



قسم التقنيات الاحيائية

حاسبات 1

المرحلة الاولى

الקורס الاول

*م. ميلا غازي عبد الحليم
*تدرسي في قسم علوم الحاسوب

Computers Laboratory (1)

What is a computer?

A **computer** is an electronic device, operating under the control of instructions stored in its own memory, that can accept data, process the data according to specified rules, produce results, and stores the results for future use.

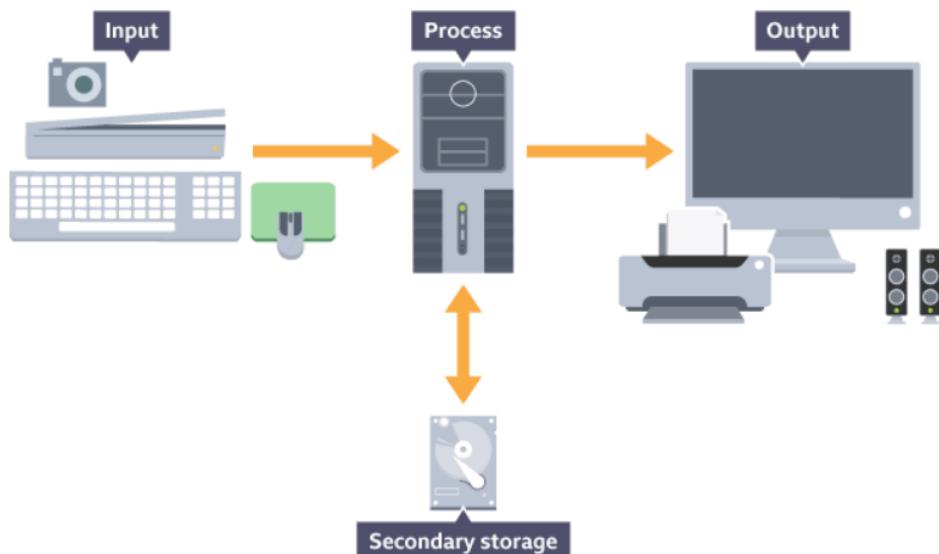
The purposes of using a computer

Computers are used for a wide variety of purposes such as:

1. Data processing, storing and retrieving for example computers are used to do commercial and financial works.
2. Scientific processing is the use of computers to support science.
3. Multimedia processing including music operating or recording, videos playing, film and video editing, special effects, animation, illustration, etc.
4. Accessing the internet
5. Browsing the world wide web (WWW)
6. Using application programs such as word processing
7. Playing games
8. Communicating via email and social media
9. Designing and building web pages

The general purpose computer model

All general purpose computers follow the same basic model. The below diagram illustrates the flow of data within a desktop computer. Data is input, processed, then either output or sent to secondary storage. It is held in main memory while it is being processed.



The Central Processing Unit (CPU) receives instructions and data from an input or memory. The instructions and data are processed by the CPU and the results are either sent to an output or transferred to secondary storage.

A computer has four main functions, it

- a. Collect input(data)
- b. Processes data
- c. Produces output
- d. Stores results

**Input
Processing
Output
Storage**

Input: Input is the raw material entered into a computer from the input devices such as a keyboard, mouse, camera or scanner. It is the collection of letters, numbers, images etc.

Process: Process is the operation of data as per given instruction. It is totally internal process of the computer system.

Output: Output is the processed data given by computer after data processing. Output is also called as a result. The user can save these results in the storage devices for the future use or display them on the output device, such as a monitor, printer or speaker.

Storage: It is the area where data can be left on a permanent basis for subsequent access by a computer processor.

Data and Information

Data can be defined as a collection of unprocessed items which should be suitable for processing by human or electronic machine before it can be turned into something useful. **Data** can include text, numbers, images, audio, and video.

Information is organized or classified data which has some meaningful values for the receiver. Information is the processed data on which decisions and actions are based.



Computers process data into information.

Window 7

Desktop Components:

1. Start Menu.
2. Taskbar.
3. Desktop Icon.

Start Menu

The Start menu is the main gateway to the computer's programs, folders, and settings. It's called a **menu** because it provides a list of choices.

Use the Start menu to do these common activities:

- Start programs.
- Open commonly used folders.
- Search for files, folders, and programs.
- Adjust computer settings.
- Get help with the Windows operating system.
- Turn off the computer.
- Log off from Windows or switch to a different user account.

Getting started with the Start menu

To open the Start menu, click the **Start** button  in the lower-left corner of the screen. Or, press the Windows logo key  on the keyboard.

The Start menu has three basic parts:

- The large left pane shows a short list of programs on the computer. The computer manufacturer can customize this list, so its exact appearance will vary. Clicking **All Programs** displays a complete list of programs.
- At the bottom of the left pane is the search box, which allows the user to look for programs and files on the computer by typing in search terms.

- The right pane provides access to commonly used folders, files, settings, and features. It's also where the user goes to log off from Windows or turn off the computer.

Using Windows Accessories

Windows comes with several accessories, built-in programs that are extremely useful for completing everyday tasks.

Frequently Used Windows Accessories

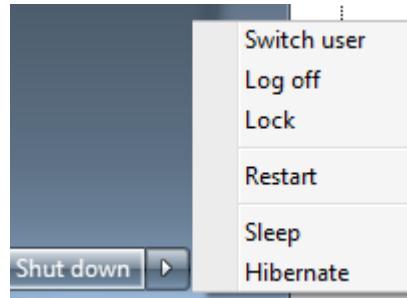
Program	Description
Calculator	Performs arithmetic calculations
Notepad	Creates, edits, and displays text file using basic text formatting
Paint	Creates and edits pictures with different extensions
Run	Open program, folder or document
Snipping Tool	Captures different parts of the screen
Sticky Notes	Creates color notes on the screen
WordPad	Creates, edits, and displays text document with complex formatting
System Tools	<ul style="list-style-type: none">• Disk Cleanup• Disk Defragmenter• System Restore
Ease of Access	<ul style="list-style-type: none">• Ease of Access Center• Magnifier• On-screen keyboard• Windows speech recognition

Start the computer and log on securely using a user name and password.

- First check that all cables are plugged securely into the rear of the machine.
- Then check that the monitor is turned on.
- Locate the power switch on the system unit (tower) and press it once to turn on the computer.

Shut down the computer using an appropriate routine.

- Click on button that represents Start
- Click Shut Down.



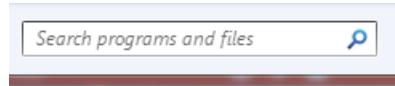
- **Switch User:** A Windows feature that enables another user to log in without the original user logging off first.
- **Log off:** To close a user account's session, closing all open programs and data files and unloading all of that user's personal settings.
- **Lock:** Locks up the computer while you're away from it.
- **Restart:** Reboots the computer.
- **Sleep:** A power-saving mode that retains all running programs and open windows in computer memory for a super-quick restart.
- **Hibernate (found only on laptop computers):** Puts the computer into a low-power mode after saving all running programs and open windows on the machine's hard drive for a quick restart.

To place the computer in one of these modes, select it from the Shut Down button's menu on the Start menu.

Searching

The Search utility allows the user to search for files. To open the Search dialog box:

- Click on the Start button.
- Write the file/folder where the user has Start Search.
- Automatically it will start searching.



Use available Help functions.

- Click on button that represents Start
- Click on Help and Support
- A window will load up. In Search Help box write what the user needs to search.

Computers Laboratory (2)

Computers Types

The computers are classified into different types according to size, operational principle, generation, and purpose.

1. Computers types based on purpose
 - General purpose computers.
 - Special purpose computers.
2. Computers types based on data type or operational principle
 - Analog computers
 - Digital computers
 - Hybrid computers.
3. Computers types based on generation.
There are five generations of computers.
4. Computers types based on size. Industry experts typically classify computers in seven categories:
 - Personal Computers PC.
 - Mobile Computers and Mobile Devices.
 - Game consoles.
 - Servers
 - Mainframes.
 - Supercomputers.
 - Embedded computers.

Window 7

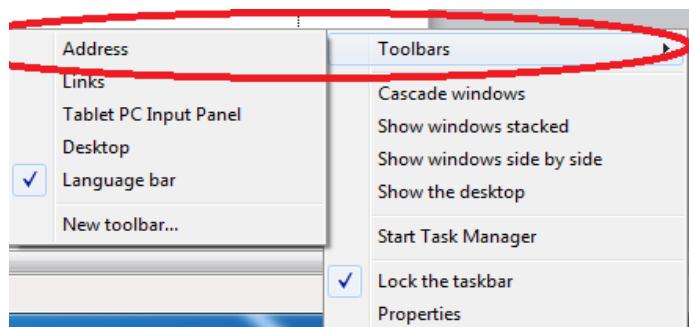
Taskbar

The Windows interface includes a special applicational desktop toolbar called the **taskbar**. The user can use the taskbar for switching between opened windows and starting new applications.

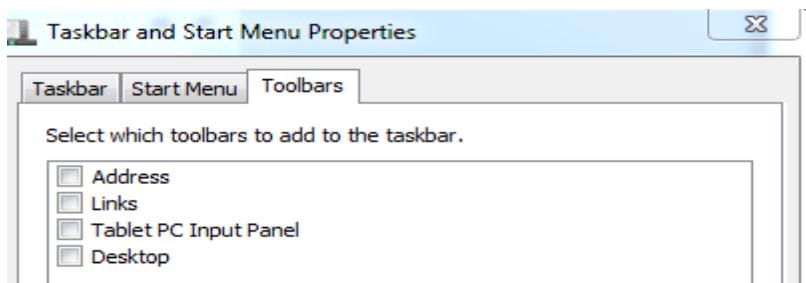


Add Toolbars to the Taskbar

The user can add toolbars to the taskbar by right click on taskbar and select Toolbars,



Or right-clicking on a blank space on the taskbar and choosing *Properties*, then the *Toolbars* tab.



Manage multiple windows

All opened windows are represented by taskbar buttons. The user can arrange the opened windows in one of three ways:

- **Cascade**, which puts windows in a single stack that has been fanned out so that the window titles appear.
- **Stacked**, which puts windows in one or more vertical stacks depending on how many windows the user has opened.
- **Side by side**, which places each window—open, but not maximized—on the desktop so the user can see all the windows at once.

To arrange the opened windows, right-click on an empty area of the taskbar, then click **Cascade windows**, **Show windows stacked**, or **Show windows side by side**.

Show the desktop: to show the desktop window.

Start Task Manager

Task Manager displays the programs, processes, and services that are currently running on the computer. The user can use Task Manager to monitor the computer's performance or to close a program that's not responding. Open Task Manager by right-clicking on the taskbar, and then clicking **Start Task Manager**.

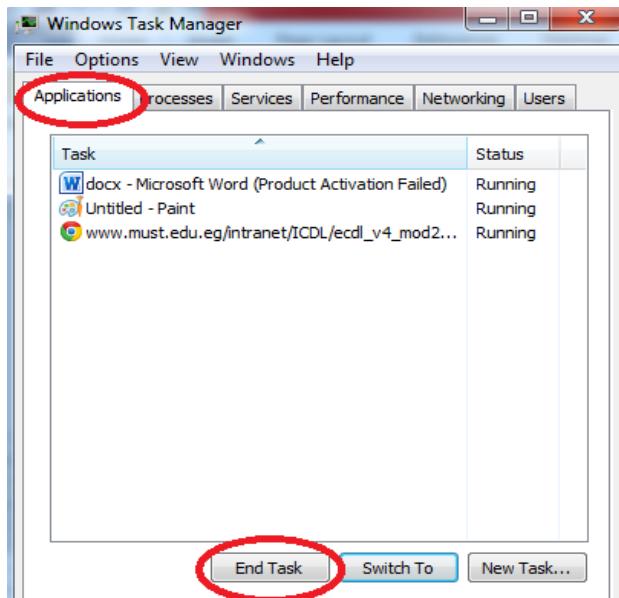
Shut down a non-responding application.

Sometimes a program / application fails to respond. In this case, the user needs to start task manager in order to shut down (close) the program:

- The easiest way to use Task Manager is to press Ctrl + Alt + Delete on the keyboard.
- The below window will open. The user will see a list of things which the user can choose from. It's important that the user click on Start Task Manager.



- Then, the new window shows a list of all currently running tasks, or programs. If a program is having a trouble, the “Not responding” status will likely appear. Click on the program that is not responding and click End Task.

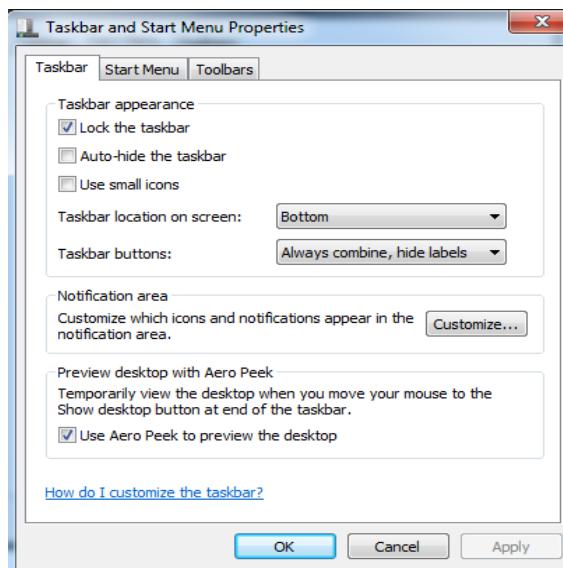


- The End Program dialog box will be displayed.
- Click End Now button.

Changing Windows 7 Taskbar Properties

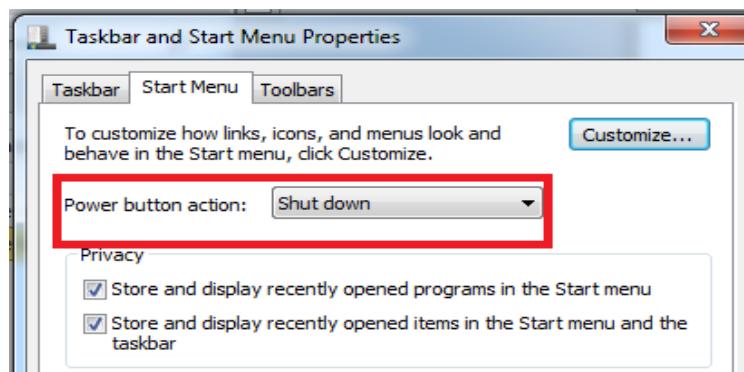
The user can customize the Taskbar by hiding it, making it bigger or smaller, or doing other things to it, to get to the customization window, right-click an open area of the Taskbar and left-click the "Properties" title.

- **Lock it.** When "Lock the taskbar" is checked, no one can make changes to its size or placement on the desktop.
- **Auto-hide.** If the user checks this box, it will hide the Taskbar, so that the user can't see it.
- **Use small icons.** This will shrink the Taskbar and icons, freeing up more space but still allowing the user Taskbar functionality. This is a good option on small screens like laptop or netbook screens.
- **Move the Taskbar.** The drop-down menu "Taskbar location on screen:" allow the user to move the Taskbar to the top, or either side, of the desktop. Again, most people are used to seeing it at the bottom and leave it there.
- **Taskbar buttons.** Here the user can change the appearance of the icons in the Taskbar. The user can turn off "combining" of icons, meaning that if the user has three Microsoft Word documents open, for example, each document will appear as its own icon in the Taskbar, rather than two "hiding" behind a single Word icon.



To Modify the Power Button

Under the Start Menu tab, the user can modify how the Power Button responds. To make modify power button, right-click the taskbar, select properties, and select start menu and then change power button action.



Notification area

The notification area is located at the right end of the taskbar and contains program icons that provide status and notifications. The notification area is used to provide:

- Easy access to different system functions: the date and time, volume, network, the action center, the active keyboard input language, etc.
- System notifications: the notification balloons that pop in the notification area. For example, when a USB stick is successfully removed, the user is notified about it.
- Show the desktop



- Easy access to applications that display their icon in the notification area.

The simplest way to select which icons and notifications appear in the notification area is to click or tap the arrow displayed on the left side of the notification area and then the Customize link.



Computers Laboratory (3)

The Components of a computer

Every computer is composed of two basic components: **hardware and software**.

Hardware refers to the physical components, which are any part that the user can either see or touch.

Software refers to the component that is responsible for directing the work to the hardware.

Hardware includes:

- **Input Device:** Allows you to enter data and instructions into a computer such as keyboard, mouse, camera, microphone and scanner.
- **Output Device:** Hardware component that conveys information to one or more people such as monitor, printer and speaker.
- **System Unit (Case):** contains the electronic components of the computer that are used to process data.
- **Storage Device:** Records (writes) and/or retrieves (reads) items to and from storage media.
- **Communications Device:** Enables a computer to send and receive data, instructions, and information to and from one or more computers or mobile devices.

System Unit The system unit is one of the five main hardware components of a computer. It is usually a rectangular container within which other important internal hardware components can be found.

External components of the system unit

External components are the visible parts of the system unit.

1. Power switch . 
2. Reset button . 
3. Optical Drive.
4. Headphone & microphone ports
5. USB ports.

Internal components of the system unit

The internal components of the system unit are:

1. **Motherboard** also known as the system board or the main board is the largest electronic circuit board in the computer. It serves as a single platform to connect all of the parts of a computer together. A motherboard connects CPU, memory, hard drives, video card, sound card, and other ports directly or via cables.
2. **Processor or Central Processing Unit (CPU)** is considered the brain of the computer. It is a hardware component responsible for all operations that is carried out in the computer's system.
3. **Random Access Memory (RAM)** is the main memory of the computer system whose main function is to store data temporary.
4. **Compact Disc (CD) drive**, can read, write, erase and re-write a Compact disc(CD).
5. **Hard disk or Hard drive** is the secondary storage device of the computer system. It stores information, files and other documents permanently
6. **Floppy Disk Drive** is used to read and write from or on a floppy disk
7. **Fan** is used to cool down and maintain temperature within the system unit.
8. **Power Supply:** Because components of the system units do not work with the power from your wall socket, the computer power supply unit receives the alternating current (AC) and converts it to a controlled direct current (DC) for the components to function.
9. **video and sound cards** enable the computer to play videos and sounds respectively
10. **Ports** allow the computer user to connect items to the system unit to be explored,
11. **Cables** are used to connect the components to each other

Window 7

Pinning

In Windows 7 operating system, the user can pin favorite programs anywhere on the taskbar for easy access. Press right-click on the opened program button in the task bar and select Pin this program to taskbar.

