REPUBLIC OF IRAQ
MINISTRY OF HIGHER EDUCATION
AND SCIENTIFIC RESEARCH
STUDIES , PLANNING & FOLLOW UP DIRECTORATE
STUDIES & PLANNING DEPARTMENT

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
دائرة الدراسات والتخطيط والمتابعة
قسم الدراسات والتخطيط

العدد : ت م ٣ / ٥ - ١٤٩ التاريخ : ٨ / ١٢ / ٢٠٢٤

№ 0001704

"التعداد السكاني ... ركيزة التنمية "
((عاجل بالبريد الالكتروني))

الجامعات كافة/السيد رئيس الجامعة المحترم

الجامعات (الكليات) الأهلية كافة/ السيد رئيس الجامعة (عميد الكلية) المحترم

م/ منهاج مادة الحاسوب والذكاء الاصطناعي

السلام عليكم ورحمة الله وبركاته..

إلحاقا بكتابنا ذي العدد (ت م ٣ /١١٠٠٩ في ٢٠٢٤/١٠/٩)، المتضمن منهاج مادة الحاسوب مشتملا مفردات مادة الذكاء الاصطناعي للأقسام غير التخصصية ، حصلت الموافقة على اعتماد المناهج الدراسية للأقسام المشار إليها في أعلاه حسب الأنظمة التعليمية (الفصلية والسنوية و عملية بولونيا) بموجب التقويم الجامعي (١٥ أسبوع للنظام الفصلي ونظام بولونيا) و (٣٠ أسبوع للنظام السنوي) والمرفقة طيا والمقرة من قبل لجنة عمداء كليات تكنولوجيا المعلومات بموجب كتابهم ذي العدد (٩٧ في ٢٠٢٤/١٠/١٣) بعد أن تم تضمين ذلك بجداول مفصلة للمواد الدراسية المذكورة آنفا.

للتفضل باتخاذ اللازم...مع التقدير.

أ.م.د إيهاب ناجي عباس
مدير عام دائرة الدراسات والتخطيط والمتابعة
٢٠٢٤ / ١٢ / ١٥

المرفقات

- نسخة من الكتاب المشار إليه في أعلاه مع كافة الأوليات.

نسخة منه الى:

- مكتب معالي الوزير/ للتفضل بالاطلاع.. مع التقدير.
- مكتب وكيل الوزارة للشؤون الإدارية/ للتفضل بالاطلاع.. مع التقدير
- مكتب وكيل الوزارة لشؤون البحث العلمي/ إشارة إلى مصادقة سيادته في ٢٠٢٤/١١/٧ للتفضل بالعلم ... مع التقدير.
- مكتب السيد مستشار الوزارة / للتفضل بالاطلاع ....مع التقدير
- جهاز الإشراف والتقويم العلمي/ للتفضل بالعلم ... مع التقدير.
- هيئة البحث العلمي / للتفضل بالاطلاع ....مع التقدير
- جامعة الموصل/عميد كلية الحاسوب والرياضيات / رئيس لجنة عمداء كليات تكنولوجيا المعلومات المحترمة/ إشارة إلى كتابكم أعلاه للتفضل بالاطلاع ..مع التقدير.
- دائرة التعليم الجامعي الأهلي / للتفضل بالاطلاع واتخاذ ما يلزم فيما يخص الجامعات والكليات الأهلية ذات التوأمة ... مع التقدير.
- دائرة الإعلام والاتصال الحكومي / للتفضل بالاطلاع ....مع التقدير
- مديرية الرقابة والتدقيق الداخلي/ للتفضل بالاطلاع .. مع التقدير
- ديوان الوقف الشيعي / للتفضل بالاطلاع واتخاذ ما يلزم بخصوص الكليات التابعة لديوانكم ووفقاً لمضمون كتابنا ... مع التقدير.
- ديوان الوقف السني / للتفضل بالاطلاع واتخاذ ما يلزم بخصوص الكليات التابعة لديوانكم ووفقاً لمضمون كتابنا ... مع التقدير.
- مكتب السيد المدير العام /للتفضل بالاطلاع ... مع التقدير
- قسم الدراسات والتخطيط/ شعبة المناهج.. مع الأوليات.
- الصادرة

د.غسان / مناهج/ ١١/٢٧

Republic of Iraq
Ministry of Higher Education and Scientific Research
Committee of Deans of IT Colleges
College of Computer Science and Mathematics
University of Mosul

جمهورية العراق
وزارة التعليم العالي والبحث العلمي
لجنة عمداء كليات تكنلوجيا المعلومات
كلية علوم الحاسوب والرياضيات
جامعة الموصل

الرقم: 97
التاريخ: 2024/10/13 م

الى/ وزارة التعليم العالي والبحث العلمي/ الدراسات والتخطيط والمتابعة/ قسم الدراسات والتخطيط

م/ مادة الذكاء الاصطناعي للأقسام الغير تخصصية

تحية طيبة..

الحاقا بكتابنا المرقم 89 في 12-9-2024 والمعمم بالكتاب الوزاري المرقم ت م 11009/3 في 9-10-2024، والمتضمن منهاج مادة الحاسوب مشتملا مفردات مادة الذكاء الاصطناعي للأقسام غير التخصصية، ولورود بعض الاستفسارات الخاصة بآلية اعتماد المنهاج المقترح وذلك لاختلاف نظام الدراسة من كلية الى أخرى، نرفق لكم ربطا المنهاج تفصيلا حسب انظمة الدراسة المتبعة.

للتفضل بالاطلاع.. مع التقدير

أ.د. ضحى بشير عبد الله البزاز

رئيس لجنة عمداء كليات تكنلوجيا المعلومات
جامعة الموصل

عميد كلية علوم الحاسوب والرياضيات

2024/10/13

نسخة منه الى/

- مكتب معالي السيد الوزير المحترم / للتفضل بالاطلاع مع التقدير
- مكتب وكيل الوزير للشؤون العلمية المحترم / للتفضل بالاطلاع مع التقدير
- السيد مقرر لجنة العمداء / مع الاوليات مع التقدير
- الصادرة

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Republic of Iraq
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Computer Course

Curriculum:

Today, it's impossible to imagine life without computers or other digital devices. Nowadays, knowing how to use a computer is a need. Many of our students take advantage of our college's fundamental computer courses, which educate them on the principles of computers and the Internet's underlying technologies and skills. The course introduces students to the fundamentals of computing, including the useof a variety of different hardware and software components. There is no prerequisiteknowledge in either programming or computer science.

Course Objectives:

Students successfully completing this course will be able to:

1. Utilize the computer for fundamental tasks.
2. Identify and discuss the hardware components of the computer system.
3. Creating documents using a word processor and creating presentations.
4. Conducting research on the Internet.
5. An introduction to Artificial Intelligence

Grades:

Passing the class requires a 50% average.

Teaching methods

The course will use the following teaching and learning methods

- Board (Normal or Smart)
- Computers
- Presentation software such as PowerPoint

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أولا: الأقسام التي تتبع مسار بولونيا (3 ECTS) والنظام الفصلي (2 وحدة دراسية)

Computer Course Syllabus: Level I

Week No.	Content	No. of Hours Theoretical	No. of Hours Practical
1.	**Introduction to Computer:** Concepts of Hardware and Software with their components; Concept of Computing, Data and Information; Connecting input/output devices, and peripherals to CPU.	1	2
2.	**Computer Components:** Computer Portions, Hardware Parts, I/O Units, Memory Types.	1	2
3.	**Computer Components (Cont.):** Basic CPU Components, Computer Ports, Personal Computer, Personal Computer (Features and Types)	1	2
4.	**Operating System and Graphical User Interface GUI:** Operating System; Basics of Common Operating Systems; The User Interface, Using Mouse Techniques.	1	2
5.	**Operating System and Graphical User Interface GUI(Cont.):** Use of Common Icons, Status Bar, Using Menu and Menu-selection, Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts.	1	2
6.	**Word Processing:** Word Processing Basics; Basic Features of Word Processors, Opening and Closing of documents, Text creation and Manipulation; Formatting Text and Paragraphs, Using Templates for Document Creation.	1	2
7.	**Word Processing (Cont.):** Creating and Managing Tables, Utilizing Styles and Themes, Spell Check and Grammar Tools, Using Headers and Footers.	1	2
8.	**Spread Sheet:** Introduction to Spreadsheet Software, Creating and Formatting Worksheets. Sorting and Filtering Data, Using Formulas and Functions.	1	2

9.	**Spread Sheet (Cont.):** Using Formulas and Functions, Using Pivot Tables for Data Analysis, Data Validation and Error Checking, Data Visualization: Creating Charts and Graphs.	1	2
10.	**Presentation Software:** Introduction to Presentation Software, Overview of Popular Presentation Tools, creating a New Presentation, Using Templates and Themes, Inserting and Formatting Text and Images, Transition and Animation Effects.	1	2
11.	**Presentation Software (Cont.):** Using Speaker Notes and Timers, , Advanced Features: Hyperlinks and Action Buttons, Troubleshooting Common Presentation Issues, Future Trends in Presentation Technology.	1	2
12.	**Introduction to Internet and Web Browsers:** Computer networks Basic; LAN, WAN; Concept of Internet and its Applications; connecting to internet.	1	2
13.	**Introduction to Internet and Web Browsers (Cont.):** World Wide Web; Web Browsing software's, Search Engines; Understanding URL; Domain name; IP Address.	1	2
14.	**Communications and Emails:** Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration.	1	2
15.	**Introduction to Cloud Computing and Services:** Definition of Cloud Computing and its concept, Cloud-Based Office Suites (Office 365 and Google Workspace), Google Docs, Google Sheets, Google Drive, Google Meet.	1	2

