



First lecture

Computer Basics

By lecturer : Assist. Lect. Alaa Omer Najim
Survey department



Lecture 2

DOS & Windows file commands

by: lecturer Alaa Omer Najim

What is a File

- A group of organized data (records) which are assembled for one particular purpose and considered as one unit
- Stored in permanent storage like hard disk, diskettes, etc.

Types of Files

- Files can broadly be categorized into two types:
 - Executable Files
 - Non-Executable Files (Data Files)

What are EXE Files

- Exe Files:
 - Program files that run or execute themselves
 - Have either **COM** or **EXE** or **BAT** as extension

What are Data Files

- Non- executable files that contain only the data that we produce
- Cannot execute themselves
- Need application program to run

What is a Command

- A command is a set of instructions used to perform a specific work
- Interpreted by the OS interpreter to a machine language
 - E.g. `<md Ram>`, `<cd Ram>`, etc.

Windows

- In windows it is very easy to do any action like creating a file or copying, moving, deleting, etc.....
- Because the instructions are executed by clicking on icons and windows unlike Dos operating system.
- Now create a folder and practice all instruction mentioned before ?

DOS Commands

- **Types of DOS Commands**
 - **Internal**
 - **External**
- **Directory**
 - **Root Directory**
 - **Parent Directory**

Types of Command

- Internal Command
 - Those commands which are already loaded in the Command.COM file while switching to the MS DOS
 - E.g. **CLS**, **VER**, **DEL**, etc.
- External Command
 - Those commands which are not loaded when loading the Program but are available in the Disk and can be invoked whenever necessary
 - E.g. **FORMAT**, **TREE**, **XCOPY**, etc.

What is a Directory

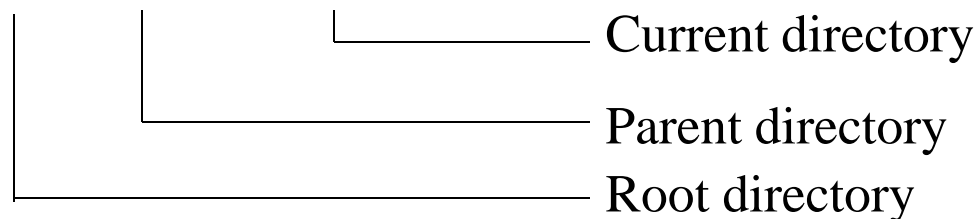
- A directory is a list of file which is itself a file stored in the computer's memory so that users can reference it as it is required
- Also called a catalog of files

Root Directory

- The Root directory is that directory that is automatically created when the disk is formatted
- It is the current drive that we have been working
 - E.g. A:\, B:\ (for Floppy Disk Drive)
 - C:\, D:\ etc. (for Hard Disk Drive)

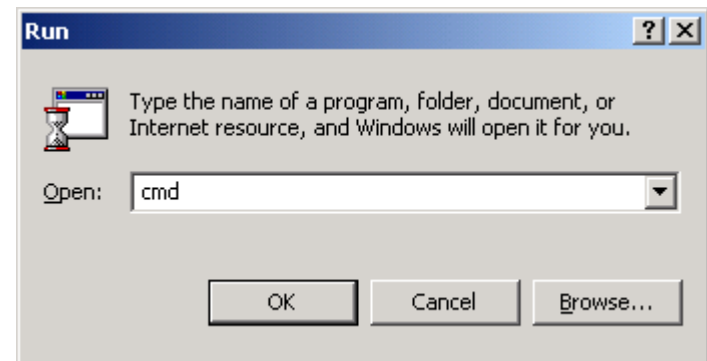
Current / Parent Directory

- Current directory is that directory in which you are currently working
- Parent directory is that directory which is one level up of the current directory
 - E.g. C:\Ram\Hari>



Getting into MS DOS

- To start MS DOS, click on the Start button and choose **Run**
- In the Run dialog box, type **CMD** or **COMMAND** which is the EXE file for MS DOS
- Click on the **OK** button



Listing the Directories and Files in MS DOS

- For listing the Sub-directories and Files within a directory, we use the **DIR** command
- Syntax :
 - **DIR/** [Directory_name]
 - E.g. C:\>DIR/ NCIT
 - Displays all the directories/files within the directory NCIT

- 1. Dir/ah :-Display all hidden files and directories.**
- 2. Dir/a-d : - Display only files.**
- 3. Dir/ad :- Display only Directories.**
- 4. Dir/a/s:-Display all directory and file with subdirectory.**
- 5. Dir/a :- Display All Hidden And Non hidden file and directories.**
- 6. Dir n*.* :Display all file and directory starting with ' n ' alphabet.**

Creating a Directory in MS DOS

- For creating the Directory in MS DOS, we use the **MD** (Make Directory) command
- Syntax:
 - C:\> **MD** NCIT

Changing a Directory in MS DOS

- For changing the directory in MS DOS, we use the **CD** (Change Directory) command
- Syntax:
 - C:\>**CD** NCIT
- Now it appears as:
 - C:\NCIT>

Switching between Directories

- For switching between the directories we use the **CD..** Or **CD** commands
- **CD..** Command switches from the current directory to the Parent directory
- **CD** command switches from the current directory to the Root directory

Creating Files in MS DOS

- For creating the files in DOS, the command **COPY CON** is used
- Syntax:
 - **COPY CON** filename

Note: File name should not exceed eight characters excluding three characters for extension

- E.g. College I.txt
- To save the file press Ctrl+z then Enter

Reading Files in MS DOS

- For reading the Pre-created files in MS DOS, we use the **TYPE** command. It displays all the contents that are in the file.

- Syntax :
 - **TYPE** Filename

Renaming Files

- For renaming the files in MS DOS we use the **REN** Command
- Syntax:
 - **REN** oldfilename newfilename

Deleting Files in MS DOS

- For deleting files in MS DOS we use the **DEL** command
- Syntax :
 - **DEL** Filename

Deleting directories in MSDOS

- For deleting the directories in MS DOS we use the **RD** command
- Syntax :
 - **RD** Directoryname

Note : For removing the directory first the directory should be empty

Checking the Date/Time

- For checking the date from the system in MS DOS, we use the **DATE** command. It returns the current system date.
- Similarly, the **TIME** command returns the current time from the system.
- Syntax :
 - C:\>**DATE**
- E.g. C:\>**DATE**



External Commands

Those commands which are not loaded when loading the Program but are available in the Disk and can be invoked whenever necessary

E.g. **FORMAT**, **TREE**, **XCOPY**, etc.

The FORMAT Command

- The **FORMAT** command prepares a new disk for use by organizing the disk into magnetic tracks and sectors
- Syntax :
 - A:\>**FORMAT** [Drive_name]
- E.g.
 - C:\>**FORMAT** A:

The TREE Command

- The TREE command is used to display all directory pathnames on the specified disk
- Syntax :
 - C:\>**TREE** [disk_name]
- E.g.
 - C:\>**TREE** A:

The EDIT Command

- The **EDIT** command in MS DOS is used to edit the files. It provides a different full screen Editor window with a few menu options.
- Syntax :
 - C:\>**EDIT** [filename]
- E.g.
 - C:\>**EDIT** file1

The PRINT Command

- The **PRINT** Command in MS DOS is used to print the text files
- Syntax :
 - **PRINT** Filename
- E.g.
 - **PRINT** File1.txt

Types of Computers

- Supercomputers...are used to process very large amounts of information including processing information to predict hurricanes, satellite images and navigation, and process military war scenarios.
- Mainframes...are used by government and businesses to process very large amounts of information.
- Mini-Computers...are similar to mainframes...they are used by business and government to process large amounts of information.
- Personal Computers (PC)...



- **Personal Computers**

Personal Computers...also known as PC's...are smaller and less powerful than the others. They are used in homes, schools, and small businesses.

Types of PCs

There are 2 main types of PCs

- Desktop
- Portable (Notebook/Laptop)

When portable (notebook/laptop) computers were first created they were HUGE. They weighed around 100 lbs., and were carried in a large luggage suitcase. The creators of the portable (notebook/laptop) computer dreamed that one day it would be the size a notebook or pocket dictionary. With today's technology, we have been able to accomplish this goal and more..



Parts of a Computer

There are two basic parts that make up a computer... •

Hardware



Software



Hardware

Hardware is basically anything that you can touch with your fingers. •

Computer Case

CPU (central processing unit...Pentium chip)

Monitor

Keyboard & Mouse

Disk Drive, Zip Drive, CD-ROM, DVD,

Hard Drive

Memory (RAM)

Speakers

Printer

Hardware (Continued)

There are three •
types/categories of
hardware

1. Input Devices
2. Output Devices
3. Storage Devices



Input Devices

Input basically means getting data into the computer to be processed. •

Keyboard, Mouse,
Trackball, Touch Pad
Light Pen, Laser Scanner,
Pointing Stick
Touch Screen,
Bar Code Reader, Scanner
Microphone, Joystick



Output Devices

Output basically means getting data out of the computer. •

Monitor
Printer
Speakers
Headphones
Modem
Fax



Storage Devices

- Storage devices are both input and output devices in one. A storage device is a place to keep data that has been processed so that it can be retrieved at a later time to be used again.

Hard Disk

Floppy Disk

CD's, DVD's

Magnetic Tape

Flash Memory, Jump Drive

Software

- Software is the programs and applications that tell the computer what to do and how to look.
- Computer programmers write the codes/instructions that make-up software applications/programs.
- HTML is a type of computer programming language that allows programmers to make web pages.
- The next 2 slides show what HTML codes look like and the web page the codes produce.

Two Types of Software

Application Software •



Operating System •
Software



Operating System Software

- Directs all the activities and sets all the rules for how the hardware and software will work together.

Examples would be:

DOS, Windows 95, 98, ME, NT, XP,
Vista, Windows 7

Unix, Linux,

MAC system OS 6,7,8,9,10

Command Line Operating Systems

DOS is an example of a command line operating system.

On the next slide, Notice that there are no:

- Icons (pictures)
- Colors
- Mouse Pointer
- Buttons
- You have to memorize commands in order to use this text based operating system.

```
C:\WINDOWS>dir h:
```

```
Volume in drive H is USERS  
Directory of H:\TLC FILES
```

```
 .                <DIR>  
 ..              <DIR>  
 HUMANRES SHW    317,952  09-14-01  8:12a Human resources Activity 2.shw  
 HUMANRE0 SHW    196,608  09-17-01  2:08p Human Resources Activity 5.shw  
 HUMANRE1 SHW    135,680  09-18-01  1:46p Human Resources Job Application.shw  
 CASHIER1 SHW    126,976  09-20-01  9:00a Cashiering Lesson 1.shw  
 THELORAX WPD     3,862  08-29-01  2:56p The Lorax.wpd  
 TLCDISCL SHW    167,424  09-19-01 10:57a TLC Disclosure.shw  
 KASH SHW        105,472  09-19-01  1:32p KASH.shw  
 ETHICS SHW       94,208  09-19-01  1:44p Ethics.shw  
 CASHIER0 SHW    200,192  09-20-01  3:26p Cashiering Lesson 2.shw  
 COMPUTER SHW    140,800  09-21-01 11:05a computer basics.shw  
 10 file(s)      1,489,174 bytes  
 2 dir(s)        12,395.44 MB free
```

```
C:\WINDOWS>_
```

Operating Systems: GUI

- **GUI stands for Graphical User Interface**

Uses pictures (icons) to represent files, folders, disk drives, modems, printers, etc.

GUI's were created to make using a computer easier, more interesting, non-threatening to inexperienced users.

A mouse allows users to point at something and click to make it work. With command line you have to have all of the commands to make your programs work.

Here is an example of a GUI

My Computer Adobe ActiveShare Outlook Express

My Documents CorelCity Shortcut to Cdplayer

Network Neighborhood Create CD Windows Media Player

Recycle Bin Gradekeeper

Corel WordPerfect 8 HP PrecisionSc...

Corel Presentatio... MahJongg Master (2)

Corel Quattro Pro 8 Notepad (2)

TLC FILES

File Edit View Go Favorites Help

Back Forward Up Cut

Address **H:\TLC FILES**

TLC FILES

- Cashiering Lesson 1
- Cashiering Lesson 2
- computer basics
- Ethics
- Human resourc...
- Human Resourc...
- Human Resources J...
- KASH
- The Logo
- TLC

Loca

Start | **TLC FILES** | Corel Presentations - [H:\T...

