

Chapter one

Introduction to computer

1.1 What is Computer?

Computer is the device that receives input data by input units, and processes these data by processing units; then either it saves the processed information in the storage units or outputs them by output devices.

In order to explain the functions that can be implemented by computer, it must be understood the meaning of the following words:

1-Data

Data are many types of information which can be processed by computer such as orders, numbers, selections, pictures, sounds, etc.

2-Processing

It is a method of treating the data and converting them from such form to another. This function is done in the processor or random memory.

3- Output

It is the method of appearing the information with such a way that can be understood from user such as screen display, earphone, printer, etc.

4-Storage

It means the save of information in computer in order to use them consequentially. This save may be done by CD, DVD, Flash, etc.

5-Networks

They are groups of computers connected with each other where any computer can transmit the information to any other computer. Networks may be constructed from two computers or may include millions of computers.

1.2-Use of computer

There are many functions that can be implemented by computer. The difference between computer and other devices is that the computer can do

many task while the other devices are designed to do limited objects .For example, TV can be used for watching only, Radio is used for listening only, etc. However, there are some of simple functions that can be done by computer:

- i- Implementation of calculation of any company or state.
- ii- Different types of games.
- iii- Designing and printing the drawings and movements.
- iv- Printing the messages and papers.
- v- Using internet.
- vi- Engineering drawing such as 3D drawing
- vii- Programming the devices.
- viii- Arranging and giving lectures.
- ix- listening for music and watching videos.

Also, many other complex and simple applications can be implemented by computers.

1.3 The stages of development of computer

A- First stage (1940-1959)

B-second stage (1959-1964)

C-third stage (1964- beginning of seventies)

D-fourth stage (beginning of seventies-present time)

1.4 General types of computer

In general, the computers differ from each other based on their ability of processing the data. Some of computers have a limited ability while there are types of computers that have very high ability of processing the data. This variety of computer types makes them suitable for different

applications and with adequate ranges of costs which can be acceptable for most user requirements.

1- Central computers (Mainframe).

They are very big computers such as that used in banks and government corporations (ex. Ministry of interior). These great size computers cannot be bought by normal persons because of their high cost. They can process large amount of data such as information of millions of peoples.

2- Personal computers.

This type can be used by normal users in houses or in work. It may be used for processing words, playing different games, using internet, learning, etc. however, this type of computers can be classified as:

a- Desktop computers

This type is larger than the other type and can be put on table in the house or in the work. Its cost is less than that of the other type and cannot be moveable because of its large size.

b- Notebook or Laptop

They are small sizes of computers used at travelling. They are represent personal computers and they are easy in movement because of their light weights and because they are constructed as a unique piece. This type is run with recharged battery in order to be able for using at movement. Also, laptop can do the same functions that can be implemented by desktop computer with keeping the light weight and small size therefor this type has higher cost as compared with the first one.

3-Servers

This type is used in networks to represent the main center of the network. It represents the place of saving and managing the network. Also, this type should be strong sufficiently in order to be able to manage the large number of computers in the network. In fact, with the development of the

personal computers they can be used as servers and now the difference between personal computers and servers has decreased gradually.

1.5 Output appearance of computer

A-Case:

It is a metal box which contains the mother board. This mother board contains number of cards such as monitor card, sound card... etc. The output appearance of case consists of:

1- Operating switches: there are two types of switches:

i- Power switch: The main function of this switch is the connection of electrical current. This switch is of two types:

a- AT switch: it is a normal switch (**On-Off**).

b- ATX switch: This is a new switch where it can run the device by one press and then the computer can be returned to the shutting down way by such order from inside of the computer.

ii- Reset: which is used for restarting the computer when such a problem has occurred such as when the computer cannot respond or implement any order. However, there are some cases that need to use the Restart switch:

- When the computer do not respond to any order.
- When adding any new part or device such as printer or scanner.
- When setting up any new program in the computer.

2-Drivers:

There are many types of drivers such as:

i- CD-Rom

This is used to drive the (CDs) and it means (Compact Disk Read Only Memory).

ii- Floppy Disk Driver

This is used to drive the floppy disks that operate with magnetic effects.

iii- CD-Writer Driver

By this driver, the information can be saved in the empty disks. The empty disk is named as (CD-Recordable). After burn, the CD will be able to read only.

Note: This driver can be used for reading and writing at the same time.

iv- ZIP Driver

This is the responsible driver for driving the ZIP disks. These disks are similar to the floppy disks except that ZIP disks are larger in thickness and greater in the capacity of storage.

v- DVD driver

This driver is used to drive the DVD disks which are similar to CD disks but DVD disks have greater capacity for storage.

B- Monitor

It is the part of computer that can display the results of the programs and applications as pictures, symbols, information ...etc. It represents the importance unit of display and it can be classified according to the cards such as CGA, EGA, and VGA which are old types. The new types such as flat screen and digital SVGA contain five switches:

- 1- power (on-off) switch.
- 2- Control menu switch.
- 3- Right and left movement switches.
- 4- Exit switch.

C- Key Board

It is one of the input units which contain about 150 key. These keys include symbols, Arabic letters and English letters. Also, this unit contains many orders that can be issued to the computer.

D- Mouse

Its size is as the fist and it has right and left sides. Also, it has a wheel at its center used for browsing the windows.

1.6 Representation of data in computer

The computer is electronic device which has some properties such as the ability for saving the information, processing data and display the information. The computer uses electrical signal which has two states either it is exist or not, or, with other word, this signal may be positive (+) or negative (-). Therefore, the representation of data inside the computer depends on the use of these two states of signal which take a digital binary by using either number (1) or number (0). Where the number (1) represents the positive signal (it is existing), while, the number (0) represents the negative signal (it is not exist). Therefore, the information is represented by (**Byte**) which consists of the numbers (1) and (0). Knowing that, the numbers (1) or (0) represent one (**Bit**). For example, to represent the Arabic letter (ا) in the computer it will take the form (11000110) which equal to (8) **Bits**. The word **Bit** means **Binary Digital** or it also may mean **piece**.

1.7 Units of measuring the storage capacity in computer.

* **Bit:**

Bit is the smallest piece or unit of storage which has one of the two forms either (1) or (0).

****Byte:**

Every one Byte consists of chain of (8) Bits. The Byte may represent one letter or one symbol such as (?) , (!) ,....etc.

*****Kilo Byte (K.B)**

1 K.B=1024 Byte

Or

1 K.B $\approx 10^3$ Byte

*** **Mega Byte (M.B)**

1 M.B=1024 K.B

Or

1 M.B = 1024×1024 Byte

Or

1 M.B = 10^6 Byte

****** Giga Byte (G.B)**

1 G.B = 1024 M.B

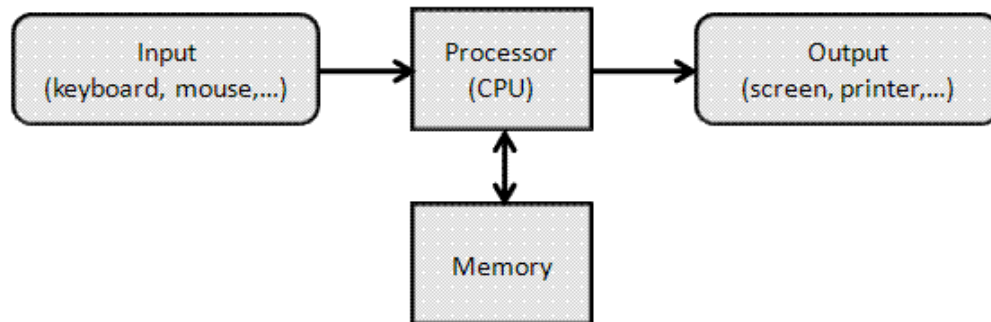
Or

1 G.B = 10^9 Byte

Chapter Two

Main Computer Parts

A computer is a machine that manipulates data according to a list of instructions called a program.



A computer can also be defined as an electronic machine that accepts input (data), processes it and gives out results (information).

The main parts of computer are as following:

- 1- Hardware
- 2- Software

Hardware:

Hardware is a collection of physical components that make up the computer and the devices attached to it such as input devices, output devices, secondary storage devices and others.

Hardware is composed from the following main parts:

(1) input units

Such examples are the keyboard, mouse and scanner.

(2) Central Processing Unit (CPU):

It is a metal piece with several legs installed on the motherboard and represents the electronic brains of the device where all the data is processed within this part and is called processor and depended on the CPU the type of computer is determined if P1, P2, P3,.....etc. The Central Processing Unit (CUP) consists of two parts:

(a) Arithmetic and Logic Unit (ALU):

It is the unit responsible for the execution of calculations such as (addition, subtraction, multiplication, and division) and the logical processes such as (greater than, less than, equaletc.).

(b) Control Unit

This unit controls and supervises the work of different computer units and directs its work according to the program orders in order to process the data and controls the following processes.

- 1- Data access from input units to main memory.
- 2- Transfer data between the main memory and arithmetic and logic unit.
- 3- Information exits from the main memory unit to different output units and secondary storage units.

In the arithmetic and logic unit and in the control unit there is a temporary storage area for small amounts of data called Register such as a Program Counter in the control unit is used to store the address of the next command to be executed while a register in the arithmetic and logic unit is called Accumulator and it is used for temporarily storage for data and the results of arithmetic and logical processes .

(3) Memory unit

The computer memory is a temporary storage area. It holds the data and instructions that the Central Processing Unit (CPU) needs. Before a program can run, the program is loaded from some storage medium into the memory. This allows the CPU direct access to the computer program. Memory is needed in all computers.

(a) Primary Memory:-

Primary memory also known as “main memory” or “internal memory” which is located in the mother board of system or as we say which is directly connected to the CPU. It is the place where only little bit of data are stored either by manufacturer or by user.

This is further divided into two parts:-

- 1- RAM
- 2- ROM

(1) RAM

RAM also known as “random access memory” it stores the data which the user currently uses or as we say it stores the data temporary in it. RAM needs power or electricity to work when the computer power is turned off then all the data in it will be erased automatically therefore it is called Volatile Memory . This is a circuit which has its separate space or slot in motherboard. This allows the computer to run the software faster. This memory does the following activities:

- 1- Storage of computer data in the input storage area.
- 2- Storage interim results of operation in the working storage area.
- 3- Storage the orders of program in the program storage area.
- 4- Storage final results in the output storage area.

RAM is further classified into two parts

- (a) SRAM
- (b) DRAM

(a) SRAM: - Known as Static RAM. The word “static” refers that the memory retains its contents as long as the power is supplied so that’s why we can say this is volatile in nature. SRAM does not need to be refreshed periodically. SRAM is faster but more expensive than DRAM.

(b) DRAM: - Known as Dynamic RAM. It also contains data only when electricity is available. DRAM needs to refresh periodically due to this, this RAM works slower than SRAM. Mainly general PC uses this RAM because it is much cheaper than SRAM and requires less space.

(2) ROM

ROM also Known as “Read Only Memory” as the word refers mainly it can only read the data which is stored in it. The information of this memory is usually stored by the computer manufacturer as well as the information of this memory remains stored in it even after turning off the computer or disconnecting the power from it therefore known as non-volatile memory . It contains BIOS of system.

Mainly there are three types of ROM:-

- (a) PROM
- (b) EPROM
- (c) EEPROM

(a) PROM: Known as “programmable Read Only memory”. In this when the data is stored then we have no right to change or alter any data to it. In this the data is written by Manufacturer company, even you can also purchase blank PROM chip but it can be programmed by special tool such as PROM programmers. In general PC’s mainly PROM is used because we don’t have to alter any data to it.

(b) EPROM: Known as “Erasable PROM” as the word refers “erasable” means we can change or erase the data. So in EPROM we have right to change the data. In this we can change the data with the help of ultra violet rays. EPROM is much expensive than PROM.

(c) EEPROM: Known as “Electrically Erasable PROM” the type of ROM which can be erased by electrical charges. EEPROM can be erased one byte at any time rather than erasing the entire chip by ultra violet rays.

(4) Secondary Memory

The place where we store our personal data in computer system is known as SM. In this we store data so that when the data is needed we can easily retrieve it. This is the fundamental component of comp. system.

It is non- volatile in nature so that we cannot lose the data when power supply is off.

There are two methods for accessing the data from it:-

1. Sequential – This is the method in which we search the data sequentially or line by line until you find the desired data. E.g. Magnetic tape, etc.
2. Direct – This is the method in which computer can go directly to the information that the user wants. E.g. magnetic disk, optical disk, etc.

Now I am going to discuss some of the secondary storage devices:-

1. Magnetic Tape: - Magnetic tape appears similar to the tape used in music cassettes. It is a plastic tape with magnetic coating. Mainly it is used to store music, movie, etc. it is not used to store data in it because as we know it comes under sequential access and it reads data line by line so that we can’t find the exact location of data.

2. **Magnetic Disk:** - This is widely used popular storage medium for direct access secondary storage. This is the place where data are automatically save when we click on save button. It is non- volatile so that once data is stored in it will not lose when power goes off.

This is the storage device where we mainly store or install OS for system. Some of the magnetic disk are as follows:-
Hard Disk, Floppy Disk, etc.

(a) Hard Disk

Hard Disk also known as “Hard Drive” or “Fixed Drive” and it is a piece of metal the size of a palm hand installed inside the motherboard and it contains all the files and data stored in the computer. Hard disk comes fix in our system and if you require more hard disk then it comes in removable also. The average computer today comes with a 250 to 500 GB hard drive.

Usually divides the hard disk into several parts to protect it from the risk of infection with the virus and the parts of this disk are called in English letters in sequence C:\, D:\, E:\,.....etc.

(b) Floppy Disk

This is removable, round, flat piece of Mylar plastic, coated with a ferric oxide. This kind of disk is read and written by Floppy Disk Drive (FDD), which is a device which performs basic operations on disk including reading and writing of data to it. This was used to transfer data from one computer to another. Earlier 5 1/4” floppy disks were used but these disks have less storage capacity so new format of 3 1/2” floppy disk came in market. Now a days floppy disk are not used because off less storage and high rate.

(c) Optical Disk

This is the secondary storage medium in which you can store much more data in it. This is flat, circular, plastic disk coated with material. Optical disk is very popular because of its small size and huge storage capacity. You must have optical disk reader in your computer so that you can read or write data on it. There are two types of optical disk:

1. CD
2. DVD

CD: Known as “Compact Disk”, mainly used to store data, music, movie, software, etc. it can store 80 minutes of continuous video recording. The space of CD is up to 700 MB. Due to its high storage capacity it is widely used. The data are stored in it in the form of “Pits”. To avail the services of CD your computer should have CD drive.

There are two types of CD:

- i- CD ROM.
- ii- CD R/W.

DVD: Known as “Digital Versatile Disk”. It is high capacity storage medium. Mainly used to store movie, music, software, etc. the storage capacity of DVD is up to 4.7 GB. It looks similar to CD but due to its high storage capacity it is not cheaper as CD. To avail the facility of DVD you must have DVD drive in your computer. DVD drive also gives you facility to run CD disks too. Types of DVD:

- i- DVD ROM.
- ii- DVD R/W.

(d) ZIP Disk

It is similar to floppy disk but it is larger in thickness and greater in the capacity of storage than a floppy disk.

(e) Flash

It is a mobile memory used to transfer data from one computer to another and is called commercially Flash Ram and has a storage capacity from 64MB to 32GB.

(5) Output Units

One of the most important output units is the monitor where the software is produced in the form of images or symbols or data and other output units printer, speaker,etc.

Tabl1 (1): Shows the system units, output units and input units

SYSTEM UNITS	OUTPUT UNITS	INPUT UNITS
Mother Board Central Processing Unit (CPU) Main memory (RAM / ROM) Hard Disk Floppy Disk Drive Laser Disk Drive Data Buses Power Supply Hardware Cards Case	Screen Printer Plotter Speakers Headphone	Mouse Keyboard Scanner Light Pen Joystick Microphone Camera Barcode reader Finger print Graphics tablet

Software

Software is a set of programs, which is designed to perform a well-defined function. A program is a sequence of instructions written to solve a particular problem. There are two types of software.

- 1- System Software
- 2- Application Software

(1) System Software

The system software is a collection of programs designed to operate, control, and extend the processing capabilities of the computer itself. System software is generally prepared by the computer manufacturers. These software products comprise of programs written in low-level languages, which interact with the hardware at a very basic level. System software serves as the interface between the hardware and the end users.

Some examples of system software are Operating System, Utility, Compilers, Interpreter, Assemblers, etc.

(a) Operating System

i- DOS (Disk Operating System)

ii- Windows (Windows 3.11, Windows 95, Windows NT, Windows 98, Windows me, Windows 2000, Windows XP, Windows 2003.....etc.)

iii- UNIX

iiii- LINUX

(b) Utility Programs

Utility programs are small systems programs that can do specific and simple task such as copying a file from tape to cylinder or arranging a set of data alphabetically or digitally. One of the type of utility programs is the editor program that allows the user to open a file and write programs or data in it.

(c) Compilers Programs

Compilers programs are the programs that programmers use to translate programs they write in a computer language such as Basic, Bascal, Fortran,etc., in order to solve a problem where these translators convert the main program that the programmer writes (Source Program) into a program written in a machine language and called (object program).



Here is a list of some of the most prominent features of a system:

- Close to the system
- Fast in speed
- Difficult to design
- Difficult to understand
- Less interactive
- Smaller in size
- Difficult to manipulate
- Generally written in low-level language

(2) Application Software

Application software products are designed to satisfy a particular need of a particular environment. computer lab can come under the category of Application software. Application software may consist of a single program, such as Microsoft's notepad for writing and editing a simple text. It may also consist of a collection of programs, often called a software package, which work together to accomplish a task, such as a spreadsheet package.

Examples of Application software are the following:

- Word Processing (MS Word, Lotus Word(Pro.), Word Perfect)
- Spreadsheet (MS Excel, Lotus123)
- Data Base (MS Access, MS SQL, Oracle)
- Presentation (MS power Point, Flash)
- Graphics (AutoCAD, Photoshop)
- Web Authoring (MS Front Page)
- Data Protection (Anti Virus)

Features of application software are as follows:

- Close to the user
- Easy to design
- More interactive
- Slow in speed
- Generally written in high-level language
- Easy to understand
- Easy to manipulate and use
- Bigger in size and requires large storage space

Computer programming language

Computer programming languages any of various languages for expressing a set of detailed instructions for a digital computer. Such instructions can be executed directly when they are in the computer manufacturer-specific numerical form known as machine language, after a simple substitution process when expressed in a corresponding assembly language, or after translation from some “higher-level” language. Although there are many computer languages, relatively few are widely used.

Language Types

(1) Machine language

Sometimes referred to as machine code or object code, machine language is a collection of binary digits or bits that the computer reads and interprets. Machine language is the only language a computer is capable of understanding.

The exact machine language for a program or action can differ by operating system on the computer. The specific operating system will dictate how a compiler writes a program or action into machine language. And one of the disadvantages of machine language is that it requires a great effort and accuracy from the programmer in addition to the difficulty of detecting mistakes.

Computer programs are written in one or more programming languages, like C++, Java, or Visual Basic. A computer cannot directly understand the programming languages used to create computer programs, so the program code must be compiled. Once a program's code is compiled, the computer can understand it because the program's code is turned into machine language.

Machine language example

Below is an example of machine language (binary) for the text "Hello World".

```
01001000 01100101 01101100 01101100 01101111 00100000
01010111 01101111 01110010 01101100 01100100
```

Below is another example of machine language (non-binary), which will print the letter "A" 1000 times to the computer screen.

```
169 1 160 0 153 0 128 153 0 129 153 130 153 0 131 200 208 241 96
```

(2) Assembly Language

This language uses certain symbols written in English to express a particular order such as add and mean collect and code mult means multiply. This language varies from computer to another and the programs written in this language are called source programs and need a translated program called Assembler in order to convert it into machine language. The source program after its translation is called Object Program.

(3) High Level Languages

A high-level language is a programming language designed to simplify computer programming. It is "high-level" since it is several steps removed from the actual code run on a computer's processor. High-level source code contains easy-to-read syntax that is later converted into a low-level language, which can be recognized and run by a specific CPU.

Most common programming languages are considered high-level languages. Examples include:

- | | |
|---------------|----------------|
| 1. C++ | 7. Objective C |
| 2. C# | 8. Pascal |
| 3. Cobol | 9. Perl |
| 4. Fortran | 10.PHP |
| 5. Java | 11.Python |
| 6. JavaScript | 12.Swift |

Each of these languages uses different syntax. Some are designed for writing desktop software programs, while others are best-suited for web development. But they all are considered high-level since they must be processed by a compiler or interpreter before the code is executed.

code written in languages like C++ and C# must be compiled into machine code in order to run. The compilation process converts the human-readable syntax of the high-level language into low-level code for a specific processor. Source code written in scripting languages like Perl and PHP can be run through an interpreter, which converts the high-level code into a low-level language on-the-fly.

Important Tasks in Windows

Starting computer

Most basic computer users only need to know a few things about their operating system. In these tutorials we will cover the basics of Windows 7. We will start with the Start menu, desktop and screen saver then move through the control panel and explore the topics of user accounts, Appearance and Themes, printers, mouse, folder options and sound. We will then move onto file structure and windows updates.

Lets' get started with learning about the start menu and desktop. The Windows start menu is where you will find and access all of your programs and settings. Click on the Windows icon in the lower left corner of your working screen. The Windows 7 Start Menu will look like this. The left hand column is a list of recently used programs and will change as you use your computer. The right hand column is where you will see

the standard menu including the control panel, device and printer manager and help.



Below the left hand column is a search box. In this box you can type a file name, folder name, program, or extension and search for the location on the computer. If you do not press enter after your search your list of matching items will appear above the search box in the start menu. By clicking the magnifying glass or pressing enter a window will open with a list of the matching items.

Below the right hand column start menu options is the shutdown button. Clicking the button will shut down the computer properly.



If you would like more options click the arrow on the button to get a list of options. The first option is to switch users. This will keep the current user logged into the computer and bring you back to the sign in window to log into another account. Log off will log the user off closing all programs and return you to the sign in menu. Lock will lock the computer so a password will have to be entered before being able to log back on. Any open programs will remain open until the closed by the user or the computer is shutdown. Restart will log off all users shut down the computer and reboot it to the log in menu. Sleep will keep all programs running but shut down the monitor and non-essential components of the computer. It will keep any programs open but will only use minimum resources to keep the computer running. Hibernate is used primarily for laptops. It uses even less power than sleep mode by placing your open work on your hard drive and turning your computer off with the ability to recover any open work when the computer is turned back on.

Chapter (3):

Flowcharts and Algorithms

(1) Introduction

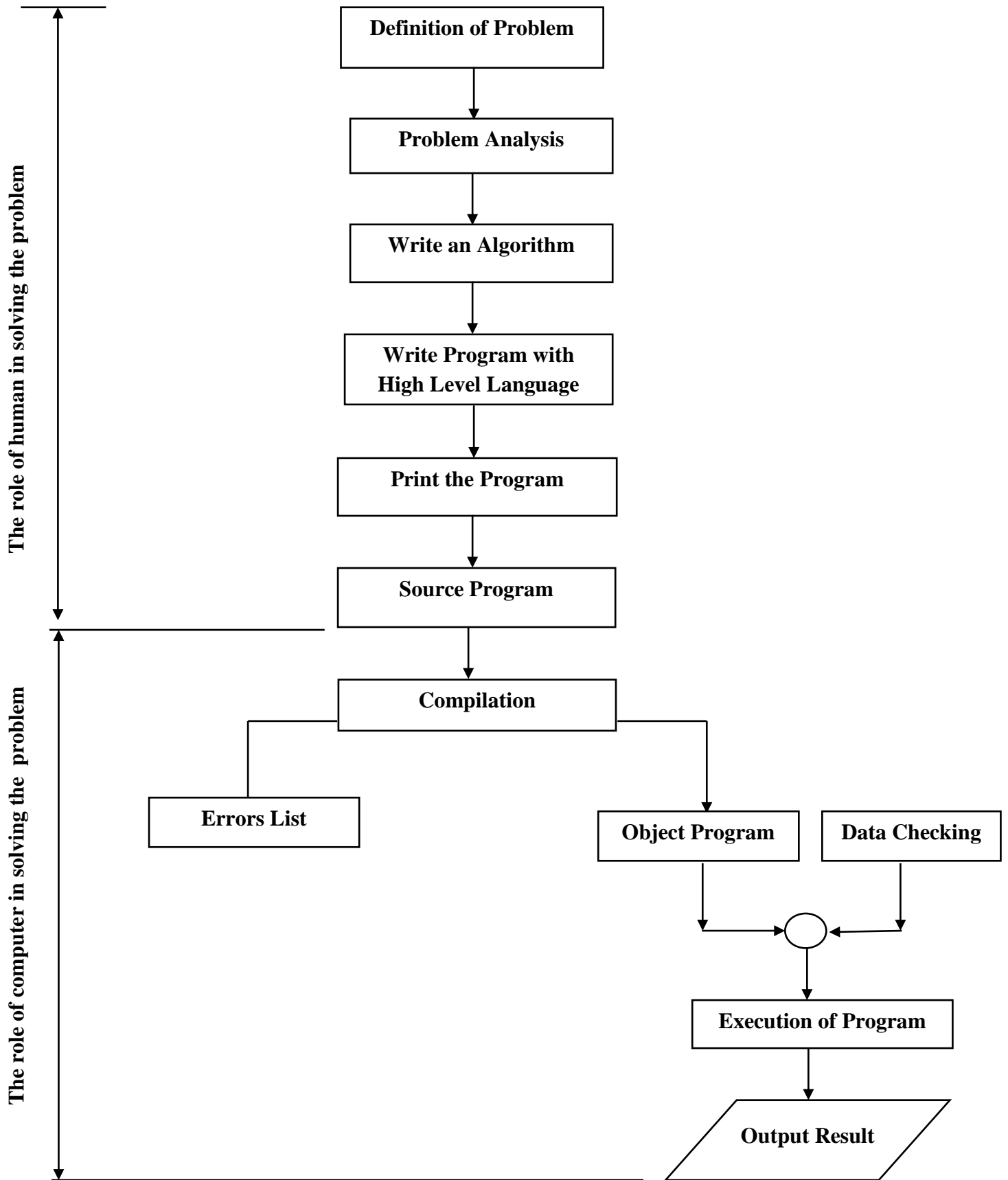
The algorithms are the hardest part in programming and when you learn it correctly it means that you are able to learn any programming language you want. In fact if you do not know how to deal with the code and address all the problems you face while writing the code you will give up and stop in your place when the first trivial problem appears to you in the code and you have thus wasted your time because you do not know how to solve the problem you are dealing with. So when you have finished analyzing your problem you can write it in any programming language you want with easy.

In fact, if you really understand the algorithm, you will be able to understand any programming language you want because you will be able to control and manipulate the code the way you want.

Algorithms are not programming language, but are the method of analysis and thinking that you have to follow in order to write the code correctly and therefore the algorithm can be defined as a set of steps or instruction arranged to perform a calculation or logical process sequentially and systematically.

There are two way to represented the algorithm (Pseudo code and flowchart) as it will be explained later.

In order to resolve any problem by using any high level language, there are two main stages as shown in the following form.

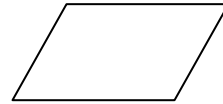


(2) Symbols and Idiomatic Forms in Flowcharts

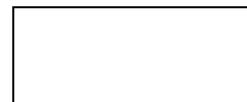
(1) Start/ Stop



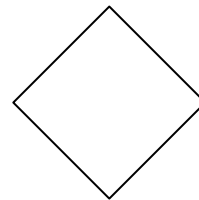
(2) Input/output



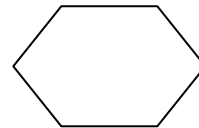
(3) Calculation and Store



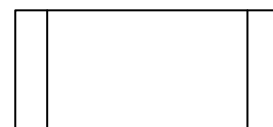
(4) Decision



(5) Looping



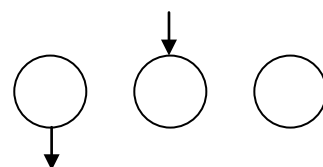
(6) Call Subroutine



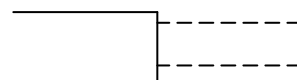
(7) Flow Line



(8) Connector



(9) Comment



(3) Algorithms (Pseudo Code)

A formula or set of steps for solving a problem. To be an algorithm, a set of rules must be unambiguous and have a clear stopping point". There may be more than one way to solve a problem, so there may be more than one algorithm for a problem. On other words, "A sequence of activities to be processed for getting desired output from a given input." Then we can say that:

1. Getting specified output is essential after algorithm is executed.
2. One will get output only if algorithm stops after finite time.
3. Activities in an algorithm to be clearly defined in other words for it to be unambiguous. Before writing an algorithm for a problem, one should find out:
 - what is/are the inputs to the algorithm
 - what is/are expected output after running the algorithm

The following symbol for different operations should be used while solving some problems: '+' for Addition, '-' for Subtraction, '*' for Multiplication, '/' for Division and '=' for assignment.

For example, $A = X * 3$ means A will have a value of $X * 3$.

Examples of Algorithm:

Problem1 Find the area of a Circle of radius r.

Inputs: Radius r of the Circle and $PI=3.14$.

Expected output: Area of the Circle

Algorithm:

Step1: start

Step2: Read\input the Radius r of the Circle

Step3: Input $PI=3.14$

Step4: Calculate $Area = PI * r * r$

Step4: Print Area

Step5: End

Problem2: Write an algorithm to read two numbers and find their sum.

Inputs: First num1. Second num2.

Expected output: Sum of the two numbers.

Algorithm:

Step1: Start

Step2: Read\input the first num1.

Step3: Read\input the second num2.

Step4: Calculate $\text{Sum} = \text{num1} + \text{num2}$

Step5: Print Sum

Step6: End

Problem3: Write an algorithm to find the average of temperature T1, T2, and T3.

Inputs: The temperature T1, T2, And T3.

Expected output: The average of three temperature.

Step1: Start

Step2: Read the values of temperature T1, T2, and T3..

Step3: Calculate the average $= (\text{T1} + \text{T2} + \text{T3}) / 3$

Step4: Print the average

Step5: End

Type of Algorithms

There are three types of control structure Algorithms:

1. Sequence
2. Branching (Selection)
3. Loop (Repetition)

The sequence is exemplified by sequence of statements placed one after the other – the one above or before another gets executed first.

The branch refers to a binary decision based on some condition. If the condition is true, one of the two branches is explored; if the condition is false, the other alternative is taken. This is usually represented by the ‘if-then’ construct in pseudo-codes and programs.

Problem: write algorithm to find the greater number between two numbers

Step1: Start

Step2: Read/input A and B

Step3: If A greater than B then $C = A$

Step4: if B greater than A then $C = B$

Step5: Print C

Step6: End

The loop allows a statement or a sequence of statements to be repeatedly executed based on some loop condition. It is represented by the ‘while’ and ‘for’ constructs in most programming languages, for unbounded loops and bounded loops respectively.

A trip around the loop is known as iteration. You must ensure that the condition for the termination of the looping must be satisfied after some finite number of iterations, otherwise it ends up as an infinite loop, a common mistake made by inexperienced programmers.

Problem: Write An algorithm to calculate even numbers between 0 and 99

1. Start
2. $I = 0$
3. Print I in standard output
4. $I = I + 2$
5. If ($I \leq 98$) then go to line 3
6. End

Note:

(Unbounded loops refer to those whose number of iterations depends on the eventuality that the termination condition is satisfied; bounded loops refer to those whose number of iterations is known before-hand.)

(4) Importance of Using Flowcharts

One of the most important benefits of using the flowcharts before writing any program is the following things:

- 1- Gives an integrated image of the steps required to solve the problem in the mind of the programmer so that it can fully inform all parts of the problem from the beginning to the end.
- 2- Help the programmer to diagnose the errors that occur in the program, especially the logical mistakes whose discovery depends on the logical sequence of steps to solve the problem.
- 3- Makes it easier for the programmer to make any adjustments in any part of the problem quickly and without having to re-examine the problem.
- 4- Makes it easier for the programmer to follow the parts of the program that have a lot of possibilities and branched.
- 5- The flowchart used in the design of solutions to some problems are a reference in resolving other similar problems and a key to resolving new problems related to old problems resolved.

(5) Flowcharts Types

In general, it can be said that there are two main types of flowcharts:

(a) System Flowcharts

This type of flowcharts is used when designing engineering devices in factories and others, which use self-control systems such as buoys in water tank, traffic lights, and pressure control devices and temperatures in oil distillation towers so that the flowcharts here are considered as the complete blueprint that shows the order, relationship and function of each stage before and after, within the framework of the integrated system.

The role of these flowcharts can be summarized as follow:

- 1- It is easy to detect any malfunction in the whole system just by looking at. This is led to simply maintenance process and at the lowest cost.
- 2- Facilitates future modification to the system program at any location.
- 3- Explain the details of the data to be entered into the system.
- 4- Explain the details of the types of expected or required results from the program prepared for the system.
- 5- To indicated how to link the system to the rest of system in the designated organization.

(b) Program Flowcharts

This type of flowcharts is used to illustrate the main steps that are being developed to resolve a problem in the form of idiomatic drawings showing the logical relationship between the other steps of the solution and the location and function of each of them within the framework of a comprehensive solution to the problem.

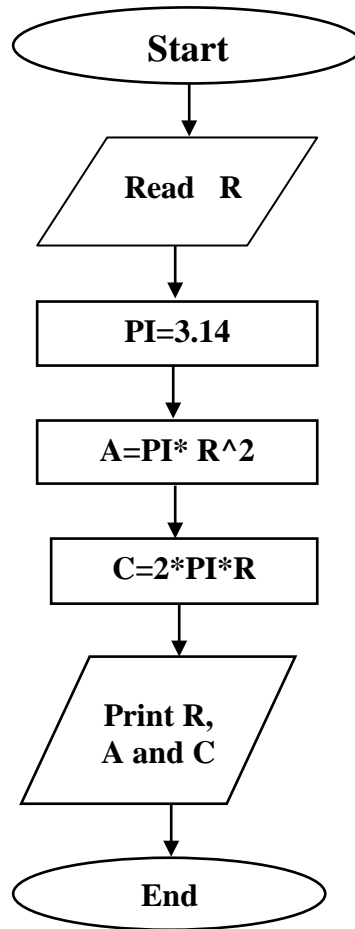
There are four types from program flowcharts :

- 1.Simple Sequential Flowcharts
- 2.Branched Flowcharts
- 3.Simple-Loop Flowcharts
4. Multi-Loop Flowcharts

(1) Simple Sequential Flowcharts

The solution steps for this type of flowchart are arranged in a straight series from the beginning of the program to the end so that it is free of branches and loops.

Example 1: Draw a flowchart to find the area and perimeter of circle have known radius (R).

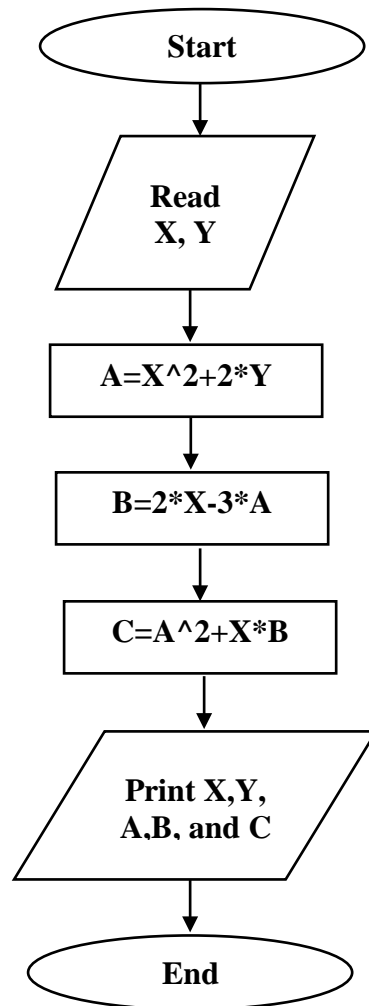


Example 2: Draw a flowchart to find the values of variables A, B, and C from the following equations.