Computer Course Syllabus: Level II

Week No.	Content	No. of Hours Theoretical	No. of Hours Practical
1.	**Security and Networking:** What is a network? Types of networks. Basic network components.	1	2
2.	**Security and Networking (Cont.):** Network Security Basics. Understanding network threats.	1	2
3.	**E-Commerce:** Concepts of Electronic banking services this include online banking: ATM and debit card services, Phone banking, SMS banking, electronic alert, Mobile banking	1	2
4.	**Computer Troubleshooting:** Identifying and solving common hardware and software problems that computer users encounter.	1	2
5.	**Computer Troubleshooting (Cont.):** Basic troubleshooting techniques and tools for diagnosing and resolving issues.	1	2
6.	**Introduction to AI:** Definition of AI, History of AI, AI Techniques and Approaches.	1	2
7.	**Introduction to AI(Cont.):** Key Characteristics of AI, Benefits of AI, Challenges and Ethical considerations.	1	2
8.	**The Role of AI in Modern Smartphones:** AI-Driven Mobile Technologies, Virtual Assistants (Siri, Google Assistant, Alexa).	1	2
9.	**The Role of AI in Modern Smartphones (Cont.):** Adaptive Learning, Real-Time Translation Services.	1	2
10.	**Applications and Tools of AI:** Overview of AI Applications in Various Industries, Education and Healthcare.	1	2
11.	**Applications and Tools of AI (Cont.):** Transportation, Marketing and Advertising.	1	2
12.	**Applications and Tools of AI(Cont.):** Finance, Robotics and Automation Technologies.	1	2

13.	**AI and Society:** How AI affects social, AI and international relations, AI and the future of humanity.	1	2
14.	**Ethical Challenges in AI** : AI ethics, privacy and surveillance, the impact of AI on the job market.	1	2
15.	**The Future of AI:** Future trends in AI, recent research and emerging technologies.	1	2

Suggested Books

1. Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020)
2. Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020).
3. Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", 1st Edition (2024).
4. Microsoft Office 2019 Step by Step 1st Edition by Curtis Frye & Joan Lambert
5. 2016 "أساسيات الحاسوب" , الخضر علي الخضر بحاث
6. 2005 " مدخل إلى عالم الذكاء الاصطناعي" , الدكتور عادل عبدالنور

ثانيا: الأقسام التي تتبع النظام السنوي (2 وحدة دراسية)

ملاحظة: يترك لمدرس المادة إعطاء بعض المحاضرات في المختبرات لإنجاز المتطلبات العملية وحسب الحاجة.

Computer Course Syllabus: First-Year

Week No.	Content	No. of Hours
1.	**Introduction to Computer:** Concepts of Hardware and Software with their components.	1
2.	**Introduction to Computer (Cont.):** Concept of Computing, Data and Information; Applications of Information Connecting input/output devices, and peripherals to CPU.	1
3.	**Computer Components:** Computer Portions, Hardware Parts, I/O Units.	1
4.	**Computer Components (Cont.):** Memory Types: Volatile and Non-Volatile Memory, Secondary Storage.	1
5.	**Computer Components (Cont.):** CPU Components: Control Unit (CU), Arithmetic Logic Unit (ALU) and Registers	1
6.	**Computer Components (Cont.):** Computer Ports, Personal Computer (Features and Types)	1
7.	**Operating System and Graphical User Interface GUI:** Operating System; Basics of Common Operating Systems; The User Interface, Using Mouse Techniques;	1
8.	**Operating System and Graphical User Interface GUI (Cont.):** Use of Common Icons, Status Bar, Using Menu and Menu-selection,	1

9.	**Operating System and Graphical User Interface GUI (Cont.):** Concept of Folders and Directories, Opening and closing of different Windows; Creating Short cuts.	1
10.	**Operating System and Graphical User Interface GUI (Cont.):** Customization and Personalization of GUIs, Accessibility Features in GUIs, User Experience (UX)	1
11.	**Word Processing:** Word Processing Basics; Basic Features of Word Processors, Openingand Closing of documents;	1
12.	**Word Processing (Cont.):** Text creation and Manipulation; Formatting Text and Paragraphs, Using Templates for Document Creation.	1
13.	**Word Processing (Cont.):** Creating and Managing Tables, Utilizing Styles and Themes.	1
14.	**Word Processing (Cont.):** Spell Check and Grammar Tools, Using Headers and Footers.	1
15.	**Spread Sheet:** Introduction to Spreadsheet Software, Creating and Formatting Worksheets.	1
16.	**Spread Sheet (Cont.):** Sorting and Filtering Data, Using Formulas and Functions.	1
17.	**Spread Sheet (Cont.):** Using Formulas and Functions, Using Pivot Tables for Data Analysis.	1
18.	**Spread Sheet (Cont.):** Data Validation and Error Checking, Data Visualization: Creating Charts and Graphs.	1
19.	**Presentation Software:** Introduction to Presentation Software, Overview of Popular Presentation Tools, Creating a New Presentation.	1
20.	**Presentation Software (Cont.):** Using Templates and Themes, Inserting and Formatting Text and Images, Transition and Animation Effects	1
21.	**Presentation Software (Cont.):** Using Speaker Notes and Timers, Advanced Features: Hyperlinks and Action Buttons.	1
22.	**Presentation Software (Cont.):** Troubleshooting Common Presentation Issues, Future Trends in Presentation Technology.	1

23.	**Introduction to Internet and Web Browsers:** Computer networks Basic; LAN, WAN.	1
24.	**Introduction to Internet and Web Browsers (Cont.):** Concept of Internet and its Applications; connecting to internet.	1
25.	**Introduction to Internet and Web Browsers (Cont.):** World Wide Web; Web Browsing software's, Search Engines.	1
26.	**Introduction to Internet and Web Browsers (Cont.):** Understanding URL; Domain name; IP Address.	1
27.	**Communications and Emails:** Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration.	1
28.	**Communications and Emails (Cont.):** Sending and receivingemails; Accessing sent emails; Using Emails; Document collaboration.	1
29.	**Introduction to Cloud Computing and Services:** Definition of Cloud Computing and its concept, Cloud-Based Office Suites (Office 365 and Google Workspace).	1
30.	**Introduction to Cloud Computing and Services (Cont.):** Google Workspace: Google Docs, Google Sheets, Google Drive, Google Meet.	1

Computer Course Syllabus: Second-Year

Week No.	Content	No. of Hours
1.	**Security and Networking:** What is a network? Types of networks. Basic network components.	1
2.	**Security and Networking (Cont.):** Basic network components.	1
3.	**Security and Networking (Cont.):** Network Security Basics. Understanding network threats. Network Troubleshooting	1
4.	**Security and Networking (Cont.):** Introduction to Network Troubleshooting, Common Network Issues and Symptoms, Network Troubleshooting Tools and Utilities.	1
5.	**Security and Networking (Cont.):** Using Command-Line Tools for Diagnostics, Identifying and Resolving Connectivity Issues, Diagnosing Network Performance Problems	1
6.	**E-Commerce:** Concepts of Electronic banking services this include online banking: ATM and debit card services.	1
7.	**E-Commerce (Cont.):** Phone banking, SMS banking, electronic alert, Mobile banking.	1
8.	**Computer Troubleshooting:** Introduction to Computer Troubleshooting, Common Hardware Issues and Solutions, Diagnosing Software Problems.	1
9.	**Computer Troubleshooting (Cont.):** Hardware Components: Diagnosis and Repair, Using Safe Mode for Troubleshooting.	1
10.	**Computer Troubleshooting (Cont.):** Troubleshooting Operating System Issues, Identifying and Resolving Blue Screen Errors, Dealing with Slow Computer Performance.	1

11.	**Computer Troubleshooting (Cont.):** Virus and Malware Removal Techniques, Updating Drivers and Software.	1
12.	**Introduction to AI:** Definition of AI, History of AI, AI Techniques and Approaches.	1
13.	**Introduction to AI(Cont.):** Key Characteristics of AI, Benefits of AI, Challenges and Ethical considerations.	1
14.	**Introduction to AI (Cont.):** Challenges and Limitations of AI, The Role of Data in AI Systems.	1
15.	**Introduction to AI (Cont.):** AI Tools and Frameworks.	1
16.	**The Role of AI in Modern Smartphones:** AI-Driven Mobile Technologies, Virtual Assistants (Siri, Google Assistant, Alexa).	1
17.	**The Role of AI in Modern Smartphones (Cont.):** Adaptive Learning, Real-Time Translation Services.	1
18.	**The Role of AI in Modern Smartphones (Cont.):** The Future of AI in Smartphone Technology, Challenges of Implementing AI in Mobile Devices.	1
19.	**Applications and Tools of AI:** Overview of AI Applications in Various Industries, Education and Healthcare.	1
20.	**Applications and Tools of AI (Cont.):** Transportation and Advertising.	1
21.	**Applications and Tools of AI (Cont.):** Finance, Robotics and Automation Technologies.	1
22.	**Applications and Tools of AI(Cont.):** AI in Marketing: Targeting and Personalization.	1
23.	**Applications and Tools of AI(Cont.):** AI in Image and Video Analysis, Smart Cities	1
24.	**Applications and Tools of AI (Cont.):** Future Trends in AI Applications and Tools.	1
25.	**AI and Society:** Introduction to AI and Its Societal Impact, The Role of AI in Enhancing Public Safety.	1