3:01 PM

Application Software

- Programs that work with operating system software to help the computer to do specific types of work.

Application Software

- There are six basic types of application software...

Application Software

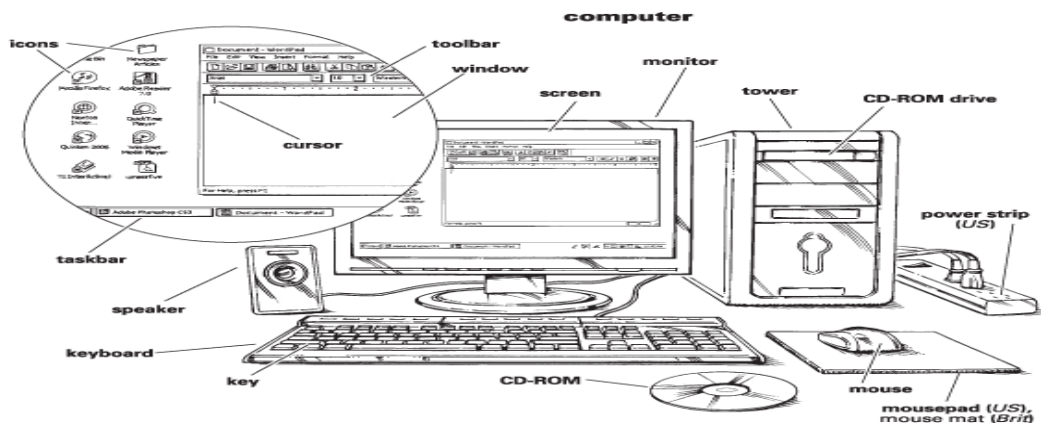
1. Business software: word processors, spreadsheets, and database programs.
2. Communication software: allows computers to communicate with other computers: fax software, Novell NetWare, AOL, Modem Software.
3. Graphics software: software that allows users to create and manipulate graphics...Photoshop, Print Shop, etc.

Application Software

4. Education and Reference software: Programs that help teach new material and ideas, and programs that can be used to find information... Worldbook Encyclopedia,
5. Entertainment and Leisure software... Age of Empires, Barbie Design Center, Solitair
6. Integrated software: Combines several types of software into one program or package... Print Shop (Graphics/Word processor).

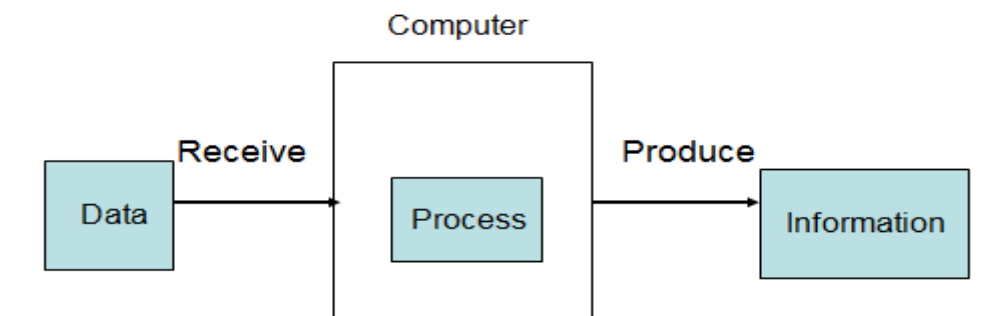
Introduction To Computer:

A computer : is a general purpose device that can be programmed to carry out a set of arithmetic or logical operations. A computer is really a system of many parts working together. The physical parts, which you can see and touch, are called hardware. (Software, on the other hand, refers to the instructions, or programs, that tell the hardware what to do.)



Computer operations:

1. **Receive input** (Data raw facts).
2. **Process data according to predefined instruction.**
3. **Produce output** (information which is meaningful data)



Computer Components:

- There are many parts that work together to make a computer work.

Hardware:

- Physical parts of the computer, including processor and memory chips, input/output devices, tapes, disks, modems, cable, etc.

Three main group will be studied in details:

Central Processing Unit (CPU).

Memory (primary && secondary).

I/O devices.

A. CPU :

- CPU (Central Processing Unit) process the data that had entered by one of input devices. also called (microprocessor).
- It's the brain of Computer.
- It's speed is measured by MHz (Mega Hertz).
- Consists from one or more chips and circuits
- Determine how powerful and fast is the computer



Parts of a CPU:

1. Arithmetic and Logic Unit (ALU):

Performs arithmetic operations and logical operations. and control the speed of those operations.

2. Registers: are (Immediate Access Memory)

- locations used by the ALU to store the data in execution.

- And to store Program instructions which are used by the Control Unit

3. Control Unit (CU):

Supervises all operations inside the PC, (Tells the rest of computer system how to carry out a program's instructions.)

B.Memory:

The computer stores data and information into special places called memory, this memory enables the user to get his data whenever he want.

There are two main types of computer's memory:

Primary memory.

1. **RAM** (Random Access Memory) ,is the location where data and programs are stored (temporarily) ,RAM is volatile, means that the data is only there while the power to the computer is turned on(when the computer is shut off, the content of RAM is erased).
2. **ROM:** (read only memory): It is another part of the main memory. That has a very small capacity main memory, keeps instructions, which make the computer work when turning it on. It is not volatile , The computer cannot write on it.

Secondary memory.

This memory is used to keep software, programs and data permanently. Also called(Storage Devices, Secondary Storage System, External Storage).

1-Hard Disk : is the most important storage media in the computer system , it keeps software and programs it is composed of several magnetic disk,Have different sizes.

2-Floppy disk: is small and portable magnetized disk in plastic case , It is used to transfer files from one computer to another it is slower than the hard disk

3-CD-ROM (compact disk read only memory): is an optical disk which uses laser to read information, It is suitable for storing multimedia software, needs a special device to write and read from it

4-USB flash drives : Are compact and easy to use that are similar to hard drives, can be put in pockets or around neck or in a keychain

Data Representation in the Memory

Bit : 1 or 0 (binary form).

Nibble: 4 bits (a half of byte).

Byte: A group of 8 Bits, Memory unit represent 1 character, it is used to measure the memory capacity.

Kilobytes(KB): about 1000 byte exactly it is1024 Bytes.

Megabyte(MB): about 1 million byte exactly it is1024x1024 Bytes.

Gigabyte(GB): about 1 billion byte exactly it is1024x1024x1024 Bytes.

Terabyte(TB): about 1 trillion byte exactly it is1024x1024x1024x1024 Bytes.

C- Input/ output Devices:

Input device : Allow you to input data to the computer.

Key Board: contains the (Characters, Numbers, Symbols, Functions and specialized keys.

Mouse: A small hand-held device. When it is moved, a rolling ball on the underside transmits information to move the pointer.

Touch Pad: It is a touch-sensitive device. When the finger moves on its surface, the Pointer will move. It is Usually used in laptops and some keyboards

Scanner :Converts page contents text, image into electronic signals. These signals can then be stored in a computer and manipulated. It can also be used to read bar codes.:

Microphone : used to record the sound on the computer or input spoken text into the word processor.

Digital Camera: the same as traditional camera but use the flash or disk to store images. Can be connected to computers.

Output device: Allow you to output information from computer.

Screen (monitor): display the work being done by the CPU, display the result of the processing, display texts, graphics, images, forms and so on.

Printers: used to print the soft copy (data) to hard copy on papers.

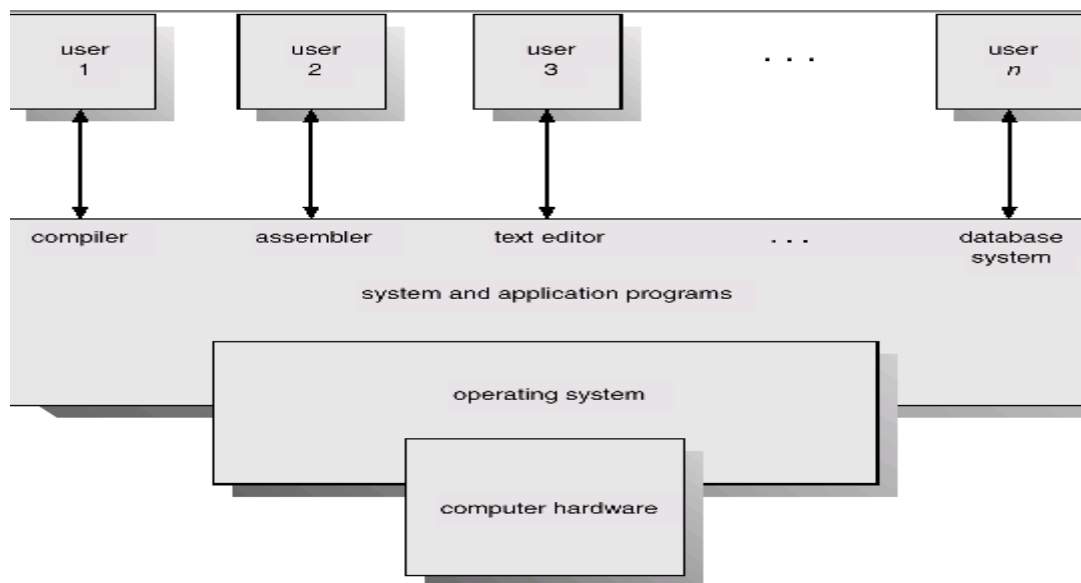
Speakers: used in multimedia to produce sounds.

Operating System

Operating System (OS): is a collection of software that manages computer hardware resources and provides services for computer programs.

Operating System : a program that controls the execution of application programs and acts as an interface between the user of a computer and the computer hardware.

Operating System : acts as a general manager supervising the activity of each component in the computer system.



Types of operating systems

1. Real-time

A real-time operating system is a multitasking operating system that aims at executing real-time applications. Operating system switches between tasks based on their priorities.

2. Multi-user

A multi-user operating system allows multiple users to access a computer system at the same time. Time-sharing systems and Internet servers can be classified as multi-user systems as they enable multiple-user access to a computer through the sharing of time.

3. Distributed

A distributed operating system manages a group of independent computers and makes them appear to be a single computer. The development of computers that could be linked and communicate with each other gave rise to distributed computing. When computers work together, they make a distributed system.

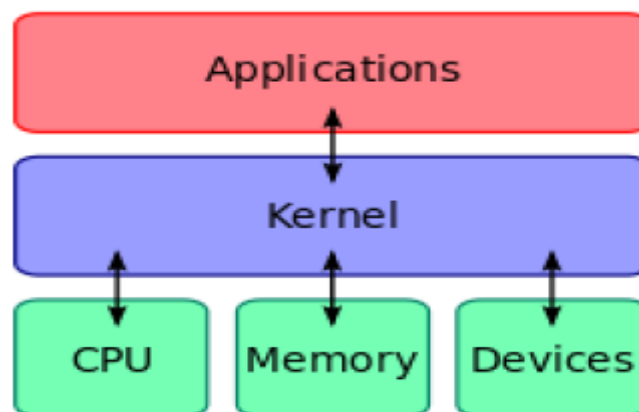
4. Embedded

Embedded operating systems are designed to be used in embedded computer systems. They are designed to operate on small machines like PDAs (A personal digital assistant). They are able to operate with a limited number of resources. They are very compact and extremely efficient by design. Windows CE and Minix 3 are some examples of embedded operating systems.

The components of an operating system all exist in order to make the different parts of a computer work together :

Kernel

The kernel is a computer program that manages input/output requests from software and translates them into data processing instructions for the central processing unit (CPU).



Memory management

The kernel has full access to the system's memory and must allow processes to safely access this memory as they require it.

Device management

The kernel access to the (input and output devices) through device drivers. A device driver is a computer program that enables the operating system to interact with a hardware device. It provides the operating system with information of how to control and communicate with the hardware parts.