1. $A = X^2 + 2Y$

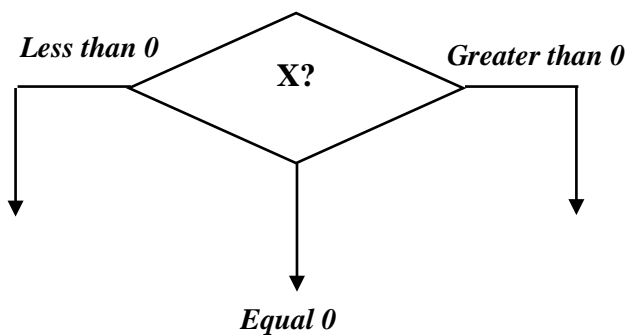
2. $B = 2X - 3A$

3. $C = A^2 + XB$

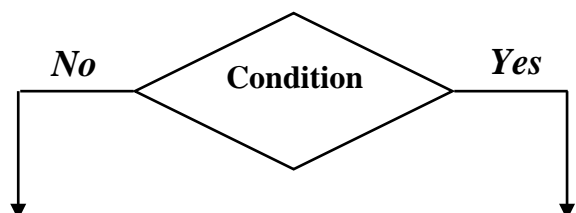


(2) Branched Flowcharts

This type of flowcharts are used when there is a need to make a decision or a trade-off between two or more choices. There are two types of resolution as shown below:



Three branches decision



Two branches decision

In general, the branch flowcharts can take one of the following two images:

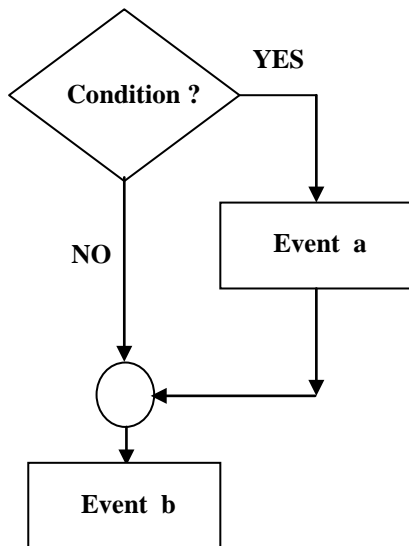


Fig.(2)

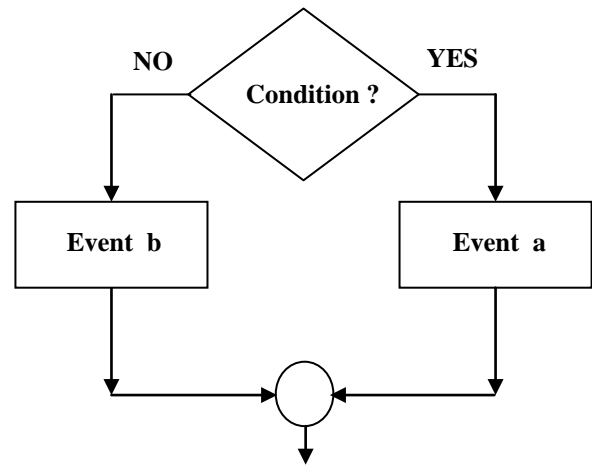


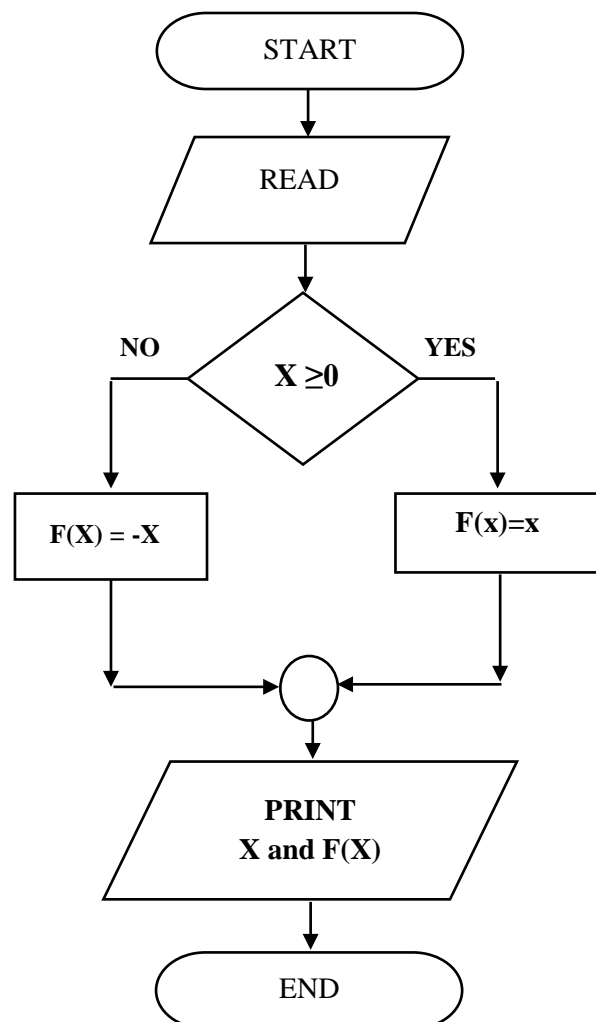
Fig.(1)

Fig.(1) shows that if the answer of condition is (Yes) the next event in the execution is event (a), but if the answer is (No), the next event is event (b) either in Fig.(2) if the answer of condition is (Yes), the next event in the execution is event (a) and then followed by event (b), but if the answer of condition is (No), the next event will be event (b) directly.

Example (3):

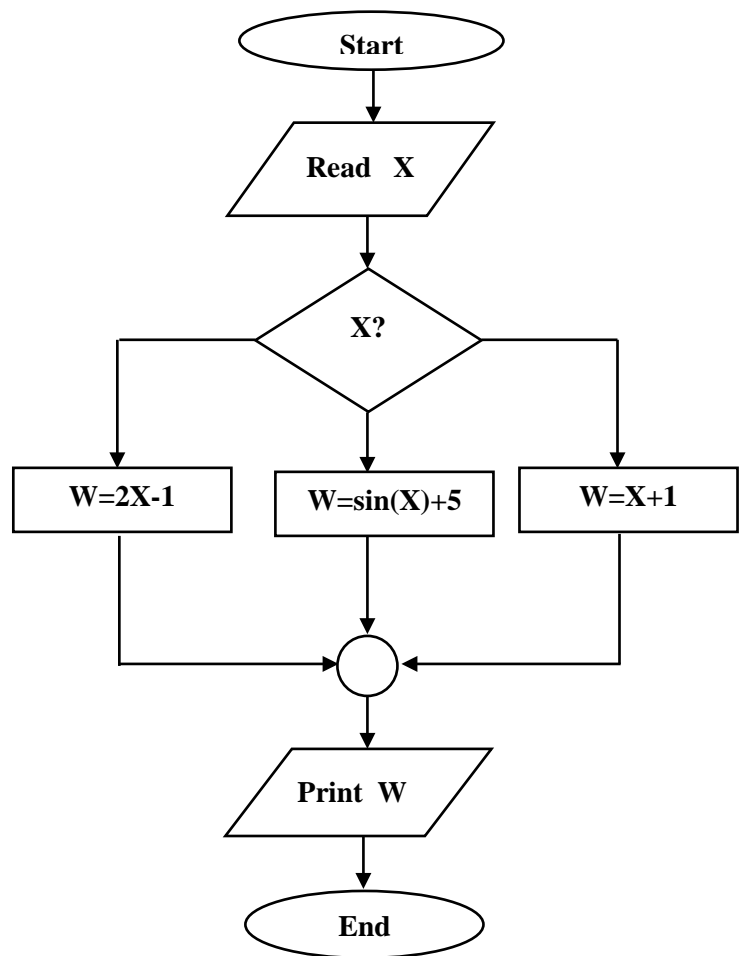
Draw a flowchart to find the $F(x)$?

$$F(x) = \begin{cases} x & x \geq 0 \\ -x & x < 0 \end{cases}$$



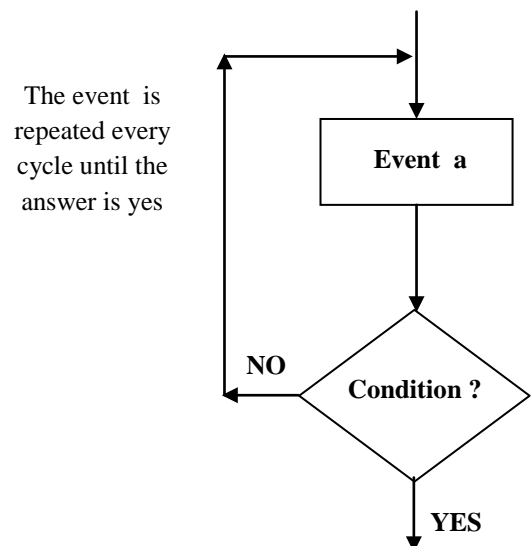
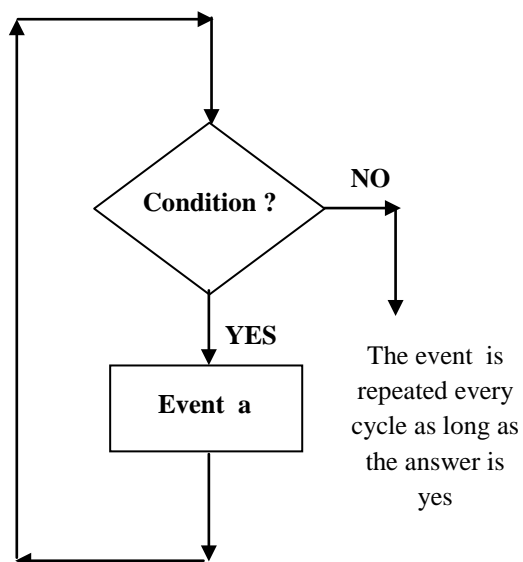
Example (4): Draw a flowchart to find the value of W from the following equations, note that the value of variable X is known ?

$$W = \begin{cases} X + 1 & X > 0 \\ \sin(X) + 5 & X = 0 \\ 2X - 1 & X < 0 \end{cases}$$



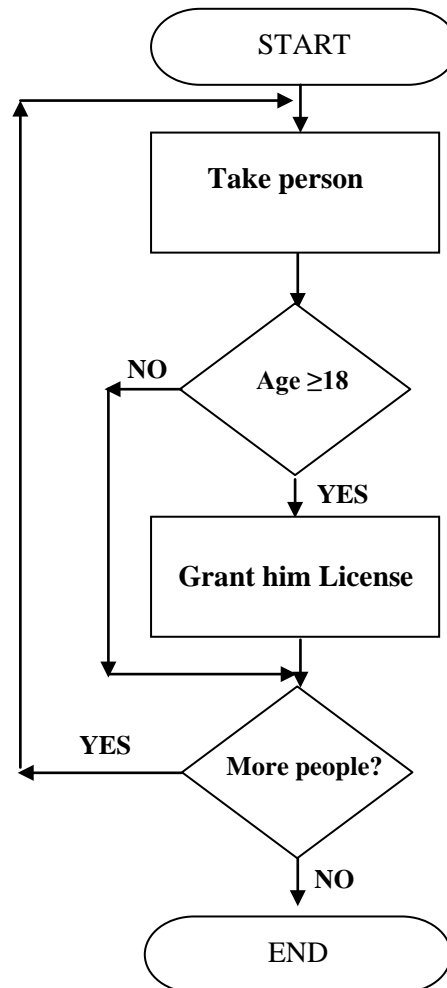
(3) Simple-Loop Flowcharts

This type of flowcharts we need to return a process or set of processes in the program a specific or unspecified number of times, and the overall form of these flowcharts is as follows:



And this flowchart is called a single-loop flowcharts because it uses a single rotation loop and is sometimes called a simple-loop flowcharts.

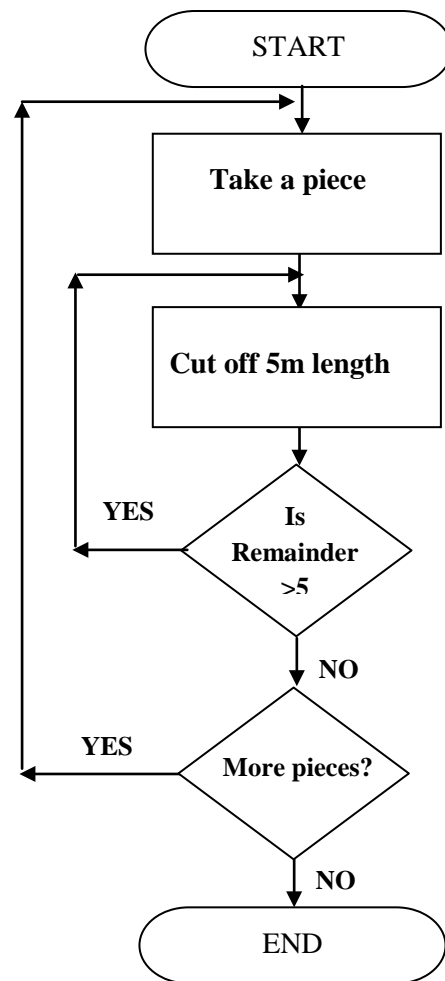
Example (5): The general Traffic Directorate in Iraq is submitting a project to obtain online driving permits, provided that the applicant not under 18 years of age . Draw the flowchart for this project?



(4) Multi-Loop Flowcharts

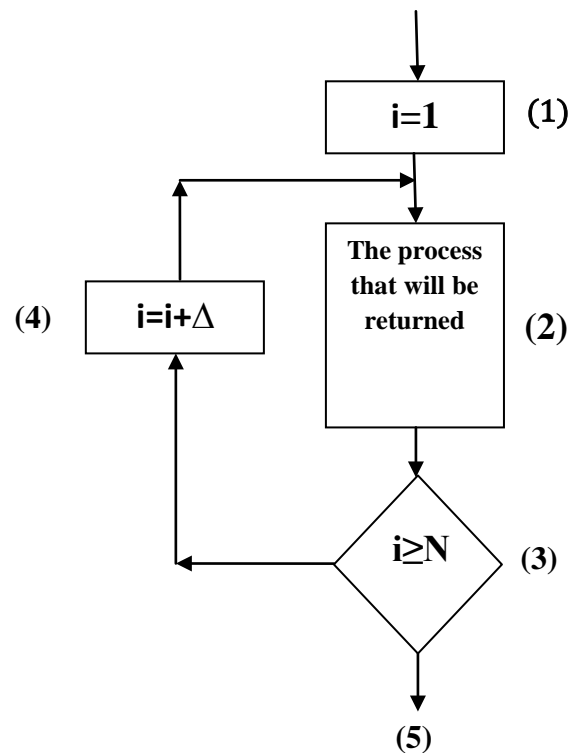
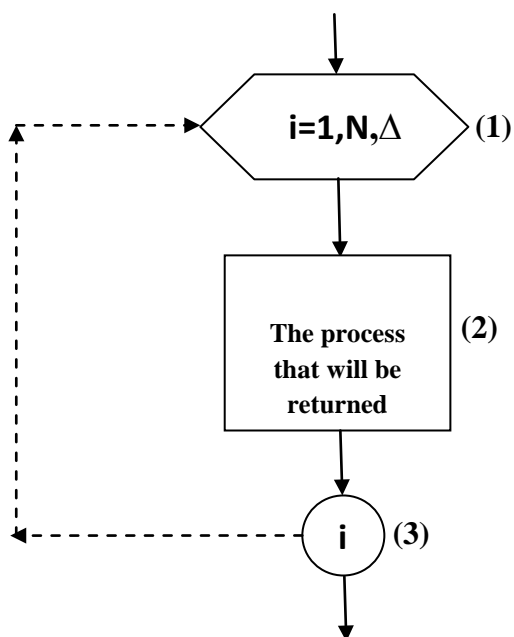
In this type of flowcharts the rotations are within each other so that do not intersect.

Example (6): A merchant wants to cut off a set of cloth sized more than 5 meters long into small pieces of which are 5 meters long . Draw the flowchart for this project ?

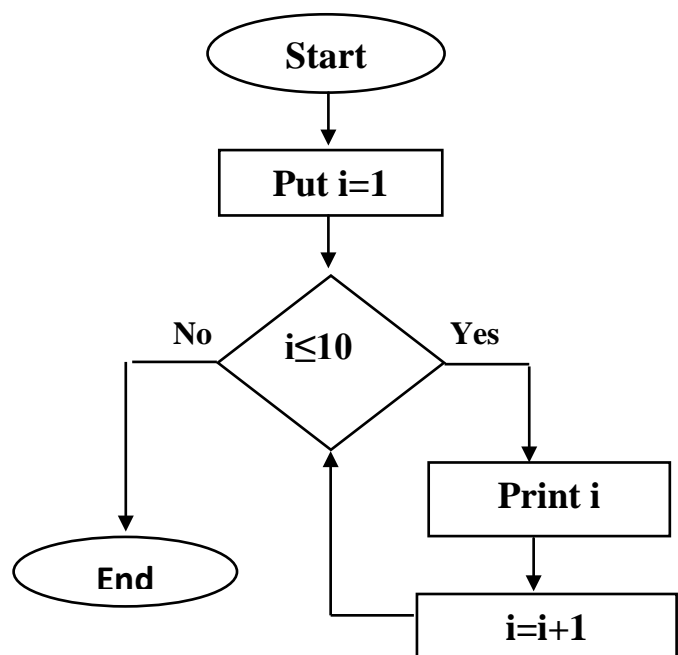
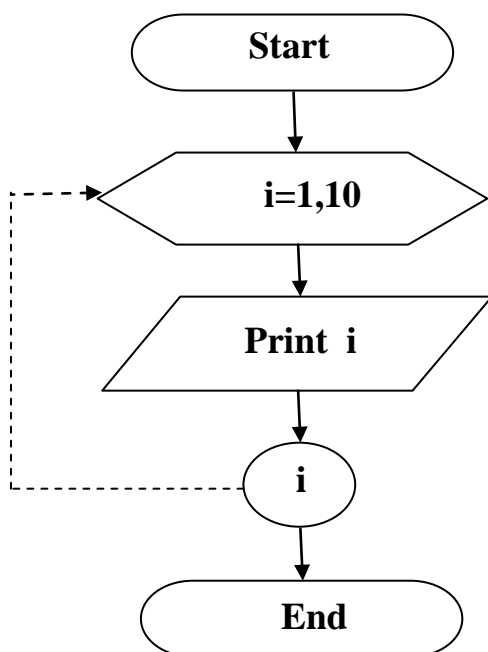


In this example we observed the presence of two loops one internal and called internal loop and the other is external loop and the functioning of these two loops are coordinated so that the priority of implementation is for internal loop.

The Idiomatic Form For Counters

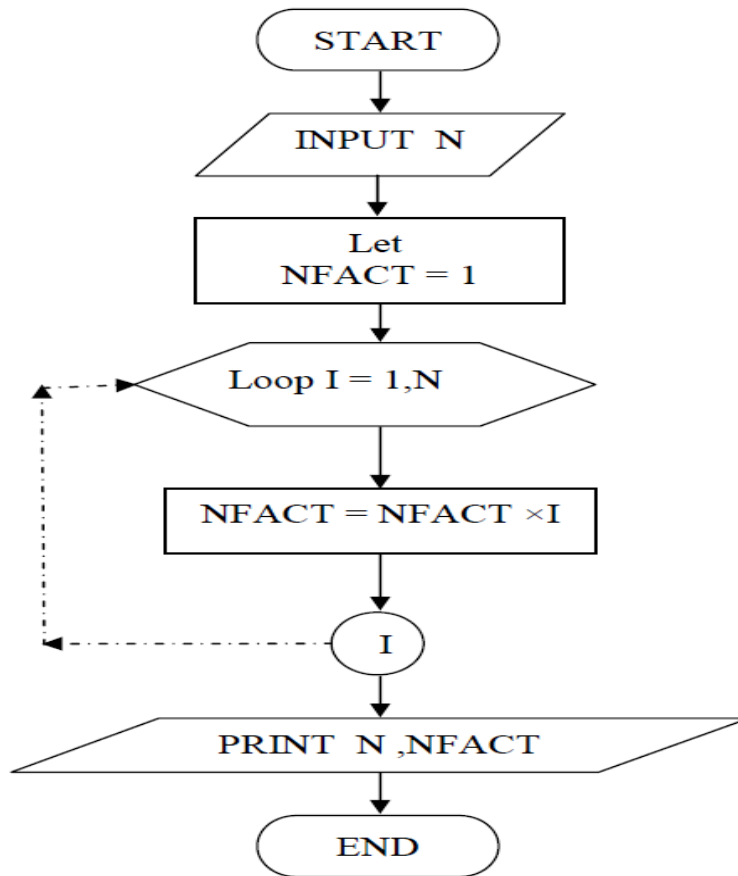


Example (7): Draw a flowchart for program print the first ten natural numbers ?



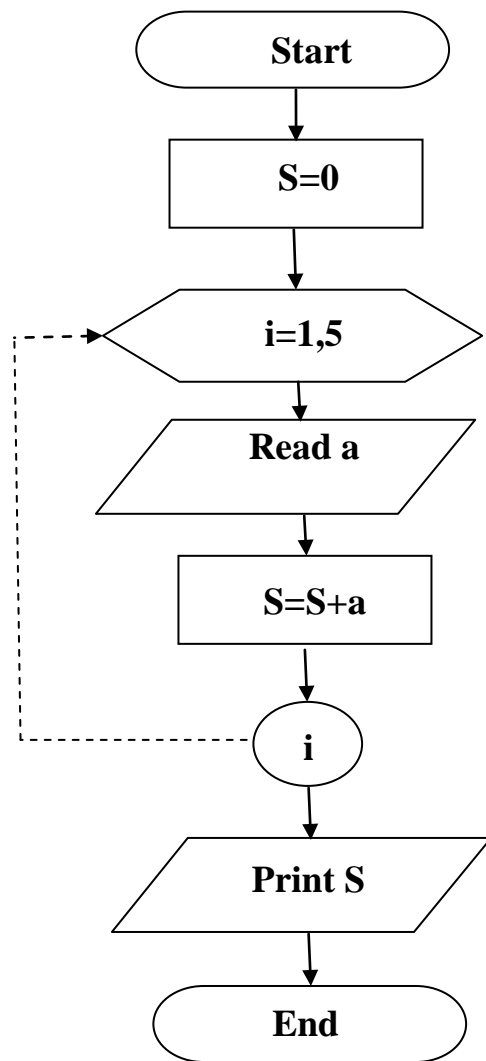
Example (8): Draw a flowchart to read the number N and find its factorial ?

$N! = N(N-1)(N-2)(N-3).....$



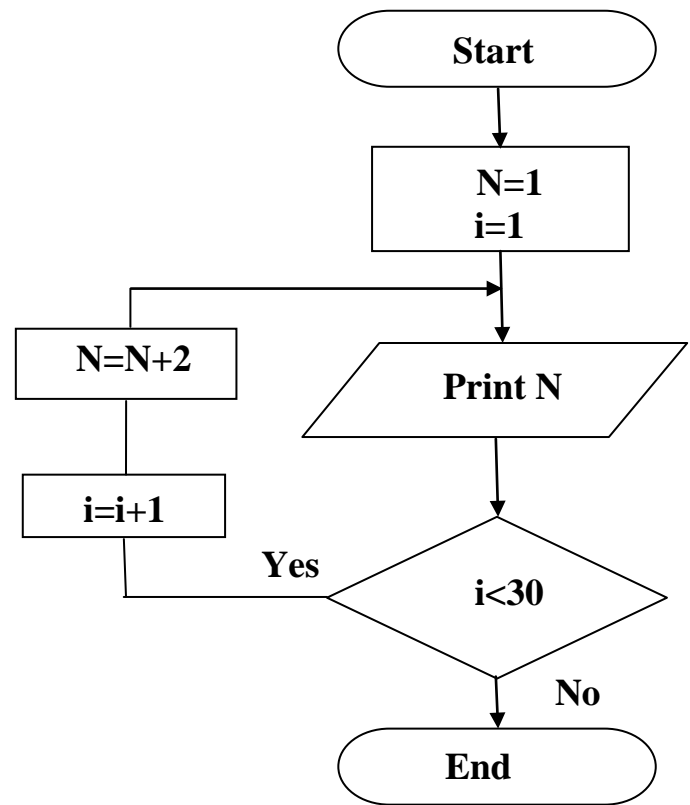
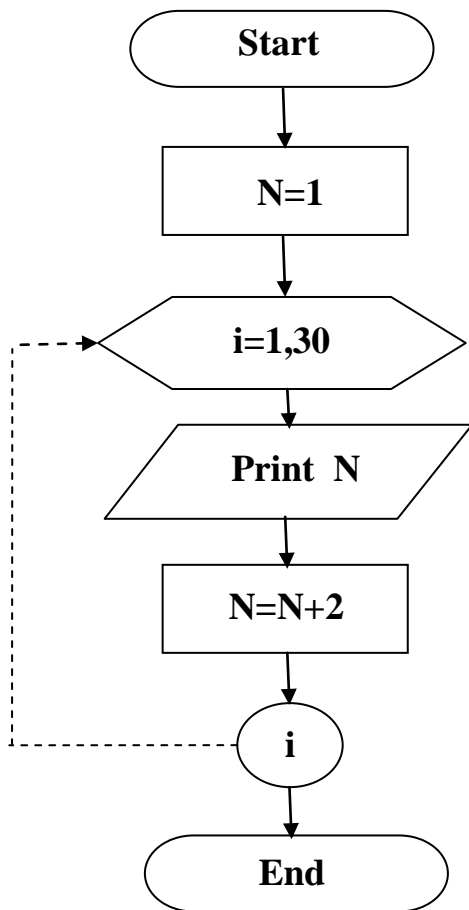
Example (9): Draw a flowchart to find the sum of the limits in the following amount ?

$$S = \sum_{i=1}^5 a_i$$

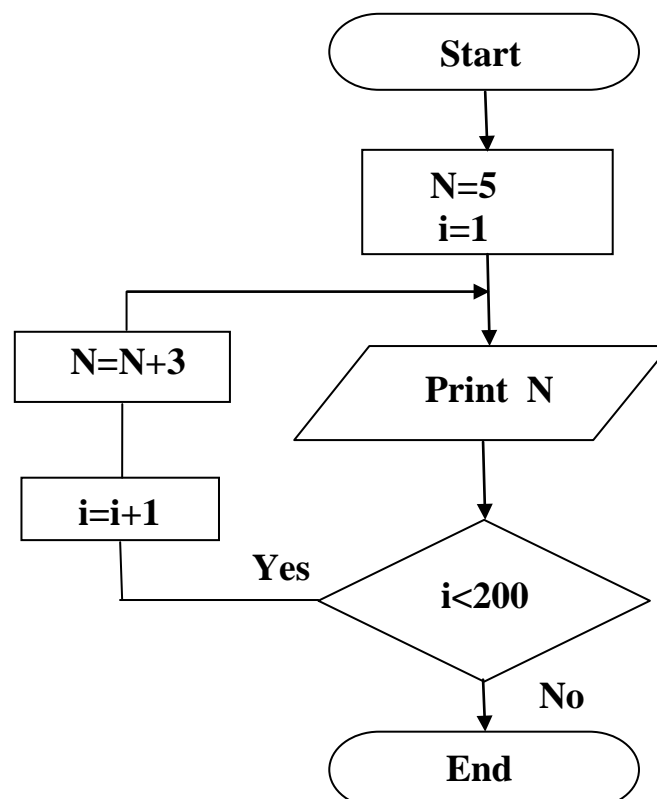


Example (10): Draw a flowchart to print the first thirty limits of the following series ?

1, 3, 5,



Example (11): Draw a flowchart to print the first two hundred limit of the engineering series that it start with 5 so that the change rate is 3 ?



Exercises:

Q1: Draw a flowchart for work the traffic lights ?

Q2: Write the algorithm required to find the largest number from the numbers A, B, and C ?

Q3: Write the algorithm for a program that calculates the cost of the phone bill according to the following three rules ?

(1) The first 50 minute: each minute with 10 DI.

(2) The next 100 minute: each minute with 15 DI.

(3) Whats more: each minute with 20 DI.

Q4: Write the algorithm to find the sum of the number from 1 to 20 ?

Q5: Draw a flowchart for the following algorithm ?

(1) Put value of sum equal zero and value of N equal 1.

(2) Add N to the sum

(3) If $N < 6$ add 1 to the current value of N, then go to step 2.

(4) Print value of sum.

(5) Stop

Q6: Draw a flowchart to find the sum m of real numbers $(X_1, X_2, X_3, \dots, X_m)$.

So that the result is the sum of the numbers T such that $T = \sum_{i=1}^m X_i$?

Q7: Write an algorithm to print the multiplication table for number 9?

Q8: Write an algorithm to calculate the average numbers that the factorial result of last number equal to 5040?

Q9: Draw a flowchart to find the greater common factor between two numbers?

Q10: Draw a flowchart to find the prime numbers for N numbers?



University of Basrah
College of Engineering
Civil Engineering Department

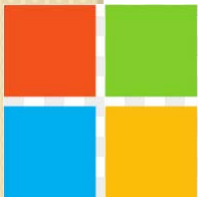


Principles of

Computer Sciences

Microsoft Word 2010

By : Haider Abdul Ridha Khanfar



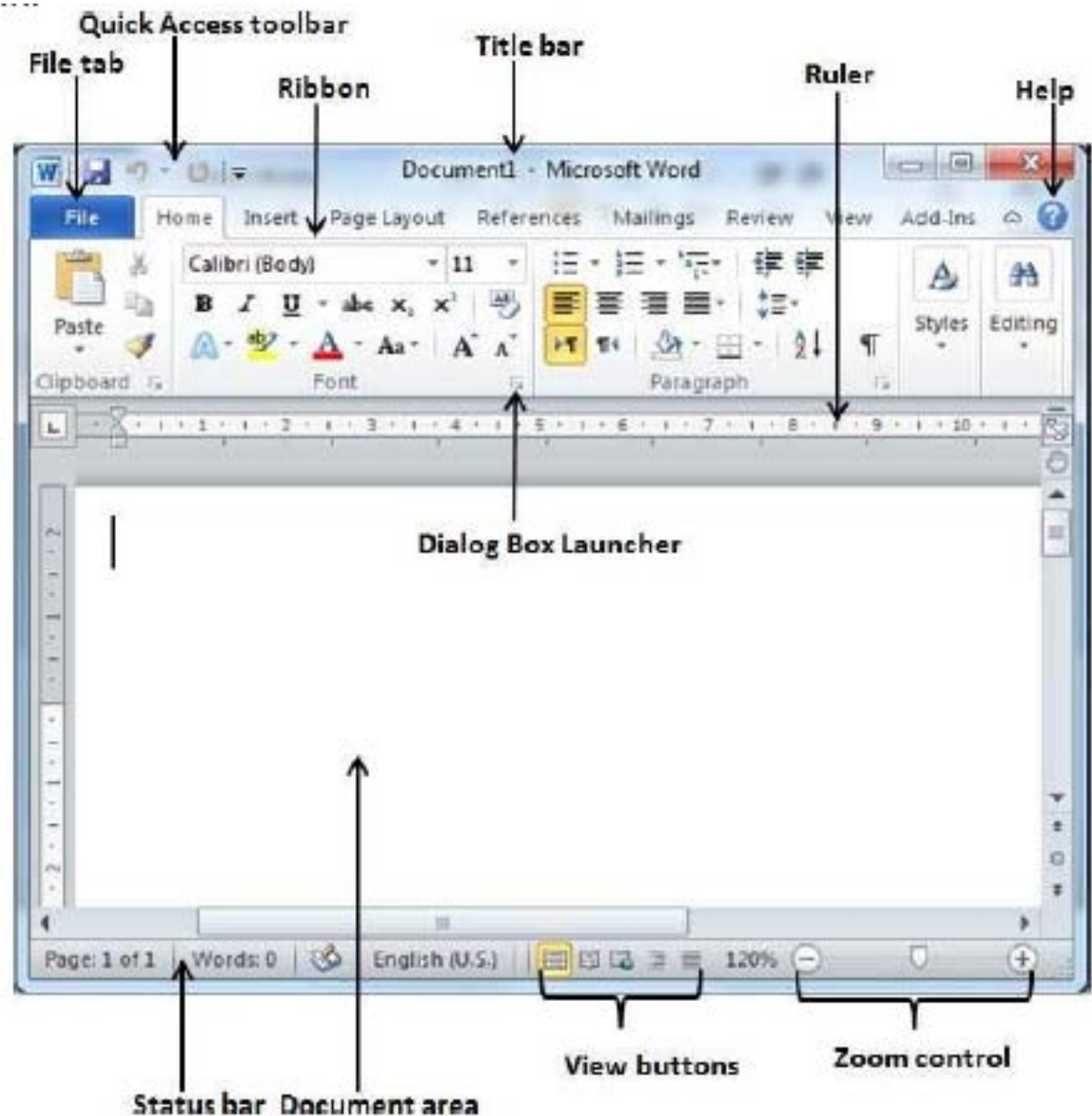
Microsoft



1- Explore Window in Word 2010

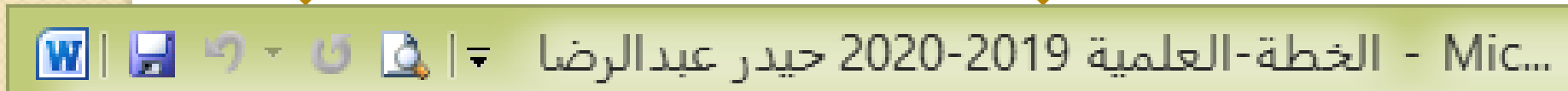
In this section, we will know how to explore Window in Word 2010. Resulting is the basic window which you get when you start the Word application. Let us know the various important parts of this window.

The Main Interface of Microsoft Word 2010



Quick Access
Toolbar

Title Bar

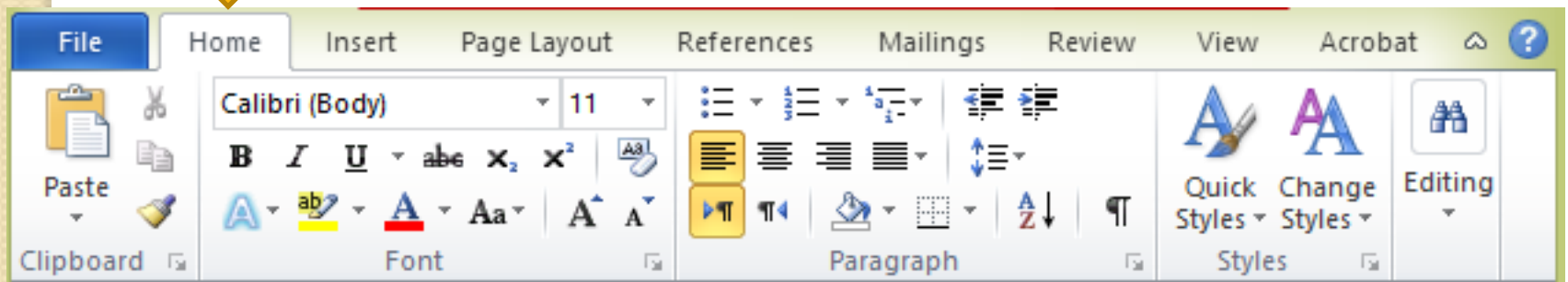


Ribbon

Tabs

Groups

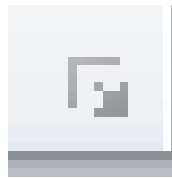
Commands



Help



**Dialog box
Launcher**



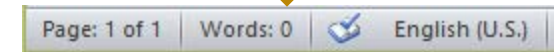
**Zoom
control**



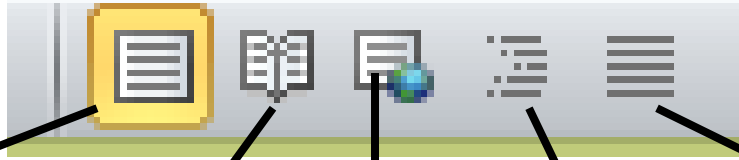
Rulers



**Status
Bar**



View Buttons



Print layout view

Draft view

Full screen
analyzing view

Define view

Web layout view

2. Backstage View in Word 2010

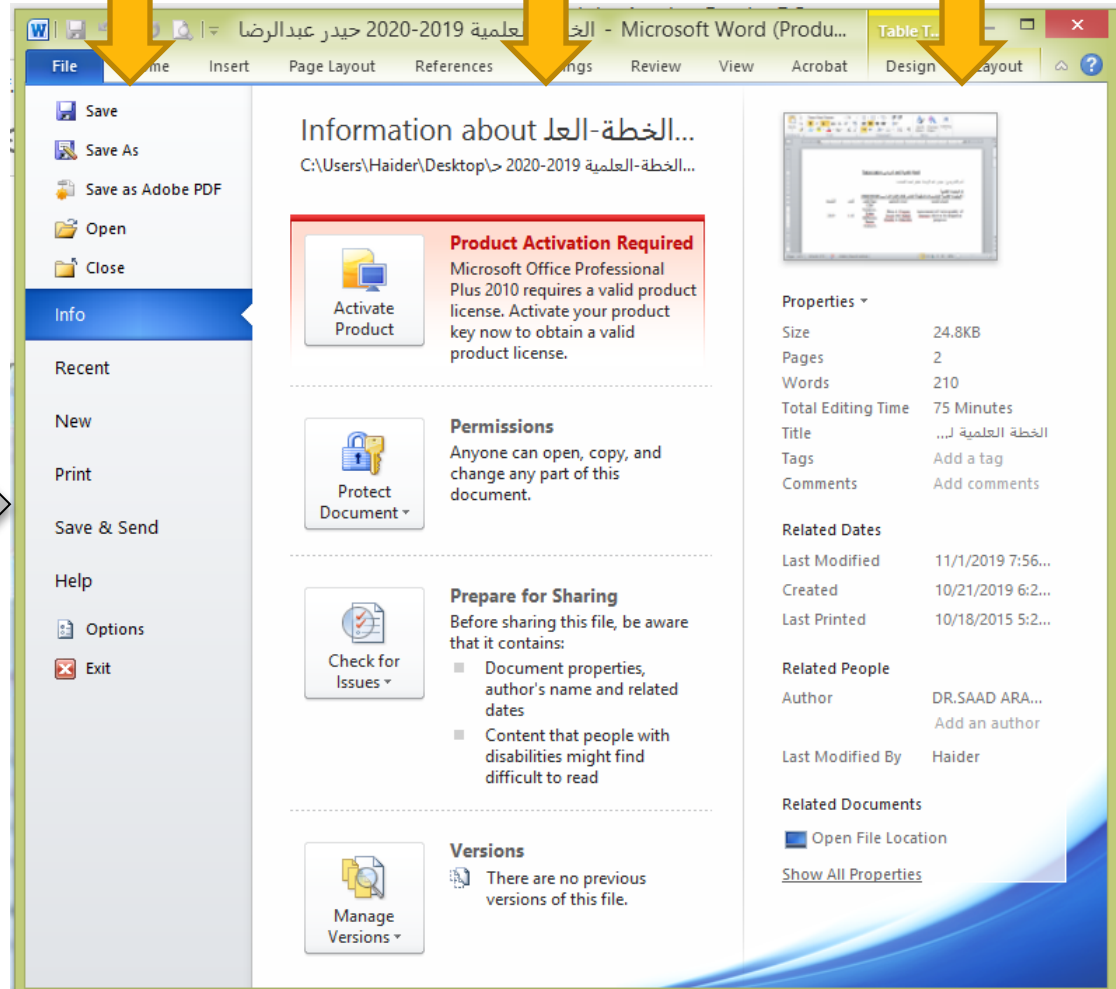
The Backstage view was familiarized in Word 2010. This acts as the central place for handling your documents. The backstage view helps in generating new documents, saving and opening documents, printing and sharing documents, and so on.