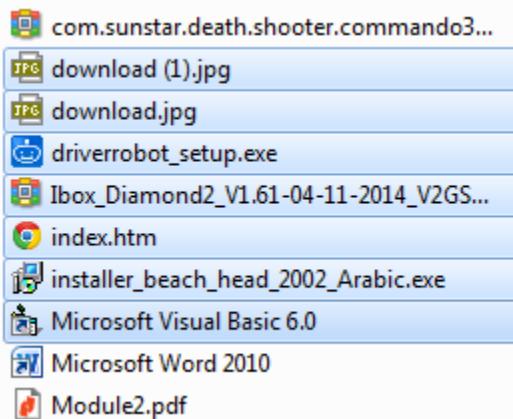
File and Folder

All the data on the hard drive consists of files and folders.

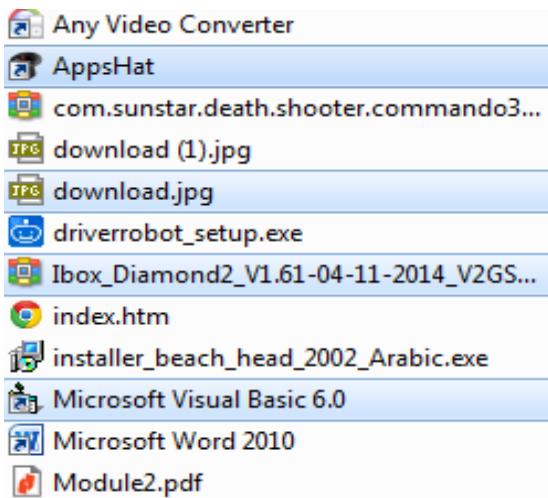
File	Folder
A file is commonly referred to as a document and usually created from within a specific program.	A folder is a container for programs or files and a method of organizing information.
Files store data, whether text, music or film	Folders store files and other folders.
Files are represented with an icon and usually include a symbol of the associated program.	Folders are represented with a yellow icon.
Each file has its own extension.	A folder does not have any extension.
Files are taking spaces on computer memory.	Folders are not taking spaces on computer memory.
The user cannot create any folder or sub folder within a file.	The user can create different types of files or sub folders in a folder.

Selecting Files, Folders and Sub-folders

- To select an individual file / folder simply click once on the file / folder. The file / folder will be highlighted in blue.
- To select a number of adjacent files / folders. Click on the first file / folder in the block you wish to select, then **press Shift with Arrow key** and keep pressing these keys whilst clicking on the last file / folder in the block.



- To select a number of non-adjacent files / folders. Click on the first file / folder that you wish to select. Then press the **Ctrl**, whilst clicking on the other files / folders that you wish to select.



Creating Folders / Sub-folders

- Identify the area where the user will create the new folder, e.g. Desktop or My Documents.
- Right click on any empty space, point to New, and then click Folder.
- A new folder will be created and the user can use the keyboard to type a name for the folder.

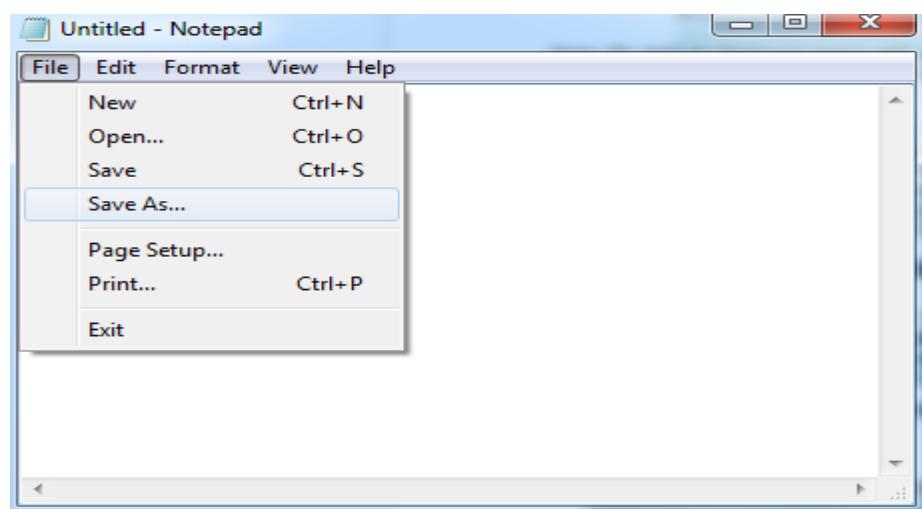
Changing the name of a Folder / File

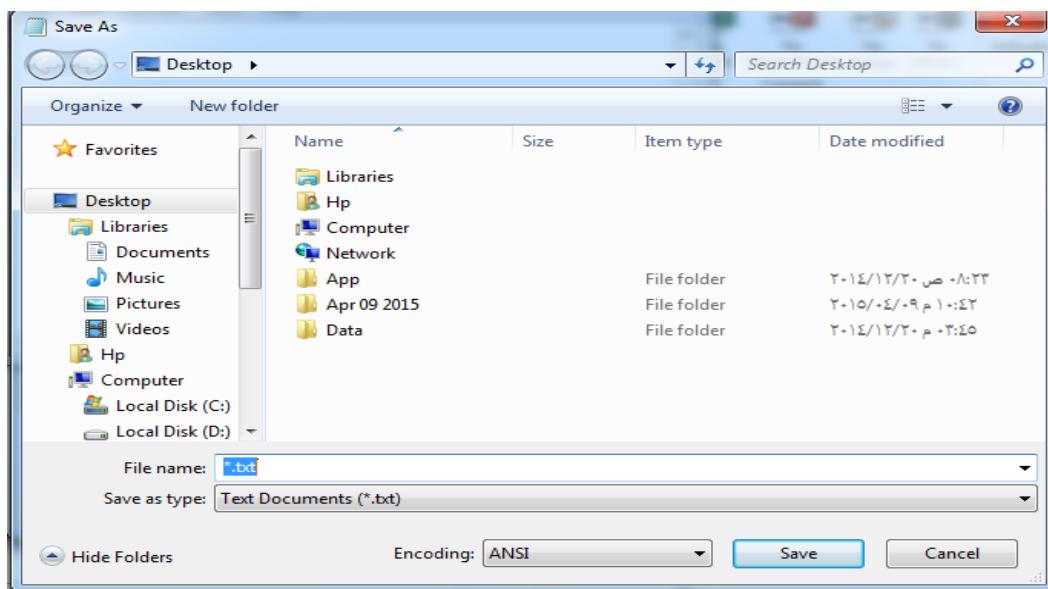
- Right click on the folder / file.
- Click Rename.
- Type a new name.

Saving a File

When the user saves a document for the first time, the user needs to give it a name. To save a file, follow this procedure:

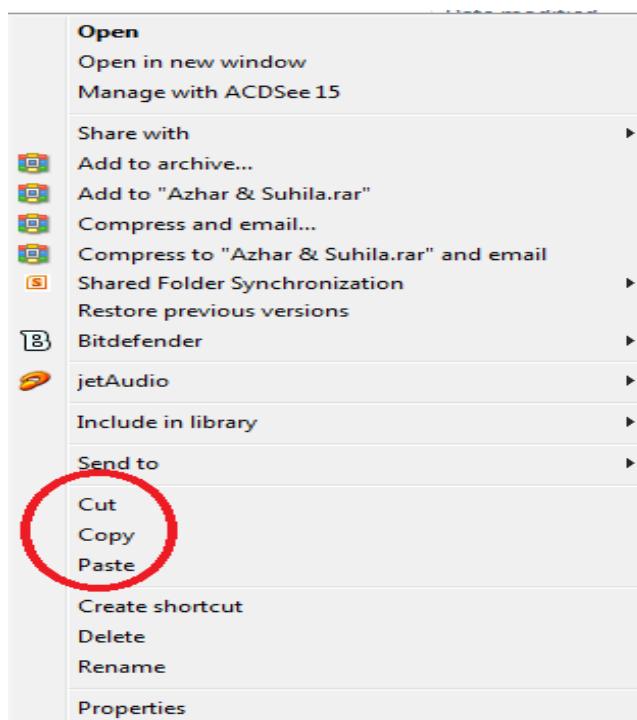
- Click File, Save As.
- From the Save in: drop down box select the disk and folder where the document file will be saved.
- Type a name for the document in the File Name: box.
- Click Save.





Duplicating (Moving) Files and Folders from one folder / directory to another.

- Select the files / folders you wish to duplicate / move.
- Right click on the folder / file, then click Copy (to duplicate) or Cut (to move).
- Open the folder where you want to paste the files / folders and right click on any empty space, click Paste.



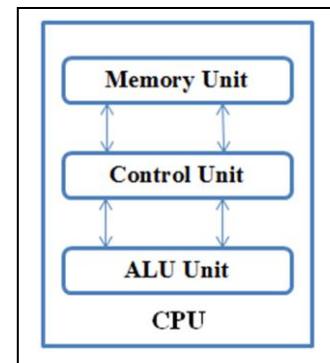
Computers Laboratory (4)

Central Processing Unit (CPU) also called a processor, is located inside the computer case on the motherboard. It consists of the following features:

- CPU is considered as the brain of the computer.
- CPU performs all types of data processing operations.
- It stores data, intermediate results, and instructions (program).
- It controls the operation of all parts of the computer.

CPU itself has the following three components:

1. Memory Unit : This unit can store instructions, data, and intermediate results.
2. Control Unit: This unit controls the operations of all parts of the computer but does not carry out any actual data processing operations.
3. ALU (Arithmetic Logic Unit): perform arithmetic and logic operations like addition, subtraction, multiplication, division, comparing, matching, and merging of data..



Memory

Memory is primarily of three types:

1. **Cache Memory**
2. **Primary Memory/Main Memory**
3. **Secondary Memory**

1-Cache Memory

Cache memory is a very high speed semiconductor memory which can speed up the CPU. It acts as a buffer between the CPU and the main memory. It is used to hold those parts of data and program which are most frequently used by the CPU.

2-Primary Memory (Main Memory)

It is divided into two subcategories RAM and ROM.

- ❖ **RAM (Random Access Memory)** is the internal memory of the CPU for storing data, program, and program result. It is read/write memory which stores data until the machine is working. RAM is volatile, i.e. data stored in it is lost when we switch off the computer.
- ❖ **ROM (Read Only Memory)** is the memory from which we can only read but cannot write on it. This type of memory is non-volatile. The information is stored permanently in such memories during manufacture. A ROM stores such instructions that are required to start a computer. This operation is referred to as **bootstrap**.

The differences between RAM and ROM are shown in the following table:

	Key	RAM	ROM
1	<i>Definition</i>	RAM stands for Random Access Memory.	ROM stands for Read Only Memory.
2	<i>Data Retention</i>	RAM data is volatile. Data is present till power supply is present.	ROM data is permanent. Data remains even after power supply is not present.
3	<i>Data Access</i>	RAM data can be read, erased or modified.	ROM data is read only.
4	<i>Usage</i>	RAM is used to store data that CPU needs for current instruction processing.	ROM is used to store data that is needed to bootstrap the computer.
5	<i>Speed</i>	RAM speed is quite high.	ROM speed is slower than RAM.
6	<i>CPU Access</i>	CPU can access data stored on RAM.	Data to be copied from ROM to RAM so that CPU can access its data.
7	<i>Capacity</i>	RAM memory is large and high capacity.	ROM is generally small and of low capacity.
8	<i>Cost</i>	RAM is relatively expensive memory.	ROM is cheaper than RAM

Window 7

Delete Files/Folders

- To delete a file, simply right click on it and click Delete. The same procedure can apply for a folder.
- The deleted files and folders are placed in the Recycle Bin where the user can permanently delete or restore them.

To permanently delete a file / folder:

- Double left click on the Recycle Bin, then right click on the file / folder that the user wishes to remove permanently, then click on delete.



Restore files, folders from the recycle bin

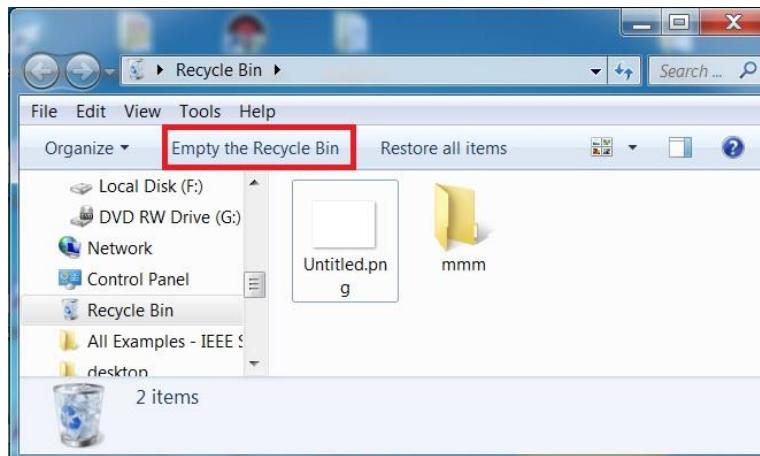
To restore a file / folder:

- Right click on the file / folder (in the Recycle Bin) and click on restore. The file will be restored to its original location.

Empty the recycle bin.

There are two ways to empty the Recycle Bin:

- Either double click on the Recycle bin to open it. Click on Empty Recycle Bin tab.



- Or right click on the Recycle Bin icon, Click, Empty Recycle Bin



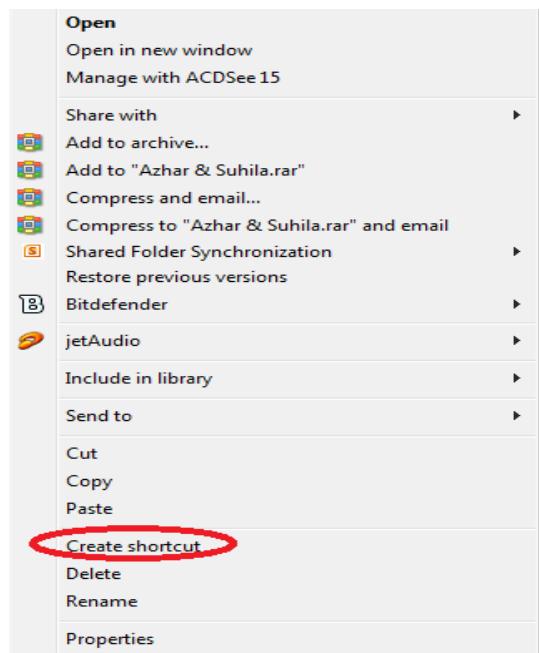
Creating Desktop Shortcut Icons

Sometimes it might be necessary for the user to create a shortcut on the desktop. Usually the reason behind this is that the user uses a particular file / folder on a regular basis and the user wants to be able to open it easily and quickly. To create a new shortcut:

- Right click on a file / folder.
- Move the pointer to send to.
- Click Desktop (Create Shortcut). A shortcut to that file / folder will be created on the desktop.

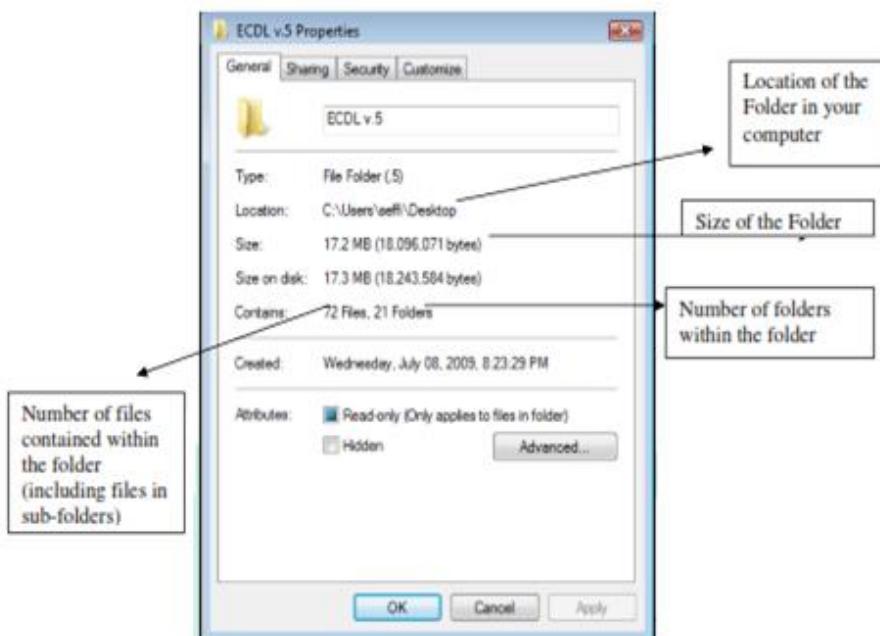
Creating a Shortcut to another Location on the Computer

- Right click on a file / folder.
- Click create shortcut.
- The shortcut will be created next to the selected file / folder.



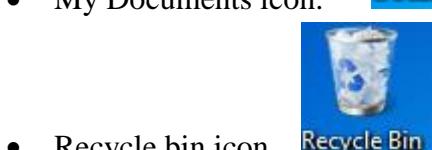
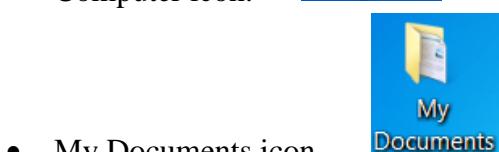
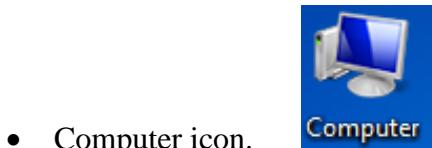
Open a window to display folder name, size, and location on a drive.