System calls

A system call is how a program requests a service from an operating system's kernel that it does not normally have permission to run. System calls provide the interface between a process and the operating system

Microsoft Word

Introduction

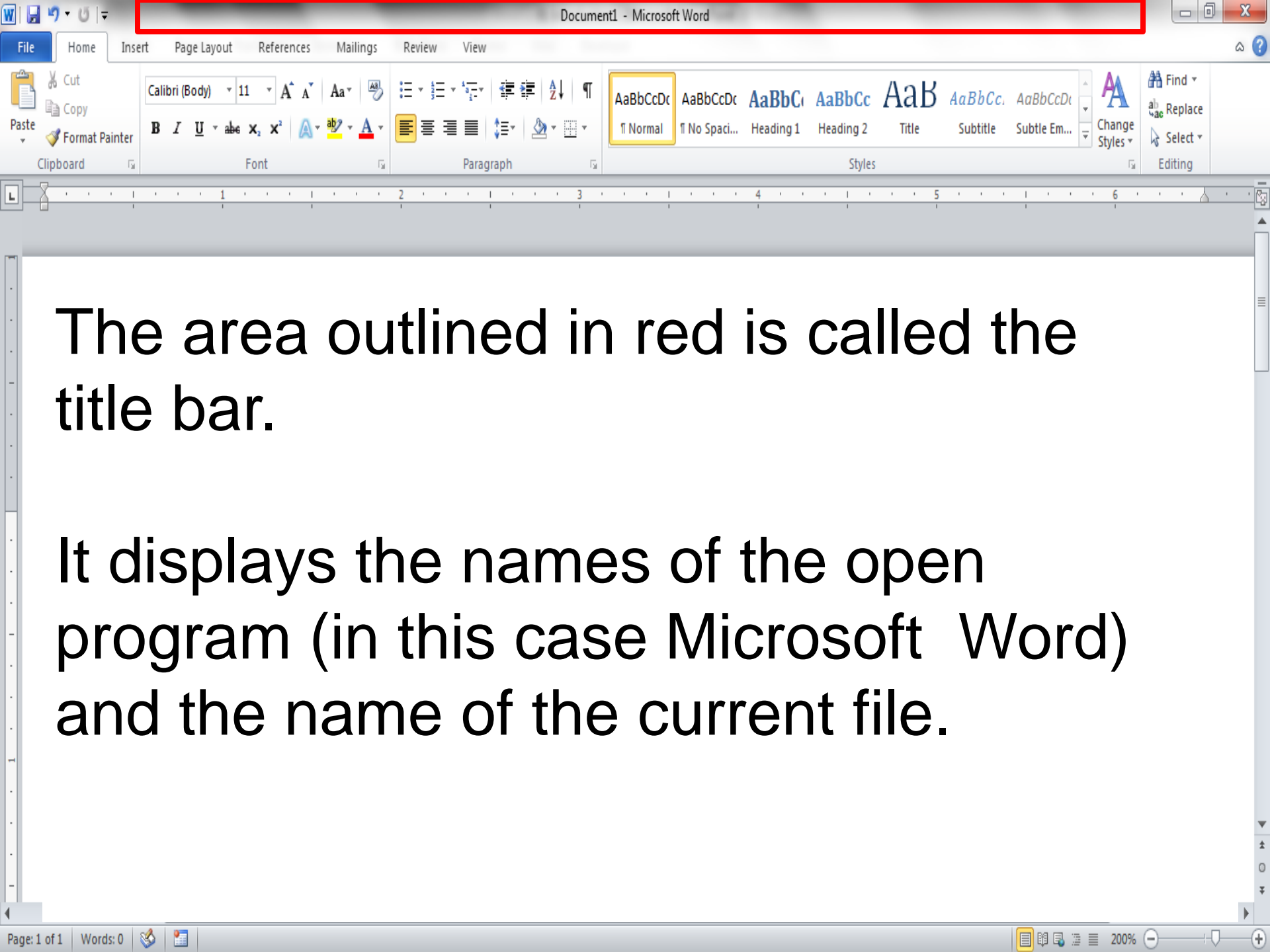


Microsoft Word...

...is the word processing component of the Microsoft Office Suite.

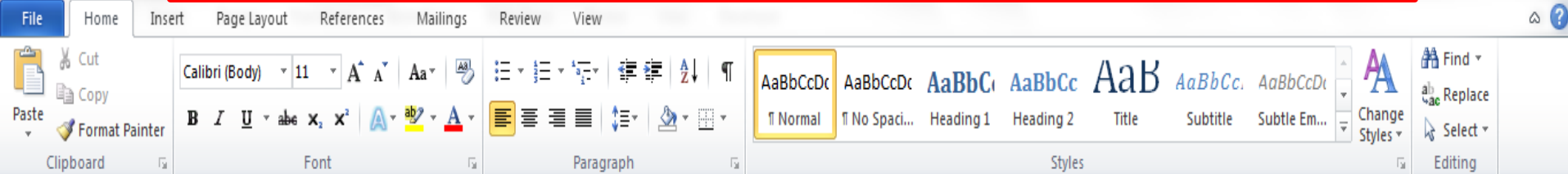
It is used primarily to enter, edit, format, save, retrieve and print documents.





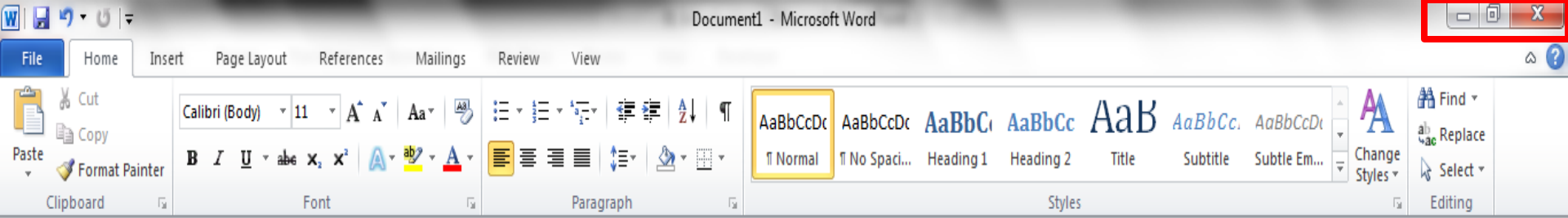
The area outlined in red is called the title bar.

It displays the names of the open program (in this case Microsoft Word) and the name of the current file.



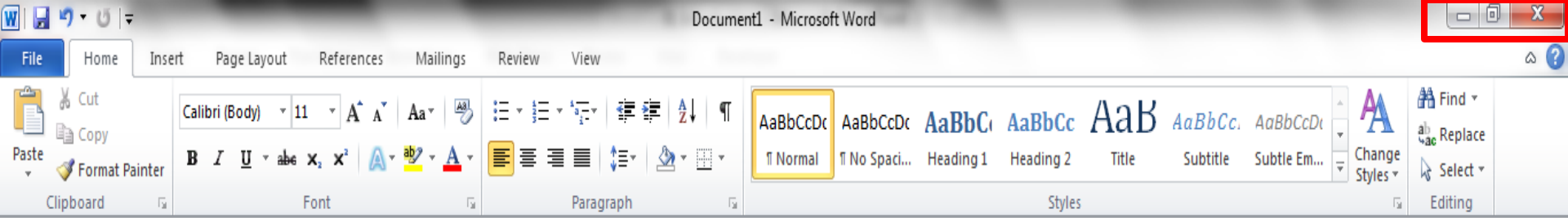
This file has not yet been saved so its name is Document1.

Files created in Microsoft Word are often referred to as documents *and* have the file extension .doc or .docx



The area outlined in red contains the minimize, maximize/restore and close buttons for the program window.

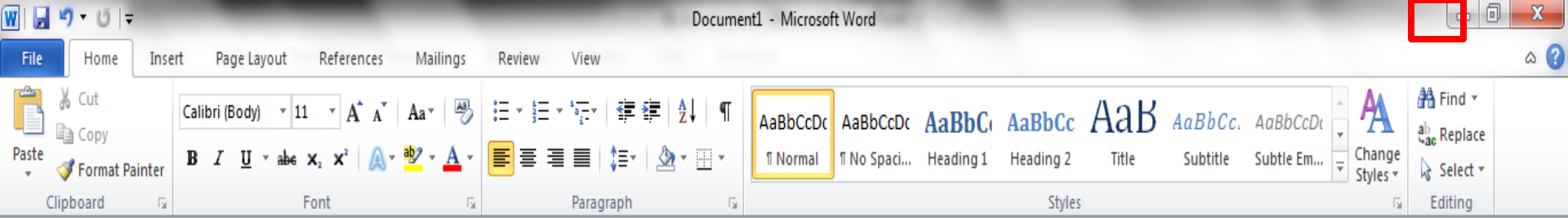




These three buttons are on almost every window that opens in a Windows based platform.

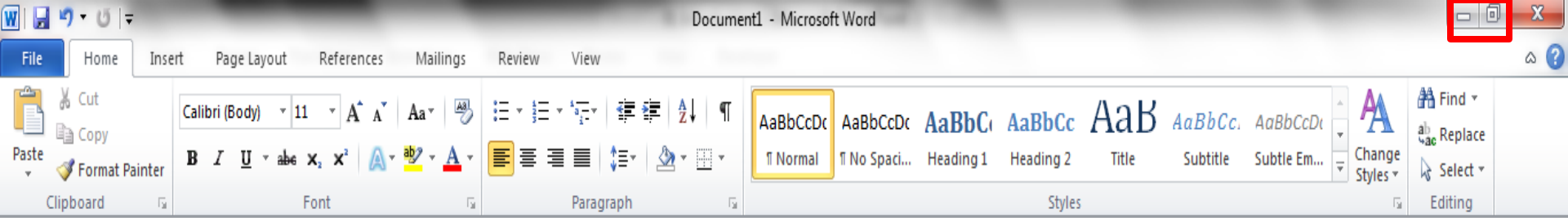
They are on Mac windows as well, but they are circles instead of squares.





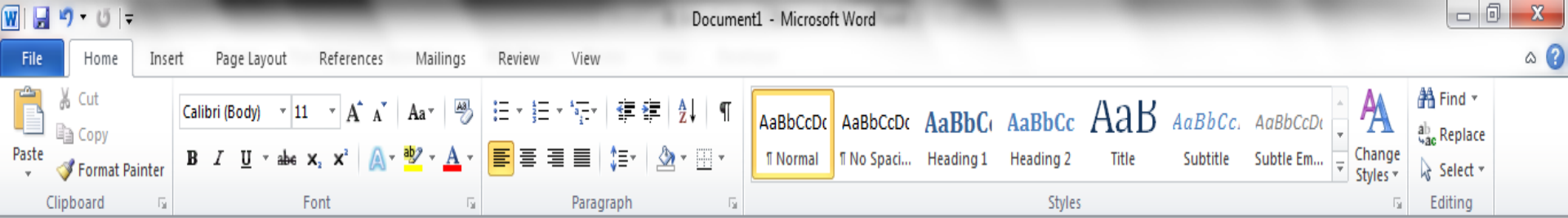
When you click the **minimize** button the program becomes a button on the Windows taskbar located at the bottom of the screen.



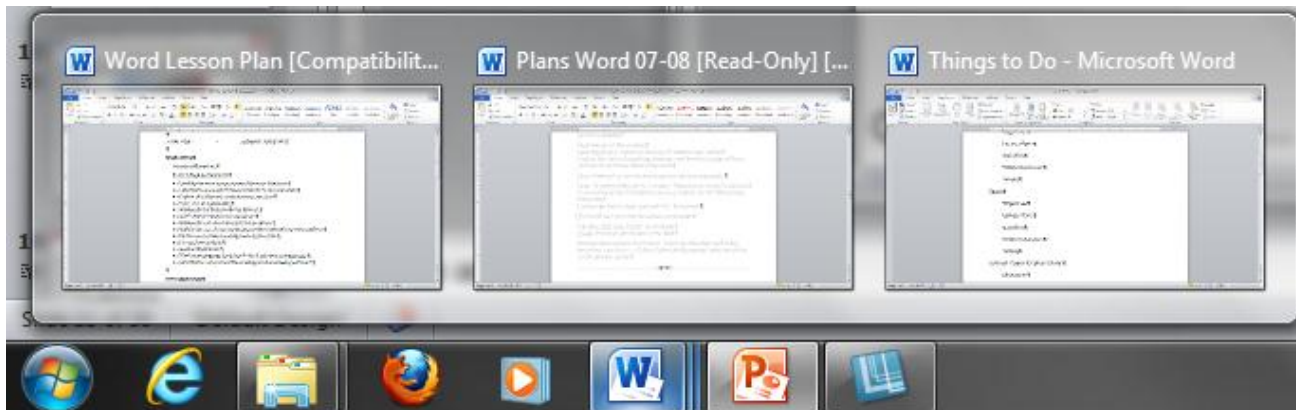


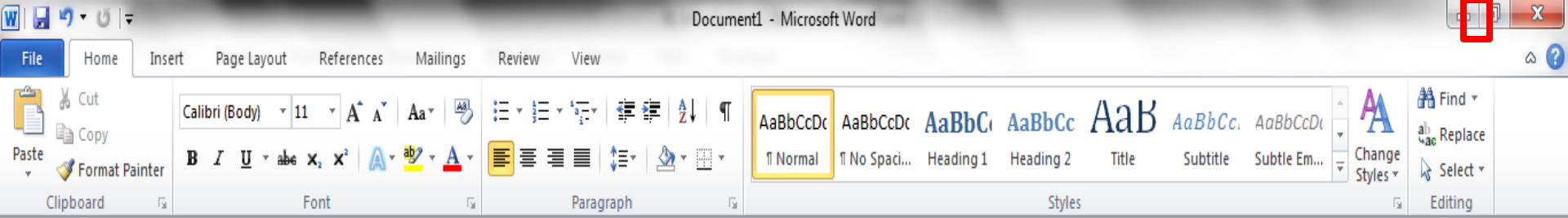
You can restore the document to its original shape and size by either: Clicking on the button on the task bar one time to restore it to active mode,





If you have multiple files from the same program open you will need to select the one you want to restore to active mode.