First
Column

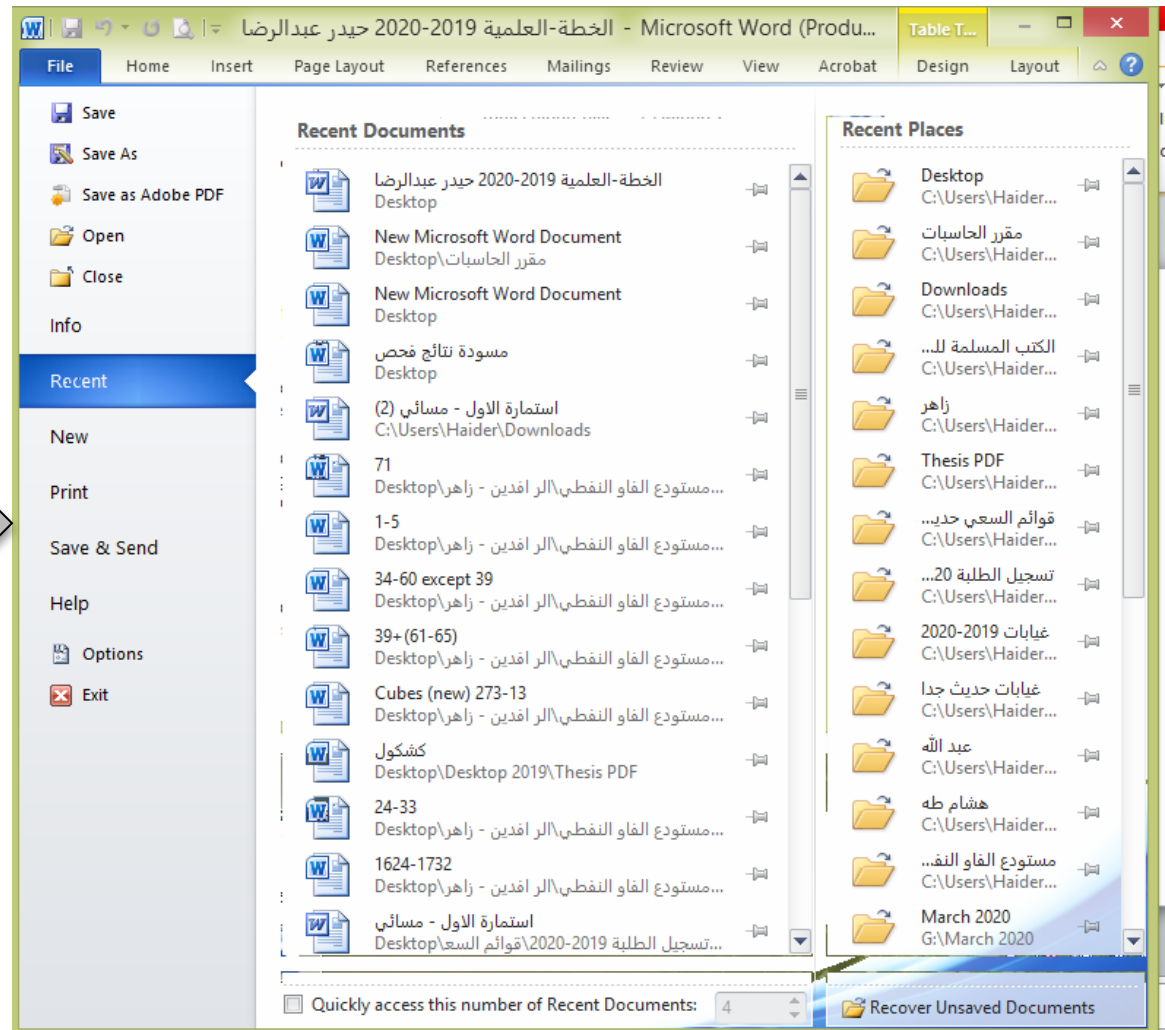
Second
Column

Third
Column

File / Info



File / Recent



First Column of Backstage View

Options	Description
Save	If an existing document is opened, it will be saved as is, otherwise it will display a dialogue box asking for the document name.
Save As	A dialogue box will be displayed asking for document name and document type, by default it will save in word 2010 format with extension. .docx .
Open	This option is used to open an existing word document.
Close	This option is used to close an open document.
Info	This option displays information about the opened document.
Recent	This option lists down all the recently opened documents
New	This option is used to open a new document.
Print	This option is used to print an open document.
Save & Send	This option will save an open document and will display options to send the document using email, etc.
Help	This option is used to get the required help about Word 2010.
Options	This option is used to set various option related to Word 2010.
Exit	Use this option to close the document and exit.

Second Column of Backstage View



Compatibility Mode

Some new features are disabled to prevent problems when working with previous versions of Office. Converting this file will enable these features, but may result in layout changes.

Compatibility Mode

If the file is not a native Word 2007/2010 file, a **Convert** button appears here, enabling you to easily update its format. Otherwise, this category does not appear.

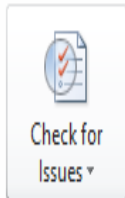


Permissions

Anyone can open, copy, and change any part of this document.

Permissions

you can use this option to defend your word document. You can set a password so that nobody can open your document, or you can lock the document so that nobody can edit your document.



Prepare for Sharing

Before sharing this file, be aware that it contains:

- Document properties, author's name and related dates
- Content that cannot be checked for accessibility issues because of the current file type

Prepare for Sharing

this unit highlights significant information you should know about your document before you send it to others, such as a record of the edits you made as you developed the document.



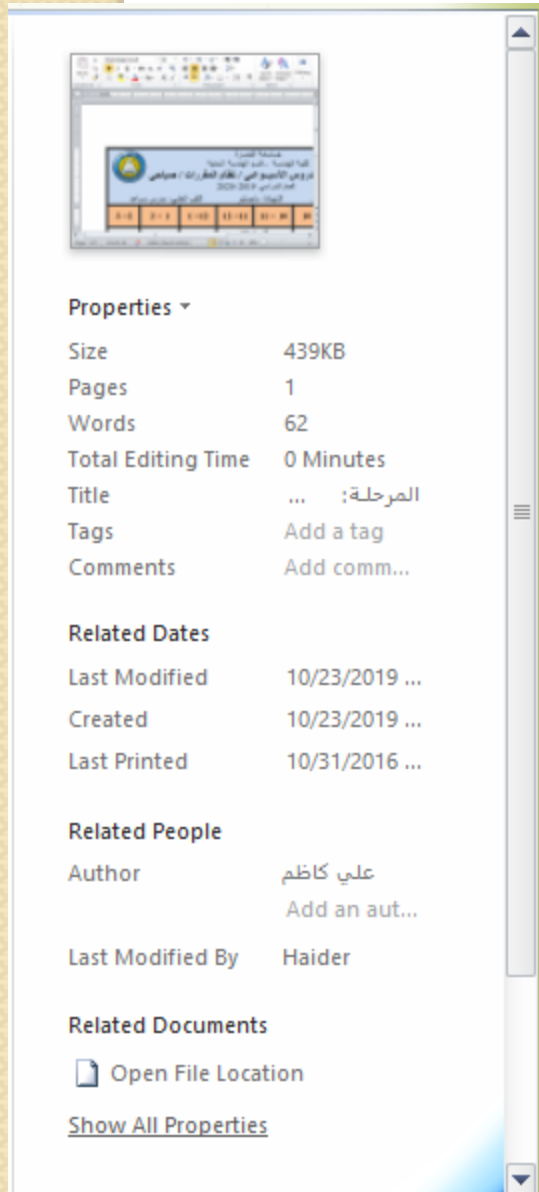
Versions

There are no previous versions of this file.

Versions

If the document has been saved several times, you may be able to access the previous versions of it from this section.

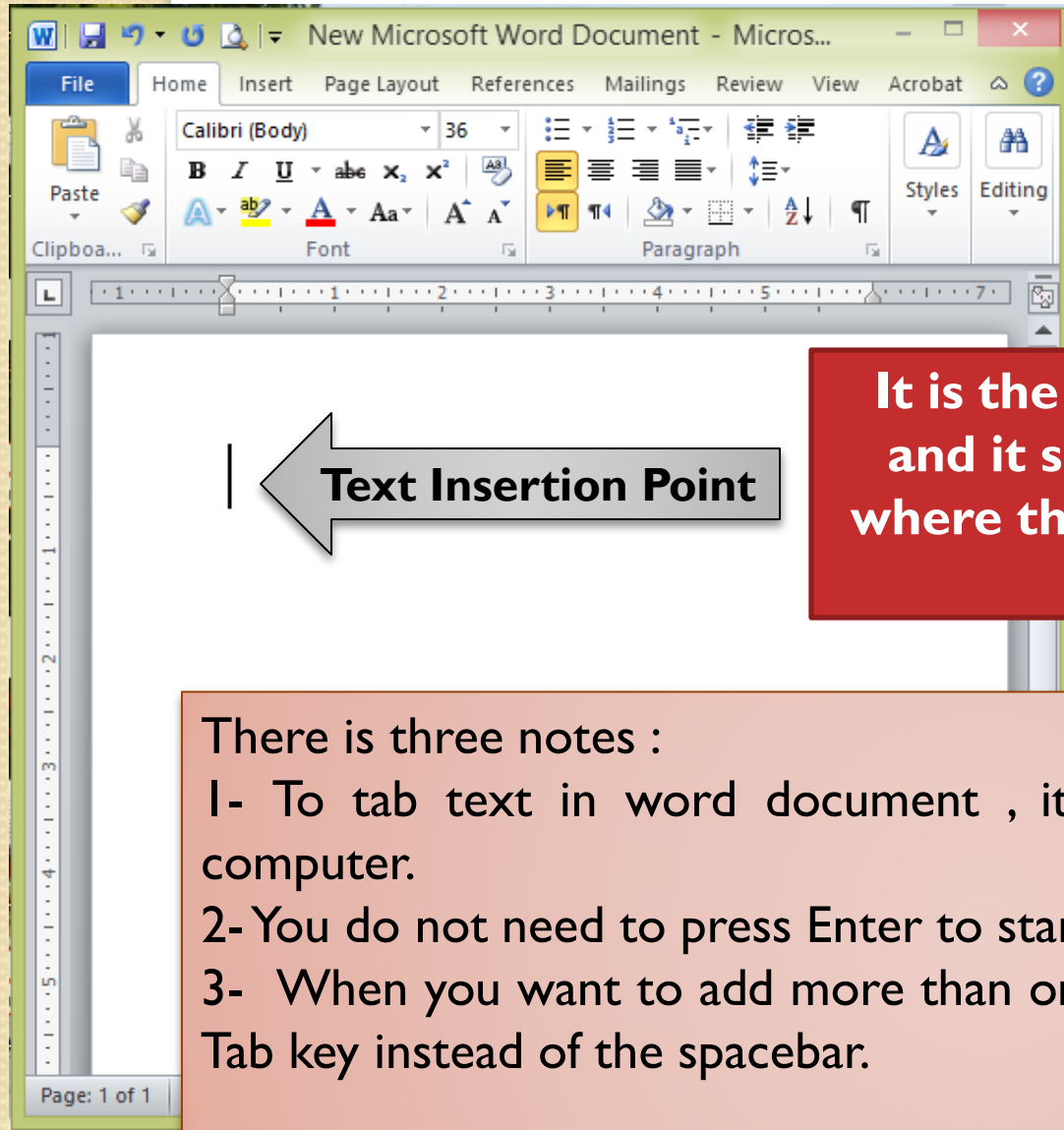
Third Column of Backstage View



Permissions

These properties include the document size, the number of pages in the document, the total number of words in the document, the name of the author etc.

3. Entering Text Microsoft Word 2010



It is the flashing vertical bar and it signifies the location where the text will look when you type.

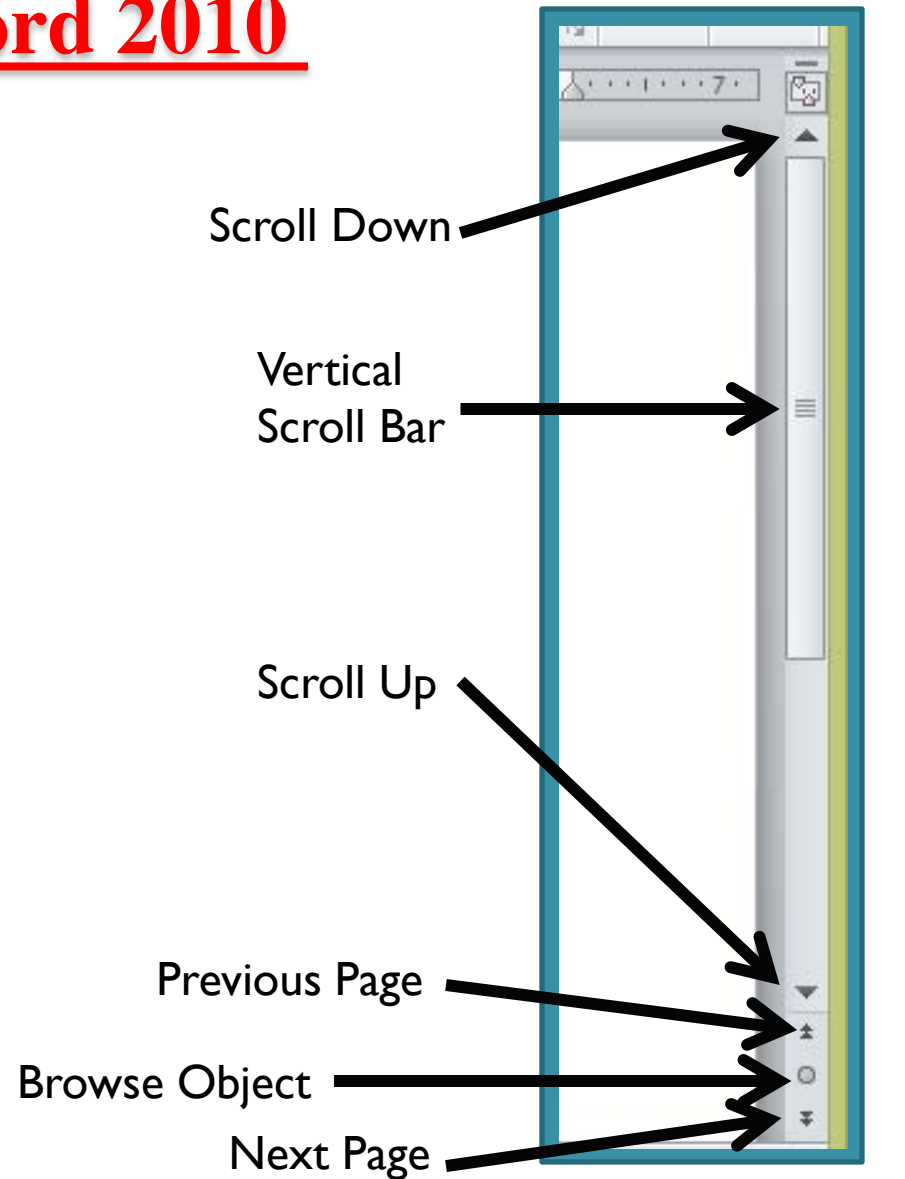
There is three notes :

- 1- To tab text in word document , it must be use keyboard of the computer.
- 2- You do not need to press Enter to start a new line.
- 3- When you want to add more than one space between words, use the Tab key instead of the spacebar.

4. Move Around in Word 2010



Keyboard

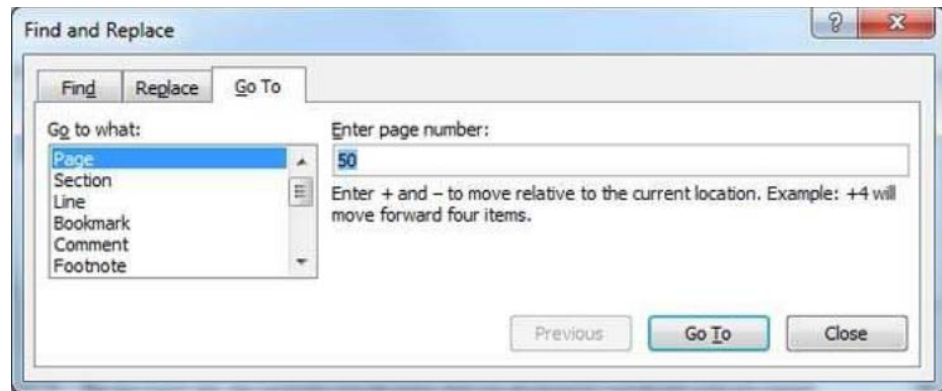
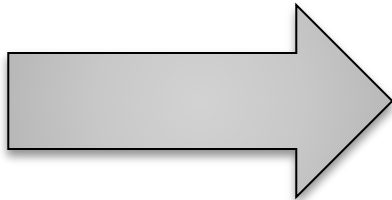


Scroll Bars



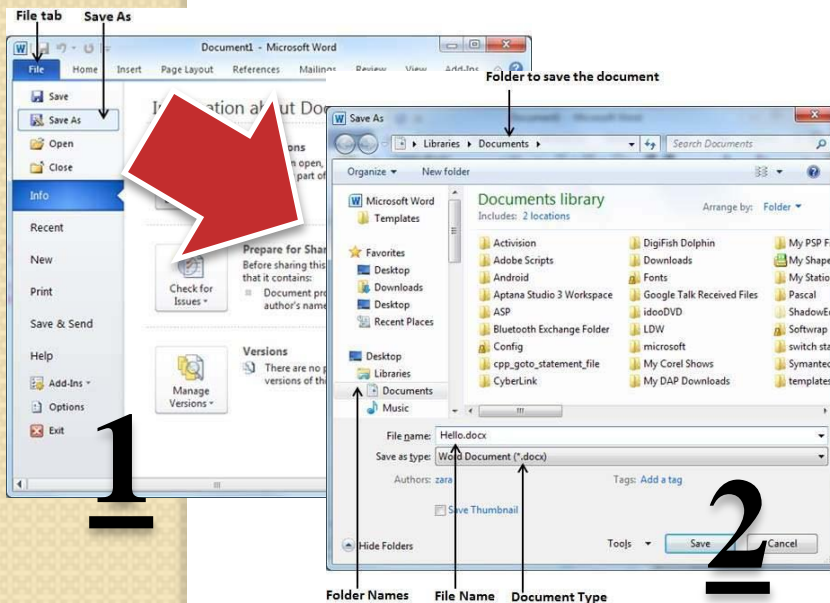
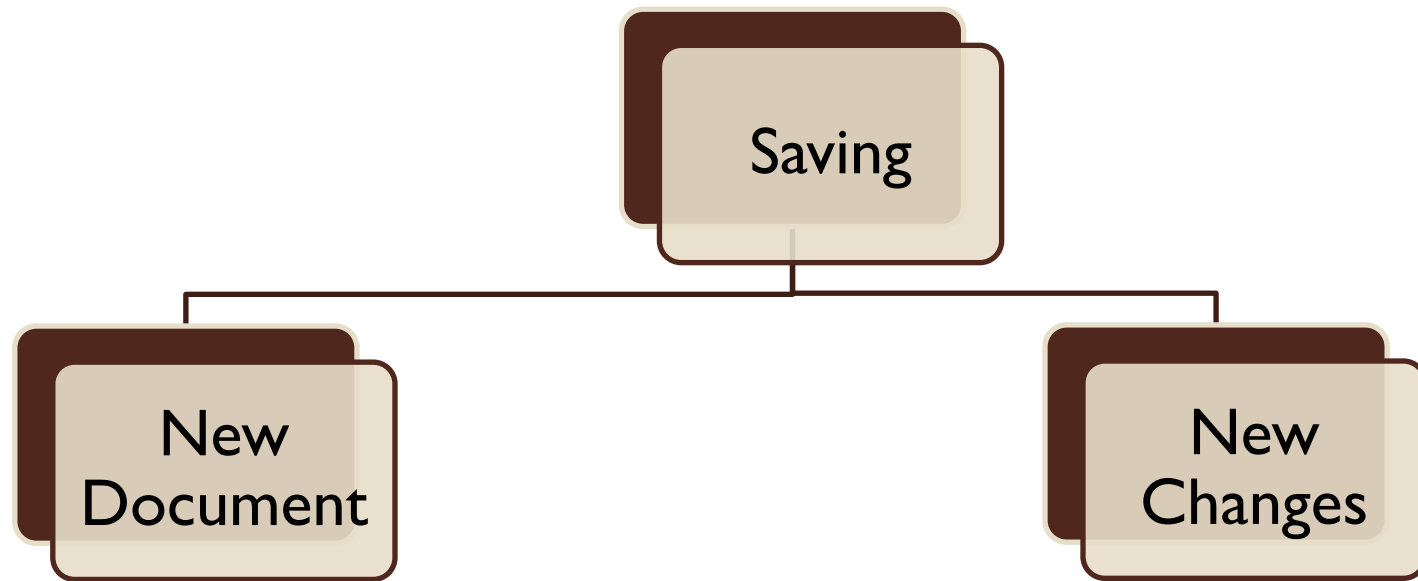
Mouse

F 5




Go To Command

5. Save Document in Word 2010



How can I save new changes ?

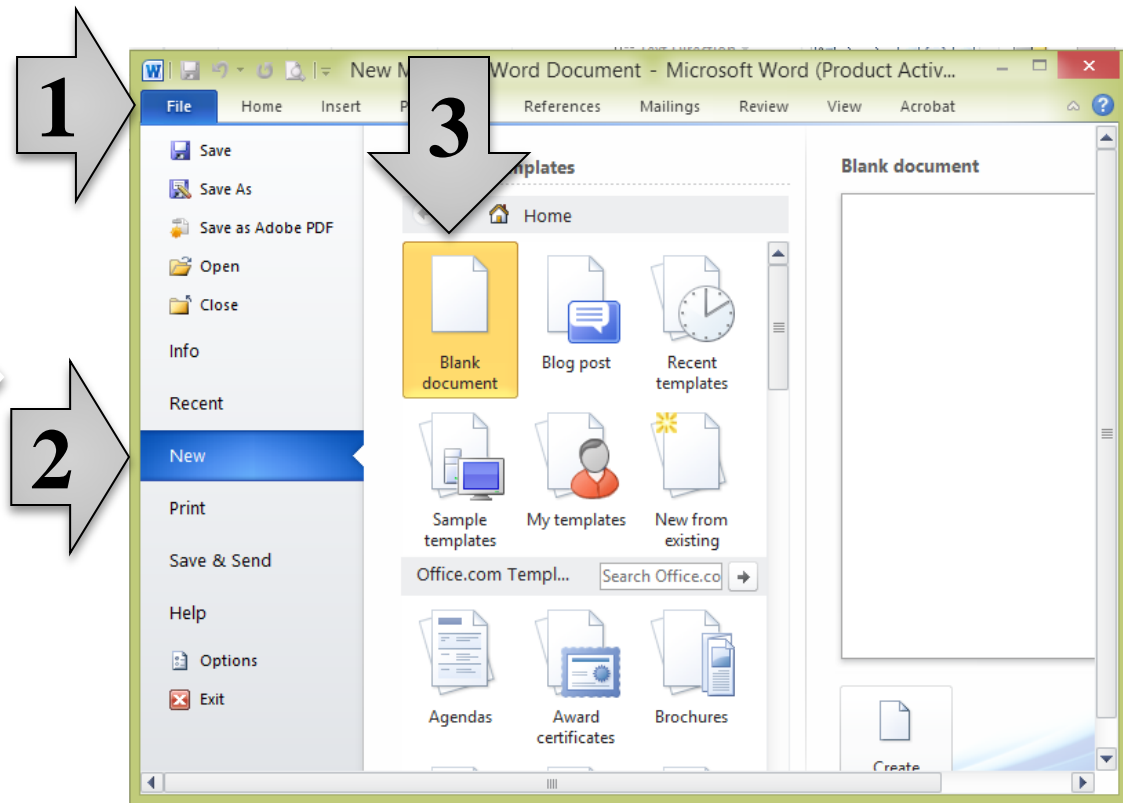
- Just press the Ctrl + S keys.
- Press on  in the corner.
- Press on the option (File/Save)

6. Opening a Document in Word 2010

New Document

There are three steps :-

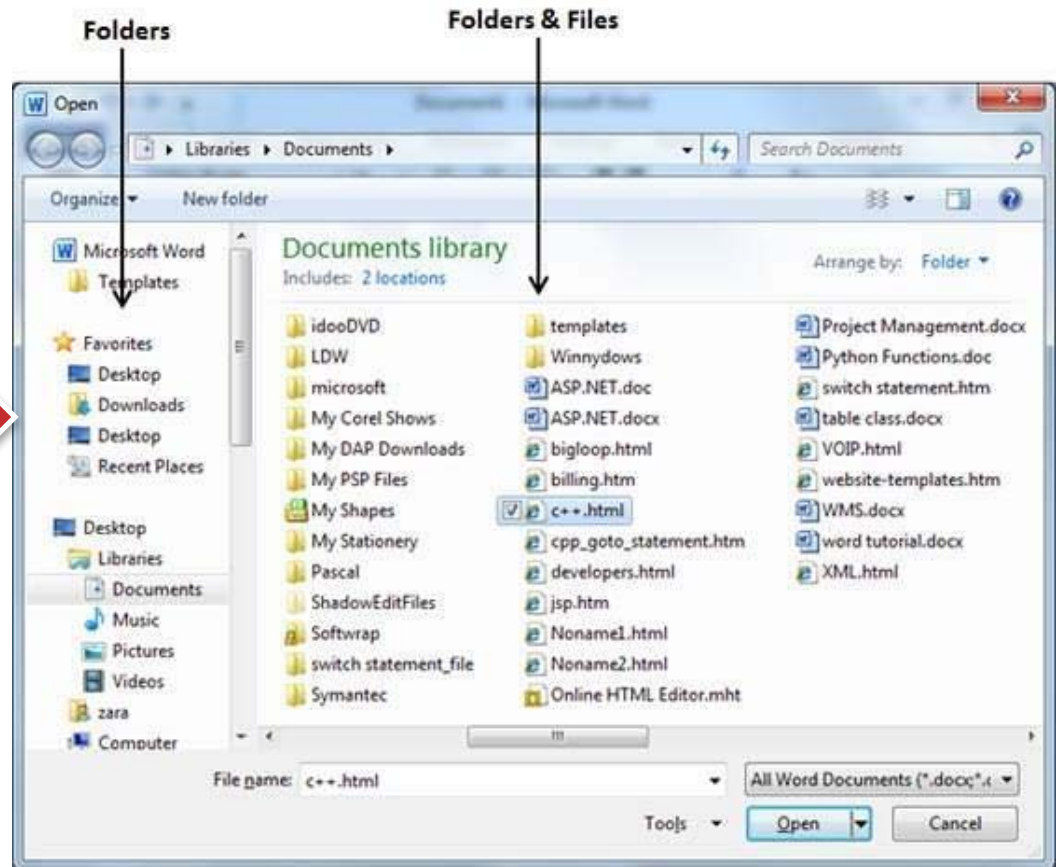
1. Click the **File** tab .
2. select the **New** option.
3. Double-click on the **Blank document** .



Existing Document

There are four steps :-

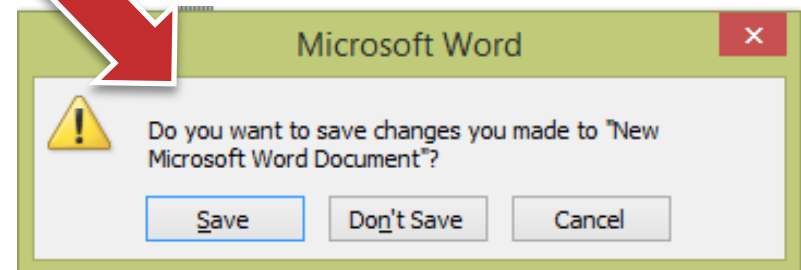
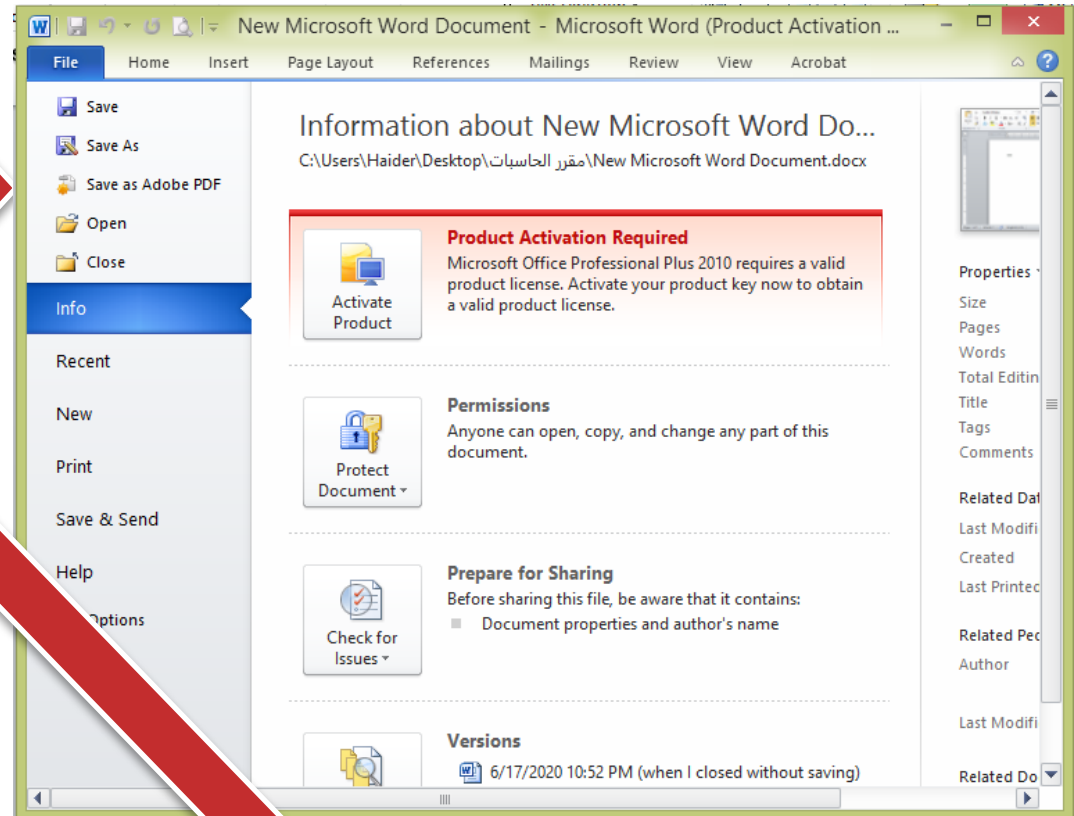
1. Click the **File** tab .
2. select the **Open** option. (This option opens this dialog box).
3. Choose the location from **Folders** column.
4. Choose the last chosen location from **Folder & Files** column.



7. Closing a Document in Word 2010

There are three steps :-

1. Click the **File** tab
2. select the **Close** option. (This option opens this dialog box if you don't save the changes previously).
3. Choose **Save** if you want to save, **Don't Save** if you don't want to save, or **Cancel** if you want to cancel the closing & to go back to the document .



8. Insert Text in Word 2010

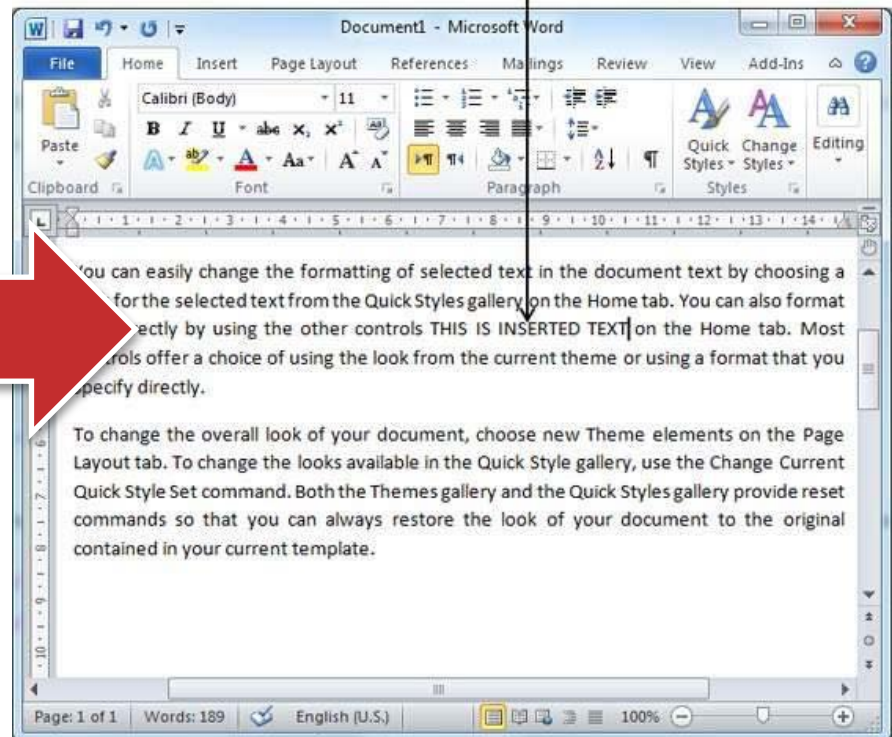
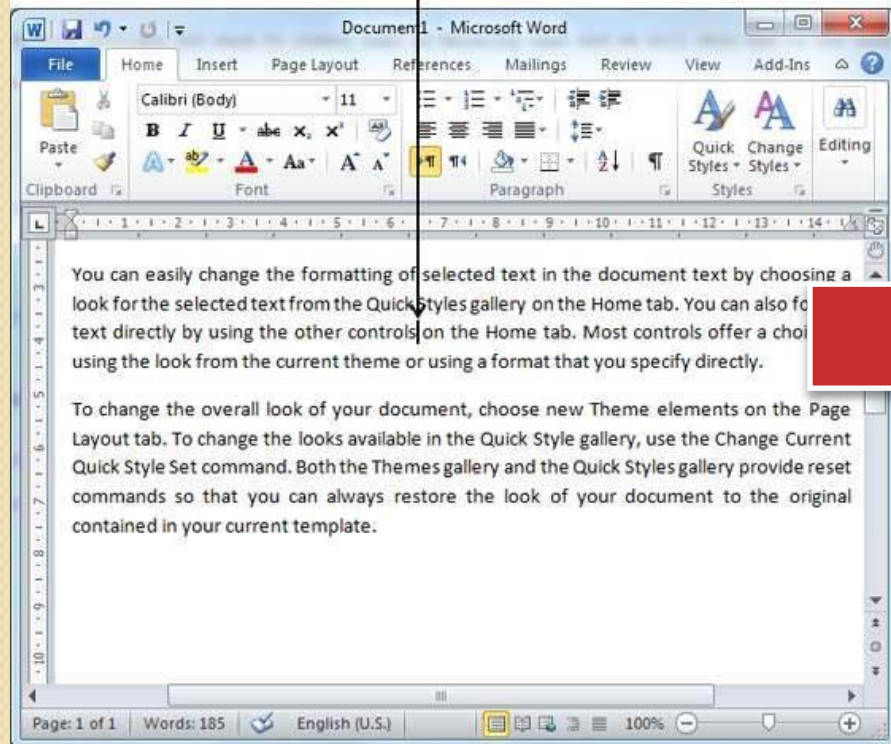
Insert and Add Text

1. Click the location where you wish to insert text (by using **the mouse** or **arrows of keyboard**).

2. Start typing the text that needs to be inserted .

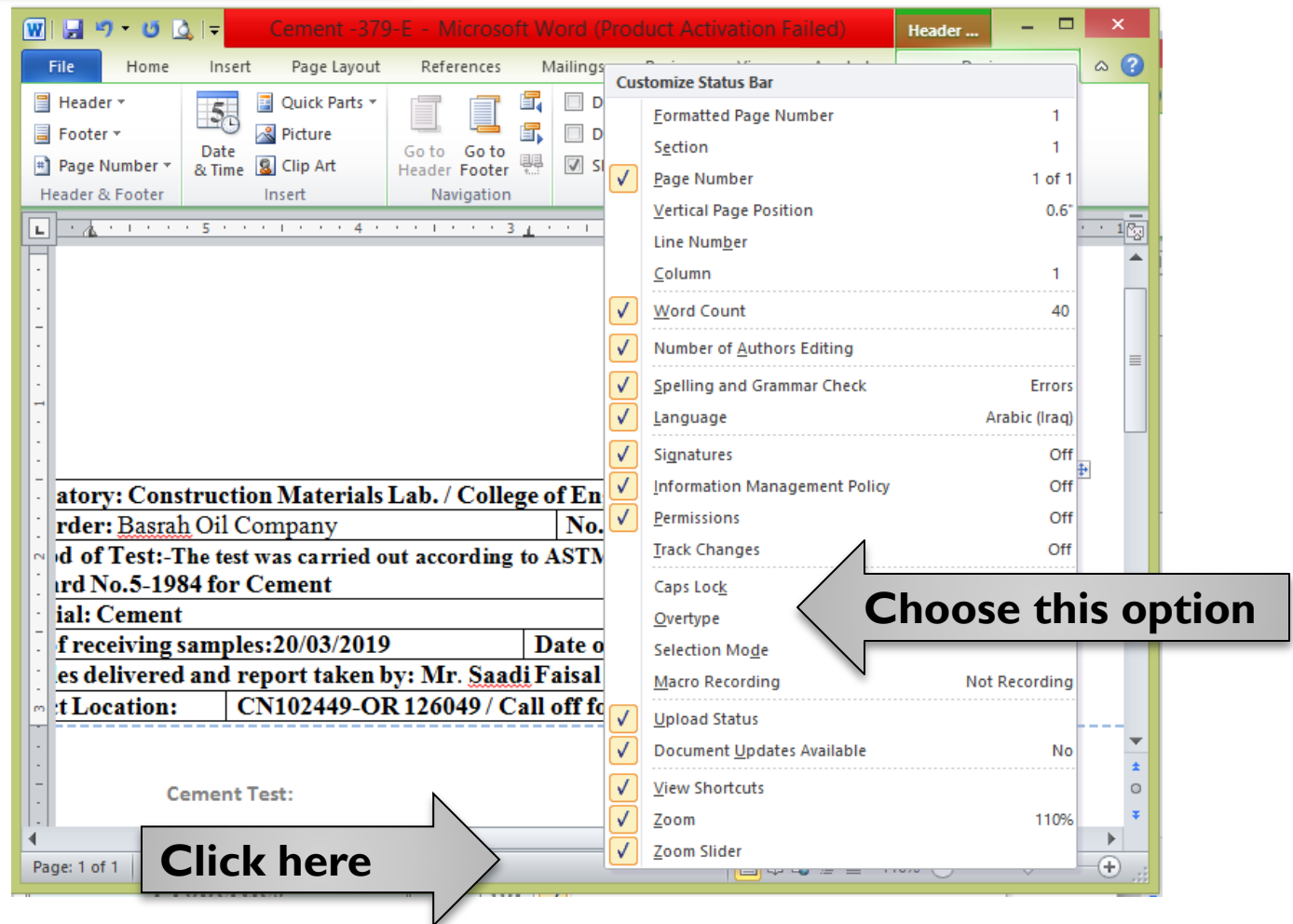
Insertion Point

Inserted Text

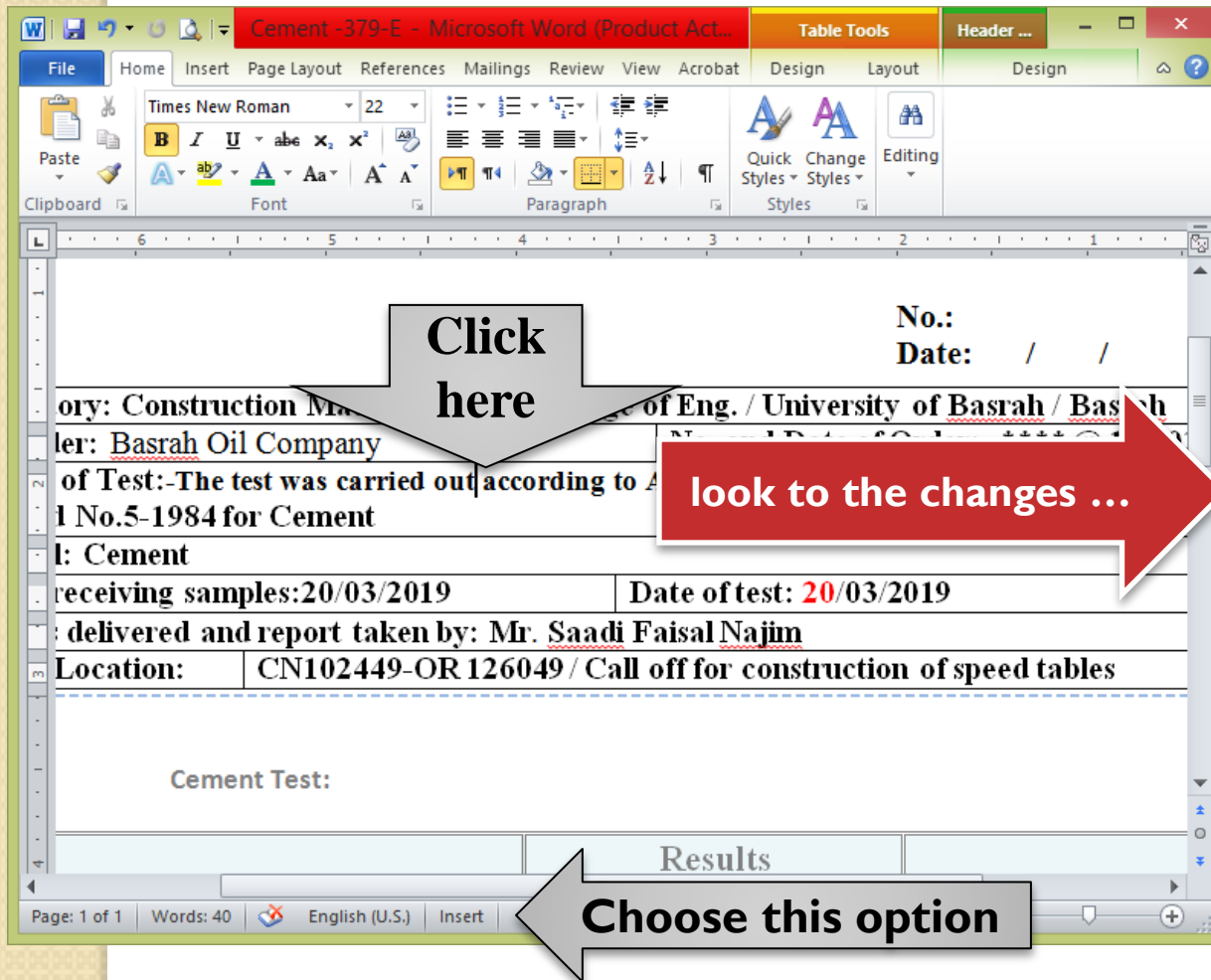


Insert and Replace Text

I. Right-click the status bar and select the Overtyping option from the displayed menu .



2. Click the location where the text needs to be inserted & click the new option (**Insert**), then start typing the text that needs to be inserted .



