



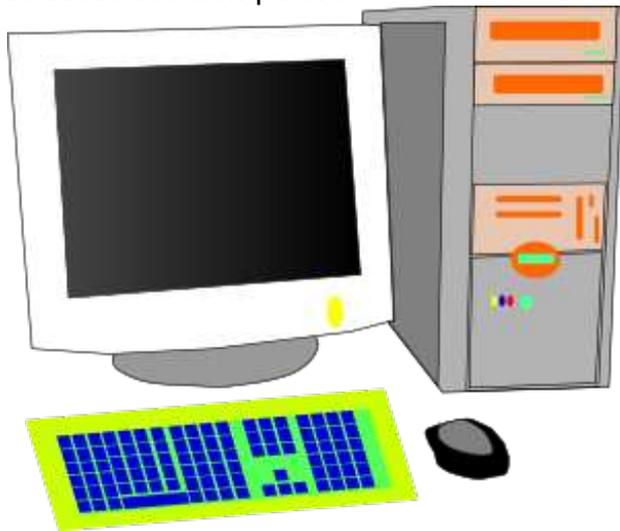
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## Introduction to Computers



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The ideas included in these pages may apply beyond these two types, but keeping a somewhat narrow focus on the desktop and laptop computers will make things easier to discuss.

The guide isn't complete. It can never be. Please make suggestions to improve it. The guide is being developed to be helpful to a beginning or early intermediate computer user. Some suggestions in it may seem too basic for you. There is no intent to be condescending, but it has surprised the guide's author how often people are unaware of some basic skills. Everyone learns in their own sequence and they convert the things learned into routines and habits. Reading through this guide, even if you are comfortable with your computer, may give you a new trick or two.

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A more complete explanation of licensing is found on the [Credits](#) page.

The guide will attempt to give you a few things:

- Explanations with background about the common terms people use when working with computers. There is a [glossary](#) in the appendix as well as explanations in the text as the term is first used in the guide. Look for **bold text** to identify the words when they are introduced.
- Step-by-step, illustrated directions to do some basic jobs.
- Recommendations for going beyond step-by-step methods.

There is no best sequence for learning to use a computer. This guide attempts to present *ONE* sequence that includes bits from several concept areas as they overlap. The idea is for the guide to take you through a series of tasks that a person might want to do. Along the way, you'll get instructions for a step. Your goal should be to read the

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step and then try to actually do the step with your own computer or in a computer lab where a lab support person can help you. That person may even offer a different order of steps. Please listen and explore. By personal exploration, you will build the skills you want.

There is no single "proper" sequence.

You need to recognize that computers are general purpose information processing tools. You will expand your skills through regular use, and you will develop your own habits. What confused you at an early stage will seem normal as you build your skills. You will develop your own routines.

When possible, you may benefit from working with another person. Some things are easier to understand when you see someone else do a series of steps. Written directions will not always be the easiest way to learn something.

**Enjoy!**

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## The Basics

If you have hired a consultant to assist you, that person may have installed optional software that they've found especially helpful. This guide may not cover some things they have planned to show you. This guide will be as generic, "vanilla" as possible describing what a fresh install of Ubuntu Unity (version 12.10). The skills described actually may be generic enough to transfer to another computer setup.

You may decide to skip over parts. That's fine. Do glance through each section, though. Maybe something will catch your eye which explains a trick you missed on your own. As is true with many things, you can learn by experimentation. Computers are very "friendly" to explorers.

Many things you do with a computer are like on-off switches. You can set options. You can turn off a feature you don't like, but the same switch that turned it off can be used to turn it back on again. You will be able to make settings changes which allow you to customize things to be the way you want them instead of needing to adjust to the **default** or standard setup. You may want to change the screen's background image, colors of text, etc. Those are things you may eventually enjoy digging into. However, if you are actually starting from scratch, or almost, get to know the standard ways things work. That way, others will be more easily able to help you through issues you have found confusing. By starting with the default settings, you also have less to try to learn right at the start.

## Input Devices

The **mouse** and **keyboard** are the two **input** devices that come with a standard desktop or "**tower**" computer. The other big piece of the computer is the screen or **monitor**. On a standard desktop computer, the monitor is an **output** device. If you got speakers with your computer, they are also output for the computer. You add information to the computer through its inputs and get information back out by way of the outputs.

### Mouse



Image Credit: [OpenClipart](#)

There is mechanism using light or a set of rollers on the bottom of the mouse to sense

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the motion as you push the mouse on the table next to your computer. The motion causes an electrical signal which goes through the wire and tells the computer to move a **pointer** on the screen. If you pick up the mouse, the electrical signal doesn't change, so you can lift and re-position the mouse as necessary to move the pointer a long distance. Just pick up the mouse and set it down to drag it around some more.



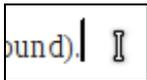
This is the look of a basic pointer.

There are many different pointers, though.

Some pointers look like open or closed hands (often when an element on screen can be grabbed and dragged around).



A pointer can get confusing when working with text. You may see a pointer which looks a little like a capital I. You may also see a vertical line flashing on and off nearby. You'll see it a lot and will get used to it. Be patient at the beginning. Remember even these things can be adjusted to make them more visible.



In the image above, the **I-beam** pointer is to the right and will move around the screen (where there is editable text) as you push the mouse. The line just after the period is going to be flashing on and off (sorry can't show that on paper!). That flashing line isn't a pointer. It is called the **cursor**. You will see it when you work with words in a text processing tool like LibreOffice Writer. A cursor marks the spot where the next letter will go when you use the keyboard. There will be more details about the cursor later in this guide.

Current computers use what is called a **point-and-click** system for controlling many of the actions you do with the computer. Move the mouse to point at something on the screen and while holding the mouse still, **click** the left button of the mouse. A mouse for a Linux or Windows style of computer has two buttons, left and right. (If you are using a Macintosh computer, your mouse has only one button. A different guide will explain the details better for you.)

**Click** is a term for pressing down quickly and releasing the mouse button without moving the mouse at the same time. Doing a click takes practice.

I recommend that you try the following. Rest your fingers over the mouse so that your thumb and ring finger (or pinky) gently rest on the desk as you hold the mouse's sides. When you are going to click something, press the thumb and ring finger down slightly to rest on the desktop. When you get the feel of it, holding the mouse this way will keep the mouse and the pointer still so you can tap the left mouse button without jerking the mouse.

Oh, by the way, the wire sticking out of the mouse should be near your finger tips, not your wrist. The wire should be pointing away from you. Turn the page to see how your hand might look as it holds the mouse.



Image Credit: [Brian](#) (bmhkim) license: cc-by-nc

If you are left handed, get somebody to show you how it is possible to switch the actions of the buttons so the "action" button is the right instead of the left.

If you are using this guide with a shared computer like the one at the Natick Community/Senior Center, please leave the mouse settings at their defaults.

The left mouse button shown under the index finger in the picture above is the action/selection button. Clicking the left button (**left clicking**) causes an action to begin. The right mouse button is used a little less often, but has an important role, to reveal options that are specific to the thing you are pointing at on the screen. Frequently, a **context menu** will appear for the object you have **right clicked**.

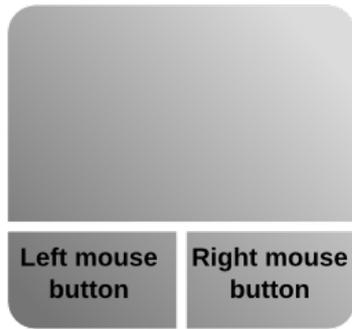
**Practice:**

1. Move the mouse around on the table and watch the pointer go around the screen.
2. Right click while pointing at different parts or pictures on the screen. See if there is a context menu that appears.
3. When you have gotten further along, practice with the mouse using both a drawing program and a card game. Both of those programs will let you gain effective control of the mouse.

Some mice have a wheel between the buttons which is used for quick control to move through the contents of long documents or web site screens. This action is called **scrolling** and a mouse with a **scroll wheel** is very popular with some users. Either the index or middle finger may be used to flick the wheel ahead or back.

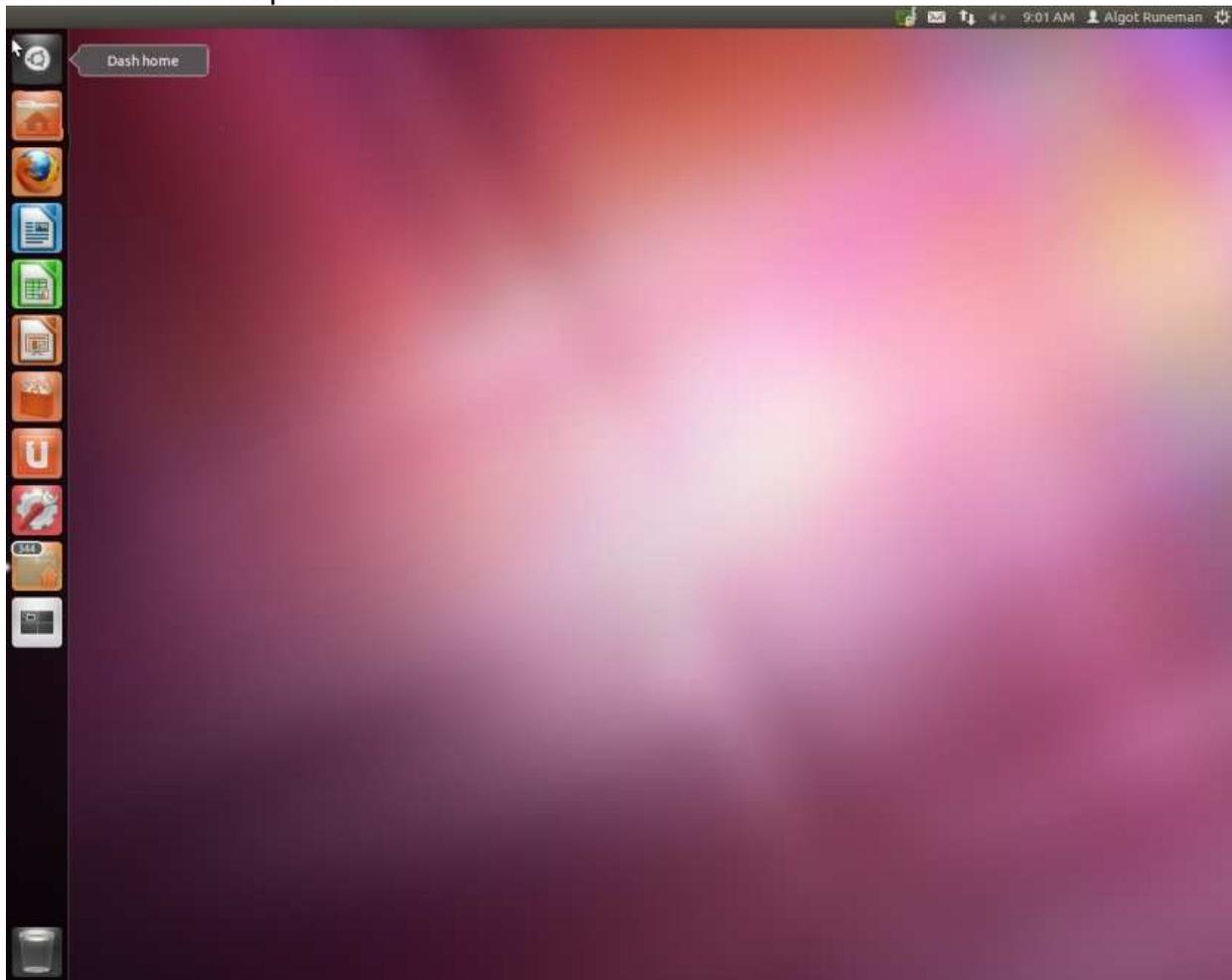
Laptop users do not always have a mouse attached to the computer. Instead, a laptop has a **touchpad** located below the keyboard.

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Touchpads use the motion of fingers brushing across the pad surface to make the pointer move. Most modern touchpads provide scrolling by flicking a finger along the right edge. Another "feature" of trackpads is **tap to click**. As you will learn, such features of many parts of the computer experience are options. You will be able to make settings changes which allow you to customize things to be the way you want them. However, if you are actually starting from scratch, or almost, get to know the standard ways things work. That way, your friends with computers or your consultants will be more easily able to help you through things which are confusing. By starting with the default settings, you also have less to try to learn right at the start.

Practice some more. Push the mouse around (or brush around the trackpad) to get the pointer to move all around the screen. The screen of the Ubuntu Unity computer at the Natick Senior Center may look similar to the next image in this guide which shows a fresh install of Ubuntu Unity.



You can push the pointer to **hover** over the small picture the left top corner. Hover means the pointer is just sitting there on top of the small picture. You hover if you point at something but don't click either mouse button. Sometimes hovering will make a change to the image. In this case, a little message appears to the right of the icon.



The left column of icons on the screen has the name **Dash** or "**The Dash**", which I think is short for "dashboard." Each of these icons represents a connection to a [tool, activity, ...]

**Practice:** Move the pointer down the column of icons and (hovering) get a first hint from the **tool tip** message that appears. Then come back to this guide and read more about these [standard activity launch icons](#). (It's a separate linked page.)

Each of the little pictures is special, though. It is called an **icon**. An icon is special because it represents a potential action (or sometimes an action already under way). If you left click the top icon, the main image of screen will change. A new set of icons will appear. Go ahead try a left click of the Dash Home icon. It should produce a new set of icons in a couple of rows across the screen.



Getting back where you started is important. Look for the X near the column of icons. That's an icon for the control of the **window** which was just opened. A window is a rectangular view which overlays on top of the other stuff on the screen. To close the "Dash home" window (closing the view that the window provides) just move the pointer over and use the left mouse button to click the X. The X in the picture above is circled in this picture (not on the real computer screen) and to make it even more obvious, there's a big arrow pointing at the circled X. A left-click of the X takes the screen back to the nearly empty **Desktop**. The term "desktop" is used to describe the visual image of the screen. Like a physical desktop in your office, the windows you "open" can be arranged on the desktop to make it easy to go from one to the other so you can focus on one task after another.

Build your vocabulary while you move through this guide. Talk to others about your practice and use these terms. Sometimes your companions will help you use the terms effectively.

Using the mouse in the way described so far, is part of working with a **Graphical User Interface** (GUI). The **GUI** is the result of many studies of how a person works when they try to do some job using the computer. The GUI is intended to make it easier, more visual, to do the job. Some people say using a mouse as part of the GUI is "intuitive." They are trying to say that it doesn't take too much instruction or practice to figure out what is going on.

## Keyboard

The second input device is a keyboard. You probably don't need too much description of it, especially if you had a typing class in school. Even so, you will learn some keyboard tricks as you go through this guide. Some tricks will save you time.

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Image Credit: [Brian Pitts](#) (cc-by-sa)

Tapping a key on the keyboard may simply make a letter appear on the screen. However, many keys can be used to launch an action in a similar way to a left click of the mouse. There's a history for the keyboard as a **command** input method. Some of you may be aware that before 1984, there were personal computers, but almost none of them had a mouse. The keyboard was the input for everything.

There are lots of things beyond typing words and sentences that you can do with the keyboard. There are many special key combinations you will gradually learn. Don't try to memorize them. That's a waste of time. This guide will tell you some keyboard tricks which will save you time. Try them out. Many of them do the same job as a series of mouse clicks. Some people prefer the mouse click methods while others prefer the keyboard tricks. You get to choose. Learn the ones you like. You will use the ones you like a lot and by using them, you'll "memorize" *them*. *They* will become your habits.

One of the best places to learn about using all the mouse and keyboard tricks is **word processing**. Word processing is more than just a fancy name for "typing." If you used to use a typewriter, you typed. The words immediately transferred to the paper in the machine. You needed to edit later. Using a word processing tool on a computer still involves typing, but the words don't go directly to paper, they appear on the screen instead. Time to give it a try. Move your pointer down the Dash until you are pointing (hovering, remember?) on the icon shown next. Holding the mouse still, tap the left mouse button. ("left-click", remember?)



[Don't worry, this guide won't always be so redundant. You'll get used to the terms as you use them, not as they get mashed together on these pages.]

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## Word Processing

LibreOffice is the default word processing program on a computer running Ubuntu Unity. Start the LibreOffice Writer program by clicking the activity icon on the Dash.



While you may not be a professional writer, word processing may be one of your common computer activities. The next sections of the guide will help you do the basics well. Many computer skills you learn while looking at word processing will directly transfer to many, many other computer activities. From program to program, many skills are the same.

The Ubuntu distribution covered by this guide includes a very powerful set of tools. You don't need to go out to a store to buy something else after you buy the computer. The word processing tool, installed by default, is called LibreOffice Writer.



LibreOffice Writer opens a window with a blank document. The main part of the window is an interactive image representing a piece of paper. Look for the flashing vertical cursor in the space outlined by lines which show the margins that get set automatically.

### Practice:

Your practice job is to partially fill the LibreOffice page with words.

A bit further along in this guide, you can see what the window looks like after typing a couple of paragraphs. You don't need to type the same words that you see here. Here are a couple of good rules for typing.

- Capitalize by holding down one of the shift keys while typing the letter you want to be Capitalized.



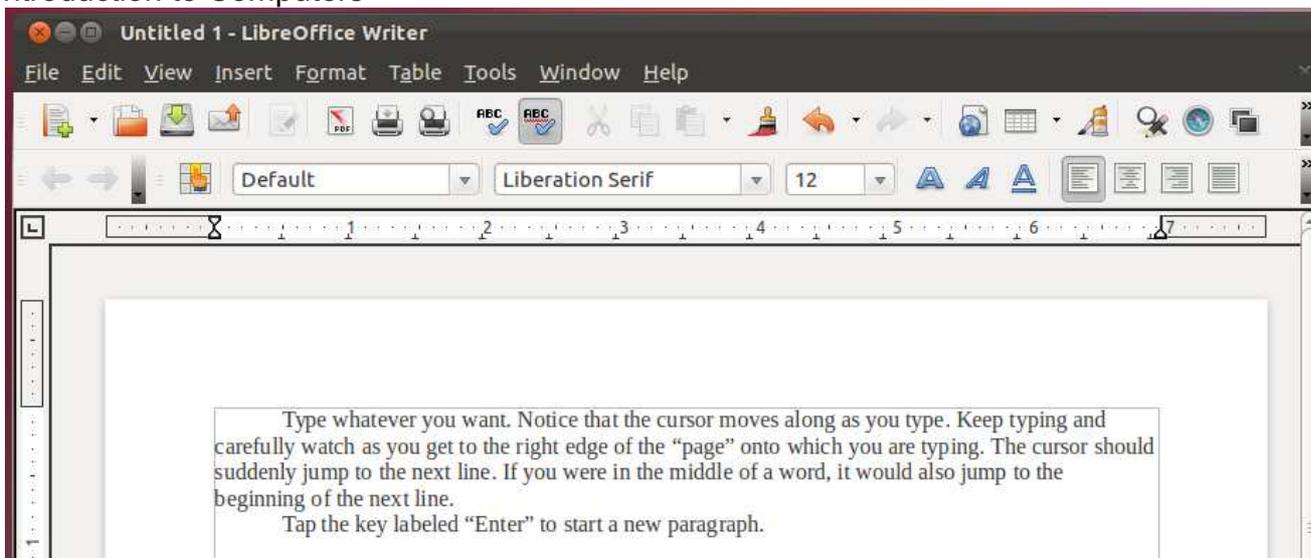
- Use the Tab key to make a paragraph indent. Don't use spaces.



- Keep typing as you get near the right hand edge of the page. If you used to be a typist with manual typewriter, avoid the urge to do a **carriage return**. The computer/word processor will take care of keeping words nicely organized at the right hand margin.
- Only tap the Enter key for two basic reasons while typing: 1) to end a paragraph or 2) to create a blank line.



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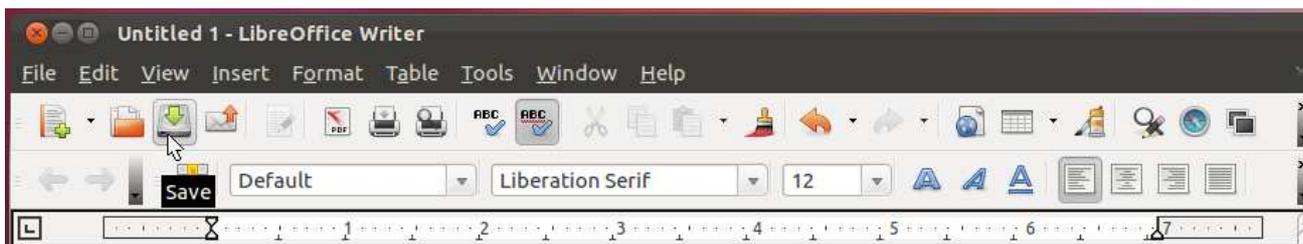


OK. That was the most simple steps. You may have understood all that without much effort. It was almost like using a typewriter.

The next steps may be done in more than one order. We'll try one sequence here.

You are going to save your very first document even though there isn't much in it.

Move the mouse pointer up to the icon with the down-pointing arrow on it (supposed to look like a storage drive) in the next image. Hovering there reveals a reminder that this icon is for **Saving** what you have just typed.



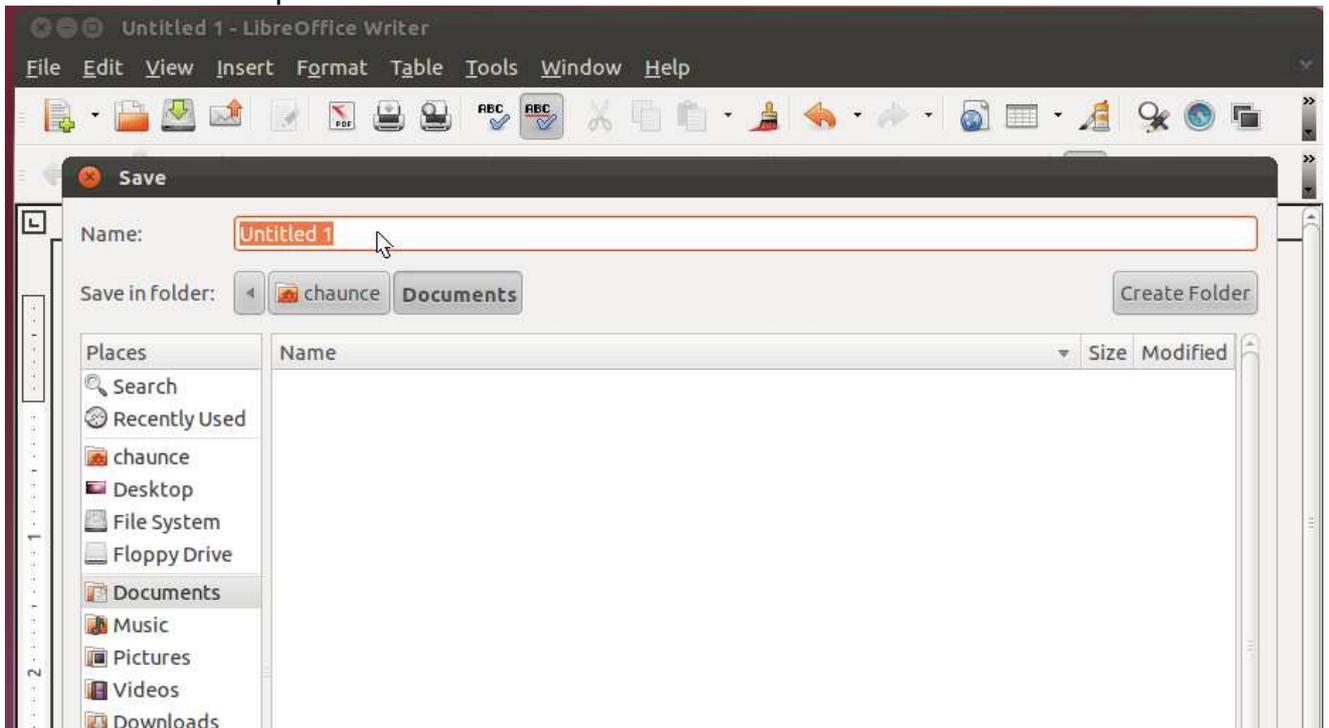
Saving is a critical step. Remember that there's no paper involved in this, yet. Word processing is more powerful than a typewriter because you can stop in the middle of a job, saving your work to continue later. A saved document is also much easier to revise than a paper one.

Click the Save **button**. A button is another name for an icon. In this case the button/icon is part of a whole row of buttons with different jobs. It is commonly called the **Toolbar** or the **Button Bar** or even something else. Sadly, there is no guarantee that terms will be consistent. There is no central "computer committee" that enforces a set of standards for computer terms. However, over time, we have seen a general agreement on most concepts. Keep moving, no matter how gingerly. Important terms will repeat. You'll get used to saying them and meaning what others think you mean, too.

Your document needs a name to get saved as a **file**. Though you can see the computer has offered "Untitled1" as a default name, it is a pretty poor name if you plan to wait a few days before you look at it again. Therefore, you should type a different name, one that makes more sense.

I recommend you type a meaningful name. If you are working at the Natick Community-Senior Center, using the Ubuntu computer set up by Dick Miller of Miller Micro for the Natick FOSS group, start with your name and then a short description. If several people use this guide, it won't work effectively if they all use the same file name over and over.

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“RunemanA Practice” was my choice for a name. All I had to do to change the name was type. If you look carefully in the image above, “Untitled 1” is highlighted by a color background. When you see highlighted text in word processing, the next thing you type will replace the highlighted text. (Read that again. It is a key concept and we’ll come back to it. When you highlight (select) text, typing will replace it.)



When you’ve personalized the name, tap the Enter key on the keyboard. Tapping the Enter key completes the saving “command.” The Enter key is an activation, like saying, “Go ahead.” Now let’s look back at what you did, adding a bit more detail.

### You typed text.

You may have even edited some words you mis-typed since this might not be the first time you’ve used a computer. Maybe you are more advanced than you realized. Do recognize, though, that trying to do thorough, careful editing while you prepare a first draft is going to make you slow down. If you are trying to be a creative writer, it is better to let the ideas flow, saving editing for a later stage.

If you divided up the text into paragraphs, you should have used the Tab key for an indent. If your work was intended for professional audiences, you might have done paragraphs with a double tap of the Enter key and not used an indent.

### You saved your work.

Well, where did it “go” when you saved it? (Try to always ask this kind of question.)

The computer took care of many steps while you tapped the Enter key to complete the save.

- The text was duplicated from the screen (There are temporarily two copies, one active copy visible on screen and the other recorded in long term storage.)
- The saved text was recorded into a **file** and stored on a **hard disk/hard drive**. A hard disk is one of the hardware components inside the computer’s case/tower. (There is more information about these [hardware components in the appendix](#).)
- The computer file contains all the individual letters and spaces which you typed, the paragraph breaks and formatting of the text (which we’re about to discuss). The file is stored in such a way that it can be copied, duplicated, sent to others, opened up again on their computer. They can read what you wrote or modify the

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text. The computer file is recorded using an international standard format called the **Open Document Format (ODF)**. No company owns the format. All companies, groups and individuals have equal access to the format. It isn't **proprietary**. Proprietary formats exist. They are designed by companies to lock you in to their tools. LibreOffice is an open tool, using open file formats. A bunch of people, worldwide are working to get governments to agree to store all public documents in open formats.

- The file name got a three letter extension to help you identify it as an open document writer file. The extension is **odt** which stands for "open document text". Using my file as an example, the file name is **RunemanA Practice.odt**. The part you typed is separated from the extension by a period which was also added automatically.
- This file name has a space in it. It's OK, but many of us would prefer to enter the file with dashes instead of spaces. I would typically have done **runemana-practice.odt** for the file name with no spaces and all lowercase letters. That's because I come from a computer background where that was common practice. We live in more modern times, use spaces and capital letters in file names if you wish.
- You did not give this file a password. The file isn't encrypted. You should know that adding a password and encryption does make your work more private, keeping your secrets safer from others. This guide will not discuss those steps. Ask about them, though, if you think you need to know.
- It is now safe to go to the top left corner of the window and click (left-click for "activate" for which we usually just say click) the circle with the little x in it. That will close the window, returning you to the desktop. Your file isn't gone. It is saved on the hard drive.
- You saved the document in a standard location. The LibreOffice Writer normally saves files into a **folder** on the hard drive, a folder called "Documents". Folders are containers. Folders continue the desktop idea, as if the computer had drawers into which you would slide your documents. If you think about it, keeping all your paper documents on the physical top of your desk eventually makes the desktop too messy to use. Folders help you organize. Folders make it easier to find old work. To keep real paper documents organized, you would slip them into manilla folders in the desk drawers. The hard drive of your computer is like a big cabinet. The folders help you keep things organized. As you get going, try to plan ahead. Make your own computer folders to subdivide the Documents folder. Maybe you'll want a "business" folder with even more folders containing files for each vendor you deal with. Of course there will be others like "personal" or "Family". You may choose to capitalize the folder names, but it certainly isn't necessary.

Depending on your available time and the level of interest in doing the steps of this section again, you might take time now to try starting at the beginning of this section and create another, or even several more files as practice.

Finish up by saving them, of course. Don't use the same file name over and over. If you use the same file name more than once, you'll run into a warning that saving with the same name will **overwrite** the first version of the file. It is generally safer to give a new name to the file instead of accidentally overwriting and ERASING the original file as you replace it with the newer one.

A good method, if you are not sure, is to do version numbers at the end of the file name: "practice01.odt" - "practice02.odt" - "practice03.odt", etc.

These files will then alphabetize in your folder, appearing in the folder views one right after another which makes them easy to find. This particular numbering scheme will allow you to have up to 99 versions. If you need more, use 001, 002, etc.

**Watch out.** If you say "file1.odt" - "file2.odt" ... "file10.odt" etc. you will run into trouble with computer ordering (**sorting**). The order of your file list will be: file1.odt, file10.odt, file20.odt because of the sorting rules.

*"What happens if I don't save a file?"*

That is another good question. Keep asking them. Then go find someone who will try to answer.