- Right click on the folder.
- Click Properties. The following window will appear:

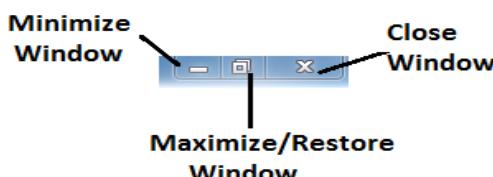


Desktop Icons

An **icon** is a small graphical representation of a program or file. When the user double-click an icon, the associated file or program will be opened.

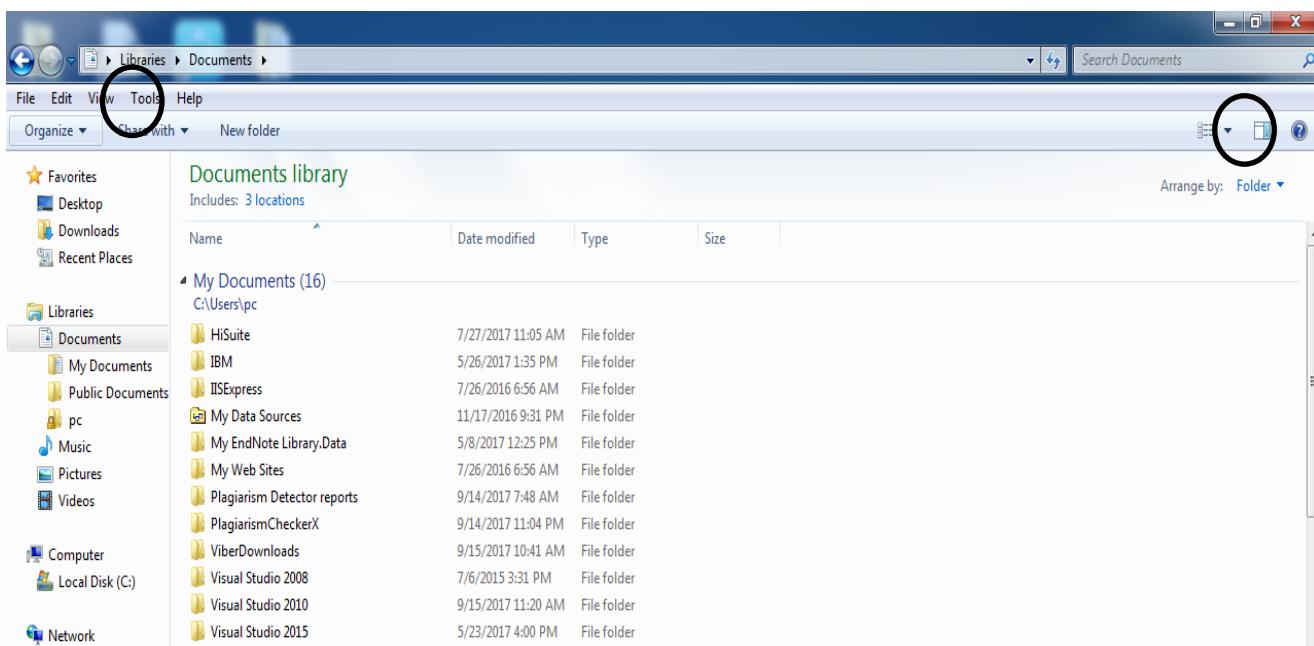


The opened windows contains three buttons in its title bar:

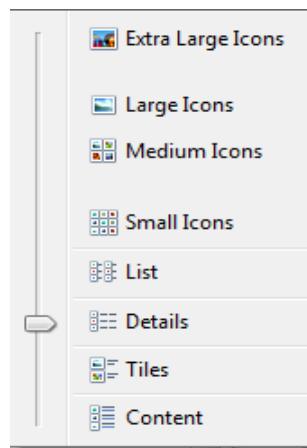


The Windows Explorer Views

The Views icon allows the user to set the view to display files. Open documents icon from desktop or from start menu, select view menu



The down arrow displays the following options.



- **Extra large icons and Large icons** : Displays larger icon sizes compared to other views with their names.
- **Medium icons** - Displays medium-sized icons of the files and folders with their names.
- **Small icons** - Displays small icons of the files and folders with their names.
- **List:** Displays all files/folders in list format split into multiple columns.
- **Tiles:** Displays only the file titles.
- **Details:** Displays all files and associated file details such as name, size, type, and last accessed date in a single column.
- **Content** - Displays medium-sized icons, with the file name, type, size, and dates.

Sort files

The files displayed in Documents window can be sorted by name, size, file type and Date / time of last modification:

- Click View, Details.
- Click the appropriate header:

Name	Date modified	Type	Size
Downloads	2010-05-11 09:33	File folder	
frames	2012-12-24 14:03	File folder	
Intel	2012-07-21 14:17	File folder	
PerfLogs	2009-05-15 06:17	File folder	
Program Files	2010-07-21 07:32	File folder	
Program Files (x86)	2010-05-21 07:05	File folder	

Computers Laboratory (5)

Memory & Ports

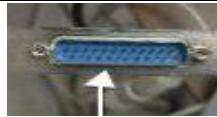
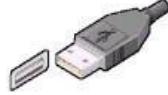
3. Secondary Memory This type of memory is also known as external memory or non-volatile memory. It is slower than the main memory. These are used for storing data/information permanently. CPU directly does not access these memories, instead they are accessed via input-output routines. The contents of secondary memories are first transferred to the main memory, and then the CPU can access them.

The most common **forms of secondary storage devices**:

- ❖ **Hard Disk Drive (HDD)** are non-volatile magnetic storage devices capable of storing vast amounts of data. An electromagnet in the read/write head charges the disk's surface with either a positive or negative charge, this is how binary 1 or 0 is represented.
- ❖ **Solid State Drive (SSD)** are non-volatile storage devices capable of holding large amounts of data. They use flash memories (millions of transistors), giving them the advantage of having no mechanical moving parts and therefore immediate access to the data. It is faster than HDD.
- ❖ **Compact disc (CD) / Digital Versatile Disc (DVD)** are optical devices. Data is burned onto the surface of the disk using a laser in these drives. A laser is also used to read the data stored on the disk. A CD can store around 650 Mb of data. DVD can store about 4.7Gb-9Gb.
- ❖ **Universal Serial Bus Flash Memory (USB Flash Memory)** are non-volatile solid state storage devices which use flash memories (millions of transistors) to store data.

Ports

A **port** is a connection point used as an interface between the computer & the peripherals like keyboard, mouse, printer, display unit, monitor, flash drive and speaker, etc. There are several types of external ports that usually come with a computer:

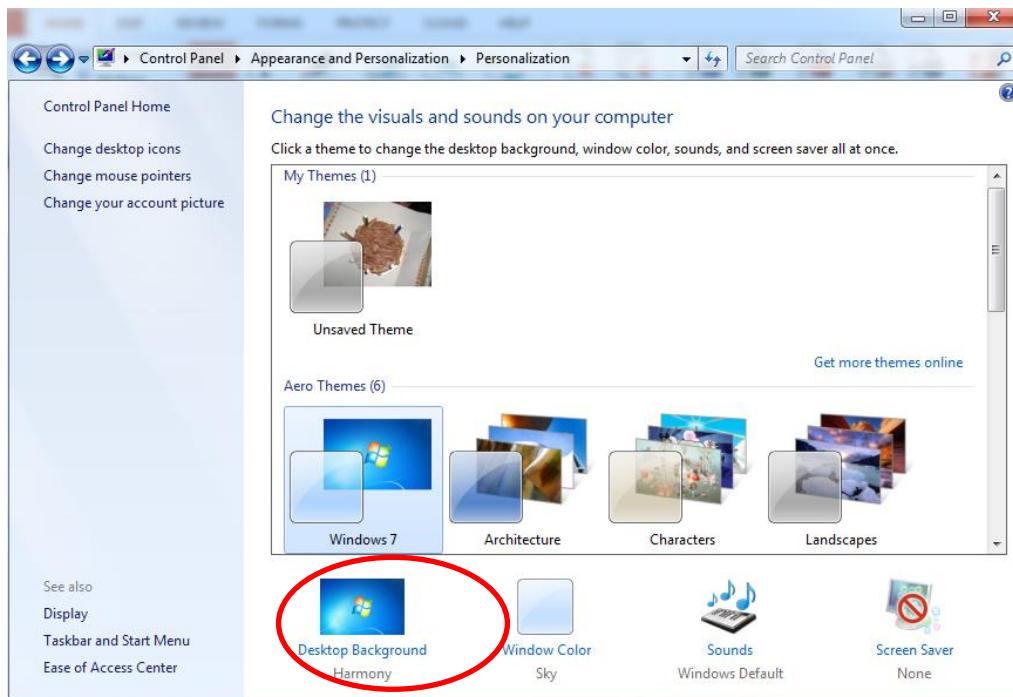
Parallel ports Used for scanners and printers. Also called printer port	
Serial ports Used for external modems	
PS/2 Port Used for old computer keyboard and mouse	
USB (Universal Serial Bus) ports It can connect all kinds of external USB devices such as external hard disk, printer, scanner, mouse, keyboard, etc.	
VGA Port VGA stands for Video Graphics Array. It connects monitor to a computer's video card.	

Window 7

Customizing the Desktop

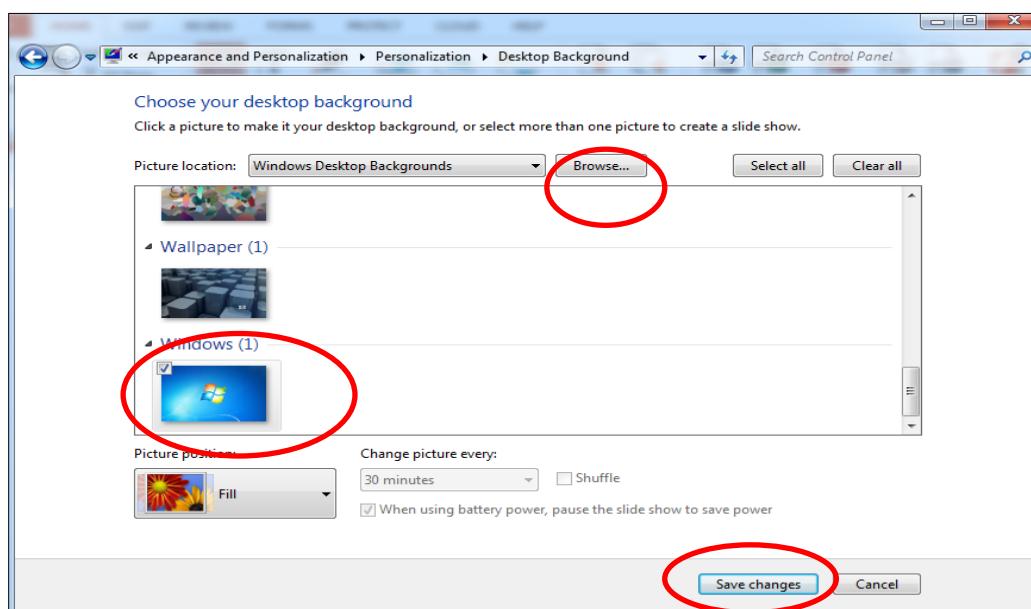
Right click in an empty space on the desktop. Click on **Personalize**.

Click on Desktop Background.



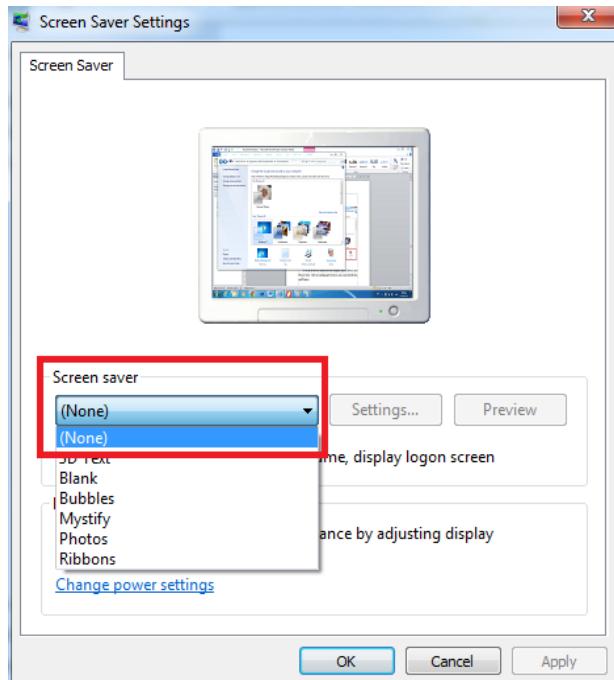
Select a picture then save change. Or click on Browse. Select background from file browser windows. Click

Ok then save change



Change the Screen Saver

Click on Personalization then on Screen Saver. From the window given choose the screen saver by clicking on the arrow under the text Screen Saver and choose from the list given



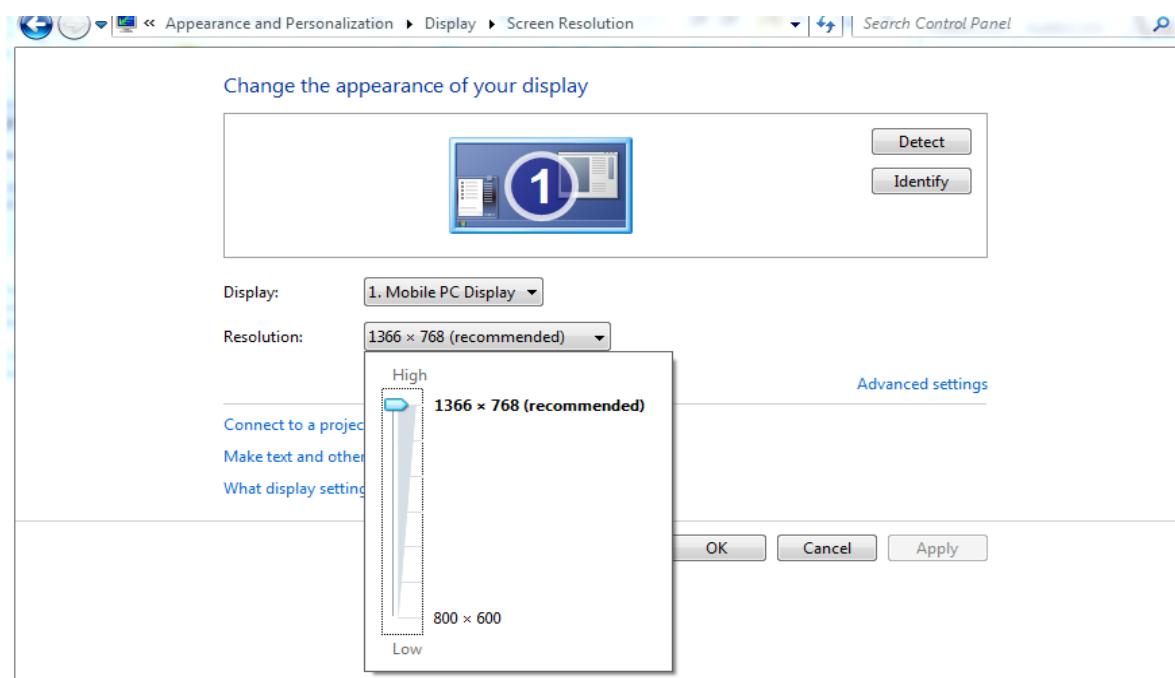
- Preview to see how the screen saver looks like. Also change the minutes to wait before the screen saver appears.

Change Screen Pixel Resolution

- Right click in an empty spot on the desktop. Click on **Screen Resolution**.



From there one can change the Resolution.



Print Screen

The user may be required to capture full screen images from the computer screen to do this:

- Locate the print screen button on the keyboard and press it once. This will take a picture of the current screen.
- Open a document (e.g. Word processor or Paint), and click Paste.

Cleaning Up the Disk

The user can safely remove redundant or unnecessary files from the hard disk by using the Disk Cleanup program. These files consist of temporary files that Windows creates or makes copies of when installing or uninstalling programs, paths to Web sites visited, temporary data files, or the status of an application program when it stopped responding.

Disk cleanup can be run using one of the following methods:

- Click Start→ All Programs→ Accessories→ System Tools→ Disk Cleanup, select the hard drive the user wants to clean up and click OK.
- Open My Computer. Right-click the local disk, then click Properties. Click the General tab and then Disk cleanup.

The length of time to calculate the space depends on when this command was last used. Once Disk Cleanup finishes from calculating the amount of space the user may be able to free up, the user will see a dialog box similar to:

Defragmenting the Disk

A file may be stored in a single contiguous space or in the first space available. Over time, Fragmentation occurs when the file system cannot or will not allocate enough contiguous space to store a complete file as a unit, but instead puts parts of it in gaps between existing files. The Disk Defragmenter program reorganizes how information is stored on a hard disk so files reside in a contiguous section. This is also called the “Defrag”, and a common method to reduce problems with accessing information or speed up the access time. Disk Defragmenter runs on a schedule, but you can also analyze and defragment your disks and drives manually.

Disk Defragmenter can be run using one of the following methods:

- Click Start, All Programs→Accessories→ System Tools→ Disk Defragmenter.
- Open My Computer. Right-click the local disk to defragment, then click Properties. Click the Tools tab and then Defragment Now.

To determine if the disk needs to be defragmented or not, click **Analyze disk**. Once Windows is finished analyzing the disk, you can check the percentage of fragmentation on the disk in the Last Run column. If the number is above 10%, you should defragment the disk. Click **Defragment disk**.

Computers Laboratory (6)

Software

Software is any set of instructions that tells the hardware what to do. System software is responsible for controlling and managing the hardware components of a computer system. There are three types of software:

- Operational Software (Operating System).
- Application Software.
- Programming language.