Before

Company: / No. and Date of Order: /

Test: The test was carried out according to ASTM C33-03 for Cement



After

Company: / No. and Date of Order: **

Test: as carried out **INSERT THIS TEXT** C33-03 for aggregate or Cement

9. Select Text in Word 2010

By using mouse & keyboard

S. No.	Component	Selection Method
1	Selecting text between two points	Click at the start of the block of text, hold down Shift , and click at the end of the block.
2	Selecting a single word	Double-click anywhere on the word you want to select.
3	Selecting a paragraph	Triple-click anywhere on the paragraph you want to select.
4	Selecting a sentence	Hold down the Ctrl key and click anywhere in the sentence you want to select.
5	Selecting a column of text	Hold down Alt , click and hold the mouse button, and drag over the column you want to select.

By using keyboard only

S. No.	Key	Selection Method
1	Ctrl + A	Press Ctrl + A keys to select the entire document.
2	Shift	Keep pressing the Shift key and use any of the arrow keys to select the portion of text.
3	F8	Press F8 and then use any of the arrows keys to select the portion of text.
4	Ctrl + Shift + F8	Press Ctrl + Shift + F8 and then use any of the arrows keys to select column of the text.

10. Delete Text in Word 2010

Using Backspace & Delete Keys

If you want to delete the words which highlighted by green, follow this steps :-

Construction Materials Lab. / College of	
Saghran Oil Company	
The test was carried out according to	
concrete cubes	
ing samples: 5/5/2019	D
red and report taken by: Mr. Saadi F.	

- 1- Keep the insertion point there (**before the character**) .
- 2- press **Delete** to delete the character.
- 3- Press (**Ctrl + Delete**) to delete words .

- 1- Keep the insertion point there (**after the character**) .
- 2- press **Backspace** to delete the character.
- 3- Press (**Ctrl + Backspace**) to delete words .

Using Selection Method

S. No.	Component	Selection Method (after selection press Backspace or Delete)
1	Deleting text between two points	Click at the start of the block of text, hold down Shift , and click at the end of the block.
2	Deleting a single word	Double-click anywhere on the word you want to select.
3	Deleting a paragraph	Triple-click anywhere on the paragraph you want to select.
4	Deleting a sentence	Hold down the Ctrl key and click anywhere in the sentence you want to select.
5	Deleting a column of text	Hold down Alt , click and hold the mouse button, and drag over the column you want to select.
6	Deleting a Line	Bring your mouse in the selection bar area and click in front of the line you want to delete .
7	Deleting entire document content	Press Ctrl + A keys to delete the entire document

11. Move Text in Word 2010

Move within the same document

There are three steps :-

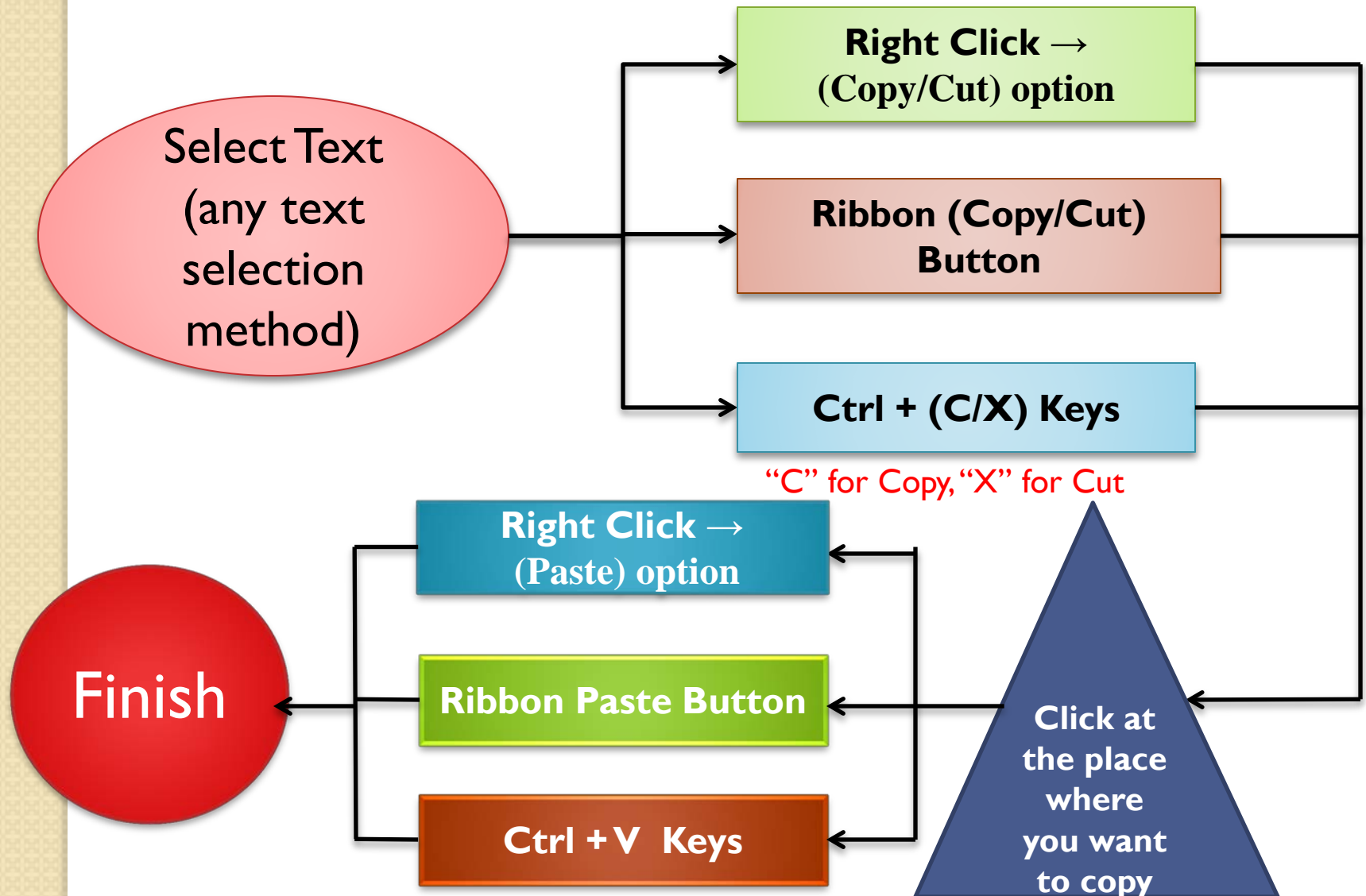
1. Select the text by using any text selection methods.
2. Take mouse pointer over the selected text and hold the left button of the mouse and keep holding it while moving around the document.
3. Take your mouse pointer to the place where you want to move the selected text and release the mouse button. You will see that the selected text is moved to the desired location .

Move within different document

There is four steps :-

1. Keep both the documents opened and to ensure that both documents are visible, click the Arrange All button on the View tab on the Ribbon.
2. Select the text by using any text selection methods.
3. Take your mouse pointer over the selected text and hold the left button of the mouse and keep holding it while moving around the document .
4. Take your mouse pointer at the place in the second document where you want to move the selected text and release the mouse button. You will see that the selected text is moved to the desired location in the second document .

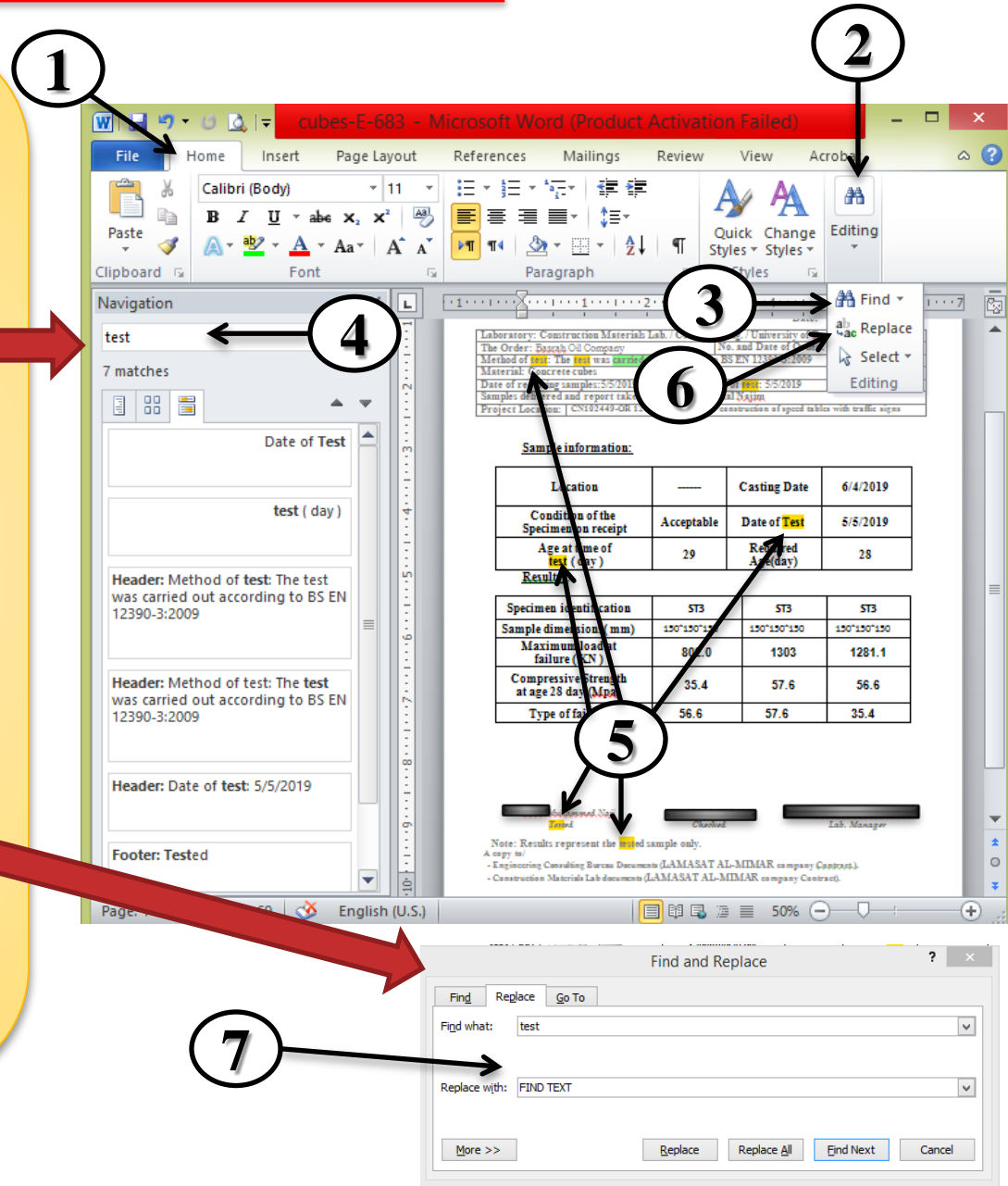
12. (Copy/Cut) & Paste in Word 2010



Note: You can use the Alt + Tab keys to switch through the different documents and select the desired target document.

13. Find & Replace in Word 2010

- 1- Click Home tab.
- 2- Click Editing group.
- 3- Choice Find option (or press **Ctrl+F**), this box is appear.
- 4- Enter a word which you want to explore in the Search box (for example “test”.
- 5- The word which is searched appear with highlight color.
- 6- If you want to replace another word ,(“FIND TEXT” for example) choice Replace ,then a dialog box is appear.
- 7- Type “FIND TEXT” in the dialog box.

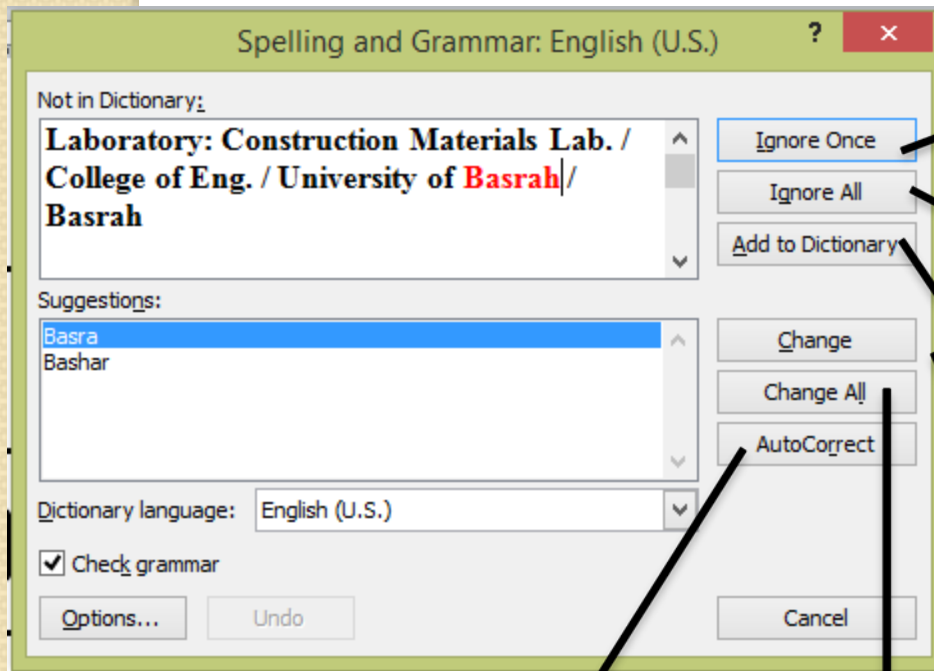


14. Spell Check in Word 2010

What are meaning the underline beneath words in Word 2010???

- 1- Red line : is meaning spelling error.
- 2- Green line : is meaning grammar error.
- 3- Blue line : is meaning correctly spelled but misused word.

- 1- Click Review tab.
- 2- Click Spelling & Grammar button.
- 3- A Spelling and Grammar dialog box will appear and will display the wrong spellings or errors in grammar. You will also get suggestions to correct .
- 4- Select one of the given suggestions you want to use and click the Change option to fix the spelling or grammar mistake and repeat the step to fix all the spelling or grammar mistake.
- 5- Word displays a dialog box when it finishes checking for spelling and grammar mistakes, finally Click OK.



If you are willing to ignore a word, then click this button and Word ignores the word throughout the document.

Like Ignore, but this ignores all occurrences of the same misspelling, not just once but throughout the document.

Choose Add to Dictionary to add the word to the Word spelling dictionary

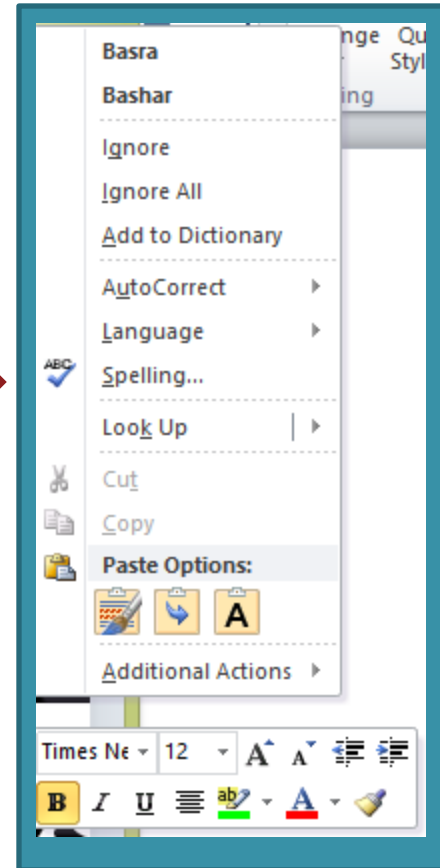
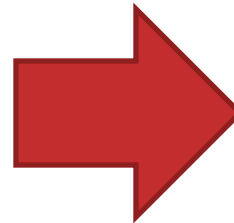
this will change the wrong word using the suggested correct word.

If you select a suggestion, Word creates an AutoCorrect entry that automatically corrects this spelling error from now on.

Like Change, but this changes all occurrences of the same misspelling, not just once but throughout the document.

Check Spelling and Grammar using Right Click

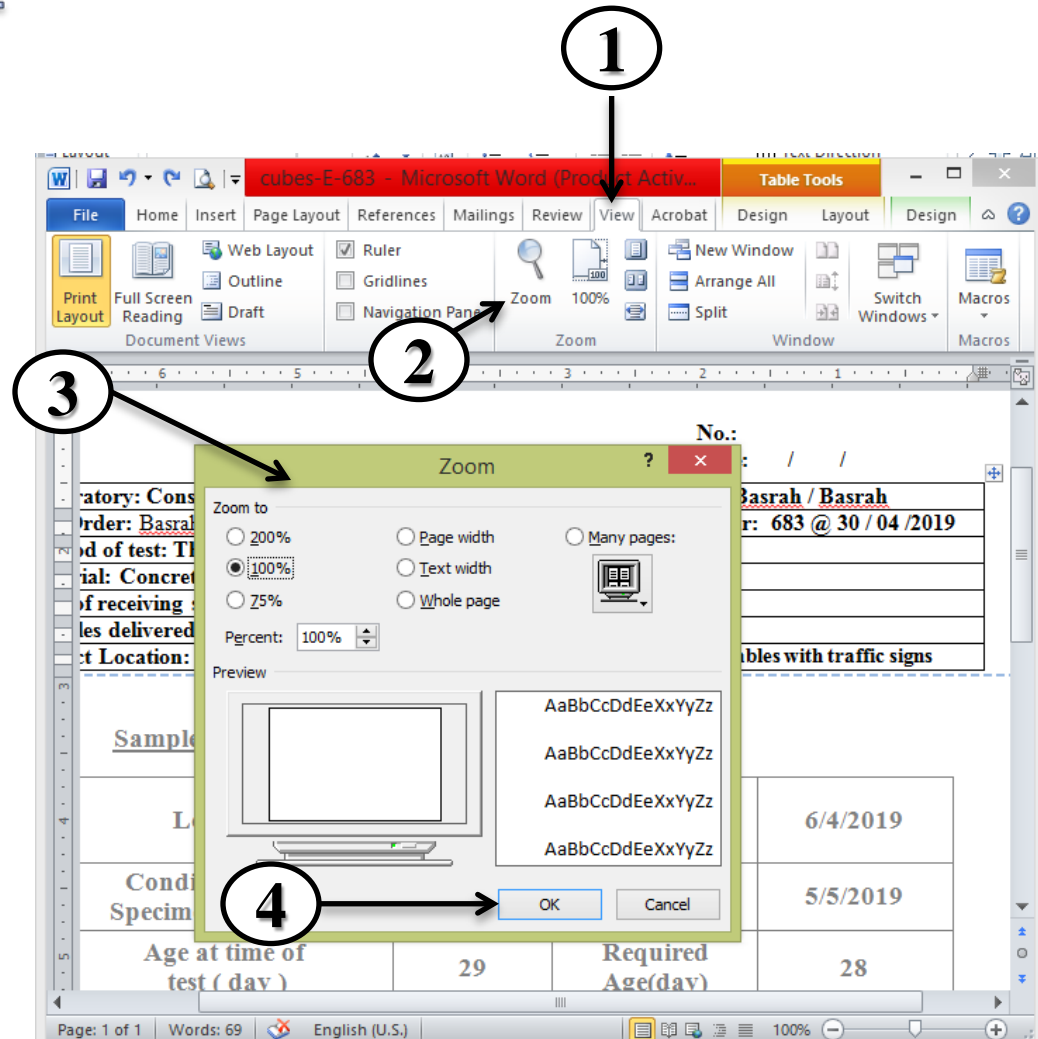
If you will right-click the mouse button over a misspelled word, then it will display you the correct suggestions and the above mentioned options to fix the spelling or grammar mistake. Try it yourself.



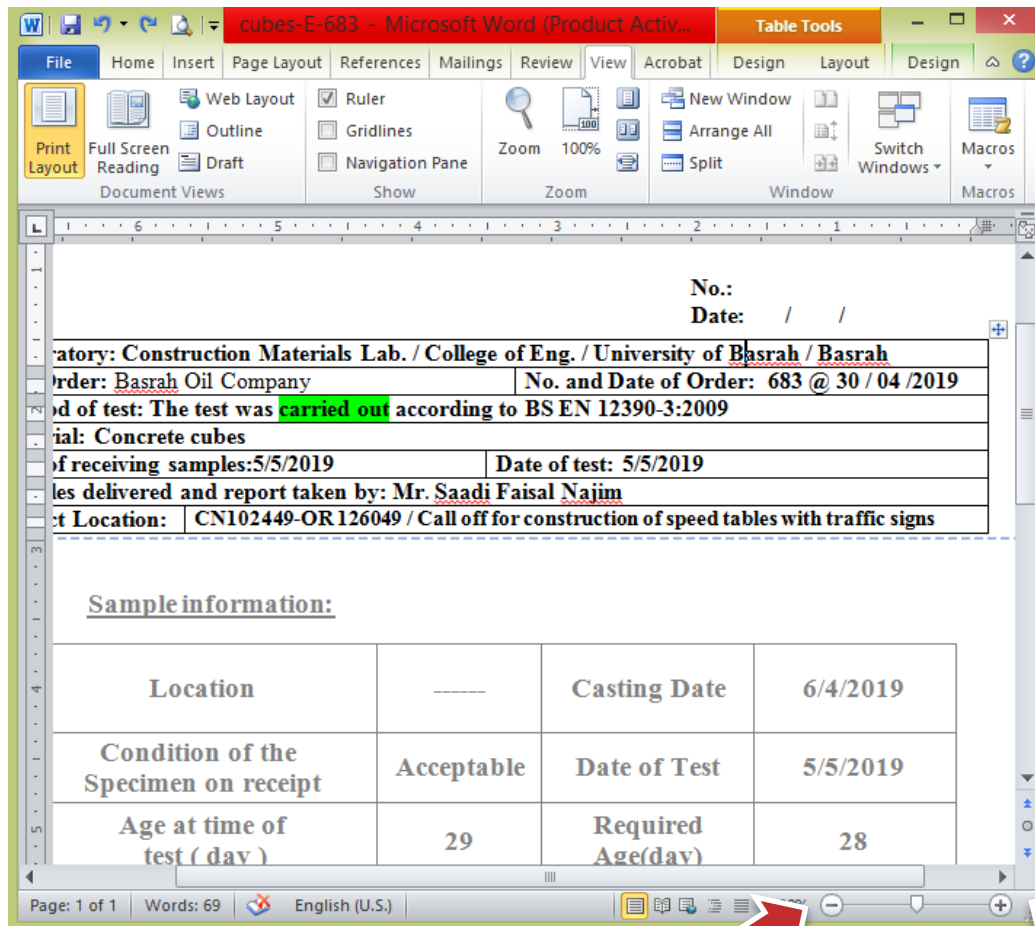
14. Zoom in/out in Word 2010

Using View Tab

- 1- Click View tab.
- 2- Click Zoom in Zoom button.
- 3- Zoom box is appear. This can show the zoom options box to select a price to reduce or increase the size of the document on-screen. By default, it will be 100%; you may pick out 200% to increase the size of the font or 75% to reduce the size of the font .
- 4- Once you are done with selecting an option, click OK to apply the changes on the document.
- 5- Try different options available, for example Page Width and Text Width .



Zoom-in & Zoom-out using (+) and (-) Buttons



Zoom Out

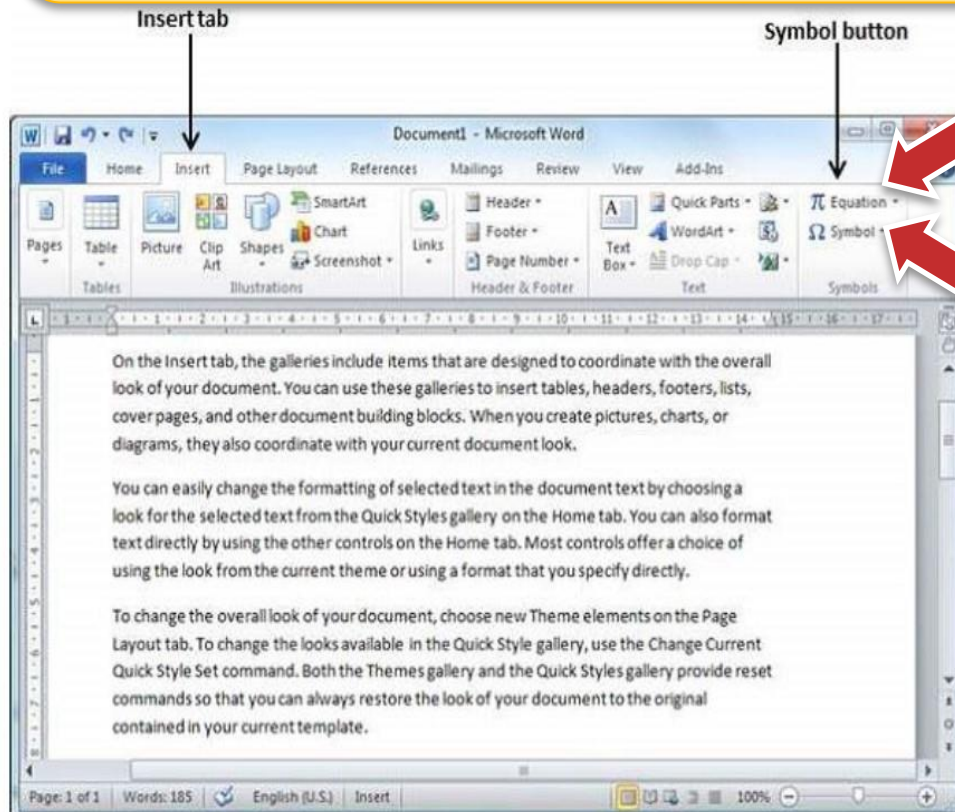
Zoom In

17. Special Symbols in Word 2010

Your keyboard may not have many characters available however you need to use the one's characters on your document; in such conditions, you have got the option to insert single Symbols the way we will, in addition, understand on this chapter.

To insert special Symbols

1. Bring your cursor to the region in which you want to insert the symbol. Click on the **Insert** tab. you'll find two alternatives underneath the image button (a) Equation and (b) Symbols.

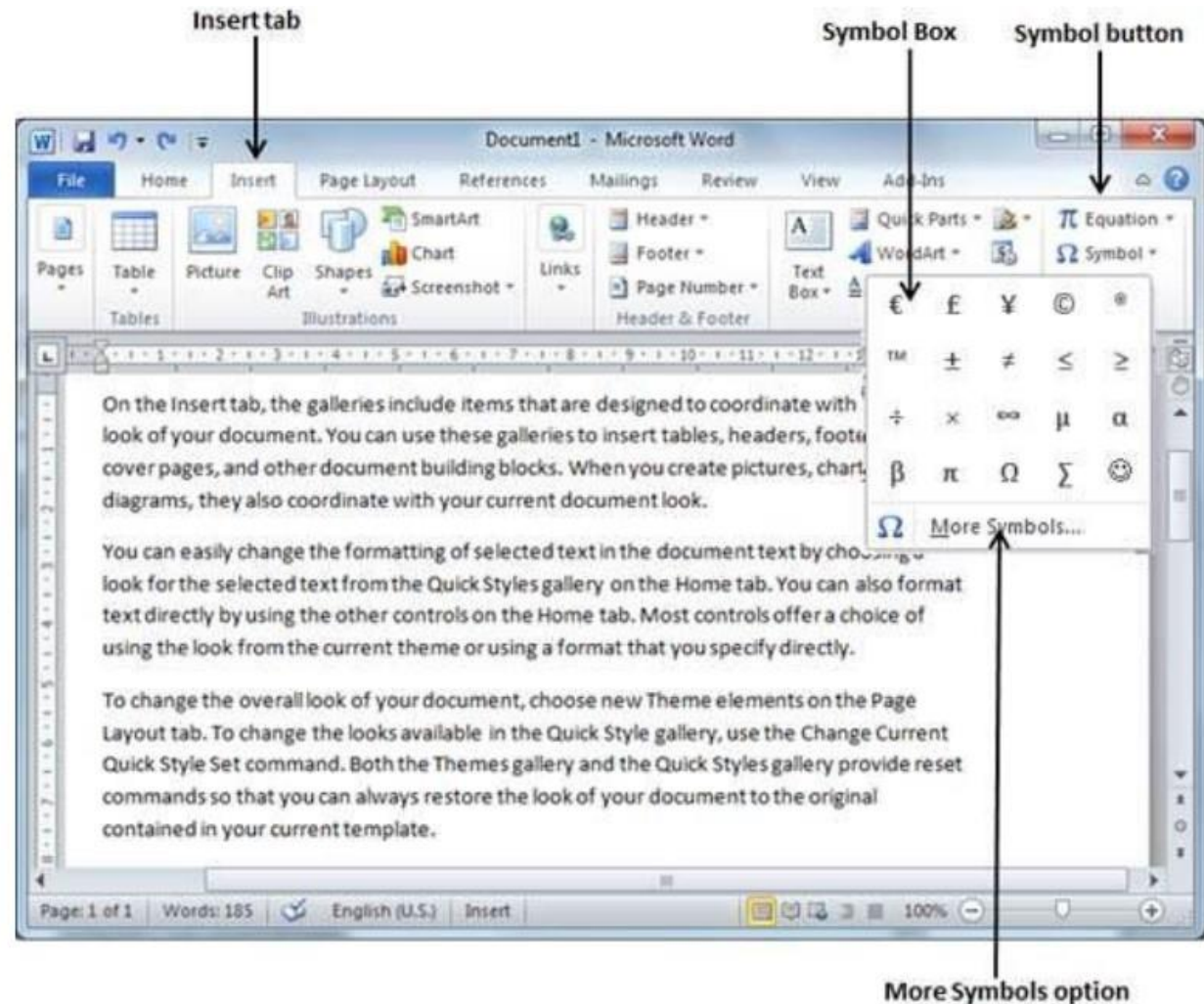


Equation

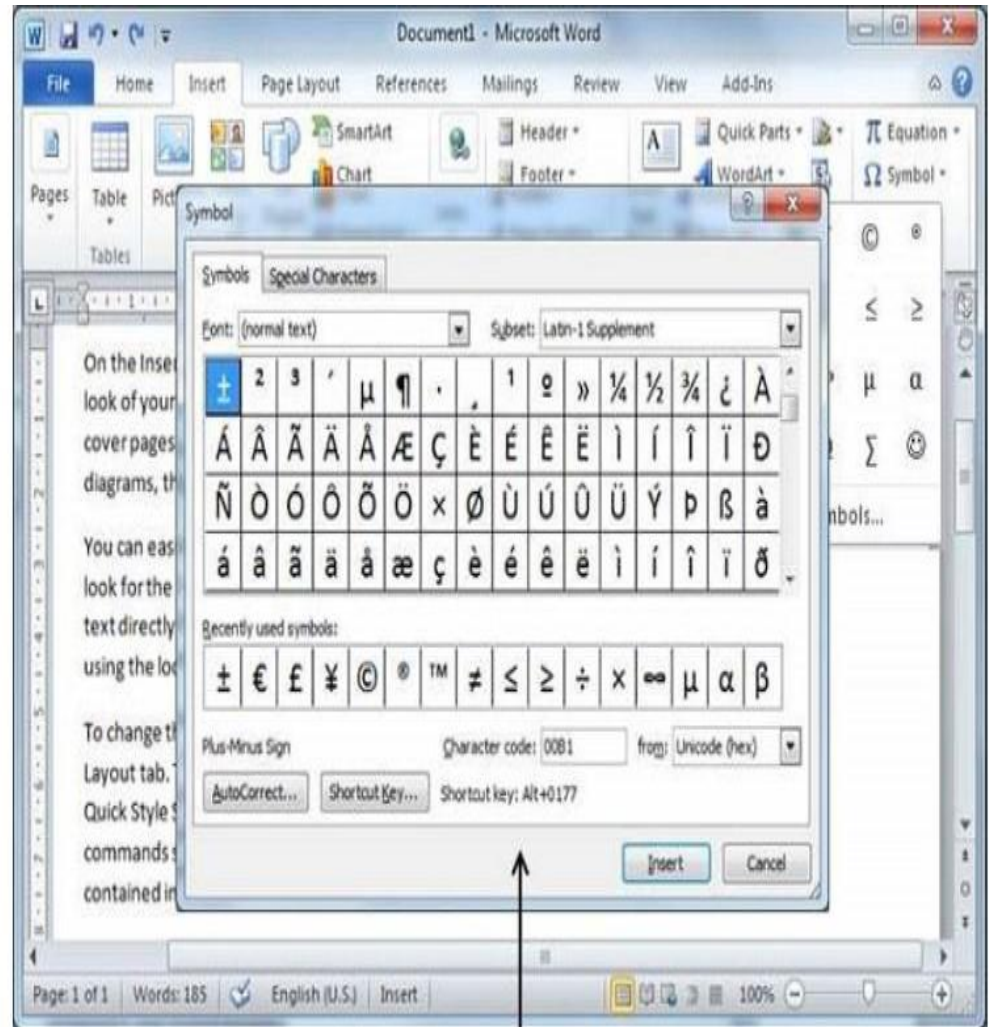
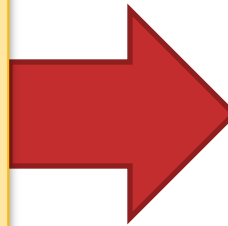
Symbols

2. When you click the **Symbol button**, a small list of symbols will appear as shown below.

3. Now click on **any of the obtainable symbols** in the box to insert that in your file at the selected location.



If you do not find the desired symbol in this small box, then you can click at the **More Symbols** option to have a wide range of symbols as shown below in the symbol dialog box. You can select any of the symbols and then click the **Insert** button to insert the selected symbol.