Well, if you do not save, then as you close down LibreOffice, you will be asked if you want to save the file. If you say "NO!" then the switches that represented each letter and space of all your work will go off and the work is gone. The same thing happens if you don't save and the power goes out. All the electronic switches go off. Work...gone! Save long files often.

In fact, LibreOffice *does* have an autosave feature. The default setting is to record "Autorecovery Information" every 15 minutes. If the power does go out, the next time you start LibreOffice, it will attempt to give you back *most* of what you were working on. Still, that perfect phrase may be gone. Save often.

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In the next section, you'll explore where the files went when you saved them. You'll also learn how to get a file back after you shut off LibreOffice or even if you shut off your computer for the night.

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## Word Processing Part 2

In the previous section, you practiced creating a basic word processing document. Maybe you created several. Good for you. The more you practice any set of skills, the more habitual they become. Good habits make using your computer more fun.

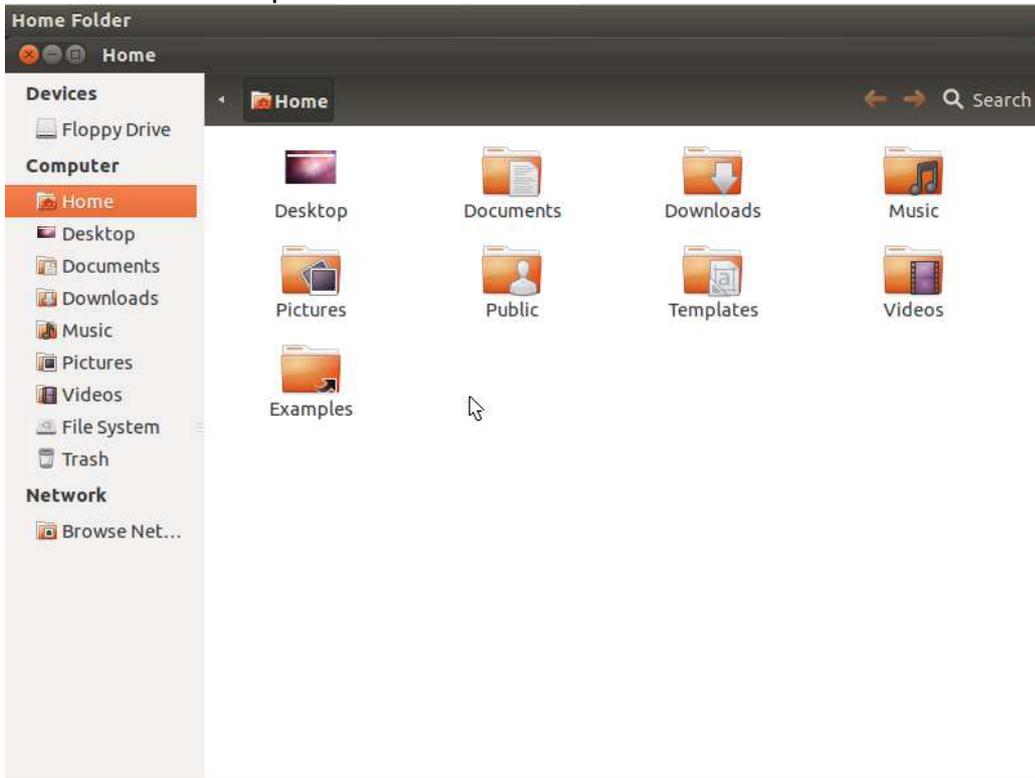
In this section your main goal will be to get back to the file(s) you saved earlier. Pretend, if necessary, that you took the day off and are coming back to get the files later in the week. You might want to add to the work you saved last time. Adding to or modifying a document is called "editing." It is considered a good idea to write without spending too much time trying to make everything perfect. Going back to re-read a draft gives you the chance to look at the work as if you were a different person, sort of like being the person to whom the document might be sent. Trying to edit during the first draft is distracting.

Finding where you saved the draft is generally easy.

Lets take a look at the folders that are set up by default on Ubuntu/Unity. All official "registered" users with an account on a computer running **GNU/Linux** have a set of folders created when the account gets added. Each user has a main user folder, matched to the **user name** chosen when the account was created. If you have only one user, that's it, but in busy families, each user can have separate space, kind of like having a drawer of the desk assigned to you. All user folders are isolated from the folders of other users. Each user has a login password so overall access to their work is secure from other ordinary users (unless you gave them the login password). Some people think of the user folder as their "home" folder, and that is what the GNU/Linux operating system calls your space, too. Inside the **Home** folder you will find all the standard folders shown below. They are named so you will be encouraged to store the right kinds of files in each folder. You would save your letters and other written documents in the **Documents** folder. Likewise, you would expect to put pictures from your camera in **Pictures**, song recordings in **Music**, etc.

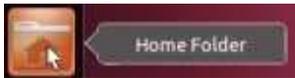
In the following image, for now, concentrate on the main section of the window. The left hand column is something to explore later.

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Of course, since you probably have your own personal computer, (PC) you can do what you like about folders. Scatter them anywhere you want. Just don't ask somebody else to figure out your "system." Try to develop good habits. Put files into logical folders. Make them easy to find.

Go to the Dash now and open the Home folder.



If necessary, go back and review the steps of moving the pointer to the correct icon, and clicking the icon to get the window of the file manager to open.

You are about to run into an "issue." Click the Documents folder icon. The only thing that happens is very subtle. The name of the folder becomes highlighted. A single click **highlights** and **selects** the folder. To actually open the folder takes two steps. You may double-click the folder icon to open it and change focus to the inside of the folder. Compare the next two images to see the subtle difference. The right hand image shows the "selected" folder. The folder name is boxed in grey. It is ready to be activated/opened.



Click an icon once to select (highlight).  
Double-Click to activate.

**Practice:** Gently click (just once) a few of the different folder icons. Watch as one after another gets highlighted. To select NO folder, click the background next to some folder, but not too close. Most icons have a bit of an invisible wide border making it easier to click them. If you accidentally open one of the folders with a double-click, that's no problem.

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There are three ways to get back to focus the window on the Home screen/folder. In the image below, notice the Home label along the top edge, above the practice file icon. The top stripe shows a “breadcrumb” trace of the folders you've opened. Clicking the Home icon retraces your steps. Just click that icon and your focus will leave the current folder and go “up” to the Home folder again. There is also a Home icon in the left column. The left column is a kind of “table of contents” for your computer. The left column lists the main “places” where information can be stored. This guide will come back to that column later, because there is always more to find out.



Remember you can't expect to learn everything all at once. Be patient. Don't rush. Don't stress yourself. Learn in small increments.

You could also click the left-pointing arrow  that is at the other end of that stripe. That arrow is an icon representing “back.” In this case, back means “go to focus on the Home folder.”

**Practice:** Repeat, retry, experiment, explore. The more you practice, the better your skills will become.

A keyboard devotee might decide to use the Enter key as the way to “activate” the selected folder or file.

Most people choose to get used to using the mouse for a double-click. Relax, in case that takes some practice, too. You need to hold the mouse gently, not in a death grip. You need to tap on the left mouse button twice in less than a second. If you consistently have trouble with making double-click work, ask for help setting the speed in the **System Settings** tool for the mouse. We won't take that detour at this point in the guide. Look in the appendix for more details on System Settings.

Go back to double-click the Documents icon, please. We need to see the icon of your saved practice document. You need to open the Documents folder to focus on what's inside.



To edit a document, you need to **open** it. The document needs to be active within the

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window of your LibreOffice word processor. Double-clicking the name of a file will do two things. The word processor will start and the window will display your document. Double-click the icon of your practice file.

Double clicking the icon of the practice file will do two things. LibreOffice will launch and the window will automatically open to show you the text you wrote and saved earlier.

Launching a program that is designed for the kind of file is a feature of the operating system. Each type of file is associated with a program that can understand its storage format.

When you have opened the Documents folder, you should see your practice file listed. Normally, the files are in alphabetical order. You will probably notice that this view of the Documents folder is extremely sparse. I created a new user just to write this guide. This is the very first saved document that I'm opening again.

- Point to the icon of your document.
- Double-click to open the window for the document. This time, the word processor will probably start more quickly, unless you had to wait a day to get back to this file.
- Find the flashing cursor.
  - Did it stay at the end of the document?
  - Did the cursor go back to the beginning of the document?
  - Begin to learn the default behaviors of your tools. You need to be observant, letting your eyes scan so you can catch things you aren't always focused on.



### Note:

At some point, you will find yourself double clicking on a file whose storage format is not linked to a program you have installed on your computer. We're not ready to get into that issue yet.

Don't be flustered. Back out of the situation. Most often the way to back out is to tap the Escape key. Tap the escape key to back out of other paths you no longer want to follow, too. For example tap the Escape key to close a menu you have clicked but don't want to explore.



(Oh, yeah, the Escape key only has "Esc" on it.)

If you saved more than one practice file as you worked on the last section of this guide, take the time to open and close a few of those files.

OK, after you have re-opened your document, you begin the official "editing" phase. A good work flow is that you type a first draft, and then save, and then go away to rest your mind. When you come back, you'll see the words more judgmentally. Please get used to the need to save your changes. Until you save your changes, they are not recorded in long term storage on the hard drive. Some people get in the habit of clicking the save button every ten minutes or so. My version of LibreOffice also has an autosave function built in. Every 15 minutes, LibreOffice saves the current state of my document so if the computer **crashes**, I can get everything but the last fifteen minutes of work back. A computer is said to "crash" when the electricity suddenly shuts off. People also say a computer crashes when there is an internal error that makes at least

## Introduction to Computers

one tool stop working. Fortunately, crashes are rare. It's a good idea to save regularly, though.

An important thing to remember is this:

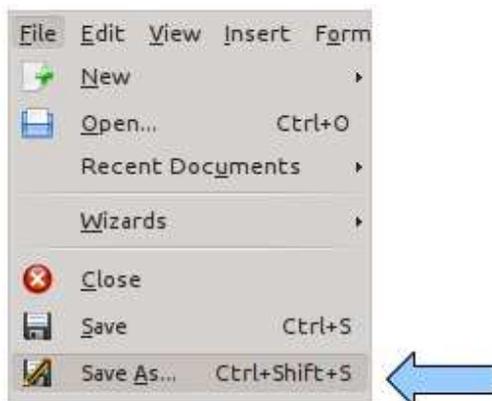
An open/active file that has not been saved is temporary. It is only on the screen and in the impermanent **RAM** of the computer's **memory**. RAM stands for the term **Random Access Memory**. Use the three letter acronym, though. Everybody does. Here's the thing about computers. Everything that you input gets stored by turning switches on or off. The letters you typed are stored by a set of eight switches. The switches are extremely tiny. You couldn't see them if you opened the case of the computer. These switches are electronic, too, except for the one that turns the computer on or off. That switch is big, physical, obvious. It is very important to understand, though, that when you turn off the computer with the big, visible switch, all the other tiny, electronic switches also go off. The switches are built into components called **transistors** or **integrated circuits** or simply **chips**. Don't bother to try to look at them. Millions of the tiny switches are sealed in rectangles of plastic.

When all those tiny switches go off, the codes which have been entered by your typing on the keys of the keyboard, those codes go to zero, all off, gone!

That is why you need to save your work once in a while. Saving makes a copy of the codes. You get a recording called a file on the hard drive. Each electronic code-switch is recorded as a tiny magnet. Each magnet has its north pole either pointing up or pointing down. The magnets don't change unless told to. A copy of your file on the hard drive is a stable, long term record of your work. Read more details in the hardware appendix.

Each time you save the file, the hard drive copy updates to have all your changes. If you don't save regularly, you will lose your changes when you turn off the computer.

What if you want to make a bunch of changes, but do not want to lose your original version? That is easy to do. Instead of just clicking the mouse on the Save button, click the word File in the top row of the LibreOffice window. You will see a bunch of options in this **menu**. A menu is a list of options with a common purpose. The File menu offers options related to the whole file. Here's the top of the File menu on my LibreOffice word processor.



### Save As...

is a File menu option which lets you give a new name to a new file copy you put onto the hard drive storage. You may want to make several versions of a novel chapter as you work along. You and your editor may exchange versions.

The option is highlighted in the image of the top section of the File menu at the left.

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The rest of the long list of options is chopped off to let you focus on the current concept.

LibreOffice should show you the same Documents folder where you saved the earlier version. Just change the name to show a version number: something like, **RunemanA-Practice2** maybe.

OK. While we're looking at the menu, Let's introduce a new bit. Look at the bottom two options in the illustration above.

- **Save** has a label at the right. It says **Ctrl+S**
- **Save As...** has the label, **Ctrl+Shift+S**

These are **keyboard shortcuts**. Some people prefer them because they find them faster to use than the mouse. A keyboard shortcut lets you keep your hands on the typing keys instead of moving over to the mouse.

Here's how it works. To use the Save shortcut for a new file, you hold down the Ctrl (control) key. Keep it down. Now, tap the letter S (no need to capitalize). Then let go of the control key. The dialog window for saving should appear just the way it did when you used the mouse to click the save button. The keyboard shortcut means the very same thing to the computer as the mouse click on the button. Ctrl+S for a file already saved will just show a moving color **progress bar** at the bottom of the screen.

Go ahead give it a try. Make some small change and then Save your current file with the keyboard shortcut. Did you notice the progress bar? It may have been quick. The progress bar briefly takes the place of the status bar. The status bar shows a bunch of document details. The guide will describe them later. But here's a quick image of the status bar taken while writing this guide. If nothing else, it makes a nice divider line in the document.

The keyboard shortcut for Save As... needs more fingers. You start by holding down the Ctrl (control) key. Keep it down. Now, also hold down the Shift key. With a third finger, tap the S on the keyboard.

OK. Take a deep breath. If the mouse works better for you, great. Use the mouse.

Only use the keyboard shortcuts you find to be more convenient than the mouse action.

When you read about a keyboard shortcut in a manual, file it away that, "There are keyboard shortcuts for some of these tasks." Whatever you do, **DO NOT MEMORIZE** a list of them. (This guide has an appendix of the keyboard shortcuts for several tools.) Working with a computer is not supposed to be a rote process. You should think about habits not memorization. You develop a habit by doing something over and over until it becomes natural. Touch typists do not think about the way their fingers move individually. The fingers seem to just "know" what to do. That is what you want with all of the things you practice with your computer. Go over the tricks as you work. Use the ones you want. Almost without any thought involved, you'll find your fingers reaching out to do the right thing. Some people choose the mouse habits. Others choose the keyboard shortcuts. It is your choice. Relax.

One last things about the Save As... option. You might have noticed the three dots

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after the option. Those three dots are intended to let you know a dialog window will pop open, giving you the chance to enter more information. The Save option only gives you the dialog window the first time you use it. A simple Save from then on “silently” updates the hard drive copy with no need for a dialog window. The file name has already been decided.

Look for the three ellipsis dots in other options to let you know there will be more to enter before completing the menu option.

The next section of activities is designed to help you develop good word processing habits. Read about the actions. Try them. Some you will get the chance to use every time you write a document. Let the frequent action steps become habits. For the tasks that come along less often, rely on the menus to remind you what is possible. If a button tooltip or menu doesn't remind you, then rely on cheat sheets which you have made, then rely on help from guides like this or similar ones on the Internet. Finally, remember you can ask another human to give you a bit of help. Don't be shy about doing that. Become a participant in a group like [NatickFOSS](#) where you'll find friendly, helpful support. You can also go to computer lab time offered at the Community-Senior Center or the library. Computer labs like those are designed to make getting help easy.

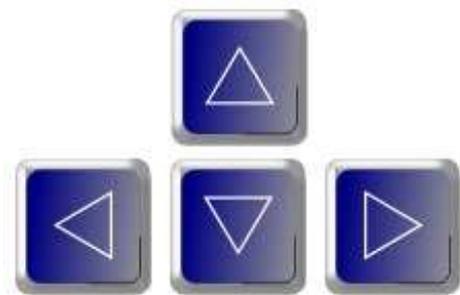
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## Word Processing - Part 3

When the cursor nears the right margin of the text space in a LibreOffice document, it is important to let the word processor tool determine whether the next letter will fit or if the whole current word needs to be moved to the next line. This is a feature called word wrap. It is important that you let the word processor, take care of line endings. If you use the typing skills you had from manual or even electric typewriters, you will make word processing difficult. Many of the benefits of word processing are tied very tightly to word wrap. If you have placed Enter key codes at the right edge of every line, editing will make a huge mess of your work.

After you type the sentences. Practice moving the cursor around the text with the cursor motion keys mentioned above and with the mouse I-beam pointer. Remember that you need to click the I-beam to place the cursor. It isn't enough just to hover the I-beam pointer where you want to type. Get good at moving the cursor around. You'll be happy you've practiced.

- **Cursor** - vertical line that flashes. It is visible somewhere on the workspace inside the window of a word processor. It is the spot where the next letter will appear as you use the keyboard.
- **I-beam mouse pointer** - If you click the I-beam pointer in the middle of a sentence, it will move the cursor quickly to the new location you chose. You can also move the cursor with the four arrow keys on the keyboard and with the Page Up, Page Down, Home and End keys.



The four arrow keys move the cursor around in a document.

Practice moving the cursor left and right. That should be pretty obvious. The up and down arrows may take a little more concentration to understand.

Don't rush. Be observant. Be persistent. Practice and think about what you see happening.

Practice with the Page Up, Page Down, Home and End keys only inside longer documents. They don't mean much when you only have a couple of paragraphs. For the record, Page Down moves your cursor down the equivalent of a page. If you're in the middle of a screen page, you will be in the middle of the next screen page. In the same way, Page Up takes you backward a page. Both of these keys can help you go quickly forward or backward through a longer document.

Home and End work at two levels. The simple level is to move the cursor from the middle of a line of text to either the left (Home) end of the line or the right (End). Be clear about this: If the right end of the line stops short of the margin, the cursor won't go any further than the end of the typed line. There is nothing to move through after the last letter or punctuation mark. Check what happens with the arrow keys again. If you are at the end of a paragraph, the cursor should jump from the end of the last line of that paragraph to the beginning of the next line in the next paragraph.

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At the second level for Home and End, the effect is MUCH larger. Hold down the Ctrl key when you tap Home. The cursor jumps to the very beginning of the document. Likewise if you do Ctrl+End, the cursor jumps to the very end of the document.

It is recommended that you get used to moving the cursor around with the mouse and arrow keys first. Practice mainly with those methods. Save the Page Up, Page Down, Home and End for later.

Understand that if you type while the cursor is in the middle of a word, the new letters will appear smack dab in the middle of the word because that is where the cursor was as you typed!

This feature of the cursor is intentional. Get used to it. It is called insertion. You will need to insert words in the middle of sentences during editing and revision of documents that you write. This feature is one of the big ideas around which word processors were designed. Because you can type missing letters in the middle of a misspelled word, new words into the middle of sentences or a new sentence in the middle of a paragraph, you will never need to retype a whole page just because of a silly typing mistake you made as you did with an old typewriter. A word processor is better for writing than a typewriter unless the power suddenly goes off. Then the computer shuts down before you have the chance to save or print. Therefore, save frequently. There are several other important keys on the keyboard in addition to the letters and the ones for cursor motion.

- **Shift** - This key makes all the upper characters showing on the keyboard. To get the dollar sign \$, hold down the shift key and tap the key that has both the 4 and the \$ on it. This key also gives capital letters, of course.
- **Caps Lock** - This key makes everything capitalize if it is a letter. The caps lock has no effect on the number keys. To make an exclamation point, you must hold down the shift key even if the Caps lock is activated.
- **Backspace** - If you notice an error just after you type a word, tap the backspace key and the cursor will back up and erase the letters by moving to the left. (If you are a Macintosh user, the backspace key is labeled "delete" but still means to erase the character to the left of the cursor.
- **Delete (Del)** - If you notice a mistake later, you can put the cursor after the letter and tap the backspace key, but you can also put the cursor in front of (to the left of) the mistake and erase to the right of the cursor with the Delete key. The Del key on the number pad is usually a substitute for the Delete key.
- **Spacebar** - This key makes a space. Do make one space after every word and after every kind of punctuation. (This is a change for typewriter users who were told to make two spaces after full-stop punctuation like the period, exclamation point and colon). Do not make spaces you don't need. They are invisible to you and me, but the word processing program has to deal with them. In some cases, extra spaces from tapping the spacebar can make editing a real headache. Don't use spaces for indents!
- **Tab** - When you want to make a paragraph indent, do not use the spacebar. The spaces of an old typewriter were the same size as all the other letters so you could get a half-inch indent by tapping the spacebar five times. Word processors on computers use proportional type in which each letter takes only the space that it needs. The letter "i" is narrow and the period is even smaller. The letter M is wide. Five taps of the spacebar don't usually make a standard half inch for indents. So, to get a consistent indent for every paragraph, no matter what kind of type style you choose, always use the tab key to make the indent. (Automatic tab stops are

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set at every half inch unless you decide to change them. Explaining tab stops is not part of this guide. Ask if you want it added.

- **Enter (Carriage Return)** This key should only be used for five editing/writing tasks:
  1. to make a blank line between paragraphs
  2. to end a list element (like bulleted items and numbered lists)
  3. to end a heading
  4. to end a title
  5. to end a paragraph.
- The most common use of the Enter key is to end a paragraph. Remember not to tap the Enter key to end each line of text within a paragraph or you will make revision a horrible experience. Also remember to avoid tapping the Enter key at the end of your document. It will frequently make an extra blank sheet of paper feed through the printer. Although you do not see the Enter key as a letter, the word processor program does see it. 40 empty lines made by tapping the Enter key at the end of a document will almost always make an extra page go through the printer. What a waste.

### Practice:

Become comfortable with typing with a word processor. Especially practice insert and backspace/delete techniques. Type yourself a cheat-sheet. Type a letter to your friend telling them what you are learning.

OK. Pause. Stepping out of the LibreOffice word processor for a moment, we need to introduce a big concept. Up to this point, this guide has referred to LibreOffice as a tool for doing word processing. That is true. However, it is time to add a couple more terms. LibreOffice is a tool for writers of every sort. Computer geeks may occasionally call LibreOffice a tool, but will usually call it a **program**. Program is another word for a tool. A program is a set of coded instructions telling the switches inside the computer when to turn on and off, what codes to store. A person who designs computer tools like LibreOffice is called a **programmer**. Sometimes the most geeky among us will call programmers “coders” because they know the secrets of the computer's insides. Programs are collectively also called **software**. Software is a sort of reference, comparing computer instructions as “soft” and thinking of the mechanical, solid pieces like the tower, the keyboard, the mouse, etc. as “hard”. Those physical, visible parts of a computer are called **hardware**. Computers are designed with very little built-in software on purpose. They are not dedicated to any one job. Today's desktop computers are **general purpose**.

To make a computer do anything useful, somebody needs to write software codes that tell the hardware parts how to do the job, of word processing, for example. LibreOffice is one of the programs that can make a computer do word processing. If you have used a Windows computer, you may have used Microsoft Office to create documents. Macintosh has a similar word processor, called iWork Pages. All word processors work so much alike that you might not even be aware of which one you are using.

One more thing in this pause from practice. In addition to the programs/tools like LibreOffice, there is a layer of software that handles the variety of different kinds of hardware so you don't have to think about it. The base layer of software is called the **operating system**. It is the job of the operating system to recognize how big your hard drive is, which brand of mouse is connected, which sort of printer you connected, etc.

In this guide, the operating system (simply called the **OS** by us geeks) is GNU/Linux. In

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order of popularity, the common operating systems are:

**Windows 7** (Microsoft - proprietary)

**Windows XP** (Microsoft - proprietary)

**Macintosh OSX** (Apple - proprietary)

**GNU/Linux** (Open Source - Free [as in liberty] Software)

**BSD UNIX** (Open Source - Free [as in liberty] Software)

**ChromeOS** (Google - based on Linux Kernel)

Choosing an operating system is a very personal decision (unless you work for a company which had decided for you). Some of us have chosen GNU/Linux because it works well, and because it supports the effort of a bunch of programmers who want software to be “free” of the control of a single corporation. Proprietary software is controlled by a corporation or company, restricting who is allowed to examine the code. Proprietary software may work well, but it may also be flawed. If only the programmers approved by the owner company can look and fix the code, when problems occur they will persist, leading to trouble. See appendix for discussion of **malware** and computer **viruses**. Free, open source software is designed so all the inner codes can be viewed by anybody. Any skilled programmer can submit recommendations for improved code.

Macintosh computers, when you buy one, have OSX pre-installed.

Most generic personal computers (PCs) are sold with the current version of Microsoft Windows. Some dealers will install GNU/Linux, but some of us make the choice to replace the Windows OS with GNU/Linux ourselves.

Finally, in this pause from the focus on word processing, cell phones are computers. That is a little more obvious with the “smartphone” category. The popular cell phone and smartphone operating systems are:

- iOS (Apple - proprietary)
- Android - (open source, though pretty tightly controlled by Google up to this point)
- QNX – (RIM Blackberry – proprietary)
- Symbian (Nokia – proprietary)
- Windows 8/RT “Metro” (Microsoft – proprietary – replacing Symbian on Nokia)

The most recent computer hardware design/format is the tablet or pad with the most famous being the iPad. Pad/tablets mainly work with iOS and Android operating systems. Keep your eyes open, though. There are a couple more Linux-based operating systems out there which may become successful (Mer/MeeGo, WebOS, Chrome, Gecko). None has yet caught the attention of hardware manufacturers, but time will tell.

Bringing the discussion back around to programs, cell phone and tablet software is called applications or just **apps**. On the general purpose computer, you'll hear application == software == program but only once in a while app. That may change, of course, since more people are buying mobile devices like smartphones than the general purpose laptop or tower desktop computers. Use the term you like most.

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The features of a program on a general purpose computer are usually available in three ways:

1. Toolbar/Feature buttons
2. Menus
3. Shortcut keys (hot keys)

You will learn to use them as you go. Don't attempt to memorize their jobs. Practice doing the steps over and over.

Many programs attempt to be consistent with each other. Most programs have a File menu since saving opening, printing, exiting, etc. are common tasks no matter what kind of information you are trying to handle. Therefore, when you learn what a menu option does in LibreOffice, you will not need to start over when you work with a spreadsheet or a photo management or banking/checkwriting program.

That means it is a good idea to explore a little further each time you have the chance. Checking out a new option from the menu or toolbar will take away from productivity for a while, but the more you explore with a purpose, the more productive you will become. You'll begin to recognize the same tasks and the same icons over and over. Try to be flexible. Sometimes the icons in a toolbar will be only similar, not the exact same image. Program designers are always trying to make their tools intuitive. An intuitive program or toolbar button icon will allow you to avoid reliance on guides like this one. The image and tooltips help you develop good habits with their ability to remind you briefly of what they do.

Still, there is a value to **Reading The Foolish Manual. RTFM** is shorthand that geeks toss around when somebody asks a question that is deemed too basic for comment. The most hard core geeks don't say "foolish", of course.

Fortunately, there are friendly people who are willing to help. Some are programmers. Others write guides like this which try not to assume too much background.

## Back to word processing...

The File menu has several more options, but let's focus on a couple more of them which are next in importance after Save, Save As... and Open.

- **New** – If you need to start a new document, you do not need to quit/exit LibreOffice. Choose New from the File menu.
- The toolbar button is:  (remember to point/hover for a tooltip label to help you).
- **Open...** – If you are working with several documents, you do not actually need to exit LibreOffice between one and the next. You can just open a second (and third, fourth, etc.) document with the Open... option using the File menu
- The toolbar button is:  intended to look like a page inside a folder for you to pull out
- **Print** - After going to all the work of writing the quarterly report, you will want to

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print it. This file option is the way to go.

- The toolbar button is:  which is supposed to be a picture of a printer. Be sure you have a printer hooked up to your computer if you want to print. In the Senior Center or library or other public location, always check with the staff to be sure about permission to print. In the appendix of this guide, there is a section on how to set up a printer for your computer.
- **Quit/Exit** - After you do all your work for the day with LibreOffice, don't just get up and walk away, leaving your work lying around open on the screen of your computer. LibreOffice, like most modern word processing applications, will warn you if you decide to quit and have not saved your most recent changes. This is a File menu option.

The next section of the guide is going to give you some practice with the Toolbar buttons. You will be editing with LibreOffice to practice the buttons, but realize that some of the things you learn will apply in other programs, too. Editing is making changes to your work.

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## Word Processing 4

This section of the guide is going to give you some practice with the Toolbar buttons. You will be editing with LibreOffice to practice the buttons, but realize that some of the things you learn will apply in other programs, too. Editing is making changes to your work.

We'll focus on the toolbar first. It has the buttons. It is just below the row of words (Menus).



### Editing

The simplest editing involves moving the cursor thoughtfully through your writing and backspacing to remove words and inserting new words by typing at the cursor position. You should practice editing that way until you think you are really good at it. Doing things the basic way is always going to be an important skill. Add new text, move through it, change things, erase things, add new things. You cannot do anything wrong. The computer won't yell at you. Get lots of practice with the basic editing skills. Create new documents. Don't worry. If you don't want them later, we can trash them.



The backspace key is usually pretty easy to understand. You use it quite a bit right after you make a spelling typo. It begins to become natural to tap the backspace key a few times and then type the correction.

Get used to that key and how to use it.

Pause for practice...Hum...Whistle, etc.

*"But, wait!"* Someone in the back is shouting. *"What about the delete key?"*

*You guys up in the back are fantastic. You ask all the right questions at the perfect time.*



*The delete key is similar to the backspace (discounting the shape difference). Delete erases from the cursor, but forward instead of backward.*

*Now, resume practicing. Try both keys. Some people seem to prefer one over the other. It is a personal style thing, I guess.*

*What? Done already? Next, let's examine some more productive editing methods.*

*Instead of erasing a paragraph or a sentence one letter at a time, you can select blocks of text to delete or modify them.*

**Practice:** Please open a document you can modify. To go along with this guide, there is

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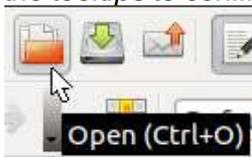
a file called *DocumentPractice.ott* which is set up to be used with some guided exercises in this guide.

