CSCI 1100L: Topics in Computing Lab
Lab 1: Introduction to the Lab!
Part 2

Feel free to ask a lab instructor any questions you may have while working on labs! We are here to help!

Part I – Working with two things on the same screen

Many lab exercises including this one will require you to look at the lab exercise directions (this document you are reading) in one window as well as another program in another window. The monitors in the lab are large enough to fit two or more windows at once. First, let's take a look at these directions while viewing the desktop. We will need to click on the **resize down** button, which looks like:  when a program is **maximized** (taking up the majority of the screen). This is the middle button in the group of three buttons at the top right of your program's window. It toggles between **resize down** and **maximize** when clicked. Go ahead and resize down this document, and you should be able to see the Desktop and the document (if some other window is blocking the desktop, **minimize** it). As with most **GUIs** (**Graphical User Interfaces**), you can move a window around by clicking and holding your mouse's cursor at the top of window and drag it around to wherever you want to put it.

Now let's use a cool feature in Windows called Window **snapping**. First, grab ahold of the top of this document's window and move it as far as you can off of the screen to the right. A translucent rectangle should appear, then let go of the mouse button, and the document will snap into place on the right side. With these directions snapped to the right side of the screen, open up a new web browser to the labs web page, and snap the browser to the left side of the screen. Now you can read the lab directions on one side of the screen while working with a web browser on the other side. This is quite helpful to use when you are working in the labs. It is always a great idea to have one side of the screen that has the lab directions for you to read and the other side of screen open to the work you are doing for the lab.

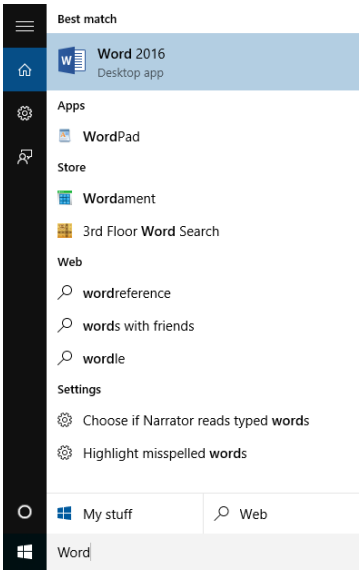
Another cool feature that goes along with **snapping** is **shaking** a window. We've all run into the experience of just too many windows opened up at once, now we can **shake** a window to minimize every other window except the one we are using. Click on some icons on the desktop or buttons on the **taskbar** (that bar at the bottom of the screen) to open up a few different programs (it doesn't matter which), and then snap these directions back to the side of the screen they were on. Grab ahold of this document's window, firmly **shake** the window around until the other windows are minimized, and this document is only one left on the screen. Then shake it again until the other windows return to their normal position. Once you grasp the use of shaking a window, you can close those other windows now, but leave these directions and the labs web page open.

Shaking is also known as a **mouse gesture**, moving the mouse around in a certain pattern to cause a program to do something, and it extends how we humans interact with the computer. Another

nifty thing to try is to snap a window to the top of the screen, which will maximize the window. Go ahead and experiment interacting with new ways of shaking and snapping a window into place. Mastering these tricks will save you time and increase your productivity.

Part II - Search in Windows

Another cool feature that was introduced with Windows Vista that Windows 10 also has is the search box (located in the bottom left part of your screen). If you know a program's name like Word, then type it into the search box.

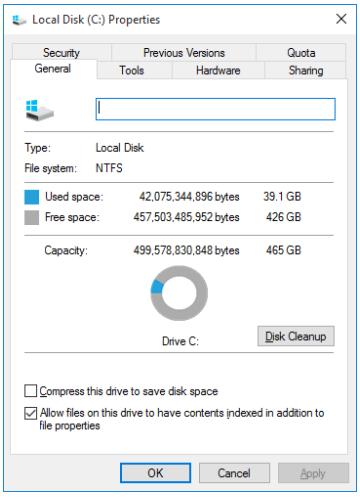


A list of files and programs are dynamically updated as you type. Let's use this trick to open up Microsoft Word. Open up the search box and type in Word, and the program should appear in the list above the box. Just click on it to open up the program. Keep in mind that the old way of navigating down directories can still be used to find programs and files, but this new way can save you time and effort. In a future lab, we will traverse file directories using command lines, which will make you appreciate the work computer scientists went through to create easy to use GUIs for operating systems.