Operating System is a special type of programs which is loaded automatically when the user starts the computer. Four popular personal computer operating systems are Windows, Mac OS, Unix and Linux.

Application Software includes programs designed to make users more productive and/or assist them with personal tasks. Application software has a variety of uses:

1. To make business activities more efficient.
2. To assist with graphics and multimedia projects.
3. To support home, personal, and educational tasks.
4. To facilitate communications.

Types of application softwares

- **Word-processing software** (enables the user to create and edit documents such as MS-word, Notepad, Wordpad etc.).
- **Spreadsheet software** (allows users to perform calculations. They simulate paper worksheets by displaying multiple cells that make up a grid such as Excel, Lotus 1-2-3 and Apple Numbers).
- **Presentation Software** (is the software used to display information in the form of a slide show such as Microsoft PowerPoint).
- **Database Software** (allows the users to store and retrieve data from databases such as Oracle, MSAccess, etc).
- **Multimedia Software** (It allows the users to create and play audio and video media. It is capable of playing media files such as **Real Player and Media Player**.
- **Graphic design Software** (allows the users to produce pictures, advertisements such as photoshop, etc).

Programming Languages are commands that users activate to complete a task.

- Low level language or Machine Level Language
- Assembly Level Language or Middle level language
- High Level Language. Popular programming languages include C++, Visual C#, Visual Basic, JavaScript, and Java.

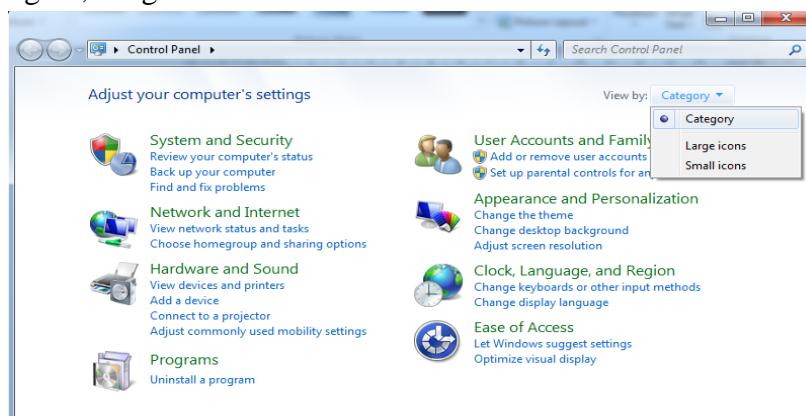
A programmer develops software or writes the instructions that direct the computer to process data into information.

Windows 7 **Control Panel**

The Control Panel in Windows 7 is the place to make changes to various settings of the computer system and to control most Windows commands and features using the various options and sliders in the Control Panel. To open the Control Panel, click the **Start button** on the taskbar and then click Control Panel on the Start menu. Windows 7 has **three different views** for looking at the computer's Control Panel.

A. Category view

By default, the Control Panel is displayed in Category view, which is separated into **eight categories**: System and Security, User Accounts, Network and Internet, Appearance and Personalization, Hardware and Sound, Clock, Language, and Region, Programs and Ease of Access.



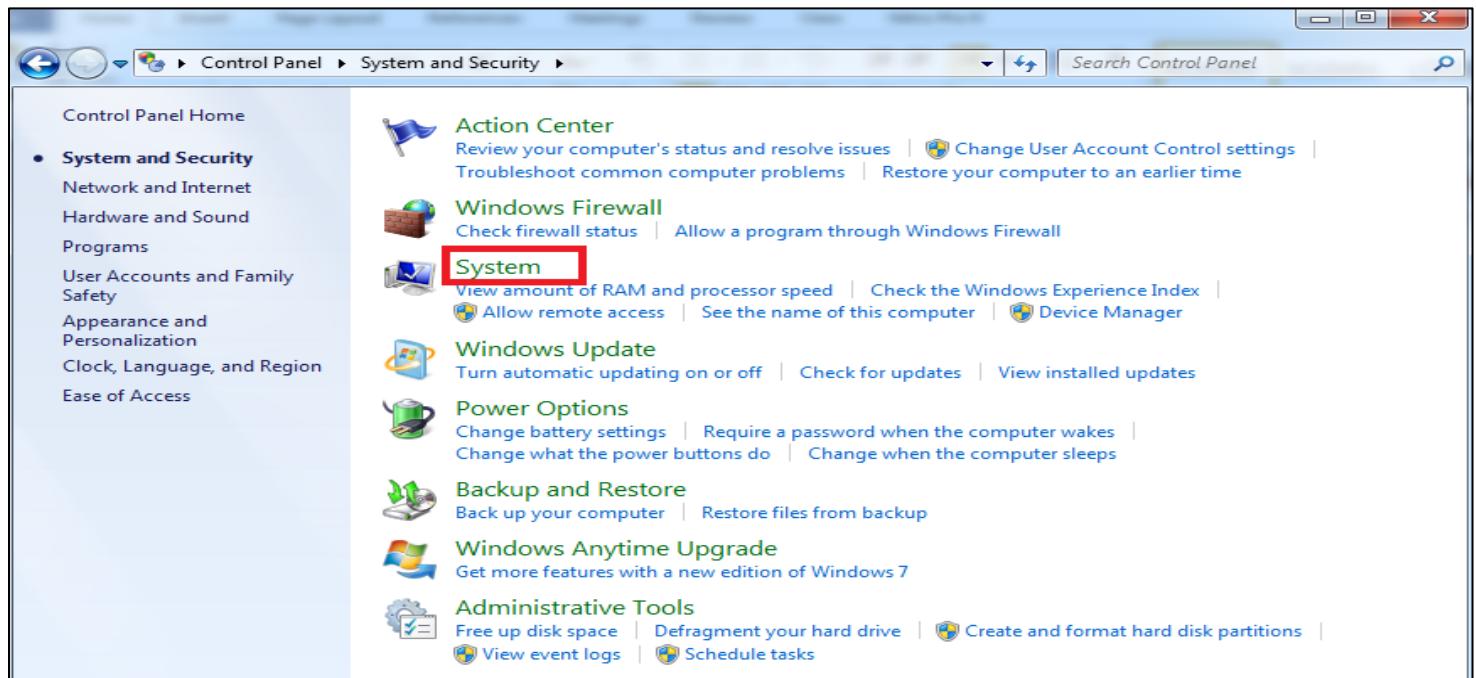
B. Icon views

The Control Panel's other two views are Large Icons view and Small Icons view. When the Control Panel is in one of the icon views, Windows displays an alphabetical listing of the **more than 50 Control Panel programs** on the system.

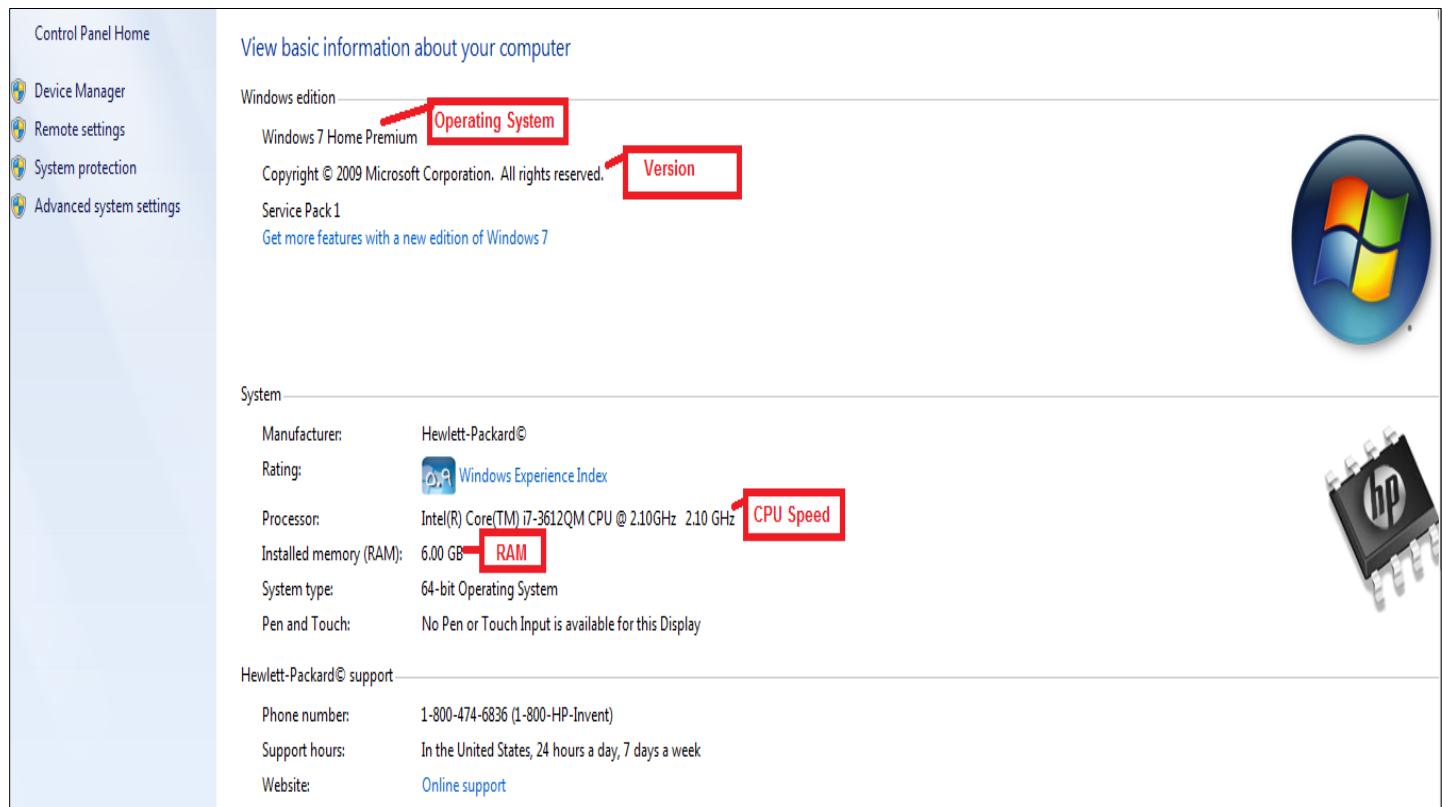
System and Security

View the computer's basic system information

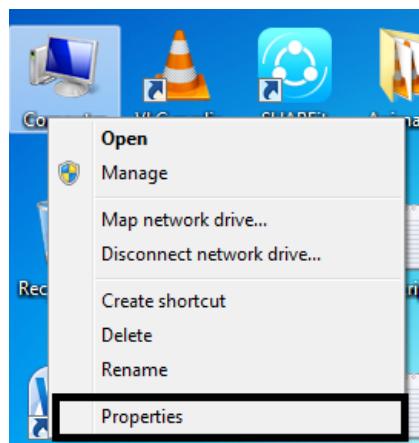
- Click on system and security in Control Panel.
- Click on System.



- The following window will be displayed:

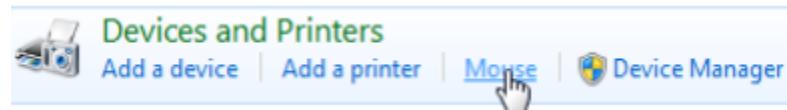


Also to view the computer's basic system information right click on My Computer icon on the desktop and select properties from drop down window.

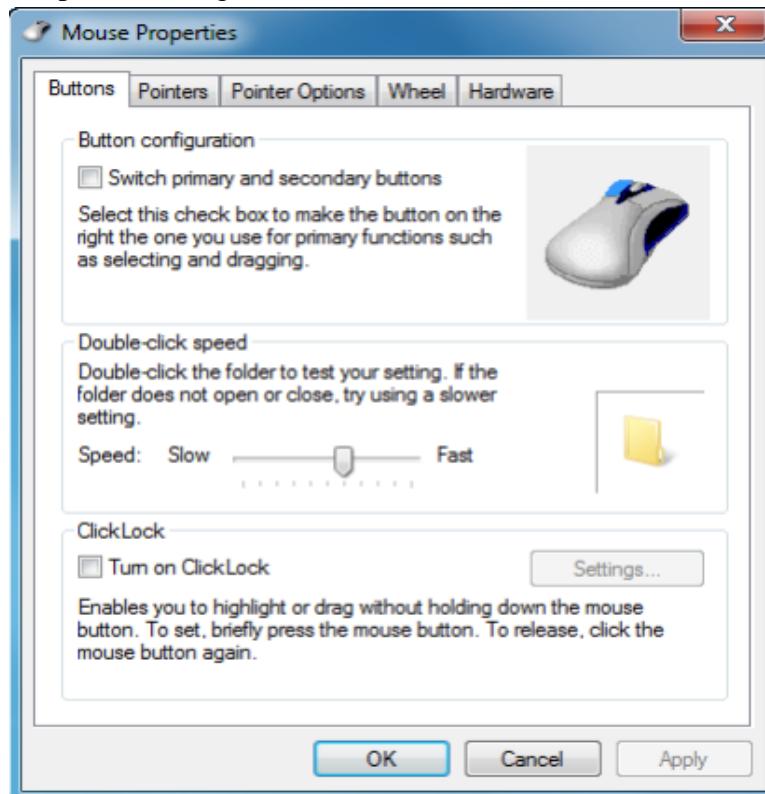


Hardware and Sound

Mouse: In the Control Panel, click Hardware and Sound and then click Mouse under the Devices and Printers heading.



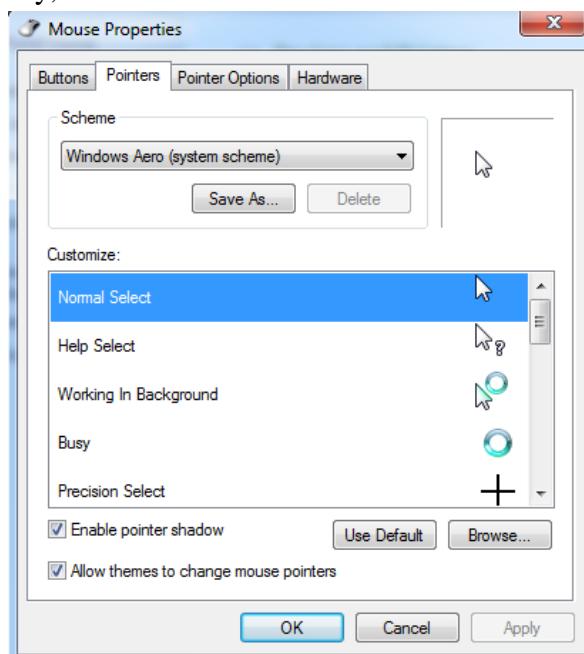
This will open the Mouse Properties dialog box:



Button configuration if the user is left-handed; he needs to reverse the function of the left and right mouse buttons.

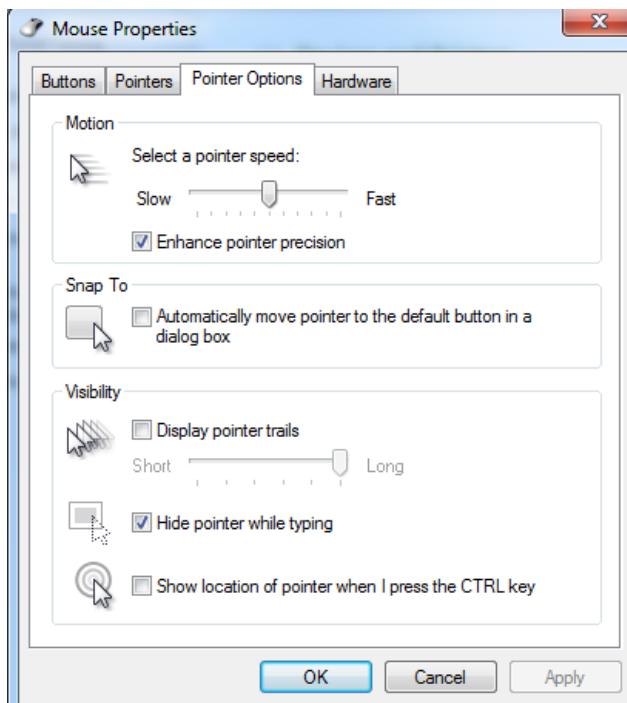
Double Click Speed the double-click is an important skill that needs to be mastered. Double-click can launch an application or open a file folder or CD.

Select shapes of Mouse Pointer on the Pointers tab the user can choose the type of pointer the mouse is to have when it moves, when it is busy, when it is used etc.



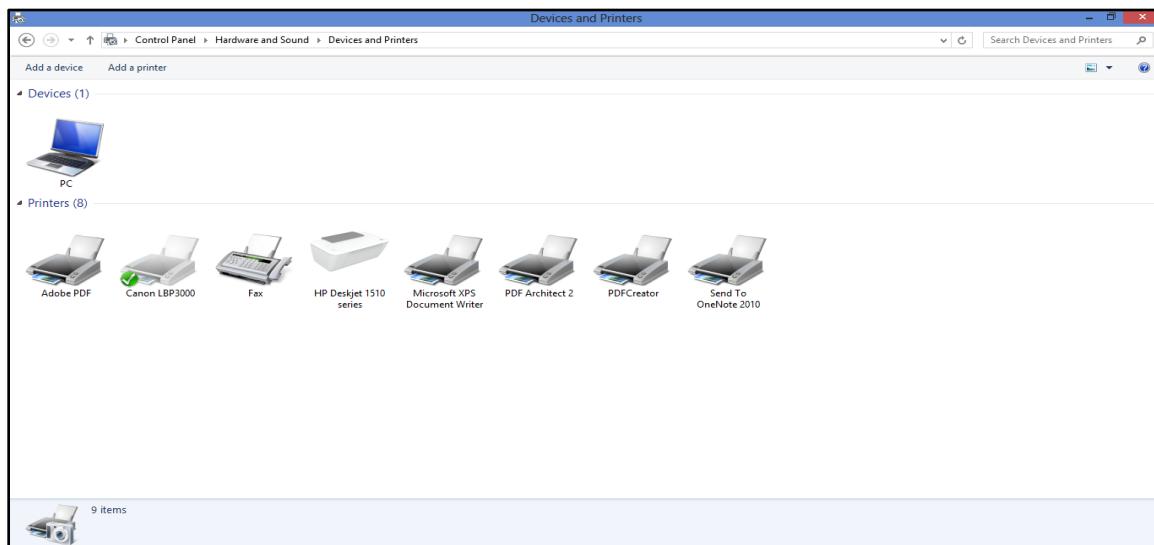
Mouse Pointer Speed

Sometimes changing the speed with which the Mouse reacts by moving the pointer on the line. To move the pointer, drag and drop it onto a new position. Click on the **Pointer Options** tab. Drag to slide to the right to increase the pointer speed.