- Select a word.
- Use the delete key...then undo.
- Use the backspace key...then undo.
- Try again, but select a whole sentence.
- Try again, but select a whole paragraph.
- Try again, but...you choose.

If it is available ([from the Website](#)), open the *DocumentPractice.ott* file. (Note: the *DocumentPractice.ott* file is a “template” so when you try to save it, you will need to give it a new name. That means several people can start with the same file and not accidentally overwrite it. Templates are very useful. The *DocumentPractice.ott* was distributed with this guide. It should be in the Documents folder on the Ubuntu computer in the Natick Senior Center computer lab. Ask how you can take a copy of it home to practice there.

You are going to learn about **highlighting** or **selecting** in this exercise. Selecting text allows you to prepare the words for some sort of change. Maybe you will want certain words to be italic or **bold**. It is generally best to make these formatting changes after you have typed and edited your basic text. You can do them as you go along during the typing of the original, too, of course.

- Start LibreOffice Writer if necessary.
- Click the appropriate toolbar button to open a file (*DocumentPractice.ott*). Look for the tooltips to confirm which button to activate with the mouse.



- Using the keyboard arrow keys, move the cursor down to the very beginning of the third paragraph. It is merely a duplicate of the second and needs to be removed. It looks like the boxed text below. Put the cursor before “The” in the first sentence.

-----Next paragraph to be deleted-----

The basics are easy. Just move your cursor around and type new words where you want them. Use the backspace key to erase from the end of a word backward until you have removed something. You will get the job done, but there are some more advanced editing methods which will make things go faster. You will get the job done more quickly. You will be more productive after you learn the techniques.

- Hold down the shift key. Keep it down for the next couple of steps.
- Tap the down arrow on the keyboard. The first line of the paragraph should get highlighted with a color background.
- Tap the down arrow until you see the highlight for all but, maybe, the last part of the final line.
- Tap the End key, if necessary, so the whole paragraph is selected (highlighted).
- Now you can let go of the shift key.

You should still see all of the text highlighted like the next illustration.

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-----Next paragraph to be deleted-----

The basics are easy. Just move your cursor around and type new words where you want them. Use the backspace key to erase from the end of a word backward until you have removed something. You will get the job done, but there are some more advanced editing methods which will make things go faster. You will get the job done more quickly. You will be more productive after you learn the techniques.

- Tap the Backspace or Delete or Del key to delete the text. Any of them works on selected text.

Great. Right? The duplicate paragraph is gone.

Hold on! What if you just deleted the most beautifully written text of all time? Is it really GONE? Nope. The text is not "gone".



- Look for the Undo button on the toolbar.
- Click that button. Tadaa! The paragraph should be back.

Undo means to do just what it says: You can undo or take back the last thing you did. Try doing that with your own examples, of course. Delete a word manually. Then tap the undo button. Type in a new word and then tap the undo button. Select single words. Delete. Undo. Try it all sorts of ways. Explore. Experiment. This guide isn't going to take you through all the practice you need. To get enough practice, always go beyond the steps listed here.

The keyboard fans among you should be asking: "Is there a way to do 'undo' without using the mouse?"

Of course there is. You know I love those keyboard shortcuts. Hold down the Control (Ctrl) key and tap the letter "Z". That's usually written **Ctrl+Z**.

That gives you the same power to undo the last thing you tried, no matter whether you were adding or taking away something.

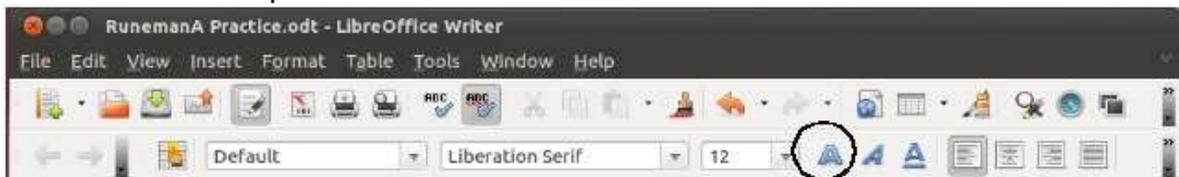
The more ways you practice the same techniques, the more natural they will become. This undo example is just one of the techniques you should practice until it becomes a habit.

NO MEMORIZATION, just repeated practice until something is part of your routine.

### **Basic Formatting**

- Select a word or two. Either use the shift-key/arrow-key method you learned just above, or you may also try selecting the words with the mouse. Some people really like the mouse for selecting text. Others find it to be too tricky, harder to be precise. Either way works. Practice and decide which way works best for you.
- To select with the mouse, place the mouse I-beam at the end of the word you want to highlight.
- Gently press and hold down the left mouse button.
- While holding the mouse button down, drag the mouse to the left.
- Release the mouse button when you have the word or words highlighted.
- Look at the second row of buttons in the toolbar (next illustration). We'll look at bold, italic and underlined text first.

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- Click the large letter A over in the right part of the lower toolbar. (Circled in illustration). This button activates bold.
- Select another word or two and try the slanted A (italic).
- Select another word or two and try the underlined A.
- Note that it is possible to apply any of these text formats to as little as a single letter. Sometimes you'll see that technique to explain an acronym like CIA (**C**entral **I**ntelligence **A**gency).
- Practice, practice, practice.

Be careful to use text modification properly.

Italics is used for things like book titles. Underlining used to be used for book titles, but that was a convention necessary for typewriters which could not do italics. Article titles should be put in quotation marks. Bold adds emphasis for purposes like attracting attention to special terms. Bold is not intended to make titles, headings or subheads. We'll cover headings, subheadings and document styles in another section of this guide.

## Fonts

Be conservative. Limit font changes. USE NO MORE THAN TWO FONTS in a document.

Font practice:

- Next, select a word or two again (that isn't already used).
- Click the arrow point beside the font selection field where it says the name of the default font. On a default Ubuntu Unity install, that's "Liberation Serif". A partial list of available fonts shows. Liberation Serif is at the top. Liberation Serif is a font or "letter design" or "typeface". Computer users usually say "font".



Choosing a font is a personal thing, but the LibreOffice designers made a few default choices that are worth sticking with until you have a reason to change. Basic text in paragraphs is easiest to read if it has "Serif" characters. A **serif** is the little drawn-out corner at the top and bottom edges of letters. Serifs help a person's eyes track along the lines of text making paragraphs easier to read. Serif text is the most common found in books printed on paper and serif fonts help when reading paragraphs which run across

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*the width of "letter" paper for which printers in the US are designed.*

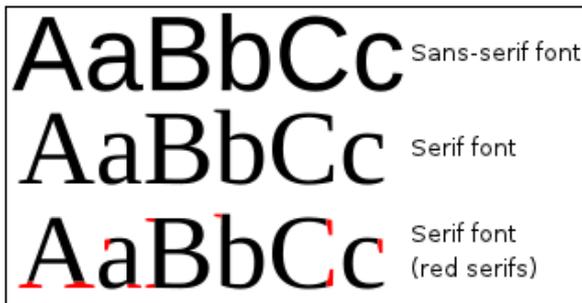


Image Credit: [Wikipedia](#)

*When a font does not have those serif extensions it seems to stand up straighter and catch the attention. That makes **sans-serif** text good for headings, for example. Many people also feel that Web pages are easier to read if the font is sans-serif.*

**Main font rule:** *Stick with a family of fonts in one document and try to do even better by using only the serif and sans-serif of the same font family. In our example, Liberation Serif is the choice for paragraph text or "**body text**", as it is sometimes called. Liberation Sans is good for the short text in section headings and main title text.*

*Be very careful to avoid mixing fonts of the same general sort. It can be very disconcerting. If part of your document is Liberation Serif, don't mix in words that are "Times New Roman", the common serif font of Windows computers, or any other serif font for that matter. The subtle differences will bother people.*

There is nothing more sad than the overuse of fonts in a document. (Liberation Serif)

There is nothing more sad than the overuse of fonts in a document. (Times New Roman)

There is nothing more sad than the overuse of fonts in a document. (Droid Serif)

*As you can see with the three lines above, while similar, these font variations easily catch ones eye.*

*Hey! Did you actually try doing your own example of mixing fonts to see for yourself? Good for you! You are exploring, testing, experimenting. You are practicing.*

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Text size and shape on an older typewriter was fixed. Each of the keys on a manual or electric typewriter caused a metal arm to strike the paper. It wasn't easy to change the shape of letters until IBM (International Business Machines) came out with a replaceable ball with its Selectric models of typewriters. Most typewriters used a Courier shape or "look" of the text.

This is a small sample of the Courier font similar to that which a typewriter produced. That means you can pretend your work was typed, except for the effects of worn typewriter ribbons.

With the Macintosh in 1984, computers changed all that. Suddenly every computer owner was able to set the font for text. Graphic designers are still pulling out their hair because of that moment. Many users don't know good design rules.

Professional writers used their typewriters to create a manuscript and the professionals at the publishing company chose the type styles. When the Macintosh was introduced, and WindowsOS came along soon afterwards, fonts were put in the hands of both the pro writers and us amateurs. If you know a designer ask them their opinions about the Comic Sans font.

Comic Sans looks like this. Woo Hoo!

**LOTS OF NEAT FONTS ARE AVAILABLE.**

**DON'T GO CRAZY WITH FONTS, PLEASE.**

**SAVE THIS SORT OF FONT FOR BROCHURES, ADS, DISPLAY CARDS, ETC.**

*While Microsoft Office and its word processor called MS-Word are not available for GNU/Linux, the fonts that are defaults for MS-Office are available for GNU/Linux. If you are going to work with a group of other users who mainly have Microsoft Office, check out how to find and install the MS-Office fonts on your computer. That way, you can exchange work you get from them and make changes that fit right back into Microsoft Office when you pass the document back. LibreOffice can easily open and save in the standard kind of file for Windows. Windows word processing files have a file type of .doc with those three letters added as the extension for the file name instead of the LibreOffice .odt file extension.*

*Adding fonts to your system is not generally something to try as a beginner. Ask for help from a more advanced user. They may have their own source for directions, but this [Ubuntu Fonts](#) Web page is a good place to start.*

*OK. I know you are dying to play with fonts. Now is the time to open a new LibreOffice Writer word processing document and test the fonts installed on your system, at least SOME of them.*

### practice...now!

*Sneaky use of a fancy font can work.*



**Caution:**

*It is very important to understand that this section in the document has shown fonts which are not on a computer by default with an Ubuntu install. If you open the ODF version of this document without also having the display fonts which the guide has used, they will not show properly. That's another big reason to stick with standard fonts in your own work. If a person uses Liberation Serif and shares a document where the default font is Times New Roman, the document will not look too terribly different. If you share a file with odd or unusual fonts, the default font will make the document look very different on a co-worker's system.*

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*LibreOffice gives you a partial solution. If you simply want to pass a completed document to others so they can use it the way it is, even with fancy fonts you only have on your system, you can choose to **Export as PDF**.*



*The export incorporates all the fonts, as they are used by you, into a "portable document format" (PDF) which is a kind of document that all popular systems can display and print. Other users see just what you designed. PDF viewers are available for GNU/Linux, Macintosh and Windows. The original fonts and layout do not depend on the fonts installed on the computer of the person to whom you have given the file. PDF files are a great way to deliver fancy documents to others. Take a PDF file to a printer or the local copy center. They can print it.*

*Do not expect a printer to make last minute changes to the PDF file, though. For that, they would need access to all the fonts you used. You should also not expect a professional printer to approve of your design. Don't pretend to know better than a design professional. By creating your own design, you get what you create.*

*If you keep at it, though, you can become a creative amateur. Stick with it.*

*Formatting of words and phrases is not all there is, but we'll break here...to keep each section under control for the Web. We'll continue in the next section to cover paragraph level formatting.*

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## Paragraph Formatting (WP-5)

This section of the guide will cover the basics of paragraph formatting in LibreOffice Writer, the default word processing program available with Ubuntu Unity.

### Paragraph Alignment

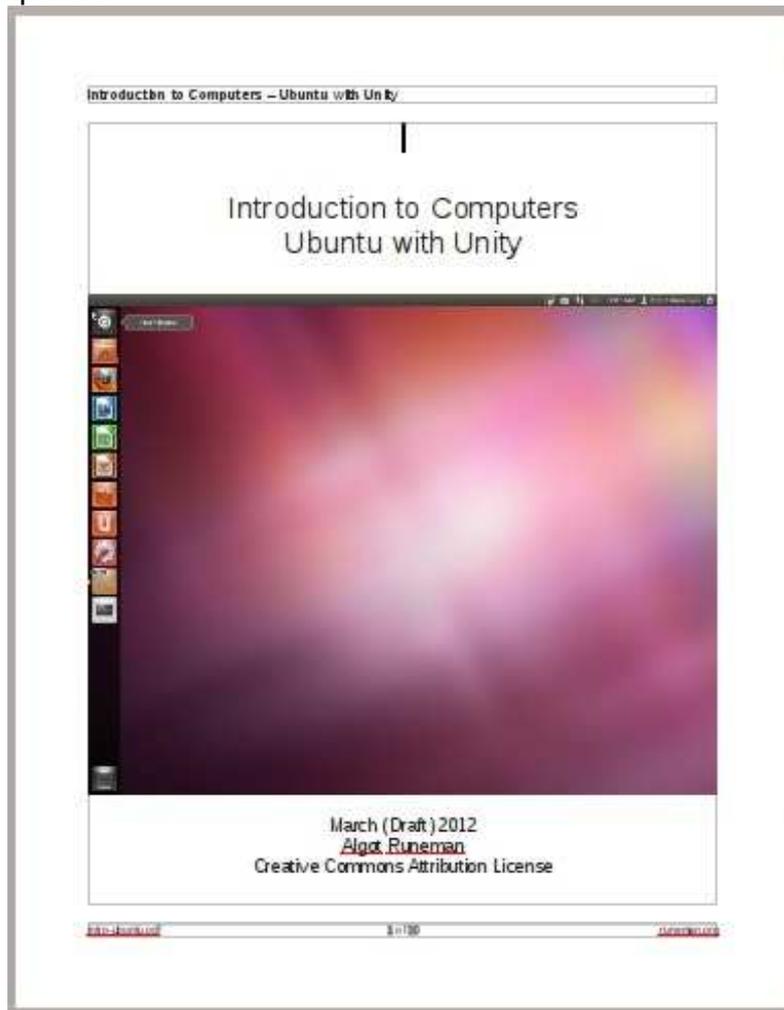


The four most common paragraph control buttons are to the right of the font buttons in the toolbar.

Normally a paragraph is called **align left**, **flush left** or **left justified**. The first button of the paragraph formatting group is for this structure effect. The paragraphs you read on a page of a book or letter are flush left. All the left edges of each line in the paragraph align to a common margin line. The right end of each line depends on where the last full word ends. Therefore, this style is sometimes called "ragged right". The four paragraph format buttons are mutually exclusive. Only one of them can control a paragraph at any time. For character formatting it was possible to have the letters both bold and italic. It is impossible, for example, for a paragraph to be both flush left *and* centered at the same time.

**Practice:** Select a paragraph (actually you only need to place the cursor anywhere in the paragraph without actually highlighting the text). Watch the change that happens when you go from "Align Left" to each of the other paragraph formats.

**Practice:** Try centering a heading. Note that a heading needs to be completed by tapping the Enter key to make sure it is not part of a longer paragraph. Centered text is very easy to misuse. It has become popular in handouts/fliers, and even there, it is tricky. In longer documents like this guide, centered text needs careful consideration. One reasonable use is for a centered graphic and its caption. Another effective location is for the cover and front pages of a book, even a small guide like this one.



**Practice:** Try the third button. It makes **flush right, ragged left** text.

The fourth button (**Justified**) makes both edges of the text be straight. It should only be used for narrow columns of text like newspaper columns or newsletters. For the normal 6-7" wide space of a letter-size page, best practice is to use left alignment formatting only. Doing a good job of full justification (as is sometimes done in books) requires more advanced space adjustment work than it is worth for normal documents.

**Observe:** (like practice, but just trying to look at something more carefully than usual) I recommend that, as you read the next justified paragraph, look at the spacing in the second sentence where it says "between some of the words." Try to see the larger gaps between the words there compared to the ones just quoted in this paragraph which is left aligned.

Usually full justification makes words spread out too much. This paragraph is justified and if you look closely, there are bigger than normal spaces between some of the words. In narrow columns, that doesn't look too bad because not many words will fit, but in wide page formats like this one, the extra wide gaps look confusing and actually make the sentences more difficult to scan. Novels are often printed with full justification, but the publisher takes pains to do the extra **kerning** work needed to make the justification look good enough. Kerning involves adjusting the spaces between letters within words instead of just adding a bigger gap between the words.

This next bit of information applies to paragraphs in general, though it may also work

## Cut and Paste:



Active buttons have solid look to them



Inactive (not available) buttons look “grayed” out.

When you are writing an initial draft, getting the basics written is the most important thing. However, when you go back through and begin revising, you may decide that the order of your ideas could be better. Editing is much easier with a word processing program than editing by hand. While you may prefer writing notes in the margin of a draft copy on paper, doing the changes is a word processor's biggest power.

First, you select the word, sentence or paragraph that you wish to move. Review the selection directions back on page xxxxx.

Once the text is selected, click the toolbar button that represents cut. The icon looks like scissors and only is available when some text is selected. If no text is selected the button looks faded and is described as being grayed out (they look faded). All of the buttons work this way to help you visually recognize what actions are available at a given moment.

You select the thing you want to move. Click the Cut button (scissors) and the text “disappears.” In fact, the text isn't gone. It has been moved to a special block of switches in RAM which is called the **clipboard**. The clipboard holds clips of all sorts. In this example we are referring to text, but you can use the clipboard to copy from one application to another and can transfer text, images, etc.

**Cut** and **Copy** are similar. Cut is most often used in editing to rearrange parts of the document. Copy is most often used when you want to use parts from one document to add them to another. The text that has been selected stays on the screen, stays where it is in the document, but is also in the clipboard so you can paste a duplicate where you want it. Sometimes the Copy-Paste process is used to create documents from pre-written texts. Politicians often create personalized letters to their constituents that are individually addressed and include the right names, but the paragraphs which describe the politician's platform are copied and pasted together to prepare the letter. Similarly, this use of “boilerplate” text is common in legal documents.

**Paste** is used to put the text from the clipboard into its new place.



Paste is only available if you have something that you have either cut or copied earlier.

**Practice:** Cut and paste some text. Try moving things into different order. The [practice file](#) has several exercises. If you have already saved your own version of the practice file, use that one since following the link just given *will not include any of your earlier effort*.

( **to-do** list the exercises?...)

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The clipboard isn't tied to LibreOffice. The clipboard is a feature of the system software. Depending on your operating system, the clipboard may have more than the most basic capabilities. At the very least, the clipboard should contain the most recently cut or copied text or image in the clipboard. That means you could copy from this Web page in your browser, switch windows to a document you are writing in LibreOffice and paste the text there.



### **Caution**

It is important to emphasize this point.

Copying from someone else's document into your own can be plagiarism or copyright infringement.

Is always OK to copy and paste from things you own. It is also OK to copy and paste when the source has been licensed to you or your organization.

For example, all the text in this guide is licensed to you under the terms of the Creative Commons Attribution license (CC-BY). There is no limitation on how much you can reuse. There is no payment to be made.



CC-BY is a liberal license. All it asks is that you state the source/author of the work...in this case Algot Runeman. Also, identify where you got the original material so other people can get to the original.

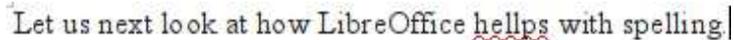
**It is NOT ethical nor legal to copy and re-publish materials for which you do not have any kind of license.**

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## Spellcheck (WP-6)

LibreOffice can help with your editing. One part of the LibreOffice support system is a spelling "dictionary." The dictionary isn't for definitions. The dictionary is for spelling.

Take a close look at the next box. It contains a small section of screen captured from LibreOffice.



Let us next look at how LibreOffice hellps with spelling|

You are wearing your reading glasses, aren't you? Look closely at the squiggle line below the word spelled "hellps".

If a word you type isn't in the dictionary of LibreOffice, a squiggle appears below the word. The squiggle appears right after you tap the space or a punctuation mark when your word ends.

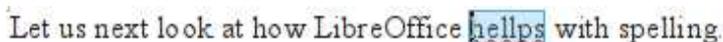
You notice two things: (1) LibreOffice does NOT automatically fix ([Autocorrect](#)) most words and (2) the squiggle stage of spell checking does not immediately give you suggestions. That comes later. The first step is just this squiggly line to indicate that you have a problem. You again have two choices.

- Choice 1: Keep on with the flow of your writing and go back later to fix the spelling while you are editing more seriously. In a first draft, spelling mistakes are not a big deal (until you share the draft, of course).
- Choice 2: Strive for perfection while you enter your text. Immediately edit, even though it slows you down.

Either way, at some point, look at the word that LibreOffice doesn't recognize. If you can make the correction yourself, pat yourself on the back and see the mistake as the **typo** it was.

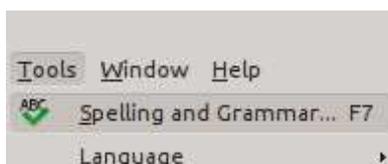
If you are not sure about the spelling, LibreOffice can make suggestions.

First step, highlight the word. (If you don't make a selection highlight, the whole document will get checked.)



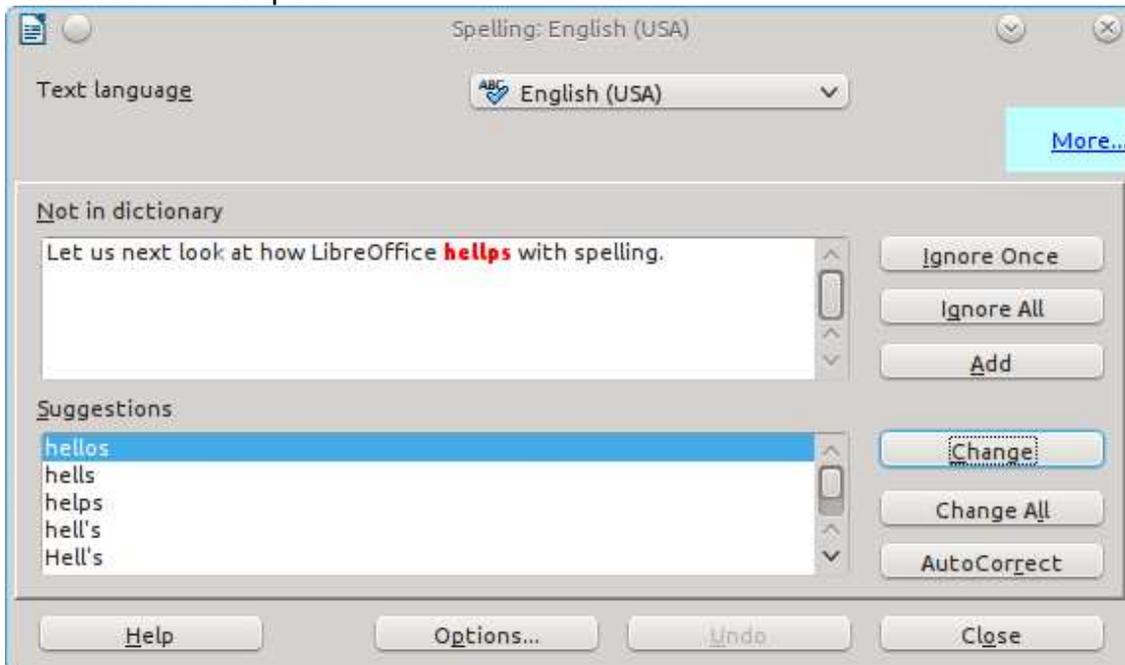
Let us next look at how LibreOffice hellps with spelling.

Second step, Click the Tools menu and then click the first choice "Spelling and Grammar".



A **dialog box** for checking spelling will pop open on top of the word processor screen. In that special tool window, the first suggestion is NOT what you want. Look a little further down.

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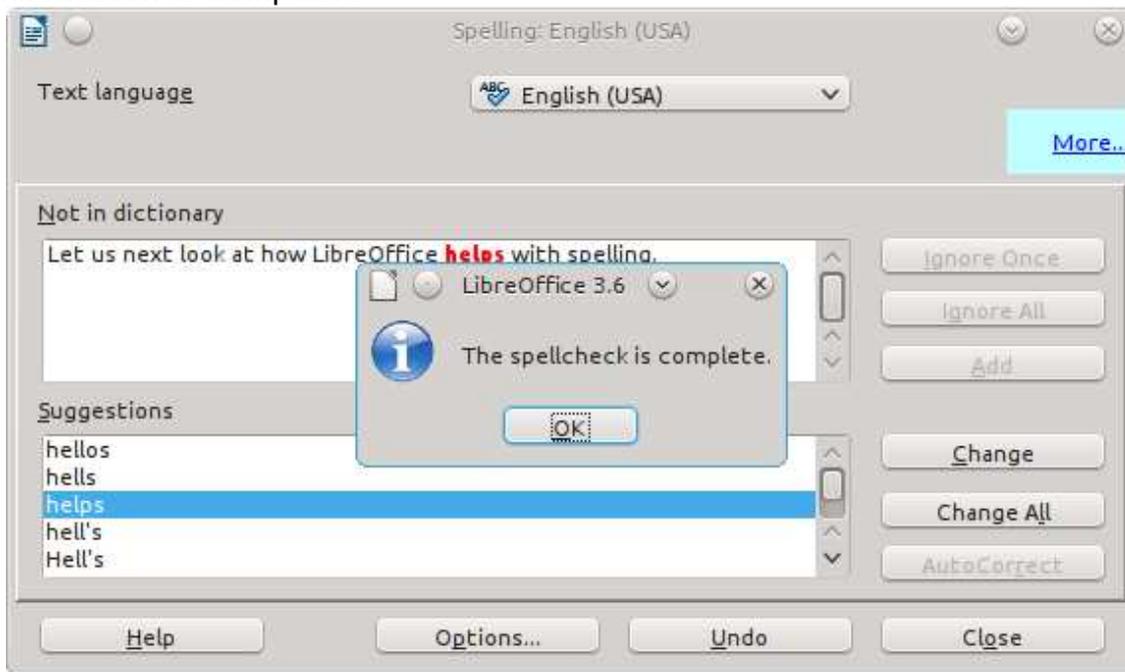


It is the third word choice you want in this case. Click on that word and finish off by clicking the "Change" button.



You can see that the job is done. Go ahead and click the OK button.

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You could skip the step of selecting the word. Then the spell check would go through the whole document. It would stop at each word that was not in the dictionary list. You can concentrate on each one. That can be really efficient, doing all the spell checking at once. Until you get used to checking spelling, it makes sense to work slowly through the process, checking a word manually first, then look through the suggestions of LibreOffice.

You *can* also choose to click the "Change All" button. If you make this choice, every time a word appears in the current document, it will be changed. You'll get notification of how many times the word was replaced. In our example, the spellcheck tool would change every "help" to make it say "help" instead.

OK, what if you highlight the punctuation mark after a word? No problem. The spellcheck isolates the word from the period in this example.



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But, what if a good word is used inside another word?

This will be a pretty silly example, but bear with me. We are going to imagine fixing "thee" inside some misspelled words.

The, thee, theese, theem theeme

The spell checking tool will NOT stop at "thee" because that word is in the spelling dictionary, in spite of being rarely used these days. You'll be able to find good suggestions for each of the other misspelled words. Of course, YOU will need to decide if "theem" is "them" and "theeme" should be "theme".

What if the word is not in the dictionary at all but we know it is right? I run into this problem often. If I put my first name into a document, a spelling check will flag my name. I get tired of seeing it with a squiggle beneath it. LibreOffice has a solution. LO lets me add a correctly whatever I say is a correctly spelled word to a custom dictionary (for only my login) that works in combination with the official word list.

Algot sat near the window.

Algot ate his supper.

Algot read a book before bed.

In this example, select only the first line, choose the spellcheck tool and when the dialog pops up, click the "Add" button instead of doing the "Change" as you did before. My name is now an accepted spelling even in the later lines of work which I did not check. Once a word is added to the custom spelling list, the added word will be accepted in the current document and all others you write later. I suppose, if you actually used my name in your practice, you can now go happily along writing all sorts of stories about Algot, the great teacher — Algot, the fabulous web author — Algot, the world renowned...Well, just don't go crazy.



Caution:

You probably saw this caution coming. If you accidentally add a misspelled word to your custom dictionary, that word will NOT be caught when you check any other document either. AND, the "undo" button doesn't help after you do add the misspelled word, so be careful. Keep reading, though. You can fix a mistake in the custom dictionary.

Let's look at a similar name spelling issue. It will help us explain how to fix the custom dictionary.

