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Hamdard Institute of Engineering & Technology
Hamdard University

Introduction to Computer Laboratory Experiments Manual

CSE-111
Semester 1st

Name: _____

Roll Number: _____

Computer Systems Engineering
Department
Hamdard Institute of Engineering & Technology
Hamdard University



List of Experiments

Sr. No	Objective	Signature
1.	To introduce the components of Computer Hardware	
2.	To understand the concept and working of Microsoft office utilities (word processing, MS WORD).	
3.	To understand the concept and working of MS power point.	
4.	To understand the concept and working of Microsoft Excel.	
5.	To introduce the concept of Internet, web browsing and social media.	
6.	To understand the basic configuration and simulation of a Networking using packet tracer.	
7.	To understand the installation of Operating System (OPEN ENDED LAB)	
8.	To understand the concept of multimedia software.	
9.	To introduce the concept of IDE for c/c++ and structure of a basic C++ program.	
10.	To understand the data types and variables in C/C++.	
11.	To understand the arithmetic operation in C/C++.	
12.	To understand the decision: IF-ELSE in C/C++.	
13.	To understand the control Structure using For Loop in C/C++ and (OPEN ENDED LAB)	
14.	To understand the control structure using while loop in C/C++.	
15	To understand the concepts of Arrays.	



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Marks Evaluation

Experiment No.	Marks			
	Class Participation (0.3)	Experiment Performance (0.5)	Experiment Reporting (0.2)	Total (1)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
Total				

Instructor's signature



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HIET, Hamdard University
Introduction to Computing (3+1)

Instructor:

Prerequisite: None

Objectives:

This course focuses on coverage of computer science and engineering discipline, introducing computing environments, general application software, basic computing hardware, operating systems, desktop publishing, Internet, software applications and tools and computer usage concepts.

Introduction:

This course aims to introduce the students with Computing. The course lays emphasis on foundations of Computer and communication available in today's world in the form of internet. Being the first course towards computing it will discuss elementary concepts of computer software and hardware. It will discuss how to explore Cyberspace, Communication, Network & Safeguards and Challenges of the digital age.

Learning Outcomes:

Mapping of CLOs and PLOs			
Sr. No	Course Learning Outcomes	PLOs	Blooms Taxonomy
CLO_1	Be able to recognize various components of a computer hardware and basic terms associated with communication and networking	PLO_1	P1 (Preception)
CLO_2	Be able to operate under supervision various computer softwares like MS Office utility	PLO_5	P3 (Guided Response)
CLO_3	Be able to execute a computer program based on C++ Language.	PLO_2	P4 (Mechanism)
CLO_4	Be able to follow instruction and execute computer program based on C++ Language.	PLO_10	A2 (Responding)

Marks Distribution:

Class Performance (Quizzes/Assignments)	20%
Mid Term Exams (1 exam)	30%
Final Exam	50%

Recommended Books:

1. "Discovering Computers – Fundamentals", Gary B. Shelly, Misty E. Vermaat @2013 (Cengage Learning), ISBN: 1-1115-3045-9
2. "Using Information Technology: A Practical Introduction to Computer & Communications", Williams Sawyer, 9thEd (McGraw HILL), ISBN: 0077523415

Reference Books:

1. "Computers, Information Technology in Perspective", Larry Long and Nancy Long, 12thEd, (Prentice Hall), ISBN: 0131405721
2. "Introduction to Computers", Peter Norton, 6thEd, (McGraw-Hill), ISBN: 0-07-059374-4



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Administrative Instructions:

1. Introduction to Computers, Types, History and Generation
2. Computer Hardware and Software
3. Memory and Storage
4. Information technology, Internet and World Wide Web
5. Application softwares and tools
6. Algorithms, Pseudo Codes, and Problem Analysis and Solving



General Laboratory Procedure

While there is no specific document to be submitted at the beginning of the Lab –unless your instructor advises you otherwise-, you are expected to read the experiment fully before you come to the laboratory? Interestingly, you can even try parts of the experiment at home. Here is a list of programs that will equip you with a virtual lab at your home:

Troubleshooting

Things will not always go as expected; this is the nature of the learning process. While conducting the Experiment **think before you do anything**. If you do so you will avoid wasting time going down dead-end streets. Be logical and systematic. First, look for obvious errors that are easy to fix. Is your measuring device correctly set and connected? Are you looking at the proper scale? Is the power supply set for the correct voltage? Is the signal generator correctly set and connected? How are the variables in the code set? Is there a syntax error? And so on. Next, check for obvious misconnections or broken connections, at least in simple circuits.

As you work through your circuit, use your Lab Manual record tests and changes that you make as you go along; don't rely on your memory for what you have tried. Identify some test points in the system at which you know what the signal should be and work your way backwards from the output through the test points until you find a good signal.

Neatness

When you have finished for the day, return all modules to their proper storage bins, return all test leads and probes to their storage racks, return all equipment to its correct location, and clean up the lab station. If appropriate switch off the unneeded equipment. Save your files in the Computer and on any USB device for your records because you might not get the same PC System again for the next experiment. Also email your file contents to your email address as a backup.

Laboratory Safety

Always pay attention to what you are doing and you're surrounding during the experiments and notify the Instructor for any unlikely event or mishap and leave the Laboratory with the permission of Instructor immediately.



All students must read and understand the information in this document with regard to laboratory safety and emergency procedures prior to the first laboratory session.

Your personal laboratory safety depends mostly on YOU. Effort has been made to address situations that may pose a hazard in the lab but the information and instructions provided cannot be considered all-inclusive.

Students must adhere to written and verbal safety instructions throughout the academic term. Since additional instructions may be given at the beginning of laboratory sessions, it is important that all students arrive at each session on time. With good judgement, the chance of an accident in this course is very small. Nevertheless, research and teaching workplaces (labs, shops, etc.) are full of potential hazards that can cause serious injury and or damage to



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the equipment. Working alone and unsupervised in laboratories is forbidden if you are working with hazardous substances or equipment. With prior approval, at least two people should be present so that one can shut down equipment and call for help in the event of an emergency. Safety training and/or information should be provided by a faculty member, teaching assistant, lab safety contact, or staff member at the beginning of a new assignment or when a new hazard is introduced into the workplace.

Emergency Response

1. It is your responsibility to read safety and fire alarm posters and follow the instructions during an emergency
2. Know the location of the fire extinguisher, eye wash, and safety shower in your lab and know how to use them.
3. Notify your instructor immediately after any injury, fire or explosion, or spill.
4. Know the building evacuation procedures.

Common Sense

Good common sense is needed for safety in a laboratory. It is expected that each student will work in a responsible manner and exercise good judgement and common sense. If at any time you are not sure how to handle a particular situation, ask your Teaching Assistant or Instructor for advice. **DO NOT TOUCH ANYTHING WITH WHICH YOU ARE NOT COMPLETELY FAMILIAR!!!** It is always better to ask questions than to risk harm to yourself or damage to the equipment.

Personal and General laboratory safety



1. Never eat, drink, or smoke while working in the laboratory.
2. Read labels carefully.
3. Do not use any equipment unless you are trained and approved as a user by ,.....
4. Wear safety glasses or face shields when working with hazardous materials and/or equipment.
5. Wear gloves when using any hazardous or toxic agent.
6. Clothing: When handling dangerous substances, wear gloves, laboratory coats, and safety shield or glasses. Shorts and sandals should not be worn in the lab at any time. Shoes are required when working in the machine shops.
7. If you have long hair or loose clothes, make sure it is tied back or confined.
8. Keep the work area clear of all materials except those needed for your work. Coats should be hung in the hall or placed in a locker. Extra books, purses, etc. should be kept away from equipment that requires air flow or ventilation to prevent overheating.
9. Disposal - Students are responsible for the proper disposal of used material if any in appropriate containers.
10. Equipment Failure - If a piece of equipment fails while being used, report it immediately to your lab assistant or tutor. Never try to fix the problem yourself because you could harm yourself and others.
11. If leaving a lab unattended, turn off all ignition sources and lock the doors.
12. Never pipette anything by mouth.
13. Clean up your work area before leaving.
14. Wash hands before leaving the lab and before eating.
15. Unauthorized person(s) shall not be allowed in a laboratory for any reason

Electrical safety

1. Obtain permission before operating any high voltage equipment.
2. Maintain an unobstructed access to all electrical panels.
3. Wiring or other electrical modifications must be referred to the Electronics Shop or the Building Coordinator.
4. Avoid using extension cords whenever possible. If you must use one, obtain a heavy-duty one that is electrically grounded, with its own fuse, and install it safely. Extension cords should not go under doors, across aisles, be hung from the ceiling, or plugged into other extension cords.



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5. Never, ever modify, attach or otherwise change any high voltage equipment.
6. Always make sure all capacitors are discharged (using a grounded cable with an insulating handle) before touching high voltage leads or the "inside" of any equipment even after it has been turned off. Capacitors can hold charge for many hours after the equipment has been turned off.
7. When you are adjusting any high voltage equipment or a laser which is powered with a high voltage supply, USE ONLY ONE HAND. Your other hand is best placed in a pocket or behind your back. This procedure eliminates the possibility of an accident where high voltage current flows up one arm, through your chest, and down the other arm.
8. Discard damaged cords, cords that become hot, or cords with exposed wiring.
9. Before equipment is energized ensure, (1) circuit connections and layout have been checked by a Teaching Assistant (TA) and (2) all colleagues in your group give their assent.
10. Know the correct handling, storage and disposal procedures for batteries, cells, capacitors, inductors and other high energy-storage devices.
11. Experiments left unattended should be isolated from the power supplies. If for a special reason, it must be left on, a barrier and a warning notice are required.
12. Equipment found to be faulty in any way should be reported to the Lab Engineer immediately and taken out of service until inspected and declared safe.
13. Voltages above 50 V rms AC and 120 V DC are always dangerous. Extra precautions should be considered as voltage levels are increased.
14. Never make any changes to circuits or mechanical layout without first isolating the circuit by switching off and removing connections to power supplies.
15. Know what you must do in an emergency.
16. Emergency Power Off: Every lab is equipped with an Emergency Power off System.
17. Only authorized personnel are permitted to reset power once the Emergency Power Off system has been engaged.

Electrical Emergency Response

The following instructions provide guidelines for handling two types of electrical emergencies:

1. When someone suffers serious electrical shock, he or she may be knocked unconscious. If the victim is still in contact with the electrical current, immediately turn off the electrical power source. If you cannot disconnect the power source, depress the Emergency Power Off switch.
2. Do not touch a victim that is still in contact with a live power source; you could be electrocuted.
3. Have someone call for emergency medical assistance immediately. Administer first-aid, as appropriate.
4. If an electrical fire occurs, try to disconnect the electrical power source, if possible. If the fire is small and you are not in immediate danger; and you have been properly trained in fighting fires, use the correct type of fire extinguisher to extinguish the fire. When in doubt, push in the Emergency Power Off button.
5. NEVER use water to extinguish an electrical fire.

Mechanical safety

1. When using compressed air, use only approved nozzles and never direct the air towards any person.
2. Guards on machinery must be in place during operation.
3. Exercise care when working with or near hydraulically- or pneumatically-driven equipment. Sudden or unexpected motion can inflict serious injury.

Additional Safety Guidelines

1. Never do unauthorized experiments.
2. Never work alone in laboratory.
3. Keep your lab space clean and organized.
4. Do not leave an on-going experiment unattended.
5. Always inform your instructor if you break a thermometer. Do not taste it.
6. Never taste anything. Never pipette by mouth; use a bulb.
7. Never use open flames in laboratory unless instructed by TA.
8. Check your glassware for cracks and chips each time you use it. Cracks could cause the glassware to fail during use and cause serious injury to you or lab mates.





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9. Maintain unobstructed access to all exits, fire extinguishers, electrical panels, emergency showers, and eye washes.
10. Do not use corridors for storage or work areas.
11. Do not store heavy items above table height. Any overhead storage of supplies on top of cabinets should be limited to lightweight items only. Also, remember that a 36" diameter area around all fire sprinkler heads must be kept clear at all times.
12. Areas containing lasers, biohazards, radioisotopes, and carcinogens should be posted accordingly. However, do not post areas unnecessarily and be sure that the labels are removed when the hazards are no longer present.
13. Be careful when lifting heavy objects. Only shop staff may operate forklifts or cranes.
14. Clean your lab bench and equipment, and lock the door before you leave the laboratory.

Clothing

1. Dress properly during a laboratory activity.
2. Long hair, dangling jewelry, and loose or baggy clothing are a hazard in the laboratory.
3. Long hair must be tied back, and dangling jewelry and baggy clothing must be secured.
4. Shoes must completely cover the foot.
5. No sandals allowed on lab days.
6. A lab coat or smock should be worn during laboratory experiments.

Accidents and Injuries

1. Do not panic.
2. Report any accident (spill, breakage, etc.) or injury (cut, burn, etc.) to the teacher immediately, no matter how trivial it seems.
3. If you or your lab partner is hurt, immediately (and loudly) yell out the teacher's name to get the teacher's attention.





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General Warning Signs





LAB # 1 Introduction to Computer's hardware

Objective:

To learn about different parts of computer hardware

Apparatus:

Personal

Background

Software:

Computer software, or just software, is a collection of computer programs and related data that provides the instructions for telling a computer what to do and how to do it. In other words, software is a set of programs, procedures, algorithms and its documentation concerned with the operation of a data processing system. Program software performs the function of the program it implements, either by directly providing instructions to the computer hardware or by serving as input to another piece of software. The term was coined to contrast to the old term hardware (meaning physical devices). In contrast to hardware, software "cannot be touched".

Operating system:

An operating system (OS) is a collection of software that manages computer hardware resources and provides common services for computer programs. The operating system is a vital component of the system software in a computer system. Application programs require an operating system to function.

Examples:

Microsoft Windows

Linux

Macintosh

Hardware:

Computer hardware is the collection of physical elements that comprise a computer system. Computer hardware refers to the physical parts or components of computer such as monitor, keyboard, hard disk, mouse, etc., refers to objects that you can actually touch, like disks, disk drives, display screens, keyboards, printers, boards, and chips. In contrast, software is untouchable. Software exists as ideas, application, concepts, and symbols, but it has no substance. A combination of hardware and software forms a usable computing system. This allows it for computer run better than normally faster.



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Figure 1. Components of CPU

Processor:

A central processing unit (CPU), also referred to as a central processor unit, is the hardware within a computer system which carries out the instructions of a computer program by performing the basic arithmetical, logical, and input/output operations of the system. The form, design, and implementation of CPUs have changed over the course of their history, but their fundamental operation remains much the same.



Figure 2. Processor chip

Two typical components of a CPU are the arithmetic logic unit (ALU), which performs arithmetic and logical operations, and the control unit (CU), which extracts instructions from memory and decodes and executes them, calling on the ALU when necessary.

Motherboard:



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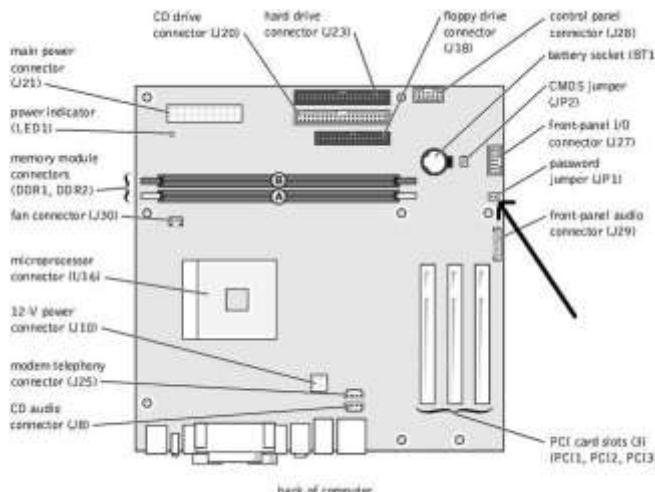


Figure 3. MotherBroad

The motherboard serves to connect all of the parts of a computer together. The CPU, memory, hard drives, optical drives, video card, sound card and other ports and expansion cards all connect to the motherboard directly or via cables.

The motherboard can be thought of as the "back bone" of the computer.

Motherboards, cases and power supplies all come in different sizes called form factors. All three must be compatible to work properly together.

Motherboards vary greatly in respect to the types of components they support. For example, each motherboard supports a single type of CPU and a short list of memory types.

Hard disk drives:

A hard disk drive (HDD also hard drive, hard disk, or disk drive) is a device for storing and retrieving digital information. It consists of one or more rigid ("hard") rapidly rotating discs (platters) coated with magnetic material, with magnetic heads arranged to read and write data to the surfaces.



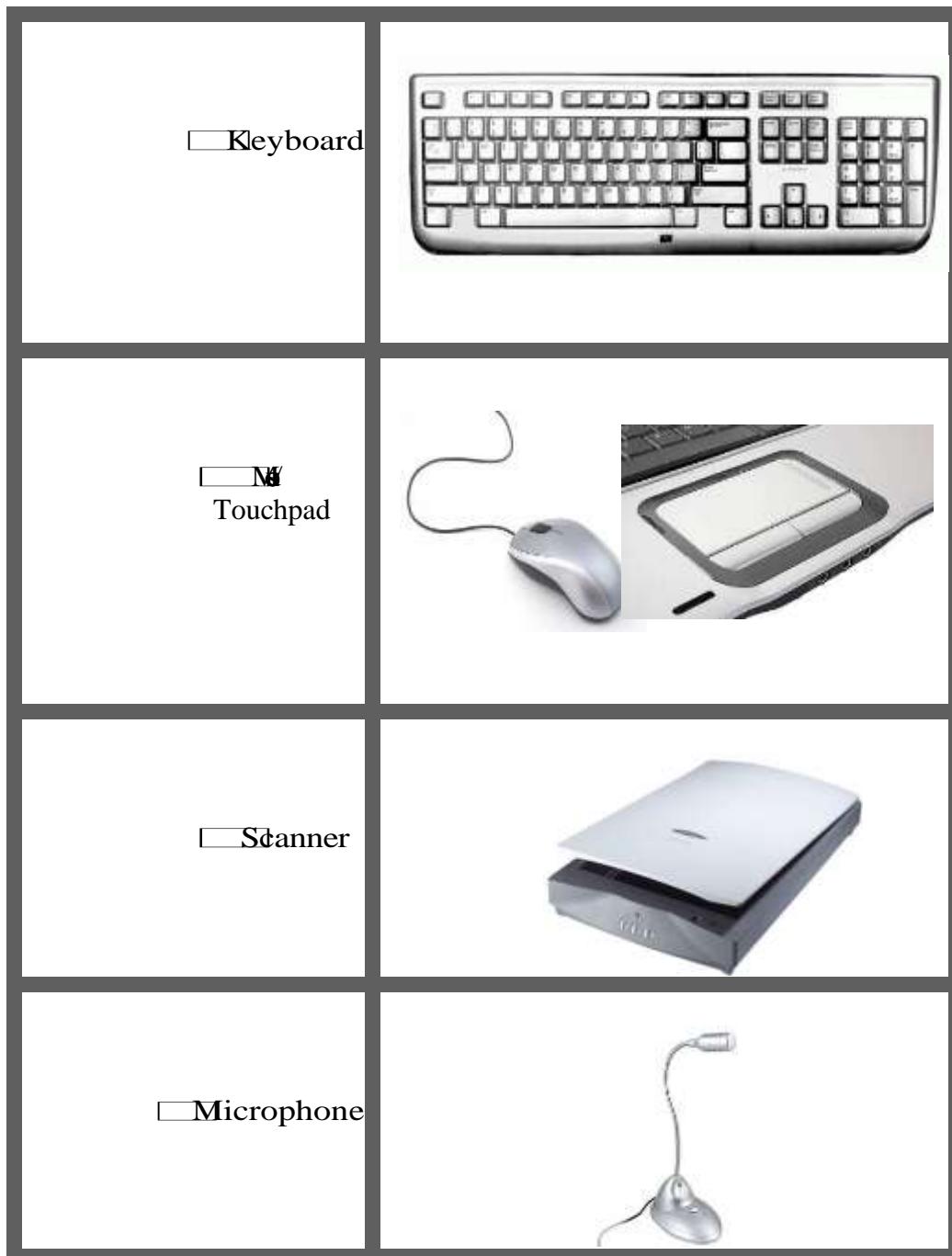
Figure 4. Hard disk

RAM (random access memory) is the place in a computer where the operating system, application programs, and data in current use are kept so that they can be quickly reached by the computer's processor. RAM is much faster to read from and write

to than the other kinds of storage in a computer, the hard disk, floppy disk, and CD-ROM. However, the data in RAM stays there only as long as your computer is running. When you turn the computer off, RAM loses its data. When you turn your computer on again, your operating system and other files are once again loaded into RAM, usually from your hard disk.