View and manage devices

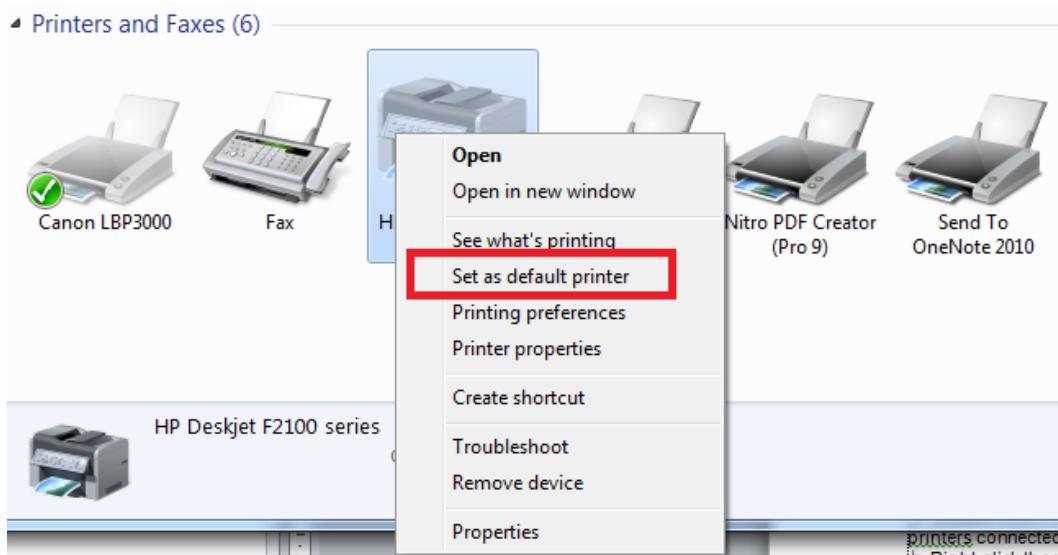
To see all the devices connected to the computer, click Hardware and sound in Control Panel. Click Devices and Printers.



Changing the Default Printer

The default printer is the printer to which a computer sends documents when selecting the Print command without first specifying which printer wanting to use with a program. There is only one default printer; it should be the printer that is using most often. To set a printer as the default printer:

- Click Hardware and Sound in Control Panel.
- Click Devices and Printers.
- The Devices and Printers window appears, showing a list of printers will be displayed.
- Right-click the name of the printer to set as a default printer.
- Click Set as Default Printer. The icon of selected printer will display a checkmark on the bottom left corner of the icon.

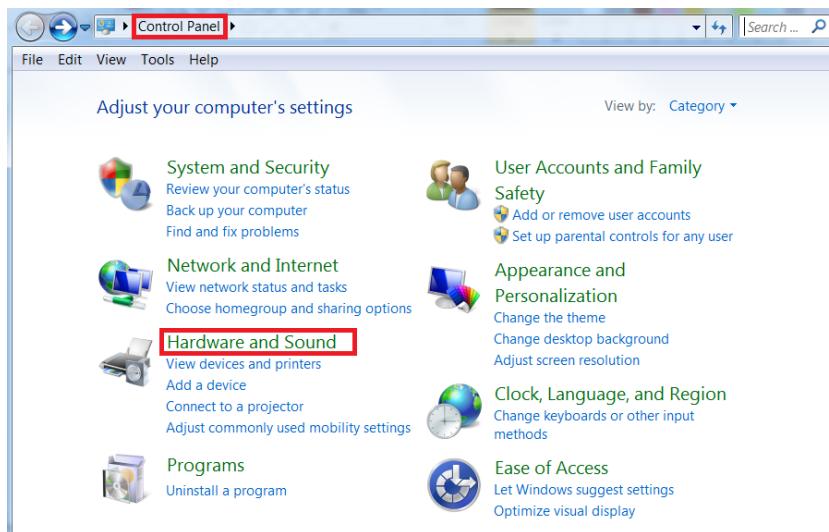


Or press the **start** menu and click **Devices and Printers** and then right-click the name of the printer to set as a default printer and click **Set as Default Printer**.

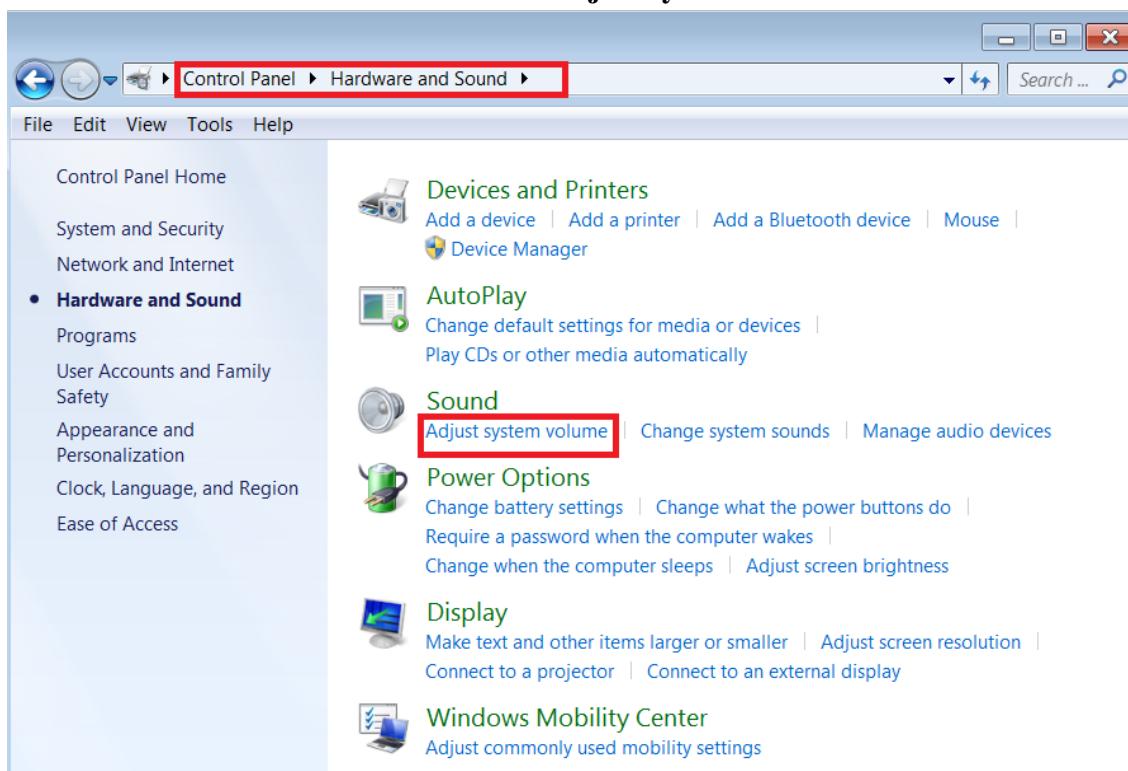
Setting the computer sound volume

In this case be careful not to make any changes, but simply know how to make setting the computer sound volume.

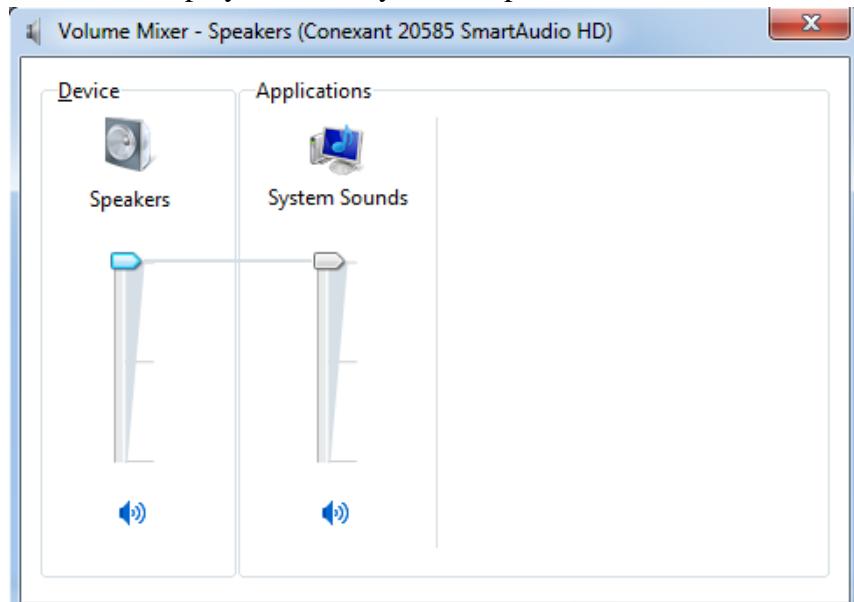
- Click on the **Hardware and Sound** command in Control Panel.



- This will display the **Hardware and Sound** dialog box.
- Within the **Sound** section click on the **Adjust system volume** link.



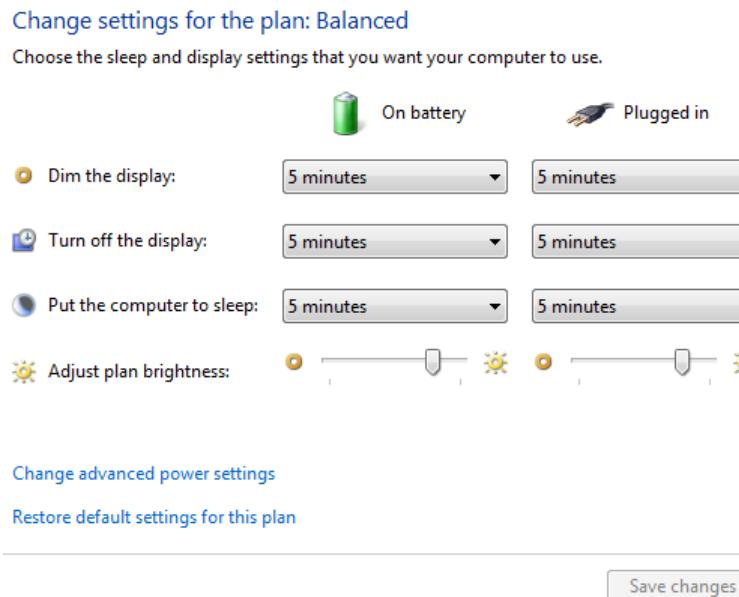
The user will see a slider control display and modify the computer volume.



Change the power setting

The user might want to change plans to save battery power on the laptop, or reduce energy consumption on a desktop at home or the office.

- Click Hardware and sound, click "Power Options"
- Click "Change battery settings". Click change plan settings. Select the power profile the user desire.



Computers Laboratory (7)

Storage Units

Bit (binary digit) refers to the smallest unit of information that can be stored in a machine. A bit has a single binary value, either 0 or 1.

Nibble : is a group of 4 bits

Byte : it is the basic unit in computer memory that is representing only one character. A character can be a number, letter or symbol. **One byte represents eight bits.**

There is also binary code for uppercase and lowercase letters:

The following table lists of storage units:

Unit	Shortened	Capacity
Bit	b	1 or 0 (on or off)
Byte	B	1B=8 bits
Kilobyte	KB	1KB=1024 bytes
Megabyte	MB	1MB=1024 kilobytes
Gigabyte	GB	1GB=1024 megabytes
Terabyte	TB	1TB=1024 gigabytes
Petabyte	PB	1PB=1024 terabytes
Exabyte	EB	1EB=1024 petabytes
Zettabyte	ZB	1ZB=1024 exabytes
Yottabyte	YB	1YB=1024 zettabytes

Factors affect the computer performance

1. Speed of CPU.
2. Size of RAM.
3. Speed and size of hard disk.
4. Multiple processes running on computer.
5. Video card.

Security and Keeping Information Safe

Information Security is a general term used to describe all kinds of security in a computerized environment. Information Security is not only about securing information from unauthorized access. Information Security is basically the practice of preventing unauthorized access, use, disclosure, disruption, modification or destruction of information.

The ways a virus can be transmitted onto a computer

- Downloads from the Internet.
- Pirated software.

- Exchange of diskettes.
- In attachments to emails and in emails themselves.
- In documents. Macro-viruses can be hidden in ordinary documents, spreadsheets and presentations. Macro-viruses make use of a special customization feature in applications called macros. Macros allow you to create mini-programs to carry out certain tasks in your applications.

There are a number of measures the user can take to protect themselves from viruses:

- Install good anti-virus software and update it on a regular basis.
- Scan all diskettes before reading them and be careful of using diskettes from unknown sources.
- Enable the auto-protection feature on the anti-virus software to scan emails.
- Be wary of emails from unknown sources, particularly if they contain attachments.
- Do not download files/software from unknown Internet sites.

Windows 7 Control Panel

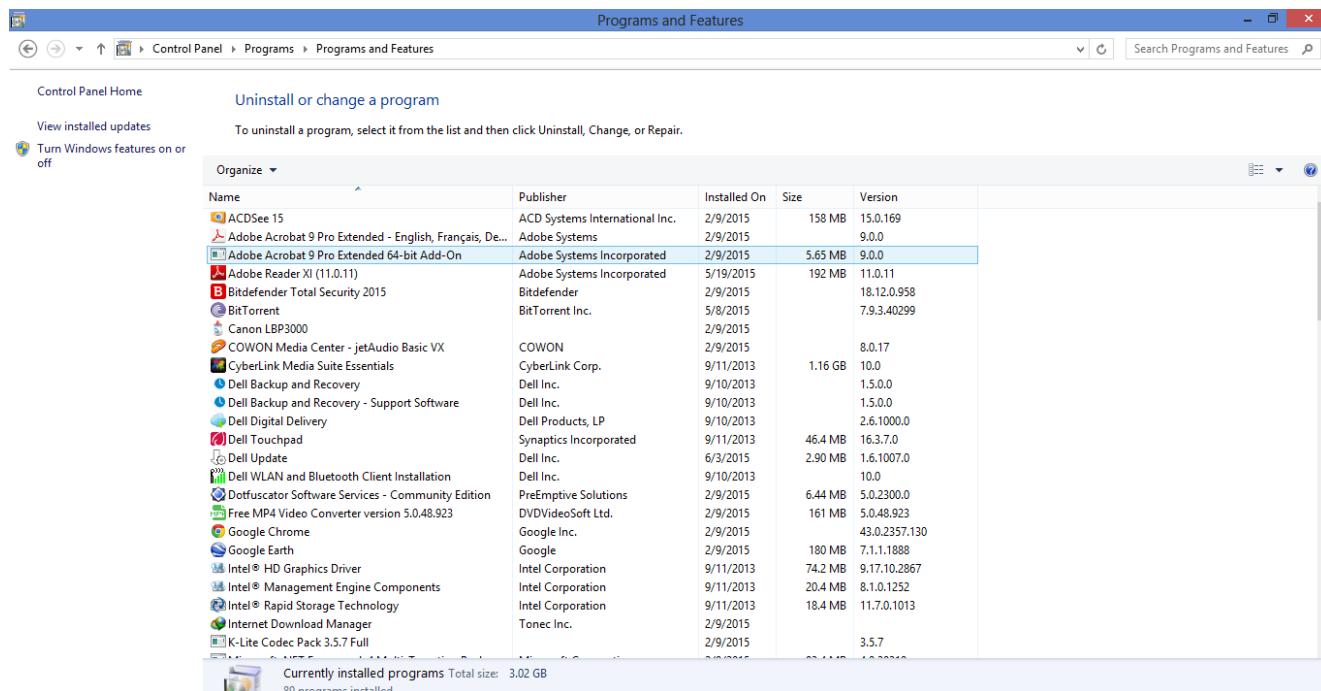
Programs

Removing Programs

Sometimes, programs can stop being useful or even start harming the computer, so it is necessary to remove them.

Open Programs and Features.

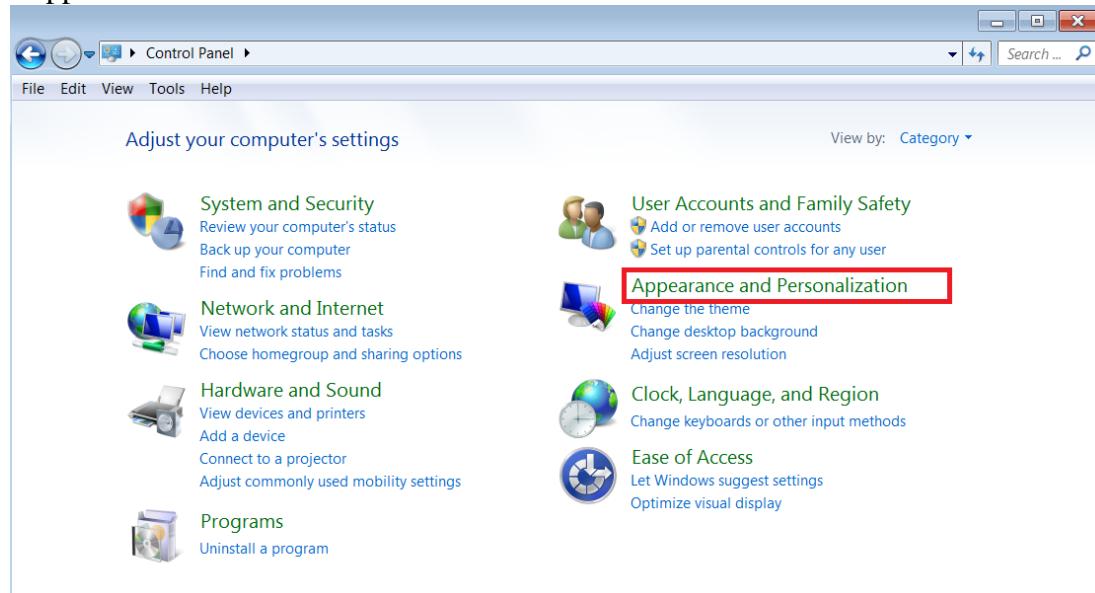
- The Control Panel is typically displayed in one of two different ways:
- In Category view, click the “Uninstall a program” link under the “Programs” category
- In Icon view, click the “Programs and Features” icon.