26	**AI and Society (Cont.):** Cultural Perspectives on AI Adoption, AI and Governance: Policy Implications	1
27.	**Ethical Challenges in AI:** Introduction to Ethics in AI, Transparency and Explainability of AI Systems, Privacy Concerns in AI Data Usage	1
28.	**Ethical Challenges in AI (Cont.):** The Ethical Implications of Autonomous Systems, Ethics in AI-Driven Marketing and Advertising	1
29.	**Ethical Challenges in AI (Cont.):** Ethical Considerations in Education, Human Rights and AI Implementation	1
30	**The Future of AI:** Future trends in AI, recent research and emerging technologies.	1

Suggested Books

7. Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020)
8. Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020).
9. Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", 1st Edition (2024).
10. Microsoft Office 2019 Step by Step 1st Edition by Curtis Frye & Joan Lambert
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12. 2005 " الدكتور عادل عبدالنور , "مدخل إلى عالم الذكاء الاصطناعي

Computer Fundamental

Lecture 1

Assist.Prof. Dr. Haider Noori Hussain

Types and components of computer systems

- In this lecture we will cover:
- Internal Hardware

Concepts of Hardware and Software

Hardware: is the general term for the physical components that make up a typical computer system. For example:

Hardware falls into two categories: internal and external. The list below are examples of external hardware, which will be discussed in detail in Chapter 2.

- keyboard
- mouse
- camera

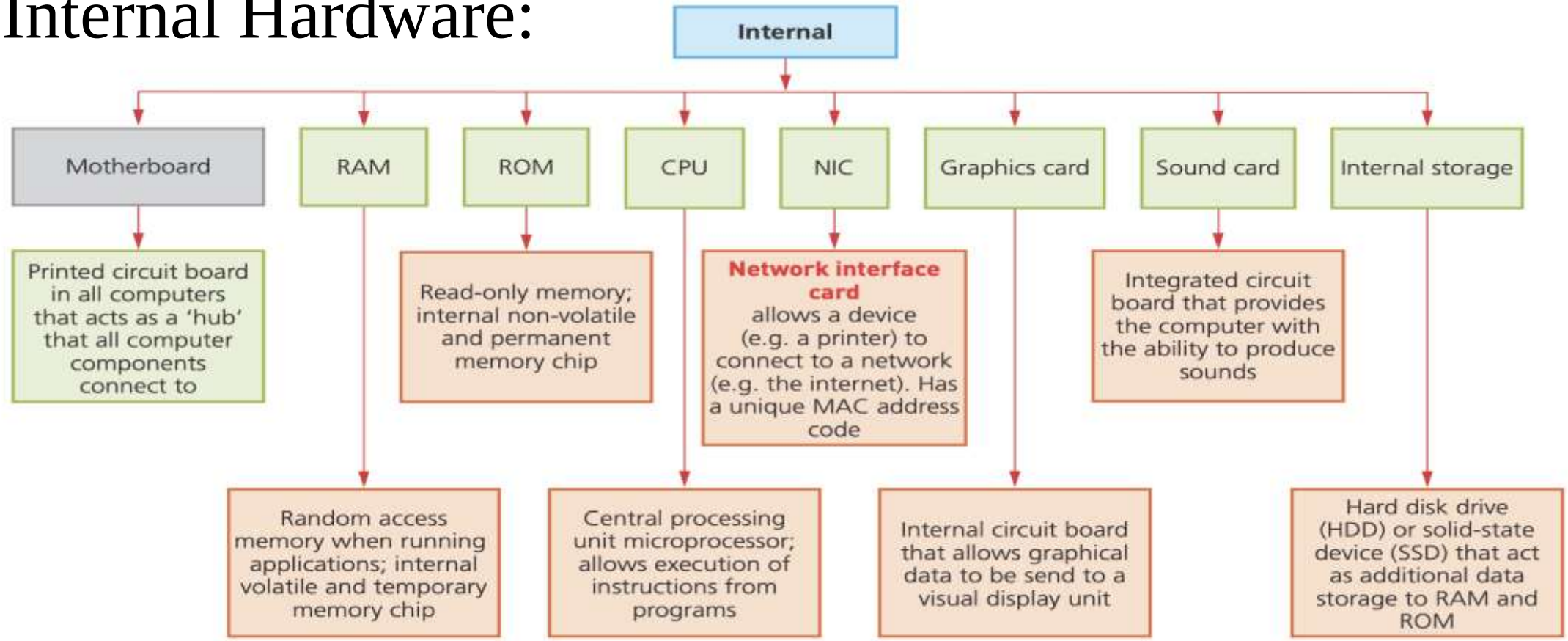
} input device

- monitor
- printer
- plotter

} output device

Concepts of Hardware and Software Cont.

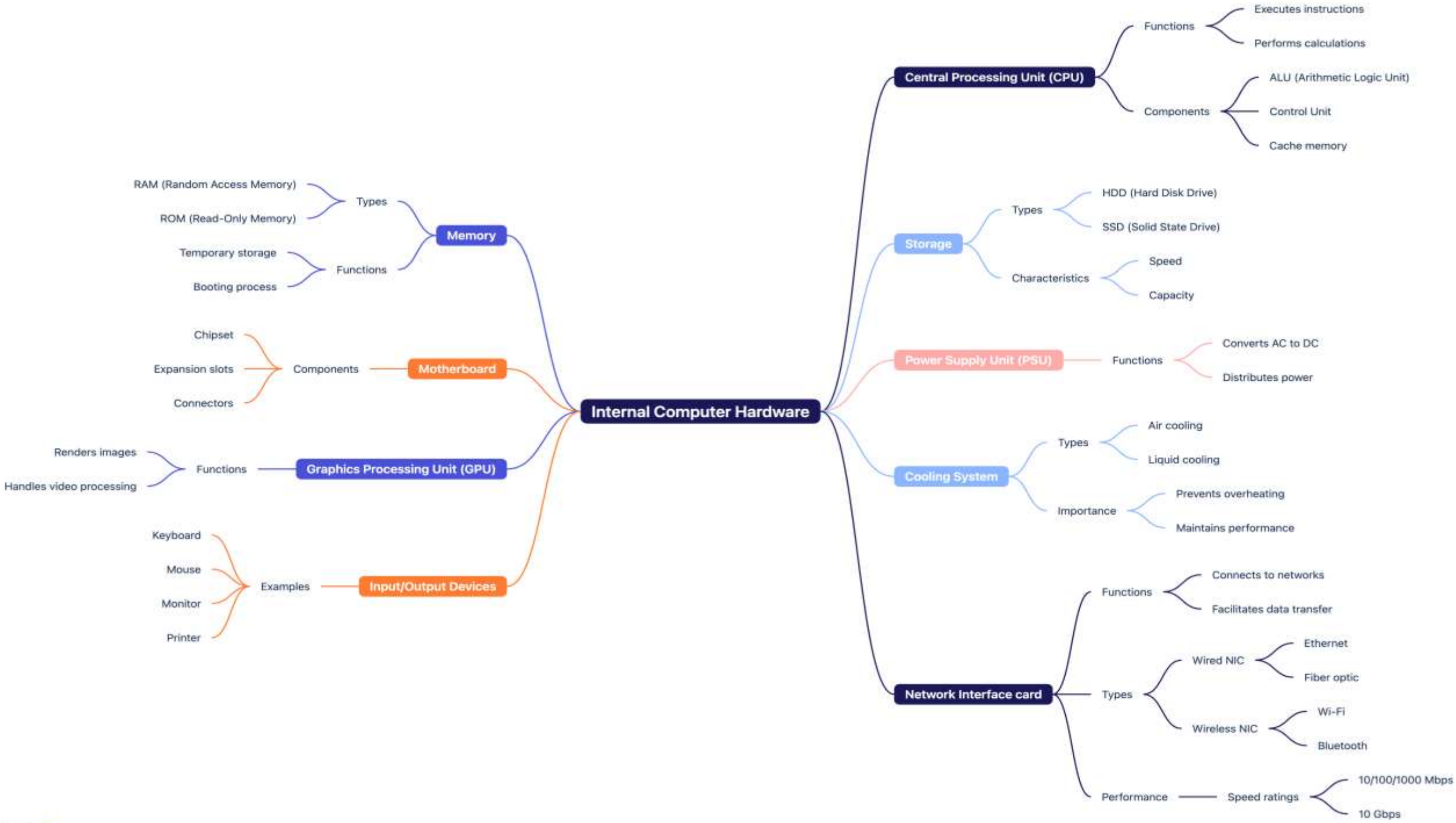
Internal Hardware:



Concepts of Hardware Cont.