Figure 5. RAM Random access memory





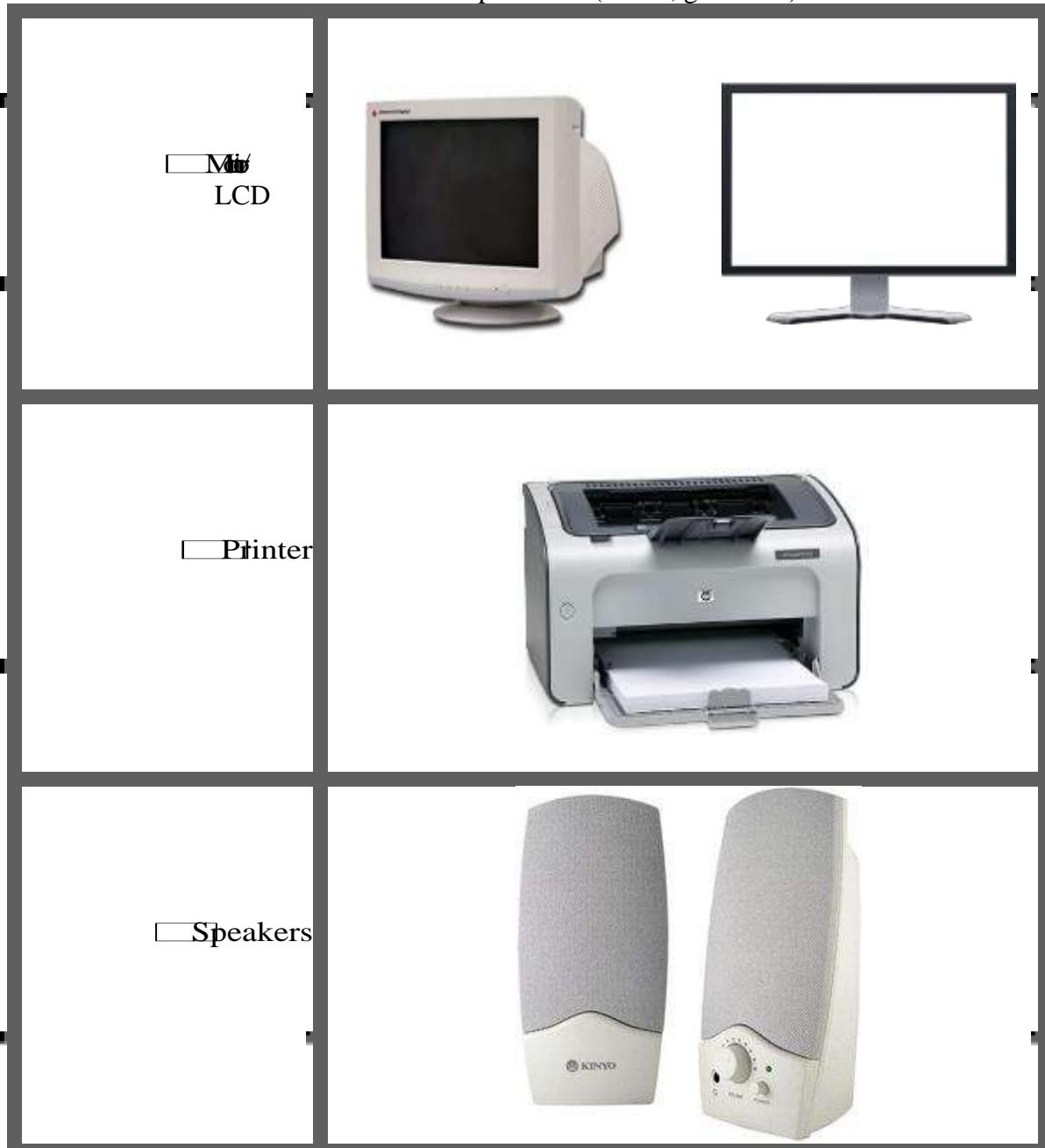
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Input devices:

The devices that use to enter data and instructions in a computer. **For Example:**

Output devices:

The devices that allow information to be represented (that is, given out) to the user. For Example:



Ports:

Ports are the socket at the back of the computer that allows different peripheral devices to connect to the computer

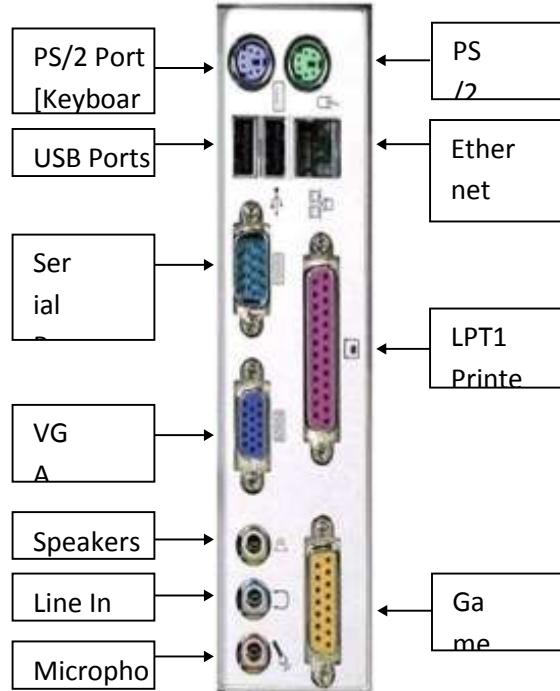


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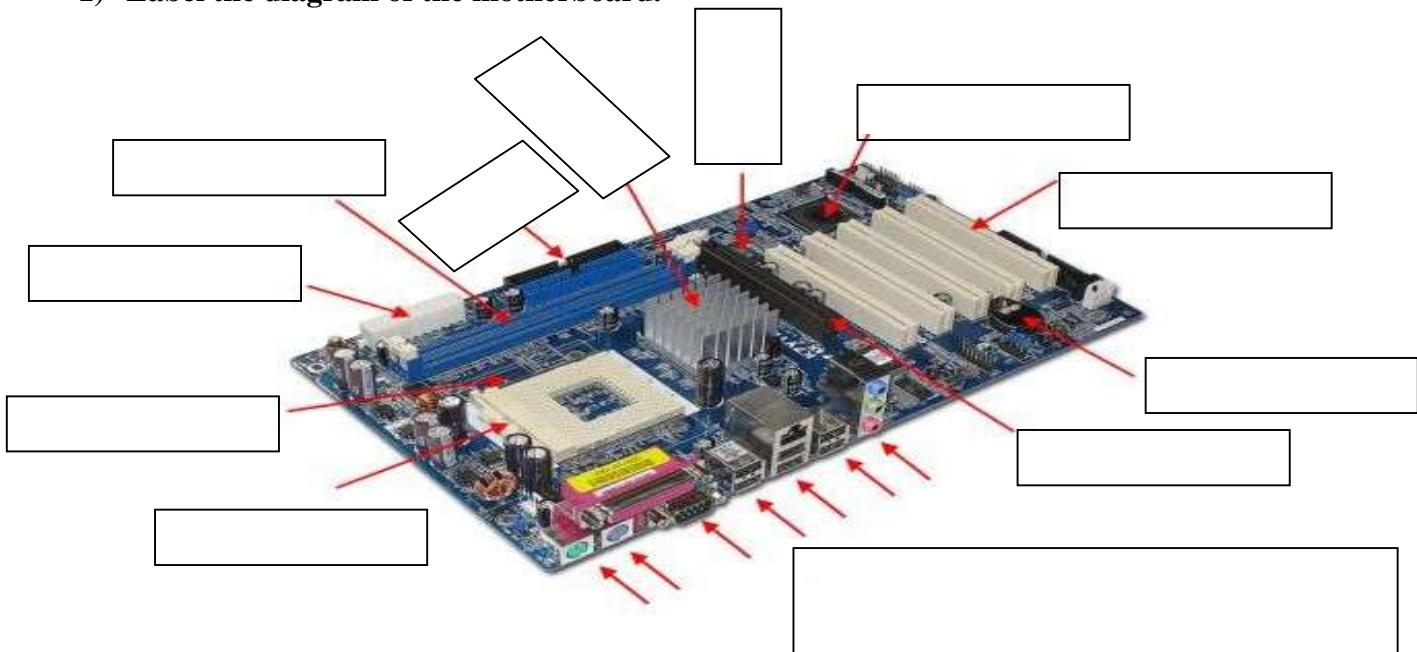
Microsoft Word:



Conclusion:

Lab Exercise:

- 1) Label the diagram of the motherboard.





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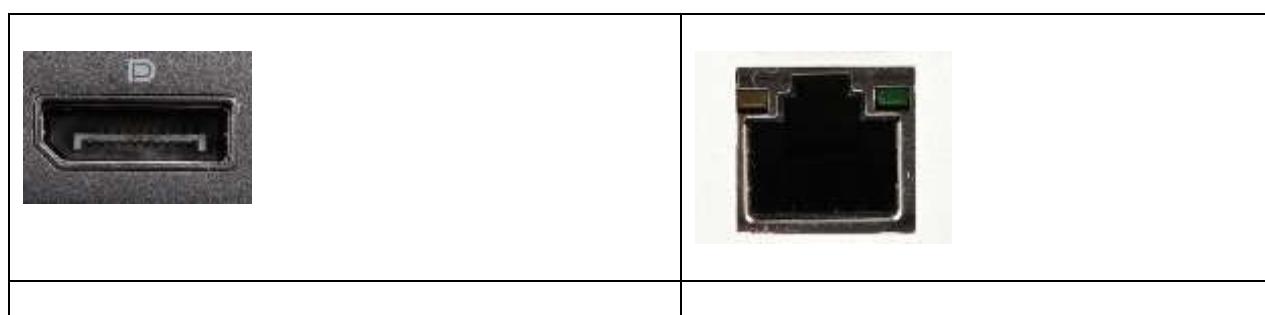
2) Where is OS stored and installed on a computer?

3) Write the specifications of the computer that is provided in lab

4) Write down the names of microprocessor companies with their latest model and speed

5) How do you Log Off the computer from the Desktop?

6) Recognize and Name the following Different Computer ports:





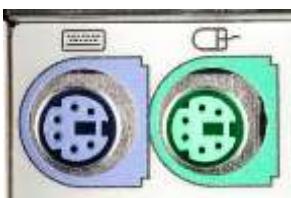
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LAB#2 **Microsoft-Office Utilities** (Word-Processing MS-Word)

Objective

Learn to create a word document using different features of MS Word

Apparatus:

Personal PC

Software MS Office

Background:

Microsoft Word is a powerful tool to create professional documents.

To begin, open Microsoft Word. Your screen will look like the one shown here.

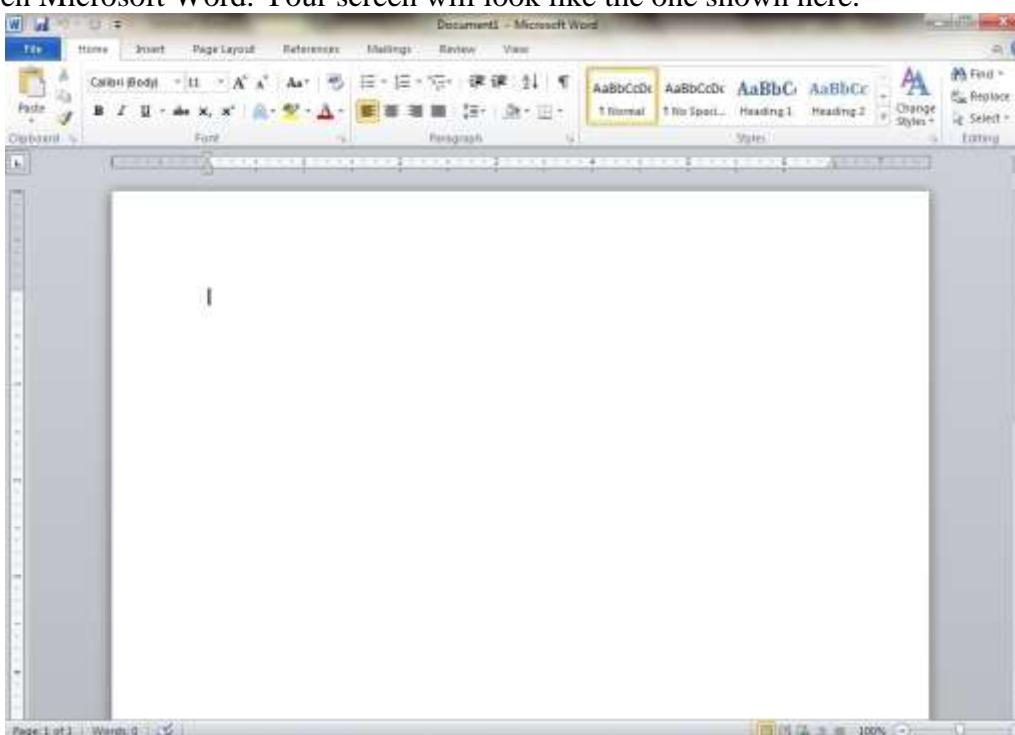


Figure 6 The Title Bar:

At the very top of the MS Word window is the title bar. The Title bar displays the title of the document on which you are currently working. Word names the first new document you open Document1. As you open additional new documents, Word names them sequentially. When you save your document, you assign the document a new name.

Document1 - Microsoft Word

The Quick Access Toolbar:

At the left corner of the title bar is the Quick Access toolbar. The Quick Access toolbar provides you with access to commands you frequently use. By default Save, Undo, and Redo appears on the Quick Access toolbar. You can use Save to save your file, Undo to roll back an action you have taken, and Redo to reapply an action you have rolled back.

The Ribbon:

You use commands to tell Microsoft Word what to do. In Microsoft Word 2010, you use the Ribbon to issue commands. The Ribbon is located near the top of the screen, below the Quick Access toolbar. At the top of



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the Ribbon are several tabs; clicking a tab displays several related command groups. Within each group are related command buttons. You click buttons to issue commands or to access menus and dialog boxes. You may also find a dialog box launcher in the bottom-right corner of a group. Clicking the dialog box launcher gives you access to additional commands via a dialog box.

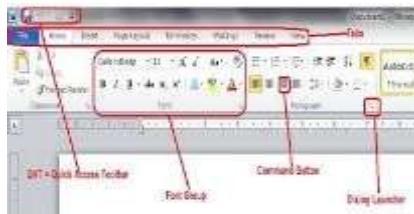


Figure 7.The Ruler:

The ruler is found below the Ribbon.

The Status Bar :

The Status bar appears at the very bottom of your window and provides such information as the current page and the number of words in your document. You can change what is displayed in the Status bar by right-clicking on the Status bar and selecting the options you want from the Customize Status Bar menu. You click a menu item to select it. You click it again to deselect it. A check mark next to an item means it is selected.

The home tab:



Clipboard Group:

You can use Word's Cut feature to remove information from a document. You can use the Paste feature to place the information you cut anywhere in the same or another document. In other words, you can move information from one place in a document to another place in the same or different document by using the Cut and Paste features. The Office Clipboard is a storage area. When you cut, Word stores the data you cut on the Clipboard. You can paste the information that is stored on the Clipboard as often as you like. Furthermore, you can copy information from one area of a document and place the information you copied anywhere in the same or another document. In other words, after you type information into a document, if you want to place the same information somewhere else, you do not have to retype the information. You simply copy it and then paste it in the new location. As with cut data, Word stores copied data on the Clipboard.



Figure 8.The Home tab:

Font Group:

When creating a document, you may need to emphasize particular words or phrases by making it bold, underlined, or italicized. Also, certain grammatical constructs require that you bold, underline, or italicize. These functions can be performed using the font group. Other features of the front group include: font type, font size, strikethrough, subscript, superscript, case change, highlight, font color, clear formatting.



Figure 9.The Font Group:

When you need to perform a task in Microsoft Word, you can usually choose from several methods:

- The dialogue box launcher
- The Ribbon
- The Mini-toolbar/context menu



- The keyboard.

Document View:

In Word, you can display your document in one of five views: Normal, Web Layout, Print Layout, Reading Layout, or Online Layout. To change the view of a document, use the view tab.

Print Layout

The Print Layout view shows the document as it will look when it is printed.

Web Layout

Web layout view enables you to view your document as it would appear in a browser such as Internet Explorer.

Full Screen Reading Layout

Reading Layout view formats your screen to make reading your document more comfortable.

Outline view

The outline view displays the document in outline form. Headings can be displayed without the text. If you move a heading, the accompanying text moves with it.

Paragraph Group:



Figure 10The Paragraph Group:

When you type information in Microsoft Word, each time you press the Enter key Word creates a new paragraph. You can format paragraphs. For example, you can indent the first line of a paragraph, you can set the amount of space that separates paragraphs, and you can align a paragraph left, right, center, or flush with both margins.

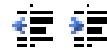
Styles are a set of formats you can quickly apply to a paragraph. For example, by applying a style, you can set the font, set the font size, and align a paragraph all at once. In this lesson, you will learn about the various formats you can apply to a paragraph and about styles.

When you are formatting a paragraph, you do not need to select the entire paragraph. Placing the cursor anywhere in the paragraph enables you to format it. After you format a paragraph, pressing the Enter key creates a new paragraph in the same format.

Indent Paragraphs:

Indentation allows you to indent your paragraph from the left and/or right margin.

You may find this necessary when you are quoting a large block of text. Try using the first line indent and hanging indent.



Align Paragraphs

Microsoft Word gives you a choice of several types of alignments. Left-aligned text is aligned to the left margin of your document and is the default setting.

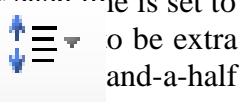


Right-aligned text is flush with the right margin of your document, centered text is centered between the left and right margins, and justified text is flush with both the left and right margins.



Change Line Spacing

Line spacing sets the amount of space between lines within a paragraph. The spacing for each line is set to accommodate the largest font on that line. If the lines include smaller fonts, there will also be extra space between lines where the smaller fonts are located. At 1.5, the line spacing is set to one-and-a-half times the single-space amount. At 2.0, the line spacing is set to two times the single-space amount (double space).

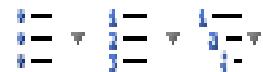


Bullets and Numbers:

If you have lists of data, you may want to bullet or number them. When



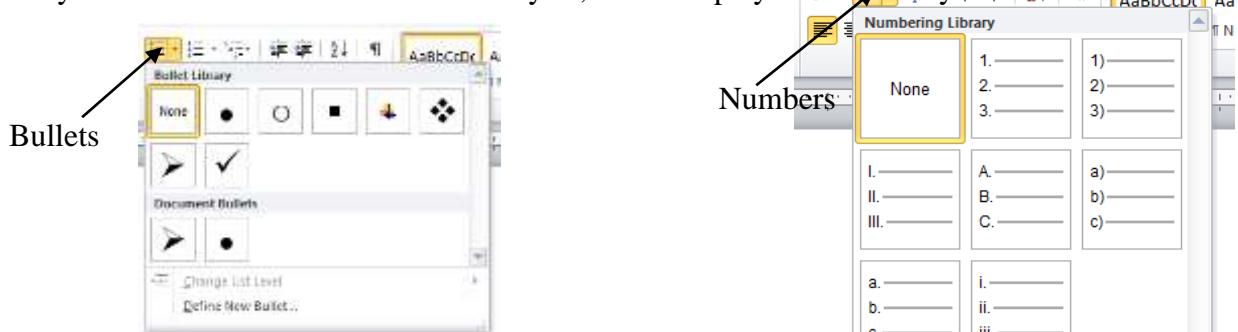
using Microsoft Word, bulleting and numbering are easy.



In Microsoft Word, you can easily create bulleted or numbered lists of items. Several bulleting and numbering styles are available, as shown in the examples. You can select the one you wish to use.

Bulleting:

1. Type the list as shown
2. Select the words you just typed.
3. Choose the Home tab.
4. In the Paragraph group, click the down arrow next to the Bullets button. The Bullet Library appears.
5. Click to select the type of bullet you want to use. Word adds bullets to your list. Note: As you move your cursor over the various bullet styles, Word displays the bullet style onscreen.



Set the Orientation:

Before you print your document, you may want to change the orientation of your pages. There are two orientations you can use: portrait and landscape. Paper, such as paper sized 8.5 x 11in, is longer on one edge than it is on the other. If you print in Portrait, the shortest edge of the paper becomes the top of the page. Portrait is the default option. If you print Landscape, the longest edge of the paper becomes the top of the page.

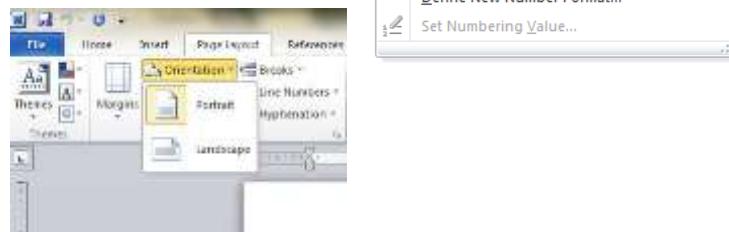


Figure 11Orientation:

1. Choose the Page Layout tab.
2. Click Orientation in the Page Setup group. A menu appears.
3. Click Portrait. Word sets your page orientation to Portrait.

Page Size:

Paper comes in a variety of sizes. Most business correspondence uses 8.5 x 11in paper which is the default page size in Word. If you are not using 8.5 x 11in paper, you can use the Size option in the Page Setup group of the Page Layout tab to change the Size setting.

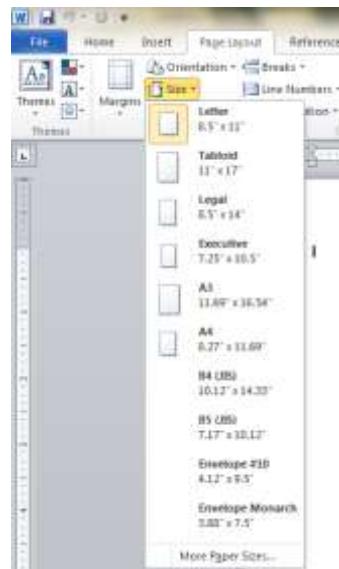


Figure 12 Page size:

1. Choose the Page Layout tab.
2. Click Size in the Page Setup group. A menu appears.
3. Click Letter 8.5 x 11in. Word sets your page size.

Set the Margins:

Margins define the amount of white space that appears at the top, bottom, left, and right edges of your document. The Margin option in the Page Setup group of the Page Layout tab provides several standard margin sizes from which you can choose.

1. Choose the Page Layout tab.
2. Click Margins in the Page Setup group. A menu appears.
3. Click Moderate. Word sets your margins to the Moderate settings.

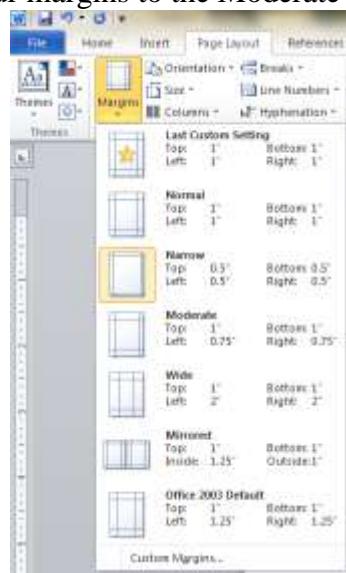


Figure 13 Margin setting properties

Inserting Picture:

Copy the picture from any source and paste in MS word. Pictures can be placed in different forms in MS-Word. MS- Word also allows pictures to be inserted from clip art.



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The screenshot shows the Microsoft Word ribbon at the top with tabs like Insert, Page Layout, References, etc. A tiger illustration is selected on the page. A context menu is open, and an arrow points to the 'Picture' option in the list. Another arrow points from the text 'Search the picture in clip art here' to the 'Clip Art' tab in the ribbon, which is currently selected. The 'Clip Art' dialog box is open, showing search results for 'people'.

Search the picture in clip art here

Picture

The 'Save As' dialog box is shown, allowing the user to choose a save location and file name. The 'File' tab is selected in the Word ribbon.

Saving a Word file:

In the File menu, select Save As. A pop – up window appears, select the destination to save the file and press Save button.