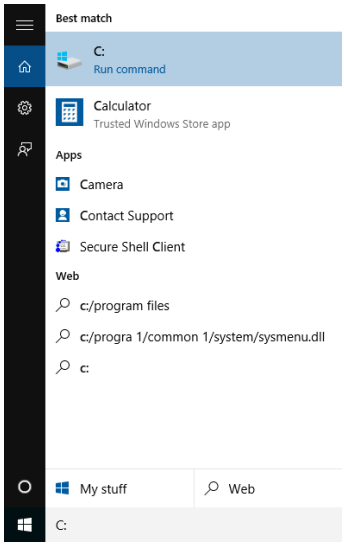
Now, go ahead and use the Search box to open up a **Paint** program. If you type in Paint, two programs may show up, and both can be used to manipulate images. Right click on a Paint program, and click Open File Location, and then right click on the **paint** shortcut and select **properties**. In the properties windows, search around to find the file location of the program in file system. The location should begin with C:\. Also, find out **the type of file, its size**, and when it was **created**. Find the same **properties** for programs like Firefox, Google Chrome (not sure what Chrome is, click on it to find out), Excel, and a folder like Documents. You can close these other windows when you are finished, but leave these directions open.

Let's try to search for the C **drive** or I **drive**. These are drive letters, and they may not show up in the search box since they aren't really folders, files, or programs; they are **devices** connected to the computer. **Drives** are **devices** that usually contain their own file structures for use by the computer. To find **drives**, **devices**, or other **hardware** in Windows, you can use the **File Explorer**. So find **File Explorer**, open it, and find out how much used space and free space the C drive (Local Disk C) has on

it, and do the same thing for the I drive if you are able to. Locate the **properties** menu for the I and C drives. You should find a nice window like the one below showing how much free and used space the drive has on it. It is important to keep track of how much space is on your drives. If your drives are close to being full, then your computer may become quite slow since the operating system has to work extra hard to find somewhere to put files.



Another quick and easy way to get to the I drive or C drive is to type I: or C: into the search box at the bottom left of the screen and click enter. Please note that changing a drive in Windows requires the letter of the drive followed by a colon (i.e. I: or C:) in the search box and in **File Explorer**.



Part III – Common Things in Various Versions of Windows

This section will cover things that are pretty common to Windows and other operating systems.

Icons on the taskbar

Hover over a program's icon in the taskbar to see a small preview of the window, and click on the icon to view the contents of the window. Try to hover over an icon for a program that isn't open, and no preview will appear.

Creating a new folder, directory structure, and file

Open up your I drive or some other folder like Documents if you can't access your I drive. When you open up a folder you'll see side menus, location and another search box at the top, menus below it, and the contents of the folder. Play around with these things until you get a feel for them. To create a new file or folder, right click on blank space inside the folder's contents (not inside the side menu or not on another file's icon), click N**ew**, click Folder, and then name the folder **folder1**. Now go inside of **folder1** and create two new folders called **folder2** and **folder3**. Go inside of **folder3**, and create a **folder4**. What we just created was a **directory structure** or a **file tree**. Navigate back and forth between these new folders, and notice that the directory structure follows like a family tree where folder1 is the parent of two folders contain inside of it (folder2 and folder3), and folder1 is the grandparent of folder4. Using this family tree analogy, what would be the relationship between folder2 and folder3, between folder4 and folder3? Think about it for a moment. . .

If you answered something like folder2 and folder3 are siblings (brothers/sisters), then congrats! Also, folder4 is the child of folder3 (or folder3 is a parent of folder4); so if you got that right.

Use the right click method to create a new text document called **DeleteMe**. The file type may be hidden, so use the properties menu by right clicking the file's icon to find out its file type and other info about the file. Open up the DeleteMe text file and type a sentence or two (or just mash some keys for fun), and practice using the **File** and **Edit** to do explore the many file options like **new**, **save**, **save as**, **cut**, **copy**, and **paste**. Also use the **Organize** menu in the folder to change it show extensions for known file types. Do a little digging around for a minute or two to find the option to show extensions for known files types so **DeleteMe.txt** will show up in the folder, but don't hesitate to ask for help.

Hmm, that last statement is important for all lab exercises. ***Don't hesitate to ask for help from a lab instructor or other students!*** We are here to help!