Internal Hardware:

- motherboard
- central processing unit (CPU)/processor
- random access memory (RAM)
- read-only memory (ROM)
- graphics card
- sound card
- network interface card (NIC)
- internal storage devices (hard disk drive and solid-state drive).


Internal Computer Hardware
Central Processing Unit (CPU)
Functions
Executes instructions
Performs calculations
Components
ALU (Arithmetic Logic Unit)
Control Unit
Cache memory
Storage
Types
HDD (Hard Disk Drive)
SSD (Solid State Drive)
Characteristics
Speed
Capacity
Power Supply Unit (PSU)
Functions
Converts AC to DC
Distributes power
Cooling System
Types
Air cooling
Liquid cooling
Importance
Prevents overheating
Maintains performance
Network Interface card
Functions
Connects to networks
Facilitates data transfer
Types
Wired NIC
Ethernet
Fiber optic
Wireless NIC
Wi-Fi
Bluetooth
Performance
Speed ratings
10/100/1000 Mbps
10 Gbps
Memory
Types
RAM (Random Access Memory)
ROM (Read-Only Memory)
Functions
Temporary storage
Booting process
Motherboard
Components
Chipset
Expansion slots
Connectors
Graphics Processing Unit (GPU)
Functions
Renders images
Handles video processing
Input/Output Devices
Examples
Keyboard
Mouse
Monitor
Printer

Concepts of Hardware Cont.

Motherboard: The motherboard is a printed circuit board found in all computers. It allows the processor and other computer hardware to function and communicate with each other.

One of the major functions of a typical motherboard is to act as a kind of 'hub' which other computer devices connect to.

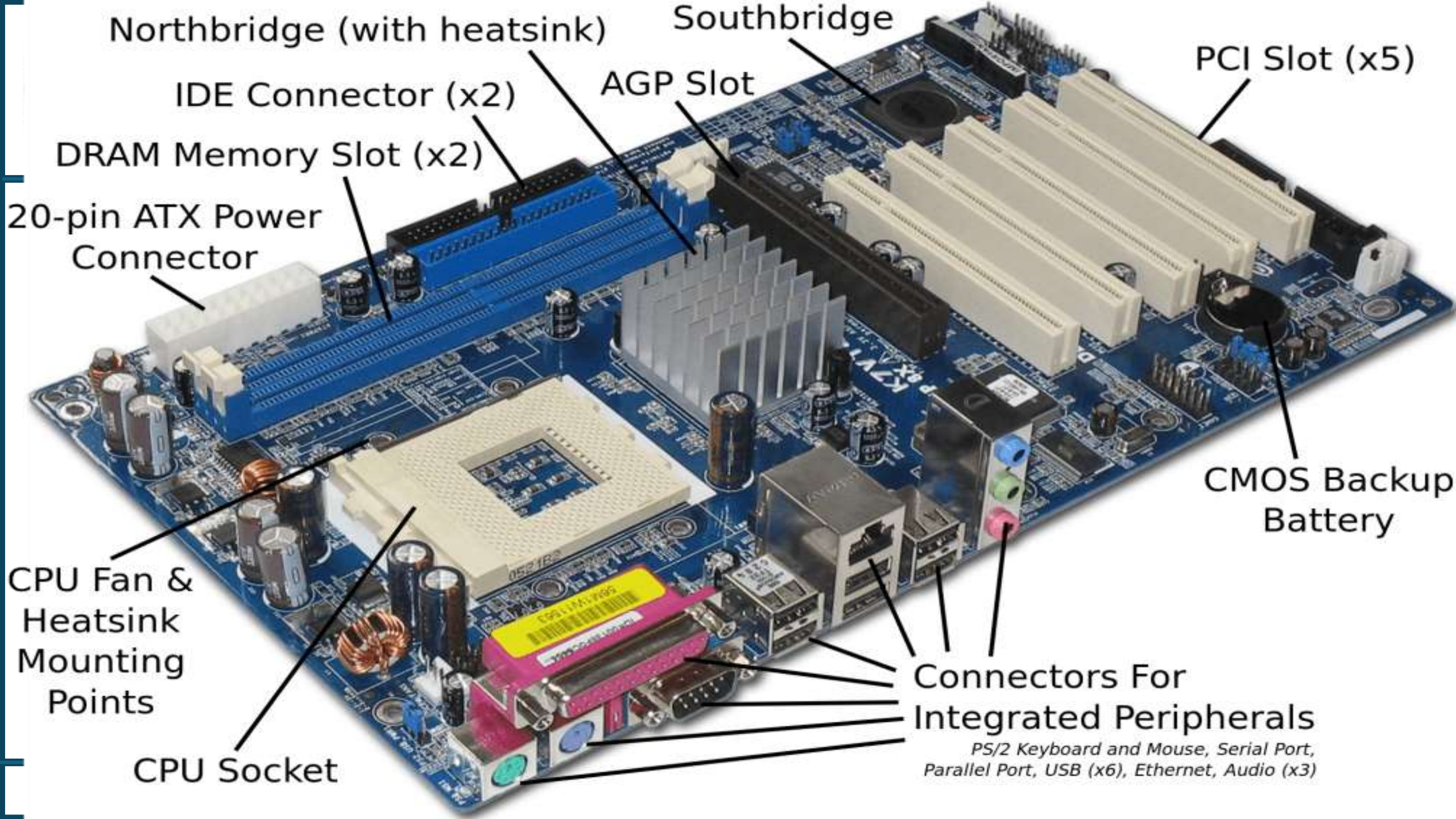
Concepts of Hardware and Software Cont.

A typical motherboard consists of a sheet of non-conductive material, such as hard plastic.

Thin layers of copper or aluminum are printed onto this sheet.

These form the circuits between the various components. In addition to circuits, a motherboard contains several sockets and slots to connect

the other components.


Northbridge (with heatsink)
Southbridge
PCI Slot (x5)
IDE Connector (x2)
AGP Slot
DRAM Memory Slot (x2)
20-pin ATX Power Connector
CMOS Backup Battery
CPU Fan & Heatsink Mounting Points
CPU Socket
Connectors For Integrated Peripherals
PS/2 Keyboard and Mouse, Serial Port, Parallel Port, USB (x6), Ethernet, Audio (x3)

Random access memory (RAM):

- Random access memory (RAM) is an internal chip where data is temporarily stored when running applications.
- This memory can be written to and read from.

Concepts of Hardware and Software Cont.

- Since its contents are lost when power to the computer is turned off, it is often referred to as a volatile or temporary memory.
- RAM stores the data, files or part of the operating system currently in use.

Read-only memory (ROM):

- **Read-only memory (ROM) is a memory used to store information that needs to be permanent.**
- **It is often used to contain, for example, configuration data for a computer system.**

- **These chips cannot be altered and can only be read from (hence their name).**
- **One of the main advantages is that the information stored on the ROM chip is not lost even when power is turned off to the computer.**
- **They are often referred to as non-volatile memories.**

Central processing unit (CPU)/ processor:

A central processing unit (CPU) or processor is an electronic circuit board in a computer that can execute instructions from a computer program.

The two main components are:

- **Arithmetic and Logic Unit (ALU) where arithmetic and logical operations are carried out.**
- **control unit (CU) which takes instructions the decodes and executes the instructions.**

Network interface card (NIC):

- **A network interface card (NIC) is a component that allows a computer or any other device (for example, a printer) to be connected to a network (for example, the internet); it can be wired or wireless.**
- **Each NIC is hard-coded with a unique MAC (media access control).**

Types of Network interface card (NIC):

Graphics card:

A graphics card allows the computer to send graphical information to a video display device such as a monitor, television, or projector.

It usually connects to the motherboard

Graphics cards are usually made up of:

- **a processing unit**
- **memory unit (usually RAM)**
- **a cooling mechanism (often in the form of a heat sink since these cards generate a lot of heat)**
- **connections to a display unit (monitor, TV or projector).**

Concepts of Hardware and Software Cont.

Sound card:

A sound card is an integrated circuit board that provides a computer with the ability to produce sounds.

These sounds can be heard by the user either through speakers or headphones.

Sound cards also allow a user to record sound input from a microphone connected to the computer, and manipulate sound stored on a disk.

Internal hard disk drive/ solid-state drive (HDD/SSD):

Basically, hard disk drives (HDDs) are magnetic in nature and are one of the main methods for storing data, files (text, photos and music) and most of the system and applications software.

Internal hard disk drive/ solid-state drive (HDD/SSD):

More modern computers (and all tablets) use the newer storage systems which make use of solid-state (SSD) technology and are replacing HDDs in many cases. Their function is the same as an HDD.

HDD

3.5”

Shock resistant up to 350g/2ms

SSD

2.5”

Shock resistant up to 1500g/0.5ms

Software:

is the general term used for the programs that control the computer system and process data.

The software considered in this course falls into two categories: applications and system.