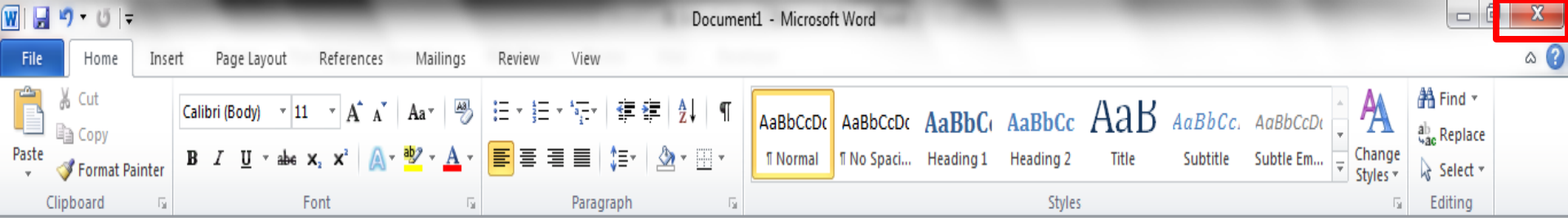




When you click the **maximize / restore** button the program assumes the same shape and size it was before you minimized it.

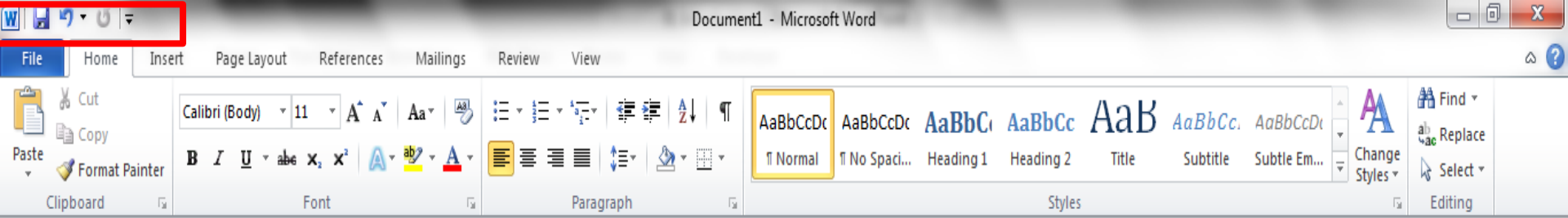


Or
The program window will fill the screen.



When you click the **close** button the program will ask you if you want to save the changes if you have made any changes. Once you have responded to this question the program will close.

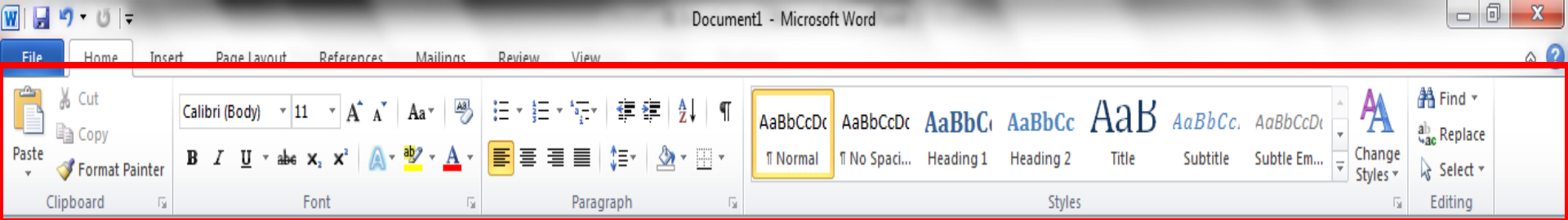




The area outlined in red is called the quick access toolbar.

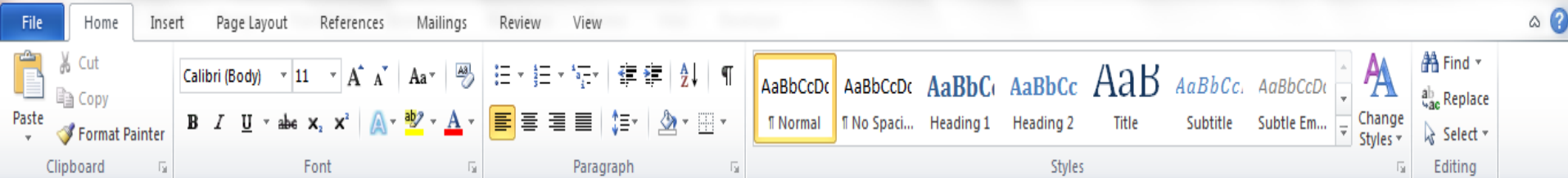
It contains the most commonly used commands in Microsoft Word:

1. Save
2. Undo
3. Repeat



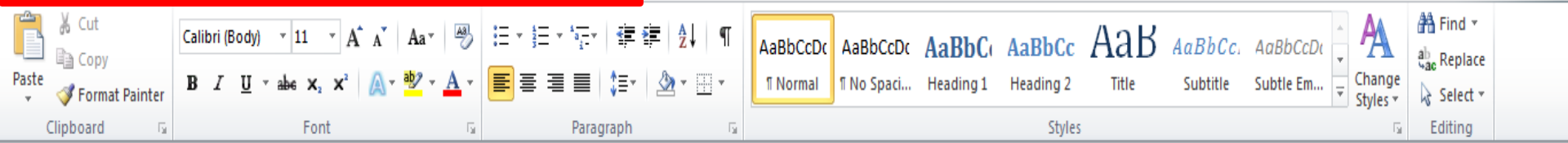
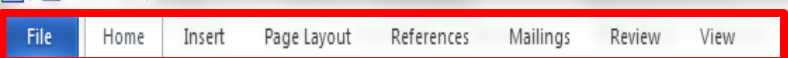
Microsoft Office 2007 & 2010 use what is referred to as the “Ribbon” interface. The area outlined in red comprises the Ribbon.

The ribbons we are going to go over today are the default ribbons.



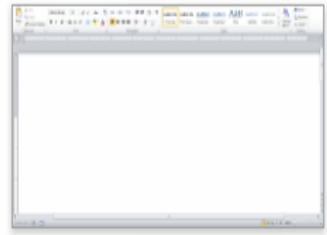
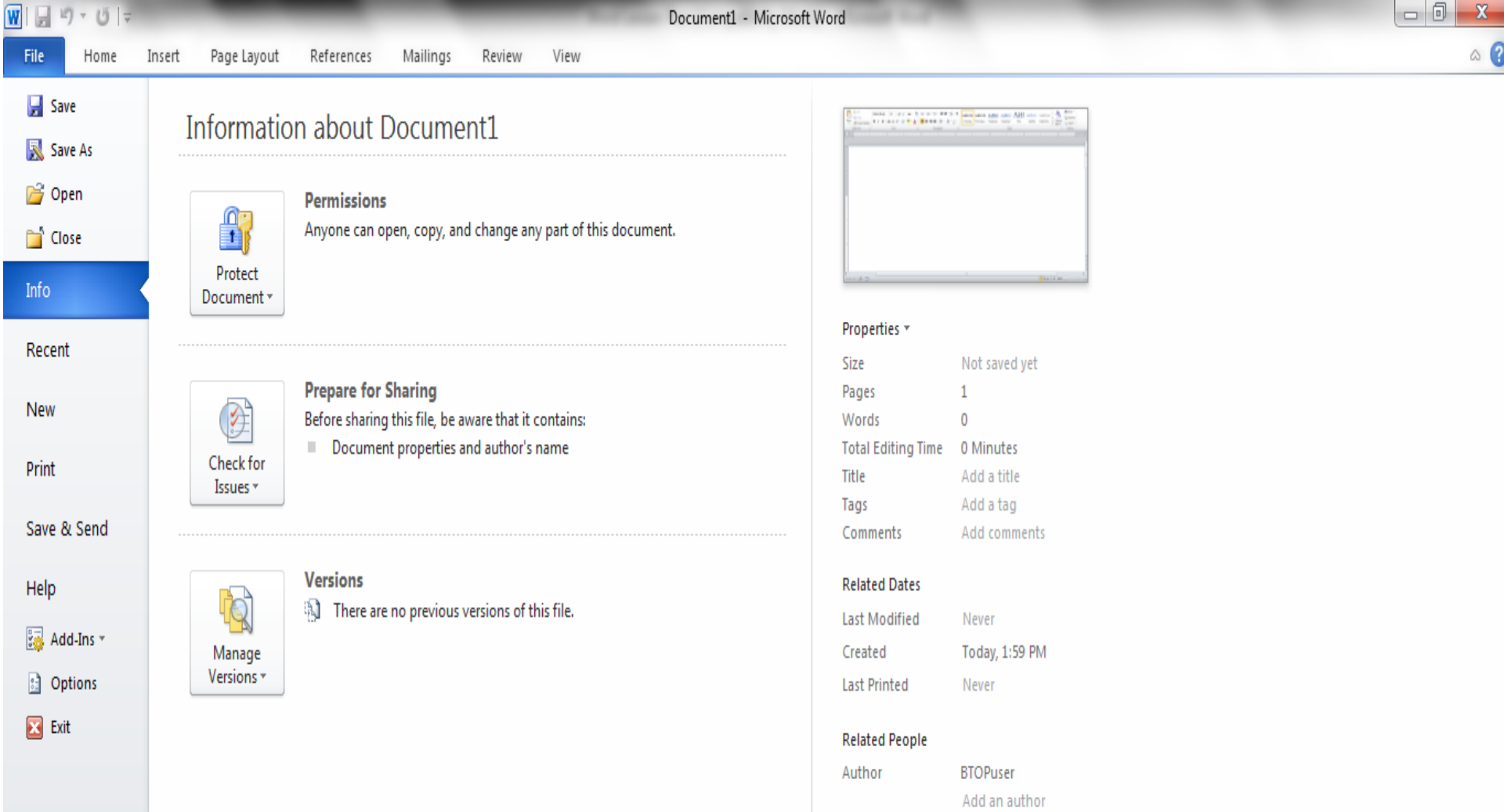
You may customize the ribbon and or a group on the ribbon on your personal computer to have only the features you want to use.

In order to do this all you have to do is right mouse click on the ribbon or the group you want to customize.



The Words File, Home, Insert, etc...
outlined in red are referred to as tabs.
Each tab has several Groups attached to
it.





Properties ▾

Size	Not saved yet
Pages	1
Words	0
Total Editing Time	0 Minutes
Title	Add a title
Tags	Add a tag
Comments	Add comments

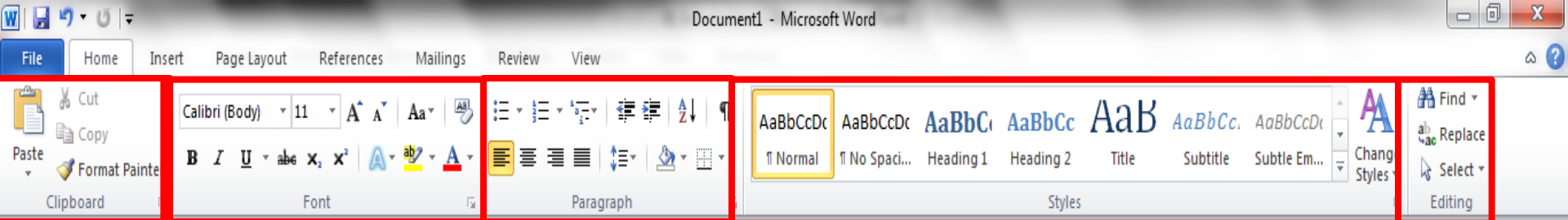
Related Dates

Last Modified	Never
Created	Today, 1:59 PM
Last Printed	Never

Related People

Author	BTOPuser
	Add an author

The File Tab menu contains the commands most commonly associated with the file.