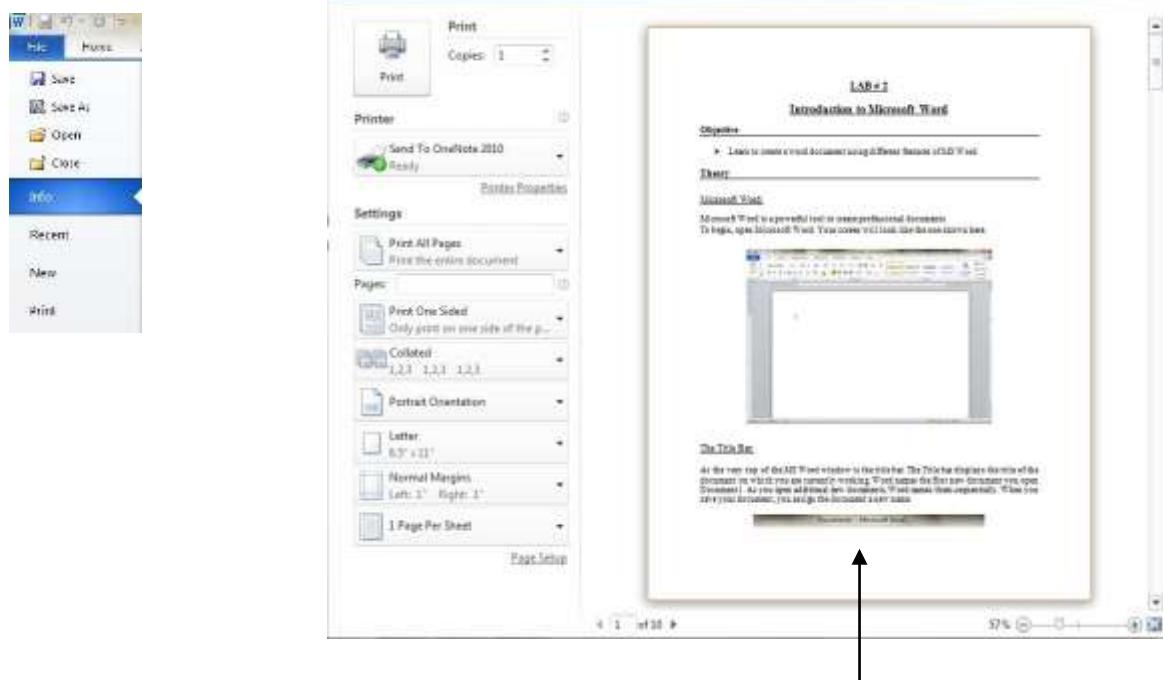
Printing a Word file:



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In the File menu, select Print option, a pop-up window appears. Set the page setting, select the printer and press Print button.

Print Preview





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Different shortcut keys used in a Word file

WORD® SHORTCUT KEYS	
Ctrl + A	Select all contents of the page
Ctrl + B	Bold highlighted selection
Ctrl + C	Copy selected text
Ctrl + X	Cut selected text
Ctrl + N	Open new/blank document
Ctrl + O	Open options
Ctrl + P	Open the print window
Ctrl + F	Open find box
Ctrl + I	Italicize highlighted selection
Ctrl + K	Insert link
Ctrl + U	Underline highlighted selection
Ctrl + V	Paste
Ctrl + Y	Redo the last action performed
Ctrl + Z	Undo last action
Ctrl + G	Find and replace options
Ctrl + H	Find and replace options
Ctrl + J	Justify paragraph alignment
Ctrl + L	Align selected text or line to the left
Ctrl + Q	Align selected paragraph to the left
Ctrl + E	Align selected text or line to the center
Ctrl + R	Align selected text or line to the right
Ctrl + M	Indent the paragraph
Ctrl + T	Hanging indent
Ctrl + D	Font options
Ctrl + Shift + F	Change the font
Ctrl + Shift + >	Increase selected font +1
Ctrl +]	Increase selected font +1
Ctrl + Shift + <	Decrease selected font -1
Ctrl + [Decrease selected font -1
Ctrl + Shift + *	View or hide non printing characters
Ctrl + ←	Move one word to the left
Ctrl + →	Move one word to the right
Ctrl + ↑	Move to beginning of the line or paragraph
Ctrl + ↓	Move to the end of the paragraph
Ctrl + Del	Delete word to right of cursor
Ctrl + Backspace	Delete word to left of cursor
Ctrl + End	Move cursor to end of document
Ctrl + Home	Move cursor to beginning of document
Ctrl + Space	Reset highlighted text to default font
Ctrl + 1	Single-space lines
Ctrl + 2	Double-space lines
Ctrl + 5	1.5-line spacing
Ctrl + Alt + 1	Change text to heading 1
Ctrl + Alt + 2	Change text to heading 2
Ctrl + Alt + 3	Change text to heading 3
F1	Open help
Shift + F3	Change case of selected text
Shift + Insert	Paste
F4	Repeat last action performed (Word 2000+)
F7	Spell check selected text and/or document
Shift + F7	Activate the thesaurus
F12	Save as
Ctrl + S	Save
Shift + F12	Save
Alt + Shift + D	Insert the current date
Alt + Shift + T	Insert the current time
Ctrl + W	Close document



Conclusion:-----

Lab Exercise:

1. Write an article on any topic comprising of three paragraphs and two columns. Use the following MS Word features:
 1. Bold, Italic, Underline, Highlight, Small Caps.
 2. Different Line Spacing
 3. Bulletin or Numbering
 4. Paragraph Alignment
 5. Insert a picture relevant to your topic on the right side of your paragraph
 6. Place your name and student id at the **top right** in font size **10**.
2. Draw table for task 4 of lab 1.
 - a. Insert your **name**, **roll number** and **lab number** as header
 - b. Insert **subject name** and **date and time** as footer
 - c. Add Page numbers
3. Write a proposal for any project of two pages, contains at least two figures, two tables, one equation with
 - a. Title page
 - b. Index
 - c. List of figures
 - d. List of tables
 - e. Water mark
4. Draw a scatter chart with line for the given data and insert data as object in MS-Word with graph

X-Values	Y-Values
0	5
1	4
2	3
3	8
4	9
5	4
6	5
7	6
8	2
9	4



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8

Attach back to back print outs of these tasks with your manual.

(Each question should be on separate page with the heading of **Question No.....** (same format))

LAB#3

Introduction to the MS Power point

Objective:

Learn to create presentations using Microsoft power point

Background:

Microsoft Power Point:

Microsoft PowerPoint is a software package that creates **visual aids** for presentations. Depending on your presentation requirements, you can use PowerPoint to create overheads, handouts, speaker notes, presentation outline, on-screen slide shows, and web presentations. PowerPoint also allows a wide-range of media, including text, graphics, charts, sound files and movies.

To start Microsoft PowerPoint: Choose Start → All Programs → Microsoft Office → Microsoft Office PowerPoint 2010. PowerPoint will open up and present you with a new blank presentation.

The Power Point Screen

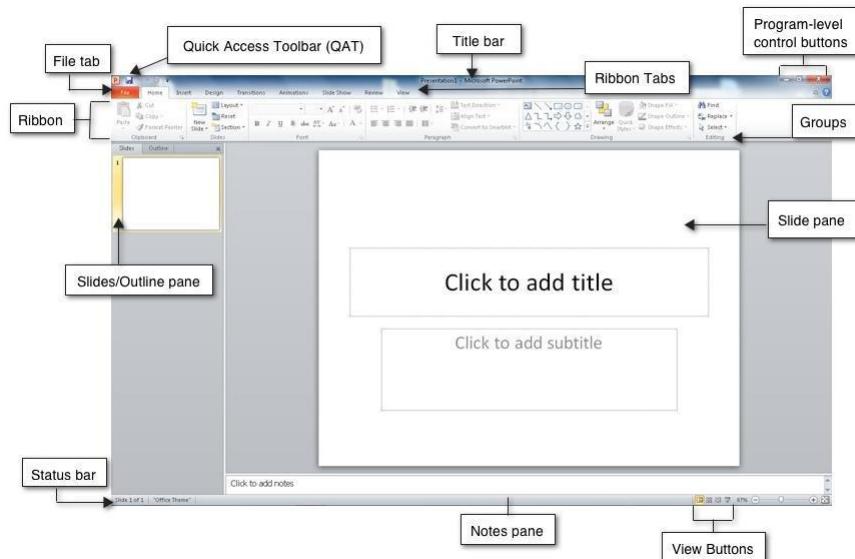


Figure 1: PPT screen

Creating a Presentation

Once MS PowerPoint is open, there are several ways to start a presentation.

Blank Presentation:

You can create a blank presentation. Go to File tab → New → Blank presentation, and click Create button. This presentation will be **empty of content and design**. Start with this option if you would like to add your content, designs and layouts as **you create your presentation**.

From Design Template:

You can also create a presentation based on a template. Go to **File tab** → **New** → **Installed Templates**, and select a template for the new presentation. The design template option will create a blank presentation for you (i.e. Empty of content), which has a presentation design applied to it.

Design templates specify how your presentation will look overall and includes the colour scheme, placeholder sizes and positions, font style, type and size of bullets etc.

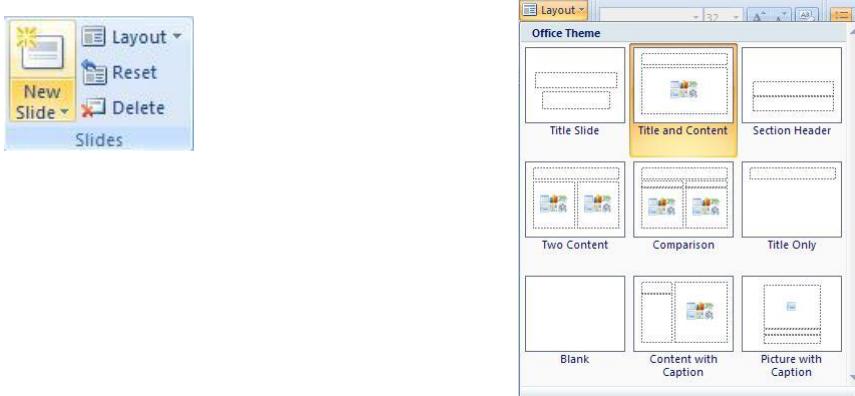
Inserting New Slides:



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To insert a new slide, click Home → New slide.

Slide Layout:

A slide layout contains placeholders that are used to position text and objects within your slide. Placeholders can be moved and resized within a slide. Slide layouts are broken into 4 categories:

- Text layouts
- Content layouts
- Text and content layouts
- Other layouts

Note that the content layouts can be used to insert clip art, media files, tables and charts. To change your slide layout:

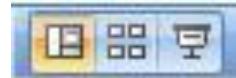
1. Select the slide(s) you wish to change.
2. Click Home → Layout. A range of layouts will be presented.
3. Move your mouse over the slide layout you want, and click it to make a selection.

You can change the slide layout for a particular slide at any time. Existing content will be rearranged to fit into placeholders on the new layout.

Deleting Slides:

To delete a slide, select the slide you wish to remove (in the left-hand 'Slide/Outline' pane) and press the 'Delete' button on your keyboard.

Viewing Your Presentation:



There are several different views in PowerPoint. These views can be accessed by clicking on the appropriate View Button at the bottom of your screen.

Each view has its own use in the creation of a presentation. There are 3 views that you will use frequently when creating a presentation.

Normal View:

Normal View is split into three panes – Slides/Outline, Slide and Notes. This view can be useful when you want to work on all three areas of your presentation at once. The panes can be resized by taking your mouse cursor over the pane line, holding down your left mouse button, and dragging the cursor in the appropriate direction.

Slide Sorter View:

This view is excellent for giving you an overall view of your presentation and also allows you to quickly rearrange your slides (very useful for obtaining a logical order to your presentation).

Slideshow View:

This view allows you to view your presentation as a slide show. To move forward through your slides, either click your mouse, or use the down arrow key on your keyboard. To exit your slideshow, press the Esc key.

Saving and Closing Your Presentation:



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To save your presentation:

1. Choose File tab→ Save.
2. Choose the drive/folder where you want to save your presentation.
3. Give your presentation a name (be descriptive). The PowerPoint file should have the extension ‘.pptx’.
4. Choose Save.

To save your presentation under a different name, use the 'Save As' command instead of 'Save'.

Printing:

Before printing a presentation, choose the Print Preview command, which can be found by choosing File tab→ Print → Print Preview. The presentation will appear on a new screen, and will let you see how your presentation looks before it is printed. It is a good idea to see if any text or objects are spilling over a page.

To print a presentation, choose File tab→ Print (the print dialog box will appear):

The print dialog box is similar to other office packages; however, in PowerPoint you have the option to choose what aspect of your presentation you would like to print. It is possible to print:

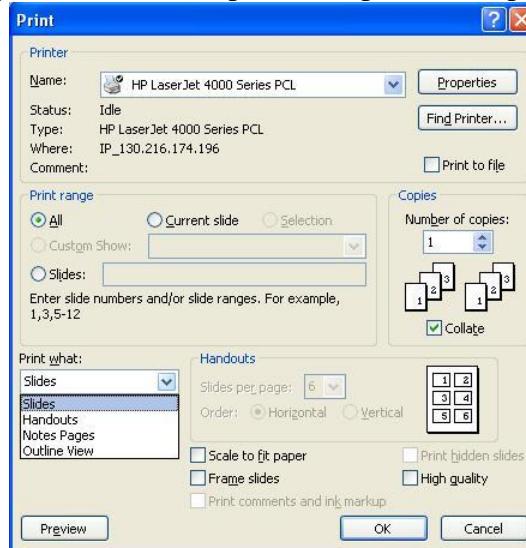


Figure 3: Printer properties

Slides

Handouts

Notes Pages

Outline View

To choose what you would like to print, click on the drop-down list in the 'Print what' area.

Note: If you choose 'Handouts', the Handouts options will become active.

Slide Design:

Microsoft PowerPoint provides slide design templates and themes that you can apply to a presentation to give it a complete professional look.

Customizing a Slide Design

A Design Theme contains a background, colour scheme and font selection(s) for your presentation. It is a quick way of jazzing up a presentation. PowerPoint comes with a range of predefined themes for your use. You can find the set of slide design themes from Design



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→Themes.

Put mouse over a design theme to preview its application to your presentation. The theme can be applied to all slides or selected slides, and you can apply more than one type of design theme in a single presentation. Right click a theme and decide if you would like it applied to the selected slide (Apply to Selected Slides) or the whole presentation (Apply to All Slides) by using the corresponding menu command.



Figure 4:Design Layout

Changing the Colour Scheme:

You can use your personal colours for all your presentations or create ‘corporate colours’ for your group!

1. Click on the Colors option in the Themes group.

2. Right click a colour scheme and decide if you would like it applied to the selected slide (Apply to Selected Slides) or the whole presentation (Apply to All Slides) by using the corresponding menu command.



Figure 5:Color Layout

Pictures:

A wide range of media and graphical materials such as still and animated pictures can be incorporated into a PowerPoint presentation. Pictures of any format may be used: jpeg, bmp, gif, tiff, etc. To add a picture:

1. Click Insert → Picture and select from your files.

2. Locate the picture file that you want to insert, click Insert.

3. With the picture selected, you can edit it using the Picture Tools to set the effect you want:



Figure 6:Background Layout

You may also use picture as the background, to do that:



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1. Right click on the background of a slide and select Format Background.
2. In the Format Background window, click on the Fill tab, and choose Picture or texture fill. Click the File... button, find the picture and insert.
3. The background can be applied to one or all your slides. If you wish to use a different picture on each slide, apply the picture only to the slide showing, insert a new slide and repeat the steps until you have all pictures backgrounds on presentation.

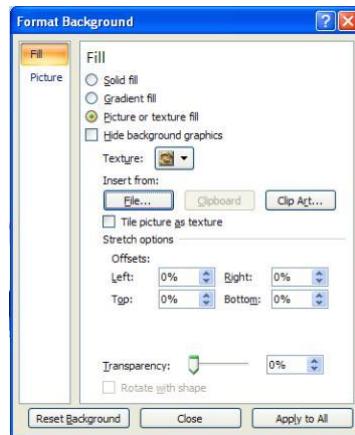


Figure 7. Format background

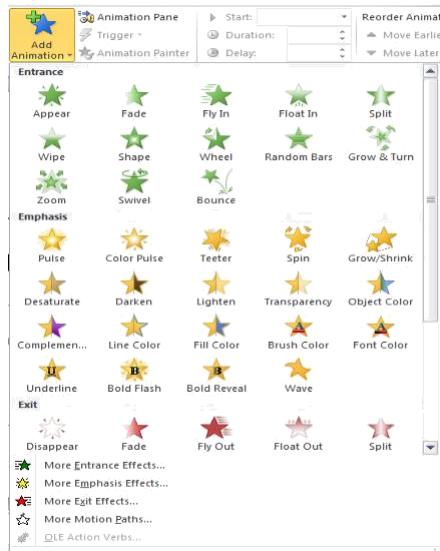


Figure 8. Add features

Animation:

You can add interest to your presentation by animating the text, graphics, diagrams, charts, and other objects to control the flow of information and draw attention to important points.

To add an animation scheme to the selected object:

1. Select the text/graphic/diagram/chart/other object that you want to animate from your slide.
2. On the Animations tab, click the Animate box.
3. To choose a scheme, mouse over each scheme to see the combination of animation incorporated, and click to select a scheme.
4. Click on Slide Show to see the overall effect.

To add a transition scheme to a slide:

1. Select the slide.
2. On the Animations tab, in the Transition to This Slide group, select one of the transition schemes.
3. Select the Transition Speed to suit.

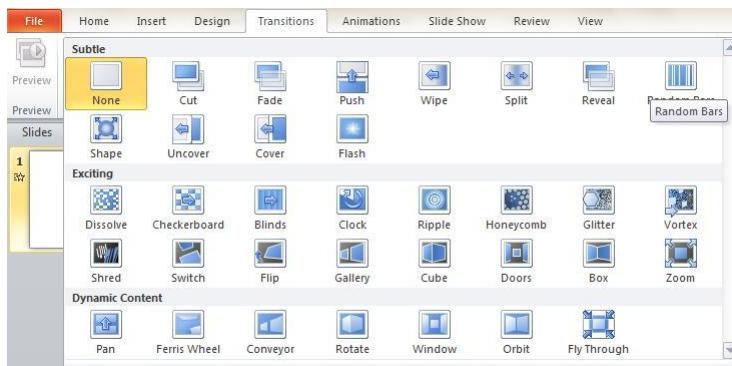


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4. Select an appropriate Transition Sound or have no sound at all.
5. Choose the slide to advance On Mouse Click or Automatically After so many seconds.
- 6 Run the Slide Show to see what you've created



Tip: If you want a transition scheme on multiple slides, highlight the slides first from the Slides pane on the left side of the screen. (Use the CTRL key to highlight random slides.) Then, choose the transition scheme and it will apply to the highlighted slides.

Sound:

Sound may be part of the slide transition or it may be inserted as part of the animation sequence.

Inserting Sound

1. Click Insert → Sound → Sound from Clip Organizer.
2. The Clip Art window appears.
3. Click a sound clip to insert it to the slide. You will be asked if you want the sound to play automatically or on a mouse click.



Movie:

Inserting Movie

1. From the menu choose: Insert → Movies → Movie from File....



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2. The Insert Movie dialog appears. Find your movie file and insert it. (Not all movie files will work in PowerPoint.)
3. Select if the movie should start on its own (Automatically) or on a mouse click (When Clicked).
4. Select the movie icon, the Movie Tools will appear, where you can set more properties, e.g. check the Play Full Screen option if you want the movie to play full screen. Play the movie to see how it works.

The screenshot shows a Microsoft PowerPoint slide with a stacked bar chart titled "Chart in Microsoft PowerPoint - Microsoft ...". The chart has four categories on the x-axis labeled "Category 1", "Category 2", "Category 3", and "Category 4", each containing three series: Series 1 (blue), Series 2 (red), and Series 3 (green). Below the chart is a note placeholder "Click to add notes". To the right of the chart is an open Microsoft Excel spreadsheet with data in columns A through G. The data is as follows:

	A	B	C	D	E	F	G
1		Series 1	Series 2	Series 3			
2	Category 1	4.3	2.4		2		
3	Category 2	2.5	4.4		2		
4	Category 3	3.5	1.8		3		
5	Category 4	4.5	2.8		5		
6							

Below the Excel window, a ribbon menu is visible with tabs like File, Home, Insert, Page Layout, Formulas, Data, Review, View, etc. At the bottom of the slide, there is a navigation bar with "Slide 1 of 1", "Office Theme", and other presentation controls.

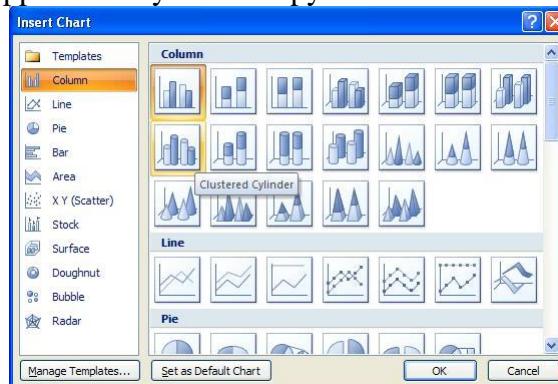
To resize chart data range, drag lower right corner of range.

Symbol Video Audio
Video from File... Video from Web Site... Clip Art Video...

Charts:

Creating Charts

You can create charts in PowerPoint so that you can animate and add sound to them. If you have data and charts already created in other applications you can copy the data into



PowerPoint's 'chart maker'. To create a chart in PowerPoint:

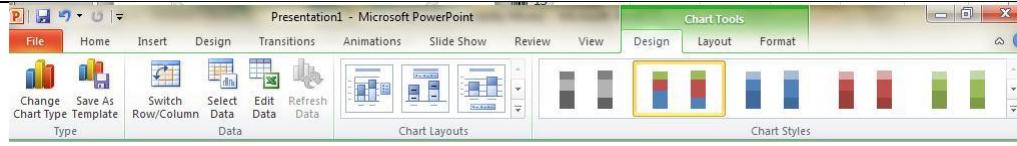
1. Click Insert → Chart. The Insert Chart dialog opens, where you can select a type of chart of your choice.
2. Microsoft Excel opens and a chart is displayed with its associated data in a table called a datasheet.
3. You can enter your own data on the datasheet, import data from a text file or paste data from another program. (Select the data on the spreadsheet and delete the sample data before inputting new data.)
4. When data is complete, click on the slide, outside the chart area and see the slide as it would be presented.
5. With the chart selected, the Chart Tools will appear in the Ribbon. You can do more settings using the Chart Tools, e.g. change the chart layout or style.



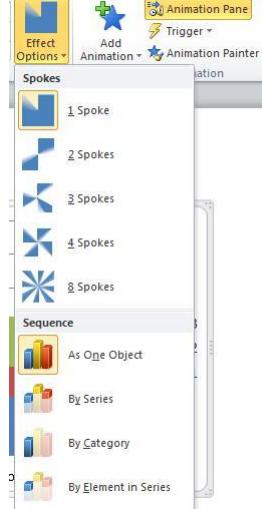
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Note: The spreadsheet and chart works just like any Excel spreadsheet and chart so you can manipulate the data and chart just as you would in Excel.



Animating Charts :

1. Select the chart that you want to animate.
2. Click Animations → Custom Animation.
3. In the Custom Animation window, click on the Add Effect button and select an effect. This will animate the chart as a whole.
4. To animate the elements of a chart, select the effect, click on the down arrow of the effect and select Effect Options, a box as in the figure appears – click on the Chart Animation tab, and select one of the effects from the Group chart box.