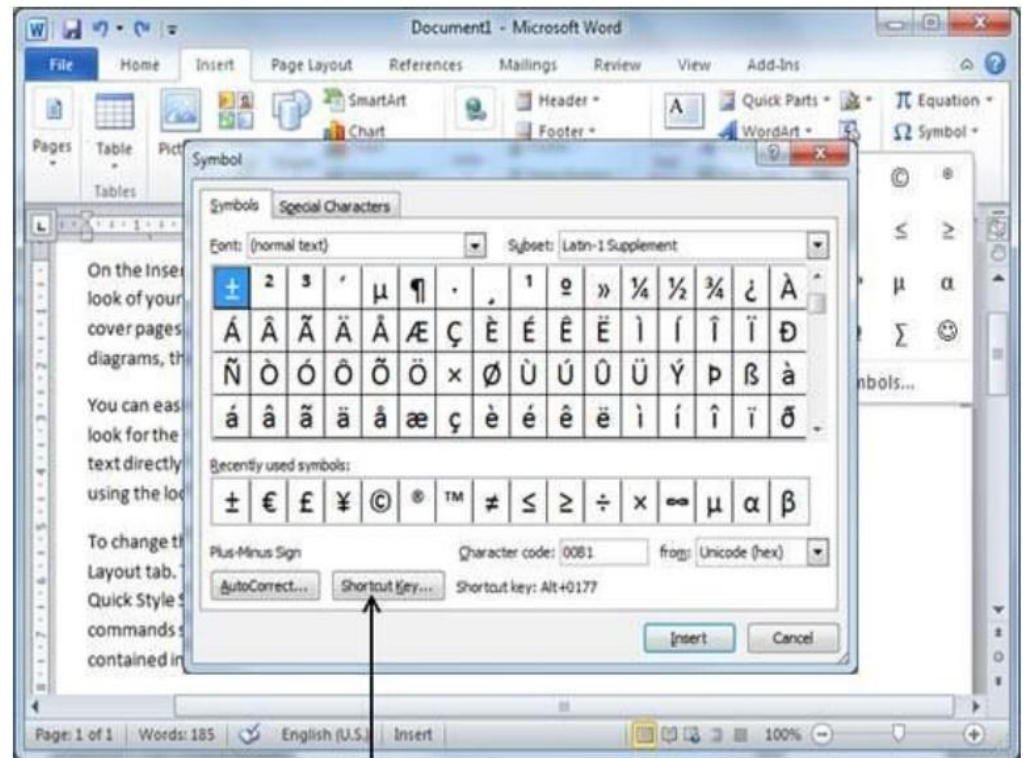
Symbol Dialog Box

To Assign Shortcut Key

You can assign a keyboard shortcut to type any of the available symbols. For **example** to assign **Ctrl + Q key** to insert the © symbol which is one of the available symbols in the special symbols list .

There are for steps :-

1. Click the **symbol** for which a shortcut key needs to be assigned.
2. Click **Shortcut Key button** which will display the following Customize Keyboard dialog box.

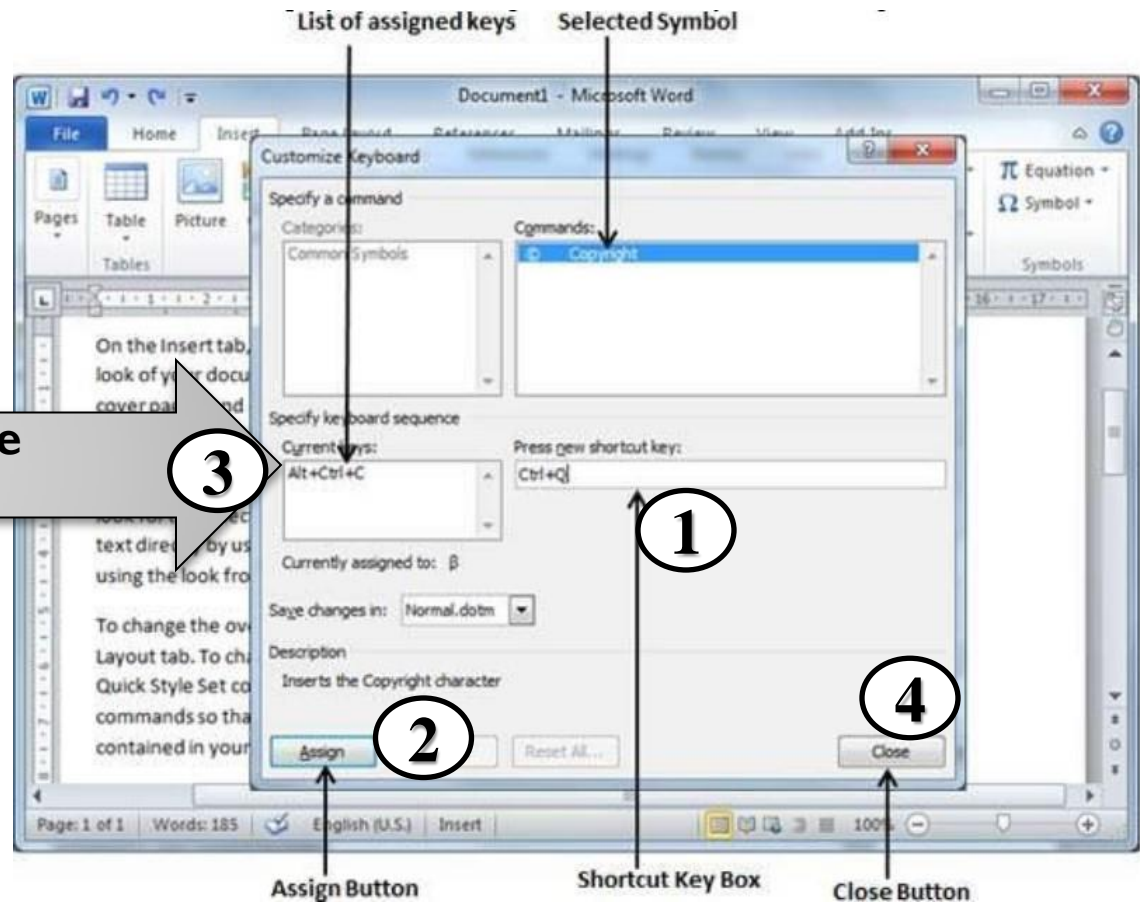


Shortcut Key

Now **type** the designated shortcut key in the shortcut key box. You press **Ctrl + Q** and then click the **Assign button** to assign the shortcut key. Lastly, use the Close button to close the dialog box.

You will see that the selected key

Now try to type **Ctrl + Q** using the keyboard directly and you will find that you are able to type © symbol without going into the symbol dialog box.

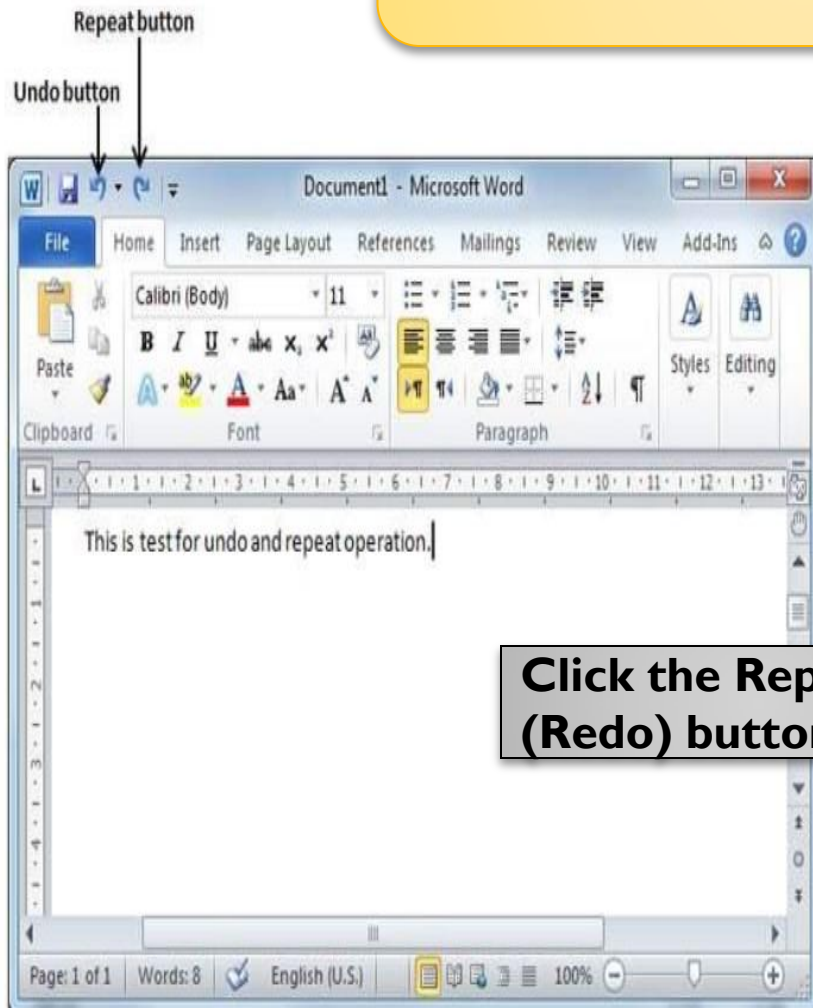


18. Undo Changes in Word 2010

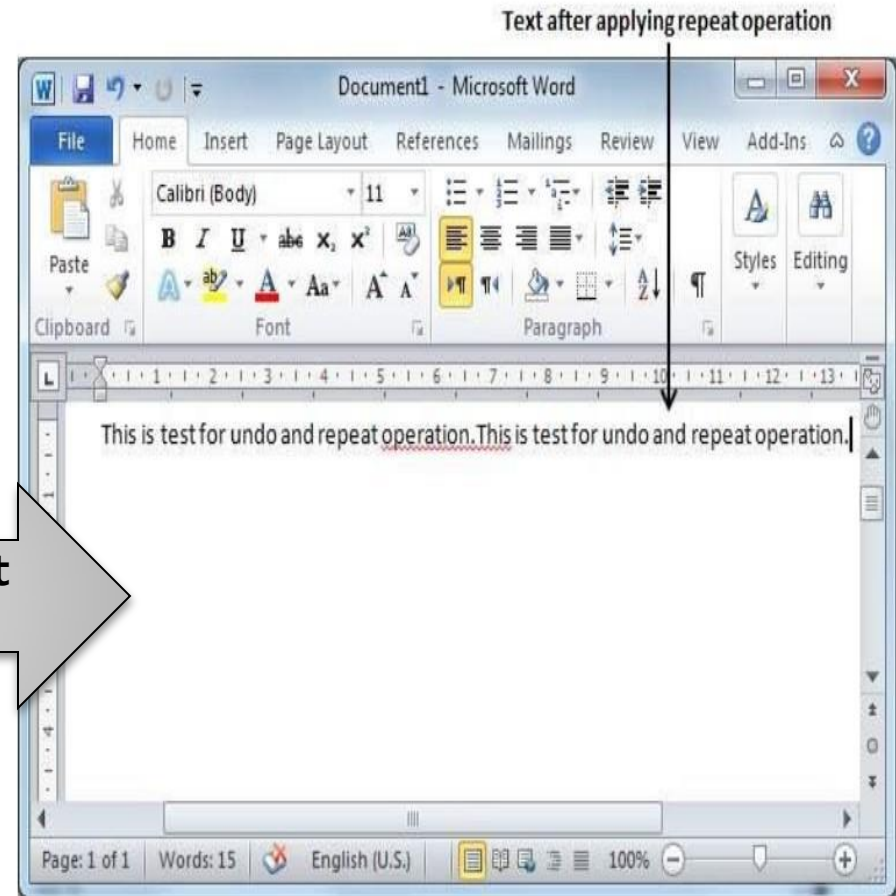
Microsoft word offers two significant features were called the Undo and the Repeat or Redo. The Undo feature is used to undo the too early action and the Repeat or Redo feature is used to repeat the previous action.

How to use Undo & Repeat operations.

You can access the Undo and Repeat buttons from the **Quick Access toolbar**.



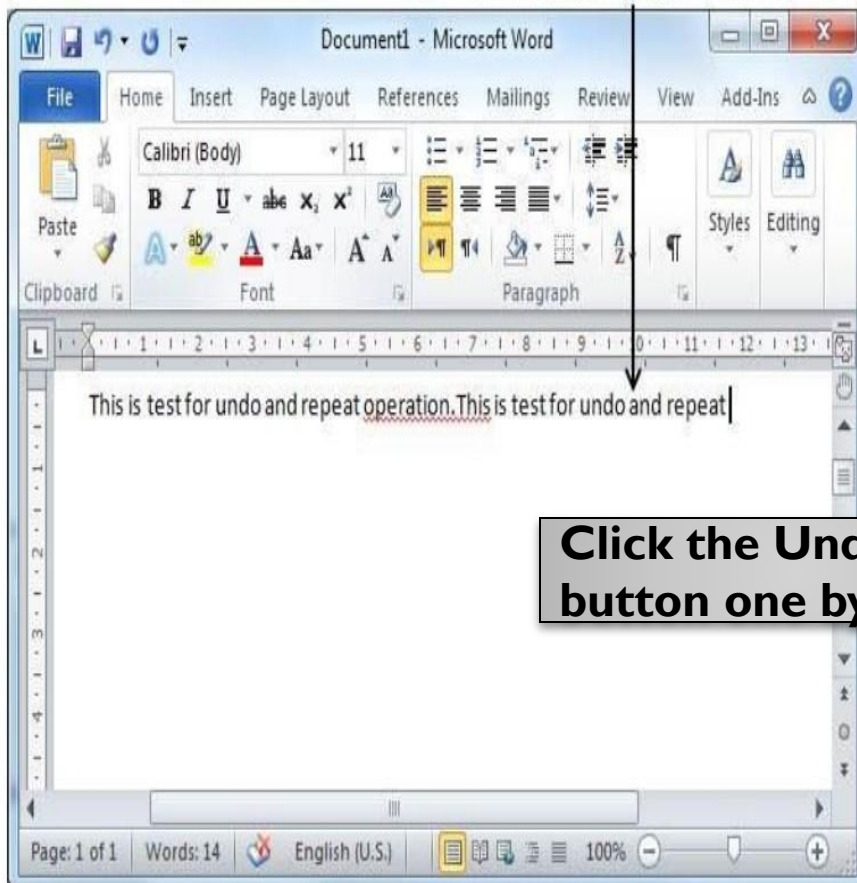
Click the Repeat (Redo) button



Now to examine the undo operation.

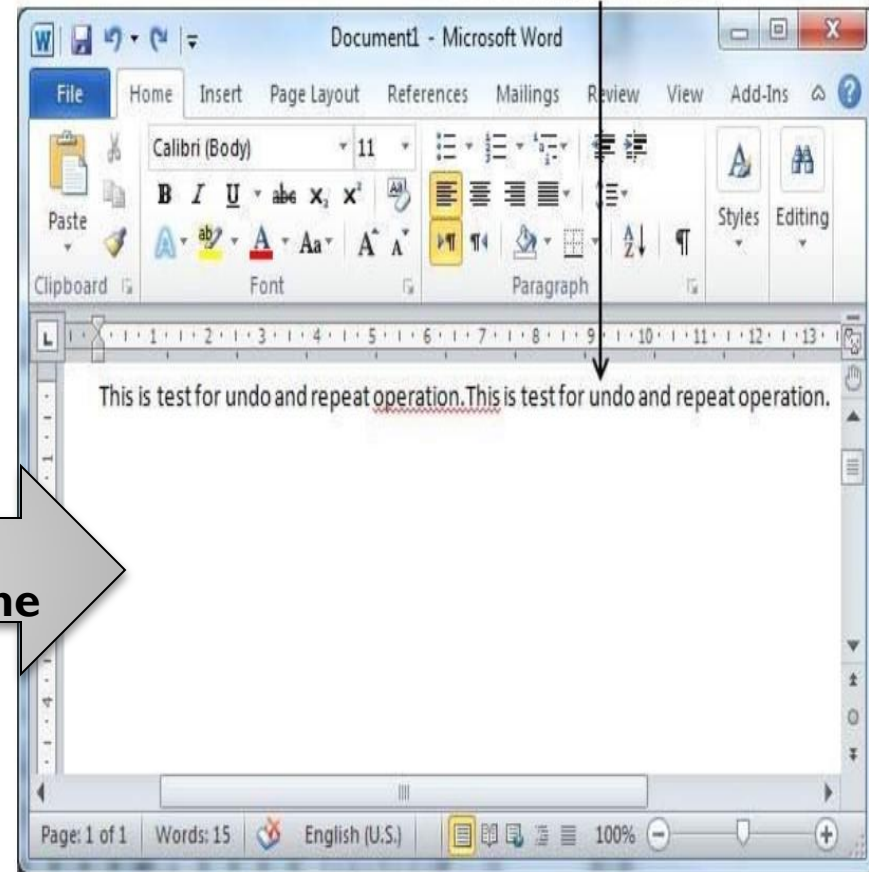
let us delete the last word operation
character by character.

Text after deleting operation word



**Click the Undo
button one by one**

Text after applying undo operation



By using keyboard only

S. No.	Key	Operation
1	Ctrl + Z	Undoes the previous action.
2	Ctrl + Y	Repeats the previous action.

Note that if the previous action was Undo, Ctrl+Y redoes the Undo one action.

19. Setting Text Fonts in Word 2010

Microsoft word lets you to use set of fonts with different size. You can alter your document's look by changing the fonts and their size.

Change the Font Type & Size.

Change

Font
Type

Font Size

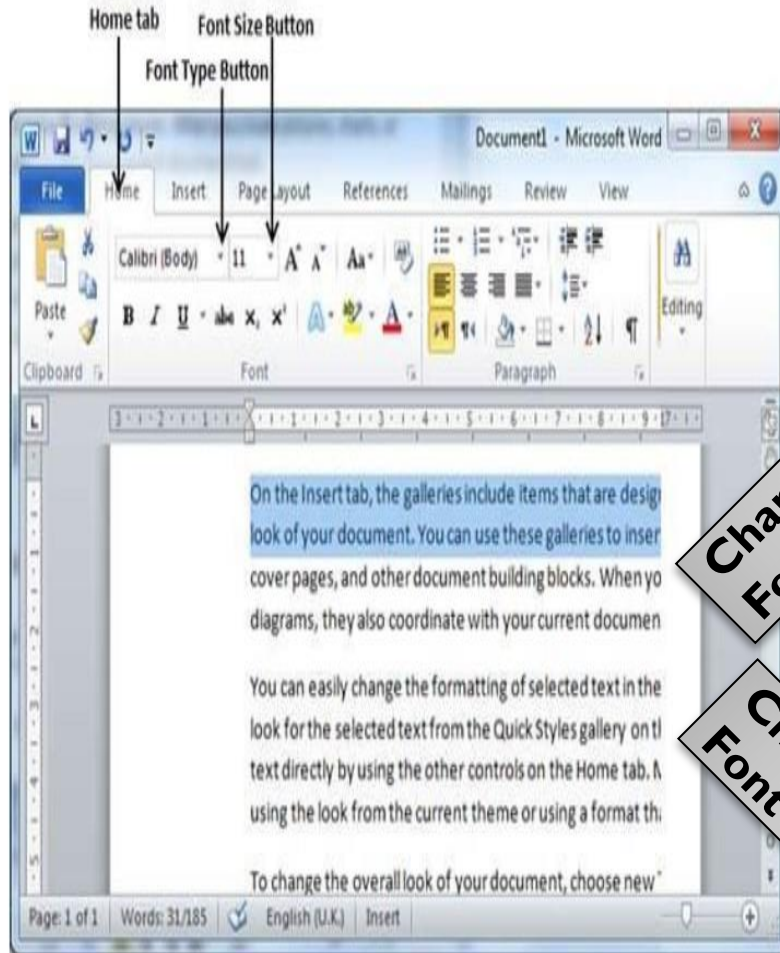
There are four steps :-

1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Font Type button**.
4. Select and click over the **font name** in the list.

There are four steps :-

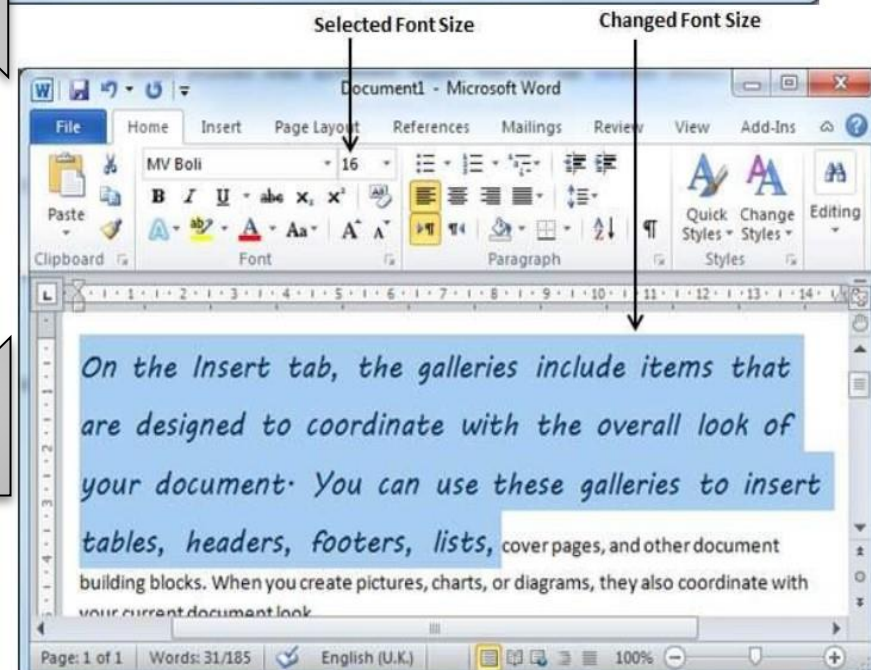
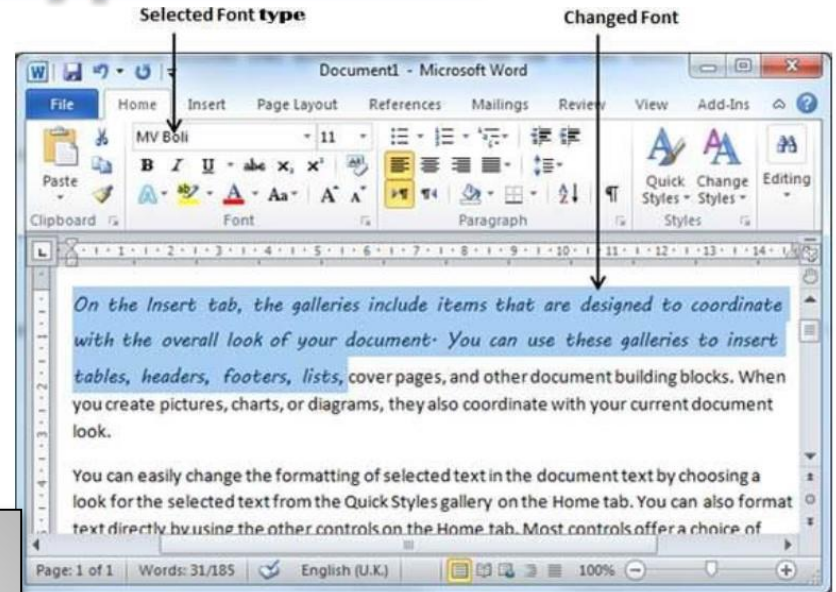
1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Font Size button**.
4. Select and click over the **font size** in the list.

Change the Font Type & Size.



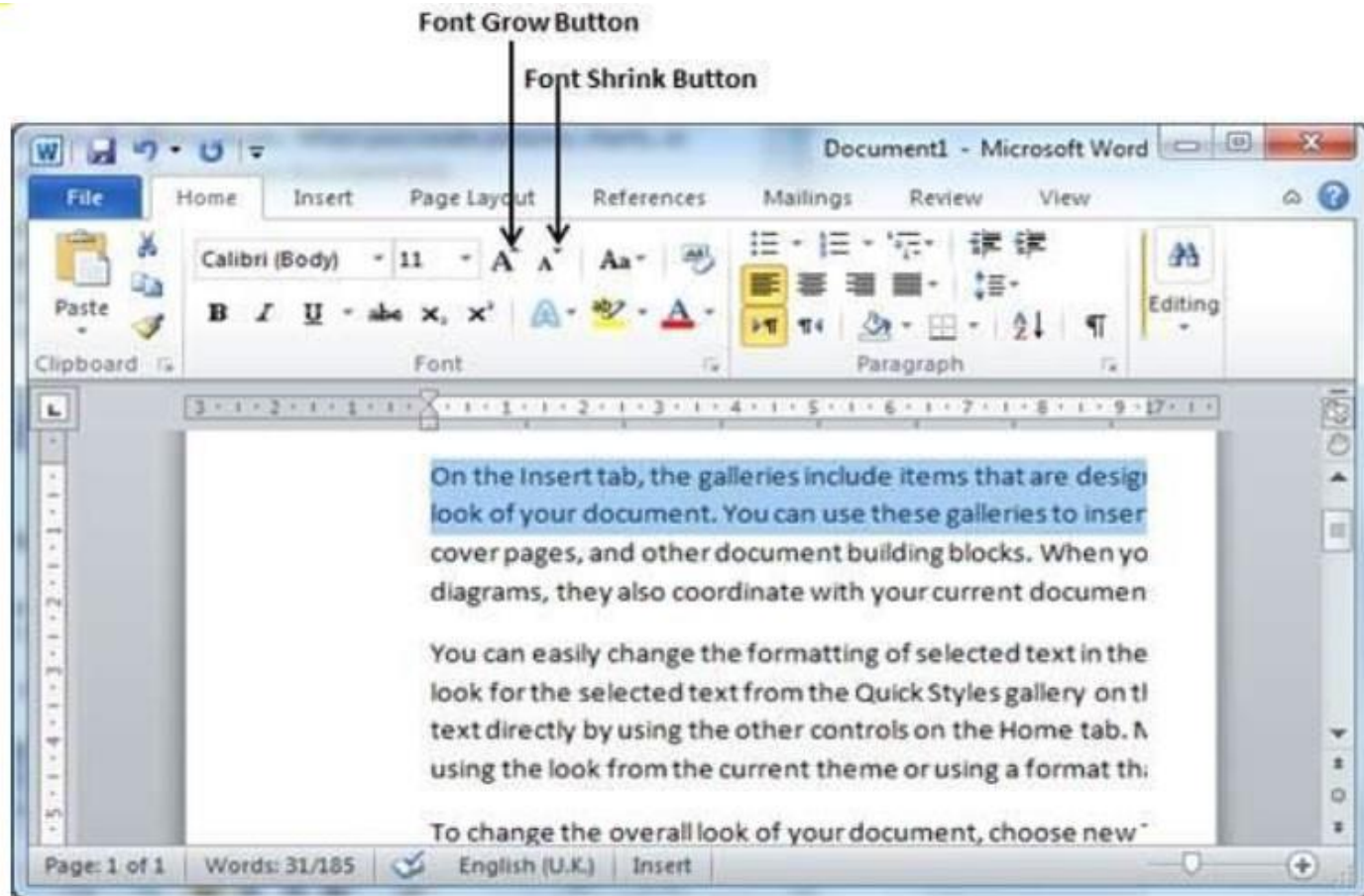
Change
Font Type

Change
Font Size



Use Shrink and Grow Buttons.

The Shrink Font button can be used to reduce the font size whereas the Grow Font button can be used to enlarge the font size.



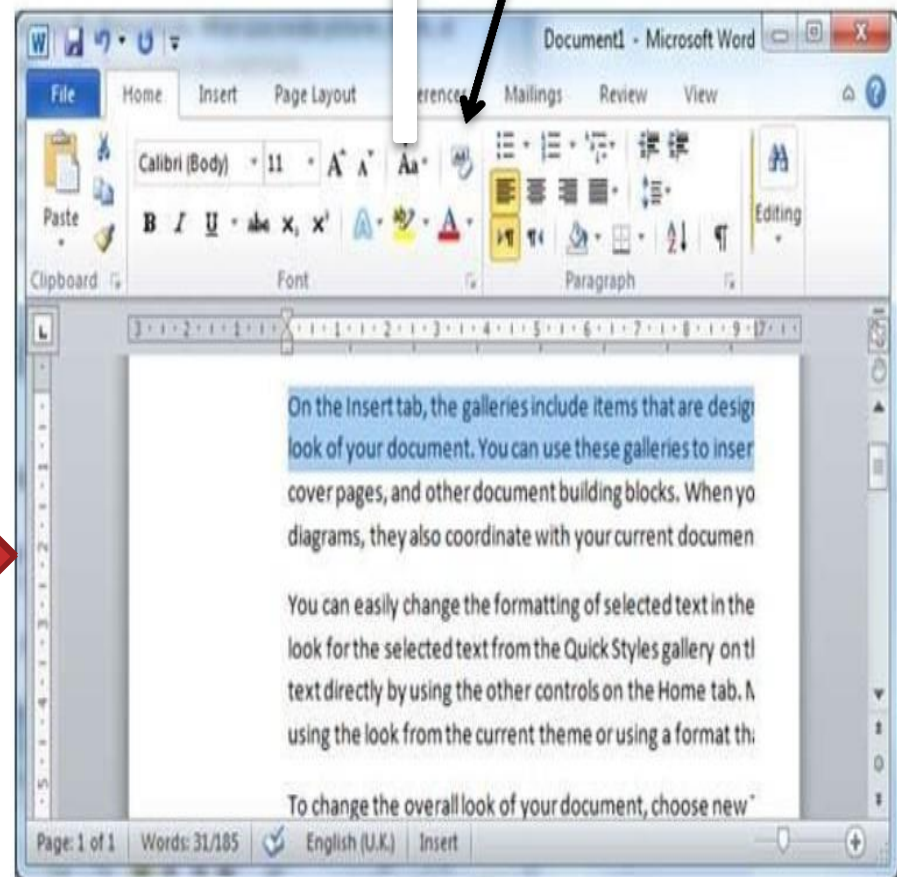
Clear Formatting Options.

All of the setting can be reset to plain text, or the default formatting. To reset text to default settings.

Clear Formatting button

There are three steps :-

1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Clear Formatting button**, or use **Ctrl + SPACEBAR**.



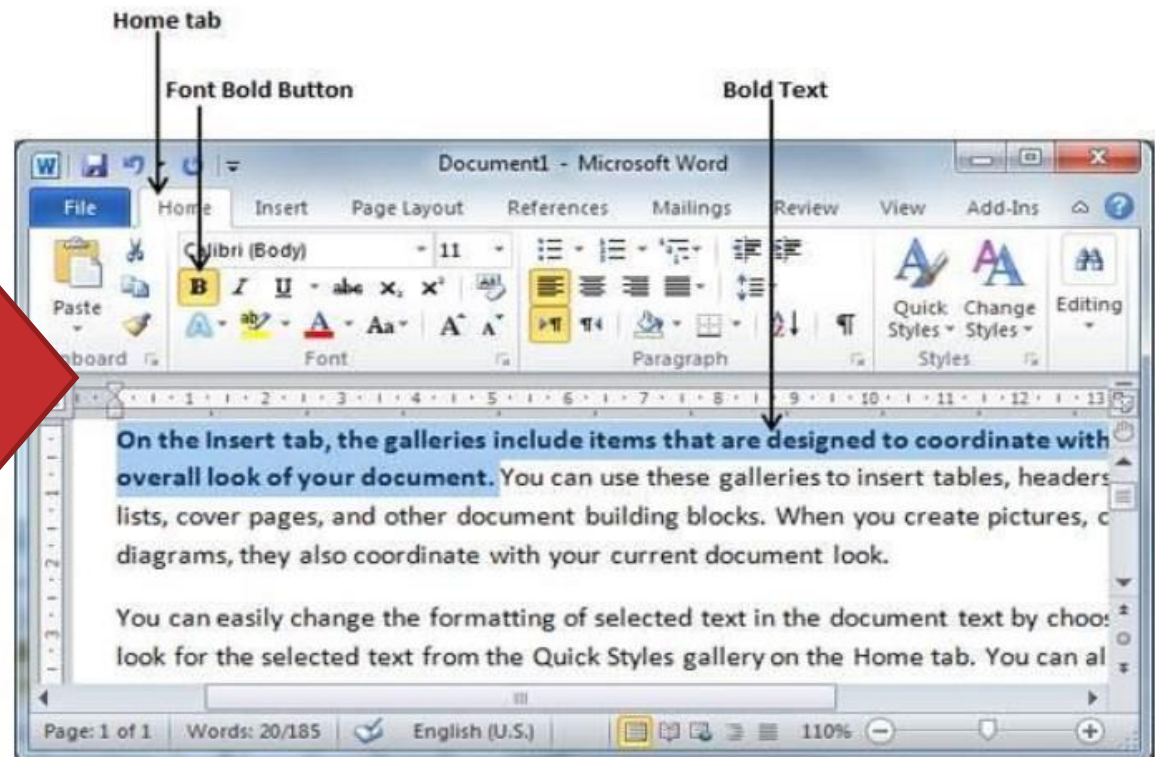
20. Decoration in Word 2010

When we use the term decorate, it means decorate by placing the text in italics, underlining the text or making it bold to look more fancy and much more.

Making text bold

There are three steps :-

1. Select the **area of text**.
2. Click the **Home** tab.
3. Click the **Bold [B]** button, or use **Ctrl + B** keys.

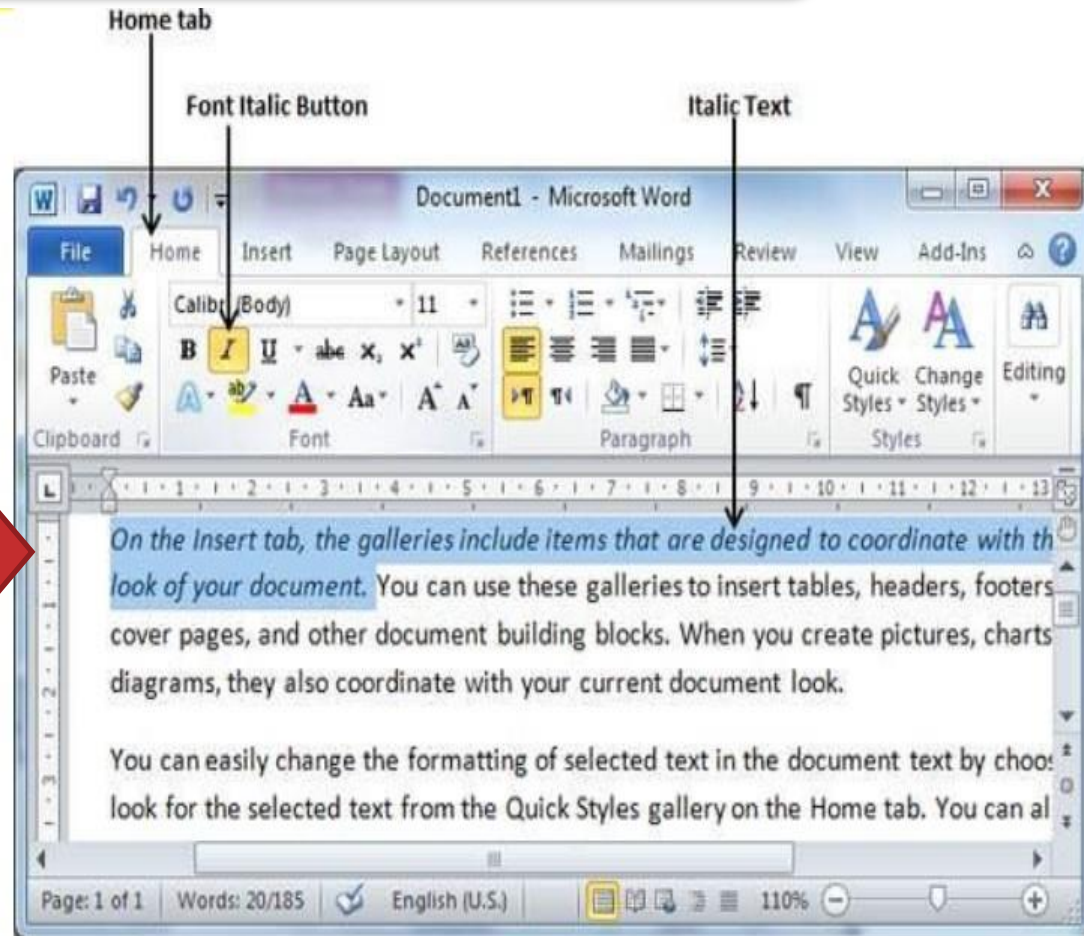
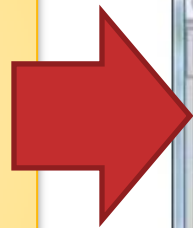


Making Text Italic

An italic text looks with a small inclination and we use the italicized text to distinguish it from other text.

There are three steps :-

1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Italic [I] button**, or use **Ctrl + I** keys.

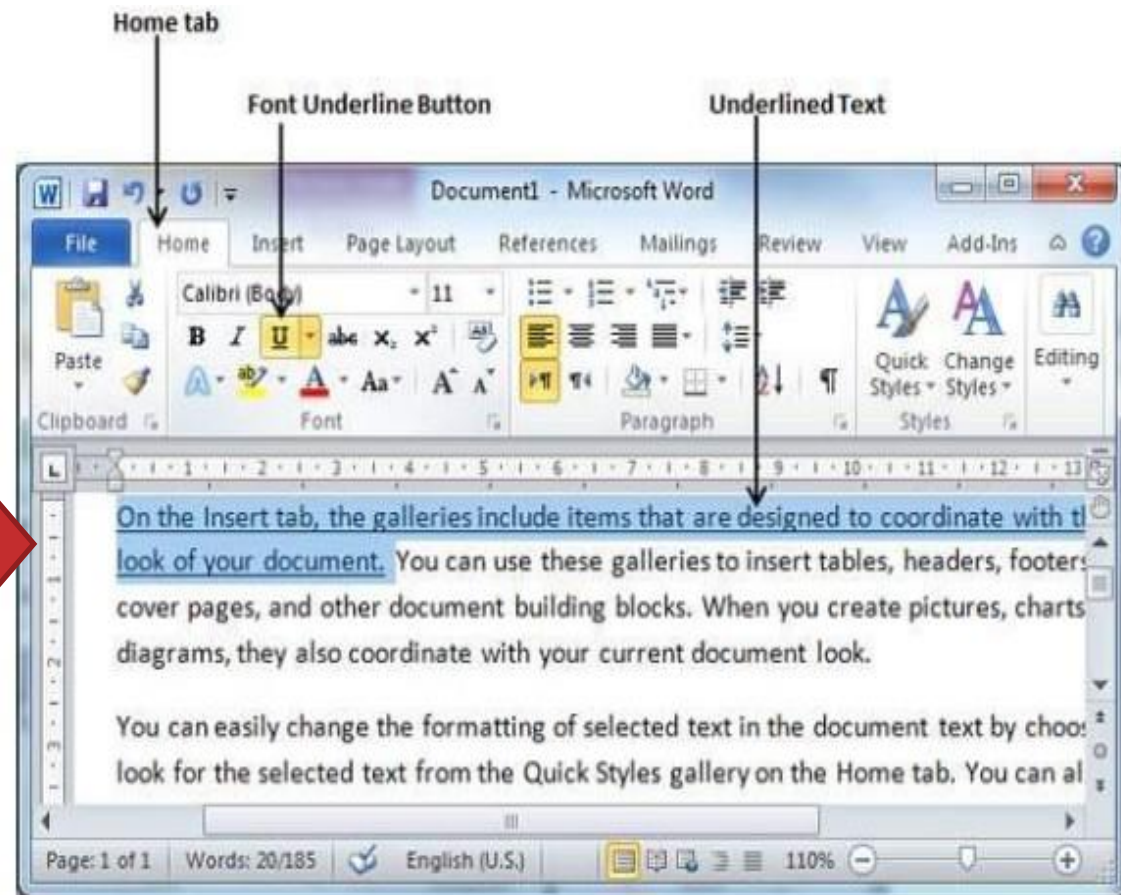
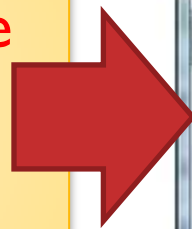


Underline the Text

An underlined portion of text looks with an underline and we use the underlined portion of text to make it more distinguished from other text.