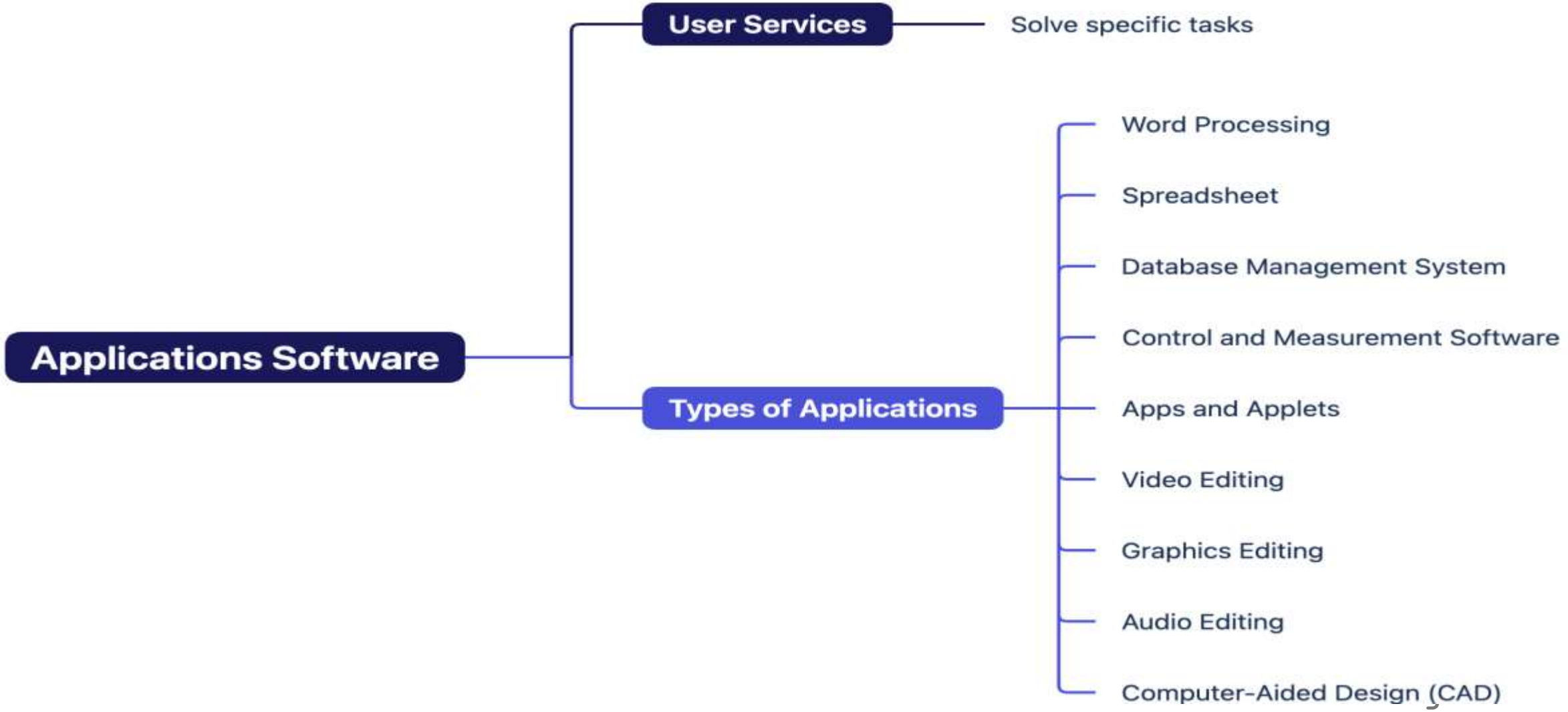
Concepts of Hardware and Software Cont.

Applications software:

provides the services that the user requires to solve a given task. For example:

- word processing
- spreadsheet
- database (management system)
- control and measurement software
- apps and applets
- video editing
- graphics editing
- audio editing
- computer-aided design (CAD).

Concepts of Hardware and Software Cont.



Concepts of Hardware and Software Cont.

Word processing

Word processing software is used to manipulate a text document, such as an essay or a report. Text is entered using a keyboard and the software provides tools for copying, deleting and various types of formatting. Some of the functions of word processing software include:

- creating, editing, saving and manipulating text
- copy and paste functions
- spell checkers and thesaurus
- import photos/images into a structured page format
- translation into foreign language.

Spreadsheet

Spreadsheet software is used to organise and manipulate numerical data (in the form of integer, real, date, and so on). Numbers are organised on a grid of lettered columns and numbered rows. The grid itself is made up of cells, and each cell is identified using a unique combination of columns and rows; for example: B6. Some of the functions of spreadsheets include:

- use of formulae to carry out calculations
- ability to produce graphs
- ability to do modelling and 'what if' calculations.

Database (management system)

Database software is used to organise, manipulate and analyse data. A typical database is made up of one or more tables. Tables consist of rows and columns. Each row is called a 'record' and each column is called a 'field.' This provides the basic structure for the organisation of the data within the database. Some of the functions include:

- ability to carry out queries on database data and produce a report (DBMS)
- add, delete and modify data in a table.

Concepts of Hardware and Software Cont.

Control and measurement software

Control and measuring software is designed to allow a computer or microprocessor to interface with sensors so that it is possible to:

- measure physical quantities in the real world (such as temperatures)
- control applications (such as a chemical process) by comparing sensor data with stored data and sending out signals to alter process parameters (for example, open a valve to add acid and change the pH).

Apps and applets

Applets are small applications that perform a single task on a device (they are usually embedded in an HTML page on a website and can be executed from within a browser).

Apps refer to software which can perform a fairly substantial task (such as, video and music streaming, banking application or social media). The term originally referred to software that ran on a smartphone and could be downloaded from an 'app store'.

Computer-aided design (CAD) software

This is software used to help in the creation, manipulation, modification and analysis of a drawing/design.

It can be used to produce 2D or 3D diagrams which:

- can be rotated to view the drawing from any angle
- can produce full dimensions
- can be used to estimate manufacturing costs of the final product
- predict any structural problems.

Concepts of Hardware and Software Cont.

Audio editing software

Audio editing software allows a user to edit, manipulate and generate audio data on a computer. It allows the user to alter:

- length of track
- start/stop time of track
- conversion between audio file formats
- volume of track
- fading in/out
- combine multiple sound tracks
- noise reduction
- to create another version of the sound track (for example, a continuous loop or phone ring tone).

Video editing software

Video editing software allows a user the ability to manipulate videos to produce a new video. It enables the addition of titles, colour correction and altering/ adding sound to the original video. Essentially it includes:

- rearranging, adding and/or removing sections of video clips and/or audio clips
- applying colour correction, filters and other video enhancements
- creating transitions between clips in the video footage.

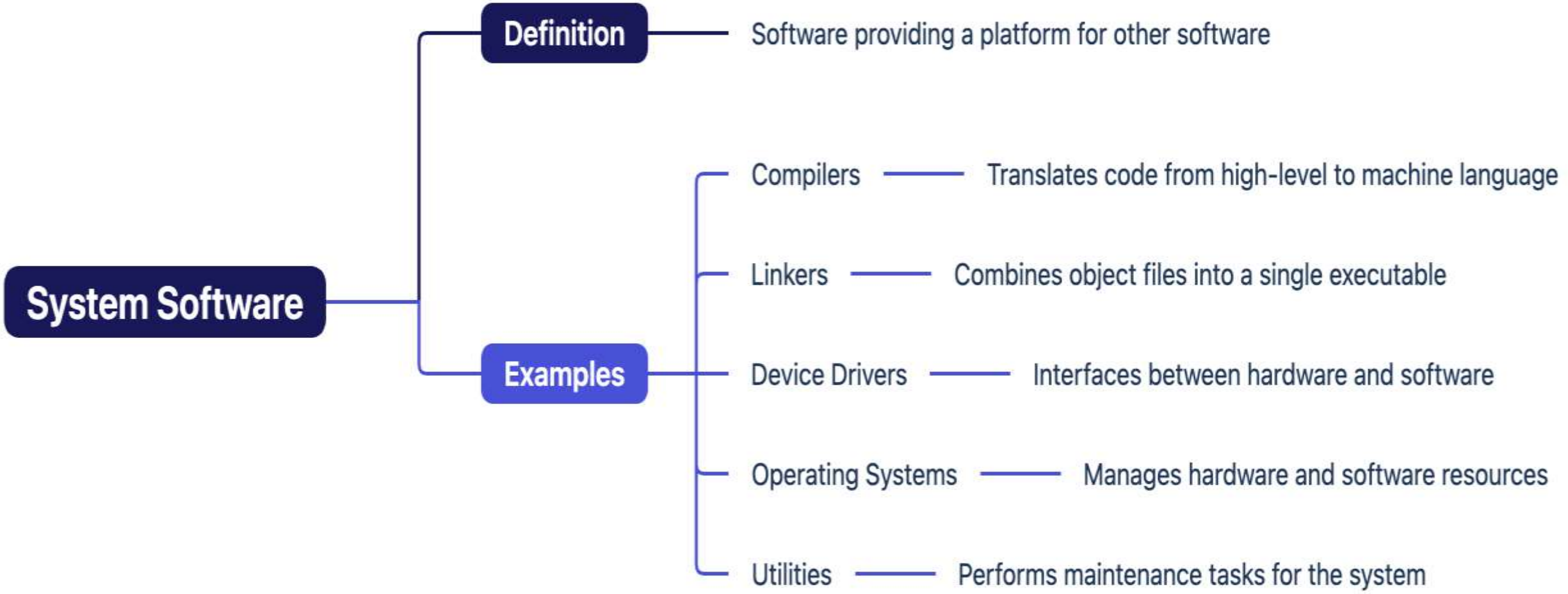
Graphics editing software

Graphics editing software allows bitmap and vector images to be changed. Bitmap images are made up of pixels which contain information about image brightness and colour. Bitmap graphics editors can change the pixels to produce a different image. Vector graphic editors operate in a different way and do not use pixels. This type of software manipulates lines, curves and text to alter the stored image as required. Both types of editing software are chosen depending on the format of the original image.