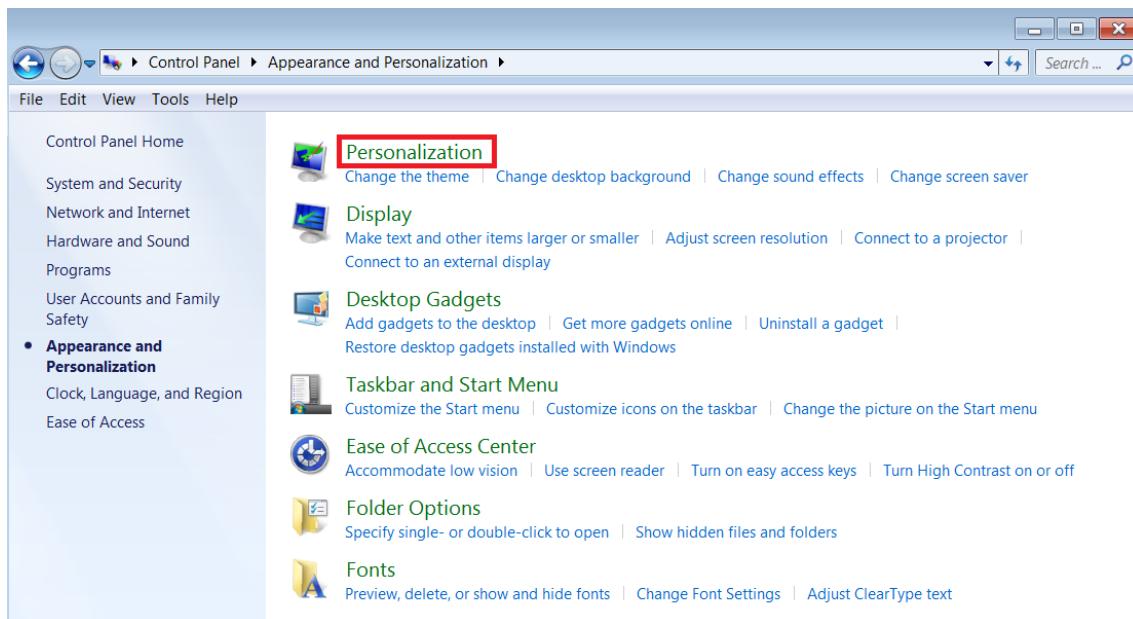
Appearance and Personalization

Changing the Desktop Background

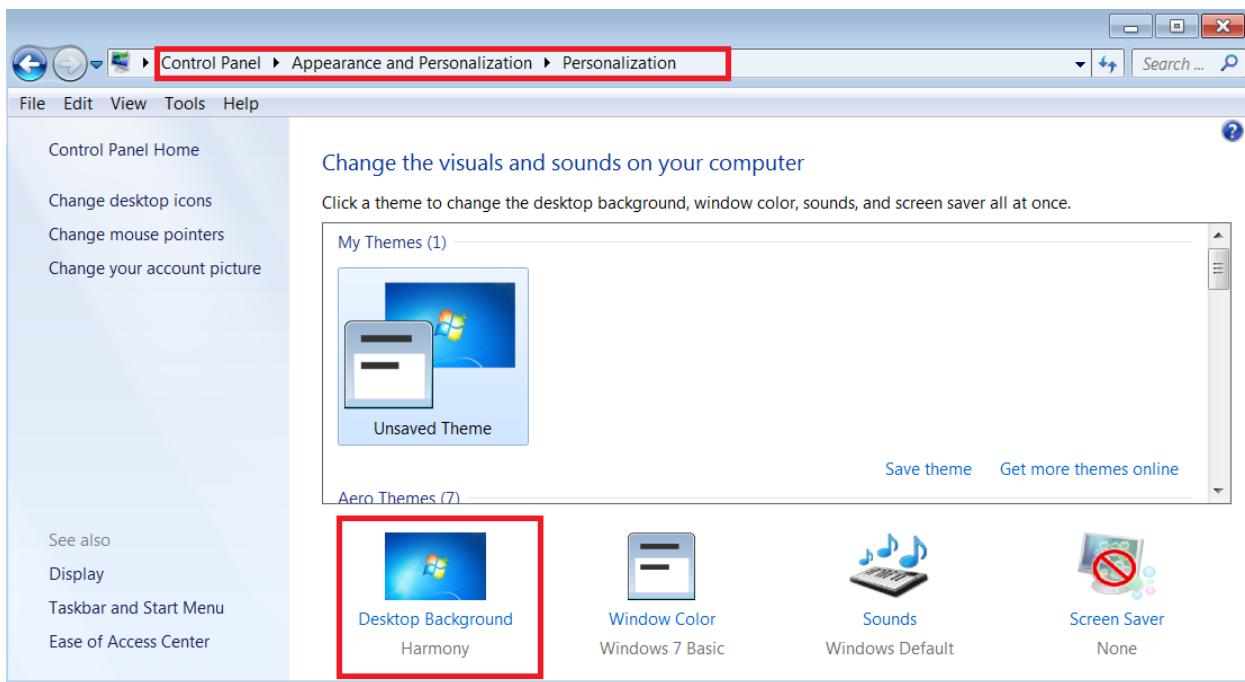
- Clicks on Appearance and Personalization.



- Click on Personalization



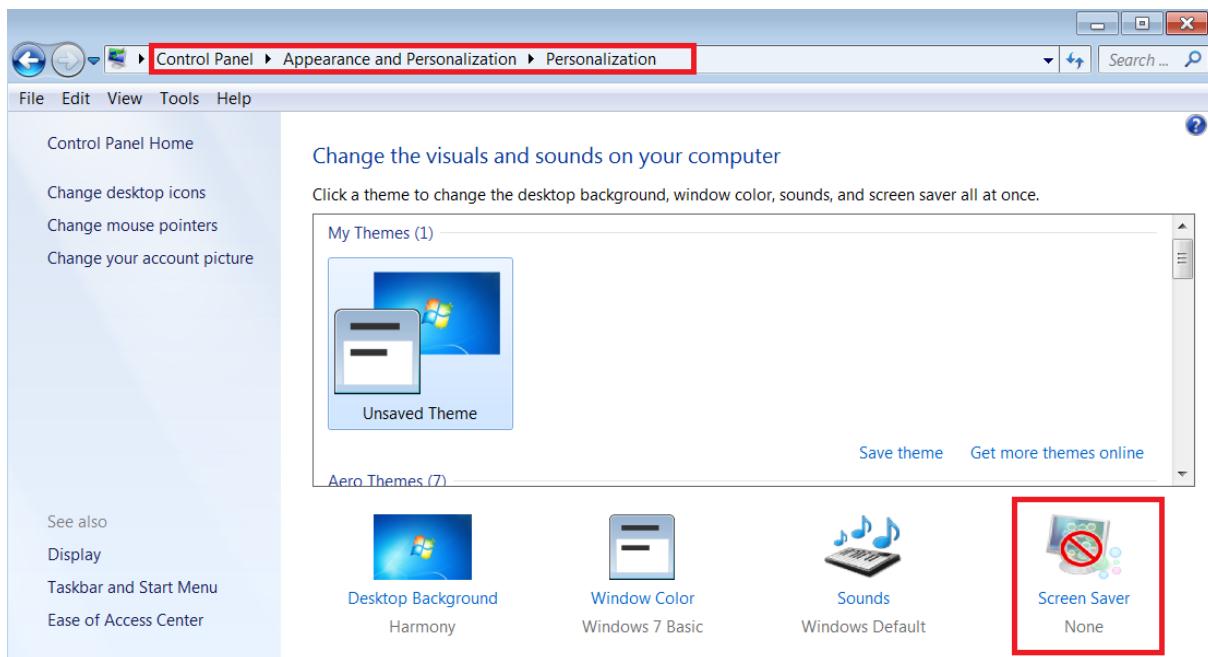
- Click on Desktop Background.

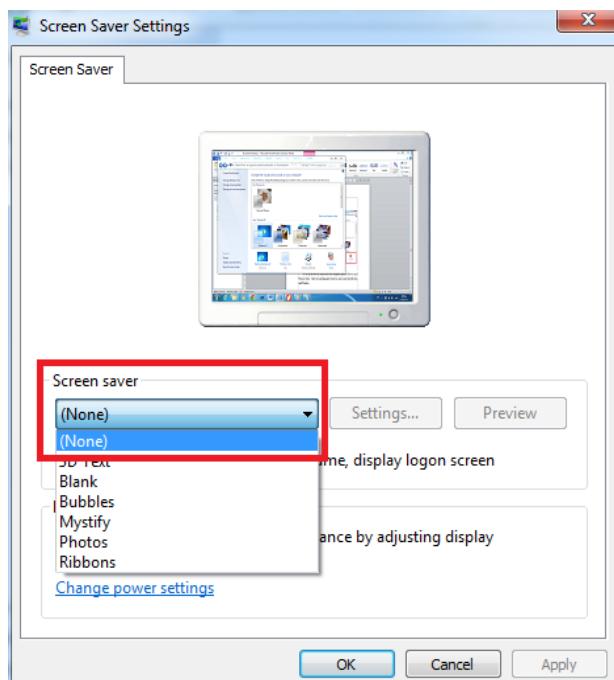


- Select a picture then save change. Or click on Browse. Select background from file browser windows.
- Click save change.

Change the Screen Saver

- Click on Personalization. Click on Screen Saver.
- From the screen saver settings window, choose the screen saver by clicking on the arrow under the text Screen Saver and choose from the given list.

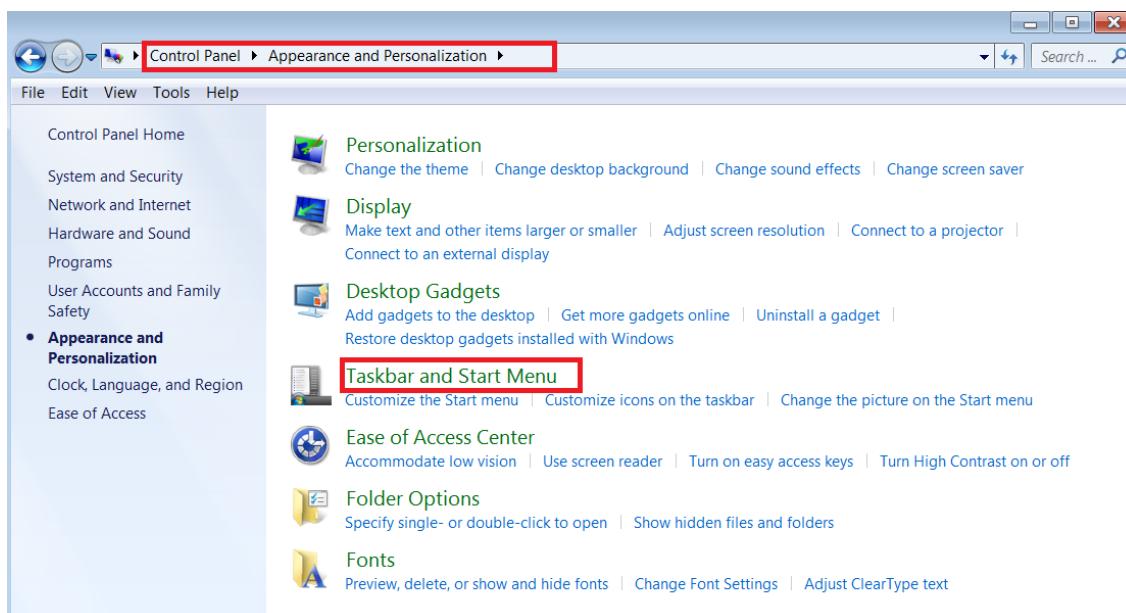


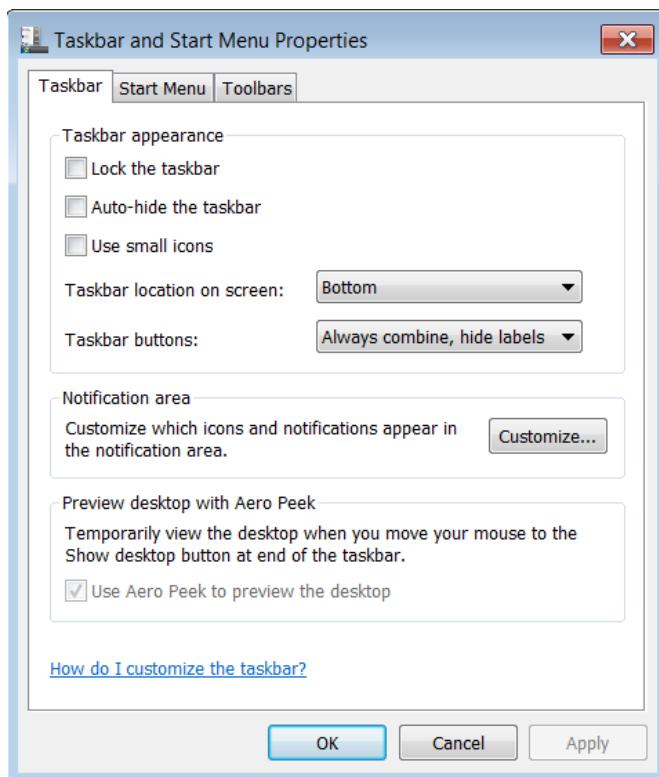


- Preview to see how the screen saver looks like. Also change the minutes to wait before the appearance of the screen saver.

Open Taskbar and Start menu Properties from Control Panel

Open Taskbar and Start Menu Properties by clicking **Control Panel**, clicking **Appearance and Personalization**, and then clicking **Taskbar and Start Menu**.

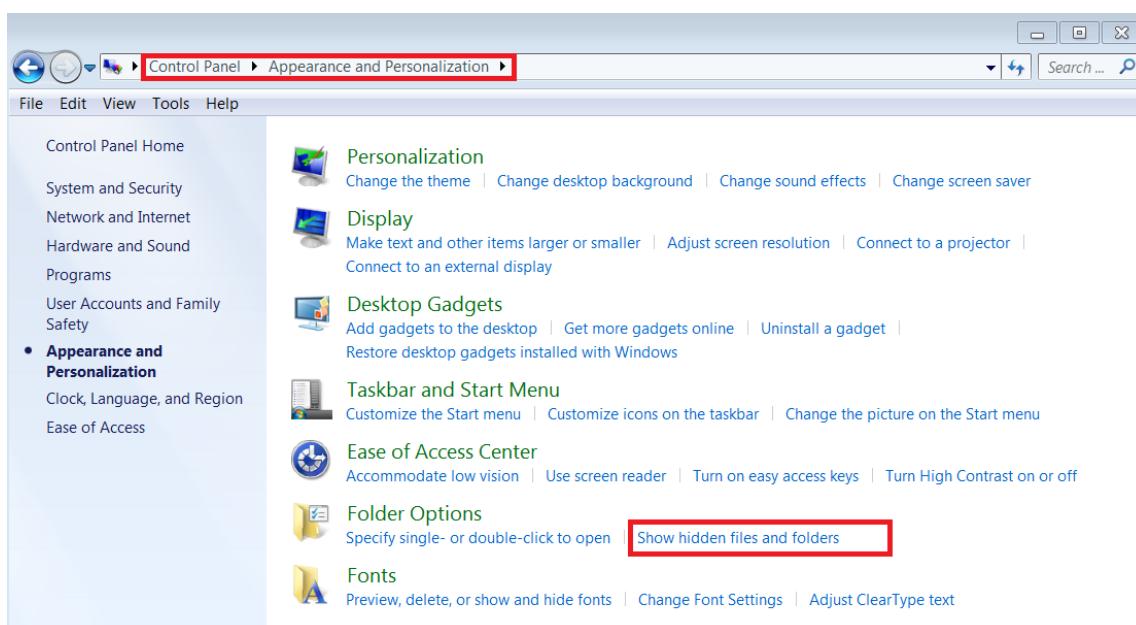




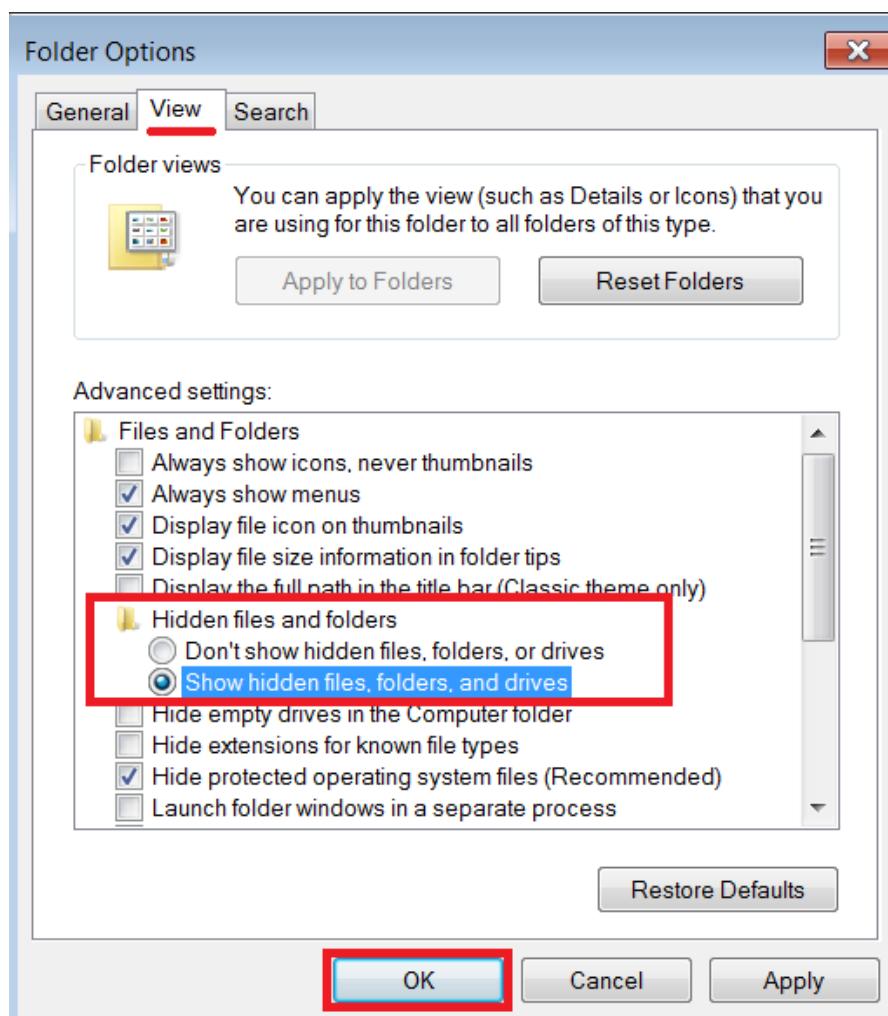
Show/ Hide the Hidden Files and Folders

Windows 7 hides important folders and files in order to keep users' files from modifying or deleting and subsequently damaging their files. Windows 7 does not show hidden files by default. To show hidden files and folders

- Click on Appearance and Personalization.
- Under Folder Options, Click show hidden files and folders.