Screenshot and Snipping Tool

Open up the Paint program (not Paint.Net for this exercise) and snap it to the screen with these directions on the other side. Now, press the **print screen** key on the keyboard. What you just did was take a screen shot of everything on your screen that was saved to Window's **clipboard**. Now go over to the Paint program, and find the **paste** button. If all goes well, you should see your screen shot appear in the Paint program. Many other programs like Microsoft Word allow you paste screen shots into them. Now, let's click on the window with these directions, and press ALT+Print Screen (hold ALT while pressing Print Screen is what we mean by ALT+Print Screen). Now **paste** this into a **new** Paint program window by finding **new** under the **File** menu. In future labs if menus look different that's fine, just poke around or ask for help. After you paste your ALT+Print Screen shot, you should only see a screen shot of the window that was currently active at the time you took the screenshot. Practice this a few times to get the hang of it. **Save** your best screenshot as a file called **MyScreenShot.gif** (again, you may need to play around with **save** or **save as** to get it to save as a **.gif** file).

Another cool feature introduced in Windows Vista that Windows 10 also has is the snipping tool. The **snipping tool** combines the functionality of **Paint and taking a screen shot**. Before Windows Vista, one had to take a screen shot like aforementioned, but if you only wanted a little piece of your screenshot, you had to paste the screen shot into another program like Paint, and then use the paint program to extract the part of image you wanted. Now, you can use the snipping tool. Open up the snipping tool, and use

it to capture a picture of just the Windows button,  , on the taskbar. You can then copy and paste this into a program like Word, which is how I, the author of this lab, easily added pictures to these lab directions from Windows. But you may be thinking that these directions are in a PDF format not Word format. How did I convert from Word to PDF????

Converting a Word Document to a PDF (Important!)

Creating a PDF (Portable Document Format) file with Microsoft Word is pretty easy, but you may be asking yourself why create a PDF instead of just using a Word document? There are a few reasons. A PDF file is meant to be read-only document; so if you want to create a document like these lab directions that are meant to read-only instead of being editable by others, then you would want a PDF version of the document. Most importantly, PDF is a widely used format and can be opened and read by many different platforms; whereas, Word documents need specific programs like Microsoft Office in order to view them.

For example, if you send your resume to a company as a .docx file, a Microsoft Office 2007 or 2010 Word file, and that company is using a version of Microsoft Office before 2007, then your resume might be unreadable to that company. However, if you send your resume as a .pdf file, it is much more likely that the company will be able to read and open your resume since most computers have a PDF reader, and PDF readers like Adobe Reader™ are free to download and install.

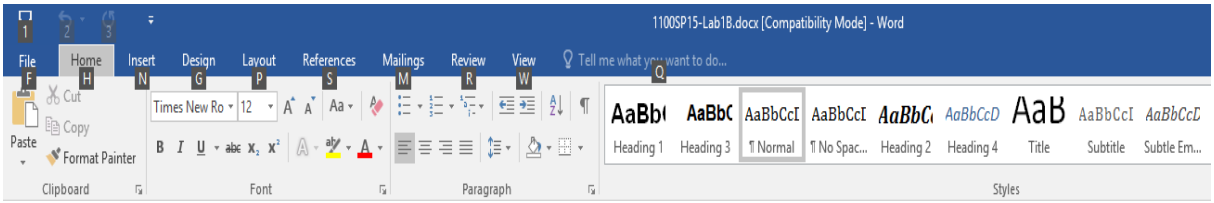
Let's practice making a PDF using Microsoft Word. First open up a new Microsoft Word document, and then write your name on the top part of the document, and use a big font to write "1 + 1 = 10", and center it. "1 + 1 = 10" is a computer science thing that you'll understand when you cover binary numbers in class, but for now, save your Word document as **CSEquation.docx** in your I drive or

Documents folder. To convert this .docx file to a PDF, go to the **File** menu, choose **Export**, **Create PDF/XPS** Document, and click **Publish**. You have now created a .pdf version of the Word document. What happens under the covers is that Word is converting its native .docx file type to a PDF file type. Anytime you convert one file type to another, it is a good idea to open up the converted file to make sure the conversion was successful. So, open up the **CSEquation.pdf** file (you may need to right click on **CSEquation.pdf**, and **Open with** Adobe Acrobat Reader) and verify that it looks like your original .docx file.

Keyboard Shortcuts

Although we usually use the mouse to command Windows, it's also possible to do many commands using only the keyboard. This is faster, and can be a lifesaver if your mouse fails!

1. Open up **Microsoft Word** (henceforth Word). Inside of Word, tap the ALT keyboard key once and then examine the menus at the top:



2. Note that one letter of each menu is indicated in boxes. This indicates the keyboard shortcut! To open the **File** menu, hold down the Alt key and press F inside of Word. This will open up a shortened version of the File menu. Use the up and down arrows to navigate the menu items. To exit the File menu without choosing any menu items, press **Esc**.