System software is the software designed to provide a platform on which all other software can run. For example:

- compilers
- linkers
- device drivers
- operating systems
- utilities.

Concepts of Hardware and Software Cont.



Concepts of Hardware and Software Cont.

Compiler

A compiler is a computer program that translates a program written in a high-level language (HLL) into machine code (code that is understood by the computer) so that it can be directly used by a computer to perform a required task. The original program is called the **source code** and the code after compilation is called the **object code**. Once a program is compiled, the machine code can be used again and again to perform the same task without recompilation. Examples of high-level languages include Java, Python, Visual Basic, Fortran, C++ and Algol.

Linkers

A linker (or link editor) is a computer program that takes one or more object files produced by a compiler and combines them into a single program that can be run on a computer. For example, many programming languages allow programmers to write different pieces of code, called modules, separately. This simplifies the programming task since it allows the program to be broken up into small, more manageable sub-tasks. However, at some point, it will be necessary to put all the modules together to form the final program. This is the job of the linker.

Device driver

A device driver is the name given to software that enables one or more hardware devices to communicate with the computer's operating system. Without drivers, a hardware device (for example, a printer) would be unable to work with the computer. All hardware devices connected to a computer have associated drivers. As soon as a device is plugged into the USB port of a computer, the operating system looks for the appropriate driver. An error message will be produced if it cannot be found. Examples of hardware devices that require drivers include printers, memory sticks, mouse, CD drivers, and so on.

Concepts of Hardware and Software Cont.

Operating systems (OS)

The operating system (OS) is essentially software running in the background of a computer system. It manages many of the basic functions. Without the OS, most computers would be very user-unfriendly and the majority of users would find it almost impossible to work with computers on a day-to-day basis. Operating systems allow:

- input/output operations
- users to communicate with the computer (for example, *Windows*)
- error handling to take place
- the loading and running of programs to occur
- managing of security (for example, user accounts, log on passwords).

Utilities

Utility programs are software that has been designed to carry out specific tasks on a computer. Essentially, they are programs that help to manage, maintain and control computer resources. Examples include:

- antivirus
- anti-spyware
- backup of files
- disk repair
- file management
- security
- screensavers
- disk defragmenter.

Computer Fundamental

Lecture 2 Part 1

Assist.Prof. Dr. Haider Noori Hussain

What Makes Up a Computer?

Computers: A combination of hardware and software.

Understanding components is key for troubleshooting and optimization.

What Makes Up a Computer?

Topics Covered:

1. Computer Portions	**2. Hardware Parts**
3. Input/Output (I/O) Units	**4. Memory Types**
5. CPU Components	**6. Computer Ports**
7. Personal Computers (Features and Types)	

Computer Portions

- Input: Devices for data entry (e.g., keyboard, mouse).
- Processing: Central Processing Unit (CPU) – 'Brain of the computer.'

Computer Portions

- Storage: Hard drives, SSDs, and RAM.
- Output: Devices like monitors and printers.
- Power Supply: Converts electricity to power the components.

Essential Hardware Components

Motherboard: Main circuit board connecting all parts.

CPU: Core processor for executing instructions.

RAM: Temporary memory for running processes.

Storage:

- HDD: Mechanical storage.
- SSD: Faster, solid-state storage.

Essential Hardware Components

Power Supply Unit (PSU): Provides electricity to components.

Graphics Processing Unit (GPU): Specialized for visual tasks.

Input and Output Units

- Input devices are hardware that allows data to be entered into a computer.
- They use either manual entry (such as a keyboard or a mouse) or direct data entry (such as sensors or optical character readers).

Input and Output Units

- Essentially, these devices turn input into a form the computer can understand for example, a mouse turns hand movements into cursor movements on the screen.
- Sometimes the data has to go through an Analogue To Digital Converter (ADC) before the computer can make any sense of it.

Input and Output Units

Note:

- Some devices can act as both input and output. For example, a touch screen can do both, as can a DVD writer/player; but most devices are only capable of either inputting data into a computer or displaying the results of computer processing (output device).

Input and Output Units

Input devices and their uses:

Keyboards:

- Keyboards are by far the most common method used for data entry.
- They are used as the input device on computers, tablets, mobile phones and many other electronic items.

Input and Output Units

Keyboards:

- The keyboard is connected to the computer through a USB or wireless connection.
- In the case of tablets and mobile phones, the keyboard is often virtual or a type of touchscreen technology (see later).

Input and Output Units

Keyboards:

- When the character on the keyboard is pressed, it is converted into a digital signal, which the computer interprets.
- They are a relatively slow method of data entry and are also prone to errors.

Input and Output Units

Keyboards:

- But keyboards are probably still the easiest way to enter text into a computer.
- However, frequent use of these devices can lead to injuries, such as repetitive strain injury (RSI) in the hands and wrists.

Input and Output Units

Keyboards:

Input and Output Units

Keyboards:

Ergonomic keyboards can help to overcome this problem - these have the keys arranged differently, as shown.

They are also designed to give more support to the wrists and hands when doing a lot of typing.

Input and Output Units

Keyboards:

Ergonomic keyboard

Input and Output Units

Uses of keyboards

» Input of data into applications software (for example, text into word processors, numbers into spreadsheets, and so on).

» Typing in commands to the computer (for example, Prnt Scrn, CtrI+P to print out, and so on).

Advantages of and Disadvantages of keyboards

Advantages of keyboards	Disadvantages of keyboards
Fast entry of new text into a document.	Can be difficult to use if the user has limited arm/wrist use.
Well-known method.	Slow method when compared to direct data entry (for example, Optical Mark Recognition).
Easy to use for most people.	Fairly large device that uses up valuable desk space.
Easier to do verification checks as data is entered (can immediately compare the source document with typed data on the screen).	

Input and Output Units

Pointing devices:

Mouse:

- The mouse is an example of a pointing device.
- The user controls the position of a pointer on the screen by moving the mouse around.

Input and Output Units

Pointing devices:

Mouse:

- There are usually two buttons which have different functions; the left button is used to select items by double clicking, while the right button brings up drop-down menus.

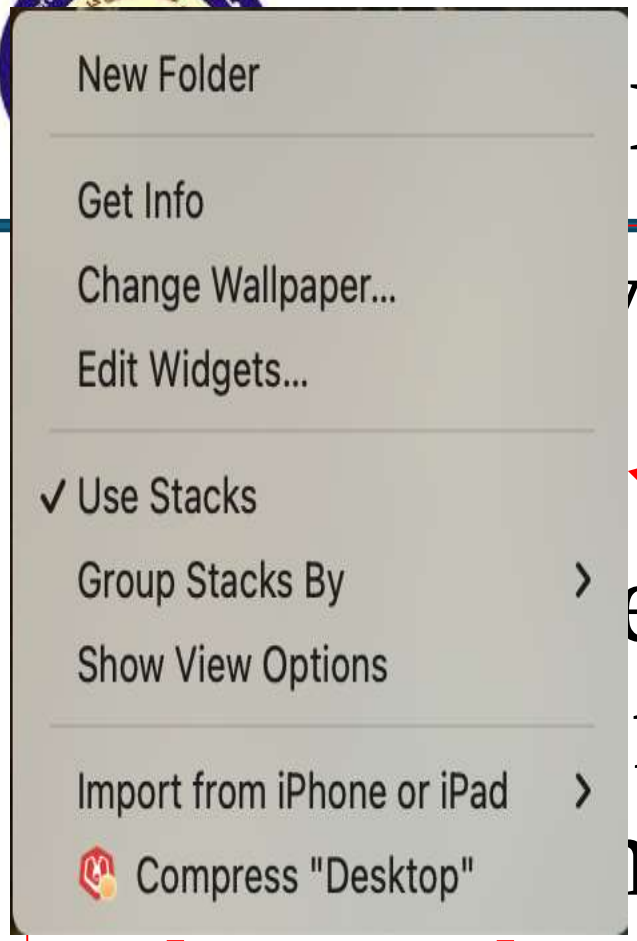
Input and Output Units

Pointing devices:

Mouse:

- There are usually two buttons which have different functions; the left button is used to select items by double clicking, while the right button brings up drop-down menus.

nput and Output Units



vices:

e usually two buttons which have functions; the left button is used to ns by double clicking, while the right button brings up drop-down menus.

Input and Output Units

Pointing devices:

Mouse:

Arc Mouse:

Input and Output Units

Pointing devices:

Mouse:

Many also have a scroll button, which speeds up the process of moving through a document.

Input and Output Units

Mouse:

- The optical mouse (where movement is detected by reflected light rather than the position of a moving ball) and the cordless or wireless mouse (which transmits signals to a USB wireless receiver plugged into the computer) are in use on modern computers.

Input and Output Units

Mouse:

The advantage of an optical mouse is it has no moving parts and it also does not pick up any dirt. This makes it more robust and improves its performance because the older type of mouse can 'skid’ on certain surfaces reducing the control of the pointer.