There are three steps :-

1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Underline [U] button**, or use **Ctrl + U** keys.

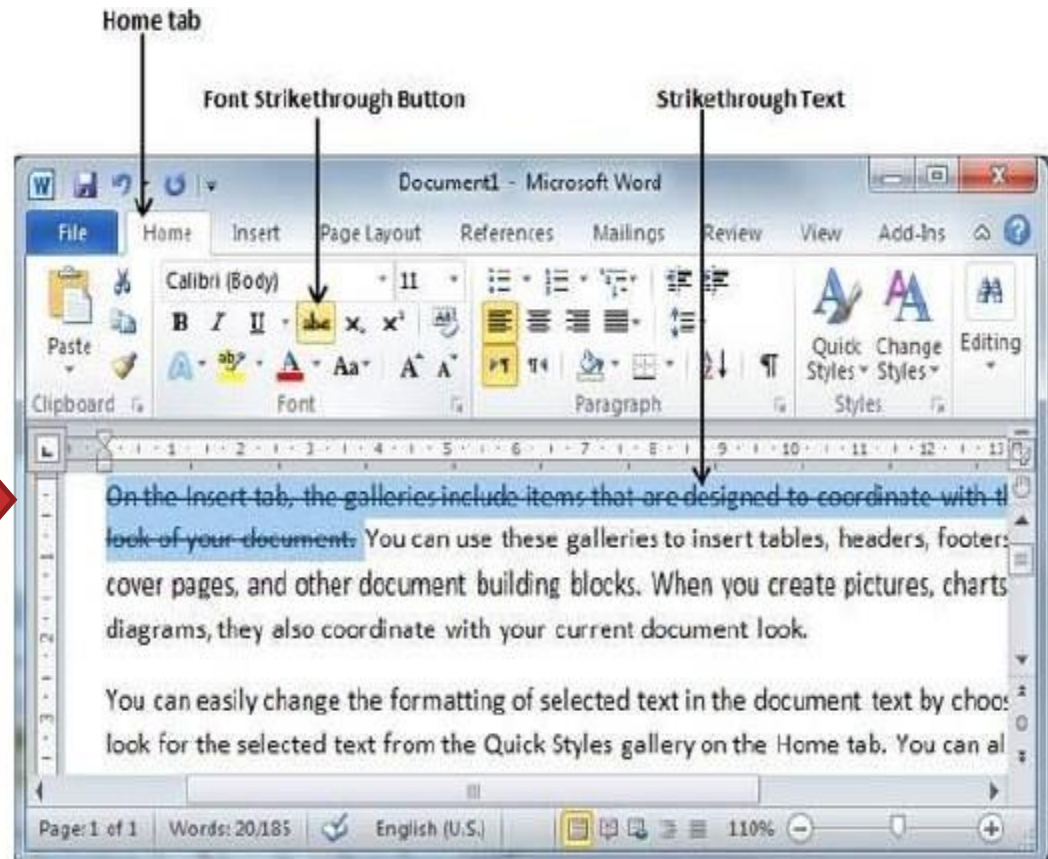
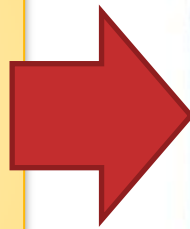


Strikethrough the Text

Strikethrough portion of text will look as if a line has been drawn through the middle of it. A strikethrough portion of text shows that it has been deleted and that the portion of text is not essential any more.

There are three steps :-

1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Strikethrough [abc] button**.



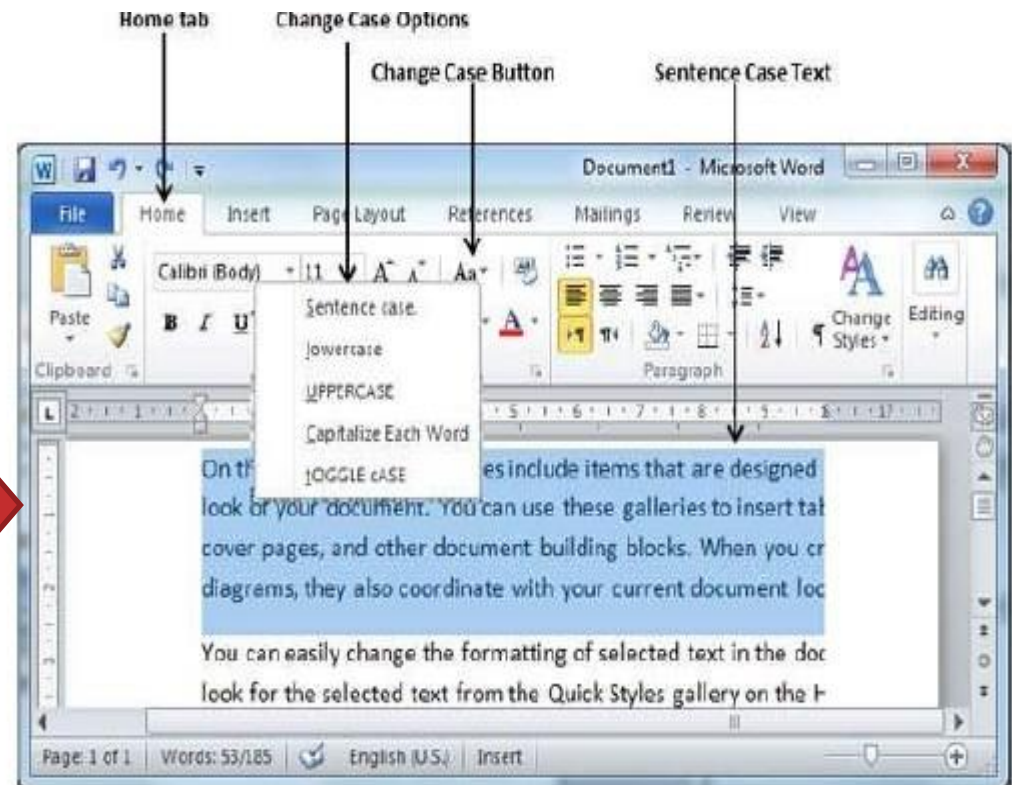
21. Change Text Case in Word 2010

You can also exploit a character you are typing by pressing and holding the SHIFT key while you type. You can also press the CAPS LOCK to have every letter that you type capitalized, and then press the CAPS LOCK again to turn off capitalization

Change Text to Sentence Case

There are four steps :-

1. Select the **area of text**.
2. Click the **Home** tab.
3. Click the **Change Case** button.
4. Select the **Sentence Case** option.

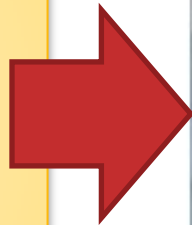


Change Text to Lowercase

Changing text to lowercase is where every word of a sentence is in lowercase.

There are four steps :-

1. Select the **area of text**.
2. Click the **Home** tab.
3. Click the **Change Case** button.
4. Select the **Lowercase** option.

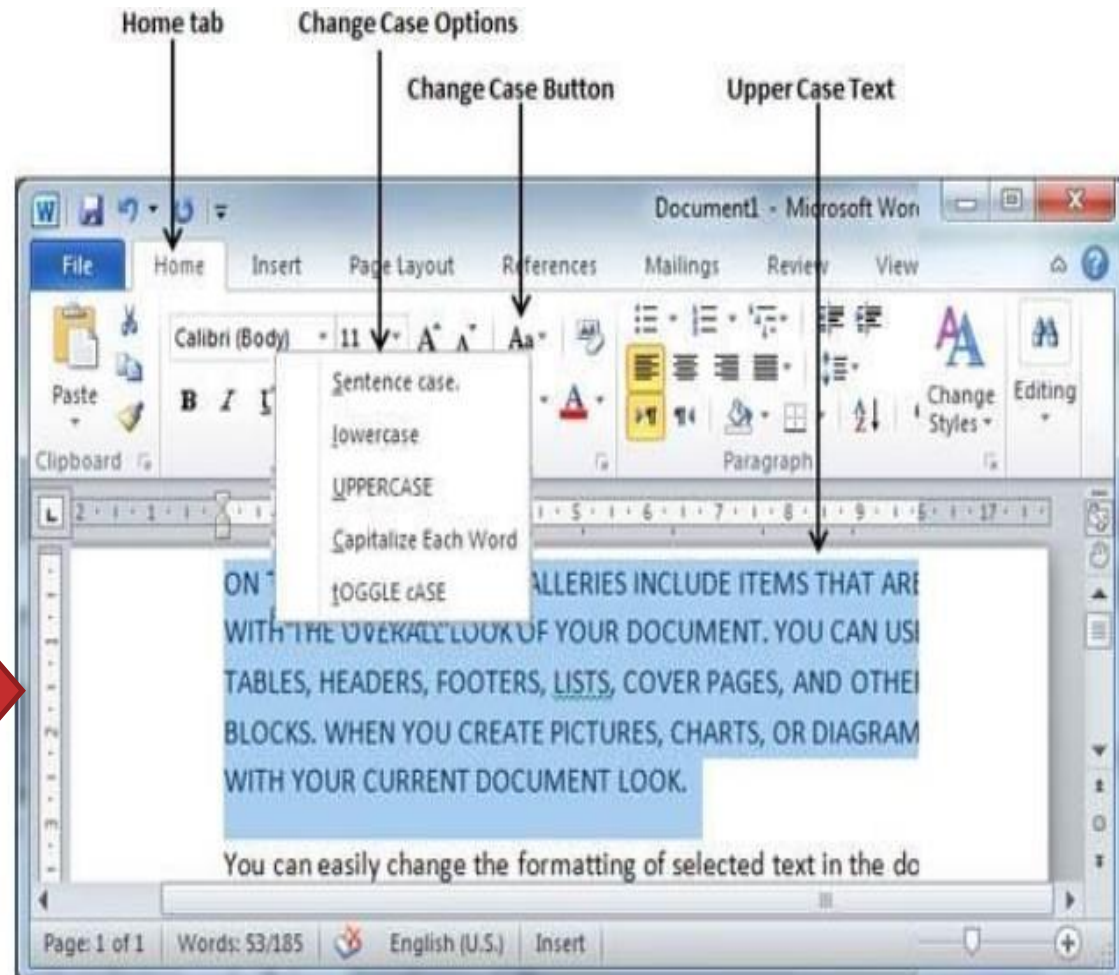


Change Text to Uppercase

This is where every word of a sentence is in uppercase.

There are four steps :-

1. Select the **area of text**.
2. Click the **Home** tab.
3. Click the **Change Case** button.
4. Select the **UPPERCASE** option.

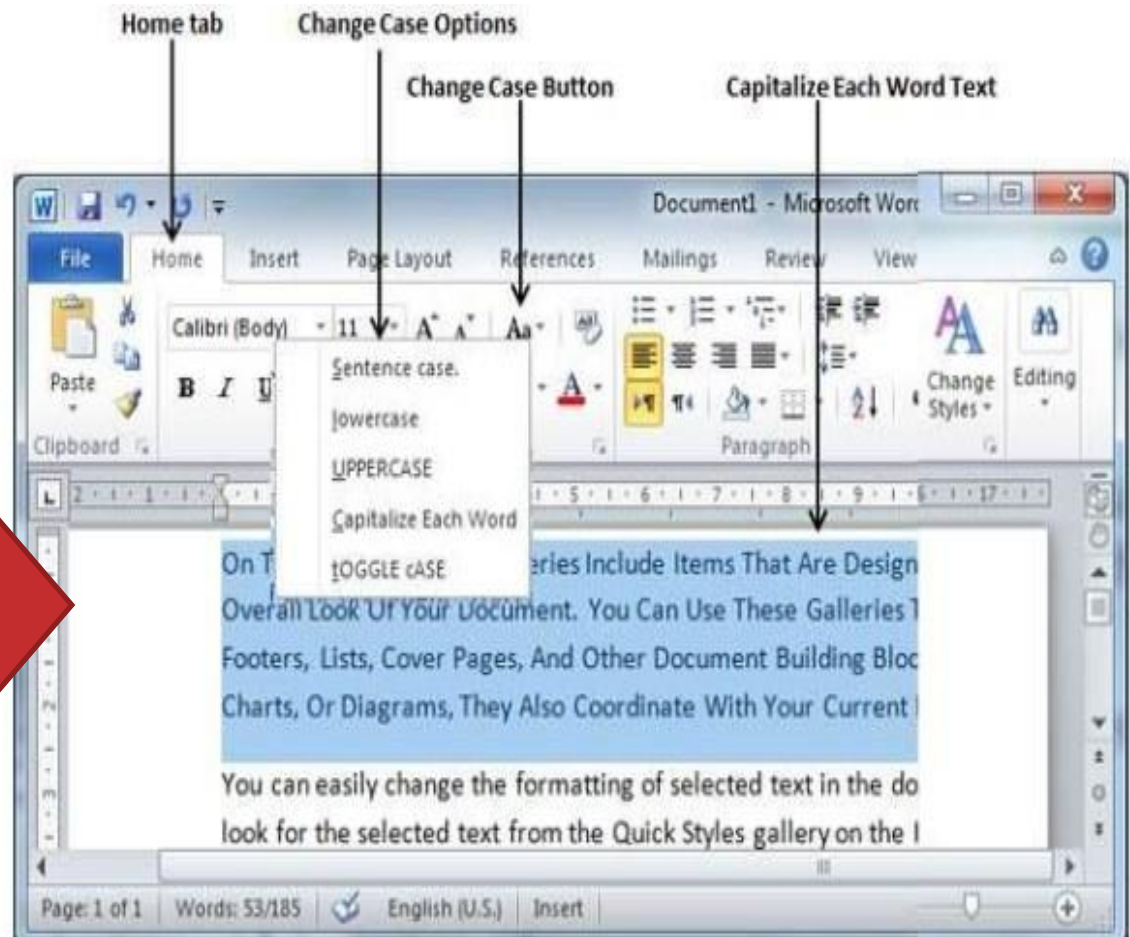


Capitalize Text

A capitalize case is the case where every single first character of every single selected word is in capital.

There are four steps :-

1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Change Case** button.
4. Select the **Capitalize Each Word** option.

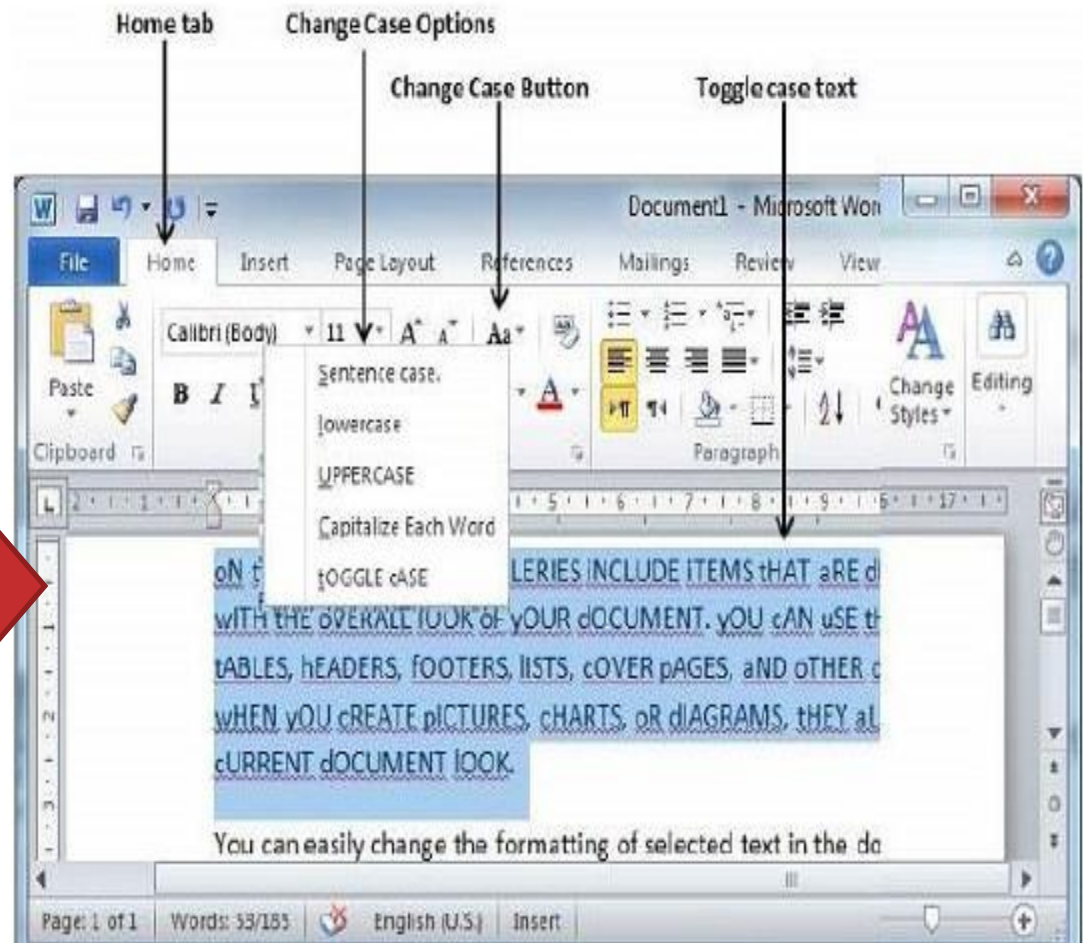


Toggle the Text

The Toggle operation will alter the case of every single character in reverse way.

There are four steps :-

1. Select the **area of text**.
2. Click the **Home tab**.
3. Click the **Change Case** button.
4. Select the **tOGGLE cASE** option.



22. Change Text Color in Word 2010

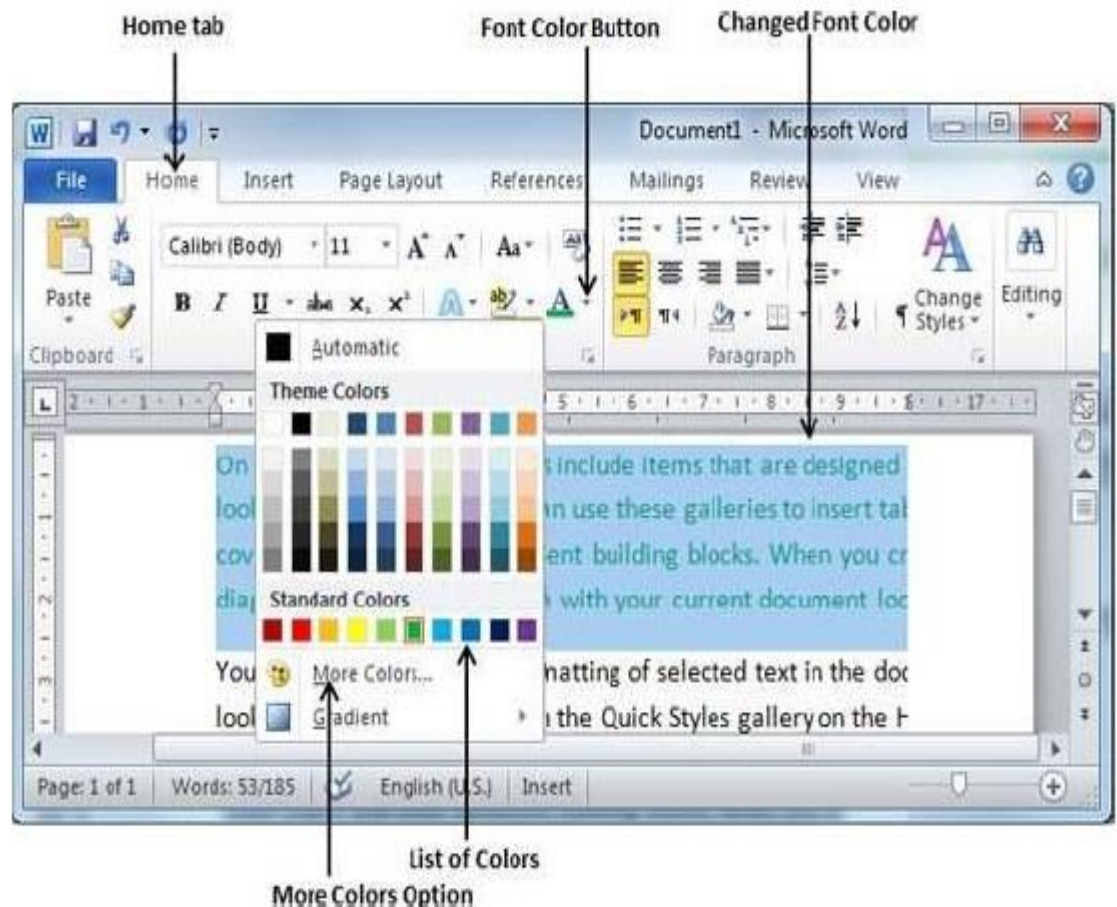
Change Font Colors

You can every time change the color of the font to a color of your choice.

1. Select the **area of text**.

2. Click the **Font Color button triangle** to show a list of colors. You can select any of the colors available by merely clicking over it.

If you do not find a color of your choice, you can use the **More Colors** choice to show the color pallet box which lets you to select a color from a range of colors.

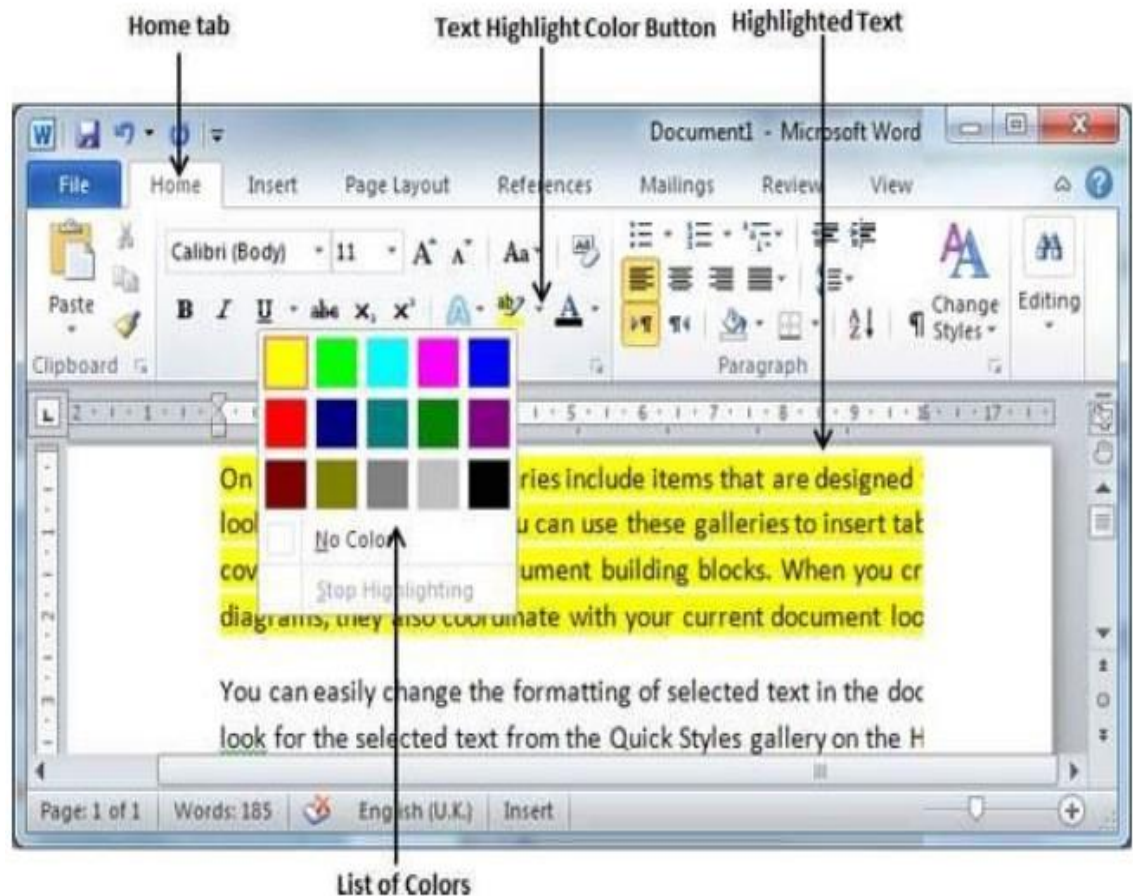


Highlight Text with Colors

Typically we highlight a text using yellow color.

1. Select the **area of text**.

2. Click the **Text Highlight Color** button triangle to show a list of colors. Try to change your mouse pointer over different colors and you will see the text color variations automatically. You can select any of the colors accessible by simply clicking over it.



Apply Text Effects

Cover page or the headings of the document.

1. Select the **area of text**.

2. Click the **Text Effect button** to display a list of effects comprising shadow, outline, glow, reflection etc.. You can select any of the text effect accessible by simply clicking over it.

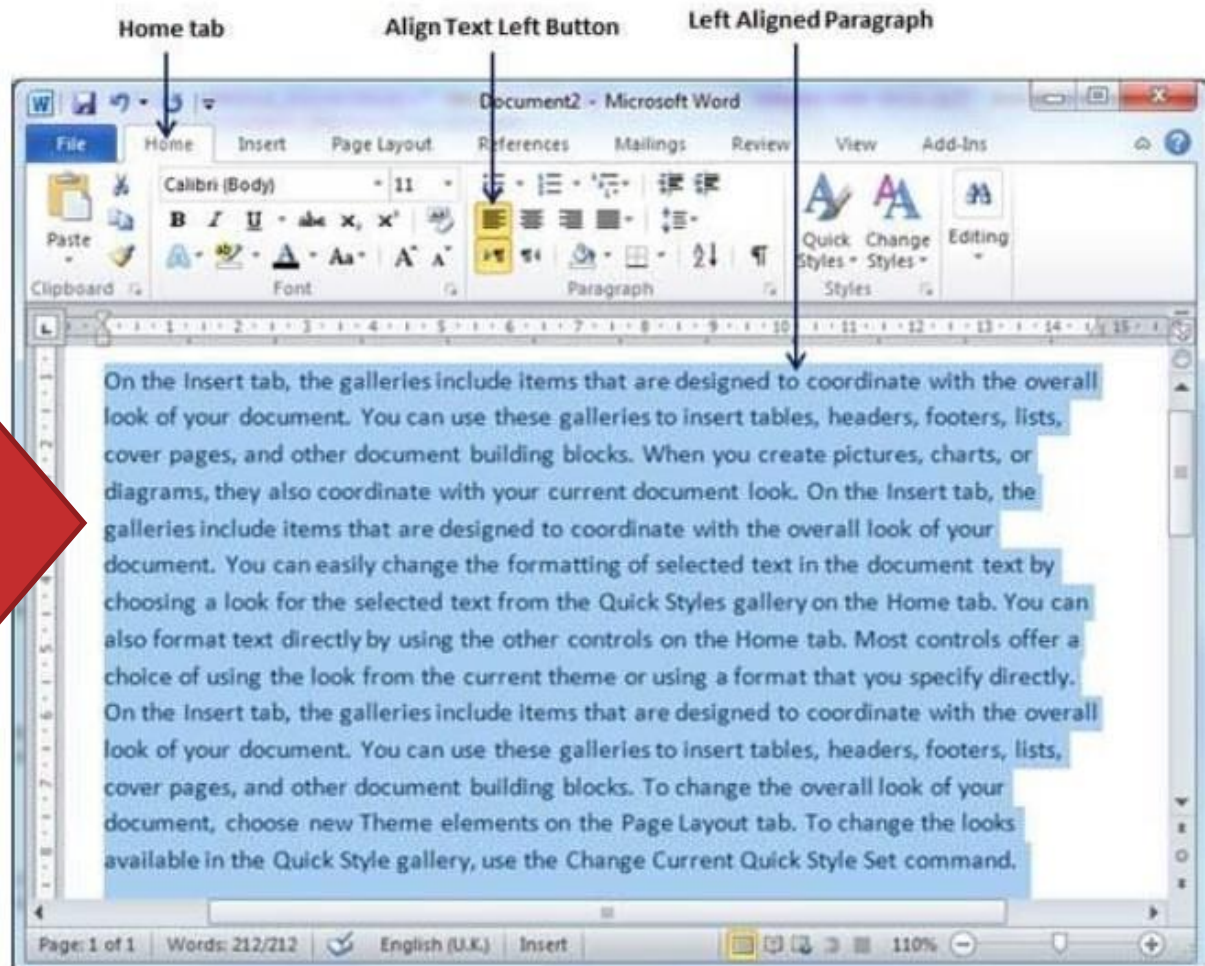


23. Text Alignments in Word 2010

Left-Aligned Text

A paragraph's text is left aligned when it is aligned consistently along the left margin.

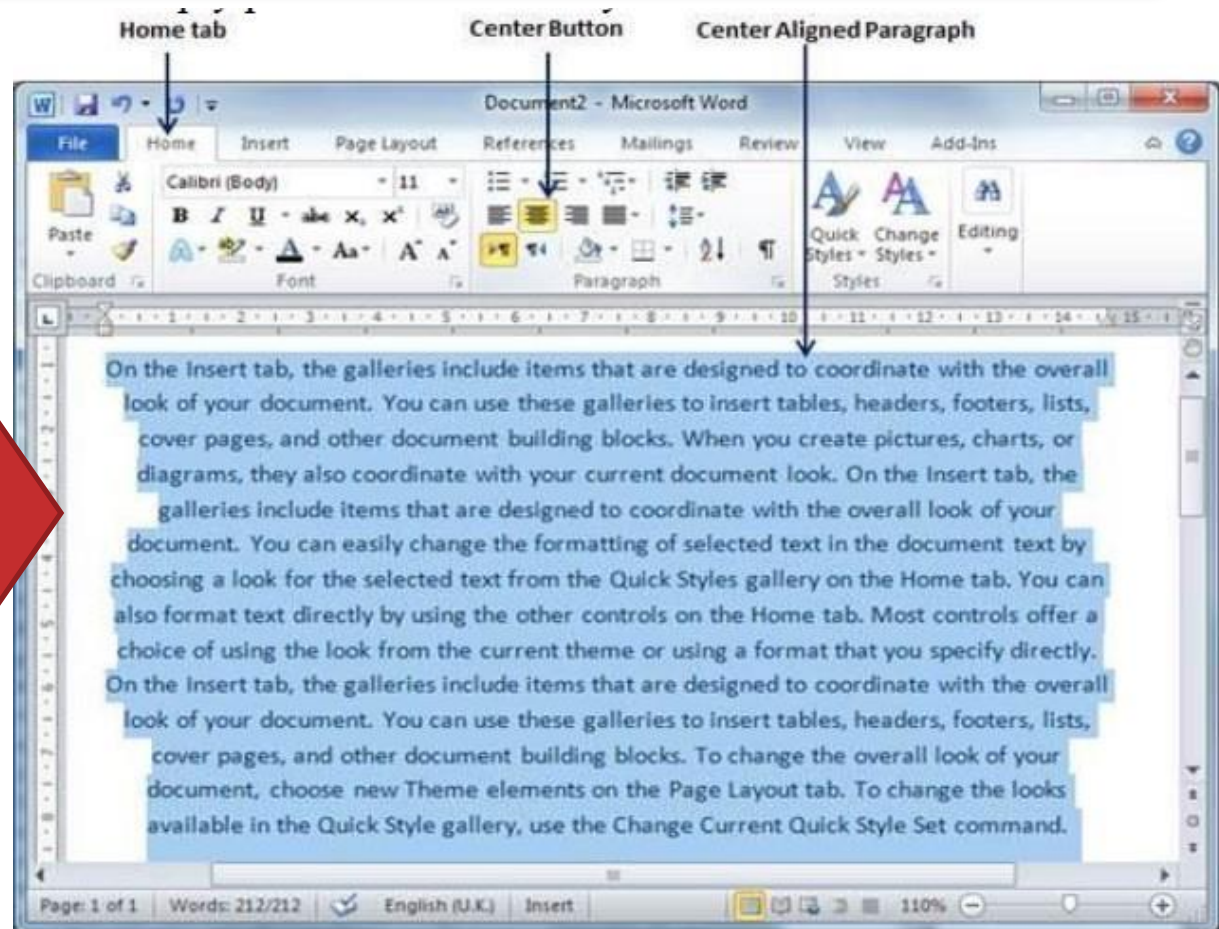
Click anywhere on the paragraph you want to align and click the **Align Text Left** button available on the Home tab or simply press the **Ctrl + L** keys.



Center Aligned Text

A paragraph's text will be said center aligned if it is in the center of the left and right margins.

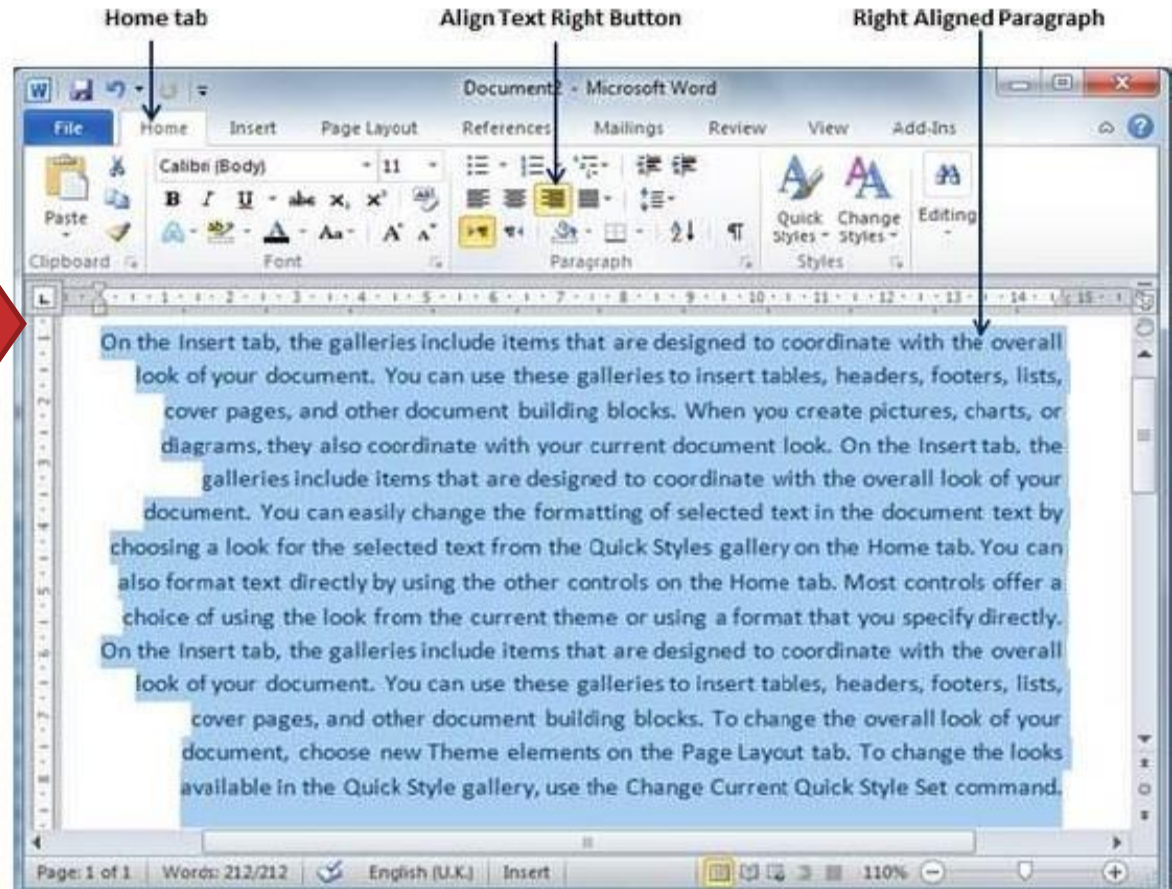
Click anywhere on the paragraph you want to align and click the **Center** button available on the Home tab or simply press the **Ctrl + E** keys.



Right-Aligned Text

A paragraph's text is right-aligned when it is aligned consistently along the right margin.

Click anywhere on the paragraph you want to align and click the **Align Text Right** button available on the Home tab or simply press the **Ctrl +R** keys.