The **Home Tab** Groups contain the commands most commonly associated with the formatting and editing of text.

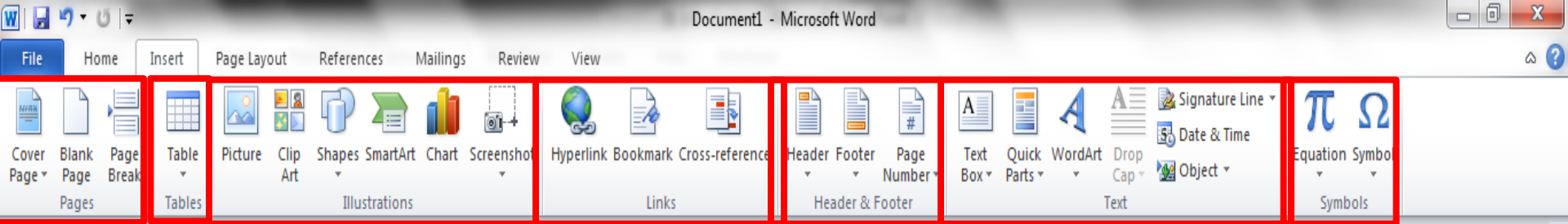
Clipboard

Font

Paragraph

Styles

Editing



The **Insert Tab** Groups contain the commands most commonly associated with adding something to the document.

Pages

Tables

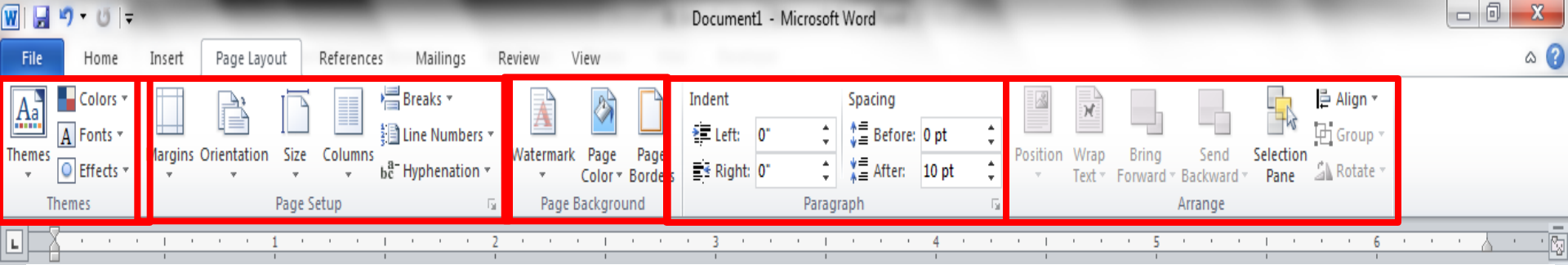
Illustrations

Header/Footer

Links

Text

Symbols



The **Page Layout** Groups contain the commands most commonly associated with settings that would affect the entire page or document.

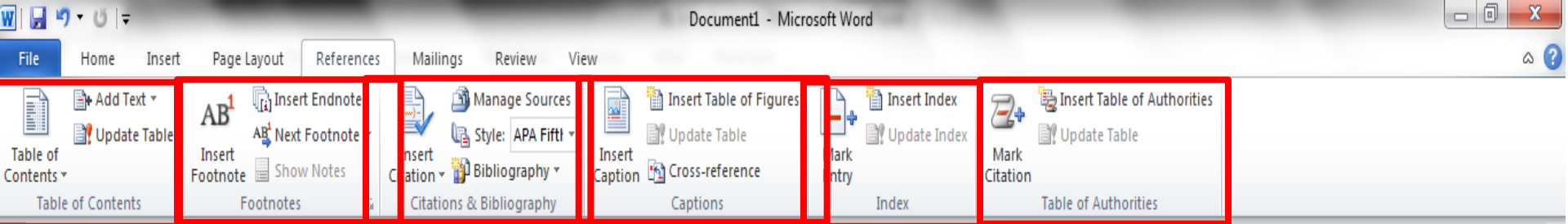
Themes

Page
Setup

Page
Background

Paragraph

Arrange



The **References** Groups contain the commands most commonly associated with writing a research paper, essay, term paper or similarly formal documents.

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of Contents

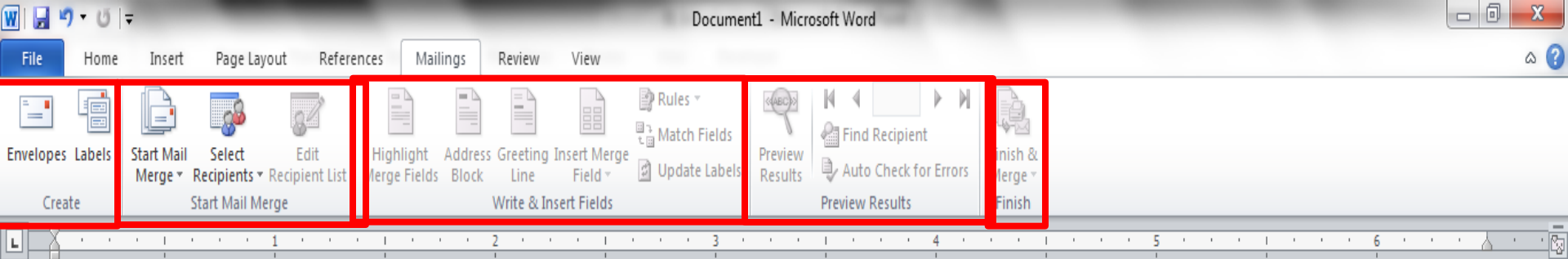
Footnotes

Citations &
Bibliography

Captions

Index

Table of
Authorities



The **Mailings Tab** groups contain the commands most commonly associated with documents and files created for mass mailing.

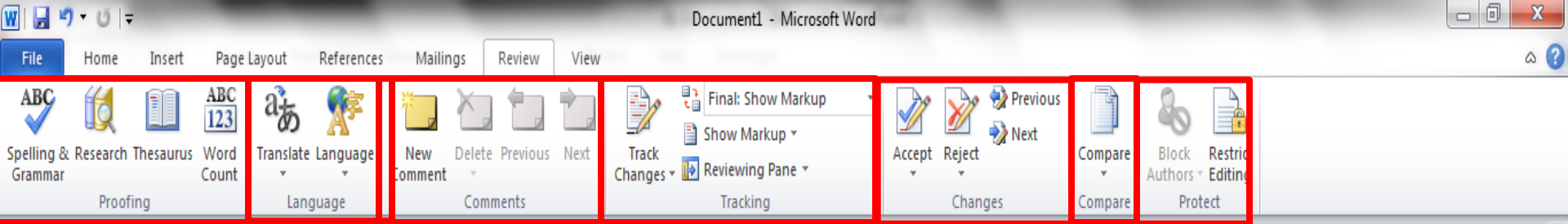
Create

Start
Mail Merge

Write & Insert
Fields

Preview
Results

Finish



The **Review Tabs** groups contain the commands most commonly associated with documents which are shared or being prepared for publication.

Proofing

Language

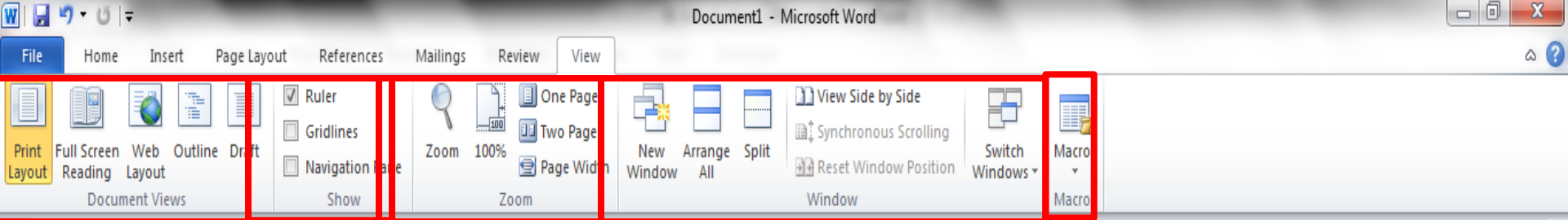
Comments

Changes

Tracking

Compare

Protect



The **View Tab** groups contain the commands most commonly associated with the variety of ways you can “look at” a document or documents.

Document
Views

Show

Zoom

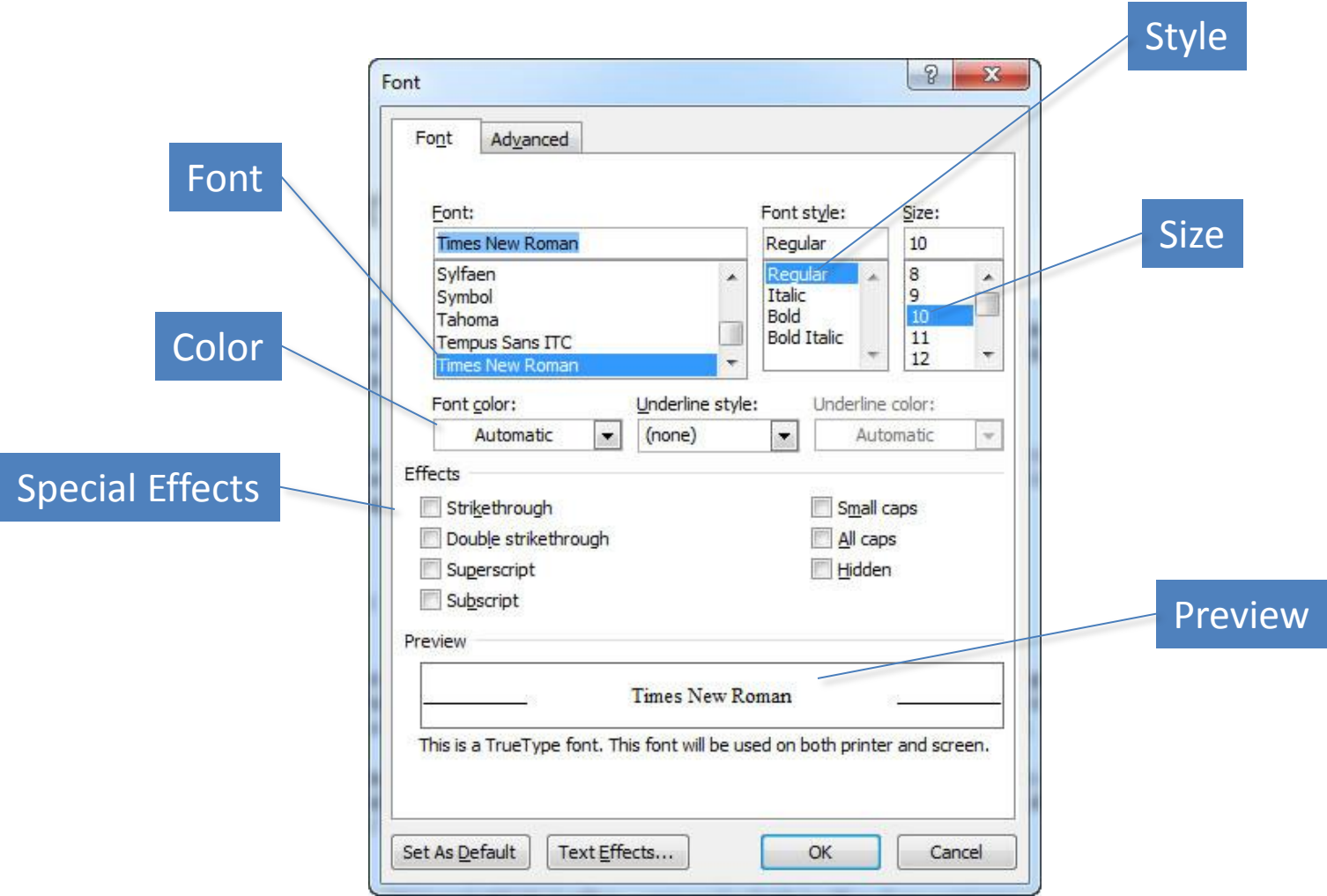
Window

Macros

Summary

- Word processors have features that make it easy to create documents.
- Consider both the content and look of the document.
- Create copies of documents and back up changes at every opportunity.