Input and Output Units

Uses of a mouse

Almost anything, depending on the software, but includes:

» grouping sing and eliting fileftware

» image editing, for example, controlling the size and position of a drawing pasted into a document

Input and Output Units

» controlling the position of a pointer on the screen to allow selection from a menu or selecting an icon, and for scrolling up and down/left and right.

Advantages of a mouse

- Faster method for choosing an option rather than using a keyboard.
- Very quick way of navigating through applications and the internet.
- Does not need a large desk area when compared to a keyboard.

Input and Output Units

Disadvantages of a mouse

- Can be more difficult for people with restricted hand/wrist movement than using a keyboard for data entry.
- Easy to damage, and the older type of mouse quickly becomes clogged up with dirt.
- Difficult to use if no flat surface readily available (for example, on an aeroplane).

Input and Output Units

» controlling the position of a pointer on the screen to allow selection from a menu or selecting an icon, and for scrolling up and down/left and right.

Touchpad: **Touchpads** are used as a pointing device in many laptop computers. The pointer is controlled by the user moving their finger on the touchpad and then gently tapping it to simulate the left-hand button of a mouse (that is, selection). They also have buttons under the touchpad which serve the same function as the left and right buttons on a mouse.

Input and Output Units

Touchpad:

Use of a touchpad

Their uses are the same as those of a mouse.

Input and Output Units

Touchpad:

Advantages of a touchpad

- Same as the mouse (faster than a keyboard for choosing options, used to navigate applications and the internet, etc.).
- Because the touchpad is integrated into the laptop computer there is no need for a separate mouse – this aids the portability and is a big advantage if there are no flat surfaces available.

Disadvantages of a touchpad

- People with limited hand/wrist movement find the device difficult to use.
- Can be more difficult to control the pointer when compared to a normal mouse.
- More difficult to use when doing certain operations such as drag and drop.

Input and Output Units

Joysticks:

- Joysticks have similar functions to a mouse and a tracker ball.
- By gripping the stick, a pointer on the screen can be controlled.

Input and Output Units

Joysticks:

- Buttons are used to make selections.
- Often they have another button on the top of the stick that is used for gaming purposes for example to fire a weapon.

Input and Output Units

Uses of a joystick

» Used in video/computer games.

» Used in simulators (for example, flight simulators) to mimic actual controls.

Input and Output Units

Advantages of a joystick

- Easier than a keyboard to navigate the screen.
- Control is more realistic for some applications than, for example, using a mouse.

Disadvantages of a joystick

- More difficult to control the on-screen pointer than with other devices, such as a mouse.

Input and Output Units

Touch screens (as an input device):

With a touch screen the user can choose an option by simply touching a button/icon on the screen. The selection is automatically made without the need for any pointing device.

Input and Output Units

Touch screens (as an input device):

Uses of touch screens:

» Self-service tills, for example, petrol stations, where the user just touches the screen to select the fuel grade and payment method.

Input and Output Units

» Automatic teller machines (ATMs) to choose from on-screen options.

» Point of sale terminals such as in restaurants.

» Public information systems at airports, railway stations, tourist offices, etc.

» Mobile phones, tablets and satellite navigation systems.

Input and Output Units

» Interactive white boards in education.

» Computer-based training (CBT) where answers are selected during on-screen testing.

» They can obviously also be used as an output device because they also work as a flat-screen monitor.

Input and Output Units

» Interactive white boards in education.

» Computer-based training (CBT) where answers are selected during on-screen testing.

» They can obviously also be used as an output device because they also work as a flat-screen monitor.

Input and Output Units

Advantages of touch screens

- Faster entry of options than using keyboard or mouse.
- Very easy method for choosing options.
- User-friendly method – no training necessary in its use.
- Option to expand the size of the display if necessary.

Disadvantages of touch screens

- Limited number of input options available.
- Can lead to problems if an operator has to use the system frequently (straining of arm muscles, RSI, etc. are all possible).
- The screen can get very dirty with constant touching (giving a risk of spreading infections, and reduce its responsiveness which makes it more difficult to read in strong sunlight).

Input and Output Units

Scanners:

Scanners are used to enter information from hard copy (for example, text documents, photographs) into a computer. The most common type is the flatbed scanner, which is made up of a glass panel and lid. The hard copy document or photo is scanned by a light source and produces a computer-readable image.

Input and Output Units

Scanners:

barcode scanners.

Input and Output Units

- The subsequent image can then be manipulated using a drawing package.
- Images of text can also be used with optical character recognition (OCR) software to produce editable text documents.
- There are also specialist scanners which are designed to carry out a specific task, for example, barcode scanners.

Input and Output Units

Uses of scanners:

- Scan in documents and convert into a format for use in various software packages.
- Scan in old/valuable documents/books, thus protecting the originals, as well as producing records in case the paper copies are lost/destroyed (this is also known as archiving).
- Scan in photographs (not all cameras are digital and therefore photographs are still printed on paper, requiring conversion to computer format for storage).
- Scan in barcodes at POS terminals.

Input and Output Units

Advantages of scanners

- Images can be stored for editing at a later date.
- When used with OCR, much faster and more accurate (no typing errors) than typing in documents again.
- It is possible to recover damaged documents and photographs by scanning in and then using appropriate software to produce an acceptable copy.

Disadvantages of scanners

- Quality can be limited depending on how good a resolution the scanner is capable of (most scanners have a range of resolutions you can choose from).
- They can be fairly slow at scanning, especially if the colour scanning mode is chosen or if the chosen scanning resolution is high.

Input and Output Units

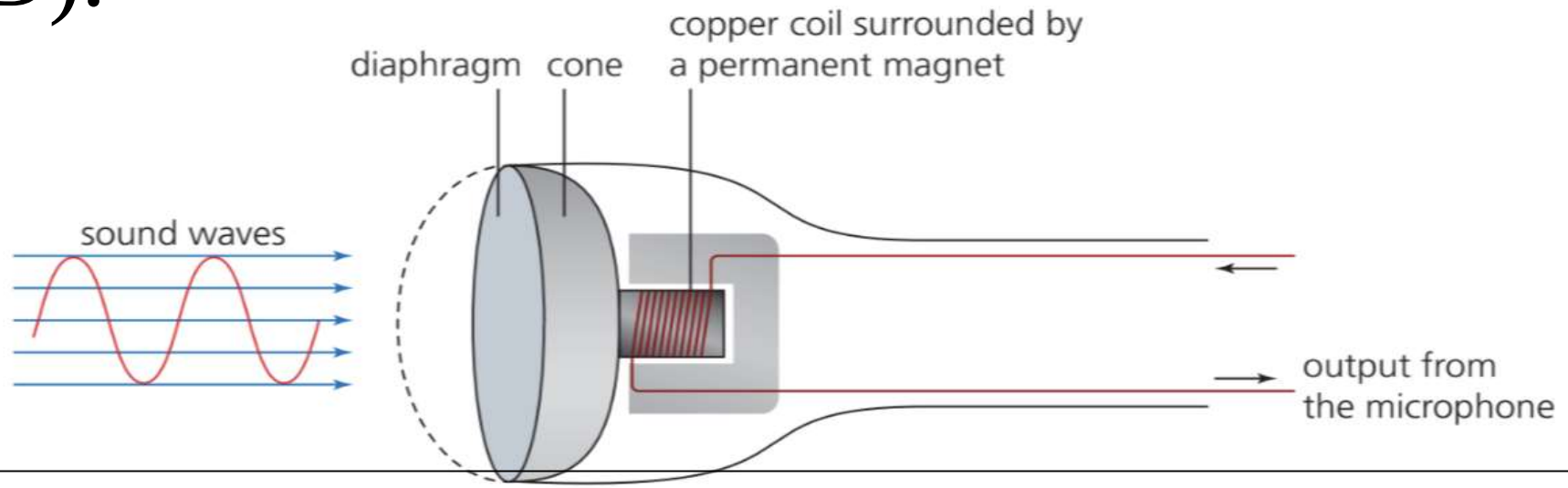
Microphones:

Microphones are either built into the computer or are external devices connected through the USB port or using Bluetooth connectivity. The Figure below shows how a microphone can convert sound waves into an electric current.

Input and Output Units

Microphones:

The current produced is converted to a digital format so that a computer can process it or store it (for example, on a CD).



Input and Output Units

» When sound is created, it causes the air to vibrate.

» When a diaphragm in the microphone picks up the air vibrations, the diaphragm also begins to vibrate.

» A copper coil is surrounded by a permanent magnet and the coil is connected to the diaphragm using a cone. As the diaphragm vibrates, the cone moves in and out causing the copper coil to move backwards and forwards relative to the magnet.

Input and Output Units

» This forwards and backwards motion cuts through the magnetic field around

the permanent magnet, inducing an electric current.

» The electric current is then either amplified or sent to a recording device. The electric current is analogue in nature.

Input and Output Units

The electric current output from the microphone can also be sent to a computer where a sound card converts the current into a digital signal which can then be stored in the computer.