General Shortcuts

CTRL + N

CTRL + M

CTRL + O

CTRL + S

CTRL + W

CTRL + P

F1

New presentation

New slide in presentation

Open presentation

Save presentation

Close presentation

Print presentation

Help

Slide Show Shortcuts

F5

Esc

B

CTRL + H

□, □ or Spacebar

□, □ or Backspace

<number> + Enter



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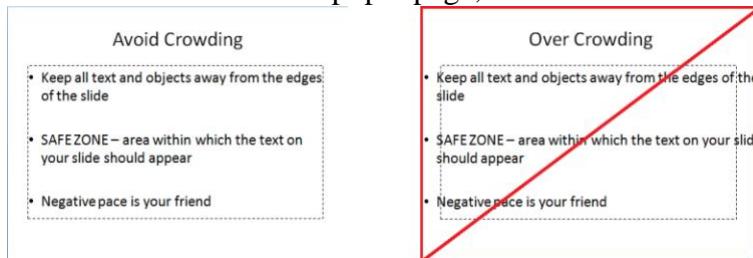
View slide show
End slide show
Display a black screen
Hide the pointer and button
Next slide or animation
Previous slide or animation
Go to slide <number>

Elements of a Good Presentation

Making a good presentation can be easy if you include the following elements:

Element 1:

Create simple slides, with no more than one concept per page, and no more than 25-30 words per page.



Element 2:

Text and images kept within a reasonable distance from the edges of the slide. This prevents the slide from looking over-crowded.

Element 3:

Slides those are easy to read. Avoid flashy color schemes, fonts, and animation. These features should complement a presentation, and not be the presentation itself.



NOTE: Choose "Slide Design - Color Schemes" from the task pane menu to see a variety of predesigned schemes you can apply to your slides.

Element 4:

Use the slides as prompts and not as a script to be read aloud. Sometimes audiences find it distracting to try to read and listen at the same time.

Element 5:

When you're making your presentation, create the content of your presentation first, and then get creative with colors and animation.

Theory

Microsoft Excel:

Microsoft Excel is the most widespread program for creating spreadsheets on the market today. Spreadsheets allow you to organize information in rows and tables (which create cells), with the added bonus of automatic mathematics. Spreadsheets have been used for many, many years in business to keep track of expenses and other calculations. Excel will keep track of numbers you place in cells, and if you define cells to refer to each



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other, any changes made in one cell will be reflected in these referring cells. It sounds a bit complicated, but Excel makes it all a breeze.

Conclusion:

Lab Exercise:

Create a presentation on topic of your choice, your presentation should include:

10 slides presentation

Headings, points related to your topic

- 1) Pictures
- 2) Animations
- 3) Transitions
- 4) Charts (not compulsory but will be appreciated)
- 5) Printout 4 slides at one page



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LAB NO 4
Introduction to Microsoft EXCEL

Objective:

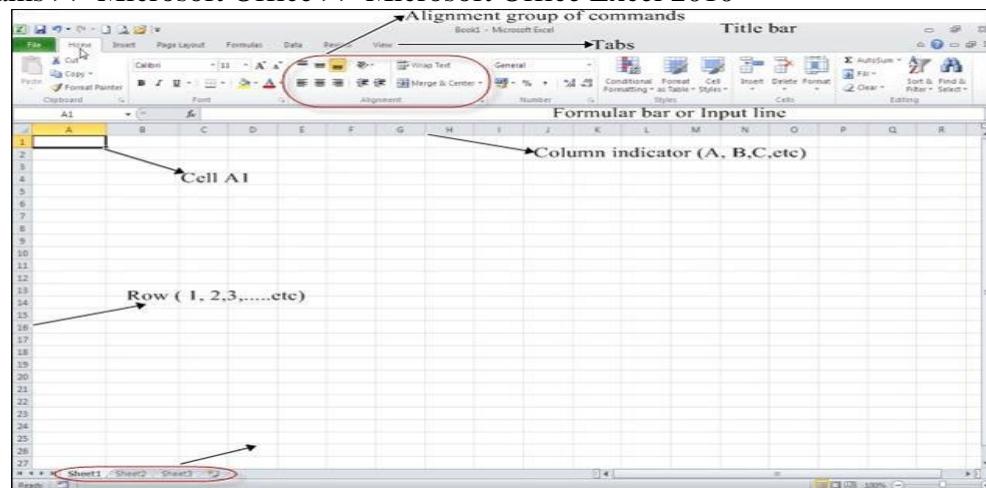
Learn to create Spreadsheets using Microsoft Excel

Background:

Microsoft Excel is a **spreadsheet program included** in the Microsoft Office suite of applications. Spreadsheets present tables of values arranged in **rows and columns** that can be manipulated mathematically using both basic and complex arithmetic operations and functions.

OPENING MICROSOFT EXCEL:

Start >> Programs >> Microsoft Office >> Microsoft Office Excel 2010



Microsoft Excel will automatically open with a blank spreadsheet spanning many columns and rows. You will notice a number of toolbars with many more options included.

Presentation of data in tables

In all aspects of your university study and professional career, good, clear presentation of data and information is essential to the success with which your audience receives your information. Simple features within Excel can really enhance how your data looks and improve comparability of data sets.

After entering the following data set into Excel we will use features, to improve the presentation of the data. From this....

	A	B	C	D	E	F
1	Japanese Car Data					
2	1991-1993 models			1994-1996 models		
3	Make	Trouble f	Had Prob	Trouble f	Had Prob	Problems
4	Mazda	44		41	46	33
5	Toyota	212		196	123	87
6	Mitsubishi	110		134	89	84
7	Nissan	88		120	80	74
8	Subaru	37		36	22	13
9	Honda	82		70	80	68
10						

Make	1991-1993 models				1994-1996 models			
	Trouble free	Had Problems	Total	Trouble free (%)	Trouble free	Had Problems	Total	Trouble free (%)
Subaru	37	36	73	51%	22	13	35	63%
Toyota	212	196	408	52%	123	87	210	59%
Mazda	44	41	85	52%	46	33	79	58%
Honda	82	70	152	54%	80	68	148	54%
Nissan	88	120	208	42%	80	74	154	52%
Mitsubishi	110	134	244	45%	89	84	173	51%
Total	573	597	1170		440	359	799	
Average	95.5	99.5	195	49%	73.3	59.8	133.2	56%

Entering data



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When you open a workbook, by default, Excel selects cell A1 as the active cell.

1. Begin typing your data into the active cell.
2. Press the Enter key to move the active cell down (e.g. A2) OR Press the Tab key to move the active cell to the right (e.g. B1)
3. To activate a random cell, move the cursor to that cell with the mouse and click on the mouse button.
4. To select a group of adjacent cells, click on the first cell and drag the cursor across the adjoining cells.
5. To select a group of random cells, click the first cell, hold down the CTRL key and click the additional cells.

Column widths / row widths

To change the column width to display all the data clearly,

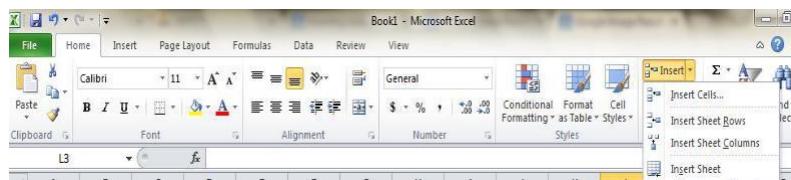
1. Move the cursor with the mouse to the right of the column heading of the column you want to widen (i.e. A B C D, etc). The cursor will turn into a cross symbol.
2. Double click the mouse and the column will automatically widen to the width of the contents. OR Click and drag the column to widen manually.
3. Row widths are adjusted the same way, except you place the cursor between the row headings.

	A	B	C
1	Japanese Car Data		
2	1991-1993 models		
3	Make	Trouble f	Had Prc
4	Mazda	44	4
5	Toyota	212	19
6	Mitsubishi	110	13
7	Nissan	88	12
8	Subaru	37	3
9	Honda	82	7
10			

To insert columns or row

To insert a column within a data set:

1. Select the column to the right of where you want to position the new column, by clicking on the column heading (i.e. A B C D, etc).
2. Right click your mouse while your cursor is over the column heading.
3. Click on Insert.



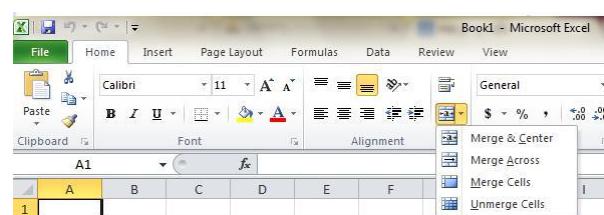
To insert a row within a data set:

1. Select the row below where you want to position the new row, by clicking on the row heading (i.e. 1 2 3 4, etc).
2. Right click your mouse while your cursor is over the row heading.
3. Click on Insert.

Merging cells

To centre a heading across the width of the data set

1. Select the cell that contains the heading and drag the cursor across the columns that represent the data set.



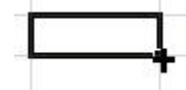
2. Click on the Merge and Center button on the toolbar.



Autofill:

Excel has an AutoFill facility that is very useful. You can read all about this in the built-in Help For now, try the following:

- On a new worksheet, click in A1 and type Jan
- Point precisely to the fill handle (small black +) in the bottom right-hand corner of the cell.
- Drag this down to the A12 and then release the button
- Excel should have filled in the months of the year
- Now try days of the week (type mon or monday)
- Fill two adjacent cells with 0 and 5, select both cells and drag the fill handle to generate
 - 10, 15, 20.....



Filling cells with the same data:

There is a quick way of entering the same data into a range of cells.

- Highlight an area of cells (for example, A1:A6)
- Type some characters or a number
- Press the Ctrl and Enter keys at the same time
- Remove the highlighting by clicking in any cell

WORD WRAP:

A long string of text can be made to wrap onto several lines within a cell using this facility.

- Click in a cell and then select Cells from the Format menu
- Click on the Alignment tab
- Click in the wrap text box, so that it is ticked
- Click OK
- Type some text and note how it wraps
- Press the Enter Key

Page setup:

The page setup allows you to format the page, set margins, and add headers and footers. To view the Page Setup select



Windows Button > Print > Print Preview > Page Setup. Select the Orientation under the Page tab in the Page Setup dialog box to make the page Landscape or Portrait. The size of the worksheet on the page can also be formatted under the Scaling title. To force a worksheet to be printed on one page, select Fit to 1 page(s).

Margins:

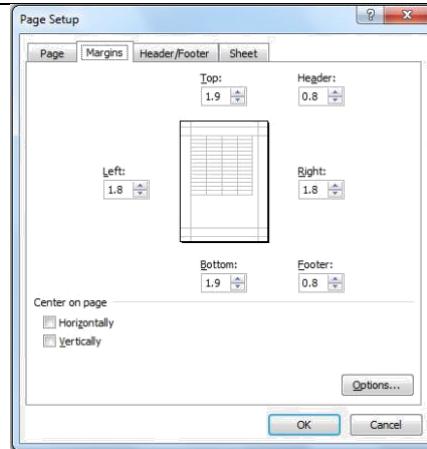
Change the top, bottom, left, and right margins under the Margins tab. Enter values in the Header/Footer fields to indicate how far from the edge of the page this text should appear. Check the boxes for centering



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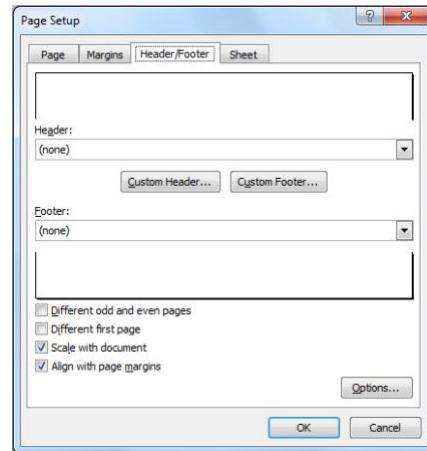
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Horizontally or Vertically to center the page.

Header/footer:

Add preset Headers and Footers to the page by clicking the drop-down menus under the Header/Footer tab. To modify a preset Header or Footer, or to make your own, click the Custom Header or Custom Footer buttons.



A new window will open allowing you to enter text in the left, center, or right on the page.

Format Text – After highlighting the text click this button to change the Font, Size, and Style.

Page Number - Insert the page number of each page.

Total Number of Pages - Use this feature along with the page number to create strings such as "page 1 of 15".

Date - Add the current date.

Time - Add the current time.

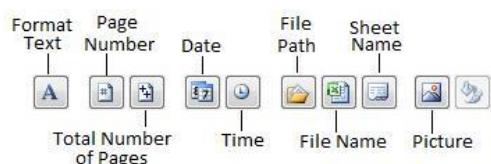
File Name - Add the name of the workbook file.

Sheet Name - Add the name of worksheet.

Picture - Add a picture.

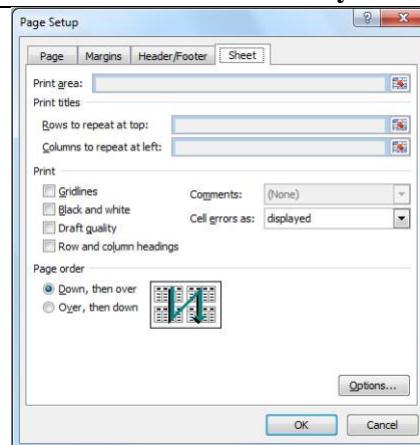
SHEET:

Click the Sheet tab and check Gridlines box under the Print section if you want the gridlines dividing the cells to appear on the page. If the worksheet is several pages long and only the first page includes titles for the columns, select Rows to repeat at the top of the Print titles section to choose a title row that will be printed at the top of each page.





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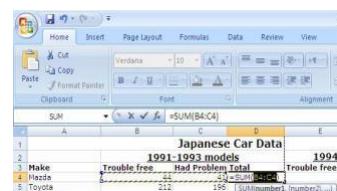
Autosum function

To automatically total a row or column of numbers

For a row of numbers, select the empty cell directly to the right of the numbers, then:

1. Click the AutoSum button on the right hand side of the Home ribbon
2. The SUM formula including the range of numbers selected will appear in the formula bar
3. Check you have the correct range and then press the Enter button.

OR



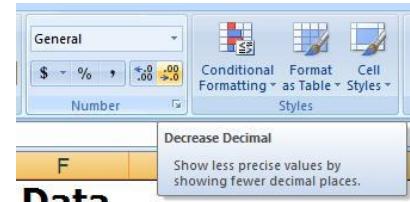
For a column of numbers, select the empty cell directly below the numbers, then continue with steps 1 to 3 above.

Rounding

To round a decimal value to a whole number or simply increase or decrease the number of decimal places a value has:

Select the cell/s containing the value/s you want to alter

1. Click on the Decrease Decimal button to remove decimal places
OR
2. Click on the Increase Decimal button to add decimal places



Mple calculations

To carry out simple calculations:

1. Think about how you would do the problem in your head or on your calculator.
2. Think about how Excel may carry this out and get Excel to do it by clicking on the relevant cell/s and using the appropriate combination of:

addition+

subtraction-

multiplication*

division /

brackets ()

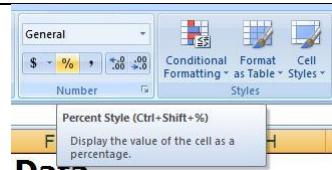
to the power of ^

3. Round appropriately using the “Decrease Decimal” button or the “Increase Decimal” button as per Rounding instructions above.

Percentages



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To create a percentage from a proportion (decimal), simply use the Percent Style button. This will automatically display the proportion (decimal) to the nearest whole percent, so:

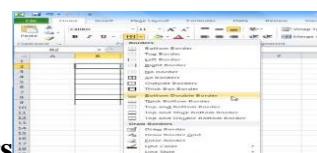
0.003 will become 0%

0.03 will become 3%

0.3 will become 30%

3 will become 300%

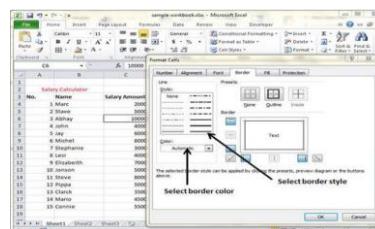
1. Select the cell/s containing the number/s you want to alter
2. Click on the Percent Style button to round to the nearest whole percentage



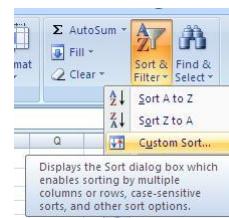
Borders

Borders can be applied individually to each of the 4 sides of a cell or applied to a group of cells. Borders allow you to separate data groups and highlight specific sections of data. To add a border to a cell or group of cells

1. Select the cell(s) that you want to place a border around
2. Click on the down arrow ▼ of the Borders button on the toolbar. A range of different border buttons will be displayed.
3. Click on the Borders button you want for the selected cells.



Sorting data



To sort data numerically or alphabetically

1. Select the rows of data you want to sort
2. Click on the Sort and Filter button on the Home ribbon.
3. Click on Custom Sort.
4. Next to the Sort By heading, click on the down arrow ▼ to select the column on which you want to sort the data
5. Select either Smallest to Largest or Largest to Smallest.
6. Click OK.

Charts



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Charts make data visual. With a chart you can transform spreadsheet data to show comparisons, patterns, and trends.

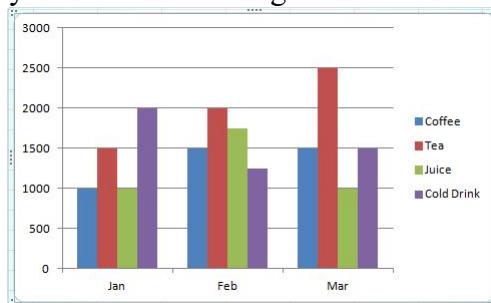
In Excel 2007, you just select data in your worksheet, choose a chart type that best suits your purpose, and click. That's it! You can also use the new Chart Tools to customize the design, layout, and formatting of your chart. Just like the preview capability you saw in Word 2007 and PowerPoint 2007, you can see how various options

	A	B	C	D	E	F
1		Jan	Feb	Mar	Total	
2	Coffee	1000	1500	1500	4000	
3	Tea	1500	2000	2500	6000	
4	Juice	1000	1750	1000	3750	
5	Cold Drink	2000	1250	1500	4750	
6	Total	5500	6500	6500		
7						

would look just by pointing at them in the dialog box, even before you make a choice.

4 Clicks to create a simple chart in Excel 2007

Let's say we want to see graphically the sales of beverages in our café in the first 3 months of the year.



1. Select the cells containing the sales data, including cells with text (e.g. column and row headings for the data.)
2. Select Insert tab.
3. Select Column icon from Charts group
4. Select Clustered Column chart from 2-D Column type

The chart shows the sales of the 4 different beverages grouped together for each month. What if we want to see what happened in the sales of each beverage month over month? Select the chart, Chart Tools -> Design -> Data -> Switch Row/Column.

Chart elements

A chart has many elements. Some of these elements are displayed by default; others can be added as needed. You can change the display of the chart elements by moving them to other locations in the chart, resizing them, or by changing the format. You can also remove chart elements that you do not want to display.

Here are some standard chart elements.

1. The chart area encompasses the entire chart and all its elements.
2. The plot area is that area bounded by the axes, including all data series, category names, axis titles, and all markers that represent data points.

The data points are the individual values plotted in a chart and represented by bars, columns, lines, pie or doughnut slices, dots, and various other shapes called data markers. Data markers of the same color constitute a data series (i.e. related data points. You can plot

one or more data series in a chart, but pie charts have only one data series.

3. The horizontal (category) or vertical (value) axis is a line bordering the chart plot area used as a frame of reference for measurement. The y-axis is usually the vertical axis and contains data. The x-axis is usually the horizontal axis and contains the categories.

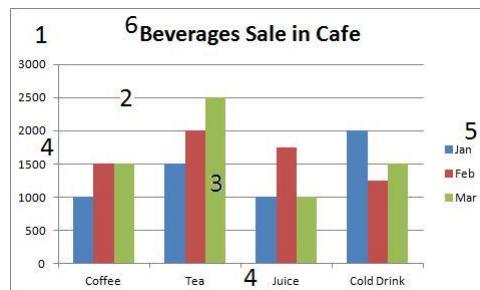


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4. A legend is a box that identifies the patterns or colors that are assigned to the data series or categories in a chart.
5. A chart title is the descriptive text for a chart. Note that horizontal and vertical axes usually have titles too.



Modifying charts

After you create a chart, you can modify it. For example, you may want to change the way that axes are displayed, add a chart title, move or hide the legend, or display additional chart elements.

To modify an element in the chart, you can right-click on it and choose the appropriate (format) option. Or, you can use the appropriate tabs, groups and options under Chart Tools. Add titles to a chart: Chart Tools -> Layout -> Labels -> Chart Title

Add axis titles to a chart: Chart Tools -> Layout -> Labels -> Axis Title

Add legend to a chart: Chart Tools -> Layout -> Labels -> Legend

Add data labels to a chart: Chart Tools -> Layout -> Labels -> Data Labels

Add data table to a chart: Chart Tools -> Layout -> Labels -> Data Table

To change formatting and layout of each axes: Chart Tools -> Layout -> Axes ->Axes

To turn gridlines on or off: Chart Tools -> Layout -> Axes -> Gridlines

To format the plot area: Chart Tools -> Background -> Plot Area

To format the chart wall (for 3-D charts): Chart Tools -> Background -> Chart Wall

To format the chart floor (for 3-D charts): Chart Tools -> Background -> Chart Floor

To change 3D viewpoint of a chart: Chart Tools -> Background -> 3-D Rotation

To move chart to a different sheet: Chart Tools -> Design -> Location -> Move Chart

Excel shortcut keys



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EXCEL® SHORTCUT KEYS

F2	Edit the selected cell
F5	Go to a specific cell
F7	Spell check selected text and/or document
F11	Create chart
Ctrl + Shift + ;	Enter the current time
Ctrl + ;	Enter the current date
Alt + Shift + F1	Insert new worksheet
Shift + F3	Open the Excel® formula window
Shift + F5	Bring up search box
Ctrl + A	Select all contents of worksheet
Ctrl + B	Bold highlighted selection
Ctrl + I	Italicize highlighted selection
Ctrl + C	Copy selected text
Ctrl + V	Paste
Ctrl + D	Fill
Ctrl + K	Insert link
Ctrl + F	Open find and replace options
Ctrl + G	Open go-to options
Ctrl + H	Open find and replace options
Ctrl + U	Underline highlighted selection
Ctrl + Y	Underline selected text
Ctrl + 5	Strikethrough highlighted selection
Ctrl + O	Open options
Ctrl + N	Open new document
Ctrl + P	Open print dialog box
Ctrl + S	Save
Ctrl + Z	Undo last action
Ctrl + F9	Minimize current window
Ctrl + F10	Maximize currently selected window
Ctrl + F6	Switch between open workbooks/windows
Ctrl + Page up & Page Down	Move between Excel® worksheets in the same document
Ctrl + Tab	Move between two or more open Excel® files
Alt + =	Create formula to sum all of above cells
Ctrl + '	Insert value of above cell into current cell
Ctrl + Shift + !	Format number in comma format
Ctrl + Shift + \$	Format number in currency format
Ctrl + Shift + #	Format number in date format
Ctrl + Shift + %	Format number in percentage format
Ctrl + Shift + ^	Format number in scientific format
Ctrl + Shift + @	Format number in time format
Ctrl + →	Move to next section of text
Ctrl + Space	Select entire column
Shift + Space	Select entire row
Ctrl + W	Close document

Conclusion:

Lab Exercise:

Create a marks sheet on Microsoft excel, which calculates the total, percentage and average of 5 courses of a student. Also create a chart to display the result in graphical form

Sample spread sheet



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	A	B	C	D	E	F	G	H	I	J	K	L
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17	S. No	Course ID	Course Name	Theory			Practical					
18				Marks	Gpa	Grade	Marks	Gpa	Grade			
19	1											
20	2											
21	3											
22	4											
23	5											
24												
25												
26												
												SGPA:



LAB-5

Introduction to Internet, Web browsers, and Social media

Objective:

To learn the basics of Web Browsers Setting, Internet and Social Media

Background:

Internet is a worldwide collection of computer networks that allows people to find and use information and communicate with others. This also allows accessing their resources, such as files, services, or other people. A **web browser** is a software application which provides the environment for retrieving, presenting, and traversing information resources on the Internet.