Sindy vs Cindy

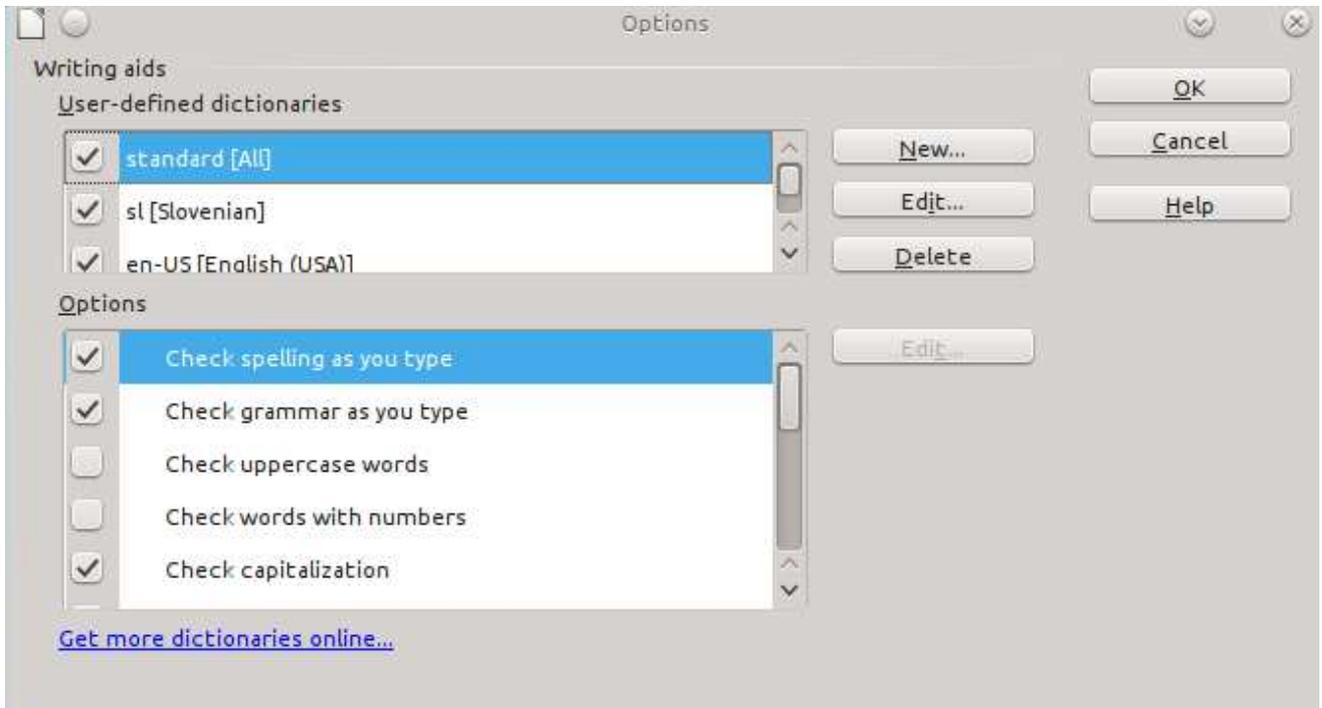
You will find that common name spellings like "Robert", "Edward" and "Cindy" are already in the official dictionary word list. Cindy doesn't get the squiggle. "Sindy" isn't common enough as a spelling for the name. Too bad for Sindy.

If we decide to add Sindy to the custom list, though, but then we change our minds (or need to fix any other accidentally-added misspelled word, here's the method.

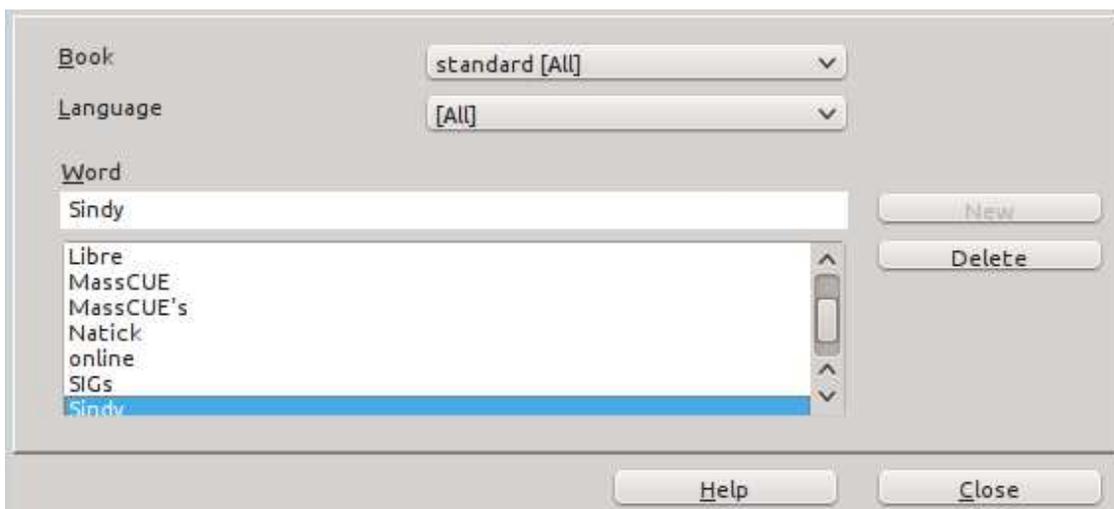
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If you didn't use "Sindy" for this practice, you will need another misspelled word. Anything will do. Just verify that you get a squiggle.

Choose the spellcheck from the Tools menu, but don't fix the word. Instead, choose the "options" button at the bottom of the dialog box. That will lead you to a new dialog. On this set of choices, we want to fix the list that is called "standard [All]". Click the "edit" button.



The list will open and you can scroll down to the word you want to delete. With "Sindy" highlighted in the list, click the "Delete" button. ( I'm not being mean to people with the name Sindy, really I'm not. )



Practice:

You know the drill.

- Spend some time making spelling mistakes so you can fix them. For me that would be easy. I don't spell well.
- Add some names to the dictionary if they are not already there. Last names are

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- frequently good examples.
- Check the custom dictionary list with an actual dictionary ( or sit with a friend who is a good speller ) to be sure that you have not accidentally added some words that are misspelled.

What can you do if you need to check spelling and are not doing your writing in LibreOffice or you run across an odd word you can't check in the word list. I have found that a Google search can help. In the next illustration, you can see I was spelling "uppolstery" wrong and Google suggested the right spelling while also looking up the correct word. Neat.



There are some words which get wrecked by fat-finger typing. LibreOffice has a feature to take care of that problem, too.

### Autocorrect:

In addition to the spelling dictionary, LibreOffice has another special list of word typos/misspellings that are so common as to be worth fixing as soon as they happen, maybe so fast you won't even notice the fix. The next image is a very short section of the list. The word on the left is automatically replaced by the word on the right.

abotu	about
abouta	about a
aboutit	about it
absence	absence
acesories	accessories
accidant	accident
accomodate	accommodate
accordingto	according to
across	across

Autocorrect also converts some common fractions and selected abbreviations to a more pretty display:

3/4 becomes  $\frac{3}{4}$  for example, and you can get the copyright symbol by typing the letter C in parentheses: (c) becomes ©.

Autocorrect uses a list that is separate from the spelling dictionary. You can examine the autocorrect list by choosing the "Autocorrect options" choice of the Tools menu. A more advanced idea is that you can actually add your own abbreviations to be expanded into almost any long phrase. You might want to ask for help with that idea.

## Styles in Wordprocessing

Using styles in word processing makes it possible to create a "look" for your company's documents. You can make a template which you pass to everyone in the company. Each template gives managers and their administrative assistants the tools they need to meet company document guidelines. Styles, in general are not a beginner concept. You can choose the fonts you like and then the documents will look the way you want them to. Styles are in this guide for two reasons. (1) You might be in a business where you must adhere to corporate style and would want to understand it. (2) You might be writing long documents where a table of contents is important. Styles are at the center of making an automated table of contents. Making a table of contents will be the activity of this section of the guide.

One aspect of styles falls at the upper edge of "beginner", right where "intermediate" begins, from my experience. That aspect is **headings**. Headings help you to write longer documents so they tie together.



Note:

As always, remember that this guide is ONE path to becoming comfortable with your computer. Just because I say styles are at the beginner-to-intermediate margin doesn't mean you must learn about styles at that point. You may have used styles very early, and you can certainly be very productive without ever using them.

The heading of every section of this guide on the web is much bigger than the text of the regular paragraphs. The line done in larger text is a "heading." Both web pages and LibreOffice have styles available. If you are working from the web site, the fonts and layouts do not necessarily match the ones in the printed version.



The initial style is "default." It is pretty basic.

This paragraph and the others with regular text size are considered **body text**. In LibreOffice, the default body text on my system is a typeface (font) called Liberation Serif at a size of 12 points. (For the record, the web page uses a sans-serif typeface as the default body text and heading font. (Web design isn't quite so straight-forward as LibreOffice Writer.)

### Heading 1

This text is typed in the default font. On my system, the default font is Liberation Serif typeface at 12 point size.

Heading 2

Heading 3



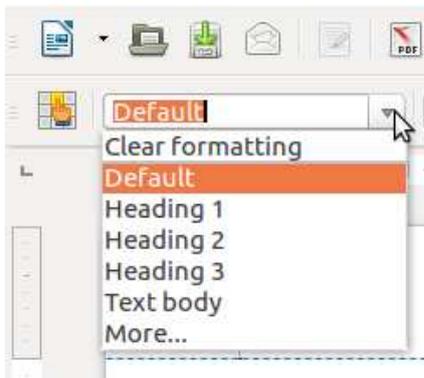
As you can see, the lettering of Heading 1 is styled at 16.1 points for size and is Liberation Sans as the typeface. For the moment, the text that says Heading 2 and Heading 3 is just body text.

The bigger lettering of a heading obviously makes the heading stand out, but it also serves another significant purpose for advanced use.

Headings are of a different status from body text. Each heading marks the beginning of a segment. Each heading helps a reader to see where the topic changes in a major way.

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It would not look so obvious, but the heading could be the same size and look like body text. However, if labeled a heading, it would still do its job structurally for the document. Usually the appearance of text in a heading is modified to look more impressive. That's for visual cues useful to the reader. In the background, LibreOffice is able to use the text identified as a heading in other ways, though. Headings are available in several levels and they make it possible, for example, to do an automatic table of contents. LibreOffice automatically builds a table of contents based on the presence of the headings that are designated by selection of one of the available heading styles.



In most writing, you'll use Heading styles 1, 2 or 3. As you see, there are more styles. We'll get to them in a bit. Styles are paragraph-level formatting. Earlier we looked at changing fonts, using bold weighting or perhaps **color changes** or even size changes. Those changes were NOT paragraph level styling. They were word/letter formatting. Character-level changes applied only to the few words or letters which you choose to highlight. By contrast, style formatting changes all the characters in a whole paragraph. So, either you have the changes of a Heading or you don't. The whole paragraph changes to the style you have chosen.

**I hope you can see that a whole full text paragraph would not make sense if it were done as a Heading 1 style...like this!**

Headings should be short saying things like:

## Chapter 6: Entering the Tunnel

Imagine with me, that you have written a novel. It would be very nice to have your Table of Contents automatically handle the page where each chapter begins, especially when you and your editor decided to change the length of chapter 2. With a manually created table of contents, the chapters afterward would need their new page numbers fixed manually in the table of contents. In LibreOffice, using headings for the chapter titles, the update of the chapter pages is handled automatically.

### Heading 1

This text is typed in the default font. On my system, the default font is Liberation Serif typeface at 12 point size.

### Heading 2

### Heading 3

Practice

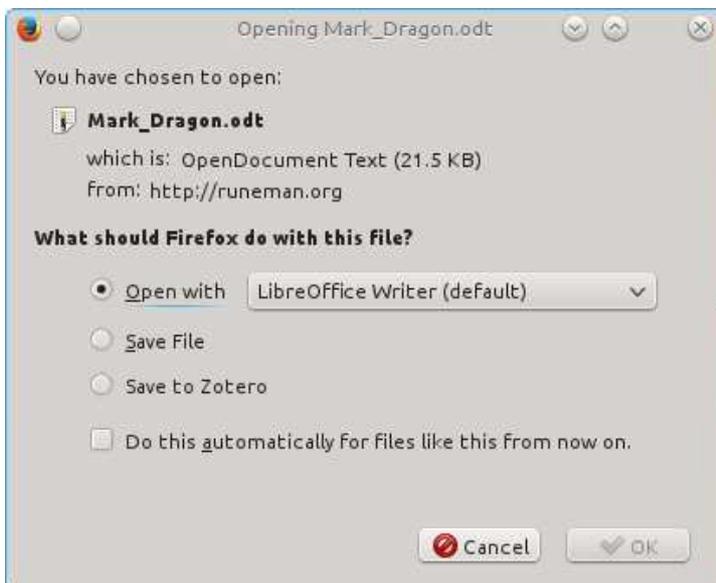
Create a very short story a few paragraphs long. Make a title at the top using Heading 1

## Introduction to Computers

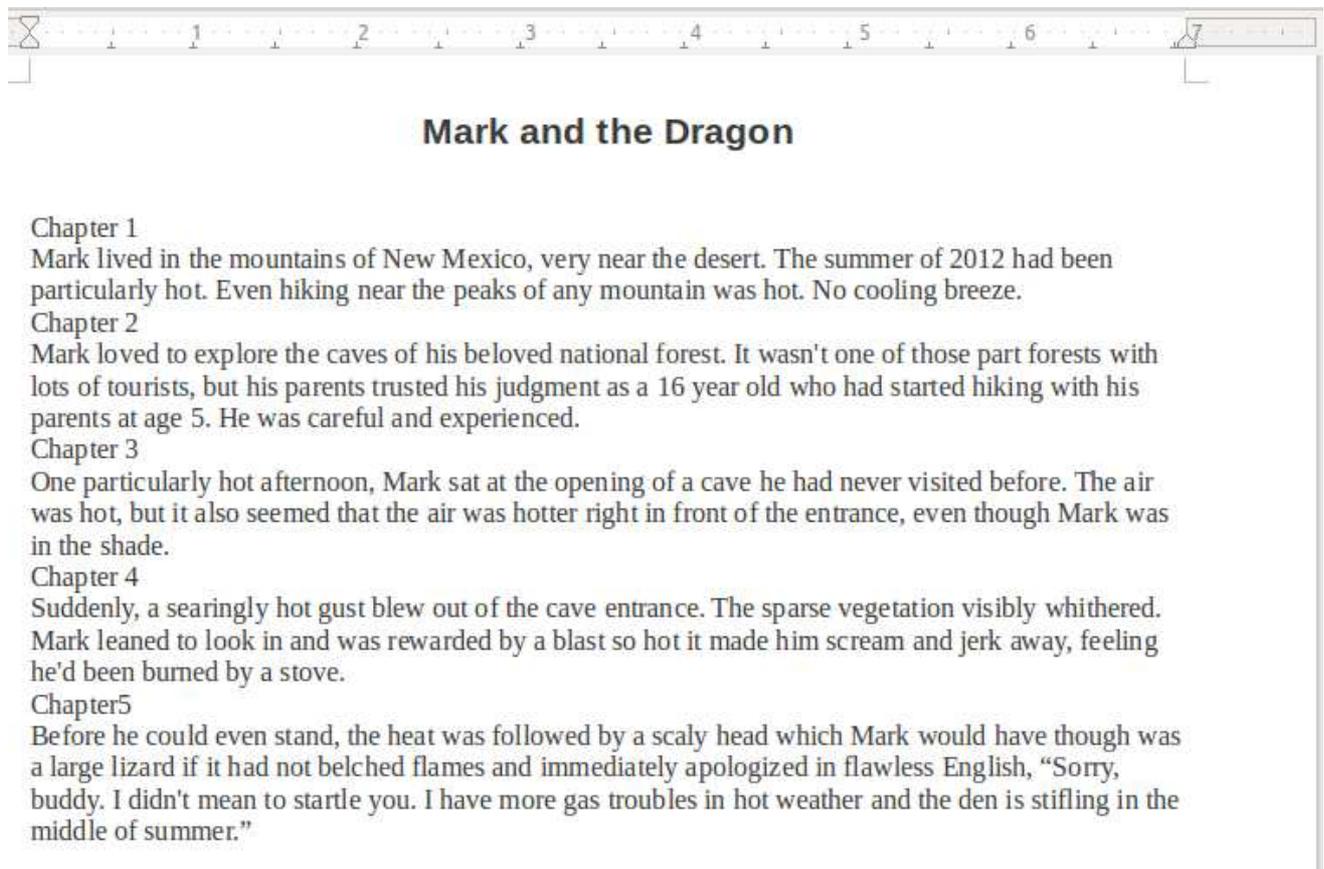
style and center it.

If you feel you MUST use my story for your practice, download the .odt file here: [Mark and the Dragon](#)

(Assuming you have LibreOffice installed, you may be offered the chance to open it directly in LibreOffice Writer. Otherwise, save it and then open it.)



Your document might look like this when you finish typing (or exactly like this if you downloaded!).



The chapter headings are separate paragraphs before each of the "story" paragraphs. Put your cursor anywhere in the Chapter paragraph and choose from the style options. Make each **Heading 2** style.

# Introduction to Computers

## **Chapter 1**

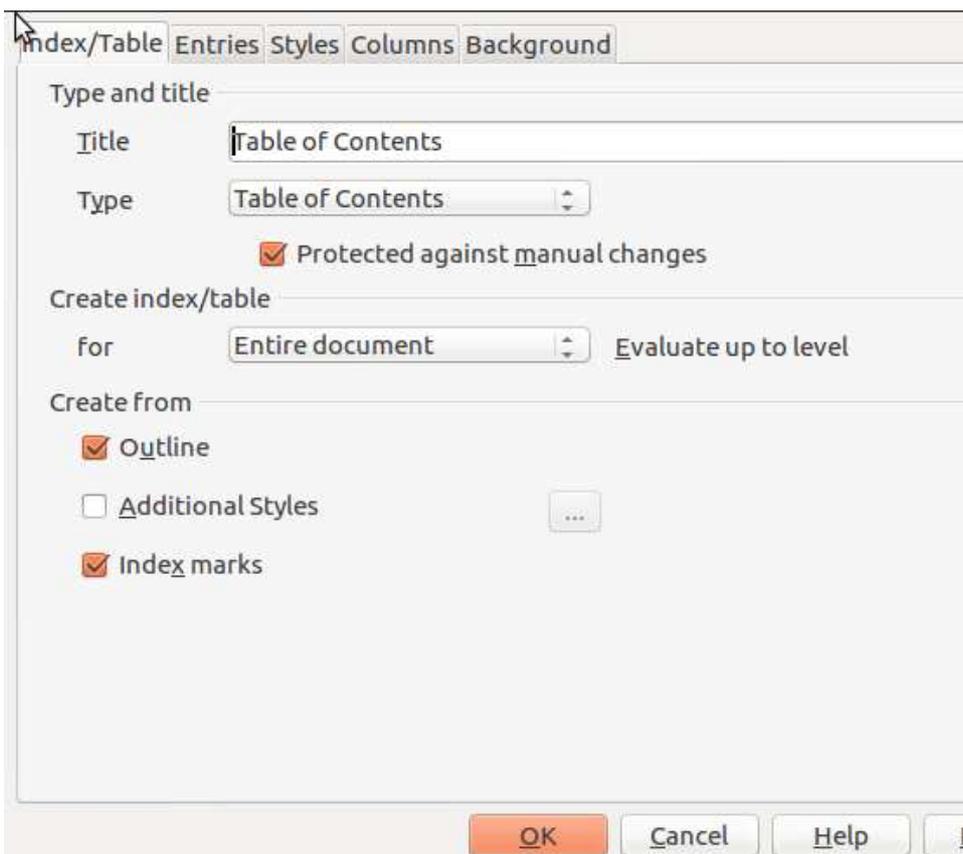
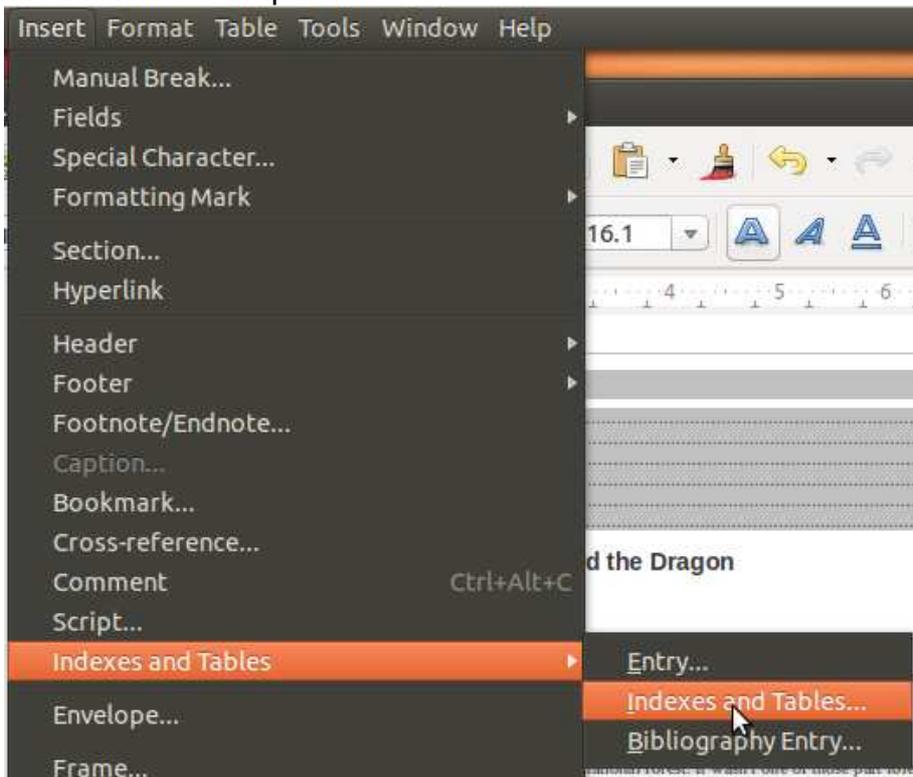
You should notice that the headings are not only larger in their text size. (Check the size at the formatting toolbar.) There is spacing above and below the heading text. The space makes the heading stand out more. If you had just changed the size of the font manually formatting it, those spaces wouldn't have happened.



### **Next step: Insert table of contents.**

Slide your pointer up to the very top edge of the screen. Unity will reveal the menus of the LibreOffice program that are normally not visible. Slide over to the menu item called "Insert" and then click "Indexes and Tables" and finally click "Table of Contents."

## Introduction to Computers

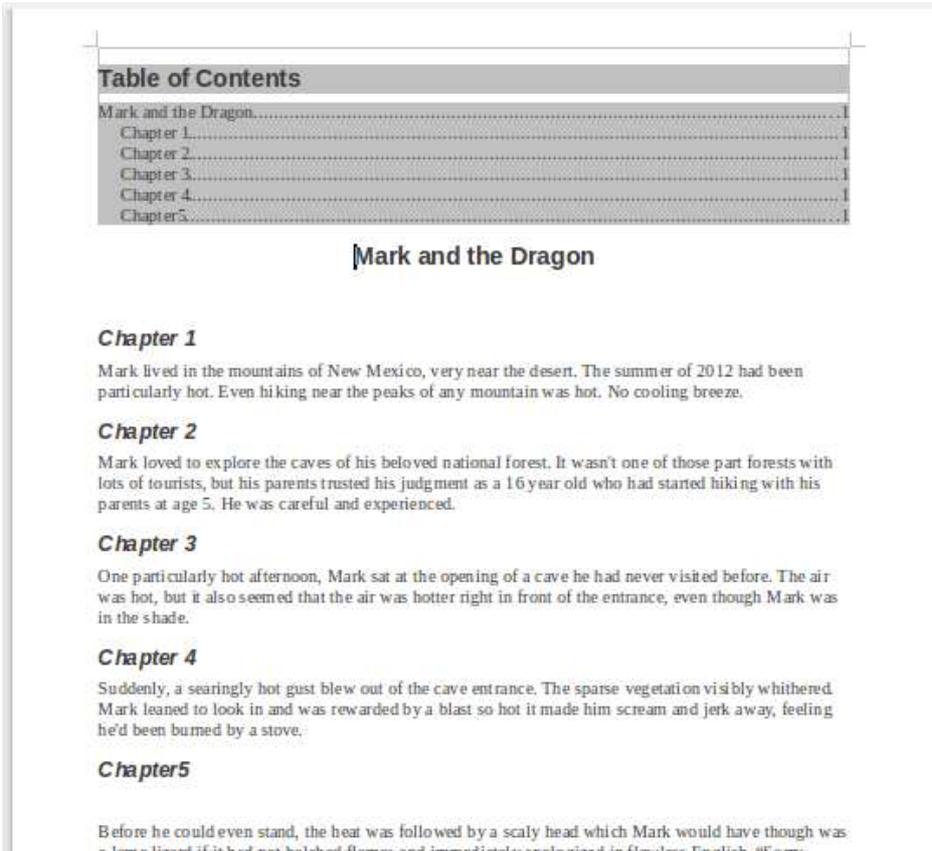


In my example, to make my table of contents, I put the cursor at the top of the story's first page, just left of the first letter of the title. Normally, I would have put in a page break so that the table of contents would be separated from the first page of the actual story. I didn't do this time so the captured page image would be an easier illustration to put in this explanation.

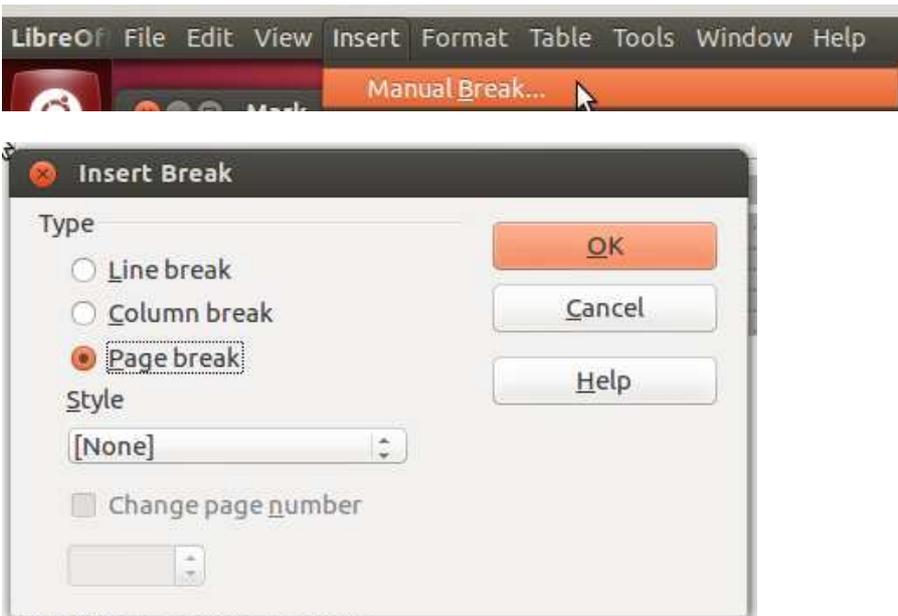
In the image below you can see the table of contents at the top (of course, all the page numbers point to page one of the story because it is terribly short. If, however, one of

# Introduction to Computers

us decided to push forward and make each chapter several pages long, the table of contents would track our changes and would automatically change the page numbers to show where each chapter started after our longer writing was done.



Normally you would want the table of contents separate from the story. You would want a fresh section/page above the story. You insert a page break, a kind of "manual break." A page break is the default choice of the Insert menu.



Additional Reading:  
[LibreOffice Online Help](#)  
[Making your own Default template](#)



### File Storage - Practical

Note:

There is a separate section of this guide describing the background and [theory of file storage](#).

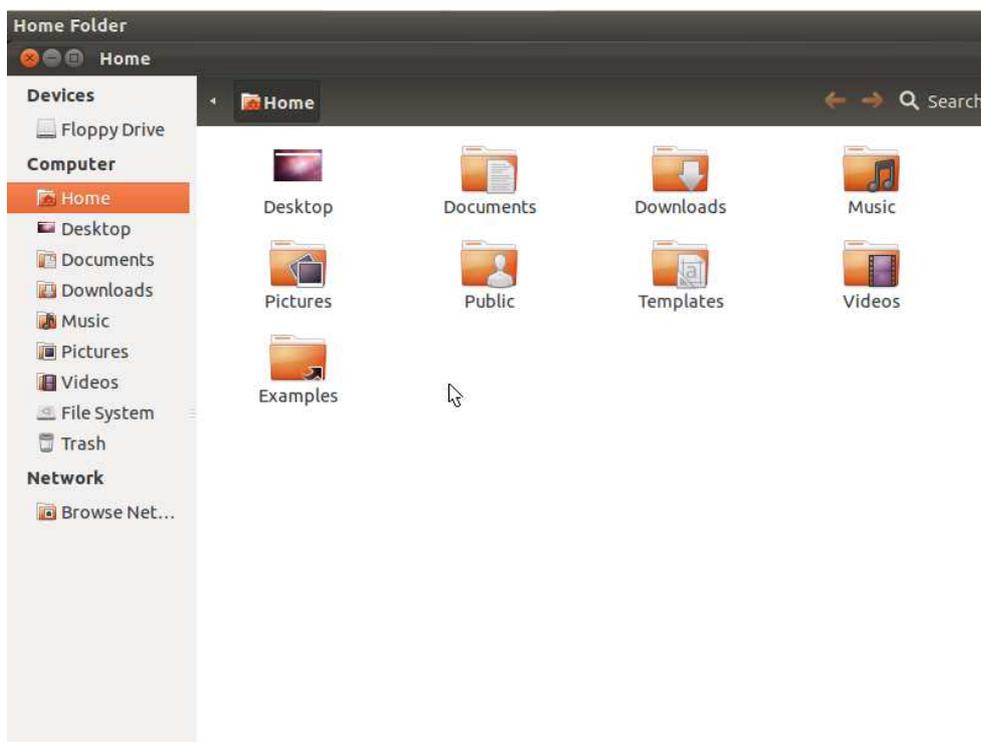
After an enjoyable afternoon of work, you want to stop for the day. You also want your work available when you start tomorrow. For that reason, you save it. Then you turn off the computer and go home.

You may recall reading that computers are really just thousands of switches, and that the switches are used to represent all sorts of information. A file is a package of information designed to be stored digitally (that is, some representation of the "on" or "off" status of switches). Remember, too, that the digital switches in an active computer depend on a steady source of electricity. The switches of digital memory are so easy to turn on and off that an interruption of electricity from a battery or from the wall outlet will let all the switches go off. When that happens, anything that was in the digital memory (also called RAM) to be lost.

You must have a way to save your work that is more permanent and secure. You cannot depend on RAM for long term storage of your work. A file is that next layer of permanence.

When you save your work, your information is duplicated into a file. The data of RAM is converted to a more stable format and stored on some kind of storage device, typically your computer [hard drive](#). Remember "Save" duplicates RAM data into a file stored more permanently. Right after saving, there are two copies, one in RAM and the other on the disk drive. If you shut down the word processor, the only copy of your data will be on the disk drive. You want to be sure you know how to get it back.

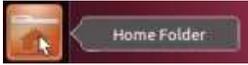
The Graphical User Interface lets us open windows to look at the disk contents, listing the data by file name. Please take time to plan your file organization. Ubuntu has created several basic folders in a file system inside your personal Home folder. Make the most of that good start. Add sub-folders within the Documents folder to organize files. Folders for "business" and "personal" might turn out to be the first subdivision of the Documents folder. It is up to you. Do not put the job off, though.