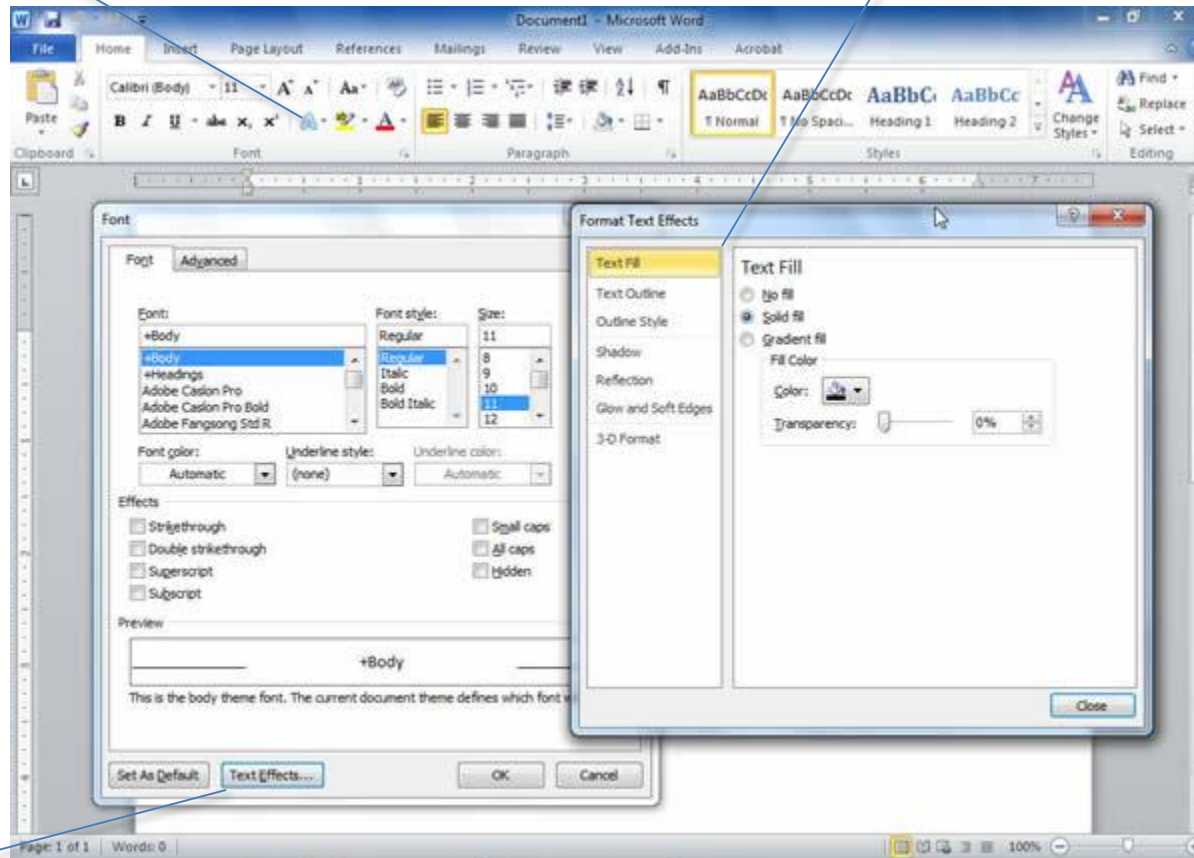
Font Attributes



Font Attributes (continued)

Text Effects

Effects



Text Effects



Introduction to Excel

L6: Basics and Descriptive Statistics

Lecturer : Alaa Omer najim



we can use Excel to:

1. Store and organize data,
2. Analyze data, *and*
3. Represent data graphically (charts)

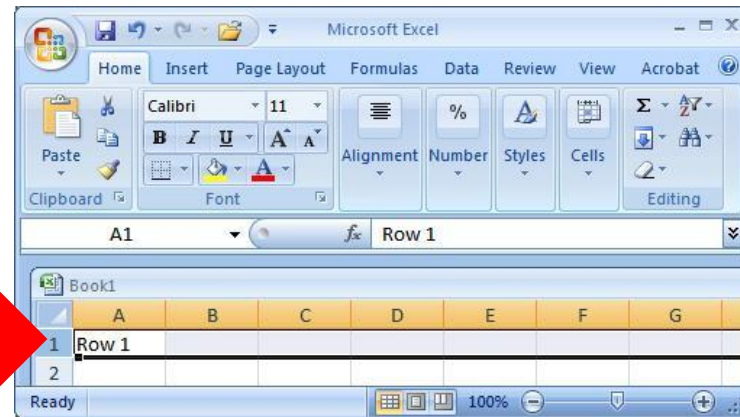
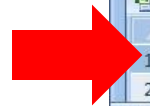


Excel Basics

Excel spreadsheets organize information (text and numbers) by rows and columns:

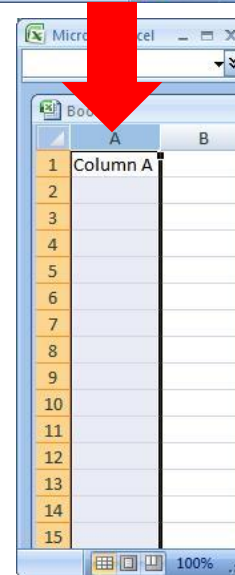
This is a **row**.

Rows are represented by **numbers** along the side of the sheet.



This is a **column**.

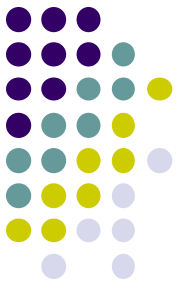
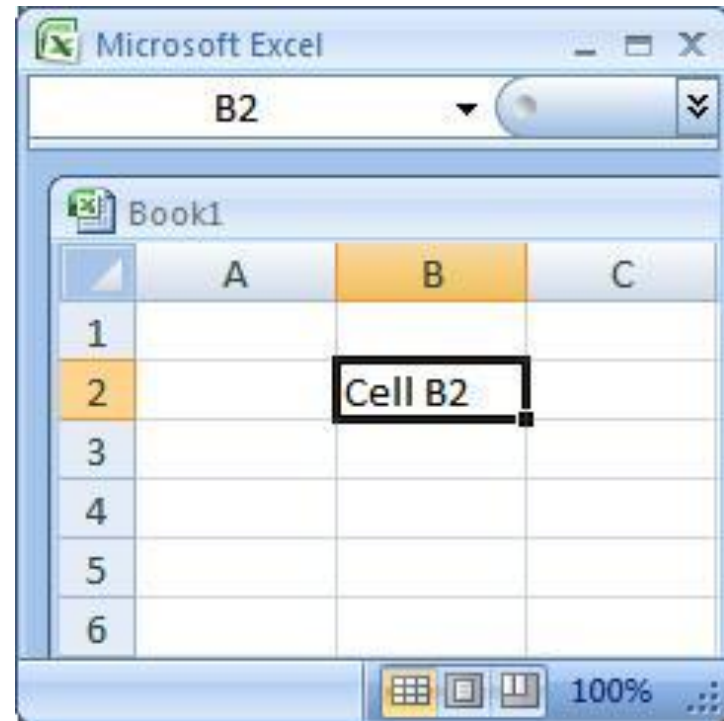
Columns are represented by **letters** across the top of the sheet.



Excel Basics

A **cell** is the intersection between a column and a row.

Each cell is named for the column letter and row number that intersect to make it.



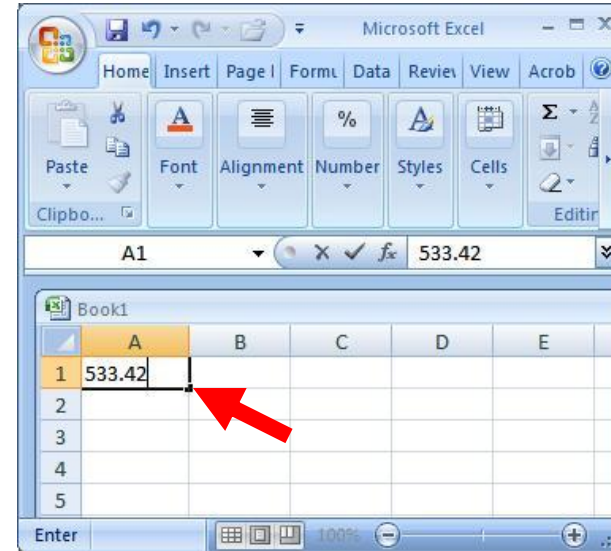


Data Entry

There are two ways to enter information into a cell:

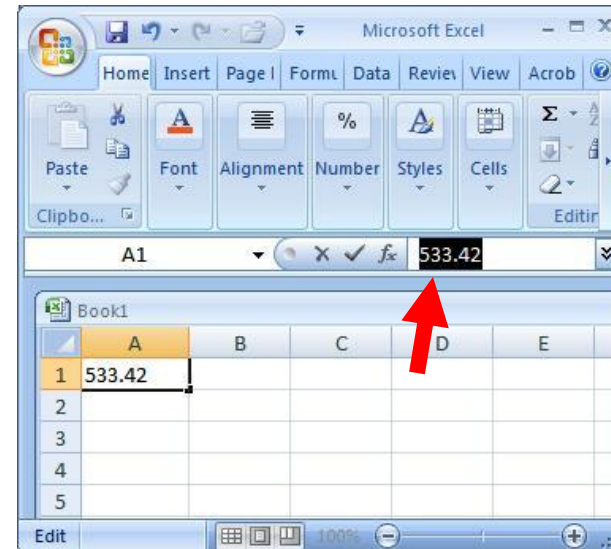
1. Type directly into the cell.

Click on a cell, and type in the data (numbers or text) and press Enter.



2. Type into the formula bar.

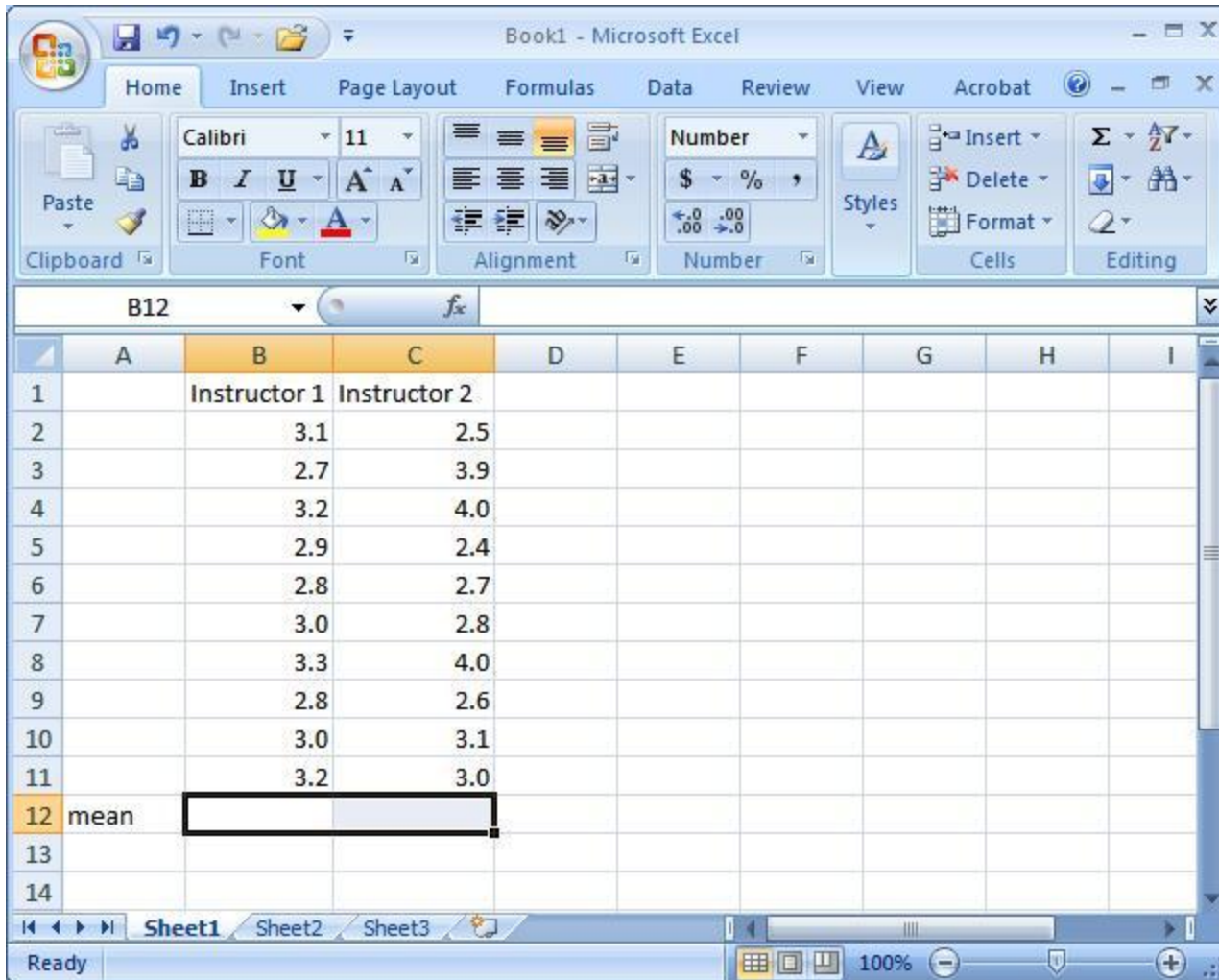
Click on a cell, and then click in the formula bar (the space next to the fx). Now type the data into the bar and press Enter.