Internet Terminology

The most important parts of the **World Wide Web** are the elements, such as Servers, pages, hot links, and more--all of which comprise the bulk of the World Wide Web. The following are some related terms:

Address: The *unique location* of an information site on the Internet or a specific file (for example, a Web page).

Internet Protocol: A set of rules. On the Internet, this translates into the set of rules computers use to communicate across networks.

TCP/IP: An abbreviation for Transmission Control Protocol/ Internet Protocol. Set of rules used to connect computers on the internet.

Megahertz (MHz): One hertz represents a single cycle of current per second in a circuit. A cycle is merely the time it takes an electron to make a "trip" between two points in a circuit. A megahertz represents 1,00,00,000 cycles per second. PC speed is usually gauged in megahertz, so a 66MHz processor can complete 6,60,00,000 cycles in one second.

Download: To copy a file from one computer system to another. From the Internet user's point of view, to download a file is to request it from another computer (or from a Web page on another computer) and to receive it.

Upload: Transferring a file to a host computer from the user's computer, usually using FTP.

Internet Service Provider (ISP): An organization or company that provides its users access to the Internet.

Understanding World Wide Web

The World Wide Web, a hypertext based system, is the fastest growing part of the Internet, as well as the most exciting. In time, most daily activities may very well take place through the World Wide Web. It is practically entertaining as well as provides practical education and business.

Web Site Terminology

The most important parts of the World Wide Web are the elements, such as servers, pages, hot links, and more--all of which comprise the bulk of the World Wide Web. The following are some related terms:

Web site: A collection of World Wide Web documents, usually consisting of a home page and several related pages. The user might think of a Web site as an interactive electronic book.

Uniform Resource Locator (URL): The World Wide Web address of a site on the Internet.

Webmaster: The individual responsible for maintaining and updating the content of a World Wide Web document. Webmasters are the creative force behind the World Wide Web.

Home page: Frequently, the "cover" of a particular Web site. The home page is the main, or first, page displayed for an organization's or person's World Wide Web site.



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Hypertext Transfer Protocol (HTTP): A standard used by World Wide Web servers to provide rules for moving text, images, sound, video, and other multimedia files across the Internet.

Bookmark: A saved link to a Web site that has been added to a list of saved links so that the user can simply click on it rather than having to retype the address when visiting the site again.

Link: Short for "hypertext link." A link provides a path that connects the user from one part of a World Wide Web document to another part of the same document, a different document, or another resource. A link usually appears as a uniquely colored word that the user can click to be transported to another Web page.

Anchor: A link that takes the user to a different part of the same Web page.

FAQ: Stands for Frequently Asked Questions. Many times, newcomers to a newsgroup will ask questions that the old-timers have heard over and over again. FAQs are written and posted periodically to reduce the number of redundant questions.

Hits: When conducting an Internet search on the Web, each result of a particular search is called a hit.

Finding Information on the Internet

The Internet isn't called the Information Superhighway for nothing. The Internet is information. Sometimes unfiltered, many times even useless, more information is available on the Internet than any one person could ever deal with. There are Search Engines which can help the user find just about anything he wants. A search engine is a computer program that indexes a database and then enables users to search it for relevant information.

Using the WWW for Communication

The most popular use of the Internet is the World Wide Web. In the following sections, are a few ways people are using the Internet to communicate with one another.

Personal Communication - Email:

E-mail makes up a majority of Internet traffic today. They provide a cheap, fast and convenient way of communicating with each other. Some of the terms which users come across while using email are as follows:

POP: This term stands for Post Office Protocol, which is the technical name for the way some e-mail clients receive their mail.

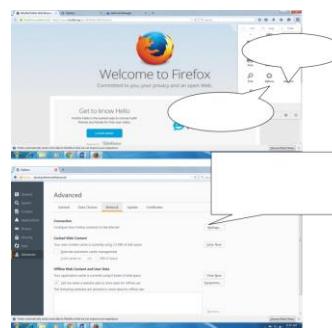
SMTP: This term stands for Simple Mail Transport Protocol, which is another technical name for the way e-mail messages are sent on the Internet by the clients.

Spam: Any mass-mailed material meant for self-promotion, advertisement, or pure silliness. Spam, or electronic junk mail, is probably one of the most offensive aspects of the Internet.

Web Browser

Web Browser is a software program that lets the user finds, see, and hear material on the World Wide Web, including text, graphics, sound, and video. Popular browsers are Internet Explorer, Mozilla Firefox, Google chrome, safari, Netscape, and so on. Most online services have their own browsers.

In this lab, we have to do practice same general setting on a Mozilla Firefox,



|Figure 1. Browser display

Options:



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Advanced panel - Accessibility, browsing, network, updates, and other advanced settings in Connection: Your organization or Internet service provider may offer or require you to use a proxy. A proxy acts as an intermediary between your computer and the Internet. It intercepts all requests to the Internet to see if it can fulfill the request using its cache. Proxies are used to improve performance, filter requests, and hide your computer from the Internet to improve security. Proxies are often part of corporate firewalls. This add-on places the search engine buttons inside the search bar instead of the dropdown menu.



Figure 1. Browser display comment box

Social Media on Internet

Social media is the collective of online communications channels dedicated to community-based input, interaction, content-sharing and collaboration. Websites and applications dedicated to forums, microblogging, social networking, social bookmarking, social curation, and wikis are among the different types of social media.

Here are some prominent examples of social media:

Facebook is a popular free social networking website that allows registered users to create profiles, upload photos and video, send messages and keep in touch with friends, family and colleagues. According to statistics from the Nielsen Group, Internet users within the United States spend more time on Facebook than any other website.

Twitter is a free microblogging service that allows registered members to broadcast short posts called tweets. Twitter members can broadcast tweets and follow other users' tweets by using multiple platforms and devices.

Google+ (pronounced Google plus) is Google's social networking project, designed to replicate the way people interact offline more closely than is the case in other social networking services. The project's slogan is "Real-life sharing rethought for the web."

Wikipedia is a free, open content online encyclopedia created through the collaborative effort of a community of users known as Wikipedia's. Anyone registered on the site can create an article for publication; registration is not required to edit articles. Wikipedia was founded in January of 2001.

LinkedIn is a social networking site designed specifically for the business community. The goal of the site is to allow registered members to establish and document networks of people they know and trust professionally.

Reddit is a social news website and forum where stories are socially curated and promoted by site members. The site is composed of hundreds of sub-communities, known as "subreddits." Each subreddit has a specific topic such as technology, politics or music. Reddit site members, also known as, "redditors," submit content which is then voted upon by other members. The goal is to send well-regarded stories to the top of the site's main thread page.

Pinterest is a social curation website for sharing and categorizing images found online. Pinterest requires brief descriptions but the main focus of the site is visual. Clicking on an image will take you to the original source, so, for example, if you click on a picture of a pair of shoes, you might be taken to a site where you



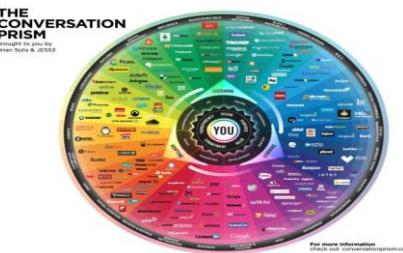
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can purchase them. An image of blueberry pancakes might take you to the recipe; a picture of a whimsical birdhouse might take you to the instructions.

Furthermore, Brian Solis created the following social media chart, known as the conversation prism, to categorize social sites and services into various types of social media. Social media is becoming an integral part of life online as social websites and applications proliferate. Most traditional online media include social components, such as comment fields for users. In business, social media is used to market products, promote brands, and connect to current customers and foster new business.



Conclusion:

Lab Exercise:

Select browser of your choice and go inside settings take snap and name it.



LAB-6

Introduction to Basic Configuration and Simulation of a Network Using Packet Tracer

Objectives:

Identify types of computer networks, topologies and TCP/IP address configuration.

Cisco Packet Tracer 5.1 Overview

Background:

Computer Network:

A network is a group of two or more computer system linked together. There are many types of computer networks, including:

LAN: Local Area Network

WAN: Wide Area Network

MAN: Metropolitan Area Network

Network topology:

A topology is the way of laying out the network.

1. Physical topology

Physical topology:

It tells the physical arrangement of the nodes in a network. There are 5 major physical topologies:

Bus

Star

Ring

Mesh

Hybrid

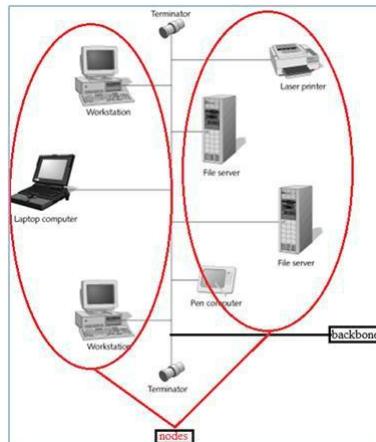


Figure 1. Bus topology

Star topology:



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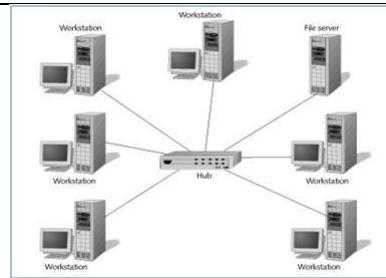


Figure 2. Star topology

RING TOPOLOGY:

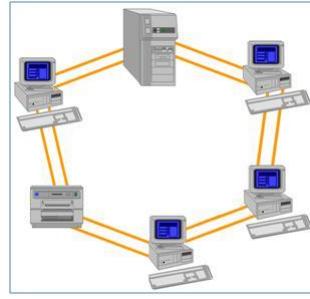


Figure 3. Ring topology

Mesh topology:

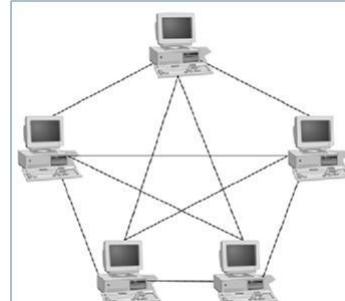


Figure 4. Mesh topology

Hybrid (Tree) topology:

It is a mixture of any 2 topologies. The figure below shows a bus-star topology.

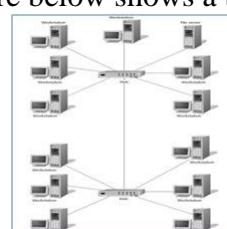


Figure 5. Hybrid topology

The Simulator

Packet Tracer Overview:



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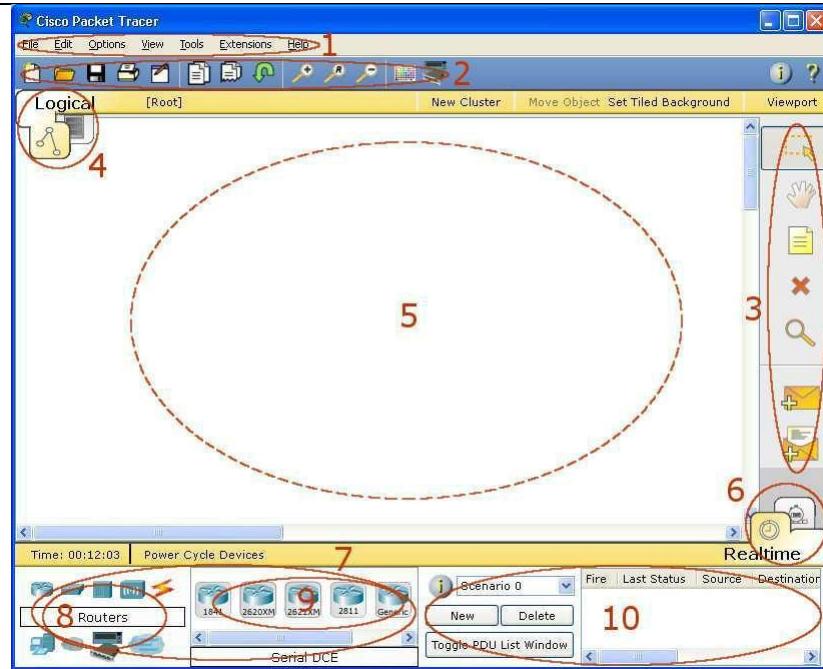


Figure Packet Tracer Overview:

Conclusion:

Lab Exercise:

1. Go to cmd write ipconfig take snap and attach here



Lab-7

Operating System Installation

Objective:

General installation method of operating system

Learn to install Microsoft Windows 10 Procedure

Intro to install Microsoft Windows 10 on Virtual Machine (VMware Workstation 7)

Background:

Installation of operating system:

Installing of any fresh operating system, first we will have to delete all of the data on the hard disk and then install Windows on their computer which can take 30 to an hour depending on computer hardware and operating system. The installation process is given below.

Procedure:

Steps to all Operating System Installation:

Installing Using a Disc/USB/LAN

Enter your computer's BIOS. Turn off the computer that you want to install Windows on then turn it back on. When the BIOS screen appears or you are prompted to do so,



press \square Del , \diamond Esc , F2 , F10 , or F9 (depending on your computer's motherboard) to enter the system BIOS. The key to enter the BIOS is usually shown on the screen.

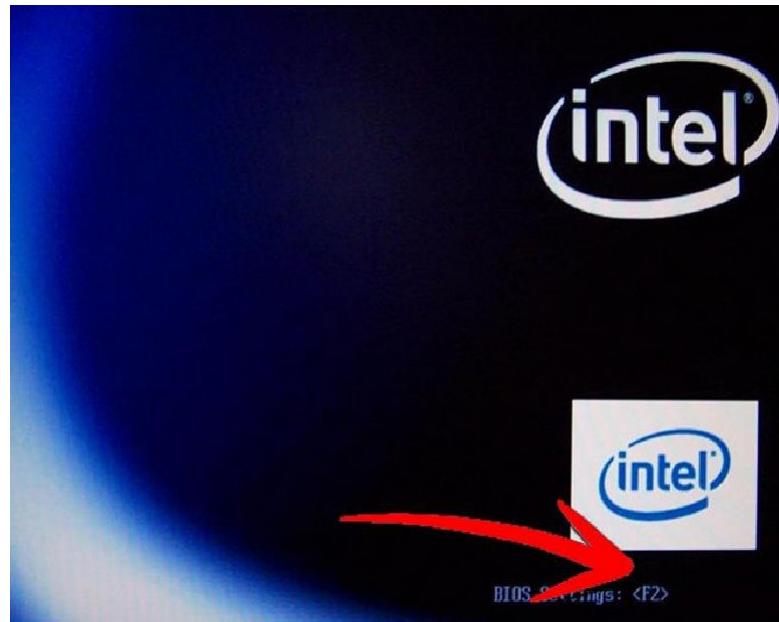


Fig.1 GUI of Windows



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Find your BIOS's boot options menu.

The boot options menu of your BIOS may vary in location or name from the illustration, but you may eventually find it if you search around.

Select the CD-ROM/USB/LAN drive as the first boot device of your computer. Although this method may vary among computers, the boot options menu is typically a menu of moveable device names where you should set your drive i.e. (CD-ROM /USB/LAN) as the first boot device. It can also be a list of devices that you can set the order of their boot on.

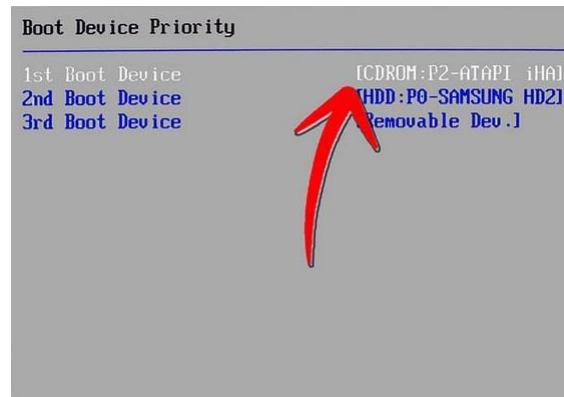


Fig.2 Windows BIOS

Save the changes of the settings. Press the button indicated on the screen or select the save option from the BIOS menu to save your configuration.

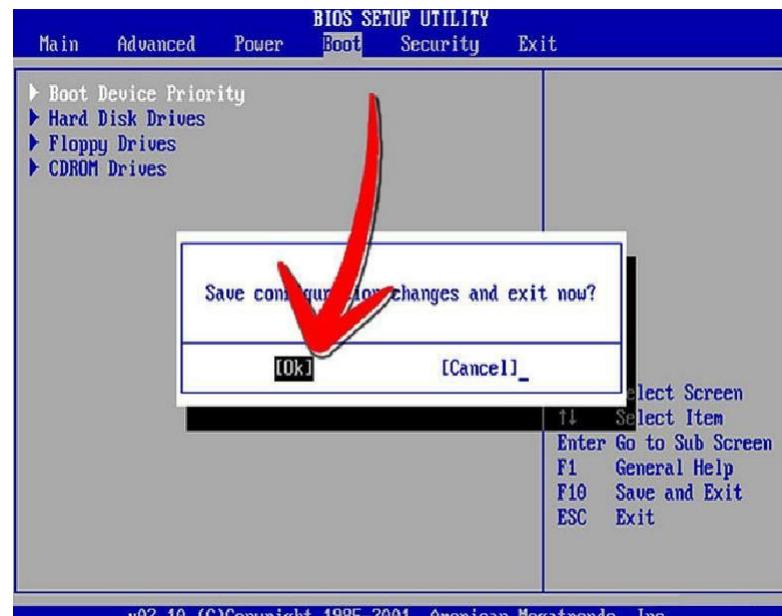


Fig.3 Windows BIOS

Windows 7 Installation:

Installing Windows 7 can take up to an hour depends on computer configuration. The installation process is given below.



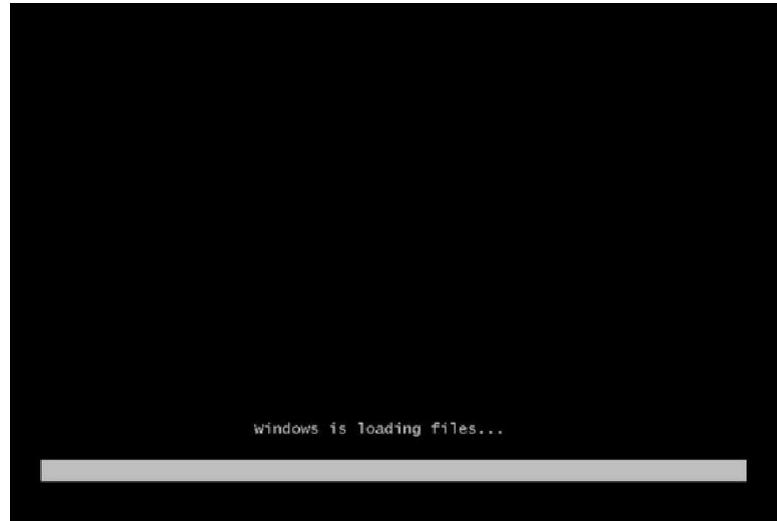
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Steps to Follow:

Insert the Windows 7 DVD into your disc drive and restart your computer.

If prompted to start from the CD, press SPACEBAR. If you miss the prompt (it only appears for a few seconds), restart your computer to try again.

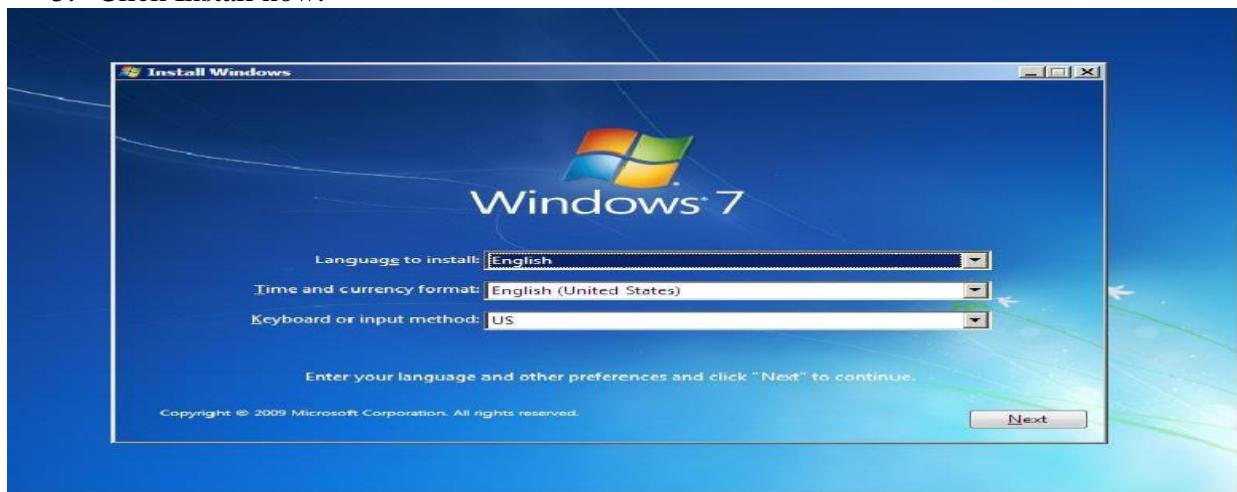
It will now load the setup files.