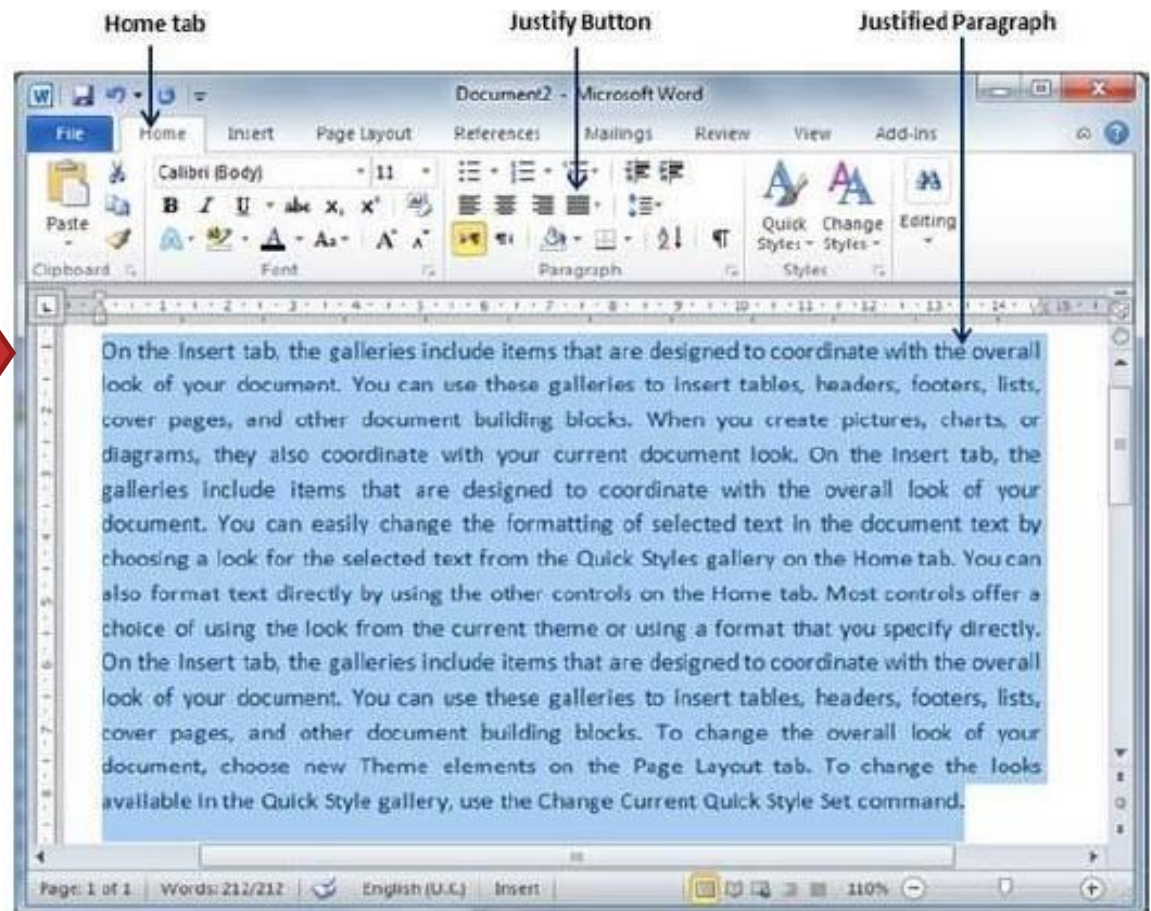


Justified Text

A paragraph's text is justified when it is aligned consistently along both the left and the right margins

Click anywhere on the paragraph you want to align and click **Justify** button available on the Home tab or simply press the **Ctrl +J** keys.

When you click the Justify button, it shows four options, justify, justify low, justify high and justify medium. You need to choose only the justify option.



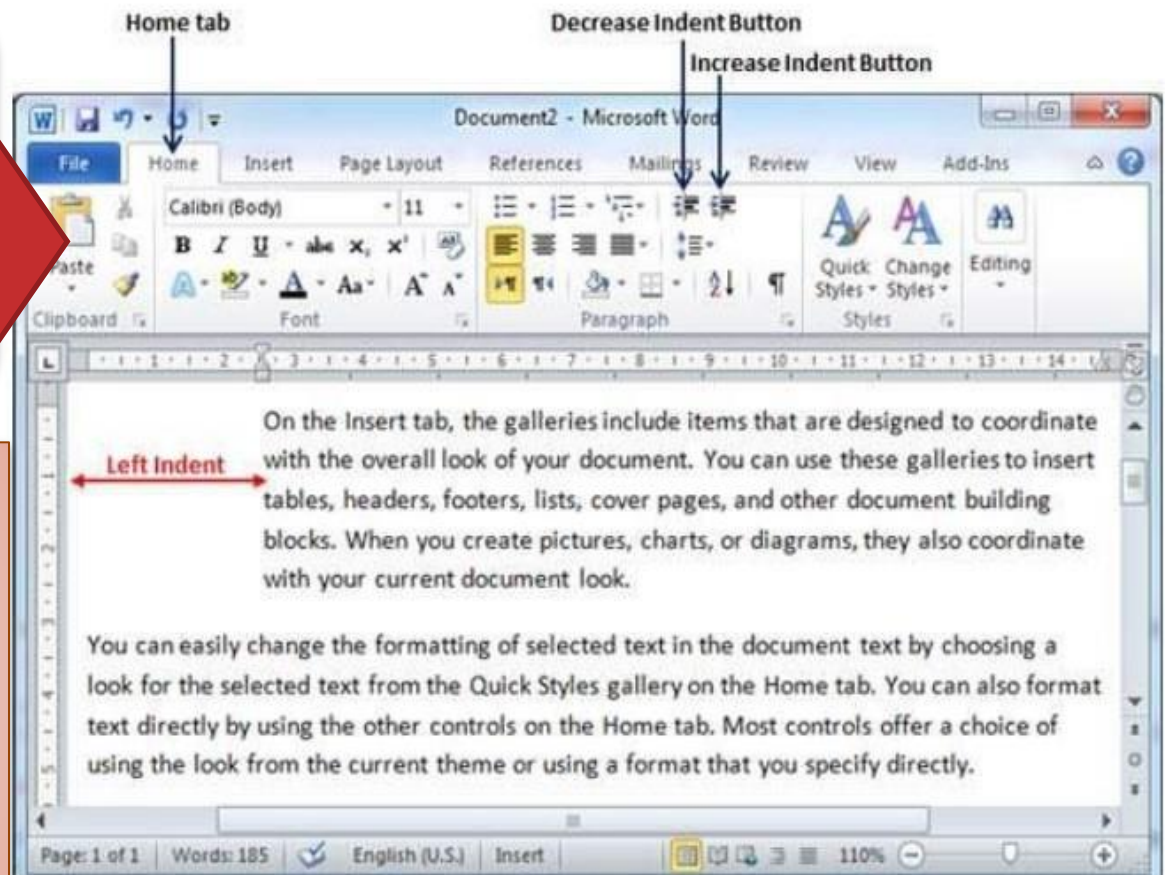
24. Indent Paragraphs in Word 2010

Left Indentation

Left indentation means to change the left edge of the paragraph inward towards the center of the paragraph.

Click anywhere on the paragraph you want to align and click **Increase Indent** button available on the Home tab or simply press the **Ctrl + M** keys.

You can get rid of left indentation by clicking the **Decrease Indent** button available on Home tab or simply press **Ctrl + Shift + M** keys.



Right Indentation

Right indentation means to change the right edge of the paragraph inward towards the center of the paragraph.

Click anywhere on the paragraph you want to align and click **Increase Right Indent** button available on the **Page Layout** tab.

You can take out right indentation by clicking the **Decrease Right Indent** spinner in the opposite direction.



Decrease Right Indent Spinner

25. Create Bullets in Word 2010

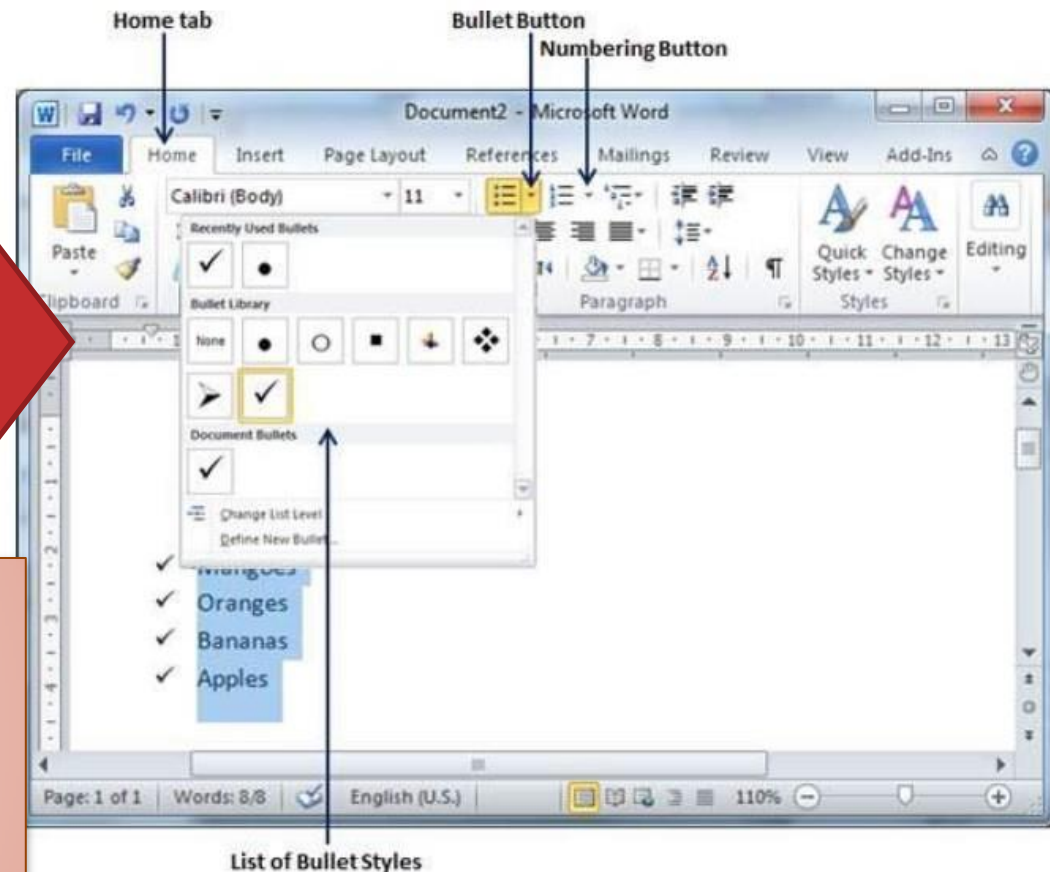
Microsoft word offers bullets and numbers to put a list of items in a fine order.

Create a List from Existing Text

There are three steps :-

1. Select a **list of text** to which you want to assign bullets or numbers.
2. Click **Bullet Button triangle**.
3. Choice **any of the bullet style** accessible by simply clicking over it.

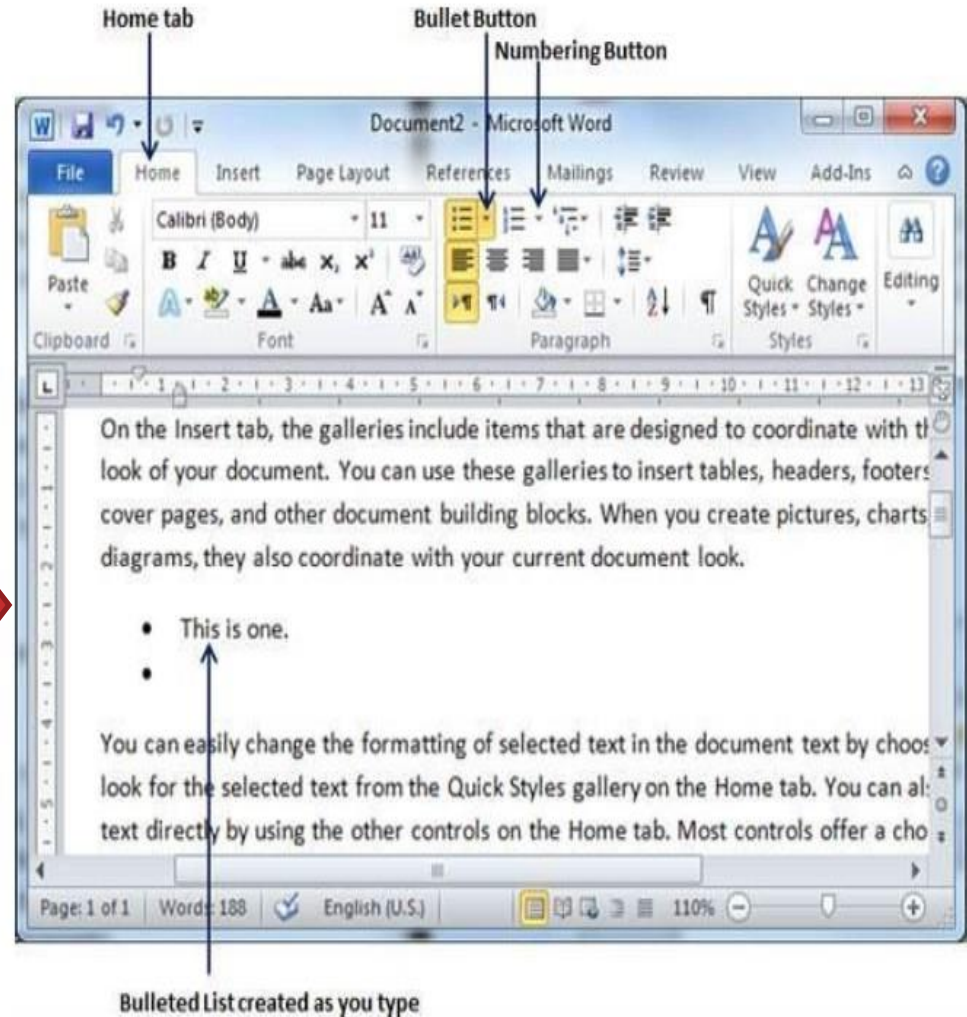
If you are willing to create a list with **numbers**, then click the **Numbering Button triangle** instead of the bullet button to show a list of numbers you want to assign to the list.



Create a List as You Type

There are four steps :-

1. Type *
2. Either press the **SPACEBAR** or press the **TAB** key.
3. Type **the rest** of what you want in the first item.
4. press **Enter** to add the item in the list automatically and go to add next item in the list.



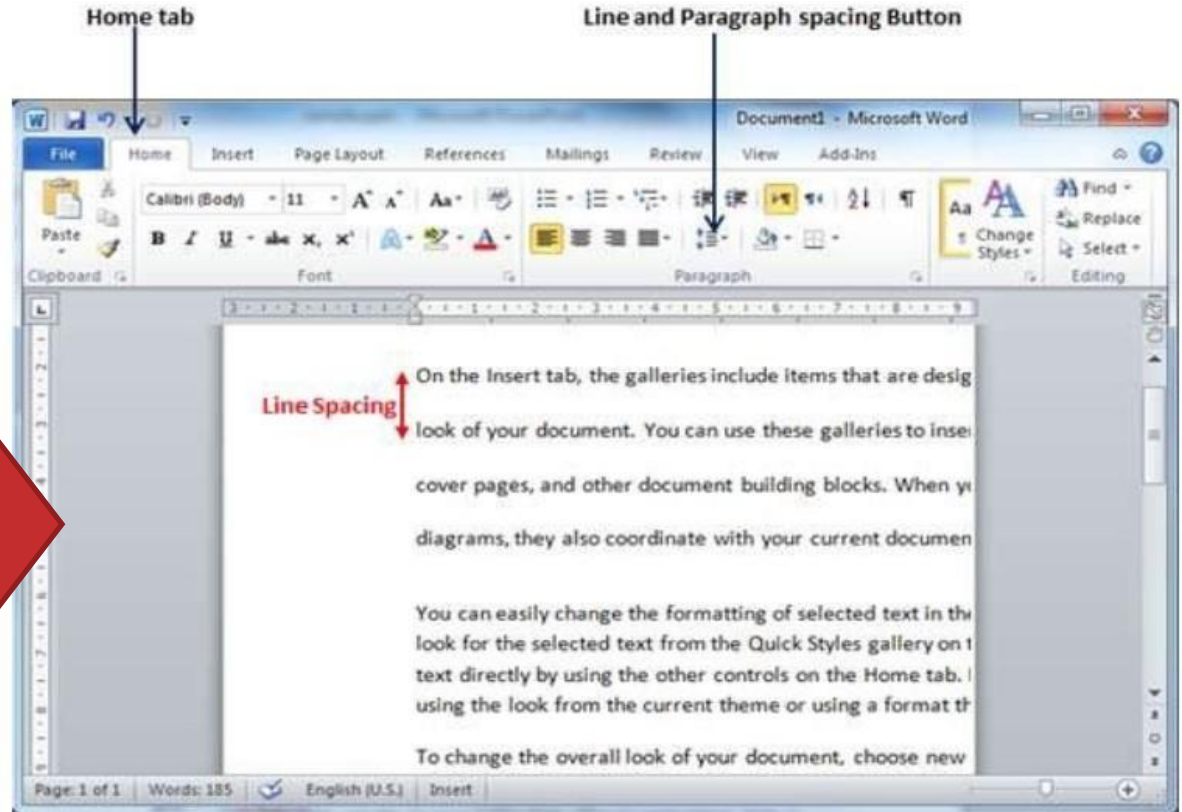
26. Set Line Spacing in Word 2010

Line spacing is the space between two lines in a Microsoft Word document. You can increase or decrease this space as per your necessity.

Spacing between Lines

There are three steps :-

1. Select a **paragraph or paragraphs** for which you want to define spacing.
2. Click the **Line and Paragraph Spacing Button** triangle.
3. Select any of the **option available** by simply **clicking over it**.



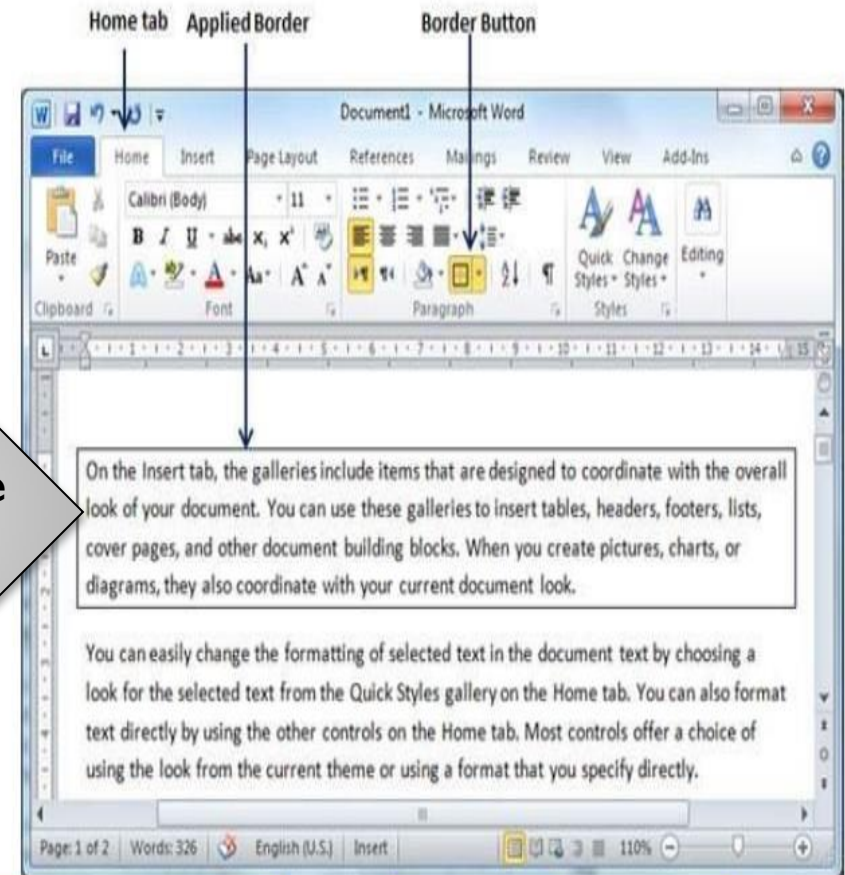
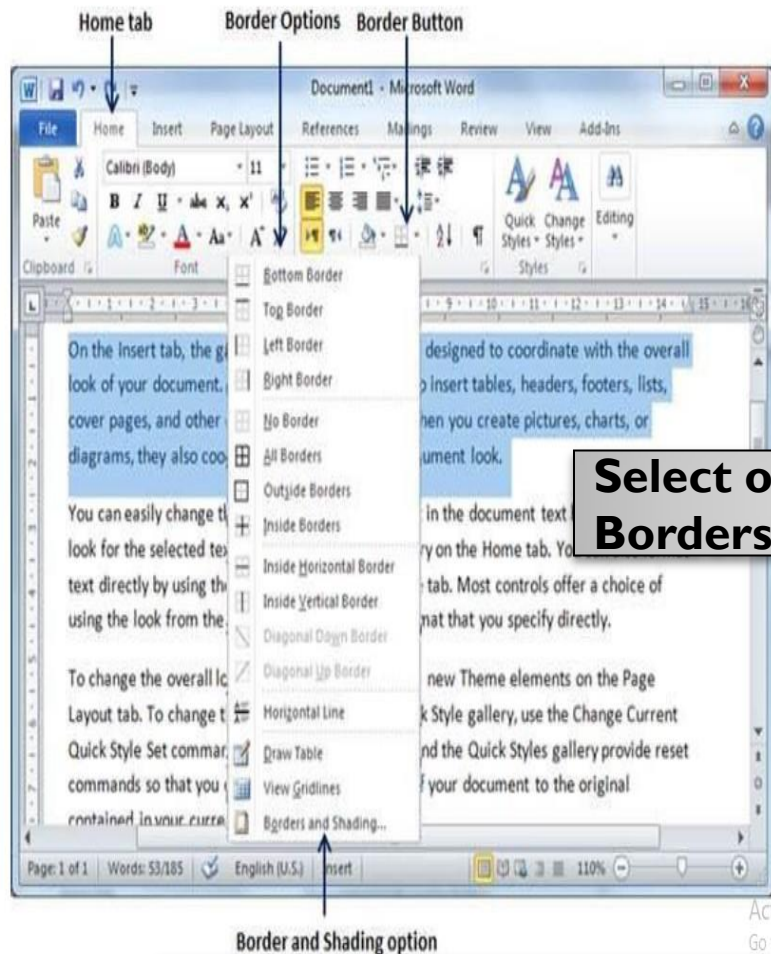
27. Borders and Shades in Word 2010

Microsoft Word lets you to place a border on any or all of the four sides of selected text, paragraphs, and pages. You can also add different shades to the space taken by the selected text, paragraphs, and pages.

Add Borders to Text

There are three steps :-

1. Select the portion of **text or paragraph** to which you want to add border.
2. Click the **Border Button**.
3. Try to add dissimilar borders like **left, right top or bottom** by choosing diverse choices from the **border options**.

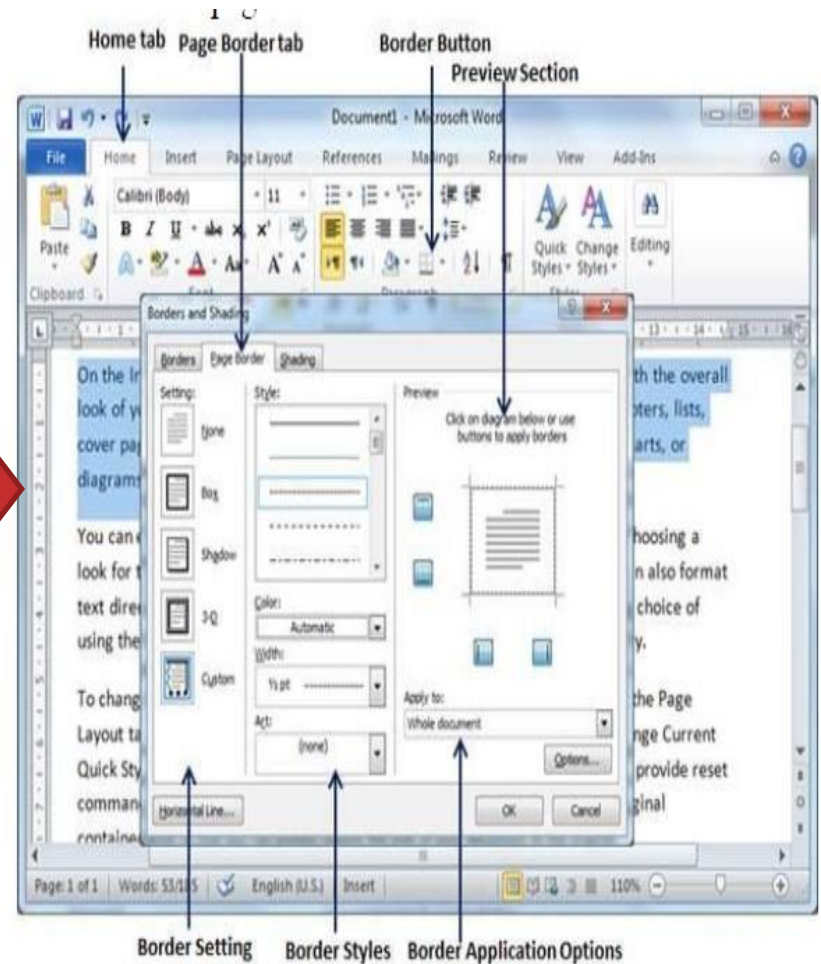
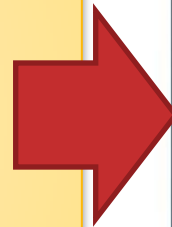


To delete the present border, by select the No Border option from the border options.

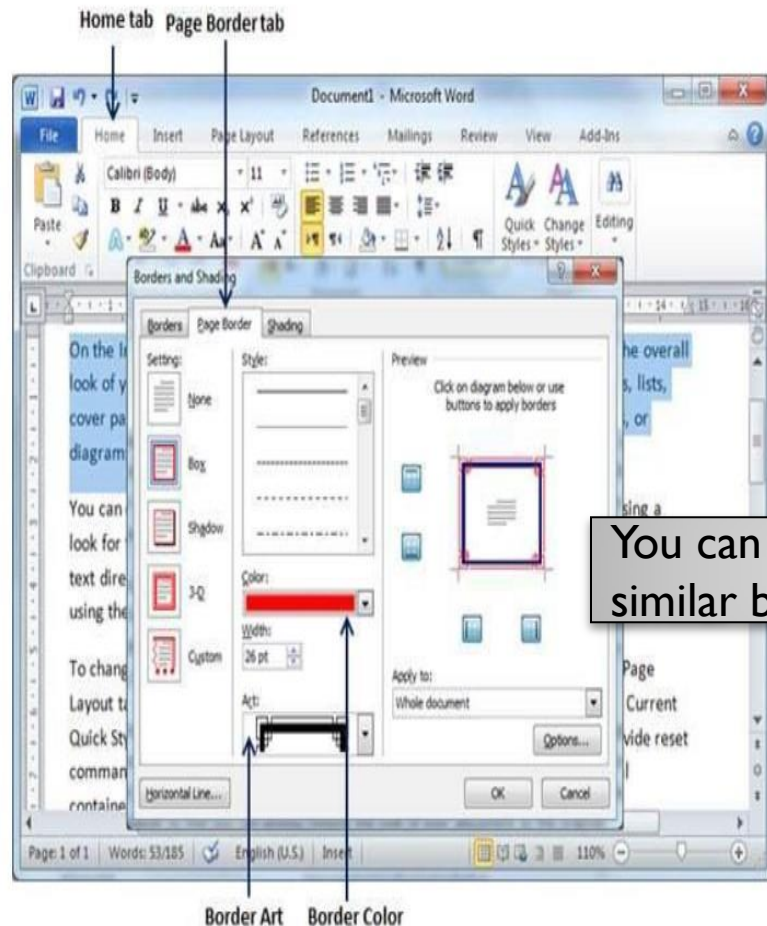
Add Borders to Page

There are three steps :-

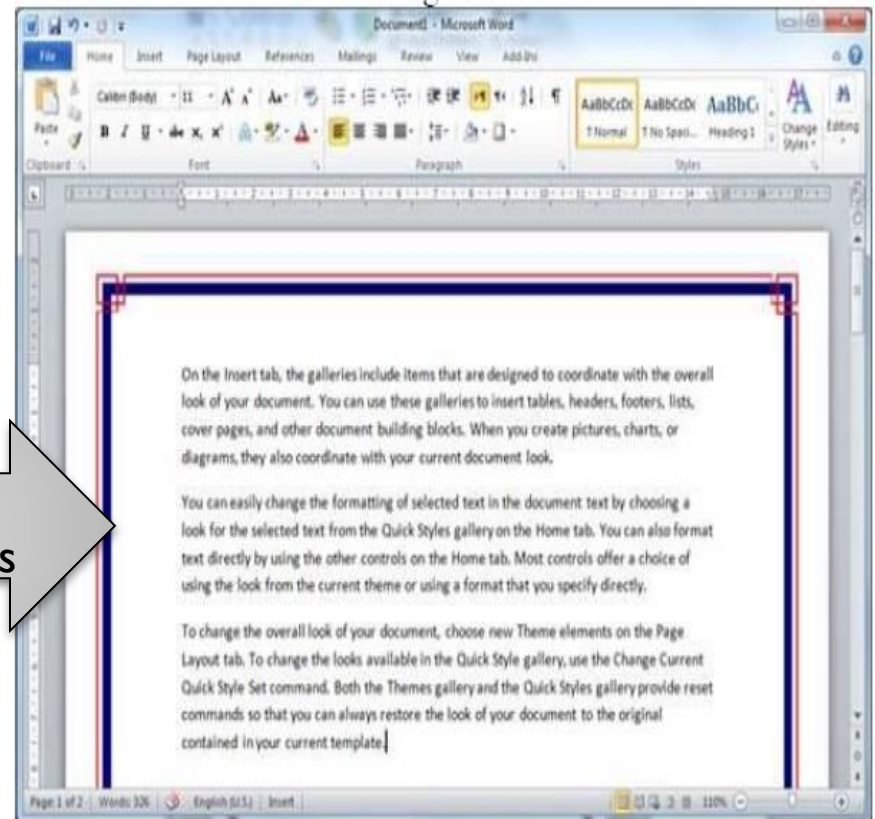
1. Click the **Border Button**.
2. Select the **Border and Shading** option obtainable at the bottom of the list of options.
3. Click the **Page Border tab** which will show a list of border settings, styles and options whether this border should be applied to the whole document or just one page or the first page.



You can modify your border by setting its color, width by using different art available under the style section.



You can have similar borders



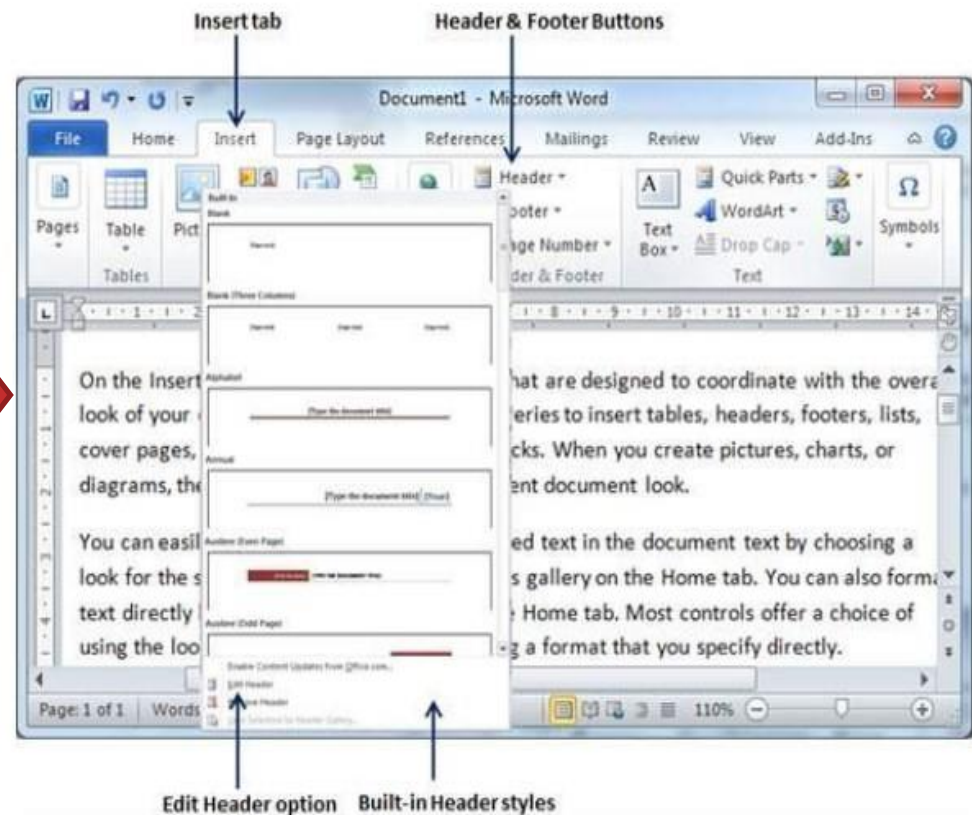
28. Header and Footer in Word 2010

Headers and footers are parts of a file that contain special information such as page numbers and the total number of pages, the document title, company logo, any photo, etc.

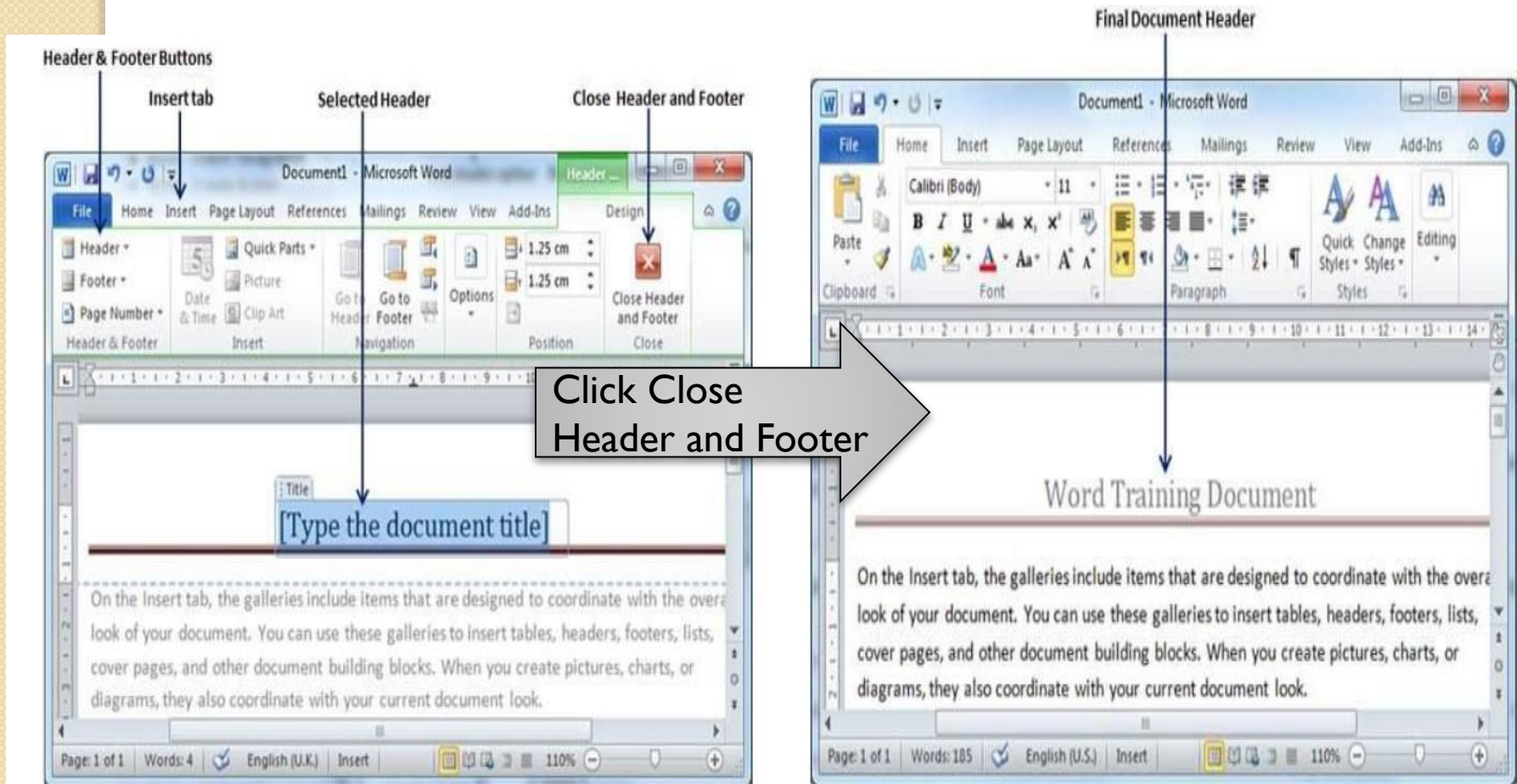
Add Header and Footer.

There are three steps :-

1. Click the **Insert** tab.
2. Click the **Header** button, it will display a list of built-in Headers.
3. Choose any of the headers by simply clicking on it.



Once you choose any of the headers, it will be applied to the document in editable mode and the text in your document will look dimmed.



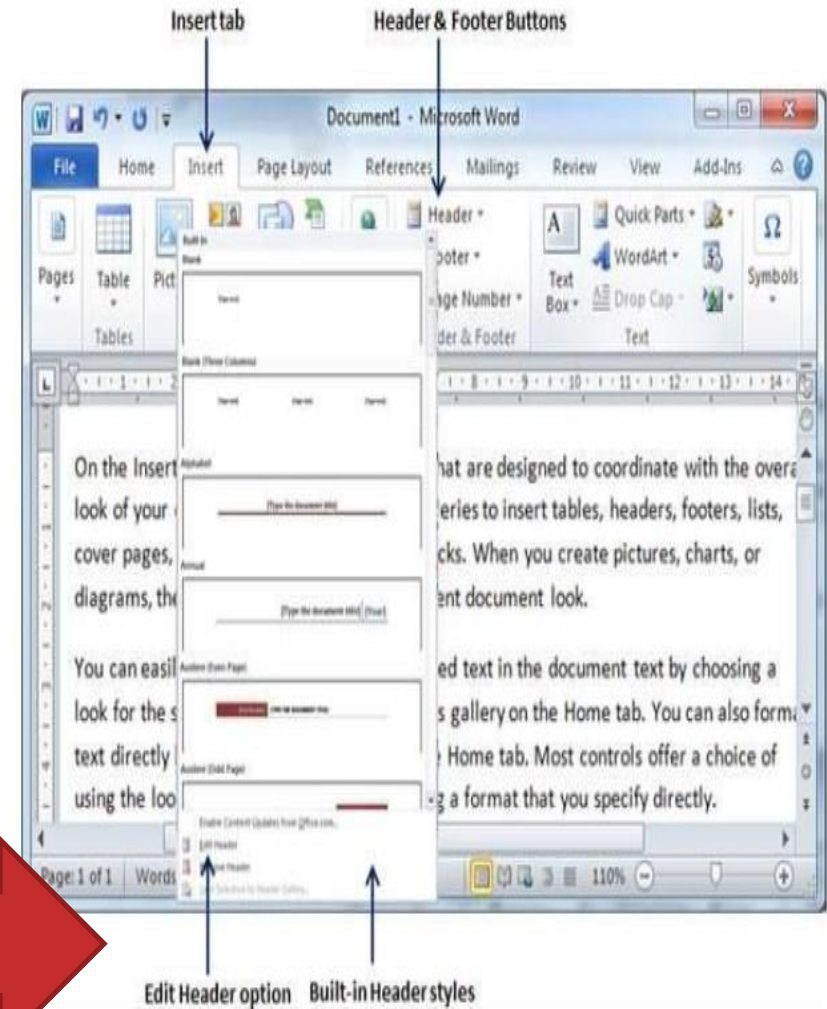
You can follow a similar procedure to add footer in your document.