Data Entry

1. Open Excel (Start → All Programs → MS Office → Excel).
2. Enter the following information into your spreadsheet:





Formulas and Functions

- Formulas are equations that perform calculations in your spreadsheet. Formulas always begin with an equals sign (=). When you enter an equals sign into a cell, you are basically telling Excel to “calculate this.”
- Functions are Excel-defined formulas. They take data you select and enter, perform calculations on them, and return value(s).




More on Functions

- All functions have a common format – the equals sign followed by the function name followed by the input in parentheses.
- The input for a function can be either:
 - A set of numbers (e.g., “=AVERAGE(2, 3, 4, 5)”)
 - This tells Excel to calculate the average of these numbers.
 - A reference to cell(s) (e.g., “=AVERAGE(B1:B18) or “=AVERAGE (B1, B2, B3, B4, B5, B6, B7, B8)”)
 - This tells Excel to calculate the average of the data that appear in all the cells from B1 to B8.
 - You can either type these cell references in by hand or by clicking and dragging with your mouse to select the cells.



Below are several functions

- =AVERAGE(first cell:last cell): calculates the mean المعدل
- =MEDIAN(first cell:last cell): calculates the median الوسيط
- =MODE(first cell:last cell): calculates the mode القسمة بالعدد الصحيح
- =VARP(first cell:last cell): calculates the variance التباين
- =STDEVP(first cell:last cell): calculates the standard deviation الانحراف المعياري

- You may directly write the functions for these statistics into cells or the formula bar, OR
- You may use the function wizard ( in the toolbar)

Functions for Descriptive Statistics



- Your Excel spreadsheet should now look like this:

The screenshot shows the Microsoft Excel interface with the following data:

	A	B	C	D	E	F	G
1		Instructor 1	Instructor 2				
2		3.1	2.5				
3		2.7	3.9				
4		3.2	4.0				
5		2.9	2.4				
6		2.8	2.7				
7		3.0	2.8				
8		3.3	4.0				
9		2.8	2.6				
10		3.0	3.1				
11		3.2	3.0				
12	mean	3.0	3.1				
13	median	3.0	2.9				
14	mode	3.2	4.0				
15	var	0.04	0.36				
16	stdev	0.19	0.60				
17							

example



- In Excel, there are many functions that can calculate a correlation statistic *علاقة احصائية*, however, we will only use =PEARSON in this class.

Let's say we want to determine if there is a relationship between number of hours spent per week studying and degree earned in the class at the end of the semester. To do so, we can calculate Pearson's r for our two variables.

Enter the following data into Excel:



	A	B	C	D	E	F
1	Student	StudyHrs	GPA			
2	1	42	3.3			
3	2	23	2.9			
4	3	31	3.2			
5	4	35	3.2			
6	5	16	1.9			
7	6	26	2.4			
8	7	39	3.7			
9	8	19	2.5			
10						
11						
12						
13						

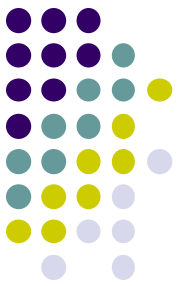
StudyHrs = average number of hours spent per week studying

GPA = grade-point average earned in the end of the semester

Step 1: Select the cell where you want your r value to appear (you might want to label it).

Step 2: Click on the function wizard f_x button.

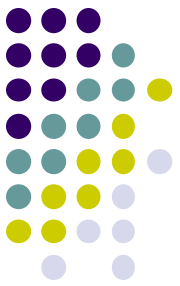
Step 3: Search for and select PEARSON.



The screenshot shows the Microsoft Excel interface with the 'Insert Function' dialog box open. The dialog box has a search field containing 'pearson' and a 'Go' button. Below the search field, there is a dropdown menu for 'Or select a category:' set to 'Recommended'. The 'Select a function:' list shows 'PEARSON' selected, with other functions like RSQ, INTERCEPT, SLOPE, and STEYX visible. The 'PEARSON' function description is shown below the list: 'PEARSON(array1,array2) Returns the Pearson product moment correlation coefficient, r.' The background spreadsheet shows a table with columns A, B, C, D, E, and F. Row 1 has headers 'Student', 'StudyHrs', and 'GPA'. Rows 2-9 contain data. Cell E5 is highlighted and labeled 'StudyHrs and GPA:'. The 'fx' button in the ribbon is circled in red.

	A	B	C	D	E	F
1	Student	StudyHrs	GPA			
2	1	42	3.3			
3	2	23	2.9			
4	3	31	3.2			
5	4	35	3.2		StudyHrs and GPA:	
6	5	16	1.9			
7	6	26	2.4			
8	7	39	3.7			
9	8	19	2.5			
10						
11						
12						

Step 4: For Array1, select all the values under StudyHrs.
For Array2, select all the values under GPA.



The screenshot shows Microsoft Excel with a spreadsheet containing the following data:

	A	B	C	D
1	Student	StudyHrs	GPA	
2	1	42	3.3	
3	2	23	2.9	
4	3	31	3.2	
5	4	35	3.2	
6	5	16	1.9	
7	6	26	2.4	
8	7	39	3.7	
9	8	19	2.5	

The 'Function Arguments' dialog box for the PEARSON function is open. The 'Array1' argument is circled in red and set to 'B2:B9', which corresponds to the 'StudyHrs' column. The 'Array2' argument is currently empty. The dialog box also includes a description of the function and a 'Help on this function' link.

Step 5: Once you have your r value, don't forget to round to 2 decimal places.



The screenshot shows the Microsoft Excel interface. The formula bar at the top displays the formula `=PEARSON(B2:B9,C2:C9)`. The active cell is E5, which contains the value 0.88. The ribbon is set to the 'Number' tab, and the 'Number' dropdown menu is open, showing the '.00' option selected, indicating rounding to two decimal places. The spreadsheet data is as follows:

Student	StudyHrs	GPA
1	42	3.3
2	23	2.9
3	31	3.2
4	35	3.2
5	16	1.9
6	26	2.4
7	39	3.7
8	19	2.5

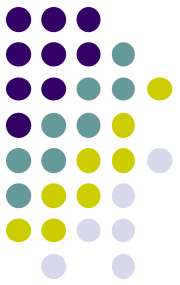
Charts



- A chart is an excellent way to visually display the relationship (correlation) between two variables.
- Each point on the chart represents an individual's data on the two variables.
- We will now create a chart for StudyHrs and GPA.

Step 1: Select both columns of variables you wish to plot (StudyHrs and GPA).

Step 2: Click on the tab labeled 'Insert', and then select 'Scatter' in the 'Charts' menu.



The screenshot shows the Microsoft Excel interface. The 'Insert' tab is selected and circled in red. Within the 'Charts' group, the 'Scatter' option is also circled in red. The spreadsheet below shows data for 'StudyHrs' and 'GPA' for 9 students.

	A	B	C	D	E	F	G	H	I	J
1	Student	StudyHrs	GPA							
2	1	42	3.3							
3	2	23	2.9							
4	3	31	3.2							
5	4	35	3.2							
6	5	16	1.9							
7	6	26	2.4							
8	7	39	3.7							
9	8	19	2.5							
10										
11										
12										
13										

Ready Average: 15.88125 Count: 18 Sum: 254.1 100%

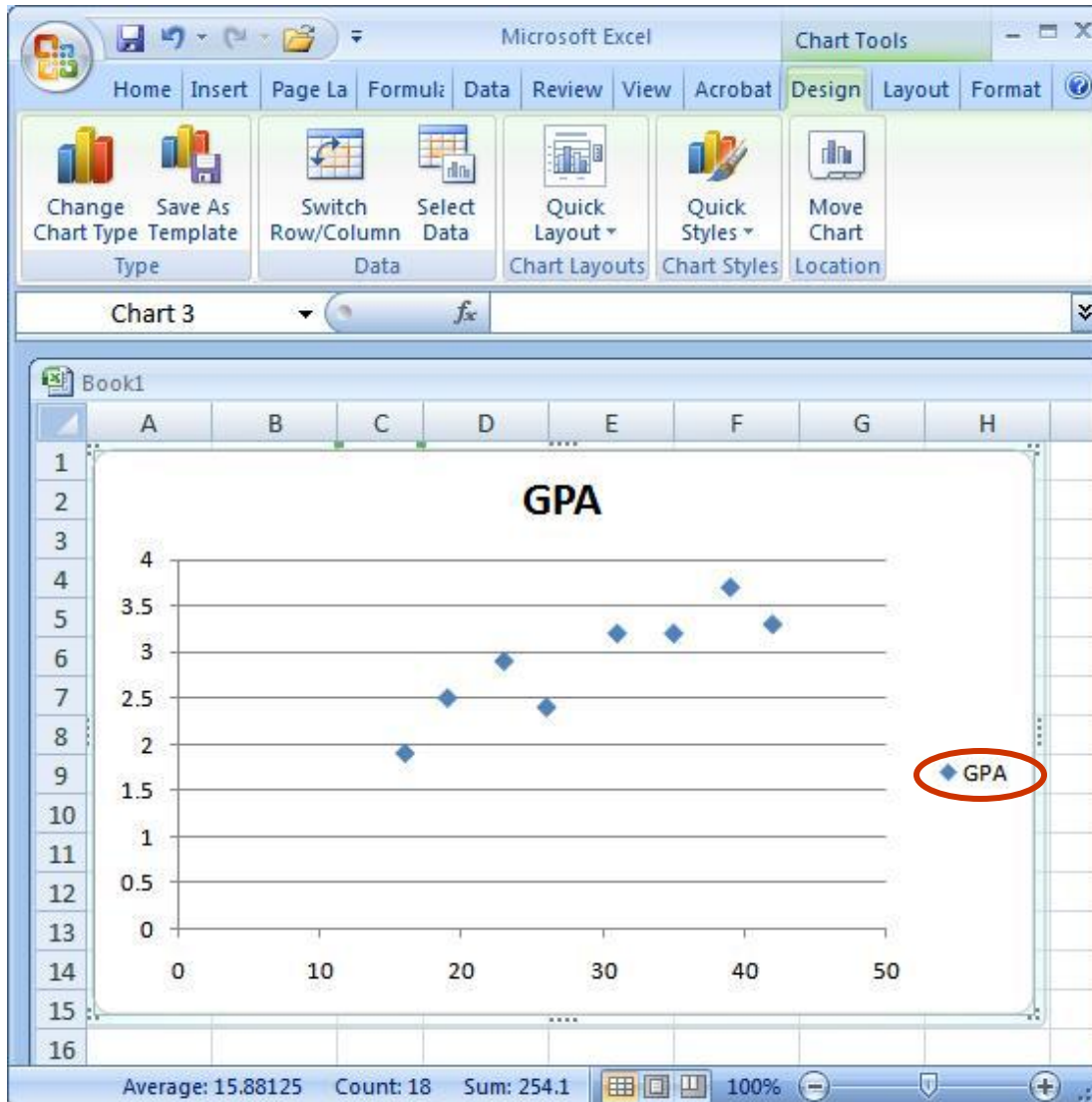
Step 3: Select the first plot in the drop-down menu.