4. Select your language, time & currency format, keyboard or input method and click **Next**.



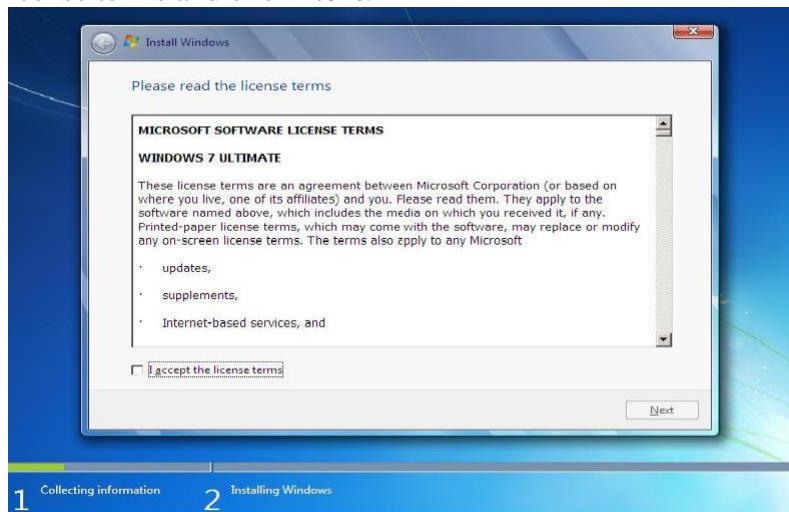
5. Click **Install now**.



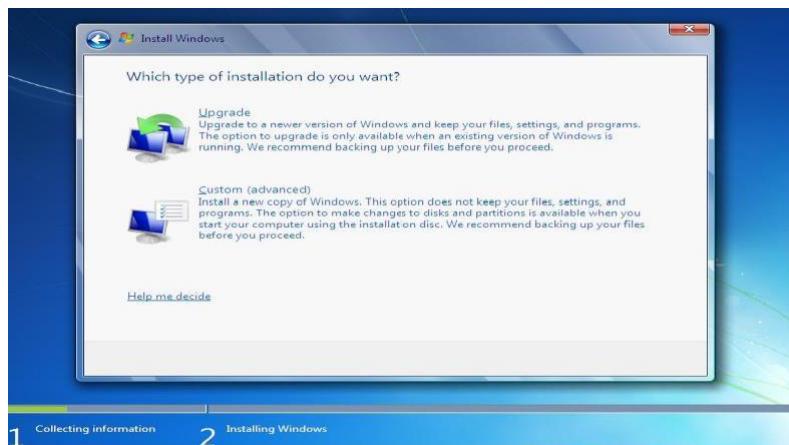


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Check I accept the license terms and click **Next**.



Click Upgrade if you already have a previous Windows version or Custom (advanced) if you don't have a previous Windows version or want to install a fresh copy of Windows 7.



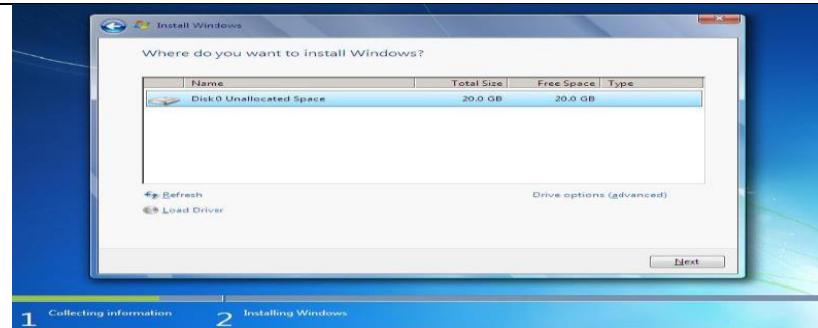
(Skip this step if you chose Upgrade and have only one partition) Select the drive where you want to install Windows 7 and click **Next**. If you want to make any partitions, click Drive options (advanced), make the partitions and then click **Next**.

- i) “Divide” hard drives into separate parts.
- ii) If the hard drive has data on it, delete the data off of it, or format it.
- iii) Select the hard drive from the list of hard drives.
- iv) Click Drive options (advanced).
- v) Click Format from Drive options.
- vi) If your computer doesn’t have any partitions yet, create one to install Windows on it.
- vii) Select the hard drive from the list of hard drives.
- viii) Click Drive options (advanced).
Select New from Drive options.
Select the size, and click OK.

Install Windows on your preferred hard drive and partition. Once you've decided on where to install Windows, select it and click **Next**. Windows will begin installing.



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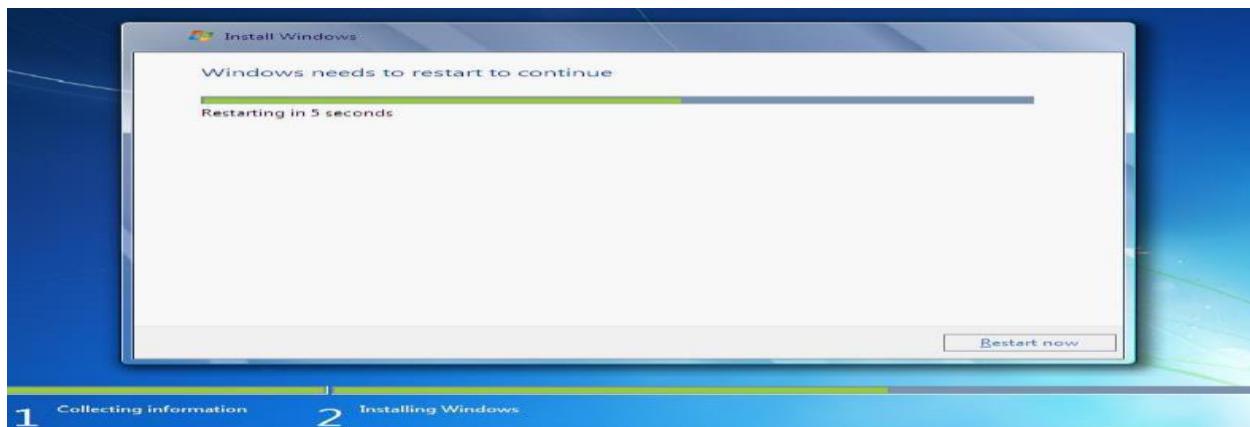


It will now start installing Windows 7. The first step, (i.e. Copying Windows files) was already done when you booted the Windows 7 DVD so it will complete instantly.

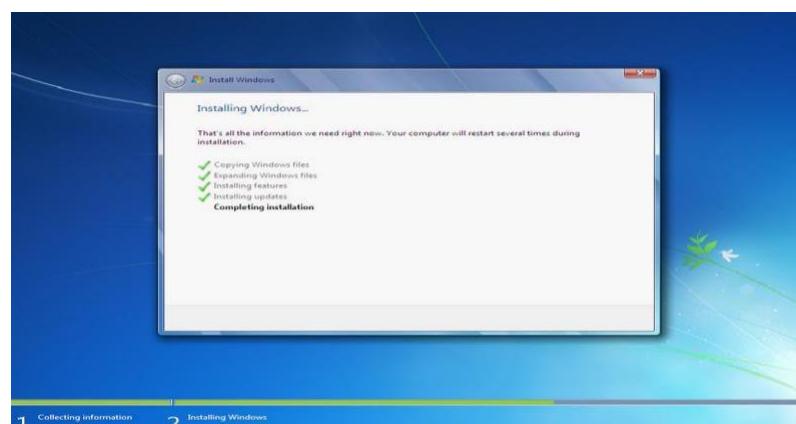
After completing the first step, it will expand (decompress) the files that it had copied.

The third and fourth step will also complete instantly like the first step.

After that it will automatically restart after 15 seconds and continue the setup. You can also click Restart now to restart without any delays.



After restarting for the first time, it will continue the setup. This is the last step so it will take the most time than the previous steps.



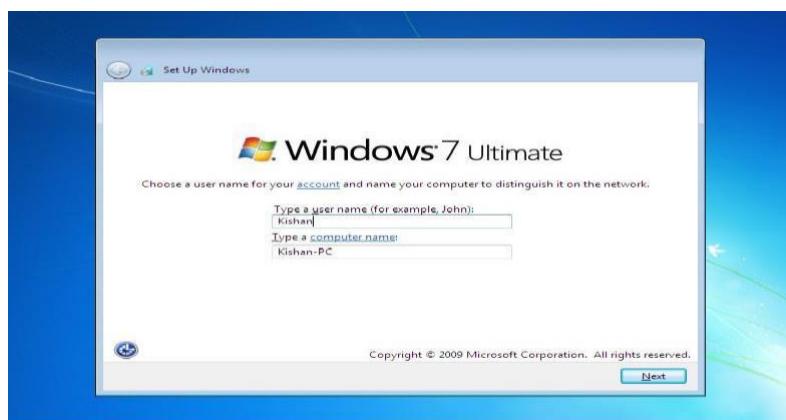
It will now automatically restart again and continue the setup. You can click Restart now to restart without any delays and launch their first desktop.



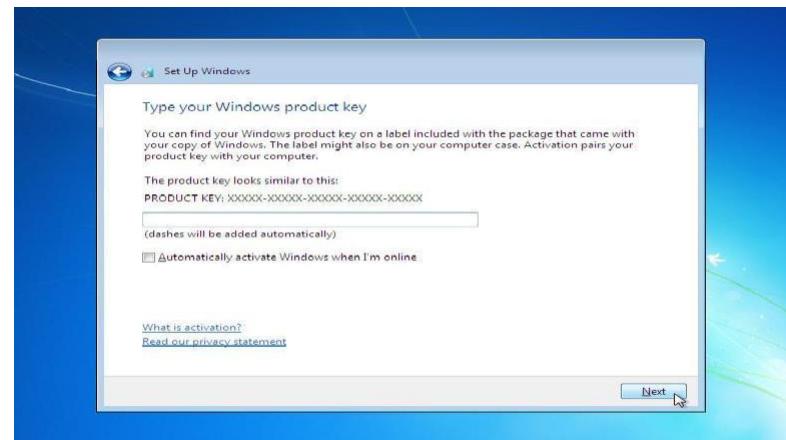
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Type your desired user name in the text-box and click **Next**. It will automatically fill up the computer name and if you want to set a password, type in the text-boxes and click **Next**.



Type your product key in the text-box and click **Next**. You can also skip this step and simply click **Next** if you want to type the product key later. Windows will run only for 30 days if you do that.



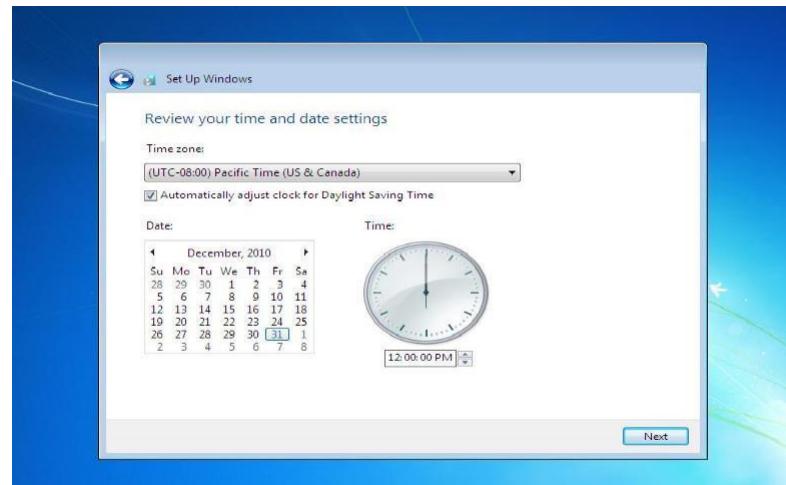
Select your desired option for Windows Updates.



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Select your time zone and click **Next**.



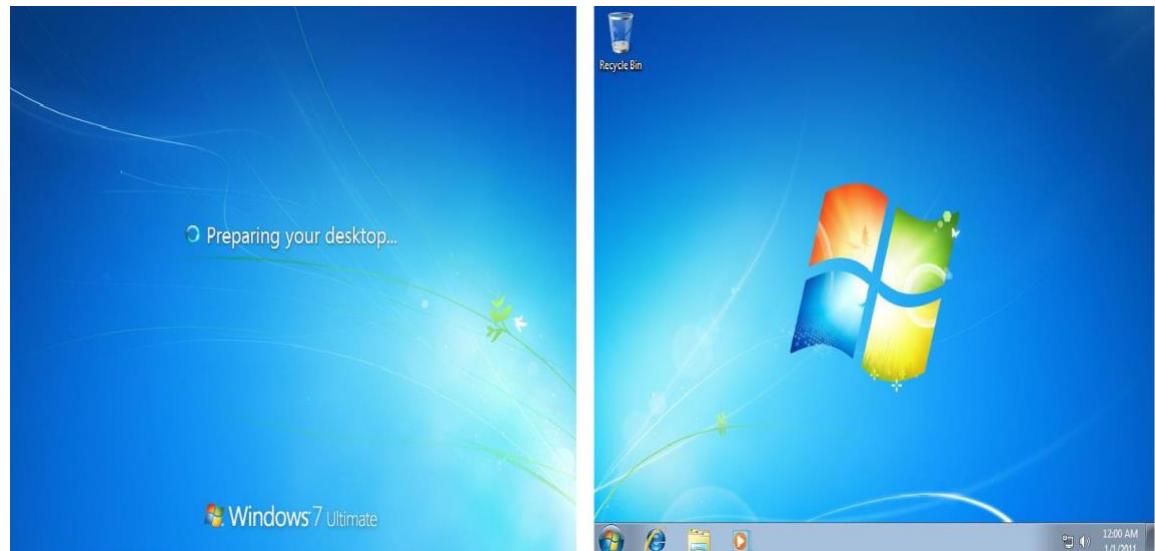
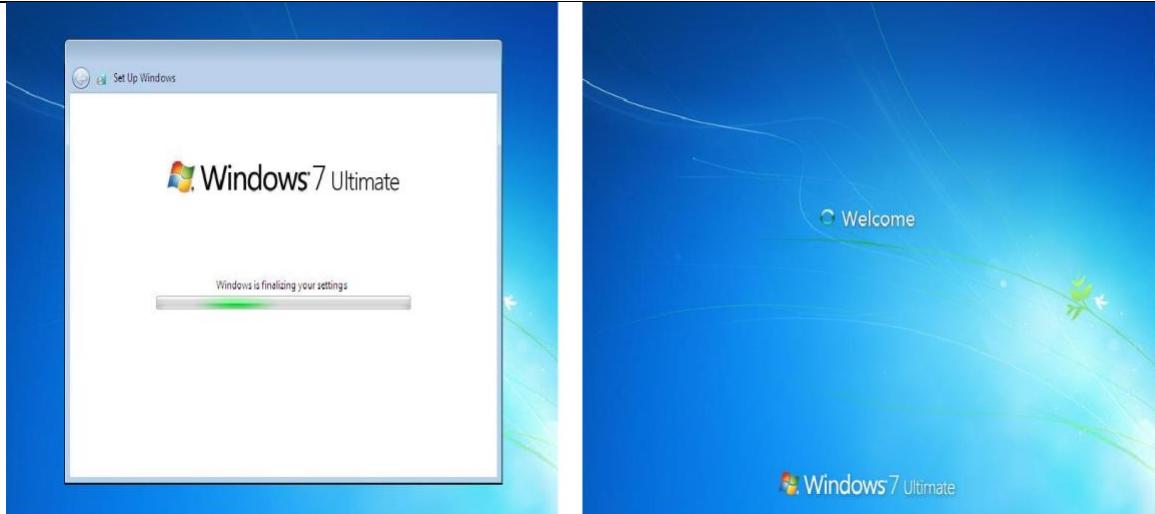
If you are connected to any network, it will ask you to set the network's location.



20. Then windows will Auto configure their finalize setting.



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CONGRATULATIONS! YOU ARE ALL DONE. Windows 7 setup is complete. You can log on by clicking your name on the logon screen. If you've installed Windows 7 on a new computer or new hard disk drive, you can now use the File and Settings Transfer Wizard to copy your important data to your computer or hard disk drive.

Conclusion:

Lab Exercise:

Open your computer and turn on the power.

After the computer completes the BOOT UP process, and your START SCREEN is full of the Windows 8 TILES, bring up your desktop using the desktop tile and/or the keyboard windows button.



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Open Ended Lab

Objective:

Using background information that you have learned in class, you are going to design and conduct open ended lab on tasks similar to described below

Task (possible options):

1. Increase RAM and note down the difference before and after installation on your choice of parameter
2. Draw a block diagram and working process of 'From Press keyboard button and results appear on Screen'
3. A cube of multiplexed LEDs generating 3D patterns
4. Install 4 NAND gates on PCB

Lab Report:

Your lab report must include:

Purpose:

This is a statement of problem to be investigated. It provides the overall direction for laboratory investigation and must be addressed in the conclusion.

Procedure:

1. Step by step procedure carefully explained in a numbered sequence.
2. All experimental variables identified and named
3. Brief description of how the independent variables are controlled.

Hint:

Open ended lab must be so much descriptive such that someone who has not studied the topics covered in open ended lab must be able to understand it and be able to reproduce the results.

Data:

1. What data needs to be taken?
2. Draw data tables

Data Analysis:

1. How do you interpret data?
2. Draw graphs, analyze them or perform calculations in order to analyze collected data.

Conclusion:

1. Discuss any questionable data or surprising results.
2. Explain the possible source of any error.
3. Suggest changes in experimental design that might test your explanations.



LAB-8

Introduction to the Multimedia software

Objective:

Introduction to basic multimedia tools using **adope photoshop**.

Background:

Multimedia is media and content that uses a combination of different content forms. This contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material. **Multimedia includes a combination of text, audio, still images, animation, video, or interactivity content forms.** Multimedia is usually recorded and played, displayed, or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia devices are electronic media devices used to store and experience multimedia content. Multimedia is distinguished from mixed media in fine art; by including audio, for example, it has a broader scope. The term "rich media" is synonymous for interactive multimedia. Hypermedia can be considered one particular multimedia application.

Type of Multimedia

Static ----- Photoshop

Adobe Photoshop is a graphics editing program developed and published by Adobe Systems. Adobe Photoshop is the premier photo editing software tool available. Whether you are working on a webpage, PowerPoint presentation, or a document to be printed, Photoshop can be used to enhance your images. In this lab we will learn about image file types, cropping images, compositing (putting several images together), ghosting images (for use as webpage backgrounds), using layers, creating masks, applying filters, and formatting text with bevels and other effects.

Create original artwork

Design graphics for a webpage or website

Make "ghosted" images that can be used as the background for webpages

Correct flaws and imperfections in a photograph

Create a photo collage: a composition made up of several different photos

Create a deceptively realistic photo that is not real

Alter photographs

Design smashing layouts

The Photoshop Screen

Below is a screenshot that shows what Photoshop looks like. Move your mouse over each section to see what the different areas are called.



Fig:1. Microsoft Paint Screenshot



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Application Bar - The top of the screen holds common tools that you would use in any situation. You can change your Workspace from here as well (currently set to 'Essentials'). On the right side is the "X" to close the application (or you can click on the "Ps" icon to the left as well), and the other buttons to minimize or shrink the window that program is using.

Menu Bar - This area holds all drop down menus. For example, if you want to see a list of filters, click on the "Filters" tab to see a complete list of filters that are installed. Many of the options you'll use are in these menus. For working with photographs, the Image menu will be used extensively.

Option Bar (below the Menu Bar) - this area changes depending upon which tool is being used. In this example, the Zoom tool is active, so you will see various options related to zoom, shown.

Toolbar (in this case, on the left side of the image and lists all of the tools)- the toolbar contains the most common tools and is usually kept on the screen at all times.

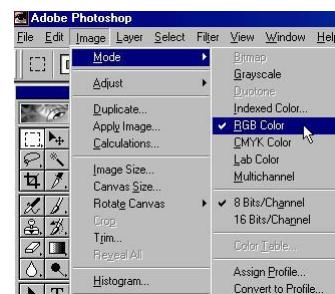
Workspace (the space in which your image is located)- This is where the action takes place. It contains the design or photo that you are working on. You can vary the size of the workspace window, zoom in or out, add guides for placement, etc. You'll also hear this referred to as the Image Window.

Filename (Located across the top of the Work Space window)- This bar shows the file you are either working on, or if you have multiple files open, each file will have a title bar tab so that you don't get confused.

Ruler (located on the top and left side of the Workspace Window)- you have the option of turning the rulers on or off (**Ctrl +R**), but if they are on you can choose different units such as pixels or inches by "**Right Clicking**" in the ruler bar. These are handy when creating designs that require specific sizes or spacing. You can also "**Click & Drag**" a guideline from the ruler bar and place it anywhere on the page or change the measurement starting point by "**Clicking & Dragging**" from the upper left corner of the ruler. The visibility of these can be turned on and off by navigating to "**View> Show> Guides**" from the "**Menu Bar**". You can lock them into place from the same drop down menu.

Windows - Windows contain tools that give you control over the image. Some examples of Windows are Layers, Colors, Character and History. These aren't really tools like you see in the toolbar, but offer you complete control over the image and settings. These will be covered in more depth as they pertain to the later tutorials. These Windows can be docked (fixed in place) or floating (moved to any area of the screen).

So those are the basic parts of the screen, the later tutorials will refer to them from time to time so it's good if you get to know them.



Indexed color is used for GIF images. This format is limited to a 256 color palette. The fewer the colors contained in the palette, the smaller the file size.

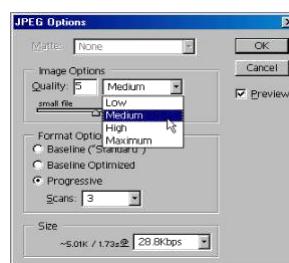
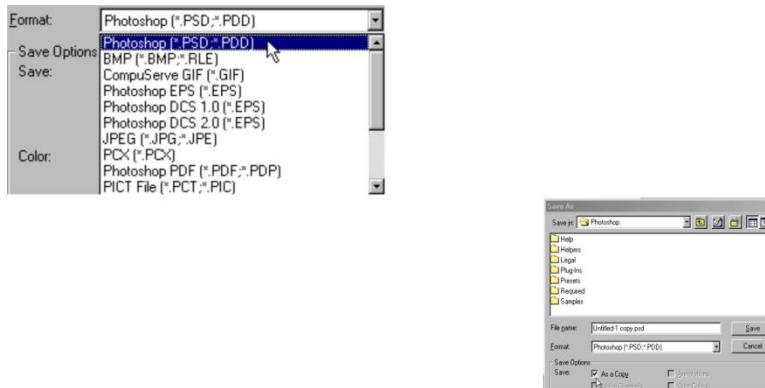


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CMYK and other image modes are used extensively by commercial print shops, who must have precise "color separations" for their printers.