Folder View



## Introduction to Computers



Next, click the Documents folder icon because that's the recommended location for all the stuff you have created and saved. Start there.



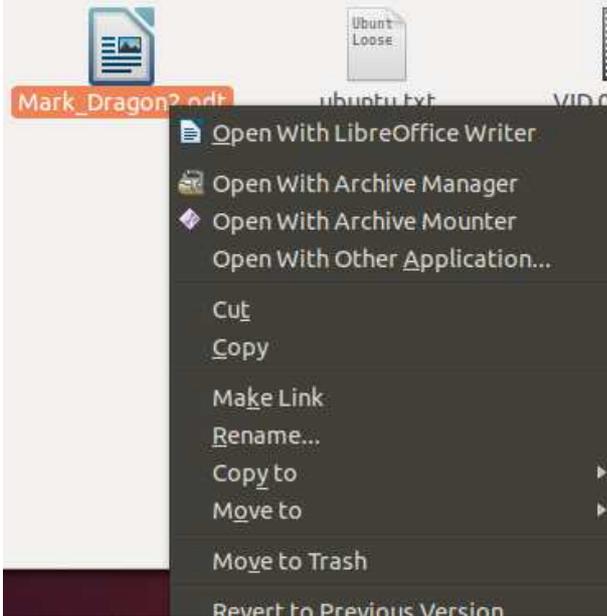
### Back to Work

If necessary, remind yourself that clicking the Launcher/Dash icons needs only a single click to activate. To open the Documents folder, you will need to [double-click](#).

If you simply want to reopen a file, just double click the file icon. Ubuntu will identify the default tool to use when opening the file. The two files visible in the preceding illustration were both created with a word processor. Ubuntu's default word processor is LibreOffice Writer and files with the odt extension will open in Writer.

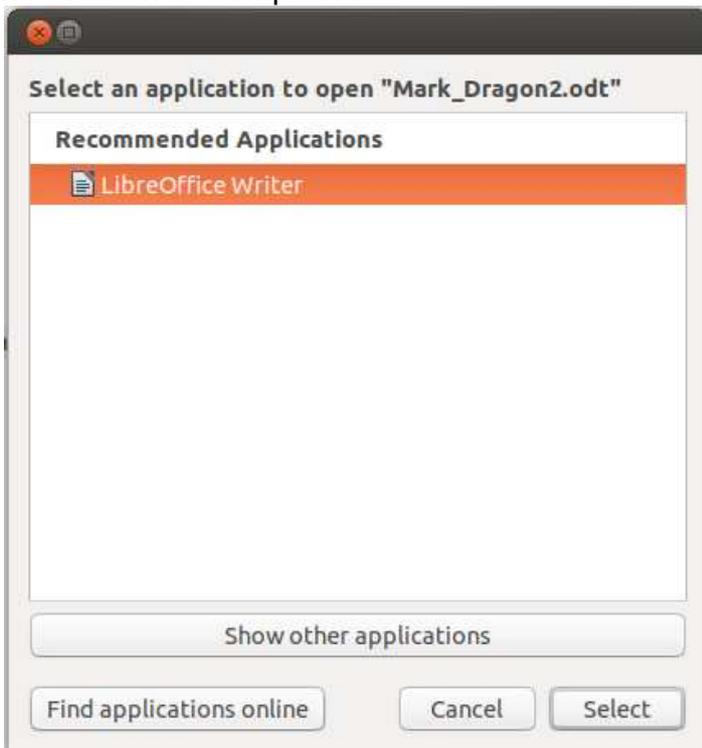
#### Note:

The Ubuntu list which links each file type to an appropriate application is a sensible default list. However, you can choose to override the list. To open with a different program, right click to get the context menu

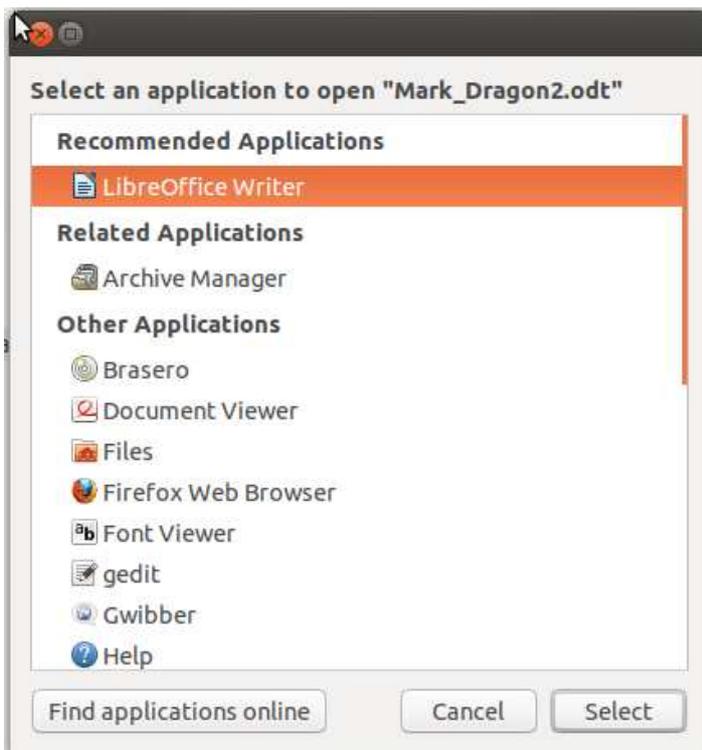


In our case, with only a basic install of programs, Ubuntu only recommends (associates) LibreOffice Writer though at the bottom of the next illustration, you can see the chance to see a list of alternatives.

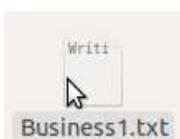
## Introduction to Computers



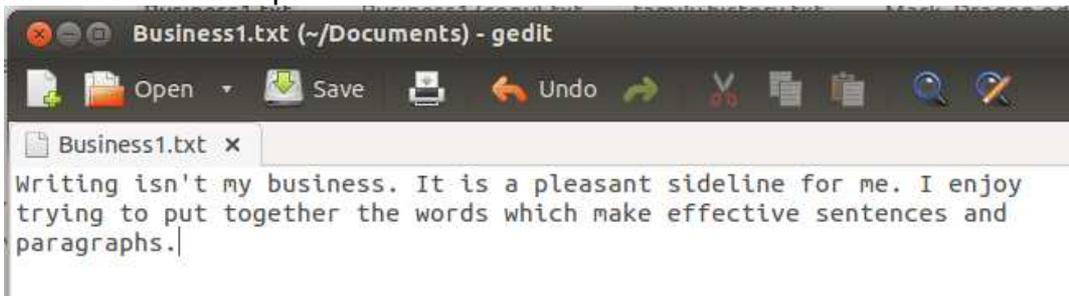
The next illustration shows a list of available tools and even gives you the option to locate alternatives to download and install.



If you double click a simple text file, Ubuntu uses a simpler program called gedit to open it.



## Introduction to Computers

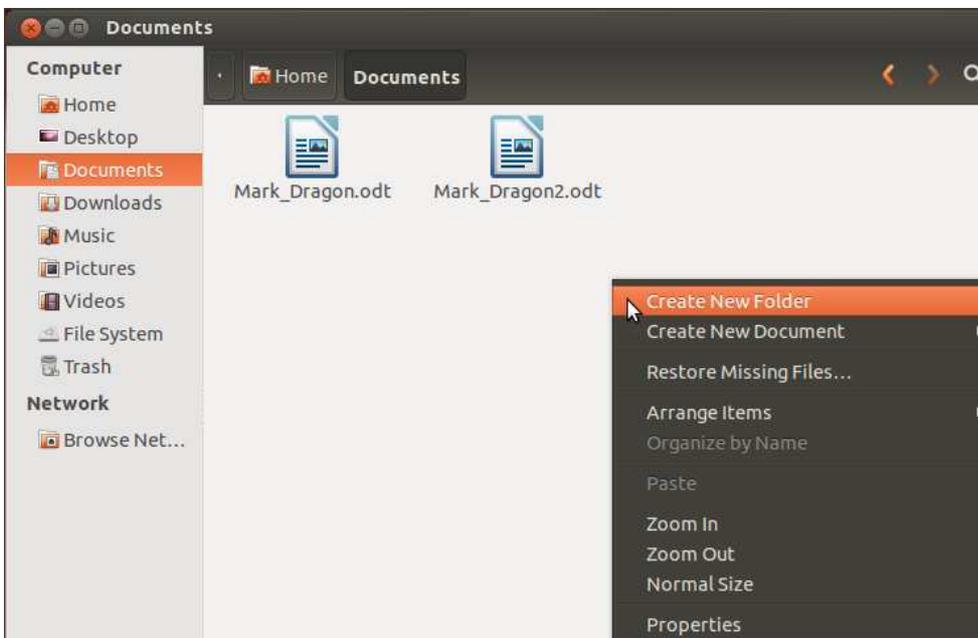


Text files are very simple. They don't have fancy formatting options like the ones in the open source LibreOffice Writer or the proprietary (closed source) program, Microsoft Word. The biggest benefit of a text file is that it is easy to open using a wide range of word processing tools. It is a format which has been around since the early days of computing, and you should expect that 20 years from now, there will be programs that can still open the simple file format. Fancier word processing tools often have complicated, even proprietary formats. An example is that it is often difficult today to open word processor files written using the once-popular WordPerfect or WordStar programs. Even earlier versions of Microsoft Word are not well supported in the current MS-Word version.

### Organizing your work

The best way to organize your work on the computer storage drive is to make a structure of folders that makes sense to you. Ubuntu has set up a top level of folders, but it is up to you to make the other folders inside the top level.

To create a new folder, move the pointer to an empty area of the Document window. Right click there. None of the file icons should highlight. You should see the context menu in the next illustration. Choose the first option "Create New Folder."



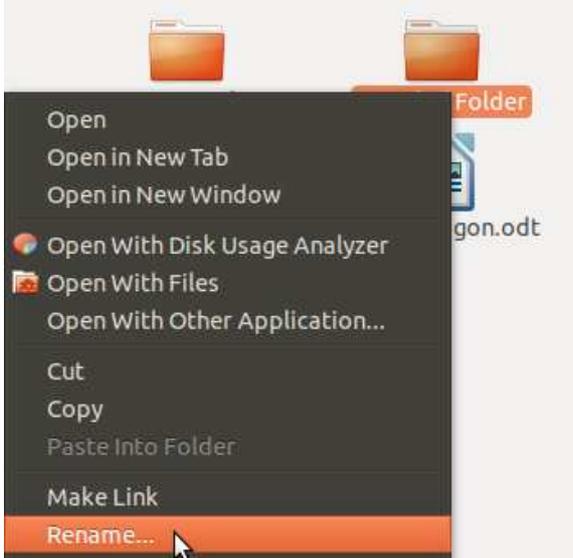
A new icon will appear with a very generic name: "Untitled Folder", and that name will be highlighted only across the lettering. That highlighting means you can replace that name with something more useful. Just type. The highlighted text will be immediately replaced. I chose to type "personal" as my choice. Tap enter to complete the renaming.

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### Note:

Watch out. If you just tap the enter key, you'll get a folder named "Untitled Folder" which isn't too helpful. If that does happen, don't panic. Right click on the generic folder name. Choose "Rename" from the context menu which appears.



If it turns out you have made several "Untitled" folders in the past, check that they are empty and choose "Move to Trash" from the context menu for each of them. ([Trash](#) explained below.)

If you are working on a shared computer like the one at the Natick Community-Senior Center, you might be smarter to do your storage practice using a USB removable [flash drive](#) or "thumb" drive instead of the hard drive. Your work will remain private. You'll be able to remove the thumb drive at the end of your session. The account used at the senior center is shared. You are not required to have a named user account.

When you plug in the flash drive, it will appear at the bottom of the list of storage locations at the left of the Home folder window. Click the USB drive icon to open it.

Next, let's move some of the files around. I've created some practice files on my system.



To make it easier, I named the files so it was clear what they were. Two files are business files and one is personal. To move a file, click-hold-drag the icon of the file until it is over the folder into which you want it to go. At that point, let go of the left mouse button and the file will be put into the folder. This process is called "drag-and-drop." You won't see it in the Home folder list, but if you double click the folder where you dropped it you will see the file in there.

## Introduction to Computers

Practice:

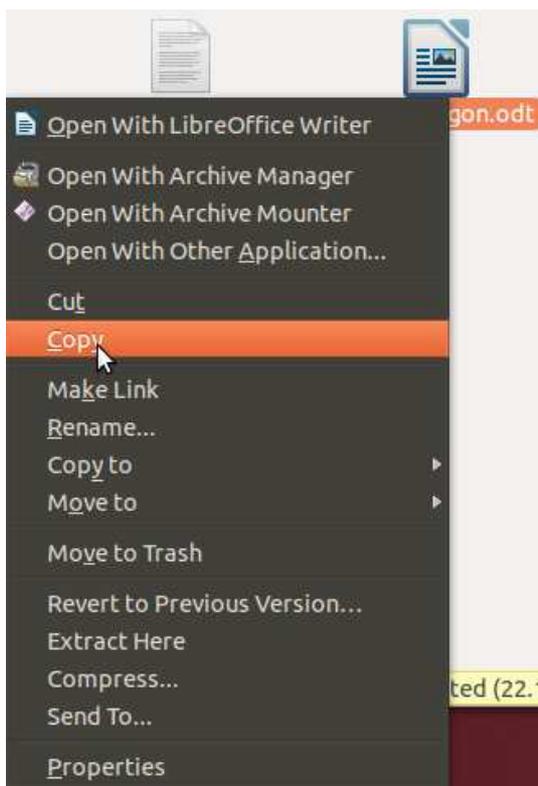
- Create one or several files if you don't have some available.
- Create one or several folders if you don't have the ones you need.
- Drag files one at a time into the folder where you think they best fit.
- The more you practice, the better you'll get. Don't rush.
- Quiz question: Into which folder do you think I dragged the Mark\_Dragon files? [ Hover here for answer. ]

Of course, not all of your files need to be in a sub-folder. Any file I access over and over, day after day, I tend to put in the top level of the Documents folder. That way I can open it more quickly.

### Opening Files

You remember, probably, that files have extensions. A file you write with LibreOffice Write gets a three-letter extension **.odt** like the two Mark\_Dragon files in the preceding illustration. These files will open with the LibreOffice word processor which is great. If I want to write more or edit changes, I want to work in the word processor to do that. All I need to do is double click the file icon. Double click works whether I do the click with the pointer on the image of the icon or the name under it.

However, if you right click the icon of a file, you get a context menu with many options. The first option is "Open with OpenOffice Writer", just the same as doing a double-click. The rest of the options are sometimes useful, though. The archive options are a bit more advanced, so let's look down the list of the context menu to some more routine options.



### Copy and Paste

**Copy** is possibly the most commonly used option in this menu. It is used in combination with Paste to take duplicate a file into two locations. You would routinely do this task when heading out of your office. You would copy a file from the hard drive and paste it onto a removable flash drive. Then you could use the file when you got to your destination, duplicating it again onto the computer of a colleague.

Note:

Some people use cloud storage to deal with getting files from computer to computer.

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Look for more information in the section about [Ubuntu One](#).

### Practice

You can practice pasting directly to your hard drive.

- Go into a folder.
- Right click and choose 'copy'.
- Switch to a different folder.
- Right click the empty background of the window. Choose Paste from that context menu.

### Note:

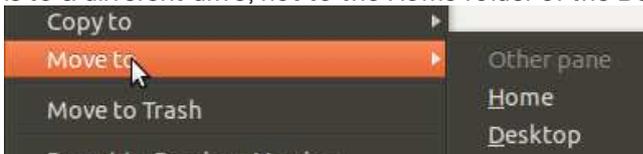
If you paste in the same folder, Ubuntu will automatically rename the pasted copy.



## Cut and Paste

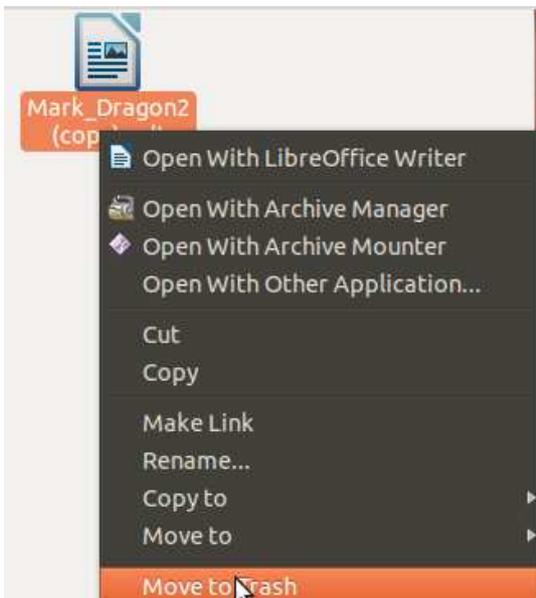
If you choose "Cut" from the context menu instead of "Copy", the file will not be duplicated. When you paste in the new location, the pasted file will be the only copy because you cut it out of the source location. Be careful.

The context menu offers you both "Copy to" and "Move to", but if you look, you'll see they don't have the range of choices that you probably want. Most times I'm copying, it is to a different drive, not to the Home folder or the Desktop.



## Trash - Recycle Bin

Folders hold files. Files are a recording of the codes which represent words and letters of text, the notes of audio or the pictures of snapshots and movies. You can decide in which folder you want to put a file. It makes sense to organize your storage with meaningful folders. When you no longer need the information in a file, you want to remove it from your storage disk. Right click the icon of the file (or the name under the icon) and choose the option "Move to Trash."



If you prefer to use the direct mouse method, click-hold-and-drag the icon across the

## Introduction to Computers

screen to the icon of the trash bucket. A colored outline will appear. Release the mouse button and the file will move from your documents folder into the trash folder.



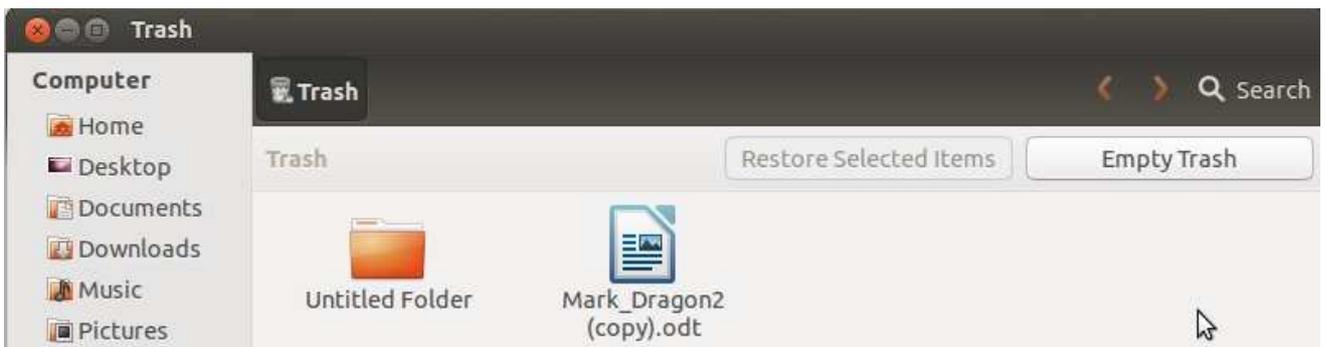
In physical space, like a kitchen, there is an actual bucket, maybe under the counter. In a computer, there is no physical bucket. There is a special folder. The file transfers from the "Documents" folder into the "Trash" folder. The data is still there, just moved around.

Just like the physical trash bucket, the trash folder will gradually get full. The operating system of Ubuntu has a limit assigned to this folder. When the trash gets full enough, the operating system completely deletes files, starting with the ones which have been in the trash folder longest. Until then, the file is actually still on your computer storage disk.

If you want the file back, click the trash icon on the Dash Home screen so your window shows the partially filled trash folder, and select the file you want. With the file highlighted, click "Restore Selected Items" as illustrated next.



Files fill up the trash bin gradually. They are recoverable as long as they are still in the trash. The size of the trash isn't limited by anything other than the disk space. That means you can free some space for more recent and important files by choosing the option "Empty Trash" when looking at the contents of your trash folder.



## File Storage - The Theory

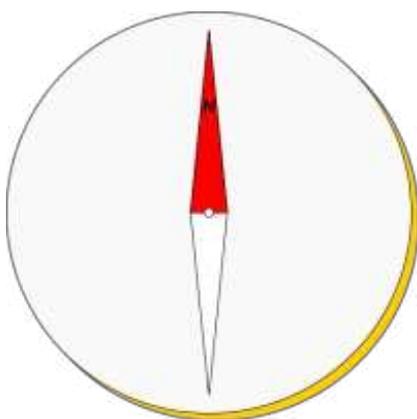
Note:

There is a separate section of this guide describing the way you [manipulate files](#) in practical ways on a computer running Ubuntu Unity.

You may recall reading that computers are really just thousands of switches, and that the switches are used to represent all sorts of information. A file is a package of information designed to be stored digitally (that is, in some representation of the "on" or "off" status of switches). Remember, too, that the digital switches in an active computer depend on a steady source of electricity. The switches of digital memory are so easy to turn on and off that an interruption of electricity from a battery or from the wall outlet will let all the switches go off. When that happens, anything that was in the digital memory (also called RAM) to be lost.

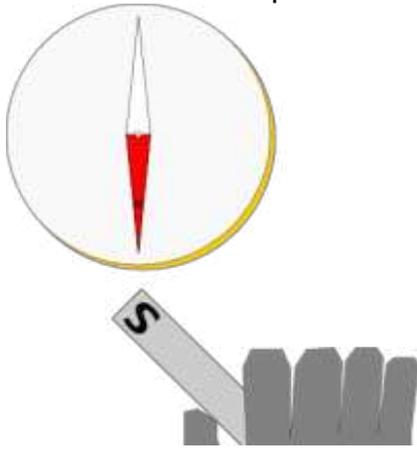
You must have a way to save your work that is more permanent and secure. You cannot depend on RAM for long term storage of your work. A file is that next layer of permanence.

In the early years of the 21st century, the most common long term digital storage method is magnetic. Magnets have two poles, north and south. If the magnet is small enough, it will swing around quickly under the control of a more powerful magnet. If the magnet isn't floating completely free, it will stay in place once the powerful magnet has moved away. You can observe part of the idea with a compass. The middle of a compass needle is balanced on a sharp pin so it can spin. When you hold the compass still, the needle will spin around and settle so one end points along the lines of magnetic force. The needle of the compass is marked with one end labeled "North." That end comes to rest pointing to the north because the Earth is a gigantic magnet, relatively weak, but much stronger than the little compass needle. It is the huge amount of iron at the Earth's core which concentrates the magnetic field of our planet. [ [More at Wikipedia](#) ]



If another magnet approaches, the magnetic field around it overpowers the Earth's field and makes the compass needle swing away from the weaker influence of the Earth's magnetic field. The Earth's field is still there, but has less strength than the nearby magnet. In fact, the needle of the compass will swing again when the nearby magnet is removed. The Earth's magnetic field will take over again.

## Introduction to Computers



Note:

Disk or Disc?

I'm old. When I started this computer stuff, we spelled "disk" for all these things. You may more often read "disc" these days [ [Grammar Opinion](#) ]. Forgive me if I mess with your preference. I'm not always a good speller, anyway.

The mechanism in a disk drive is based on the ideas illustrated in these simpler compass images. The locally powerful magnet is controlled by electricity and turns on and off very rapidly while riding just above a layer of magnetic particles spread evenly on the top layer of a spinning disk. The magnets in the layer are mostly stuck in the rest of the layer's material, but can be made to shift by the powerful magnet as it passes closely over them. The powerful magnet tugs the particles, establishing a patch of them with their north ends up. The next patch might be set so their north ends are down. The pattern of ups and downs is like the switches, on or off, in RAM. The patches of tiny magnetic material stay oriented as the electromagnet moves away. Its job is done. The pattern stays put for a relatively long time (years). The Earth's weak magnetic field is not able to rearrange the magnetized patches on the disks of a hard drive.



Image credit: [walknboston](#) on Flickr [cc-by license]

Disk drives sit inside the box of your computer. They are sealed. Opening one to show the parts like this would make it not work. Exposing your disk drive to a powerful electromagnet like the ones used in a car junkyard would erase it.

Note:

"Hard" takes its meaning by reference to the material of the spinning disks inside the

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case. The first hard drives had metal disks. More recently, the disks are made of lighter, but still very stiff material. The storage disks that were common in early personal computers were made of thin, very flexible plastic. They were called "floppy disks." The terms "hard" and "floppy" stuck. Once a term takes hold, it can be difficult to change. Think about the modern phone. It has no dial, yet we still refer to dialing a phone number.

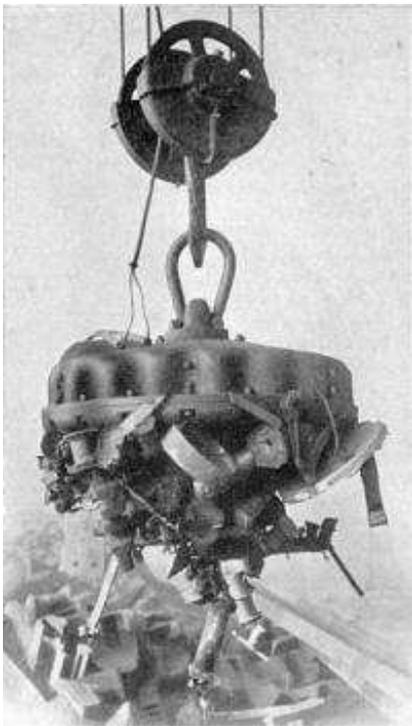
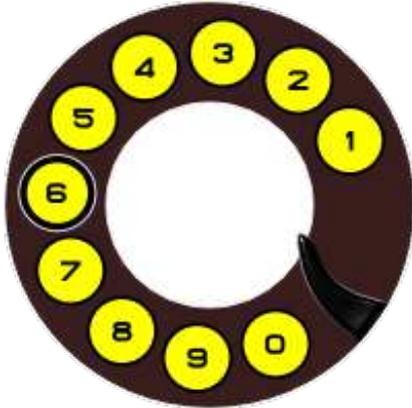
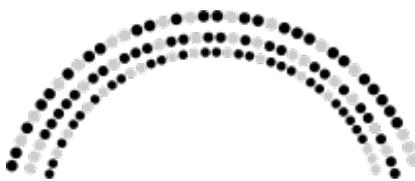


Image credit: [Cyril Methodius Jansky](#) from Wikimedia [ license: public domain ]

The file sits, as recorded, even after the disk stops spinning when the computer's power is shut off. The data is stored. It is now a series of small clusters of magnetic particles laid out in a line following the curve of the disk. The file will stay stable for years.



Imagine the black dots are facing "up" and that the gray dots are "down" magnetic patches on the rotating disk. This image is an aide to your imagination and is not to scale. (There's no intentional hidden message in [binary](#) either.)

Later, when you want to look at the file again, the process is reversed. While the disk

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spins by, an electric current gets turned on or off by the little patches of magnetic particles. The current turns switches in RAM back on. The RAM switch pattern repeats the pattern from the disk. The file data is accessible again to be read on screen, printed to paper, sent as an attachment in email, etc.

Thanks are due to the many engineers who have worked to develop these techniques. We don't have to worry about the details because of their work.

Solid State drives are becoming more popular these days. Instead of magnets, the solid state drives (SSD) use electronic components of tiny size to store data. The data is still no more than clustered sets of switches. SSDs have the benefit of being smaller than standard disk drives and SSDs have no moving parts. Like most electronic components, the initial cost is high, but the price of a large solid state drive will come down to match the magnetic drives in common use these days. Solid State Drives of this type are intended to be fixed in place within the box/case of your computer.

Another form of solid state storage is the popular thumb drive or "USB key." Thumb drives are designed to be removable storage. Thumb drives have taken the place of magnetic disks that used to be the preferred form of removable storage. The most common removable disks were called "floppy disks" because the disk was made of flexible plastic inside a harder plastic case.



Image credit: [Robert Nelson](#) on Flickr [ license: cc-by ]



Image credit: [Emelian Robert Vicol](#) on Flickr [ license: cc-by ]

## Introduction to Computers

Before the 3.5 inch floppy, the popular size was 5.25 inches square. Though it was bigger, it had less storage space because of technical limitations of the time. Before the 5.25 drive, there were even 8 inch floppies. Before that, removable storage was done with paper tape or punch cards. Wow, talk about ancient history!

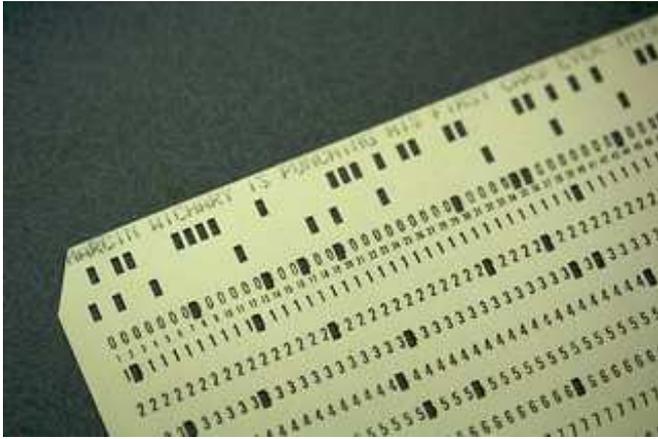


Image credit: [Marcin Wichary](#) on Flickr [ license: cc-by ]

Very few computers are sold these days with a built-in floppy drive of any size. One of the long term problems of file storage is updating the medium on which the file is stored. It may not be too long from now that nobody will have working versions of a floppy disk. Any files still stored on the old floppy disks will be lost.

One of the theoretical benefits of storing files in the cloud is that someone else worries about the physical format of the storage. Of course, you depend on the company you are paying to do your cloud storage. If they stop providing the service, you'll need to grab your data back from them before they turn off their equipment.

While we're at it, let's finish off this theory section with CDs and DVDs.