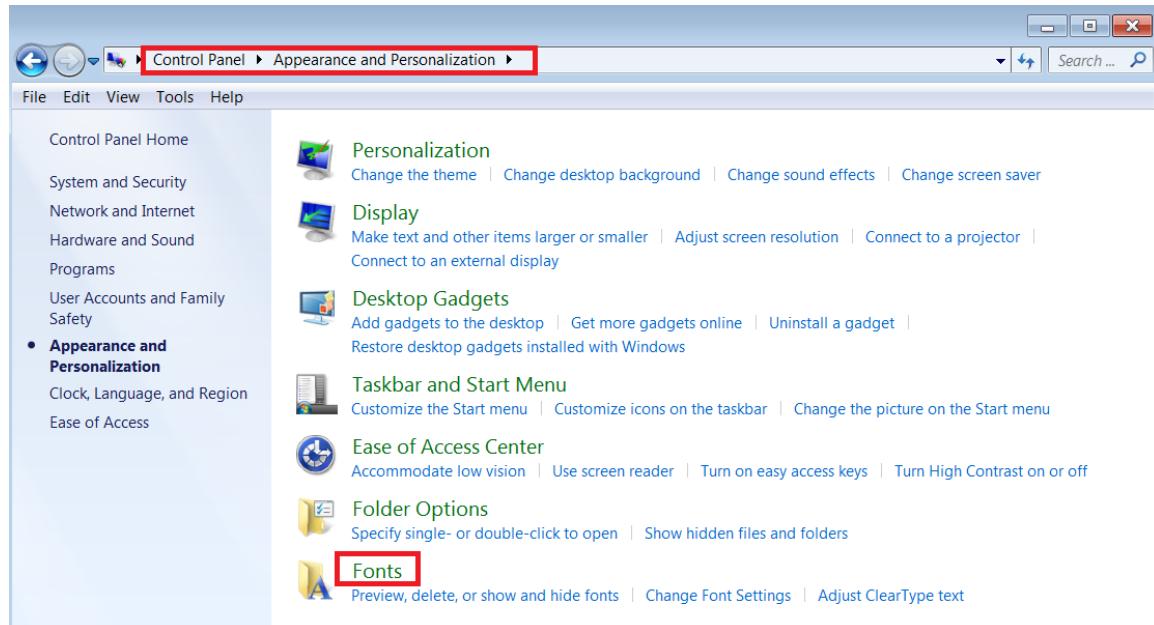


- Inside View tab in the Folder Options window, click show hidden files, folders, or drives and then click OK. The hidden files and folders will be shown.

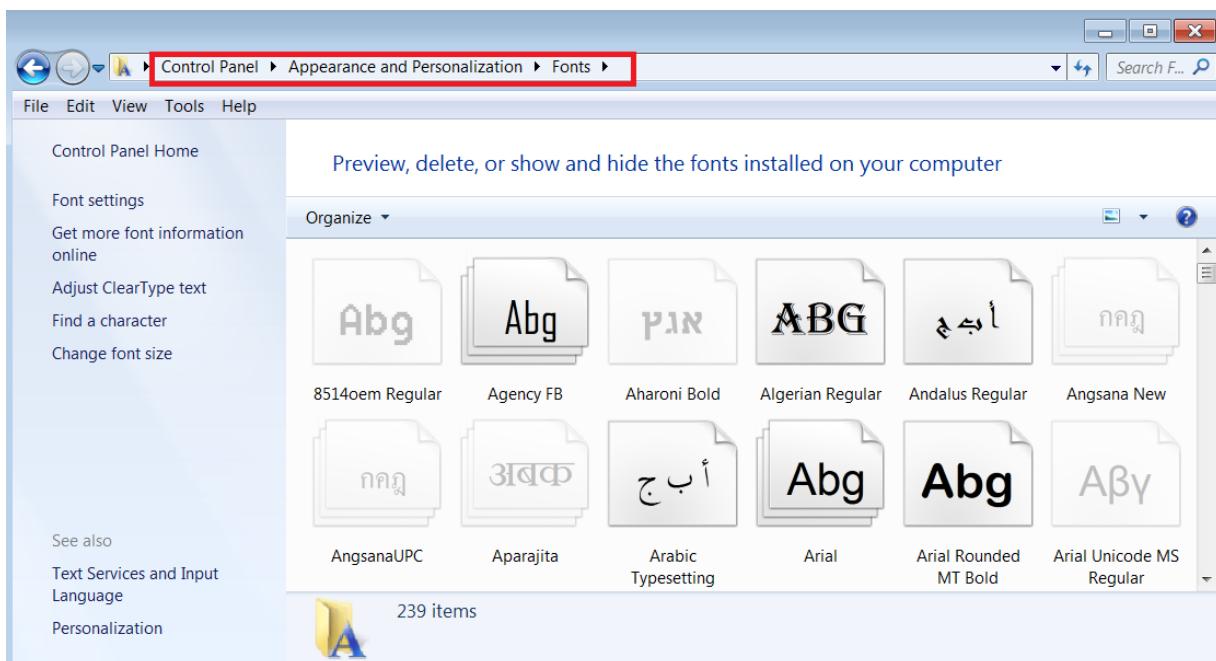


Adding Fonts

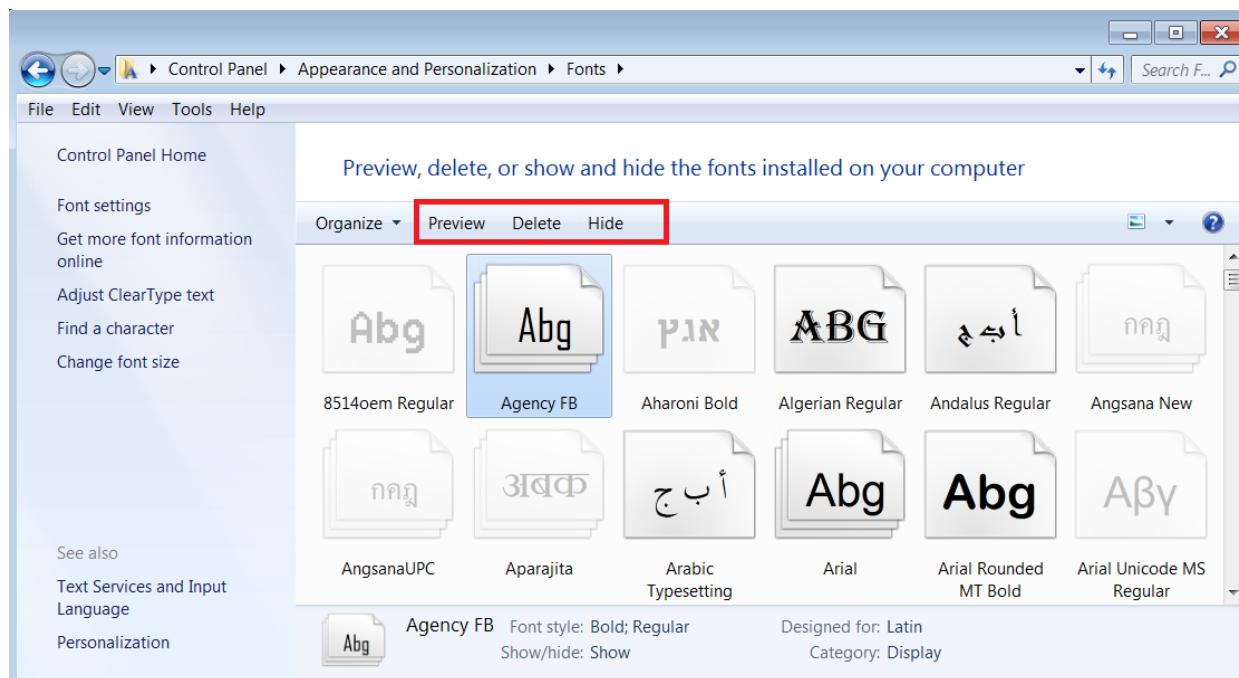
- Click Appearance and personalization command in Control Panel.
- The fonts that are installed in the computer can be seen by going to the Fonts Window. It is installed as part of the Operating System (OS).
- Then Click on **Fonts**.



- The user will see the following:



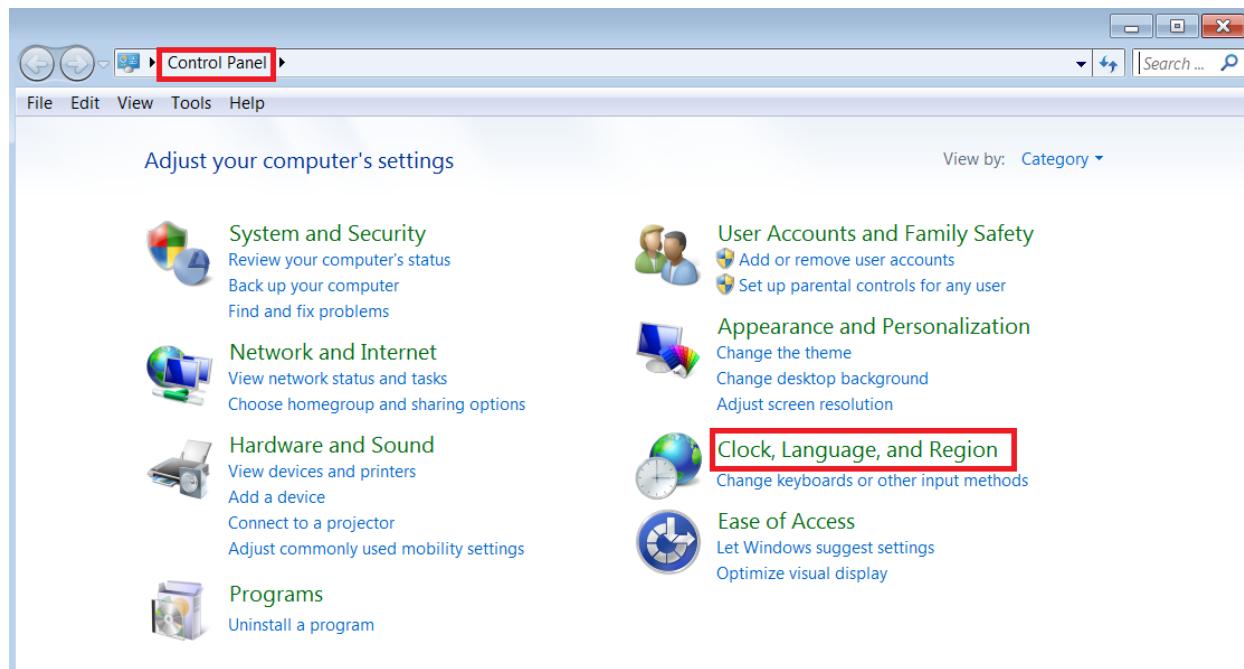
- By selecting a font , the user can preview, delete, or hide or show the selected font.



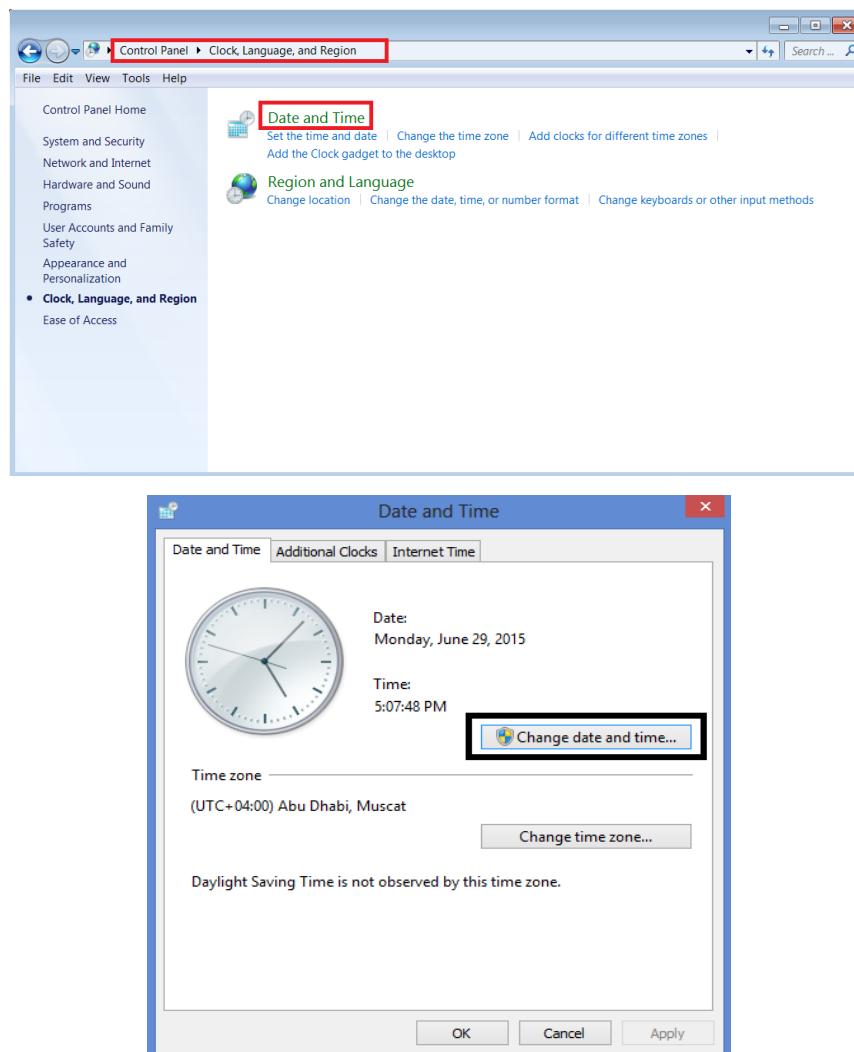
Clock, Language, and Region

Modifying the computer date and time

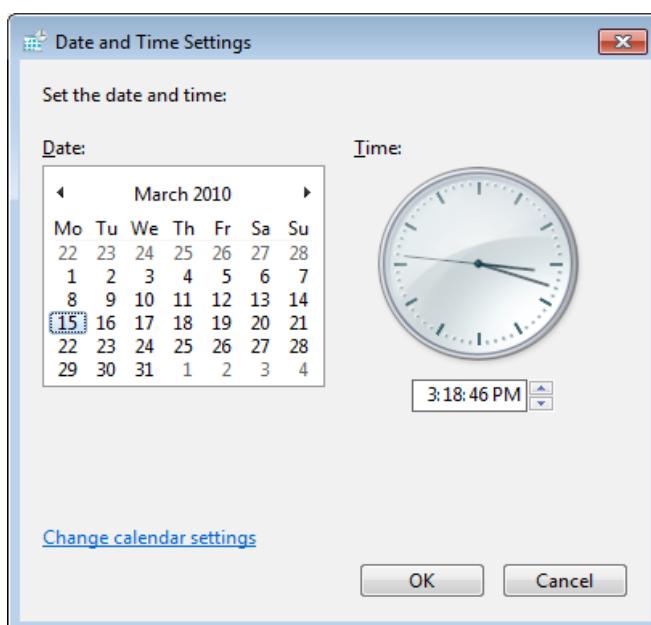
- Click on the Start button. Click on Control Panel, and then Click on the Clock, Language, and Region.