Image File Types

Whenever you save a file in Photo Shop, you can choose the FILE FORMAT to save in:



In this class we will keep things a bit more simple. We will primarily save our files in PHOTOSHOP format. This format has the benefit of retaining the different layers you create in the image (they stay separate, instead of being "flattened")

As a technique, I recommend creating a temporary version of any image you are working on and SAVING IN PHOTOSHOP FORMAT.

After the image is finished, choose to save a copy of the file in the desired format (FILE - SAVE - under SAVE OPTIONS check "As a Copy"):

Two of the best known image formats (because they are widely used on the internet) are:



JPEG (Joint Photographic Experts Group) retains 24 bit color (millions of colors).

extension is **.jpg**

Can compress JPEG up to 4:1 (lossy compression, some detail may be lost)

Can compress in PhotoShop.



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GIF (Graphics Interchange Format)

Extension is **.gif**

Limited to 8 bit color palette (256 colors)

Needs to be in INDEXED COLOR format

Best for simple graphics

3 variations of GIF: transparent, animated, and interlaced

When saving a PhotoShop image as a JPG file, several options will be presented:

Select image quality based on the expected use of the file (internet images should be smaller) and desired quality.

SAVE FOR WEB OPTION:

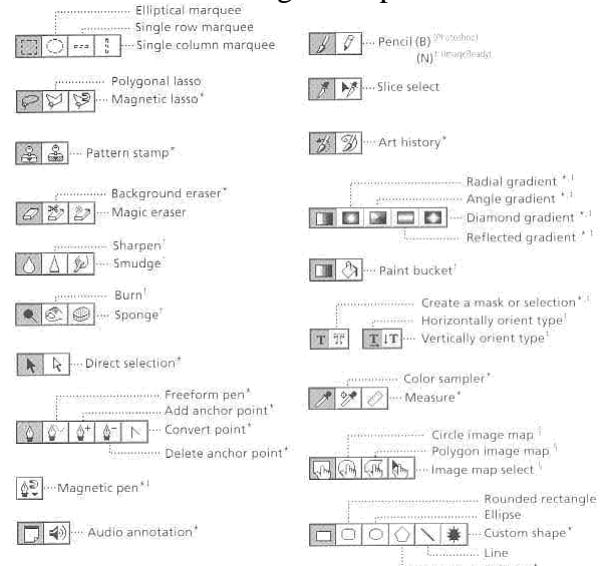
One of the best "new" features of PhotoShop, introduced in version 5.5, is the "Save for Web" option.

Choose FILE - SAVE FOR WEB to display a variety of optimized file saving options, in different formats.

Select the version you prefer and save in the desired location.

Tools

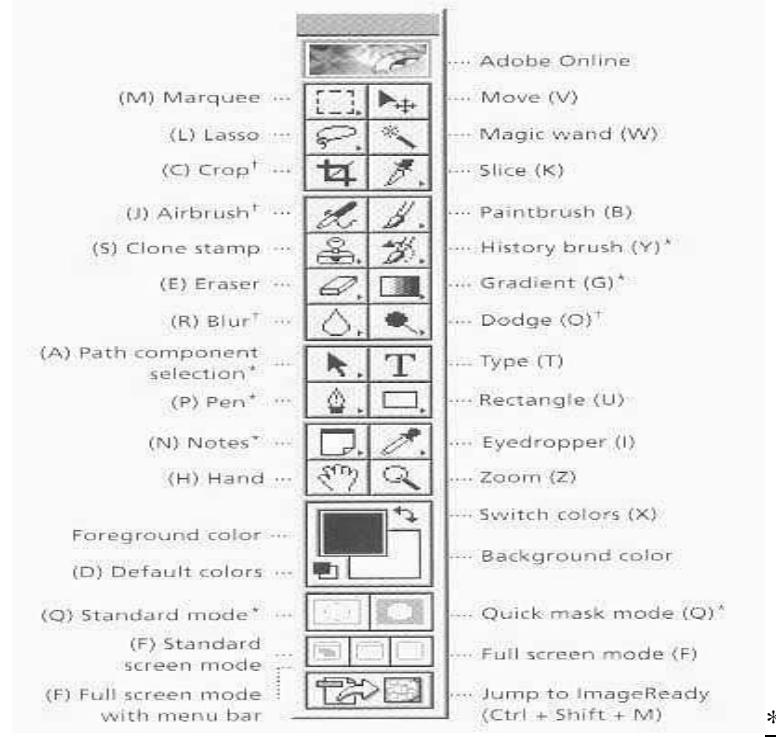
The PhotoShop toolbar contains a large array of selectable tools for image manipulation. The toolbar in



PhotoShop 6.0 for Windows looks like this:



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Multiple Undos

One of the best features of PhotoShop is its ability to allow multiple undos. This means that, unlike most programs which allow you to just "undo" the last thing you did, PhotoShop will let you go back MANY steps.



Use the History palette () to "move back in time" and undo past actions.

After a file is closed, actions are not saved, however, so complete all undos before closing.

Copy & Paste

One of the best sources for graphics is the internet. Any image copied from a webpage can be inserted into PhotoShop easily.

After an image is copied to "the clipboard," create a new image in PhotoShop (FILE - NEW). The dimensions of the photograph will automatically correspond to the exact height and width of the image copied on the clipboard!

When you paste the clipboard contents into the PhotoShop image (see instructions below) the copied picture is brought in as a NEW PHOTOSHOP LAYER.



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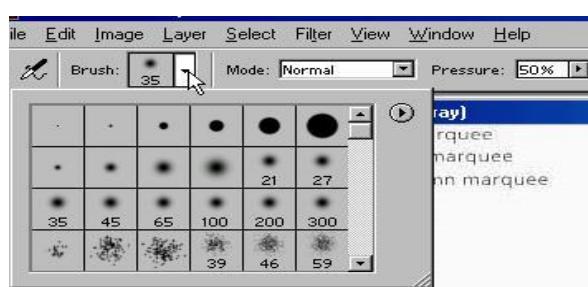
Choose to save the image file as a copy and select the desired format. Remember most photographs should be saved in JPG format to preserve colors most accurately.

Drawing / Painting

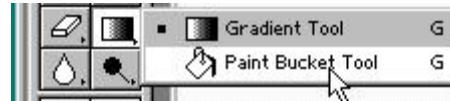
The drawing and painting tools are located in the second part of the PhotoShop toolbar:



Whenever a tool is selected, like the Airbrush tool (), options for that tool are shown at the top of the screen and can be changed by clicking on each setting:



Note that some tools, like the Fill tool (Paint Bucket), are hidden by default behind another tool choice (in this case, the Gradient Tool):



Also note the differences between tools: the Paintbrush tool () located beside the Airbrush

tool, and the Pen tool () located below the Path Component Selection Tool ():



The Airbrush tool "applies gradual tones (including sprays of color) to an image, simulating traditional airbrush techniques." (PS 5.0 Manual, p. 197)



The Paintbrush "creates soft strokes of color." (SSAA, p. 197)



The Pencil tool "creates hard-edged freehand lines and is most useful for bitmapped images." (SSAA, p. 197)



The Pen tool "lets you create straight lines and smooth flowing curves with greater precision than possible with the freeform pen or magnetic pen tool. For most users, the pen tool provides the best control and greatest accuracy for drawing." (SSAA, p. 153)

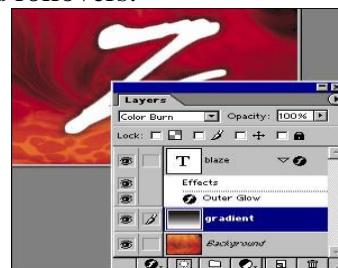
Working with Layers

Layers provide a powerful way for you to organize and manage the various components of your image. For example, by placing an artwork element on a separate layer, you can easily edit and arrange the element without interfering with other parts of the image. To organize related groups of elements, you



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can nest several layers under a layer set. Layers also provide the basis for managing and defining advanced features such as Web animations and rollovers.



Create a New Layer

From the LAYER menu, choose LAYER - NEW - LAYER, or

Click on the Create New Layer button (at the bottom of the layers palette

After creating the layer, name it if desired. Layers can be renamed later if desired by double clicking on their name.

Move or Delete a Layer

Move a layer to a new relative location by clicking and dragging it within the layers palette.

Delete a layer by clicking on the Delete Current Layer button on the layers palette. It looks like a trash can:



Hide or Show a Layer

Click on the eye (next to a layer to hide it.

Click on the same box (which will be empty when the image is hidden) to show the layer again.

Duplicate a Layer

From the LAYER menu, choose DUPLICATE LAYER.

As a technique, before modifying something in PhotoShop create a duplicate layer, then hide the original (click on the eye). Then make changes to the copy. If you don't like the changes, delete the duplicate layer and repeat these steps.

Cropping

One of the most basic ways to edit an image is to CROP it: remove unwanted portions and focus the viewer's attention on a particular aspect or element.

Cropping a photo means cutting out parts of the photo by making it a smaller rectangle.



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Crop an image in PhotoShop:

Open the image you want to crop.

Click on the crop tool in the toolbar, under the lasso:

Click and drag on the image to define the part you want to KEEP. As a technique, click in the upper left corner first and then drag down, to the right.

Stretch the crop region "handles" (the boxes in the corners and on the sides of the

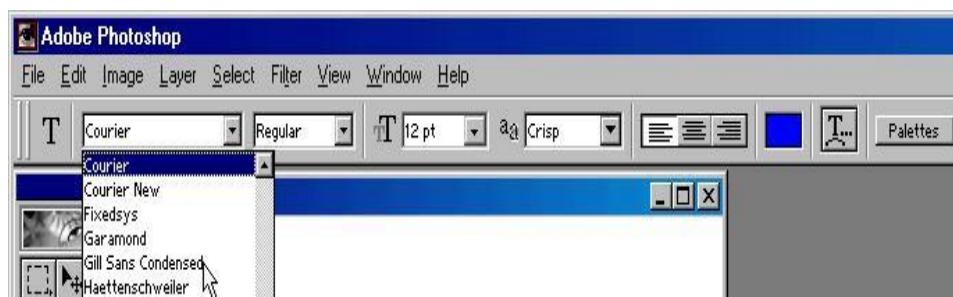


selected area) as desired:

Press ENTER to crop the photo as selected.

Using Type

After selecting the text tool (), text options are displayed at the top of the screen that can be changed as desired:



To add text to an image:

Create a new layer (LAYER - NEW - LAYER)

Click on the text tool:



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Click on the layer where you want to insert text

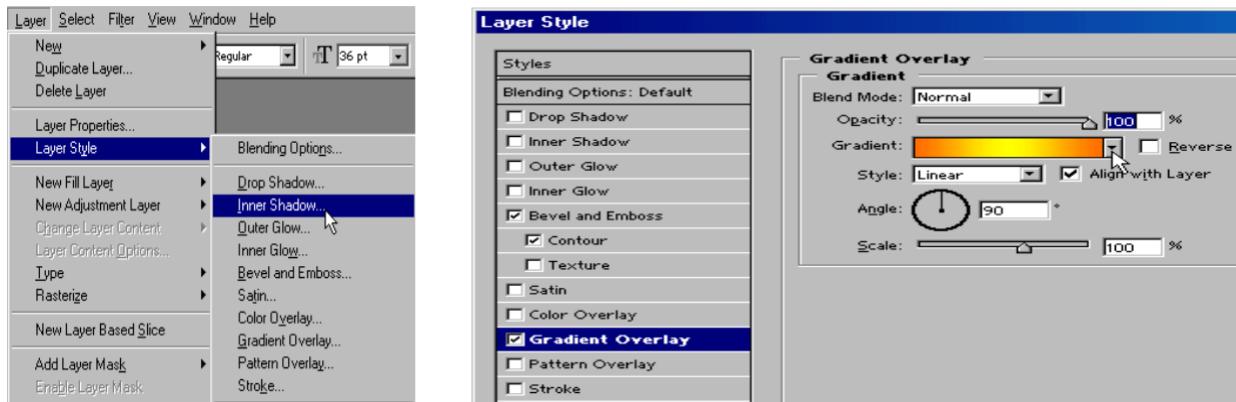
Change the Text Options at the top of the screen, below the menu options, as desired.

Type your text

To add a fancy layer effect:

Click on the text layer in the layers palette.

From the LAYER menu, choose LAYER STYLE, then the desired effect. More than one can be selected.



12. Compositing



To create a photo composite:

Each image should be inserted as a separate LAYER. Refer to the previous section on copying/pasting.

When you save the final version as a JPG image, it will be FLATTENED so the different layers will not be preserved.

Save a copy of the original image in PhotoShop format (PSD) to keep the layers separate, in case you want to change something later.

Retouching Photos

Adjust the CURVES

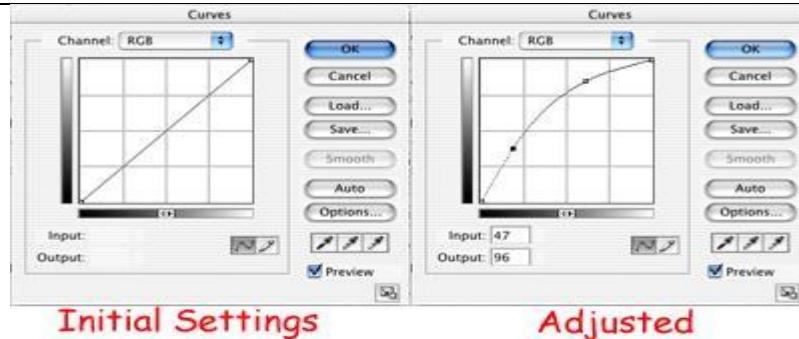
With an image open and selected in PhotoShop, choose IMAGE - ADJUST - CURVES. Click and drag on the line to make the image darker or lighter:



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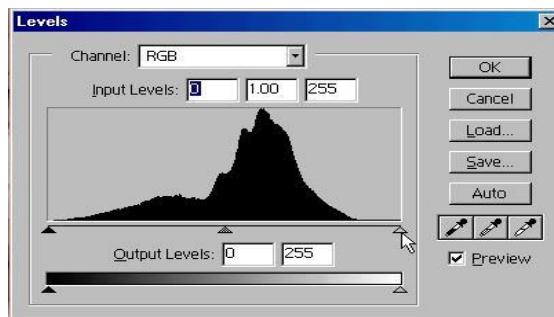
With the PREVIEW box checked, you can immediately see the effects of your curve changes.

Click OK to save the changes.

Adjust the LEVELS (the definition of pure white, pure black, and the point midway between these values)

Try to adjust levels automatically by choosing IMAGE - ADJUST - AUTO LEVELS:

If this result is not desirable, manually define the pure white and black values for your image by choosing LEVELS from this menu and:



Dragging the triangles under the graph on the left and right sides underneath the levels graph.

Click on one of the eyedroppers, and then click on the appropriate part of the photograph (white eyedropper on the right defines pure white, black eyedropper on the left defines pure black, middle eyedropper defines mid-gray.)

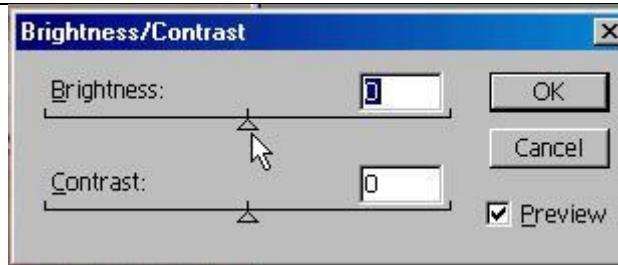
Your image may not include pure white or pure black pixels. If this is the case, don't use these eyedroppers.

Adjust Contrast, Brightness, and Color Balance

From the same menu (IMAGE - ADJUST) select other variables to change
Either drag sliders to adjust values, or directly input numerical values:



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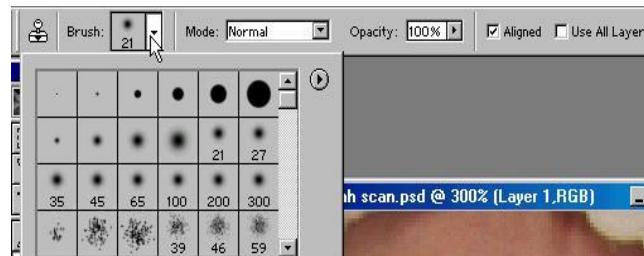


Use the Clone Stamp Tool to "Touch Up"

Use the Magnifying glass () to zoom in on your selection first.

The Clone Stamp Tool allows you to duplicate one part of the screen on another, by "painting it on"

After selecting it, choose the desired type and size of the brush, depending on what size and type of cloning you need to do:



Make sure you are in the desired LAYER before using the Clone Stamp Tool.

Hold down the ALT key (Mac: Option key) and click to DEFINE the part of the image you want to clone.

Release the key and click / drag over the area you want to erase and STAMP a clone of the defined area.

Color Enhancement

One of the things Photoshop is widely used for is color enhancement. We can achieve this using a combination of the Levels and Hue & Saturation commands.

The first thing we need to do is adjust the levels of the photograph using the Levels command. Press CTRL+L to access the dialogue box.

Move the far right slider towards the left until it reaches the start of the first peak. Next alter the gamma by moving the middle arrow towards the right or left. You will see the changes as you move the arrow. Select OK when you are satisfied with the new colors.

Now to brighten up the colors. From the Image menu, select Adjust... Hue & Saturation (or press CTRL+U (WIN) or COMMAND+U (MAC)). From the Edit drop down list, choose Reds. Move the Saturation slider to the right. Straight away you will notice that only the red colors within the image have brightened.

You can do the same with any of the other colors in the Edit drop down list. Press OK when you are finished.



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Ghosting Photos (Opacity)

This technique involves three basic steps:

Cutting all parts of a saved image and pasting them in a new layer

Changing the opacity of the layer (usually to 20 or 30 percent for a webpage background)

Saving the image again as a flattened JPG image

To create a "ghosted" image:

Open a saved image in Photo Shop

Select the entire picture by pressing CONTROL - A (Mac: Command - A)

From the EDIT menu choose CUT

From the EDIT menu choose PASTE (the image should be pasted as a new Photo Shop layer)

In the Layers palette, change the OPACITY setting (for that layer) between 20 and 30



percent: It may look too faint in Photo Shop, but in a web browser a background with an opacity greater than 30% tends to compete with overlaying text.

From the LAYER menu, choose FLATTEN IMAGE (this removes the separate layer)

Save the image (FILE - SAVE)

Alternatively, skip steps 6 and 7 and choose FILE - SAVE AS COPY

Conclusion:

Lab Exercise

Demonstrate a picture which will have all the features that expressed in lab, and perform following:

- i. Select two pictures merge them in a one picture

Save each edited picture with different extension.



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LAB # 09

Introduction to IDE for C/C++ and structure of a Basic C++ Program Objective

To Study the features of Integrated Development Environment (IDE) for C++ language and basic building blocks and structures of C++ program

Background

IDE Basics:

C++ language features an Integrated Development Environment (IDE) as the programmer's platform. It is a screen with windows and pulls down Menus. Code of the program, error messages and other information are displayed in separate windows. Programmer uses menu selections or key combination to revoke all the operations necessary for the program development. Debugging capabilities are also built-in the IDE.

General Overview:

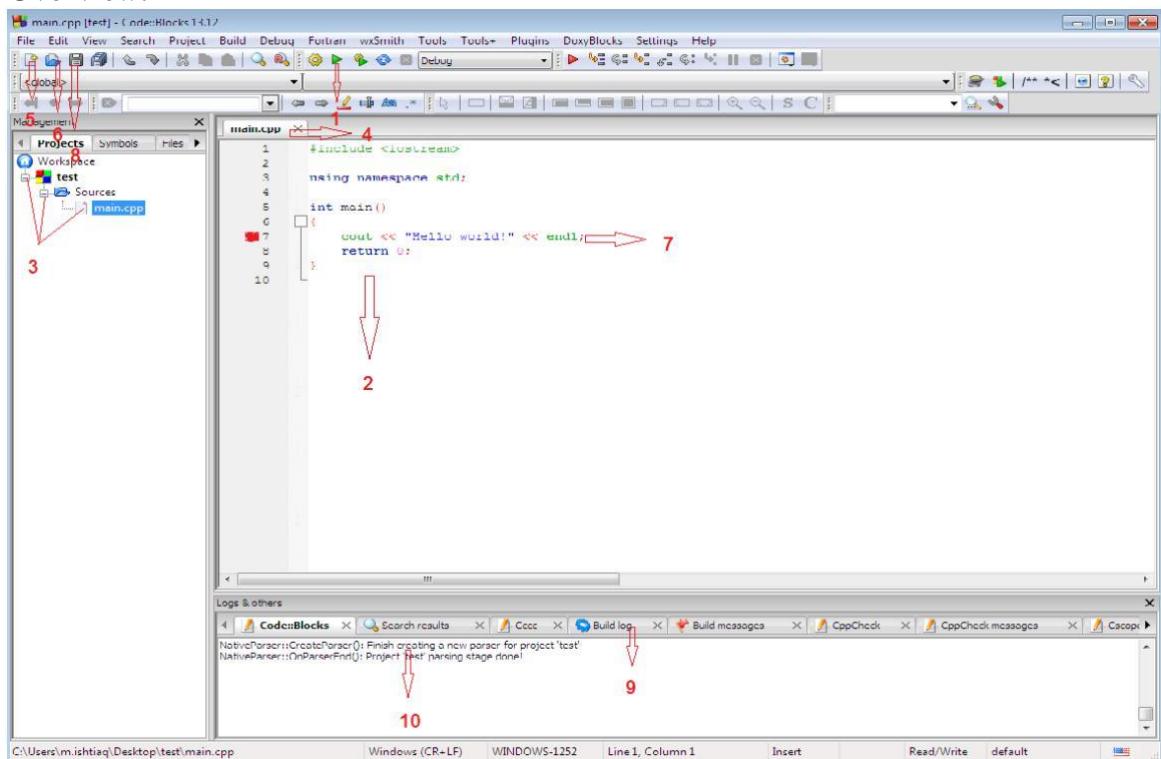


Fig.1: IDE of C++

- Run – Compiles, links and runs the program
- Edit Window – space for writing the program
- Functions – Functions used in the program
- Tabs – Different tabs for different programs
- New – Opens a new edit window
- Open – Opens a previously saved program
- Line with the error
- Save – Saves the program
- Build Status – Show the status of build process
- Error – Describes the error along with the line number

Invoking the IDE



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To enter the IDE, double click on the **CodeBlocks** icon at the desktop or select from the start menu. This will make you enter into the IDE interface. Click on the new icon or select it from the File Menu which will look like the figure given below. Start writing your program where cursor is currently placed. Press F5 to compile and run your program.