CD = Compact Disc

DVD = Digital Videodisk or Digital Versital Disc

Both of these media are considered "optical" storage because they use the light of a bright laser instead of an electromagnet. The laser melts or "burns" pits into the critical layer of the disk. The resulting pits represent on or off switch data for the stored files. Commercial disks are suitable for long term storage. There is some concern for data longevity of disks made with the mechanism in a home computer. CD technology replaced the vinyl record album and cassette tapes for music. CDs contain files. A file can be music just as easily as a file can be the words of a novel or business report.

DVDs followed after CDs. The DVD storage format holds much more data than a CD. While songs were delivered on CD, movies have been delivered on DVDs. Movie files are bigger. They need more room. No surprise.

The drive mechanism reads and writes to either a CD or a DVD. The burned disk is removable. CDs and DVDs are often used as a way to do backups. The CD/DVD data is stable and takes very little storage space. CDs and DVDs have effectively replaced floppy drives for purposes of backup. Thumb drives and the cloud have replaced floppies as a way to easily transport files from one computer to another.

Note:

CDs advanced to DVDs for storage capacity CDs max out at around 700MB (less than

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a Gigabyte). DVDs are generally recognized to hold 4.70 GB. Both have been relatively successful for computer storage even though they were originally invented for selling music and movies in playback-only format. DVDs have advanced to Blu-ray Disc™. Blu-ray is a multi-layer format, and drive mechanisms have been made for computers. Blu-ray format (with 25GB per layer) allows high definition movies to fit on single Blu-ray disks. They have not dropped in price quickly, and the demand for them has been somewhat limited. CD/DVD storage was very popular with advanced, "early adopter", computer users and that helped make the prices fall. Demand drove the manufacturers to get the tools into everybody's hands. That demand has not been there for Blu-ray technology. Blu-ray is still mainly a way to deliver pre-recorded movies to the public, often with lots of "extra features" filling the larger format space. [ [More at Wikipedia](#) ]

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## Making the Internet Connection

### Using the Internet is being in touch.

A personal computer, these days, provides a view of the world, much more rich and more individualized than the views available from television or radio. TV and radio are "broadcast" media. You could choose which channel, but the broadcaster determined the schedule and content.



Photo Credit: [Paul Townsend](#), license: CC-BY-SA

The computer, when connected to the Internet, can give you access to much of the same material, but also significantly more. In effect the number of "channels" is beyond your ability to count. You will be able to choose your favorite sources and even interact with them, adding your comments if you desire, maybe you will even become a channel creator. The creator of the [World Wide Web](#), Tim Berners-Lee envisioned it as a two-way interaction, everybody making their contribution.

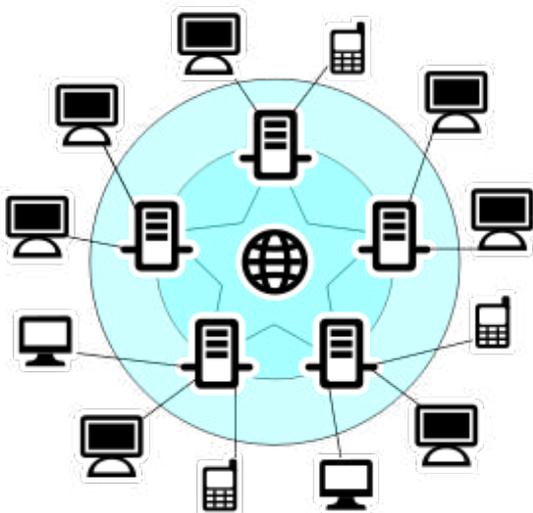


Image Credit: [Davide Capasso](#) License: public domain

## Connecting

The most common connection to the Internet comes from the same company that gives you cable TV or your phone service. The same technicians who installed your TV cable box can provide a box called a [router](#). While the cable box delivers TV channels to your television, the router connects your computer to the Internet. The wires running outside your house link to the wires on the utility poles along your street, just the same way as the electrical wires do, just the way the basic telephone wire has done for years. The wires are better, and the switches in the central office building are better, but the link is very similar. You may even have fancy "fiber optic" wires available in your town. The speed of your Internet connection is gradually improving with the goal of having true [broadband](#) connections for you and your neighborhood.

The installers usually expect you to have a Windows or Macintosh computer, but a GNU/Linux computer works just fine, too. A dual boot computer will make the installers happy if you start it in Windows for them during setup.

### Internet Service Provider

In Natick, Massachusetts, there are several companies from whom an Internet connection can be arranged. At home, you might choose Verizon (FiOS or DSL), Comcast Xfinity or RCN. Businesses may also work with other ISP choices. At the Community/Senior Center, service is provided by the town's own wide area network. The general term for a provider is [ISP \(Internet Service Provider\)](#)

Inside your house, you may decide to use a wire to connect to the router with a computer cable, but you may also use the router to give you a wireless connection for laptops and other electronic gear in your house. The wireless connection usually is set up with a password protocol so that you can restrict access to the wireless signal. The installing technicians may help you set that up, too. After the first install, you can add more devices as you wish. The router effectively sets up a small network inside your house. That network is called a [LAN \(local area network\)](#). The router connection to the internet is called the [wide area network \(WAN\)](#) link. Generally, ignore the details of these terms unless you are having trouble.

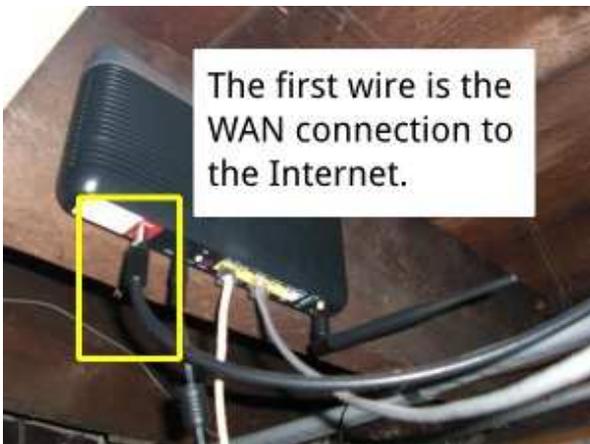
## Troubleshooting the Connection

Before you call the company for technical support, do the following things.

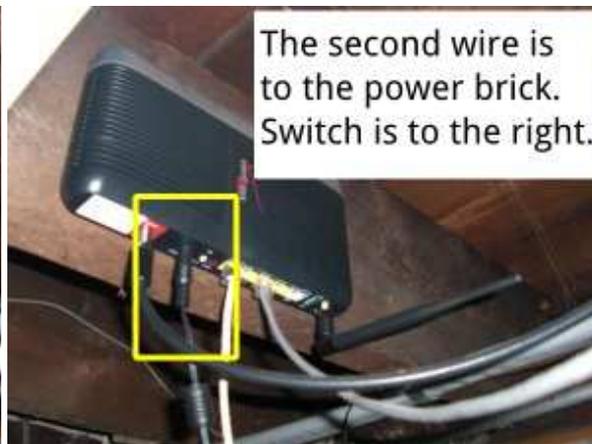
- Restart your computer. Most connection issues are electronic. Restarting the computer resets all the electronic switches.
- Disconnect and reconnect both ends of the "patch cord" wires between the computer and the router. Sometimes they get loose and need to be resealed. Re-plugging the wires also scrapes away minor corrosion that can happen.
- Turn the router off. Wait 10 seconds and turn it back on. Routers are small, special-purpose computers that benefit from an occasional reboot. A router reboot is also indicated to fix the hookup if you have had a brownout or recent electrical storm. Brief and incomplete electrical interruptions allow some switches in electronics to turn off while others remain on. The restart gets all the switches back to their proper position.



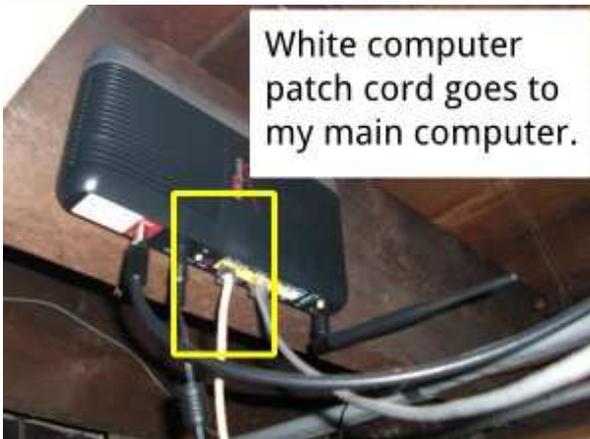
Four wires come out of this home router which is in my cellar, the place the FiOS service enters my house. (You can choose where your router is placed.)



The first wire is the WAN connection to the Internet.



The second wire is to the power brick. Switch is to the right.



White computer patch cord goes to my main computer.



Gray patch cord goes to a second computer.

## Introduction to Computers



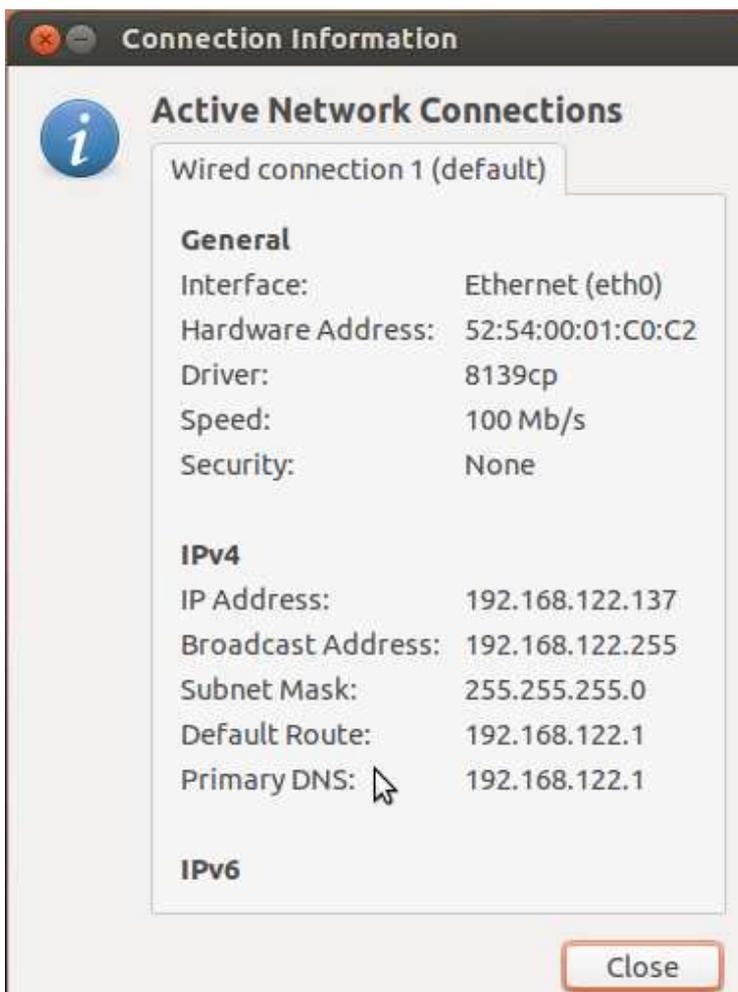
There are four sockets for computers on this router. If you need more sockets, you can purchase another box called a LAN switch and connect it to one of these sockets. There's also a socket here for an alternate WAN connection.



Networking icon in status panel

## Wired Connection

Your tower computer is probably wired instead of wireless.



## Introduction to Computers

<b>IPv4</b>	
IP Address:	192.168.122.137
Broadcast Address:	192.168.122.255
Subnet Mask:	255.255.255.0
Default Route:	192.168.122.1
Primary DNS:	192.168.122.1

The key number here is 192.168.122.137 because it shows the computer is "connected." You will be able to judge if you don't have good connection if a number doesn't show up at all. The other numbers probably will be useful only when you are talking to a technician during troubleshooting.

## Wireless/WiFi

Wireless connections are very local. The home router from your service provider, or an access point you add to improve the wireless signal, typically provides connection in a 20 meter (65 foot) radius. The antenna on the router sends and receives the signals from your laptop computer and other gadgets using the WiFi signal (Roku, Xbox, etc.) Most "desktop" or "tower" computers do not have built-in wireless, but an add-in card can provide it.

It is most common to use a method of secure transmission between the router and your computer. Your installer technicians will usually test your laptop connection. If you buy your own laptop later, you'll need to know the secret code to make the connection. The technical term for the secure connection may be called WEP, WPA or WPA2. Each access point has a secret code (password/passphrase) you need to know along with the access point's name. From the factory, there is usually a name for the access point that is random, maybe something like "SBPQ2Z".

The image below is not exactly like the Ubuntu Unity appearance. My virtual machine doesn't do the wireless connection, so this image shows how my own KDE desktop network connection details look.



## Introduction to Computers

Wireless choices nearby your computer will show a list like this.

The icons tell the strength of signal and the nature of security. In my case, the connection labeled WLAN has small shield with the X on it  indicates an unsecured wireless access point. Hovering over the icon with the mouse pointer reveals the security level. An unsecure access icon also indicates it is possible to sign on without any secret/password. Some businesses provide open wireless to make it easier for customers to get access. Others, like the Natick Community/Senior Center ask you to agree to a [Terms of Service \(TOS\)](#) agreements when you first try to use your browser to connect to the Internet.

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### World Wide Web

The [World Wide Web](#) is at the center of the Internet. Most information you access through your browser (Firefox, Chrome, Safari, Internet Explorer) is formatted and displayed using the techniques originated by [Tim Berners-Lee](#) in the early 1990s at the European center for nuclear research, known as [CERN](#).



Image Credit: John S. and James L. Knight Foundation (cc-by-sa)

Berners-Lee was trying to make it easier for scientists to share their work. The network protocols available in the early 1990s didn't have support for a rich mix of text, images, sound, files of data, etc. Very quickly, his first web site and the [http protocol](#) he started, grew to many servers. With an expanding protocol structure, researchers quickly saw the value of a common platform for interactive work. The World Wide Web is a collaborative space and is continuing to develop new capabilities. The effort is overseen by the [World Wide Web Consortium \(W3C\)](#) where Sir Tim now works.

One core feature of the World Wide Web is the [link](#). Any user of a browser these days follows link after link, tracking things that interest them from source to source. It is very easy to start with one idea in your mind and wind up exploring lots of seemingly unrelated stuff by the end of the chain of links you have clicked. Links did not spring instantly into Sir Tim's mind. The terms "[hypertext](#)" and "hypermedia" are from [Ted Nelson](#) who described his concepts about nonlinear writing with the term back in the mid 1960s. It was the merging of networking technologies with the World Wide Web which made the idea explode into our collective consciousness. Today, we read the news, watch videos, even purchase goods by way of links. The official protocol is known as "[hypertext transfer protocol](#)" abbreviated **http://** and every browser today adds that to an address when you type it in, even if you don't do it yourself.

That means [www.runeman.org](http://www.runeman.org) automatically becomes <http://www.runeman.org>. The destination server knows that you want a hypertext or "web" page delivered to your browser. There are other protocols, but most web users rely on the hypertext protocol and when necessary, the security version called "https". If you do online banking or purchase from a reputable online retailer, look to see that the address is https not http. There is an additional clue which you can see in the next image. Besides the visible protocol, Firefox includes a small padlock icon to indicate that the transmission to the bank server and back is a locked, secure transmission. The data is encrypted which means your data cannot be deciphered even if it is captured along the way by data thieves.



If you hover your mouse over the address, you'll also see the company which provides the security assurance, in this case, the company [VeriSign](#). VeriSign is related to one of the antivirus software companies, Symantec.

The original visual design of links is still common. Links show as a word or words that are blue with a matching blue underline. Designers have worked hard to get many other



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Remember each zero means multiplying the address space by 10. That's 38 of ten times ten times ten times ten.

As a result, we are now approaching what has been called "[The Internet of Things](#)," with the key idea that many, if not all, consumer items will contain a tiny computer which can communicate to servers on the Internet. Each connected item will have an address. Pacemakers will be able to send their measurements of heartbeat to a doctor's office. Your car might report its location and current speed to a computer system which would return information that to adjust speed to make traffic flow more efficient. Google has successfully developed a [computer controlled automobile](#) which needs no driver to negotiate city streets.

DNS also handles another pain in the neck. `http://NatickFOSS.org` matches `http://natickfoss.org` because the DNS system normalizes the capitalization to avoid missed connections. Unfortunately, file names beyond the domain name, on files within a web site, the capital letters DO matter. That means this file has the address `http://runeman.org/intro-ubuntu/www.html` and is written in lower case letters to match the standard approach. If you make a small change and try to call for the file `http://runeman.org/intro-ubuntu/WWW.HTML` you will get an error message.



Be careful, especially if you are sending a link to another person. You will be better off copying the link than trying to retype it.

To capture a web address using Firefox:

- Go to the site and verify you are looking at the page you want.
- Hold down the control key and tap the letter L (Ctrl+L) which should highlight the entire address in the address location area of your browser window.



- Hold down the control key again and tap the letter C (Ctrl-C) which will copy the address into the clipboard. Remember that the clipboard is a computer-wide temporary memory. What you capture in one window can be pasted into a different window.
- Switch windows, perhaps to your email service and paste (Ctrl+V) the address into your message. When you hit send, the message, including the exact address will get sent to that friend.

Try these steps in other browsers, too, if you have them. You will note that the behaviors of these shortcut key combinations are consistent. Standards are a good thing. Look for them. Request compliance from software vendors and developers. Open source developers, in particular, will often listen and respond rapidly.

You can use the mouse to accomplish the same thing (copying a link address), but it isn't quite so quick or easy in my opinion.

- To highlight, double click the left mouse button while hovering over the address space of the browser.
- Then right click and choose copy from the context menu.
- Go to your other application and paste the address from the clipboard with a right click at the location where you want to paste and choose paste from the context menu.

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As always, get comfortable with a set of steps that you practice over and over. There is no "right" way to use a computer. Do listen to the advice of others. Arguing with them probably won't help either of you. Then do it your way unless you find that you actually like what your friend recommended.

A little way back in this section, there was mention of Symantec, the company behind one popular antivirus suite. Computer viruses and [malware](#) are serious issues of the Internet and World Wide Web. A computer virus is software which makes your computer do things you do not want done. Be alert to the lure "incredible" offers. Clicking links offering too much for too little may be the gateway to a virus or other malware.

The good news is that Ubuntu is a GNU/Linux computer system. Linux was designed from the bottom up to be secure against malware. There is antivirus software available for GNU/Linux and it would be wise to install and use it if you routinely share documents and files with Windows users. While a virus usually targets Windows systems and won't infect your Ubuntu system, you don't want to pass a virus along to your friends who do use Windows.

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### Default Software

Software controls the general purpose computer. This page lists some (not all) of the major software packages that are installed when you do a fresh install of Ubuntu Unity.

#### Office Suite

Ubuntu with Unity has the LibreOffice suite.



##### **LibreOffice Writer**

The core of a business suite is the word processor. With it, you write business correspondence, compose reports, etc.



##### **LibreOffice Calc**

To make the charts and graphs for your reports, there is the spreadsheet tool.



##### **LibreOffice Impress**

To give all those board meeting presentations.



##### **LibreOffice Draw**

When you need to create basic designs for your logo or a fancy report cover, start here.

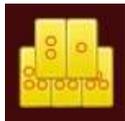
#### Games

Ubuntu's defaults are pretty basic.



##### **Aisle Riot Solitaire**

Solitaire is one of the best ways to practice mouse skills. Of course, you also get to play solitaire (Klondike [the one most people know], Freecell and a dozen more variations). The program includes rules, too in the help menu.



##### **Mahjong**

I know it is a very popular game from China. Don't ask me how to play, though.



##### **Mines**

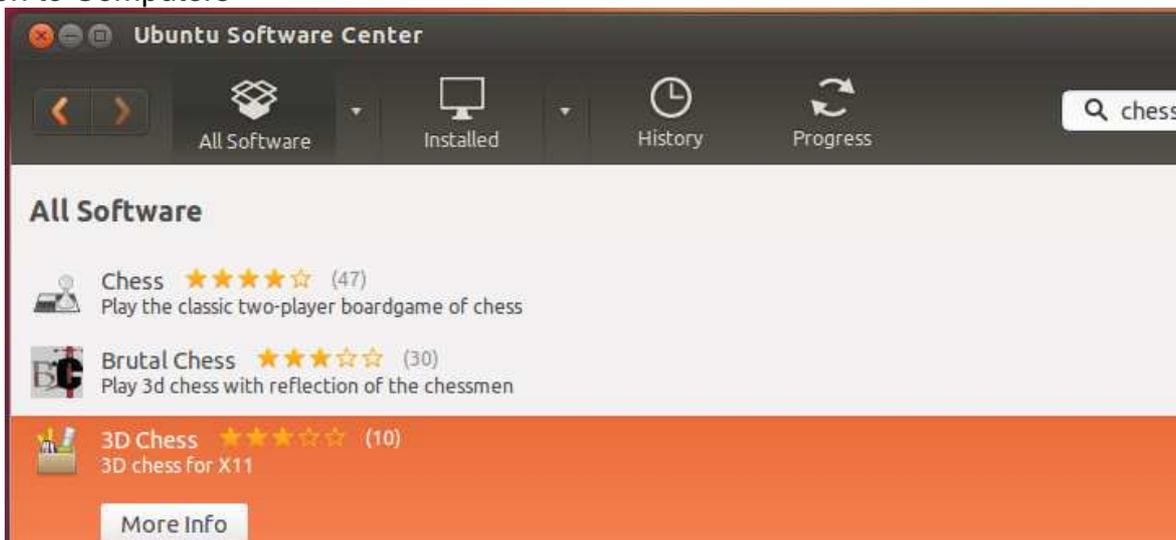
This logic game asks you to locate mines on a grid. It was made popular on early Windows computers. This is a clone of that game.

##### **Chess**

Chess is NOT among the standard applications. Either the Canonical staff which makes Ubuntu isn't a chess crowd or something. Searching for Chess at the Dash Home doesn't currently display a FOSS version. All the items that appear are going to cost you to install.

**However**, you can find rated chess programs through the software center along with many more games.

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## Miscellaneous



### Rhythmbox

Attach some speakers to your tower and you can listen to music as you work. [Rhythmbox](#) gives you access to all the audio files on your computer and to Internet Radio, too. Your laptop has built-in speakers, but use headphones when in public places. What if the rest of us can't stand your favorite group?



### Shotwell

Your digital camera has helped you get so many great pictures, you need help organizing them. Ubuntu comes with [Shotwell](#) which is going to let you add tags to the digital images so they are easier to find later. You can tag and search for all the photos of Aunt Marge wearing that big straw hat, for example.



### Movie Player

All those home videos you took are available to you. Why not watch them? "Movie Player" is how Ubuntu identifies this application. The developers call it "[Totem](#)". Be patient. FOSS developers are not necessarily thinking about the end user when they name their projects. Ubuntu used "Movie Player" to help the beginner and most ordinary users. At some point, you will probably find a program that you adore. You'll use the same name for it that the developers do. When that happens, you know you are part of the in crowd.



### Simple Scan

If you have a scanner, you can use it to make copies of old photos, make digital images of checks you want to access quickly at tax time. [Simple Scan](#) gets you going. Once the paper document is a digital image, you can, with a bit more effort, convert the captured image of the printed words using optical character recognition (OCR).

The list could go on, but getting used to doing on line searches is an important skill for you as you move ahead. Find out what applications other FOSS users can't do without. Patiently read through the blog posts and forum discussions you encounter. You will run into people who praise a tool that others say is junk (or worse). Some of the information will be out of date. Check the date of the links you are offered in your searches. Try to find the most recent ones.

Ask friends. Visit your local FOSS user group like [NatickFOSS](#). The more you explore, the more you will uncover.

# Introduction to Computers

## Installing Software

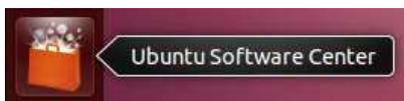
Ubuntu is a distribution of GNU/Linux, and the Canonical **package** management team has chosen a set of useful software that gets installed during the initial setup. Canonical is the company behind the Ubuntu distribution. Most software is constructed from several parts which are also called **dependencies**. The package managers work to ensure that each element of the package works without problems.

There are thousands of other FOSS programs.

Ubuntu, just like Fedora, openSUSE (any GNU/Linux) should be considered a "base" distribution.

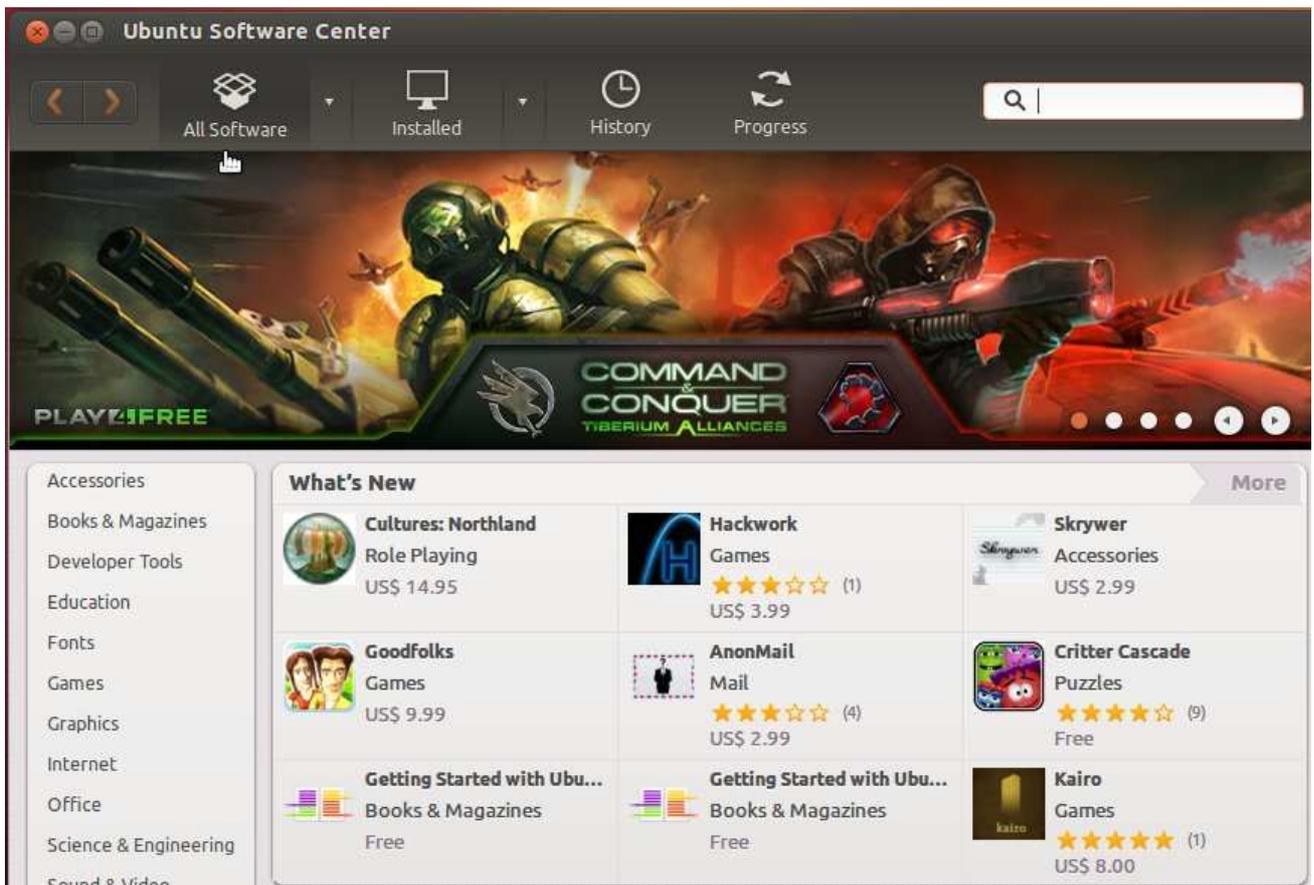
It is your choice how you decide to customize the set of software. You should install software to do the jobs you need to accomplish. Fortunately tons of useful software is available from the **Ubuntu Software Center** servers.

The tool for adding new software to your computer is the Ubuntu Software Center, one of the Dash choices, about halfway down the screen.



Ubuntu has made choosing software look like an app store, the way Apple and Google run their phone/tablet installers.

There are also many items that a user of other distributions wouldn't expect to see: Commercial software. Making money with open source software is fine, but Canonical may be the first to "promote" programs that are for sale to Ubuntu users.



The process is the same whether a program is Free or Paid. Choose an option.

- Choose a program from the screen of the Software Center.
- Enter the name of a program you want to find in the search blank at the right near the top of the screen.

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- Browse by category using the category list down the left side of the screen.

There are reviews available, but it probably also makes sense to talk to friends and others who use FOSS or Ubuntu to hear about the software they use and recommend. Consider the source of the recommendation. A glowing report from a person you don't know may not be the way to decide.

Once you have clicked the icon for the program you want, you will see a fuller description. The example here is the excellent design tool called Inkscape.





# Inkscape Vector Graphics Editor

Create and edit Scalable Vector Graphics images

★★★★★ (281 ratings)

**Free** Install

Inkscape loads and saves a subset of the SVG (Scalable Vector Graphics) format, a standard maintained by the WWW consortium.

Inkscape user interface should be familiar from CorelDraw and similar drawing programs. There are rectangles, ellipses, text items, bitmap images and freehand curves. As an added bonus, both vector and bitmap objects can have alpha transparency and can be arbitrarily transformed.

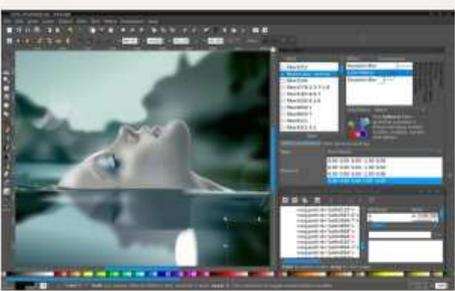
Inkscape supports multiple opened files and multiple views per file. Graphics can be printed and exported to png bitmaps.