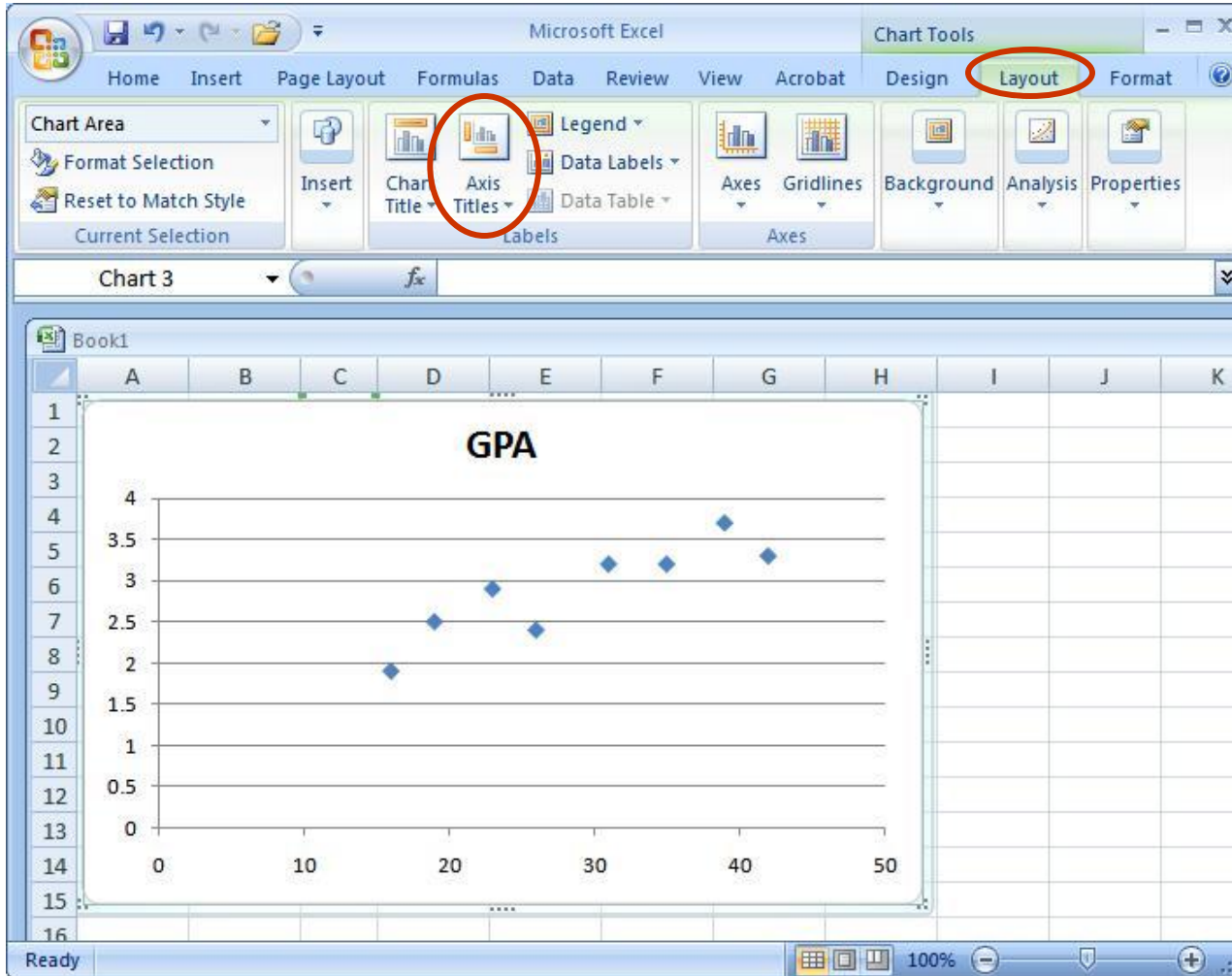
	A	B	C	D	E	F	G	H	I	J
1	Student	StudyHrs	GPA							
2	1	42	3.3							
3	2	23	2.9							
4	3	31	3.2							
5	4	35	3.2							
6	5	16	1.9							
7	6	26	2.4							
8	7	39	3.7							
9	8	19	2.5							
10										
11										
12										
13										

Ready | Average: 15.88125 | Count: 18 | Sum: 254.1 | 100%

Step 4: Remove the legend by clicking on it and pressing Delete.



Step 5: Add axis titles by selecting the 'Layout' tab and clicking on 'Axis Titles.' For the horizontal title, you want it below the x-axis. For the vertical title, you want the 'Rotated Title' option.



NOTE: Your chart must be highlighted for the 'Layout' tab to appear under 'Chart Tools.'

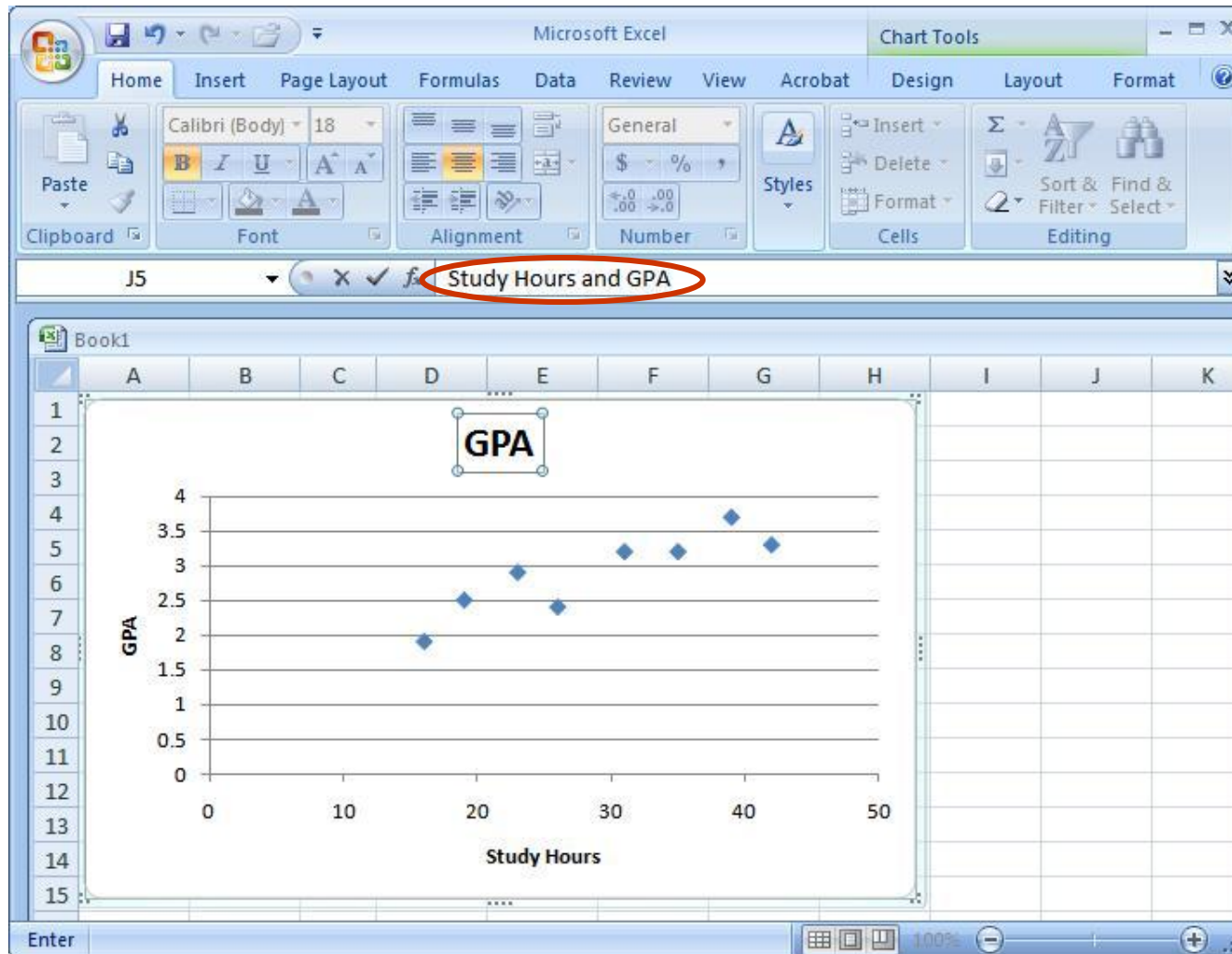


A note about x- and y-axes:

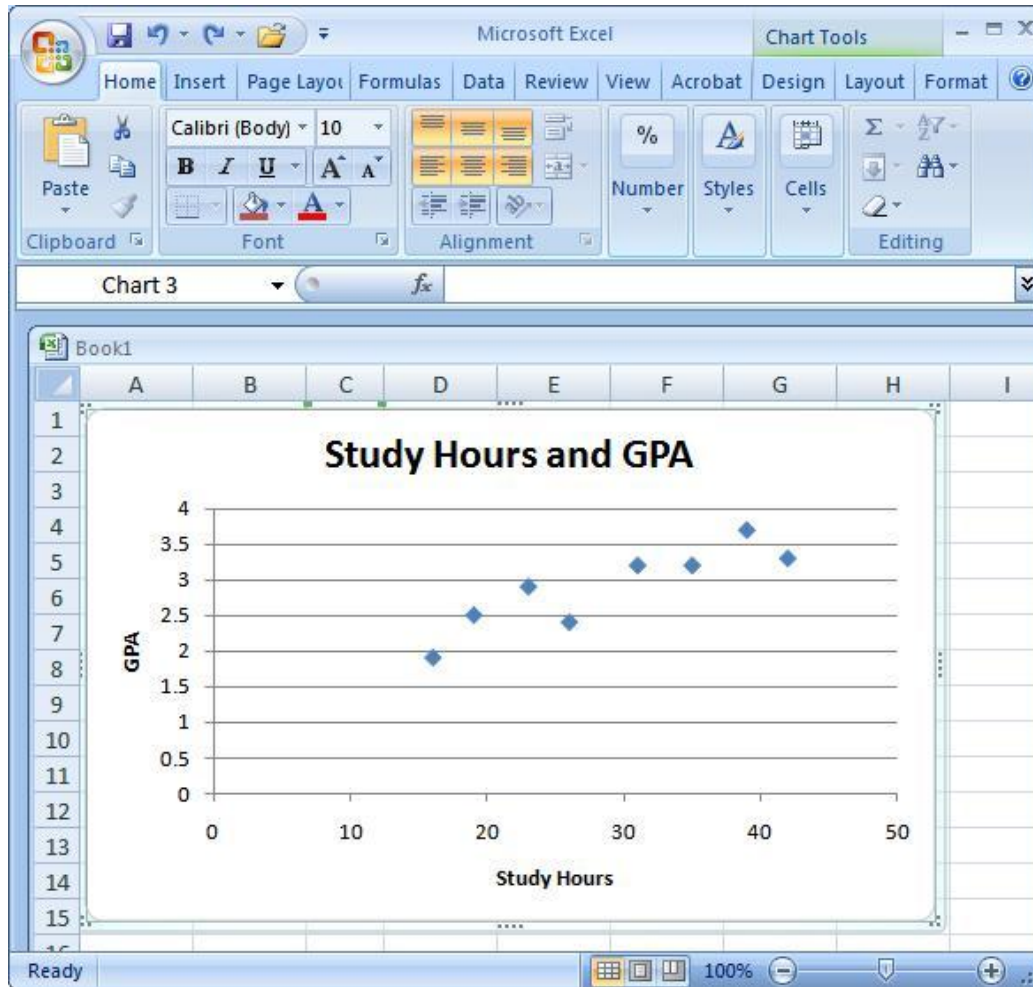
- For scatterplots, it does not matter which variable goes on each axis (this is NOT true for other types of charts).
- However, you need to make sure you label your axes with the proper variable name.
- In this example, GPA is on the y-axis and Study Hours is on the x-axis (we can tell this based on their different ranges of values).
- As a helpful hint, Excel will automatically put the first variable (left-hand column) on the x-axis, and the second variable (right-hand column) on the y-axis.



Step 6: Change the chart title by selecting it, typing a new one, and pressing Enter. Chart and axis titles may be altered by right-clicking on them.



Your scatterplot is now finished!



*Each point in the scatterplot represents an individual's data.