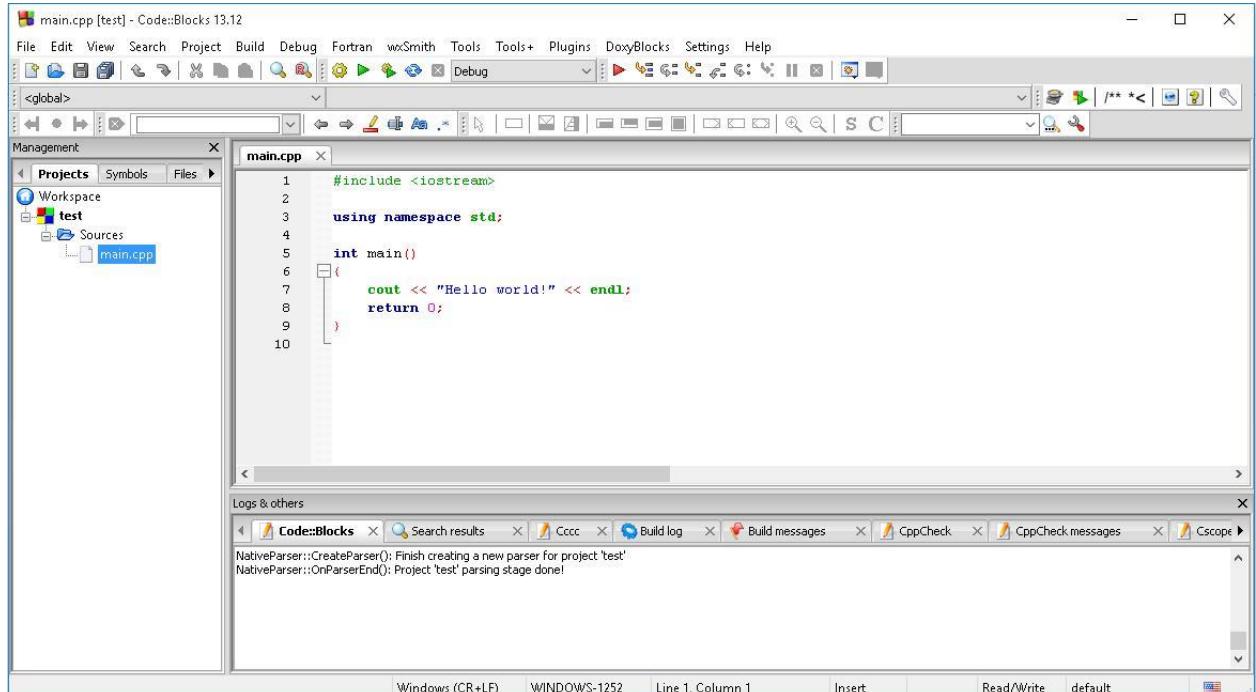
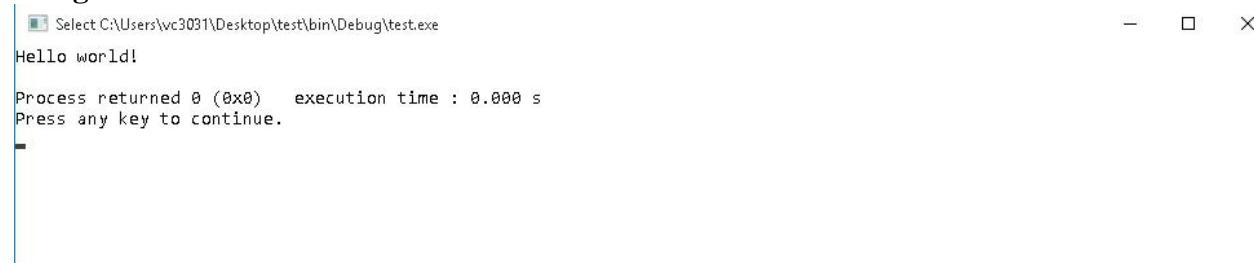


Fig.2: IDE of C++ program

If your source file does not have any error then an output window will pop up and display the result.

Using Menus



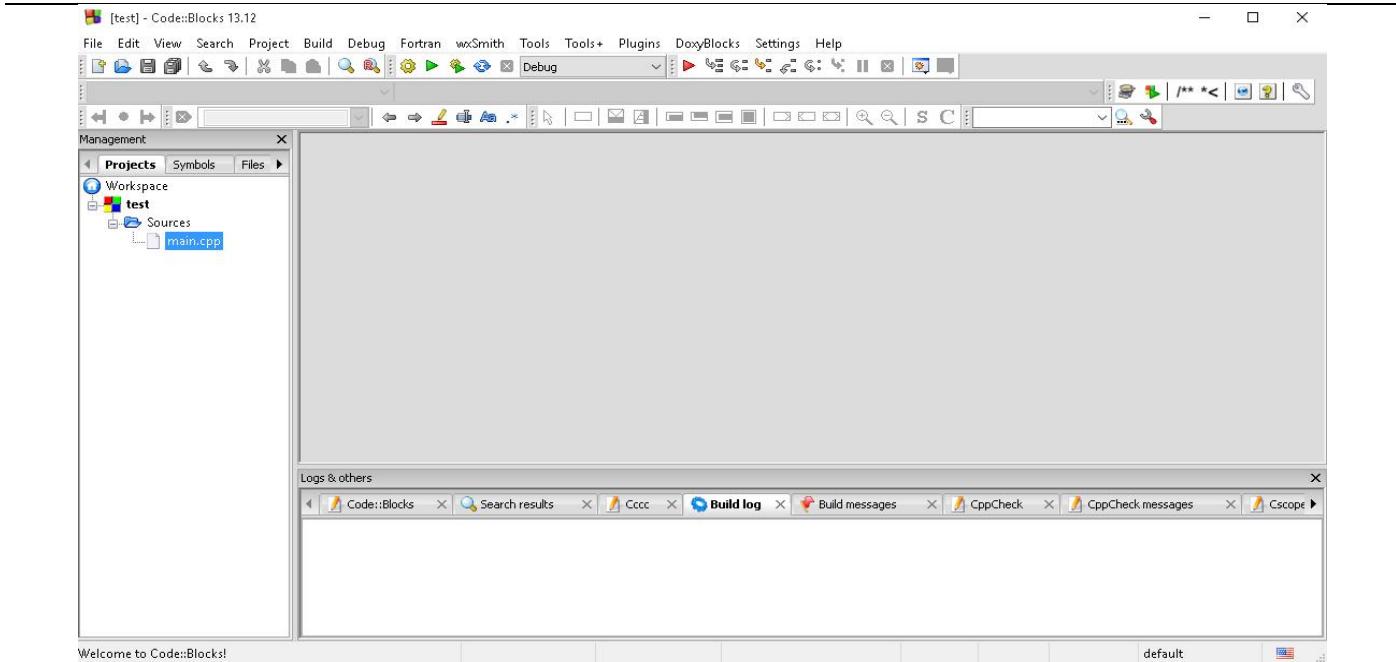
If the menu bar is inactive, you can invoke by pressing the ALT function key. To select different menu, move the highlight left or right with cursor (arrow) keys. You can also revoke the selection by pressing the key combination for the specific menu.

Opening New Window

To type in program you will need to open an Edit window. For this, open file menu and click ‘new’. A window will appear within the CodeBlocks screen with line numbers on the left. If the code is too long you can see the code by scrolling the window.



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Writing a Window

For writing program the Edit window will be active. Type the program code with the proper syntax and command. Characters will appear where the cursor is positioned. Press [Enter] to move to the next line. Use the cursor keys to move to any position on the screen. You can delete characters by using [Del] key. You can delete the entire line by selecting the line and pressing the [Del] key or by pressing CTRL+Y key combination.

Saving a Program

After typing the program code, you should save it to the disk. To perform this operation, select Save from the File menu. Pressing the [CTRL+S] combination can also complete this operation. Save the file and provide an appropriate and unique name to the file. Make sure you add the “.cpp” extension to your filename. You can save the code after compiling the program but saving it before is more appropriate.

Executing a Program

If the program is compiled and linked without errors, the program is executed by selecting Run from the Build menu or by pressing the [F5] key.

Correcting Error

If the compiler, recognize some error, it will let you know through the Build window, which is at the bottom of the program window. The error will be listed and the line containing the error will be highlighted.

Now you have to see your Edit window and remove the error by appropriate actions. These errors are due to different reasons. For example; wrong termination, wrong syntax, etc.

Exiting IDE

Before exiting IDE, programmer must save the necessary source file. If the file is not closed and you try to exit the IDE, it will ask whether you wish to save the program or exit anyway.



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An Edit window can be closed by different ways. You can click on the small cross in the upper right corner, you can select Close from the Window menu, you can right click on the tab of the program and click ‘close’ or you can press the [Alt] [X] key combination.

You can close the CodeBlocks IDE by selecting EXIT from the File menu or by pressing the keys [Alt] [F4].

Structure of C++ program

In order to write a program in any programming language, it is necessary to know about its command and syntax. Programmers must also know the basic usage of commands and other programming structures. Programs written in C++ language are really not much difficult to understand than one written in any other language, once you become familiar with the basic syntax.

Function Definition:

All C++ programs are divided into units called ‘functions’. Every C++ program consists of one or more functions. Consider the following program:

```
#include <iostream>

int main ()
{
    cout << "This is a program" << endl;
    return 0; }
```

The above program has a function named “main”. This function is one to which control is passed from the Operating System when the program is invoked, i.e. it is the first function which will be executed. The word “void” preceding “main” specifies that the function “main” will not return a value. The second “void” in parentheses specifies that the function takes no arguments.

Delimiters:

The braces after the function definition signal the beginning and the end of the body of the function. The opening brace { indicates the start of a block of code whereas the closing brace } indicates the end of block or it terminates the block of code.

Braces are also used to delimit blocks of code in situations other than functions. They are used in loops and decision-making statements within a program.

Statement Terminator:

Statements in C++ language are terminated with a semicolon “;”. Semicolon terminates the line not the carriage return you type afterwards. C++ language pays no attention to carriage return in your program listing. The compiler pays no attention to any of the so called “white space” characters: the carriage return, the space and the tab.

Programmers can place as many or few white space characters in a program; they will be invisible and will be ignored by the compiler.



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Program Indentation:

As you can place as many white space characters in the program, therefore, they can be used to make the program easier to read. Consider the previous program, which can also be written as follows without proper indentation.

```
void main (void) { cout << "This is a program" << endl; }
```

The compiler would not know the difference; however, stretching the code out vertically makes for a more comprehensive program, and aligning and matching braces makes it easier to ensure that each opening brace has a closing brace.

Indentation of block of code enclosed in braces is an important aspect of making C++ program readable. Indentation the line of code is not critical in small programs but when there are many sets of nested braces in a program, indentation becomes increasingly important.

The cout Statement:

Consider the program line:

```
cout << "This is a program" << endl;
```

The **cout** statement causes the phrase in quotes to be printed on screen. The **cout** statement is always followed by insertion operator `<<` i.e. every element in the **cout** statement must be separated with `<<` operator as it is used to separate the quoted phrase and manipulation operator “`endl`”. As C++ language distinguishes between uppercase and lowercase characters, thus the statements ‘**COUT**’ and ‘**cout**’ are not the same.

cout statement is an output statement and has the following Syntax.

Syntax

```
cout << e1; / << e1 << e2 << e3 ... << en;
```

Here **e** stands for an element. As syntax indicates, **cout** can take either one element or multiple elements separated by `<<` operators. Don’t forget ; (semicolon) at the end of **cout** statement as it terminates the statement.

Printing strings:

Any symbol or sequence of characters and symbols enclosed within double quotation is treated as strings in C++. Consider the following program:

```
#include <iostream>
Using namespace std ;
int main (void)
{
    cout << "Welcome"
        << " To "
        << "Hamdard University" ;
    Return 0;
}
```

Compile and run the aforementioned program and note down the output.



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Printing numbers:

cout behaves differently when it encounters numerical expressions instead of strings. Recall that anything enclosed within double quotation is printed as it is on the output screen. Numerical expressions on the other hand are substituted with the result of expression and resulting answer is than printed on the output screen. Consider the following program:

```
#include <iostream> // if compiler is selected
Using namespace std ;

int main (void)
{
    cout << "Sqr(5) = " << 5*5 << endl
        4. " and sum of 19 + 10 is: "
        5. 19+10 << endl;
    Return 0;
```

}

Compile and run the above mentioned program and note down the output.

Lab Task

Write a program which prints your bio data



Lab-10
To Understand the Data Types, Variables

Objective:

Learn to write programs declaring different variables and data types

To learn statements for providing input and displaying output

Background:

Variable:

A variable is a named memory location that can hold various values. All variables must be declared before they can be used. A variable's declaration serves one important purpose that it tells the C compiler what type of variable is being used. Variable declaration means that you are giving an identity to the variable, which is to be used in the program.

Basic Data Types of C language:

C support four basic data type described below:

Character	Character data	Char
Integer	Signed whole number	Int
Float	Floating point number	Float
Void	Valueless	Void

Table 1: Data type Description

Data Type Description:

Character:

It is one bit long and it is most commonly used to hold a single character. A variable of type char can also be used as a “little integer” if desired. A character constant is either a single alphabet, a single digit, or a single special symbol enclosed within single inverted commas. For example ‘A’, ‘0’, or ‘&’. It requires 1 byte in the memory for storage.

Integer:

Integer may hold signed whole number (Number with no fractional part). It may hold values in the range –32768 to 32767.

Float:



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Data type float hold signed floating-point values, which may have fractional components. Float can hold very large values.

Variable Declaration:

Variable are generally declared as:

Type var-name;

Here ‘Type’ is C data type (e.g char, int, float etc)and ‘var-name’ is the name of the variable. You can also declare more than one variable of same type by using a comma-separated list. For example

int a,b,c ;

Value Assignment to the Variable

A programmer can assign a unique value to the variable. The general form of an assignment statement is

Variable name = value;

For example;

X = 1000;

Example Programs

Program 1:

This program declares a variable and assigns it a value.

```
#include<iostream>

Using namespace std ;

main (void)

{
    float number;
    number = 1000.001;

    cout<<"The value is "<< number<<endl;
}
```



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Output

The result of the above program will be:

The value is 1000

Program 2:

This program declares different type of variables and prints their assigned values.

```
#include<iostream.h>

Using namespace std ;

main (void)

{
int event = 5;

char heat = 'c';

float time = 27.25;

cout<<"The winning time in heat "<< heat <<" of event was "
```

1. event << " is "<< time<<endl;

}

Output

The result of the program will be:

The winning time in heat c of event 5 is 27.25.

Conclusion:

Lab Exercise:

Q1 Write a program to declare int variable with value 5 and show the output



Lab-11
To Understand The Arithmetic Operations

Objective:

Learn to write programs using different arithmetic and logical operators

Background:

Arithmetic Operators:

Arithmetic Operators are used to do basic arithmetic operations like addition, subtraction, multiplication, division, and modulus.

Types of Arithmetic Operators:

The following table lists the arithmetic operators used in C++.

Operator	Action	Description
+	Addition	Adds two operands
-	Subtraction	Subtracts second operand from the first
*	Multiplication	Multiplies both operands
/	Division	Divides numerator by de-numerator
%	Modulus	Modulus Operator and remainder of after an integer division

Sample Program

```
#include <iostream>

Using namespace std ;

int main( )
{
    int x = 13;
    int y = 6;
    int a = x%y;
    int b = x+y;

    cout << "The Modulus of x,y is ::" << a << '\n' ;
```



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```
cout << "The Sum of x,y is ::" << b << '\n';
```

```
return 0;
```

```
}
```

Program Output:

```
The Modulus of x,y is :: 1
```

```
The Sum of x,y is :: 19
```

Lab Exercise

Q1 Write a program that prints the addition operator

Conclusion:



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LAB - 12

To Understand The Decisions: IF-ELSE

Objective:

To learn statements for providing flexible jumping within program

Background:

C++ supports the usual logical conditions from mathematics:

Less than: $a < b$

Less than or equal to: $a \leq b$

Greater than: $a > b$

Greater than or equal to: $a \geq b$

Equal to $a == b$

Not Equal to: $a != b$

Program

```
#include <iostream>
using namespace std;

int main() {
    int x = 20;
    int y = 18;
    if (x > y) {
        cout << "x is greater than y";
    }
    return 0;
}
```

Conclusion:

Lab Task:

Write a program that compare two numbers and show output.



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LAB # 13

To Understand the Control Structure Using FOR LOOP

Objective:

This lab demonstrates the use of repetition structure named “for loop”.

Background:

Loops

There are many situations where a certain operation is repeated number of time, this repetition is termed ‘loop’ in programming languages. Loops are broadly divided into two categories (1) counted loops (2) conditional loops. Counted loops are those in which number of iterations can be predicted or counted whereas in conditional loops one cannot count the number of iterations and loop terminates when condition is met. Consider a situation in which user is prompted to type any string and program gets input until user hits the Enter key. In this lab only for loop is discussed which is usually considered a counted loop.

For Loop

There are different loop statements in C++ language and ‘**For**’ is one of them. These statements also allow one or more statements to be repeated. The ‘**For loop**’ is considered most flexible loop because it allows number of variations. In its most common form, the ‘for’ loop is used to repeat a statement or block of statements for some specified number of times.

General Form

Its general form for repeating statement(s) is shown here:

```
for ( initial_value ; condition_expr ; increment/decrement_expr )  
    statement ;/ Block
```

Taking the following **For** statement for description;

Program 1

```
#include <iostream>  
using namespace std;  
  
int main ()  
{  
    for ( int count=1 ; count<=10 ; count++ )  
  
        cout << "count= " << count << endl;  
    system ("pause");  
    return 0;  
}
```



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Conclusion:-----

Lab Exercise:

Write a program to print first 10 numbers



LAB # 14

To Understand the Control Structure Using WHILE loop

Objective:

TO understand the analysis of loop concept and implement loops

Background:

The While Loop

The ‘for’ loop does something a fixed number of times. But in a case where you don’t know how many times you want to do something before you start the loop, you use a different loop: the while loop. Here is the syntax template for the While loop:

SYNTAX:

while (condition_expr)

statement; / Block

Program 1

This program asks the user to enter a series of numbers, when the number entered is ‘0’, the loop terminates. Observe that the program does not know in advance, how many numbers will be typed before the ‘0’ appears, that is upto the user.

```
#include<iostream>
using namespace std;
int main ()
{
    int n = 9; // make sure the initial value is not 0 int total =
0;

    while(n!=0) // loop will execute until n is a 0

        {cout<< " Enter any number: "; cin>> n;

         total ++;

        }
    cout<< " You entered " << total << " numbers " << endl; system
("pause");

return 0;
}
```



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Conclusion:-----

Lab Exercise:

Q1 Write a program to print last 10 numbers using while loop.



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LAB - 15

To Understand the Concept of ARRAYS

Objective:

To understand the concept of data structure Arrays

Background:

Array

In everyday life similar objects can be grouped into units. In computer languages, this can be done by using arrays. Arrays can hold a few data items or tens of thousands. The data items grouped in an array can be simple types like int or float. Arrays group data of the same type. For example, we can store 5 values of type int in an array without having to declare 5 different variables. Items in the array are called elements and they can be accessed by an index number. These elements, of the same type, are placed in contiguous memory locations.

For example, an array to contain 5 integer values of type int could be represented like this, where each blank panel represents an element of the array.

0	300
0	301
0	302
0	303
0	304

Like a regular variable, an array must be declared before it is used. A typical declaration for an array in C++ is:

type name [elements];

Where type is a valid type (like int, float...), name is a valid variable name and the elements field (which is always enclosed in square brackets []), specifies the number of elements the array has to contain.

Therefore, to declare an array called ‘age’ as is as simple as:

int age [5];

Initializing Arrays

When we declare an array, we have the option to assign initial values to each one of its elements by enclosing the values in braces { }. For example:

int age [5] = {23, 25, 40, 16, 19} ;

This declaration would have created an array like this:



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<input type="checkbox"/>	23
<input type="checkbox"/>	25
<input type="checkbox"/>	40
<input type="checkbox"/>	16
<input type="checkbox"/>	19

The amount of values between braces { } must not be larger than the number of elements that we declare for the array between square brackets []. For example, in the example of array ‘age’ we have declared that it has 5 elements and in the list of initial values within braces { } we have specified 5 values, one for each element. When an initialization of values is provided for an array, C++ allows the option of leaving the square brackets empty []. In this case, the compiler will assume a size for the array that matches the number of values included between braces { }:

```
int age [ ] = {23, 25, 40, 16, 19} ;
```

After this declaration, array ‘age’ would be 5 ints long, since we have provided 5 initialization values.

Accessing the values of an array

In any point of a program in which an array is visible, we can access the value of any of its elements individually as if it was a normal variable, thus being able to both read and modify its value. The format is as simple as:

name[index]

Following the previous examples in which age had 5 elements and each of those elements was of type int, the name which we can use to refer to each element is the following:

300	23	age[0]
301	25	age[1]
302	40	age[2]
303	16	age[3]
304	19	age[4]

For example, to store the value 40 in the third element of *age*, we could write the following statement:

```
age[2] = 40;
```

For example, to pass the value of the third element of *age* to a variable called *a*, we could write:



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a = age[2];

Program 1

```
#include <iostream>
using namespace std;

int main ()
{
    int age [] = {23, 25, 40, 16, 19};

    int n, result=0;

    for ( n=0 ; n<5 ; n++ )

    {
        result += age[n];
    }

    cout<< result << endl;

    system ("pause");
    return 0;
}
```

Conclusion:

Lab Exercise:

Write a program to add two arrays.



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Open Ended Lab

Objective:

Using background information that you have learned in class, you are going to design and conduct open ended lab on tasks similar to described below

Task (possible options):

Design a calculator that converts binary to decimal and vice versa.

Case Study on C++ Compiler.

Connect three pcs and transfer data

Lab Report:

Your lab report must include:

Purpose:

This is a statement of problem to be investigated. It provides the overall direction for laboratory investigation and must be addressed in the conclusion.

Procedure:

Step by step procedure carefully explained in a numbered sequence.

All experimental variables identified and named

Brief description of how the independent variables are controlled.

Hint:

Open ended lab must be so much descriptive such that someone who has not studied the topics covered in open ended lab must be able to understand it and be able to reproduce the results.

Data:

What data needs to be taken?

Draw data tables

Data Analysis:

How do you interpret data?

Draw graphs, analyze them or perform calculations in order to analyze collected data.

Conclusion:

Discuss any questionable data or surprising results.

Explain the possible source of any error.

Suggest changes in experimental design that might test your explanations.



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7 Lab Semester Project Rubrics

Heads	Marks	Performance below Poor (0% of m)	Poor (20% of m)	Performance between Poor and Satisfactory (40% of m)	Satisfactory (60% of m)	Performance between Satisfactory and Excellent (80% of m)	Excellent (100% of m)
Hardware Presentation	3						
Communication skills	3						
Viva	6						
Report	3						
Total Marks	15						
Marks Obtained							