3. Now press **Alt+W** inside of Word to open up the **View** menu. You will see the View menu items with more letter boxes surrounding indicating menu choices. Press the Tab key, which gives you another way to navigate through the menu.

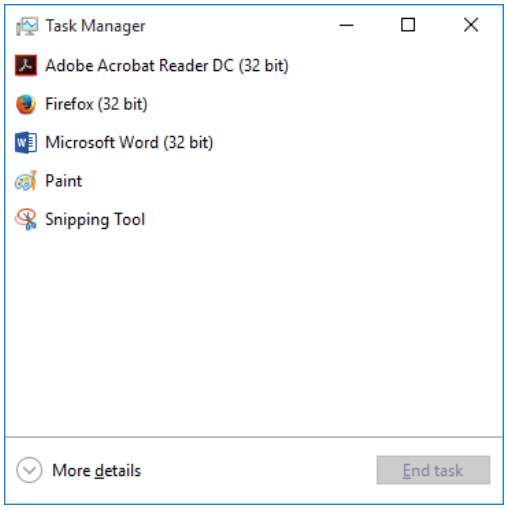
4. Press Shift-Tab after **ALT+W** in Word to move up the menu. Press Esc to close the menu. Nice trick to know if your mouse malfunctions and you need to save your document.

5. Try this out in other programs. It will in some program, but not all programs support it.

The "Show Desktop" shortcut

6. Sometimes your Desktop is cluttered with too many open windows. Find the Windows Logo key next to the shift bar. Hold this key down and tap the D key once. All of your windows are minimized at once! (Pressing **Windows** + **D** again causes them to all be active again).

Windows Task Manager



7. Press *CTRL + ALT + Delete* and click the Task Manager button (don't sign out). Open up Excel, and it should appear in Applications part of the Task Manager. Use the Task Manager to end the Excel task, and the program should close. Normally you will close Excel by clicking the "X" at the top right of the Excel window; use this "emergency" method only when the system has locked up and will not respond to the normal mouse controls. Note: when you end a task with the Task Manager, the program will probably close without saving any data; so use it with caution.
8. While you have Task Manager open, click on the **Processes** window (may need to click **More Details**). Here you will see the many invisible programs that make up Windows. The "CPU" column shows what percent of CPU usage is being consumed by each process. Normally the System Idle process, which runs when there is nothing else to do, uses most of the CPU. If your computer is running slowly, this display will show which process is hogging the CPU. Often the offending process is a virus, worm, or spyware process. You can stop the offending process, which should speed up your computer. *Warning*: ending Windows systems tasks on your home computer can destabilize your system.
9. Click on the Task Manager **Performance**. This is another cool feature that shows visual data about your **CPU** (**Central Processing Unit**) and **memory** usage as your computer runs. How many cores does this lab machine have? What type of CPU does it have? How much main memory is this machine currently using?

The Windows Logo + Tab shortcut

10. First, check your taskbar to see if you have at least 3 windows open (if not, open a few program windows to demo this feature).
11. Now let's say you want to quickly switch between this window and another open window. Simply press and hold down the Windows key on the keyboard, and tap the Tab keyboard button. You can then easily select another window.

The Alt + Tab and Windows Key + Tab shortcut

12. To get a less visually stimulating version of the previous shortcut, instead of the Windows Logo key, press and hold the Alt key. As you hold down the Alt key, tap the Tab keyboard button.

See which window surfaces when you press and hold the Alt key and tap the Tab key three times.

13. Try the same thing by holding the Windows key on the keyboard

Part IV – Conclusions

We've merely scratched the surface of the features found in Windows 10, and you can Google Windows 10 features to find a more things to do with Windows 10. You may be thinking that this was a lot of info to take in one lab week. The important thing is not to memorize every little step in the lab and not to get stuck on a particular part of lab. Always feel free to ask questions from others in the lab. For the lab quizzes, you won't be able to ask for help or see the lab directions, but you will be able to use any program found on this computer, including the search and help

menus. The help menus are usually labeled as **help**, as an icon like  , or an icon with a question mark. Take a few moments to explore some help menus because there will be future labs where these help menus will be quite valueable (and usefule for lab quizzes). Also for lab quizzes, you'll be able to use Google, Bing, or whatever search engine you like to aid you in case you forgot something.

The most important thing to take from this lab is the ability to play around and figure out how to do things in the Windows environment. This is what computer scientists do best. We don't memorize things, we find easy ways to do things on a computer, do them repeatedly so often that we gain fluency with whatever computer we use. Remember our goal is to teach computer fluency, which takes time, lots of practice, and patience.