Some of the import and export features are provided using the packages dia, libwmf-bin, pstotedit, skencil, imagemagick, and perlmagick.

Other extensions use ruby, libxml-xql-perl, python-numpy, and python-lxml. You must have these packages to make full use of all extensions and effects.

If you want to use the spellchecker, you have to install aspell and the respective language-pack, e.g. aspell-en or aspell-de.

[Developer Web Site](#)



The Ubuntu Software Center also has one more very appealing feature. Look down to the lower part of the details screen.

The software center lists several programs that are useful as add-ons to Inkscape. You can add them later, too, but if you think they'll be useful, they are just a click of a box away. Note that these are not part of the Inkscape program and will have their own documentation.

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**Add-ons**

- Diagram editor (dia) ★★★★★☆
- Dia (dia-gnome) ★★★★★☆
- Perl module to generate SVG images (libsvg-perl)
- Perl module for querying XML tree structures with XQL (libxml-xql-perl)
- PostScript and PDF files to editable vector graphics converter (pstoedit)
- Interpreter of object-oriented scripting language Ruby (default version) (ruby) ★★★★★★
- Utilities for converting XFig figure files (transfig)

---

**Version** inkscape 0.48.3.1-1ubuntu6

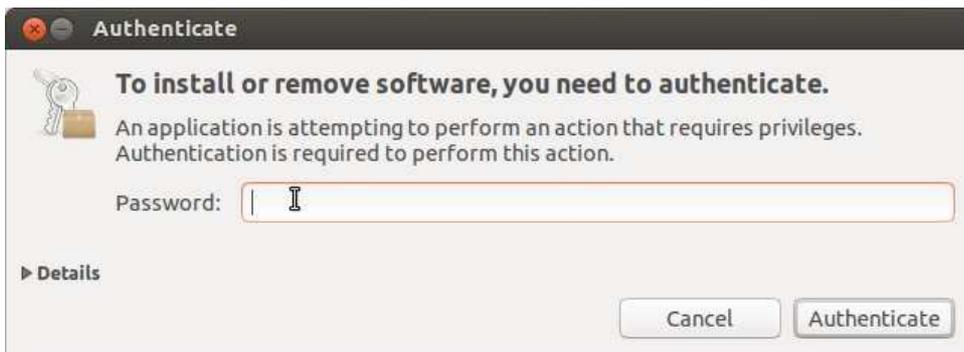
**Total size** 31.4 MB to download, 107.5 MB when installed

**License** Open source

**Updates** Canonical provides critical updates for Inkscape Vector Graphics Editor until April 2014.

There is another thing to see as you examine the details of a program. Inkscape is listed as version 0.48.3.1 which seems like it would indicate software that was barely useful. Most commercial programs are first released at version 1.0 and some experts say you should wait for version 1.1 at least. Unlike commercial software, much of open source software is developed with the intent to make it quickly useful, but perhaps not "feature complete." As it is, Inkscape is amazingly useful. There are plans to add more to the program. It will only improve. You can do great work with version 0.48, so don't hesitate. Install and enjoy it.

You will need to enter the administrative password which you chose when doing the install of Ubuntu. It is the same password that the main user of the computer uses each time at login. All changes to software need authorization. This isn't intended to be a pain in the neck. Rather, it is an intentional security measure. GNU/Linux has a strong security record because of its overall design. Ubuntu makes an admin user take responsibility to approve important changes.



The Inkscape program launch icon joins the list on the Unity Dash.



Now you are ready to go.

## Updating Software

You will generally want to use the most recent versions of your computer software. Problems (which developers call "bugs") get fixed and often there are new, valuable features.

Developers make changes to software. They put their changed work into some shared location. People who work for Canonical verify that the updates work with Ubuntu.

Ubuntu has a set of approved packages for thousands of programs. Even though you may only have a few hundred installed. Keeping your computer up-to-date is a simple matter.

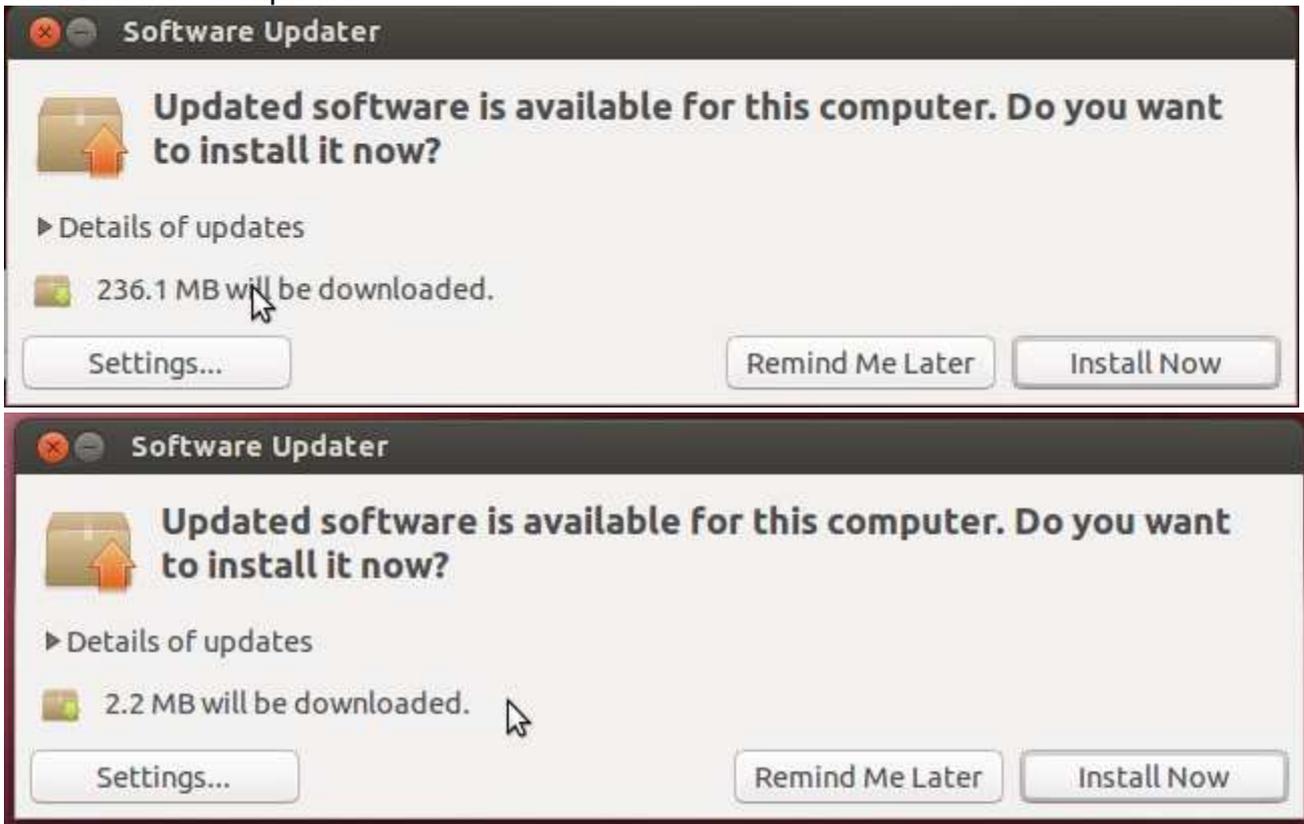
Tap the Dash Home button.



Start to type the word "update." If you really want to, type the whole word. For my example you can see that the Software Updater becomes available after only the first three letters.



Click the icon for the Software Updater to launch it. Right away, the software connects through the Internet to a server to see if there is anything to update. There often is. The next two illustrations show that sometimes you'll get a lot to update. Other times it will only be a little bit. You can clearly put off the updates for a while if you find yourself too busy on a given day. However, it is a good idea to get into a routine.



Note to users of Microsoft Windows: Windows similarly updates system software and Microsoft software you have legally installed. However, my experience is that the updates get done just as you are shutting down the computer. They have been downloaded while you have been working. You get a message warning you to not force a shutdown. I've encountered some long shutdown issues which are especially bothersome when on the road with a laptop.

I prefer the GNU/Linux and Ubuntu way. You get a notice in your taskbar to let you know that updates are available. You schedule the time to do the updates. If you get into a routine of updating once a week, it goes pretty fast, too.

You'll need to know the administrative password to install the updates. That usually isn't a problem. If you set up your own Ubuntu install, you picked the admin password.



The software will download and the updater tools will replace old software with the

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new versions. Occasionally, you will need to shut down a running program, but even that isn't usually necessary because of the way the updater works.



You will see the names of software below the progress stripe. Some may be obvious, like "libreoffice-common", but don't worry if you don't recognize every item that shows. There are a bunch of support programs that make up GNU/Linux.

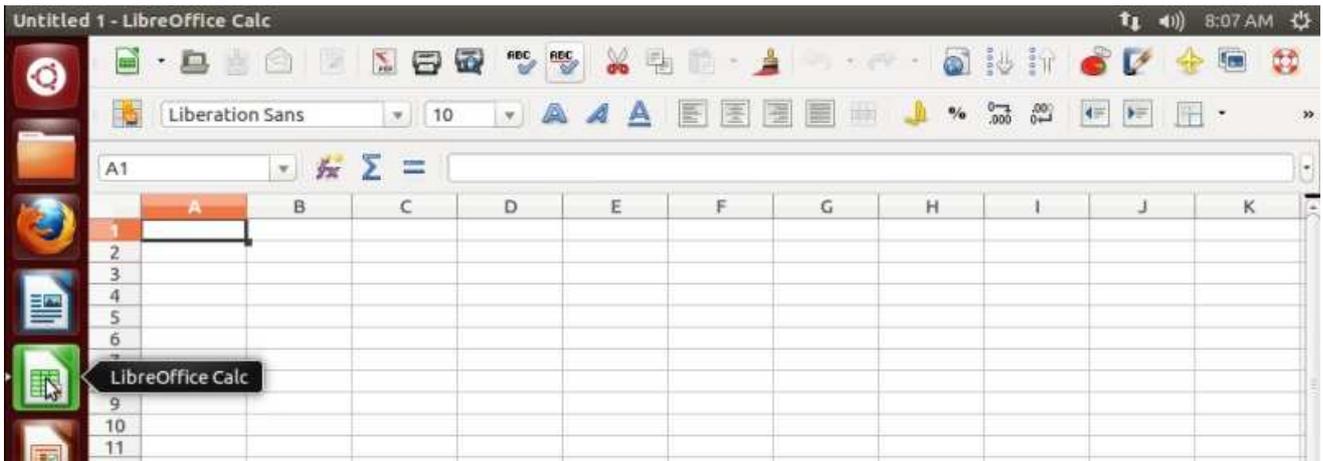
After a little while you'll get the following message.



Click the OK button. That's usually it. You can just continue working, but once in a while some parts of the operating system itself are updated. If that happens, you will see a message telling you a restart is a good idea. Although you can put off the restart, it is generally better to do updates when you are not rushing to finish an important job. Do updates when you can focus on the update task. Ubuntu makes that easy. The notification that there are updates usually appears for me early in the day, soon after I start my computer. I can plan ahead to pick the best time.



## Spreadsheets



LibreOffice has a spreadsheet tool called Calc. Why would you want to use it?

Spreadsheets do two things really well.

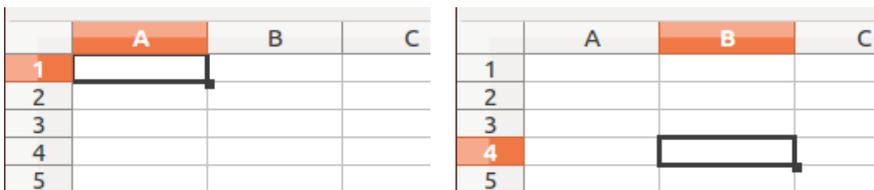
- help you organize data in columns and rows (a data table)
- build complex number relationships with calculations

This section of the guide will show some basic examples of what you can do with Calc and give you a look at some fundamental spreadsheet concepts.

Start the Calc program so you can follow along with the guide and begin your exploration of this tool.



There's a lot to see, but let's start with the most basic thing. The screen is subdivided by lines that are labelled with letters across the top and numbers down the side. Each little rectangle is called a [cell](#). You can move around by clicking in any cell as the next two images show. The program opens with the top-left cell highlighted and then I clicked another cell.



Each cell is identified by the column letter and the row number. That makes the first cell **A1** and the second one which I clicked **B4**. Every other spreadsheet cell has a similar way to identify it. The sheet layout is also sometimes called a table or a grid.

You can put words or numbers into any cell. Commonly the words are used as labels and the numbers are the data. Words and numbers are treated differently in spreadsheets. You can do calculations with the numbers, but that isn't really done with the words, which might not be much of a surprise to you.

Lets take a look at the a small grid of data. This illustration shows "labels" and "values" which are two of the three most common kinds of information held in cells.

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	A	B	C
1	Labels	Values	
2	Row 1	10	
3	Row 2	20	
4	Row 3	30	
5	Row 4	40	
6	Total	100	
7	Average	25	

The bottom of column B shows two values which are not the same as the others above. The final two values in the column are calculated values. They depend on the values entered above. The numbers 10, 20, 30 and 40 were entered directly into the cells. But, the numbers at the bottom were not entered by typing them directly. Instead, I entered a formula. The first formula takes the values from cells B2 through B5 and calculates a total which is also called a "sum." The formula looks like this: `=SUM(B2:B5)` (of course, "Total" is another name for "sum" so that's OK as a label.)

Don't overlook the beginning equal sign. That's a critical thing. If you leave it out, you are just typing a label. **SUM(B2:B5)** is just a label as far as Calc can tell. It is your job to be sure that the program "sees" the formula.

You can also see the formula shown in the "edit" space. That's the best place to work if you need to edit a complex formula.

	A	B	C	D
1	Labels	Values		
2	Row 1	10		
3	Row 2	20		
4	Row 3	30		
5	Row 4	40		
6	Total	100		
7	Average	25		

Each formula is built much the same way, beginning with the equal sign and then a function name with parentheses around the cells to be used. The total did not need to list each cell. The designers/programmers of Calc use a colon to mean "through" so our formula was a reference to cells beginning with cell B2 and extending "through" B5.

A key term in the preceding sentence was "reference." It is important to understand that the formula calculates the answer with the contents of the four cells B2, B3, B4 and B5. The numbers inside those cells can be changed and the formula will get evaluated right away with the new numbers. It isn't the hard-coded values entered into the formula. The formula did not say **=SUM(10,20,30,40)** even though that would be a valid formula. The problem with that formula is that it does not make sense within a spreadsheet. By using the exact numbers in the formula, you break the point of a spreadsheet. The strength of a spreadsheet is the ability to set a formula in place and then work with it over and over with many different sets of numbers.

As a matter of fact, prove it to yourself. If you have not done so, enter all the information in the cells we have discussed so far. Do a careful job with the formula in cell B6. Make sure it is `=SUM(B2:B5)` and then check that the total is 100. Right after that, change one or more of the numbers in the column so you are asking the formula to give you a total for new numbers. Check your answer if necessary. Spreadsheets are good with number calculations. You should feel comfortable trusting them to do a good job.

Let's take a quick look at another common formula. **=AVERAGE(B2:B5)** Once again, the answer of 25 shows in cell B7 even though I didn't type 25 there. I typed the formula for the average of cells B2 through B5. The spreadsheet evaluates the formula as a value for us to see. At the same time, you can look in the edit space and see what formula produced the value.

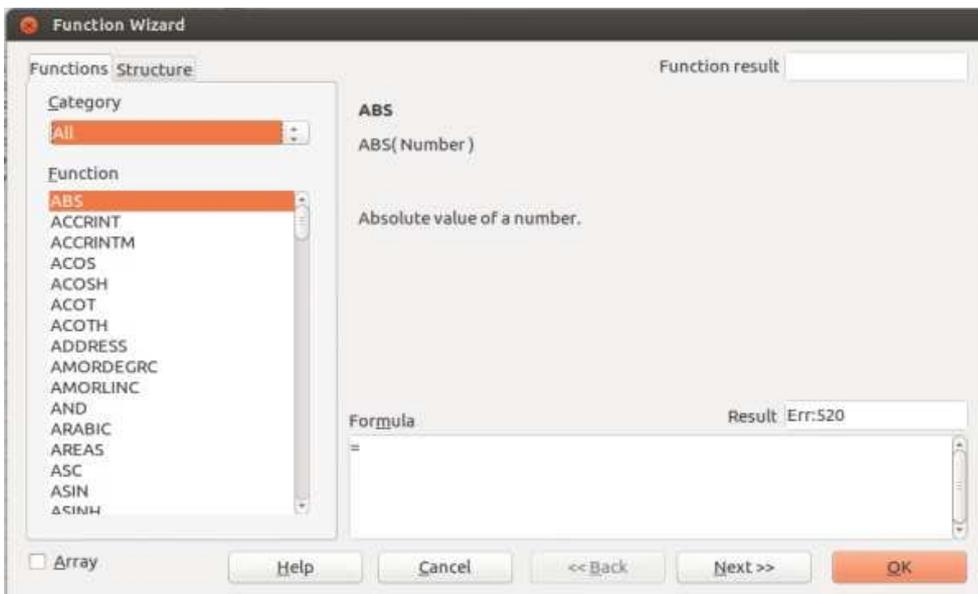
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	A	B	C	D	E
1	Labels	Values			
2	Row 1	10			
3	Row 2	20			
4	Row 3	30			
5	Row 4	40			
6	Total	100			
7	Average	25			

You probably noticed that the formulas are in caps, as are the cell references. In fact, I typed the formulas with lower case letters. LibreOffice converted them automatically for a consistent look, not because the case of the letters is significant.

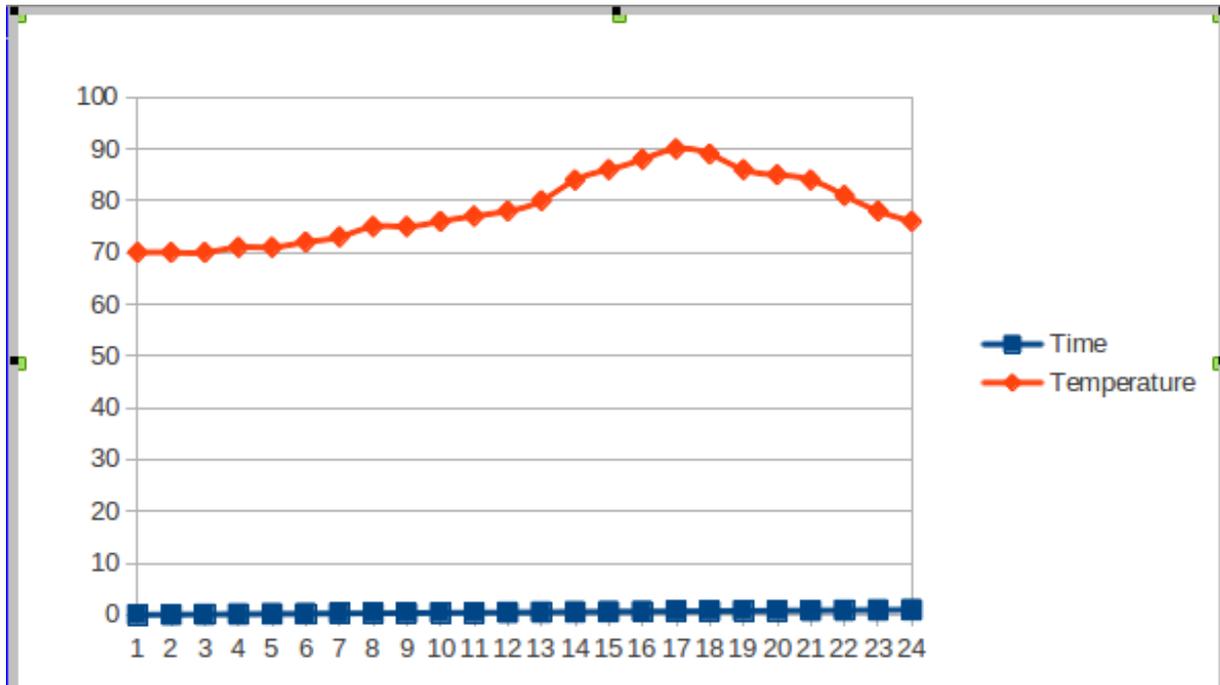
OK. There are the fundamentals. Cells contain either labels or values or formulas. Formulas complete calculations on the contents of the cells which contain values.

You should feel empowered to explore building your own data grids with your own labels and values at this point. This guide has not told you all the different kinds of calculation that are possible. They go way beyond sums and averages. If you choose an empty cell and then click the button for the formula wizard, you can begin to examine the available calculation formulas. You may be more comfortable if you limit the list to a category you know about. The wizard will help you construct the formula properly.



## Graphing with LibreOffice Calc - Line Graphs

A good graph helps to make sense of numerical data. Graphs or "charts" as they are called in Calc give us a quick look at the pattern of numbers. Humans are very visual. We depend on our eyes for a lot. Graphs/charts capitalize on our visual nature. Please be patient with me if I mix the use of the terms chart and graph. Spreadsheet program designers like "chart" but my school training called these things "graphs."



The image quickly tells us that the 24-hour temperature rose steadily from midnight and then fell as the day headed to the next midnight.

If I asked you, "Was it warmer in the morning or the afternoon?" you wouldn't even need to glance at the temperature scale on the left edge of the image. Your eyes would track the line and you would quickly decide an answer. Of course, looking at the scales isn't cheating. The scales help, so it is good that they are there. Calc automatically converts the numbers of a spreadsheet into this chart in just a couple of steps, including the scales if we include their data. (You may prefer to call a scale by its math name "axis.")

Start Calc and follow along. Doing the steps yourself is very helpful, making concepts stick better. Reading, all by itself, isn't as good as exploring. The more pathways you use to develop your understanding, the more rich the set of connections will be. More connections to what you already know improves your ability to remember.

Enter a set of labels and numbers like the ones shown in the following image. You do

	A	B
1	Time	Temperature
2	12:00 AM	70
3	01:00 AM	70
4	02:00 AM	70
5	03:00 AM	71
6	04:00 AM	71
7	05:00 AM	72
8	06:00 AM	73
9	07:00 AM	75
10	08:00 AM	75
11	09:00 AM	76

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not need to use the same exact numbers. And if you just enter the times as 0 through 24, that is fine. (I'll explain how to do time series later).

Put the labels "Time" and "Temperature" at the top to identify the columns so we can get Calc to use them when making the chart.

We are going to make a [line graph](#) this time because line graphs are the standard for time series data.

12	10:00 AM	77
13	11:00 AM	78
14	12:00 PM	80
15	01:00 PM	84
16	02:00 PM	86
17	03:00 PM	88
18	04:00 PM	90
19	05:00 PM	89
20	06:00 PM	86
21	07:00 PM	85
22	08:00 PM	84
23	09:00 PM	81
24	10:00 PM	78
25	11:00 PM	76

Save your file so you can explore and go back to the original later. Saving a clean original version is generally wise. As you move through your explorations, use "Save As..." to give yourself reference versions so you can track the steps you took.

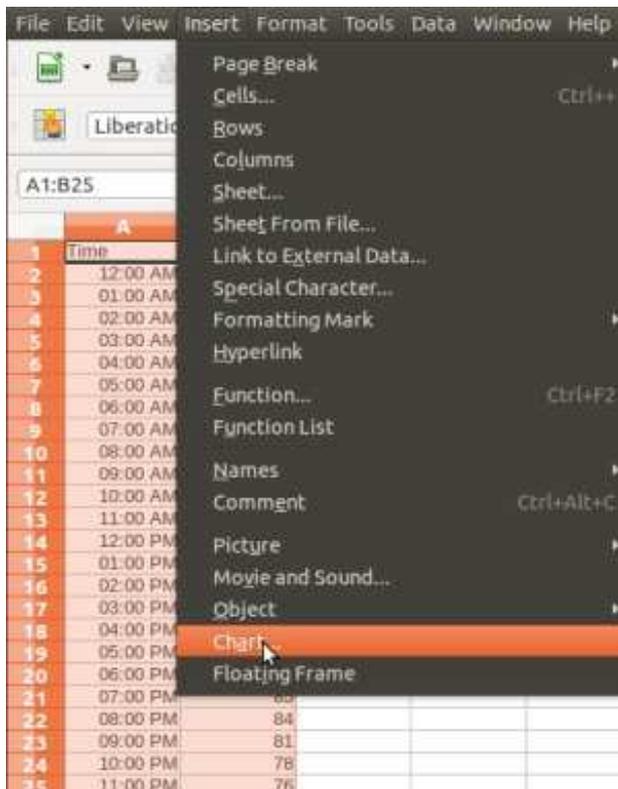
When you have created your data in two columns, click in cell A1 and drag your mouse down to cell B25 and release the mouse button. Try again if the highlight doesn't cover the full set of data. You are selecting the **data range** for the graph. Calc needs to know which cells the chart will use. This step defines those cells.



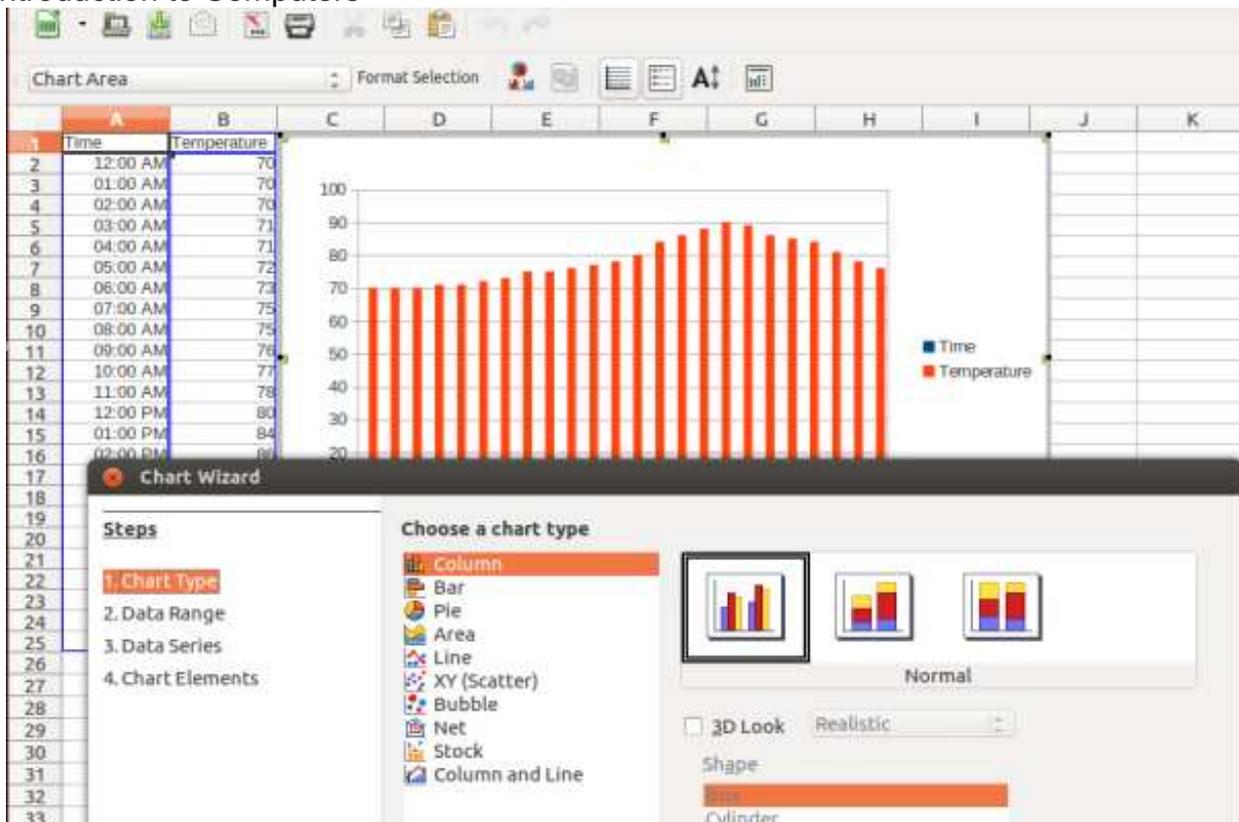
Note:

If something odd happens, remember **Ctrl+Z** will **undo** the last thing you did, putting things back the way they were.

Next, slide your pointer up into the title bar at the top of the window. The Calc menus will appear. Click on "Insert" and choose "Chart" as the next image illustrates.