Edit Header and Footer

I. Click the **Insert** tab.

2. Click either the **Header** button or **Footer** button.

3. Click on the **Edit Header** option.



Now you can edit your file header and once you are done, click **Close Header and Footer** to come out of the edit header mode.



You can follow a alike process to edit the footer in your document.

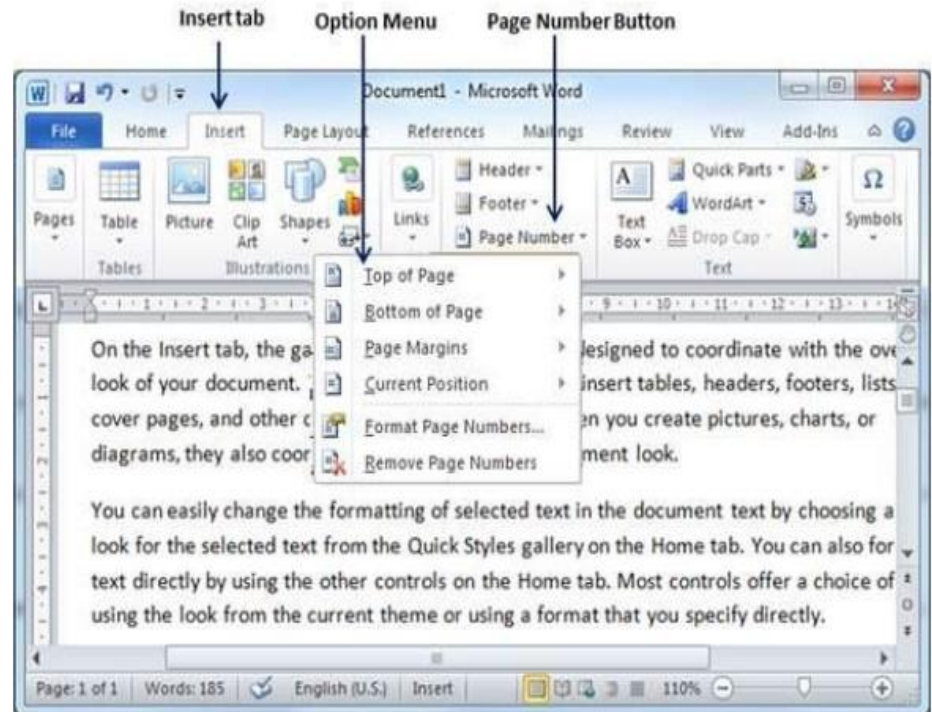
29. Add Page Numbers in Word 2010

Microsoft Word automatically allocates page numbers on the pages of your document. Normally, page numbers are printed either in header or footer but you have the choice that can show the page number in the left or right margins at the top or the bottom of a page.

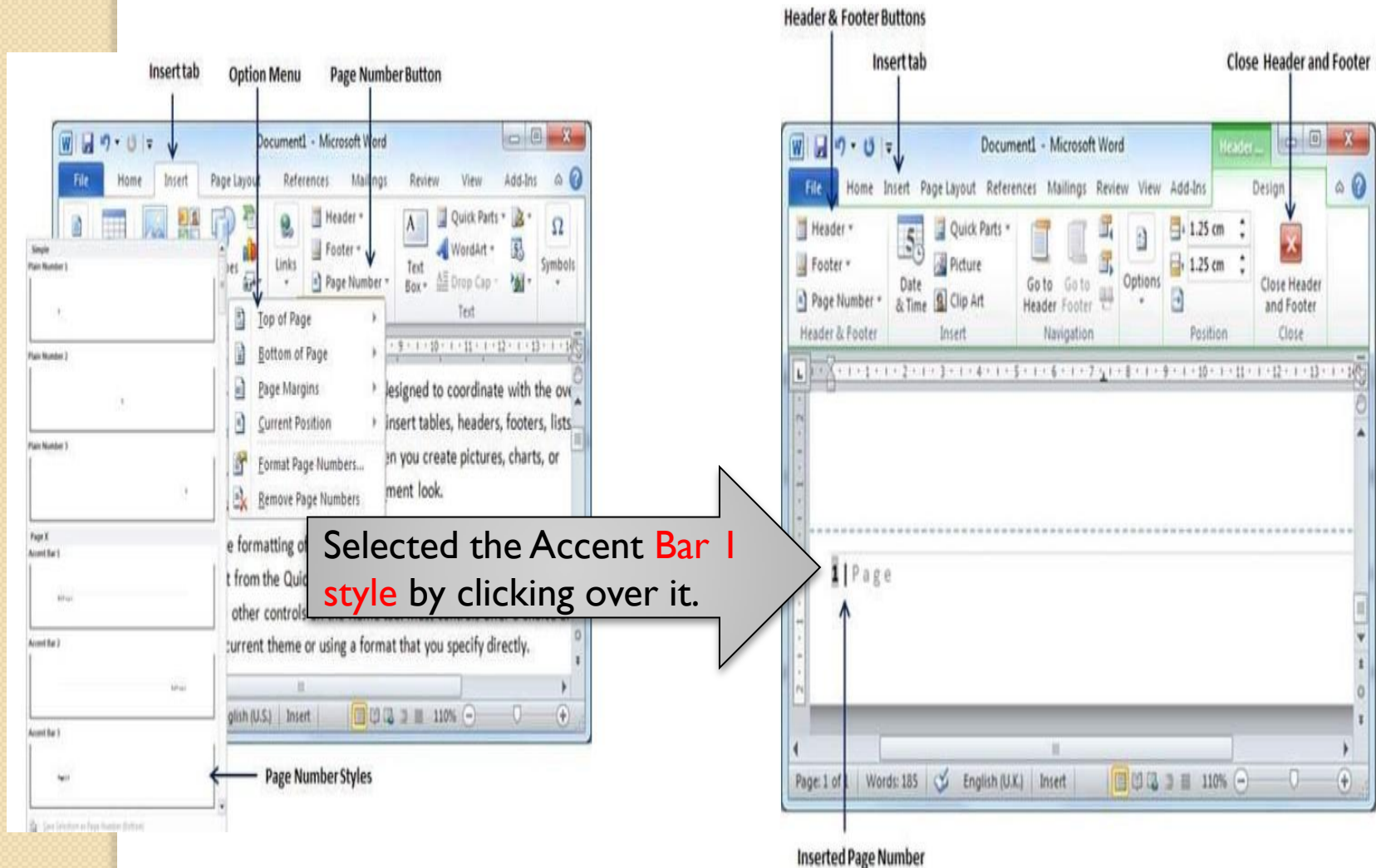
Add Page Numbers.

1. Click the **Insert** tab.

2. Click the **Page Number** button available in the header and footer section.



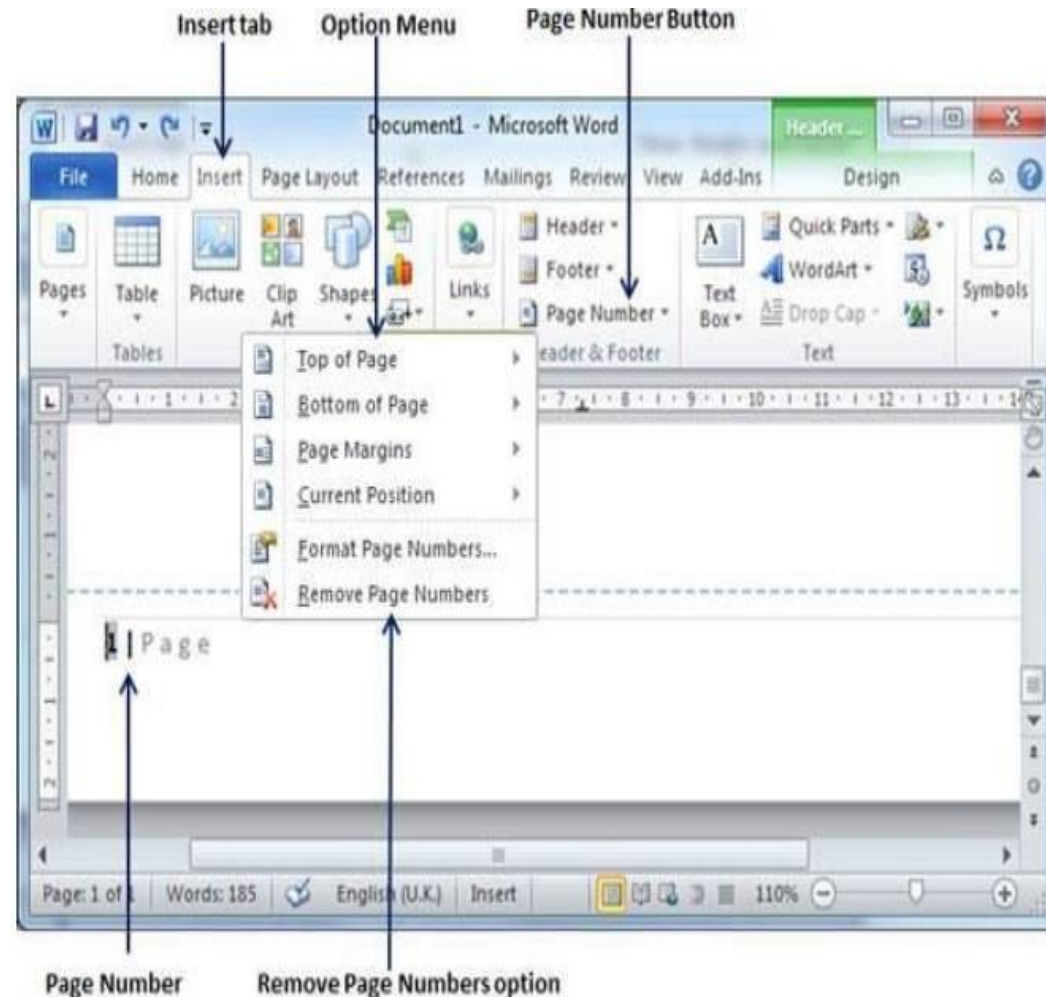
For **Example**, when I take the mouse pointer at the Bottom of Page option it shows the resulting list of styles



Remove Page Numbers

There are three steps :-

1. Click the **Insert** tab.
2. Click the **Page Number** button accessible in the header and footer section.
3. **Remove Page Numbers** option. Just click this option.



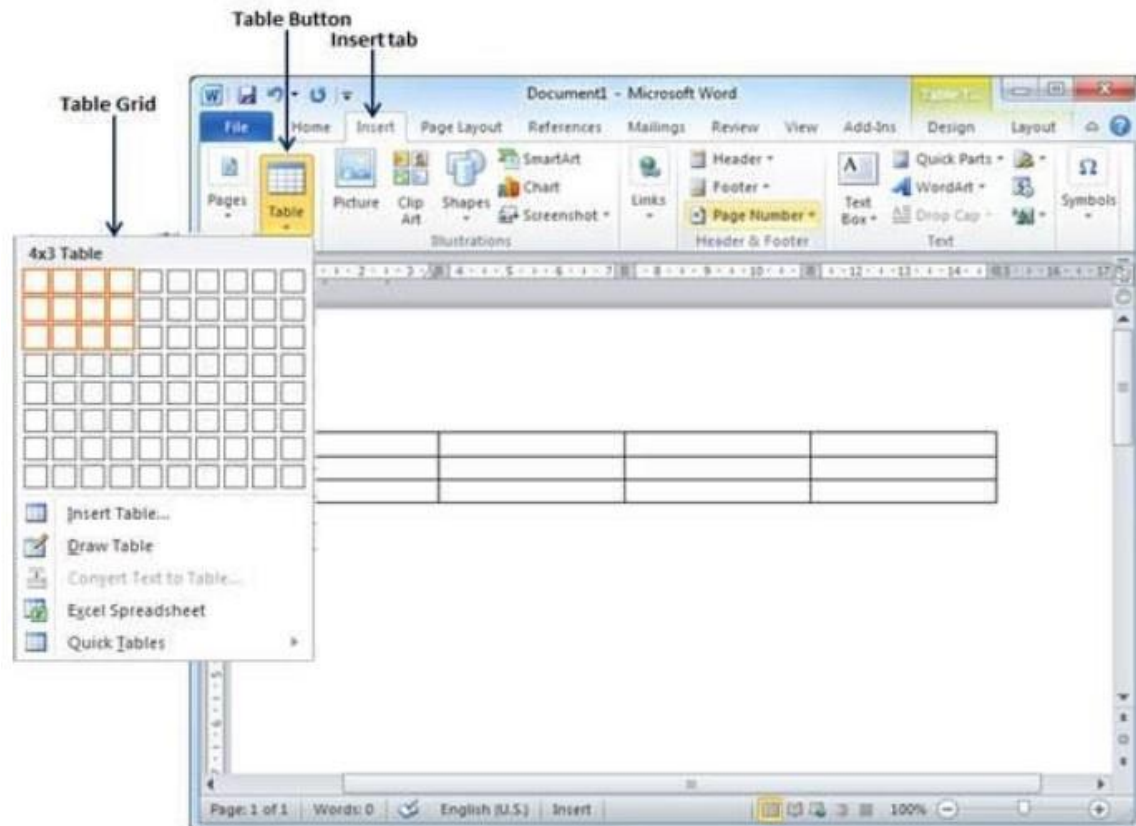
30. Create a Table in Word 2010

A table is a structure of vertical columns and horizontal rows with a cell at every intersection. Each cell can include text or graphics.

Create a Table

1. Click the **Insert** tab followed by the **Table** button.

2. You can make your table having the desired **number of rows and columns**.



3. Click the **square** on behalf of the lower-right corner of your table.

4. Click the **Table Styles** button to show a gallery of table styles.

The image consists of two screenshots of the Microsoft Word interface, illustrating the steps to apply a table style.

Left Screenshot: This screenshot shows the 'Table Styles' task pane on the right side of the Word window. The task pane is divided into two sections: 'Table Style Options' and 'Table Styles'. The 'Table Styles' section displays a 'Gallery of Table Styles' with various pre-designed table styles, each represented by a small table icon with different colors and patterns. An arrow points from the 'Table Styles' button in the ribbon to this gallery.

Right Screenshot: This screenshot shows the 'Table Styles' task pane with a specific built-in style selected. An arrow points from the 'Table Styles' button in the ribbon to the 'Table Styles' section of the task pane. Below the task pane, a table is visible in the document. A large grey arrow points from the text 'Click the built-in table style.' to the table.

Table Style Options:

- ☒ Header Row
- ☒ First Column
- ☐ Total Row
- ☐ Last Column
- ☒ Banded Rows
- ☐ Banded Columns

Table Styles:

- Shading
- Borders
- Draw Borders

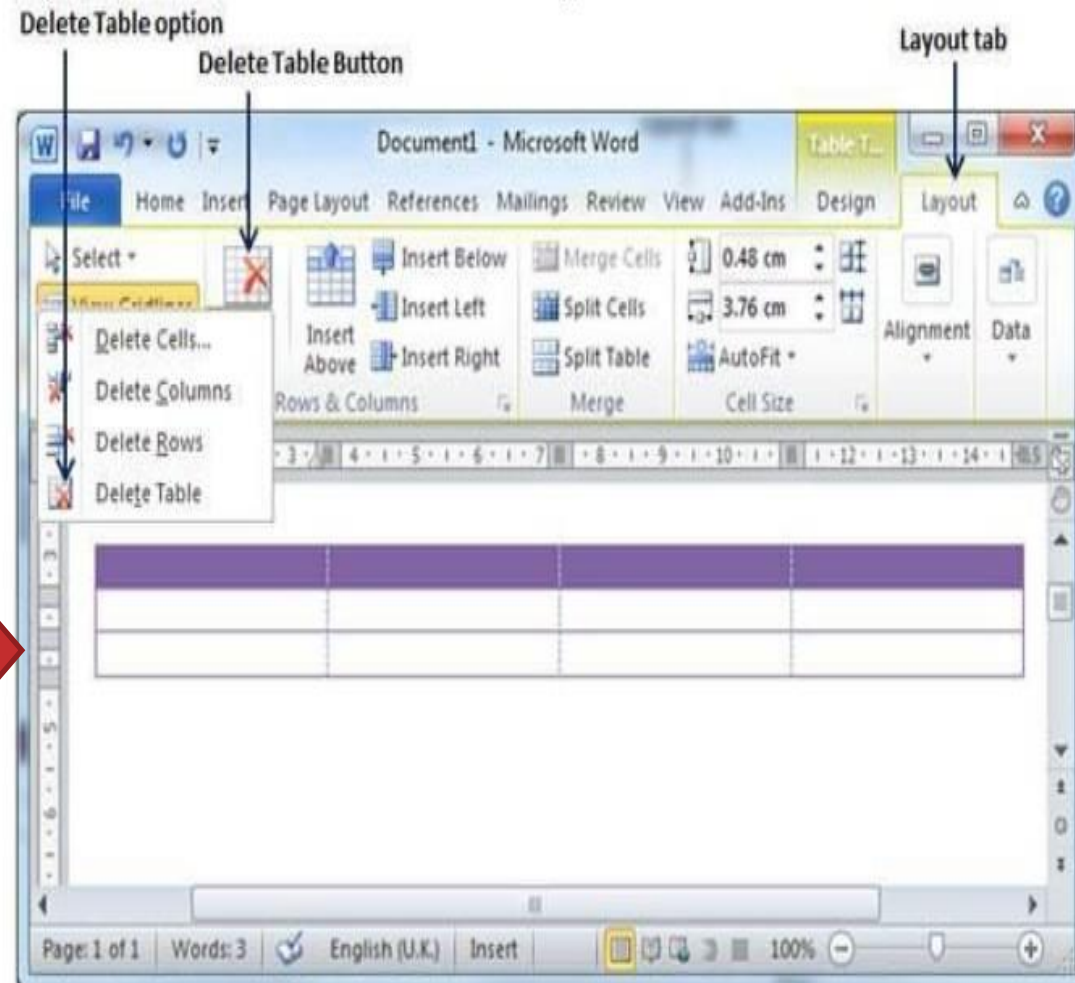
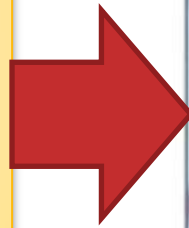
Click the built-in table style.

Delete a Table

There are three steps

:-

1. Click **anywhere in the table.**
2. Click the **Layout tab.**
3. Click the **Delete Table option.**



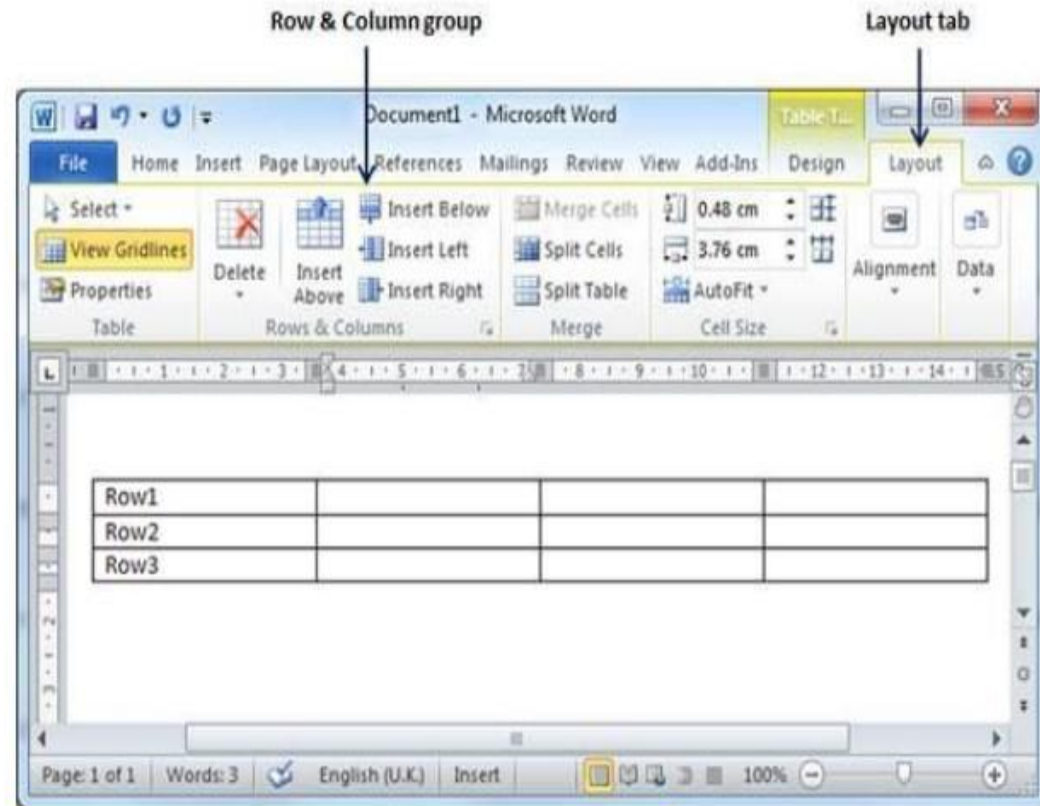
31. Rows & Columns in Word 2010

A Word table can contain as many as 63 columns but the number of rows is unlimited.

Add a Row

1. Click a **row** where you want to add an additional **row**.

2. Click the **Layout** tab.



3. Use the Row & Column group of buttons to add any row **below or above** to the selected row.

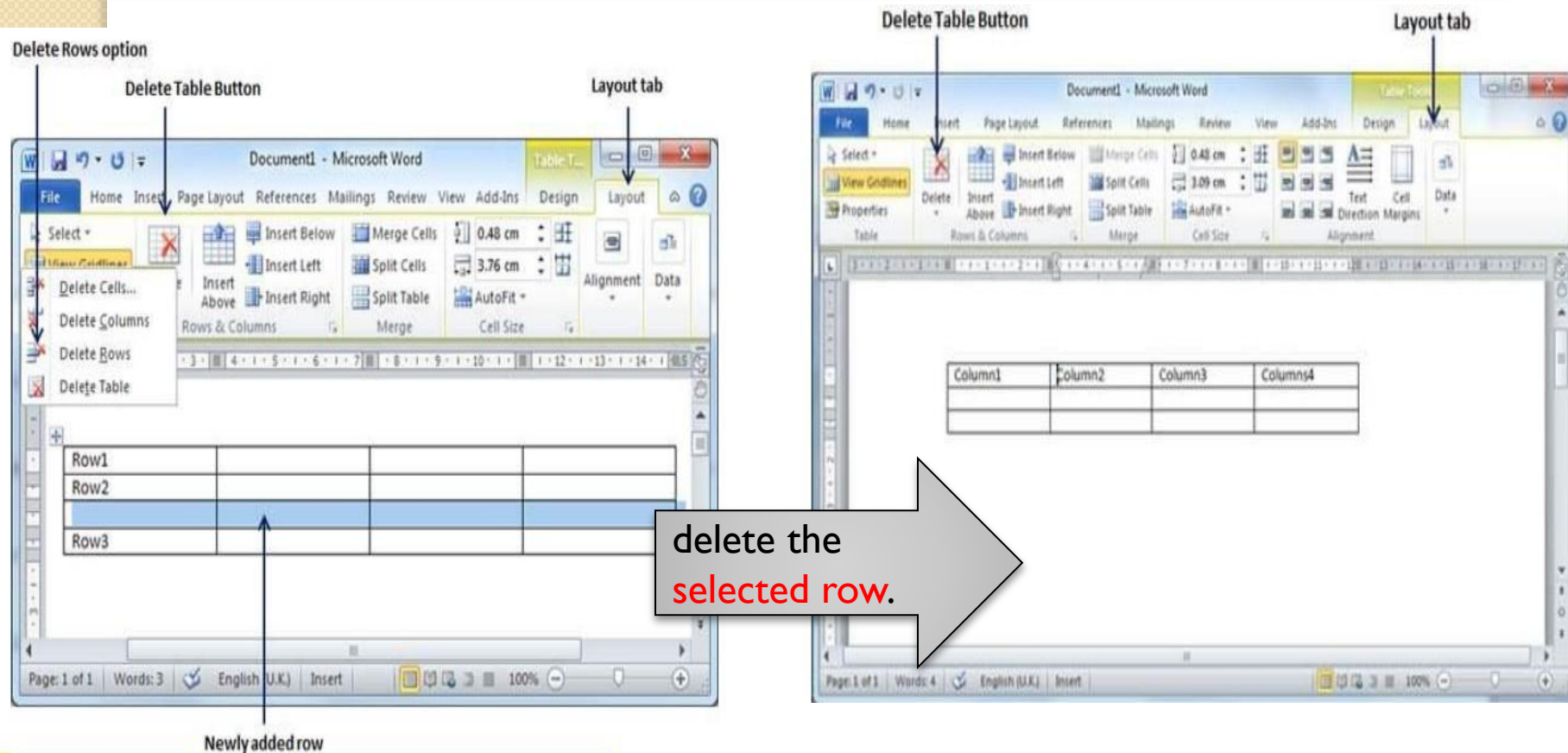
Click the **Insert Below** button, it will add a row just below the selected row.



Delete a Row

There are three steps :-

1. Click a **row** which you want to delete .
2. Click the **Layout** tab.
3. Click the **Delete Rows** option under the **Delete Table Button**.

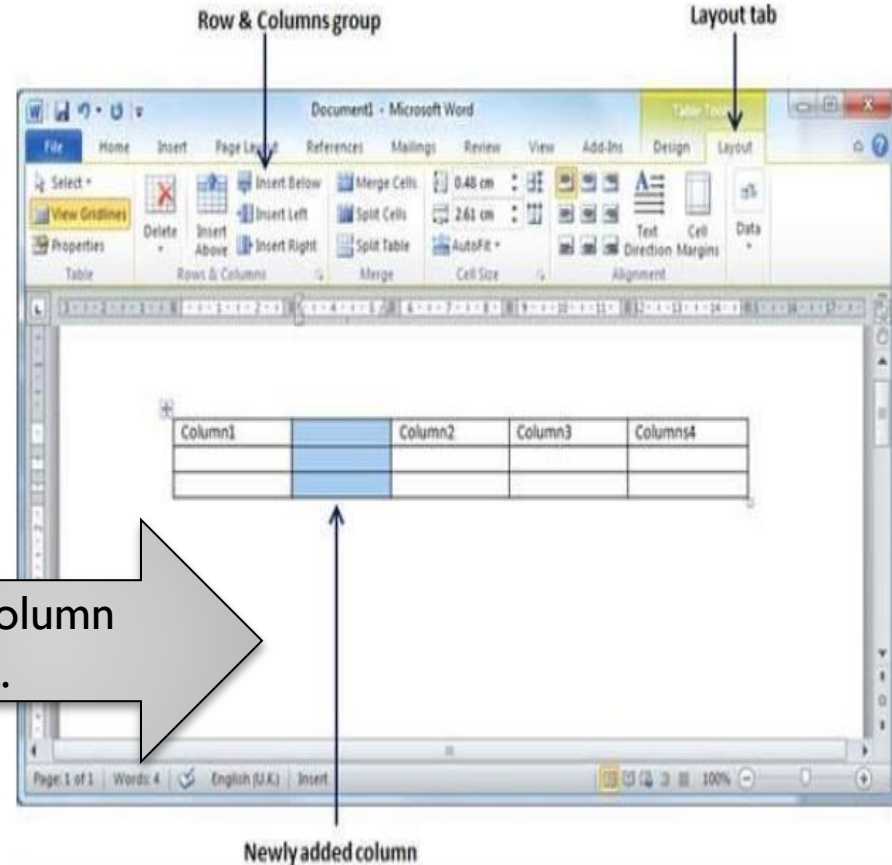
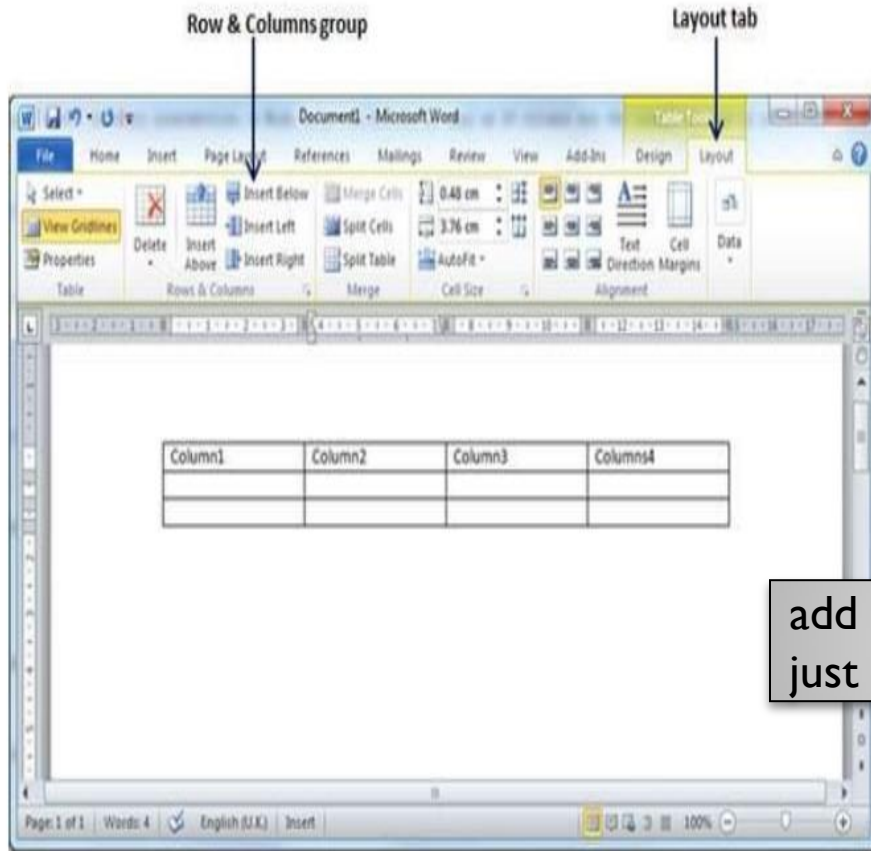


Add a Column

1. Click a **column** where you want to add an additional column .

2. click the **Layout** tab.

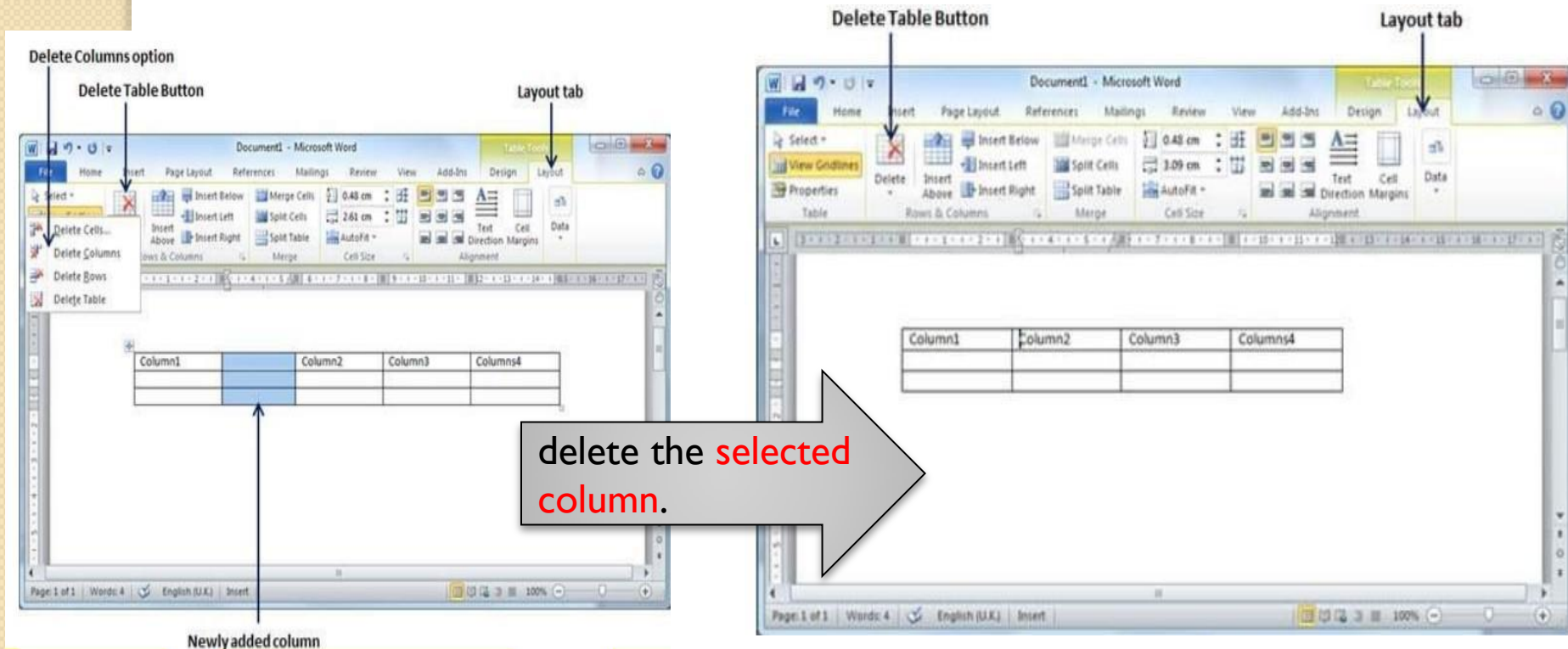
3. Use **Row & Column** group of buttons to add any column to the left or right of the selected column.



Delete a Column

There are three steps :-

1. Click a **column** which you want to delete .
2. Click the **Layout** tab.
3. Click the **Delete Column** option under the **Delete Table Button**.

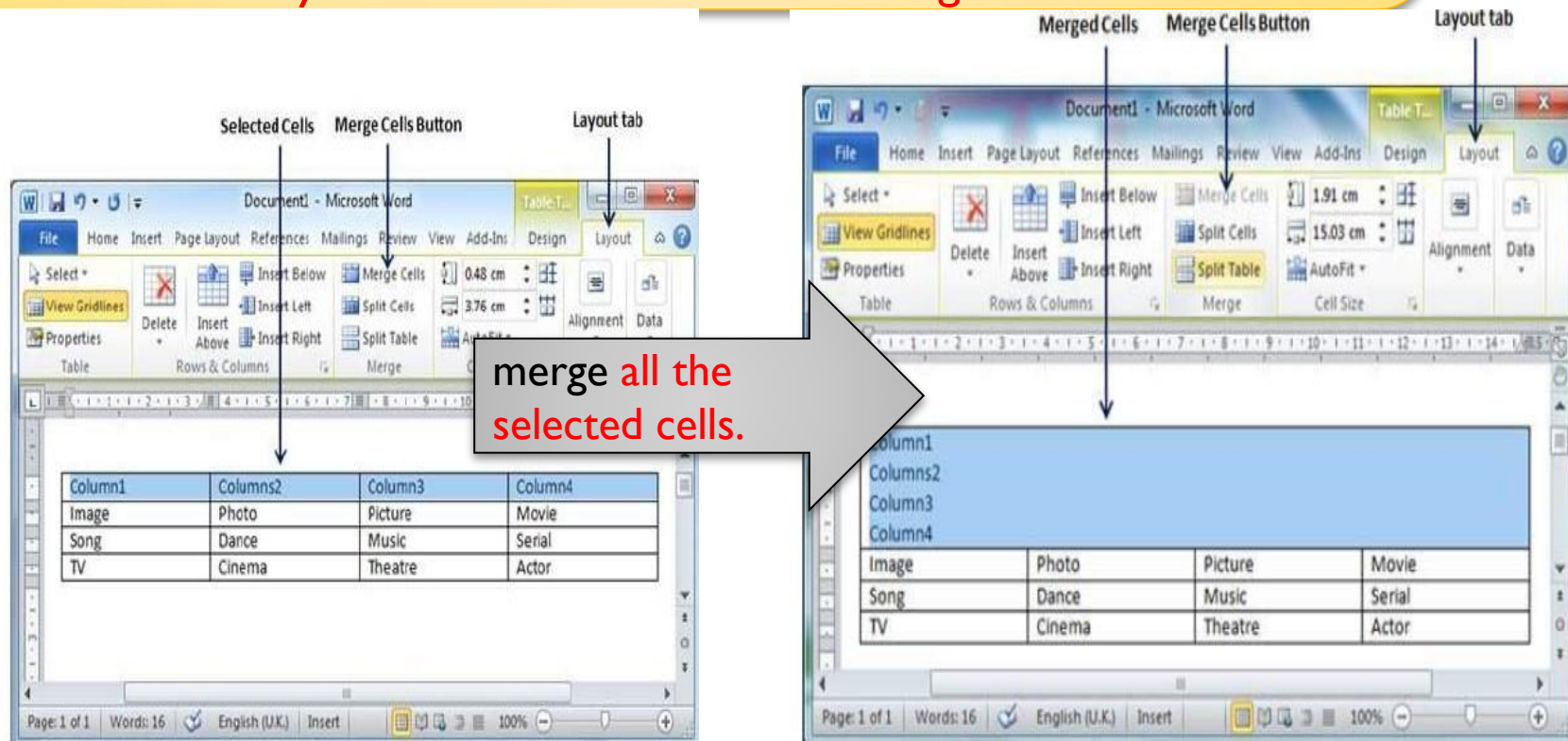


32. Merging Cells in Word 2010

Microsoft Word lets the merging of two or more cells to create one big cell.

There are three steps :-

1. Get your mouse pointer position **inside the first cell**.
2. Press the **Shift** key and click the cells around the cell which you want to merge into the first cell.
3. Click the **Layout tab** and then click the **Merge Cells button**.



Once merging the cells, all the content of the cells will be twisted which you can fix later as you like.