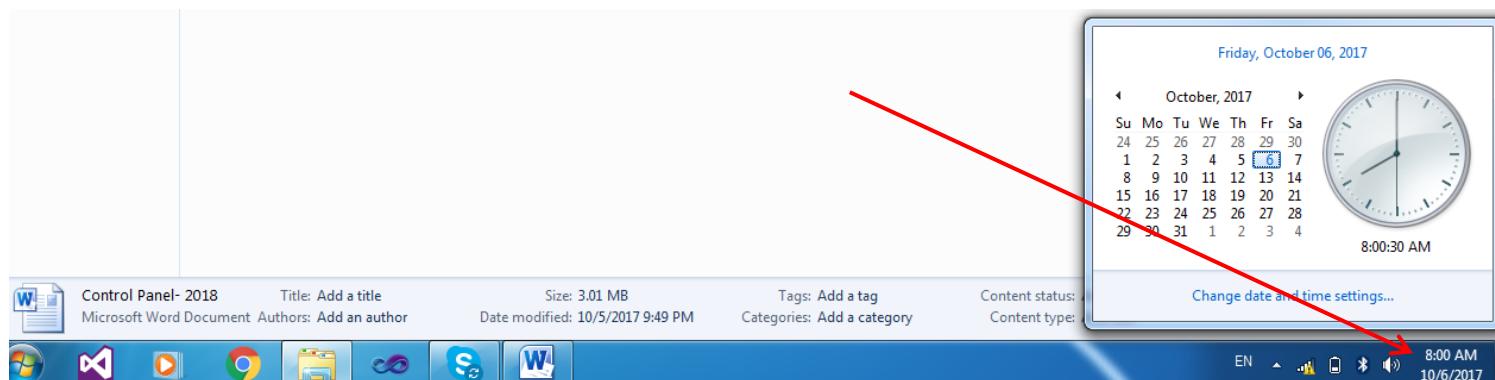
- To set the date and time, click on the **Date and Time** command. This will display the **Date and Time** dialog box, allowing to change the date or time.



- Click on the **Change date and time** button and change the date and time as required. Then click OK.

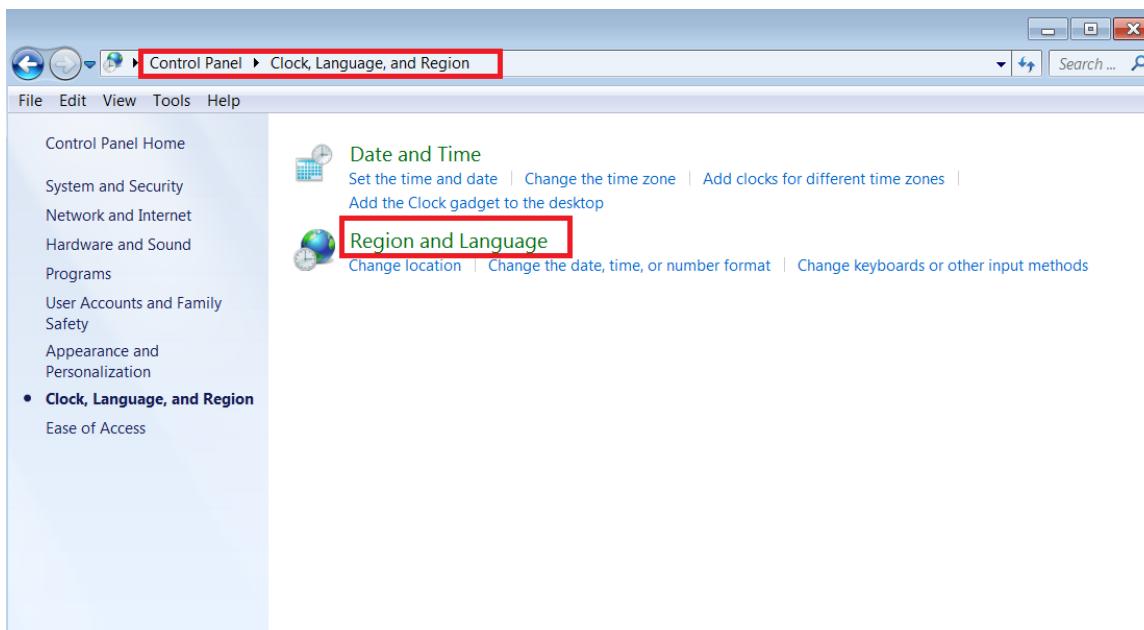


The user can also access to date and time by click the Date/Time displays on the right end of the taskbar, and click Change Date and Time settings from the small window that appears. The Date and Time dialog box appears. Click the Change Date and Time button.

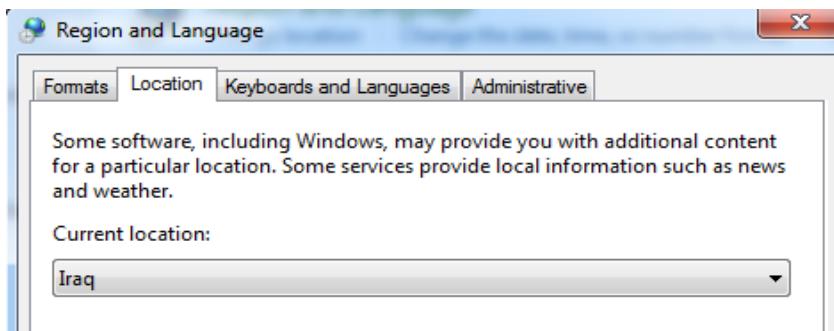


Change Region, and Language

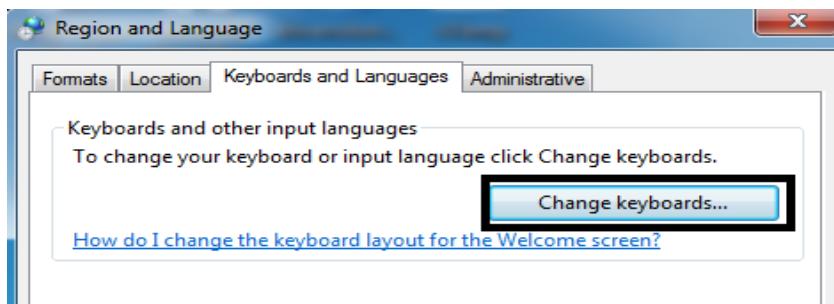
- Click on **Clock, Language, and Region** command in Control Panel. Click on **Region and Language** dialog box will be displayed. Click on Location tab.



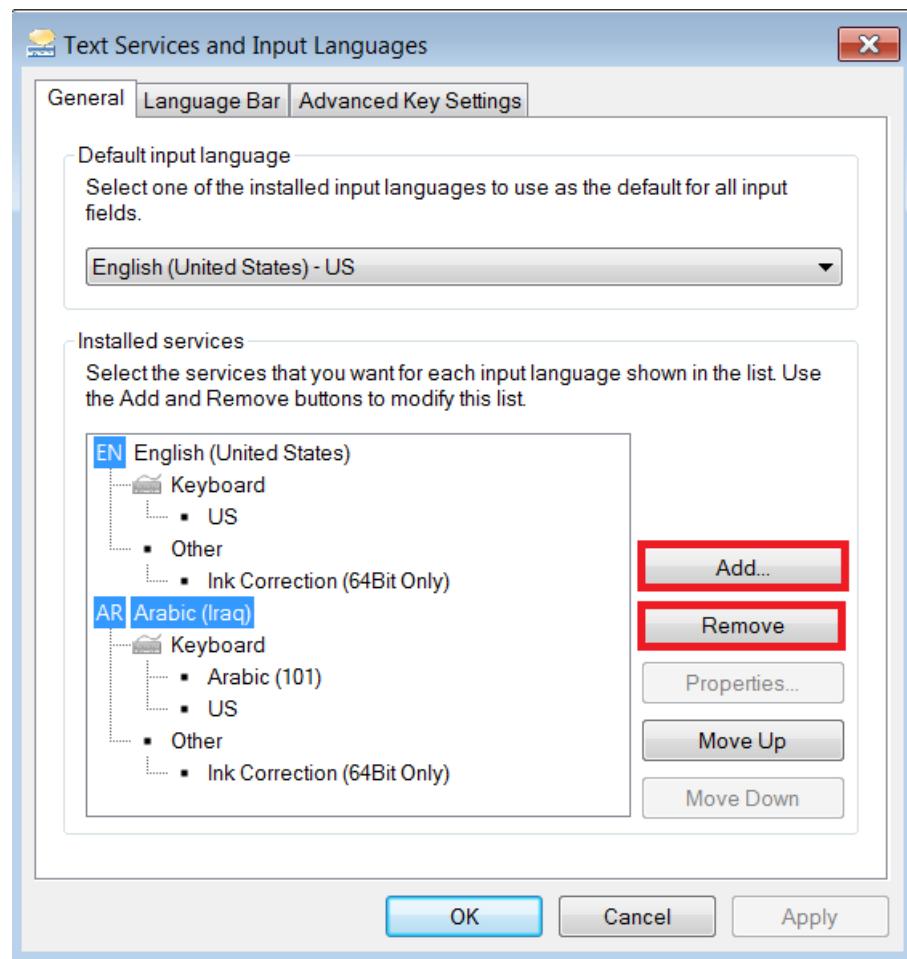
- Or Click on the **Change location** link under **Region and Language**. If necessary click on the down arrow to display a list of countries, from which pick the particular country.



- Click on the **Keyboards and Languages** tab. Click on the **Change keyboards** button. This will display a dialog box allowing selecting and change the Default input language.



Adding/ Removing keyboard settings can also be done. To add or remove a non default keyboard language, select the language and then Click on the **Add** button or **Remove** button.



Computers laboratory (8)

Start → All programs → Accessories → Calculator

Start → All programs → Accessories → Notepad

Start → All programs → Accessories → Paint.

Start → All programs → Accessories → Run.

Start → All programs → Accessories → Snipping Tool.

Start → All programs → Accessories → Sticky Notes.

Start → All programs → Accessories → WordPad.

Start → All programs → Accessories → System Tools → Disk Defragmenter.

Start → All programs → Accessories → System Tools → Disk Cleanup.

Start → All programs → Accessories → System Tools → System Restore.

Start → All programs → Accessories → Ease of Access → Ease of Access Center.

Start → All programs → Accessories → Ease of Access → Magnifier.

Start → All programs → Accessories → Ease of Access → On-Screen Keyboard.

Start → All programs → Accessories → Ease of Access → Windows Speech Recognition.

Start → Help and Support.

Start → Search programs and files → Write the file/folder name → Enter.

Right click on taskbar → Properties → Toolbars tab → Address

Right click on taskbar → Properties → Toolbars tab → Links

Right click on taskbar → Properties → Toolbars tab → Tablet PC Input Panel

Right click on taskbar → Properties → Toolbars tab → Desktop

Right click on taskbar → Toolbars → Address

Right click on taskbar → Toolbars → Links

Right click on taskbar → Toolbars → Tablet PC Input Panel

Right click on taskbar → Toolbars → Desktop

Right click on taskbar → Toolbars → Language bar 2

Right click on taskbar → Cascade Windows.

Right click on taskbar → Show Windows Stacked.

Right click on taskbar → Show Windows Side by Side.

Right click on taskbar → Show the desktop.

Right click on taskbar → Start Task Manager.

Right click on taskbar → Lock the taskbar.

Right click on taskbar → Properties → Taskbar tab → Lock the taskbar.

Right click on taskbar → Properties → Taskbar tab → Auto-hide the taskbar.

Right click on taskbar → Properties → Taskbar tab → Use small icons.

Right click on taskbar → Properties → Taskbar tab → Taskbar location on screen: (Bottom / Left /Right/Top).

Right click on taskbar → Properties → Taskbar tab → Taskbar Button: (Always combine, /Combine when taskbar is full / Never Combine).

Right click on taskbar → Properties → Start Menu tab → Power button action: (Shutdown/ Log off/ Lock/ Restart/ Switch user/ Sleep).

Right click on the favorite program's icon in taskbar → Pin this program to taskbar.

Right click on empty space → New → Folder.

Right click on the folder / file → Rename → Type in a new name.

Right click on file / folder → Copy.

Right click on file / folder → Cut.

Open the new location → Right click on empty space → Paste.

Computers laboratory (9)

Right click on file / folder → Delete.

Double left click on Recycle Bin icon→ Right click on file / folder in Recycle Bin→ Delete.
(To permanently delete a file / folder)

Double left click on Recycle Bin icon →Right click on file / folder in Recycle Bin → Restore.

Double left click on Recycle Bin icon → click on Empty the Recycle Bin.

Right click on Recycle Bin icon→ click on Empty Recycle Bin.

Right click on file / folder → Send to → Desktop (Create Shortcut).

Right click on file / folder → Create Shortcut.

Right click on a folder → properties.

Double click on a folder → view menu → Extra Large Icons.

Large Icons
Medium Icons
Small icons
List
Details
Tiles
Contents

Double click on a folder → view menu → Details → Click Name header

Click date modified header
Click Type header
Click Size header

(To sort files in a folder)

Computers laboratory (10)

- Right click in an empty space on the Desktop → Personalize → **Desktop Background** → Select a picture → Save Changes.
- Right click in an empty space on the Desktop → Personalize → **Desktop Background** → Browse → Select background from file browser windows → Ok → Save Changes.
- Right click in an empty space on the Desktop → Personalize → **Screen Saver** → choose from screen saver list → change the minutes in Wait → OK.
- Right click in an empty space on the Desktop → **Screen Resolution** → change the resolution slider in resolution address → Ok.
- Press **print screen** button on keyboard → Open a document → Paste.
- Start → All Programs → Accessories → System Tools → **Disk Cleanup** → select the hard drive → OK.
- Double Click on Computer folder → Right-click the local disk → Properties → In General tab, Click **Disk Cleanup** → OK.
- Start → All Programs → Accessories → System Tools → **Disk Defragmenter** → Analyze disk → Defragment disk.
- Double Click on Computer folder → Right-click the local **disk** → Properties → Tools tab → **Defragment Now** → Analyze disk → Defragment disk.

Computers laboratory (11)

Control Panel

- Start → Control Panel → view by: **Category** view.
- Start → Control Panel → view by: **Small Icons** view.
- Start → Control Panel → view by: **Large Icons** view.
- Start → Control Panel → **System and Security** → System (**windows edition, processor speed, RAM size, system type, Windows Activation**).
- Right click on Computer icon → properties → Basic information will appear (**windows edition, processor speed, RAM size, system type, Windows Activation**).
- Start → Control Panel → **Hardware and Sound** → Mouse (under the Devices and Printers heading) → Mouse properties window will appear.
- Start → Control Panel → **Hardware and Sound** → Mouse → buttons tab → in **Button configuration**, Switch primary and secondary buttons → OK.
- Start → Control Panel → **Hardware and Sound** → Mouse → buttons tab → In **Double Click Speed**, Drag the slider → OK.
- Start → Control Panel → **Hardware and Sound** → Mouse → Pointers tab → **Select shapes of Mouse Pointer** → OK.
- Start → Control Panel → **Hardware and Sound** → Mouse → Pointer Options tab → In motion, select a **pointer speed** → OK.
- Start → Control Panel → **Hardware and Sound** → **Devices and Printers** (all the connected devices will be **viewed**).
- Start → **Devices and Printers** (all the connected devices will be viewed).
- Start → Control Panel → **Hardware and Sound** → Devices and Printers → Right-click on the name of the printer → **Set as Default Printer**.
- Start → Devices and Printers → Right-click on the name of the printer → **Set as Default Printer**.

- Start → Control Panel → **Hardware and Sound** → under Sound, **Adjust system volume** → drag the slider.
- Control Panel → **Hardware and Sound** → **Power Options** → Change battery settings → change plan **settings** → Save Changes.

Computers laboratory (12)

- Start → Control Panel → Category view → Click **Uninstall a program** link under the **Programs** category → select the program → Uninstall/Change.
- Start → Control Panel → Icon view → **Programs and Features** → select the program → Uninstall/Change.
- Start → Control Panel → **Appearance and Personalization** → Personalization → **Desktop Background** → select a picture → Save Changes.
- Start → Control Panel → **Appearance and Personalization** → Personalization → **Desktop Background** → Browse → Select background from file browser windows → Ok → Save Changes.
- Start → Control Panel → **Appearance and Personalization** → Personalization → **Screen Saver** → choose from screen saver list → change the minutes in Wait → OK.
- Start → Control Panel → **Appearance and Personalization** → Taskbar and Start Menu → Taskbar tab → **lock the taskbar**.
- Start → Control Panel → **Appearance and Personalization** → Taskbar and Start Menu → Taskbar tab → **Auto-hide the taskbar**.
- Start → Control Panel → **Appearance and Personalization** → Taskbar and Start Menu → Taskbar tab → **Use small icons**.
- Start → Control Panel → **Appearance and Personalization** → Taskbar and Start Menu → Taskbar tab → **Taskbar location** on screen: (Bottom / Left /Right/Top).
- Start → Control Panel → **Appearance and Personalization** → Taskbar and Start Menu → Taskbar tab → **Taskbar Button:** (**Always combine**, /**Combine when taskbar is full** / **Never Combine**).
- Start → Control Panel → **Appearance and Personalization** → Taskbar and Start Menu → Start Menu tab → **Power button action:** (Shut down/ Log off/ Lock/ Restart/ Switch user/ Sleep).
- Start → Control Panel → **Appearance and Personalization** → Taskbar and Start Menu → Toolbars tab → **Address** / **Links** / **Desktop** / **Tablet PC Input Panel** .
- Start → Control Panel → **Appearance and Personalization** → Under Folder Options → show hidden files and folders → View tab → click **show hidden files, folders, or drives** → OK.
- Start → Control Panel → **Appearance and Personalization** → Under Folder Options → show hidden files and folders → View tab → click **Don't show hidden files, folders, or drives** → OK.

- Start → Control Panel → **Appearance and Personalization** → Fonts → select a font → Preview, Delete, hide/Show.
- Start → Control Panel → **Clock, Language, and Region** → Date and Time → Change date and time.
- Click the **Date/Time** displays on the right end of the taskbar → Change **Date and Time** settings.
- Start → Control Panel → **Clock, Language, and Region** → Region and Language → Location tab → **select current location**.
- Start → Control Panel → **Clock, Language, and Region** → under Region and Language → Click on the Change location link → **select current location**.
- Start → Control Panel → **Clock, Language, and Region** → Region and Language → Keyboards and Languages tab → Change keyboards → **select and change the Default input language**.
- Start → Control Panel → **Clock, Language, and Region** → Region and Language → Keyboards and Languages tab → Change keyboards → **Add** → select a Language → OK.
- Start → Control Panel → **Clock, Language, and Region** → Region and Language → Keyboards and Languages tab → Change keyboards → **select a non-default Language** → **Remove** → OK.