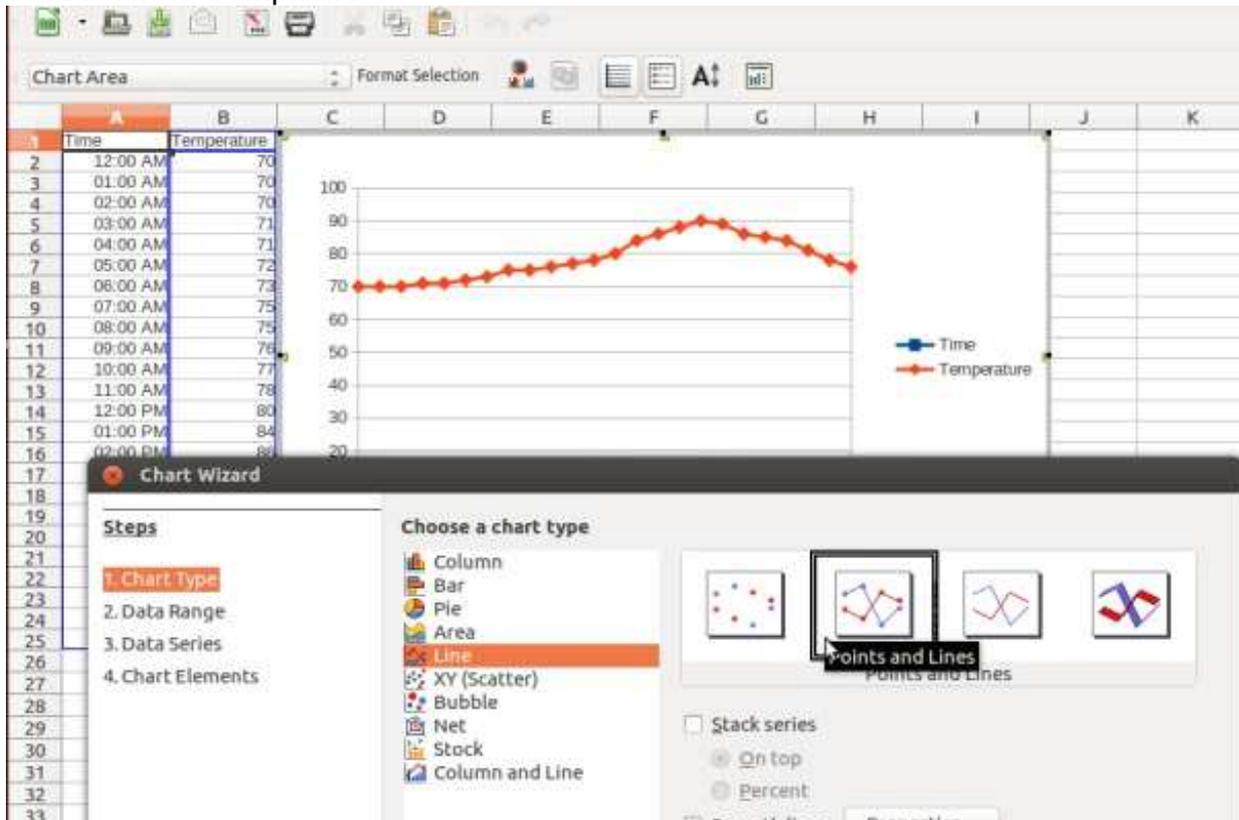
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As soon as you click, a chart will appear. It will be a [column \(bar\) chart](#). A bar chart, whether it is vertical or horizontal, isn't the right kind of graph for this data. A column/bar chart compares two or more things and we'll explore that kind after the temperature chart/graph.

For a series of temperatures measured over time, we need a [line chart](#), so look down the list of choices and find the line charts. We're almost there. We also want the dots connected, so choose the second type.

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For now, let's be satisfied. There are other steps you can do with the wizard to refine the chart, but the basic chart is all we need this time around. Click "Finish."



### Looking Ahead:

There are so many options available when using the chart wizard that it seems sensible to try to concentrate on the basics at first. Once you have a good grasp of making a few sample charts, then you can take time to add more and more to your explorations. The whole guide is intended to be relatively basic. Your own experience and the needs you identify while you work will lead you to ask questions and to search online resources for answers. The next two sections will go through bar/column charts and pie charts. Line, bar and pie charts cover most routine needs for graphing data. If your particular data needs the visual support of other graph types, ask somebody for help.

You can click on the box containing the whole chart image and drag the line graph around to make it fit the page just the way you want. Even more, you can also right click the chart image and choose copy from the context menu. Then you can put the graph into a word processing document, pasting it there from the clipboard. The ability to copy both images and text between computer tools is one of the most powerful things about a computer. You can compose complex documents from many sources. With practice, you can be very professional.



### Note:

An advanced sort of "copy and paste" is called "Object Linking and Embedding (OLE)" which allows you to create links between two files (word processing document and spreadsheet, for example). If the numbers of the spreadsheet change, the chart will change and the next time you print the word processing document, the updated image

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will appear, not the old version. This technique is great for use in monthly reports where there is a regular need for charts based on new numbers.

### Up Next:

The next couple of sections will examine column/bar graphs and pie graphs. Stay tuned.

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## Desktop Hardware Basics

Experts and media gurus describe desktop computers as being on the way out. OK, maybe laptops are taking their place in many offices and homes in the 20-teens (it is 2013 at this writing). Even more portable tools like tablets, smartphones, even flexible/wearable computers are on their way to device dominance. Even the experts don't predict accurately beyond a few years.

Desktop hardware may be of marginal interest to many, but the fundamental physical components of a computer remain. It is worth understanding them as they exist in a desktop computer because the components are found in all versions of computers, even though they are smaller, more integrated, faster...and faster...and faster.

**Hardware** is the physical parts of any computer, no matter the size.

At its most basic, all the hardware parts are organized around **switches**.



This is the kind of switch most of us in the US will recognize right away. Behind the wall plate, a wire connects to one side of the switch mechanism. Another wire connects on the other side. When the switch looks like this one, **ON** electricity goes through and somewhere nearby a light shines. When a person reaches out and flicks the switch **OFF**, the mechanism inside opens a gap so the electricity cannot go through. The light goes off. In the depths of night, it gets very dark.

Photo Credit:

[madabandon on Flickr](#)  
[cc-by-nc-sa]

Now you need to exercise your imagination. The switches inside a computer are smaller. They are tiny. They are almost too small to see, even with a good microscope.

The tiny switches are electronic. That means you don't reach inside the computer to poke a teeny lever to turn them on or off. Modern computers depend on the transistor, the same kind of switch that made lightweight, battery-powered radios possible.

Since the days of the transistor radio, engineers have found even more exotic ways to make wires and electronic switches smaller. In the middle of the 20th century, the earliest electronic-switch computers took up rooms the size of a typical school classroom. The same computer power these days can be found in a part called an integrated circuit the size of a pinkie finger's fingernail.

Image Credit: [Dave Lanovaz on Flickr](#) cc-by-nc-sa

These pictured integrated circuits, which are also called "chips" are actually bigger than the ones inside your desktop, laptop or wireless phone. I mention wireless phones

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because they are the current state-of-the-art for consumer computers. Smartphones are more powerful than the mainframe computers of the 1950s. All the components of a desktop are there inside the cellphone which slips easily into a shirt pocket.

## Computer Components

### Monitor

The **screen** of a computer is probably the most visible part of your computer. It sits on your desktop and displays the windows of your Graphical User Interface (GUI). The monitor/screen is an "output" device. Information is visible because thousands of electronic switches determine the location and color of tiny dots of the screen. Each dot is so small that you don't notice it individually unless you look very closely at the screen. Each of the dots is called a **pixel** which is short for "picture element." The laptop on my desk has a screen which displays 1366 pixels across the width of the screen and 768 from top to bottom. Each pixel has a set of switches which control the amount of red, green and blue and brightness. If it were four switches for each pixel, that would mean

4 times 768 times 1366 = 4,196,352 switches going on-and-off, on-and-off, on-and-off. The same thing is happening inside the modern LCD and LED flatscreen televisions. For those, the cable set-top box is the controller. Your own monitor may have a different arrangement of pixels. The "resoluton" of the screen determines how many pixels are involved. People watching movies and playing high speed games want the highest quality resolution.

**Central Processing Unit (CPU)** For your computer, the controller is called the Central Processing Unit. The CPU is an electronic control box that handles the instructions of the programming software. The software is written by human beings. It says what a window looks like when you see it on the screen, It determines how the pixels of color will be arranged on the screen. As you read these words, you are looking at the dots/pixels and probably are seeing black letters on a white background. That's the standard set of colors used in Web browsers to display text. Thousands of pixels are involved.

The CPU gets instructions from the controlling software program. It gets the switch codes for each letter of each word in each sentence...You get the idea. The result is that the screen output reflects the input of software instructions. The message you are seeing in your browser window on the monitor screen is the one I instructed it to show. You are not seeing random dots of color. The dots are controlled carefully by the instructions received by the CPU and processed out to the screen as exactly arranged dots of color.

Current CPUs have an edge over older ones. Highly integrated chips make it possible to create multiple "cores" inside the same CPU chip. A core is basically a CPU unit. With several cores, it is like having many CPUs. "Dual Core" CPUs are common these days. "Quad Core" (4 core) CPUs are available. Even smartphones have multi-core processors (for a premium price). Multi-core CPUs can efficiently multi-task, each core can be used to deal with a separate job. Running several programs at once becomes a reasonable thing to do.

The CPU is very busy at the center of the computer, but it has connections to many other physical parts.

### Graphic Processing Unit (GPU)

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Fancy pictures sent to the appropriate pixels on the monitor can take a huge toll on the CPU (remember all those switches) and do so on the less expensive computers. The least expensive computers are not suitable for big monitors and watching action movies delivered through the Internet with video **streaming** services like Netflix, iTunes, etc. To improve the speed of graphics, one can add a processor dedicated to controlling the pixels heading to the screen. In those systems, the CPU sends all the graphics processing commands to be handled by the GPU. The result is better, flicker-free movies and games.

Remember that hardware is in contrast to **software**. Software is the set of instructions which control which switches go on or off and the timing of those switch flips.

### **Random Access Memory (RAM)**

Software and movies and even the text of this user guide need to be stored. Short-term "live" storage is important because efficient display requires quick access. Live storage is accomplished with switches (like everything else in computer hardware). The faster we can turn the switches on and off, the faster the pictures can change. The CPU runs fastest, most efficiently, when it can grab a sequence of pixels from fast storage. RAM is very efficient for short term storage of pictures, movie frames, game screens, even long, boring text pages.

The more RAM your computer has, the more work you can do simultaneously. Now, if you are watching a movie on your computer, you are probably focused on that until the movie ends. But, if you are working at your office desk, you might be running several programs at the same time. You might have your word processor program running to do the monthly company newsletter. Along with that, you have your email program running because you are waiting for the last article. You also have your Web browser running to get useful pictures for the newsletter (preferably liberally licensed ones like the ones in this guide) from the Web.

No matter how efficient your CPU is, it needs RAM to store the documents, Web pages, and email attachments you are actively using. If you don't have enough RAM, the CPU will need to swap the data and programs from and to longer-term storage. RAM is quick and efficient storage. Swap storage takes longer to access than RAM. Your multi-tasking slows down. You get frustrated when you have to wait switching from the word processor window to the browser window to the email window and then back.

### **Hard Disk Drive**

Swap storage is done on a special section of space on a hard disk drive. While RAM switches are volatile, all of them switching off when the electricity goes off, disk drives provide a stable long term storage solution. Instead of electronic switches, disk drives use magnetic storage. Each individual switch of a picture gets recorded as a magnet pointing north (up) on the surface of a spinning disk. The switches that should be off are recorded as a magnet pointing south (down) on the spinning disk. Modern disk drives store the state of billions of switches. Disk drives are called "hard" because the magnets are arranged in circles on metal disks. The disks spin rapidly and an electromagnet floating just slightly above the surface reads or writes switch data (a zero represented by a "down" magnet - on represented by an "up" magnet).

Swap storage is done on the hard drive, too. Even though the disk may be spinning at 5200 revolutions per minute, it takes much longer to read the data from swap storage than from RAM.

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Once the data is written to the disk drive, it can also be left there for later. Magnetic disk data storage is stable for years. It isn't like RAM, remember which uses electronic switches to represent data. The electronic switches all go off when you turn off the computer. No power, no data. All RAM switches go off.

By contrast, it takes an intent to make a change of magnetic data on a hard drive. That's great for long-term storage.

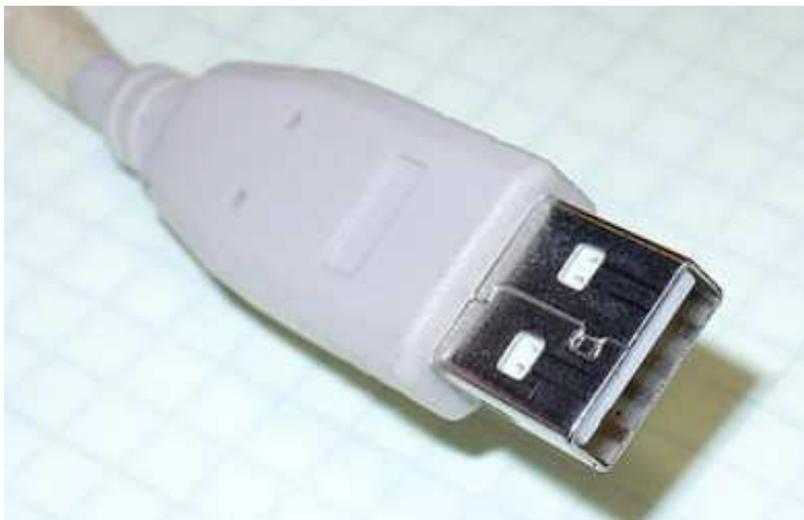
### **CAUTION:**

When you get rid of your computer, all the data that was stored on the disk drive (hard drive) is still there. If you have sensitive, private data, no matter what the format, take time to erase your disk before you recycle it. GNU/Linux has several utilities that are great for this job.

CPU, RAM, Hard Drive, Power Supply, Cooling Fan and all their connecting wires are contained in a box. That box is sometimes made of metal and can sit next to your desk. It is then typically called a "tower." Actually, some people just call it the CPU. They are being lazy, but the box does contain the CPU, so maybe it is okay.

The same box of parts is beneath the keyboard in a laptop computer (all the parts are much smaller).

Wires run out from the back of the tower to the external parts of your system. Those wires carry the electronic signals to all the **peripheral** parts of the system. We started this hardware discussion with the monitor. It connects to the tower with a special, thick cable. The other peripherals generally connect with a standard cable type, the Universal Serial Bus (USB) cable. Not so long ago, most peripherals had their own design of connecting cable. USB has made things much simpler.



USB Connector - Image Credit: [Jeff Keyzer](#)

### **Keyboard**

When we write a newsletter or any other document, the keyboard peripheral makes it relatively easy. Of course, to be efficient, you probably should learn to touch type. The programmers who make the software to control your computer spend hours and hours at the keyboard. Most programmers find the keyboard the most efficient way to enter all the codes that run your computer.

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### **Mouse**

Today's typical computers are universally dependent on a Graphical User Interface. You need a peripheral that moves the pointer around the screen. The mouse is the input tool of choice.

### **Printer**

While a lot of reading we do is on the screen in a browser window, there are times that a paper copy is preferable. You can connect a printer to your computer using a USB cable. GNU/Linux will recognize most printers and let you start printing right away.

There are a few classes of printer from which you can choose these days.

- Inkjet - sprays dots onto the paper - expensive ink
  - Laser - dusts and melts the ink onto the paper - moderate price
  - Multifunction - may be either inkjet or laser - often has printer, copier, scanner and fax functions.
  - Network - may be either inkjet or laser - shared among several computers in the same office. Reduces cost, fewer printers in the office. Often doubles as a copier.
-

## Glossary

**While you may prefer to read the main sections of this guide to learn about each of these terms in the context presented there, the glossary may provide you a better quick access to the terms.**

This part of the guide is probably going to lag behind the development of the other sections. Please be patient.

When it seems appropriate, for unusual terms inside a glossary entry, there are links to external sites. Often the initial site is [Wikipedia](#). Wikipedia is a modern encyclopedia entirely on the Web. It has an extra dimension when compared to other traditional encyclopedias. Wikipedia is edited by thousands of individuals, with the entries checked and rechecked as new information becomes available. Unlike the paper encyclopedias of my own youth which had an annual update volume, Wikipedia is frequently updated within minutes of the appearance of new information.

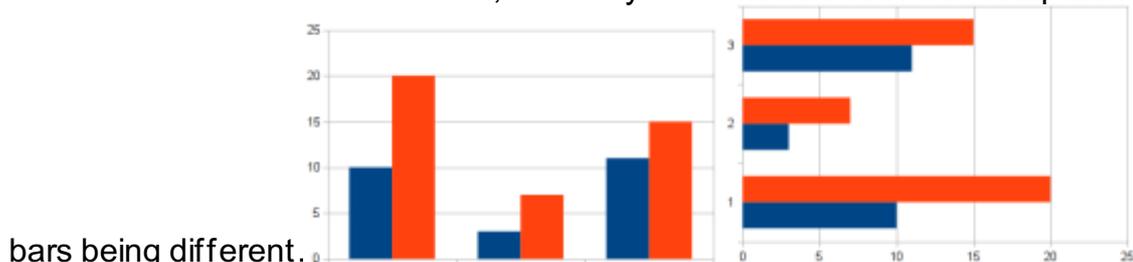
Even professional educators are beginning to accept this new-format encyclopedia as a starting point for student research. Even then, you should always do a wide search for answers. Just because an item is the top link on a Google search does NOT make it the definitive answer. Just because a statement appears on a Wikipedia entry does not make it authoritative. Wikipedia, like any other encyclopedia, is simply one place to start.

### affiliate

One way that websites make money is through ads placed on the site's pages. These ads often link directly to an online store such as Amazon. The website owner gets a payment for anything that is purchased by the person who follows the ad link to the online store.

### bar chart

When you need to make comparisons between two sets of numbers, a bar chart is the best choice. LibreOffice Calc calls the tall bars "column charts" instead, but both show the same information, with only the orientation of the comparative



### binary

Binary means simply "two states" like on or off. Computers, because they are filled with switches, are a natural for using information coded into binary formats. A single switch can mean just two things "on" or "off" or "one" or "zero". Coding in binary uses groups of switches to carry information. The most well known group is a group of 8 switches, a "byte". Coding in binary is therefore, usually represented as a set of eight digits: 00001111 which carries a meaning very different from 11110000 or 10101010. [ [Read More at Wikipedia](#) ]

### broadband

The speed of an Internet connection is measured by how many bits of information are transferred per second. Earlier phone line connections (called "dial-up") were relatively slow at 56 kilobits (56,000 bits) per second. Anything

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beyond that speed has been called broadband or "high-speed" Internet. A typical house connection is better than 10,000,000 (ten megabits) per second. People will use several terms for broadband, including "DSL", "Broadband Cable", and "FiOS" among others. The choices for broadband in your area depend on the companies which have run the wires on the utility poles.

### button

The GUI of modern computers present small icon graphics to represent tasks you can start. To start the task, you left-click the button or icon. A person starts actions or selects "objects" on the computer by a quick push-and-release of one of the buttons at the finger end of the mouse. See also: point-and-click, left-click, right-click

### cell

The grid of a spreadsheet is divided into small elements called cells which can contain three kinds of information: values, labels and formulas. You don't move a cursor around the screen, really. You jump from cell to cell instead.

### cloud

As a feature of the current Internet, it is possible to work with programs and storage that are running as a service through a small software client on the computer on your desk or your lap. The "cloud" is a marketing term, too. It strongly suggests that your data is "somewhere out there". Google is well known for providing "Google Drive" which provides the basics of word processing, spreadsheets, and presentation software with files automatically stored on a distant hard drive, NOT on your own computer. The biggest benefit is accessibility. You can easily work on the file from several computers and even simply share your files with others. The file is just another Web address you access with your browser. Google, Mozilla, Microsoft and several other companies are working on making the cloud replace a standard computer. Google sells the Chromebook which is specifically designed to work with cloud tools. The entire Chromebook philosophy is a Web-based one. All computer features are dependent on being connected to the Internet. It is exactly like the smartphone in that way. A cell phone isn't really much use if you cannot connect, "no bars", as they say.

### command

Typing an instruction that the computer should follow is a "command." There is a non-GUI "command line" method to direct a computer's action. People who program computers or who want to set advanced features of their computers often go "behind" the graphical user interface to do their work.

### computer

General purpose information processing tool. context menu Using the right mouse button to point-and-click will typically give you a small box which lists options that apply to the screen/object at which your pointer is pointing.

### cursor

It is a marker to show the current location in a word processing document. The next letter you type will be inserted at the location of the cursor. The cursor is usually represented by a vertical flashing line, though you may also see it as a flashing line along the bottom edge of the text line.

### distribution

Free Software is easier to get than it used to be, thanks to the Internet. There are several companies and community groups organized around making Free Software even easier to install and use. Ubuntu is a distribution of a selected set of Free Software. The distribution is a preliminary selection from the thousands of available programs. The distribution gives you a "running start" by providing an operating system, a music player, a word processor, a photo manipulation tool,

## Introduction to Computers

etc. There are many distributions. Ubuntu is just one of them. Check out Mint, Debian, Fedora, OpenSUSE as other examples.

## Domain Name System (DNS)

The domain name system of the Internet translates addresses from human-readable words into machine-readable number codes, one each for the addresses of computers on the world-spanning network.

## encrypt

As a part of strong security measures, you may decide to recode a file so only you can restore it. You give a "key" that is like a password that must then be entered again to access the protected file. The most common encrypted files are your user name and password that you type to connect to online banking. The encrypted information cannot be decoded without the key. Your browser sets up the encryption key automatically with the bank, in this case.

## file

This is the generic term for any document as it is stored on a computer's hard drive or a removable drive like a USB thumb drive. File types are often identified by their extensions. JPG is the extension for a photo file, for example. The extension for a word processing file is ODT if it is stored in the Open Document Format used by programs like LibreOffice.

## flash drive

A removable solid state storage device. Usually small, about the size of a thumb which makes it often called a "thumb drive." In 2013, a 4GB flash drive is the smallest size sold and prices range downward from \$15 for that size, depending on the brand. Sizes up to 128GB are commonly available. Flash drives are mainly used as removable storage and plug into one of the USB sockets on a computer. The term "flash" is both a reference to the speed of the drive and the electronic technology that makes the storage persistent, not needing a supply of electricity to maintain the state of the storage.

## folder

Although the files are electronically stored, it is convenient to organize those files in a way that mimics the way we would physically store paper documents. On a computer, we put a document file into a virtual manilla folder and digitally store it in a file cabinet. Using folders organizes things mentally, too. A computer's digital hard drive, even a removable USB solid-state drive, benefits from organization. Creating sensible electronic folders ahead of time, before saving your work, makes it easier to find individual files later.

## Line Graph

To show a series of measurements which change as time passes, a line graph or line chart is best.

## GNU/Linux

Every computer has an operating system, the base software that lets users add tools like word processors and deals with printing, saving, etc. GNU is the broad term for the system control tools that surround a central core or "kernel" that is called Linux. It is common to hear people refer to this operating system as "Linux" in the same way that people say "Windows" instead of "Microsoft Windows XP" or "Microsoft Windows 7."

## GUI

(also Graphical User Interface) is the system of using a mouse to manipulate the program while doing a task on the computer. Pointing and clicking on icons or copying and pasting with visual cues are a big part of a GUI.

## hover

Especially on Web pages, simply moving the mouse pointer to an icon will reveal a

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hint. Hovering over the toolbar buttons (icons) of most programs also reveals the purpose of the tool that the icon represents. (See also: tool tip)

### hard drive

Your computer needs a place to store data so it isn't lost when the electricity to your computer goes off. Most computers have a magnetic device with disks that spin and on which data is recorded. The hard drive is typically found inside the tower box of your home computer or might be as smaller version tucked under the keyboard of your laptop.

### HTML (HyperText Markup Language)

A system of marking information to deliver it to you computer so that it is visually appealing with a mixture of text sizes and styles along with media elements like photographs, sound and video. The system was proposed by Tim Berners-Lee in the early 1990s. Because it solved many problems, HTML made the World Wide Web take over the majority of information exchanged on the Internet wiring. The software that displays Web pages is called a "browser."

### icon

Part of the Graphical User Interface (GUI) is using small images to represent important capabilities of the program you are using. The toolbars of most programs have icons for printing, for example. An icon might be intended to look like a printer. Look closely. Of course, it may not actually look like your own printer. Icons are usually small so many of them fit on a toolbar.

### input

Computers need information to do their work. People use devices connected to the "box" to supply that information. The keyboard and mouse are the two most common input devices, but touchpads, touch screens, cameras and microphones also qualify.

### ISP (Internet Service Provider)

A company that provides all the networking services associated with an Internet connection. The services typically include a home router, email, and technical support for Internet problems. Typically, people purchase the service from the same company which provides cable television or phone service. Sometimes the ISP will also provide Web page creation options.

### keyboard

Traditional computer input device which has the basic look of a typewriter with the letters/numbers, but with additional keys that make working with a computer easier.

### LAN (Local Area Network)

Within your house, all the computers are connected to a router for access to the Internet. In addition, you can make easy links between them to share access to printers, share files, movies and music. The LAN shares an address set that make connecting easy.

### left-click

The left hand button of a mouse is the selection/action button. Typically a single click of the left button selects (highlights) something. A double-click on an icon launches or activates a program.

### link

Connecting from page to page on the World Wide Web is accomplished with the use of links, usually a link is blue text that is also underlined in blue. Each term on this page has a link from one or more of the pages in this guide. They are also called hyperlinks and have a history from before the World Wide Web, but the Web is the place where hyperlinks have blossomed into their current value.

### monitor

## Introduction to Computers

The screen which displays your view of the Internet or any other output from the computer is called many terms. [CRT \(Cathode Ray Tube\)](#) was one of the earliest while computers were still exclusively a very techie thing. Monitor was next and remains a mostly techie term, too. Most users these days think of it as a "screen", reflecting the connection with the even more familiar TV screen. In fact, many of the flatscreen television screens can be directly connected to a computer. Instead of looking at a 14 inch diagonal monitor on your laptop, you can connect the computer to the huge screen in your living room and watch a movie.

### mouse

Hand-held input device to point at and select from options visible on the computer's screen.

### Natick Community-Senior Center

Natick, Massachusetts, a community west of Boston, is the 'home' of the NatickFOSS User Group. Meetings are held at the recently completed community and senior center where classrooms with digital projectors make it easy for members to share their expertise with everyone.

### output

After processing information, the computer produces a visible or audible result. That output may be displayed on a monitor, printed to paper, or viewed as a video or audio product.

### password

Security of files and access to online accounts requires a password that only you know, but also that you can remember.

### pointer

The mouse controls an image (typically an arrow) which moves around the computer's screen while the human hand moves the mouse.

### point-and-click

You will select and activate events with a quick push-and-release of the mouse button while the pointer is hovering over something visible on the screen.

### proprietary

When a single company or corporation holds the exclusive rights to distribute and modify a product, then it is "proprietary." FOSS software is the opposite of proprietary software. Anyone has the permission to improve and redistribute the software. Free Software removes most limitations. The only restriction is that someone is not allowed to take FOSS and make it proprietary.

### right-click

When you click the right mouse button, a context menu typically appears. Context menus reveal actions you may do that are specifically related to the object/icon you clicked.

### router

Connecting to the Internet requires an extra piece of equipment. The router installed by your cable or phone company gives you the link from within your house to the wiring of the Internet. The connection links your computer to an electronic "internet protocol" or "IP" address. Lots of engineering went into the setup of the addresses, but your computer and the router handle it all for you automatically. Hook up the computer and router with the special cord and off you go.

### save/saving

Any work you do in a computer is temporary, surviving only until a copy of the work is stored on long term storage. The computer has a disk drive on which you may save a copy of a document, photo, song, etc. If you don't save it, your work will be lost when you turn off your computer.

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### scrolling

Most often describes moving up or down a "page" that is longer than the visible screen. Most windows have a visible bar along the right edge. It is possible to move up and down (vertical scroll) through the document/page by clicking and dragging the scroll bar. Some windows also display a scroll bar at the bottom of the window allowing horizontal shifting/scrolling of the image.

### scroll wheel

Some mice have a wheel between the two buttons. Using the wheel, you can scroll vertically without using the window scroll bar.

### social network

The Internet was designed to be a way to share and to communicate. Social networking is one aspect of that, but didn't happen right at the start. At the dawn of the World Wide Web, a person needed to be a techie. Today, services like Twitter, Facebook, Google+, among others, provide a very easy way to share ones thoughts to a potentially huge audience. Social networking takes less effort than blogging, for example. Twitter is particularly notable for limiting each post to a maximum of 140 characters. Being concise has value in a "tweet."

### tap-to-click

The laptop default setting for a touchpad is to allow you to tap the area of the touchpad as a substitute for a left-click of the left button below the touchpad.

### terms of service (TOS)

Internet services of all kinds have an agreement you acknowledge by using the service. This agreement is a contract which you don't even need to sign. Just by using the service, you agree to the terms, as written. The provider can change the terms without notice. Be sure you think before committing to a service. Even if you don't read the TOS, understand that you may be giving others access to the work you generate or store on the service. If privacy is a concern to you, definitely read the TOS and discuss the implications of using the service with advisors and friends before you commit your work to the service.

### tool tip

A modern graphical user interface (GUI) tries to tell you as much as it can to guide your actions. Hovering the mouse pointer over some parts of a program window, such as the icons of the toolbar will show a small text message to guide you in using the tool.

### touchpad

A laptop can be used with a mouse, but typically has a rectangular area that is sensitive to touch. Moving a fingertip across the touchpad will move the mouse pointer in the direction you move your fingertip.

### tower

A common form of the box in which the main electronics of the computer are found. A tower may actually be placed on a desk which leads to the the "desktop" term, but many people place the tower inside a desk enclosure or put it on the floor beside the desk. While many people refer to the visible computer box as the "CPU", try to avoid that. The CPU is a relatively small electronic component at the core of all the other parts of a computer. The small CPU is inside the tower, but so are many other important parts like the hard drive. It wouldn't make you sound tech-savvy to call the tower a "disk drive" either.

### username

Every person gets a user account on a GNU/Linux computer unless they share someone else's account. Online sites may also have you create a username in combination with a secure password, too.

### WAN (wide area network)

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"Wide Area Network" is generally used as another term for "The Internet", though it might also refer to a private network connection between buildings of a large company.

### word processing

One of the earliest uses of personal computers was to make writing and editing a document easier. Before "PC" computers, doing a revision meant writing the corrections onto a printed copy of the document. Then somebody typed the new version, from scratch. Word processing allows us to store electronic copies of each document so making changes only involves careful editing and then reprinting the document. Word processing handles all the issues like margins automatically, too. It is rare to see rooms full of secretaries typing all day long to do the required revisions. The smaller number of people are now often called administrative assistants instead of secretaries. As you might suspect, this document has been reworked many times to reflect the changing world of computers.

### WWW (World Wide Web)

Information accessed from the Internet which uses the HTML language to structure the look so that it is more pleasing and impressive than just simple text. Increasingly, web pages are created using more advanced languages like JavaScript, PHP, Python and others, with Cascading Style Sheets (CSS) used to enhance the layout and look of the pages.

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## Credits

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I believe sharing is good. I taught in public schools before my retirement. I was happy to share my own knowledge with my students and to pass along what my own teachers had worked to help me learn. I didn't ask the kids in class to forget what they heard me say. That would have been silly. I hoped they would remember the things they needed and that they, too would be happy to share with their friends and family.

**Share! Just do it right.**

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