Input and Output Units

Uses of microphones

- To input speech/sounds to be used in various applications, for example, in presentations, sampling (in films, music, etc.) and special effects (films).
- Input in voice-recognition software:
  - the software converts the speech into text that can be used in, for example, a word processor or to input commands into a computer
  - to recognise commands; for example, some cars now have voice-activated systems to switch on the lights, turn up the radio volume, etc. (see Chapter 1).
- Microphones can also be used as a sensor to pick up sound (for example, in an intruder alarm system).
- Used in video-conferencing or Voice over Internet Protocol (VoIP) applications.

Input and Output Units

Advantages of microphones

- Faster to read in text than to type it in using a keyboard.
- It is possible to manipulate sound in real time using special software rather than work on a recording done at some earlier stage.
- If used in a voice activation system, it has the advantage of improving safety (because the car driver, for example, does not need to take their hands off the wheel to operate a switch or alter the radio station, etc.).

Disadvantages of microphones

- Sound files can use up a lot of computer memory.
- Voice-recognition software is not as accurate as typing in manually (for example, the software cannot distinguish the difference between 'their' and 'there').

Input and Output Units

Other Input Deices:

Sensors

Card readers

Chip and PIN readers

Radio frequency identification (RFID) readers

Optical mark recognition/reader (OMR)

Optical character recognition/reader (OCR)

END Of Part 1 Lecture

Computer Fundamental

Lecture 2 Part 2

Assist.Prof. Dr. Haider Noori Hussain

What Makes Up a Computer?

Computers: A combination of hardware and software.

Understanding components is key for troubleshooting and optimization.

What Makes Up a Computer?

Topics Covered:

3. Input/Output (I/O) Units Cont.	**4. Memory Types**
5. CPU Components	**6. Computer Ports**
7. Personal Computers (Features and Types)	

Input and Output Units

Output devices and their uses:

As the name suggests, these are devices that usually show the result of computer processing in a format that can be understood by a human (for example, on a monitor or printed on paper). However, some output devices are part of a control system.

Input and Output Units

Output devices and their uses:

In these examples, the computer is controlling a process and sends signals to these output devices.

Input and Output Units

Output devices and their uses:

Monitors: we will consider two types of monitor:

» the cathode ray tube (CRT) monitor.

» LCD (or TFT) screen (TFT means 'thin film technology'; a general term for modern thin screens).

Input and Output Units

- While CRT monitors have just about been phased out everywhere, they are included here because these are the only type of device which allows the use of light pens (see Section 2.1.11).
- Consequently, some companies using CAD still use large CRT monitors to enable the use of light pens as part of the drawing environment.

Input and Output Units

CRT monitors

- Cathode ray tube (CRT) monitors are the least expensive type of monitor, although they are becoming increasingly rare as LCD monitors are now taking over.
- They come in various sizes and make use of an electron gun firing against a phosphor screen.

Input and Output Units

CRT monitors

- The picture is made up of tiny dots which are colored red, green or blue.
- The intensity of each colored dot makes up the vast range of colors interpreted by the eye.

Input and Output Units

Uses of CRT monitors

» They are only used in specialist areas, such as computer-aided design (CAD); the screens are usually very large to enable complex diagrams to be created or modified.

» They are used with light pens to allow designs to be created on screen.

Input and Output Units

Advantages of CRT monitors

- The screen can be clearly seen at a wider range of viewing angles than with most LCD monitors.
- They allow the use of light pens in, for example, CAD/CAM applications.

Disadvantages of CRT monitors

- They tend to be rather heavy and present a weight hazard if not supported properly; they also have a very large footprint on a desk (they cover about ten times the area of an LCD monitor).
- They run very hot and can cause fires if left unattended (especially as they get older).
- They consume considerably more power than LCD monitors.
- They can flicker, which can lead to headaches and eyesight problems with prolonged use.

Input and Output Units

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Input and Output Units

LED and LCD screens:

LED screens:

- An LED screen is made up of tiny light emitting diodes (LEDs). Each LED is either red, green or blue in color.

Input and Output Units

- By varying the electric current sent to each LED, its brightness can be controlled, producing a vast range of colors.
- This type of screen tends to be used for large outdoor displays, due to the brilliance of the colors produced. Recent advances in LED technology have led to the introduction of OLED (organic LED) screens.

Input and Output Units

- Note: Many monitors and television screens are advertised as LED when in fact they are LCD screens which are backlit using LEDs.

LCD screens

- LCD screens are made up of tiny liquid crystals. These tiny crystals make up an array of pixels which are affected by changes in applied electric fields.
- How this works is outside the scope of our course, but the important thing to realise is that for LCD screens to work, they require some form of backlighting.

LCD screens

- Modern LCD screens are backlit using light emitting diode (LED) technology and must not be confused with pure LED screens.
- When LEDs are used, a matrix of tiny blue-white LEDs is used behind the LCD screen.
- The use of LED backlighting gives a very good contrast and brightness range.

LCD screens

- Before the use of LEDs, LCD screens used Cold Cathode Fluorescent Lamps (CCFL) as the back lighting method. Essentially, CCFL used two fluorescent tubes behind the LCD screen to supply the light source.

LCD screens

- Before the use of LEDs, LCD screens used cold cathode fluorescent lamps (CCFL) as the back lighting method. Essentially, CCFL used two fluorescent tubes behind the LCD screen to supply the light source.

LCD screens

- Why are LEDs more popular than CCFLs for backlighting? Or
- Why are LEDs preferred over CCFLs for backlighting applications?

LCD screens

- Solution: LEDs are preferred over CCFLs because they are more energy-efficient, provide better brightness, enable thinner designs, and have a longer lifespan.

LCD screens

- What are the advantages of LED technology over CCFL technology in backlighting applications?

LCD screens

- Solution:

1. **Energy Efficiency**: LEDs consume significantly less power compared to CCFLs, making them more eco-friendly and cost-effective.
2. **Slimmer Design**: LEDs are compact, enabling thinner and lighter displays.

LCD screens

- Solution:

3. Longer Lifespan: LEDs have a longer operational life, reducing the need for frequent replacements.

4. Better Brightness and Contrast: LEDs provide higher brightness levels and improved contrast ratios, enhancing display quality.

LCD screens

- Solution:

5. Faster Response Time: LEDs can be turned on and off more quickly, enabling better performance in dynamic visual applications.

6. Environmental Friendliness: LEDs do not contain mercury, unlike CCFLs, making them safer for the environment.

LCD screens

Advantages of LCD screens

- Very efficient, low power consumption.
- Lightweight devices.
- Unlike CRT monitors, do not suffer from screen image burn-in (that is, a permanent image burned into the screen due to unchanging images over a period of time).
- Screens can be made in large variation of sizes.
- Do not suffer from a flickering image, unlike CRT monitors.
- Very sharp image resolution (allow a vast range of colours).
- Produce low electromagnetic fields compared to CRT monitors.

LCD screens

Disadvantages of LCD screens

- Colour and contrast from various viewing angles can be inconsistent.
- Motion blur is a common issue.
- Lower contrast than CRT monitors, because it is harder to produce a deep, rich level of black.
- LCDs can have weak or stuck pixels, which are permanently on or off; some pixels may be improperly connected to adjoining pixels, rows or columns.
- The LCD panel may not be uniformly illuminated by the back light, resulting in uneven intensity and shading over the screen.

Touch screen (as an output device)

A touchscreen, while primarily considered an input device, can also serve as an output device in certain contexts. This dual functionality makes it unique compared to many traditional devices. Here's how a touchscreen works as an output device:

Output Functionality of Touchscreens

Display Visual Information:

- Touchscreens are often integrated with display technologies like LCD, LED, or OLED. These screens show text, images, videos, and graphical interfaces, fulfilling the output function of visual representation.

Output Functionality of Touchscreens

Uses of touch screens (acting as both input and output)

- Smartphones and tablets (allowing interaction with apps).
- ATMs at banks (where screen options displayed depend on previous input response).
- Ticket collection machines at theatres, cinemas and railway stations (again on-screen outputs will depend on previous inputs).
- Information kiosks at museums or art galleries.

Output Functionality of Touchscreens

Advantages of touch screens

- Faster entry of options than using a keyboard or mouse.
- Very easy method for choosing options.
- User-friendly method – no training necessary in its use.
- Option to expand the size of the display if necessary.

Disadvantages of touch screens

- Limited number of options available.
- Not very good if large amounts of data are being input or output because they are not very accurate and the interface is not fast.
- The screen can get very dirty with constant touching (giving a risk of spreading infections, as well as reducing its responsiveness and making it more difficult to read in strong sunlight).
- Easier for a third party to track a user's interactions, which is a security risk (for example, entering credit card details).

Multimedia projectors

- Multimedia projectors receive signals that can be either analogue or digital (although most modern projectors only work with digital inputs).
- The signal source is usually from a computer, television or DVD player.

Multimedia projectors

- The image from the source is magnified and projected onto a large screen.
- The devices work with a remote control which acts like a cordless mouse when interfacing with the screen.

Multimedia projectors

Multimedia projectors

- It is then possible to direct the computer presentation without being tied to the computer (another feature of the virtual mouse is the laser pointer).
- Most multimedia projectors take input from various types of video format.

Multimedia projectors

Uses of multimedia projectors

- Training presentations (to allow the whole audience to see the images from a computer).
- Advertising presentations (large images showing product features, for example a new car; can be shown at exhibitions, shopping malls, etc.).
- Home cinema systems (projecting the images from a DVD or television).

Advantages of multimedia projectors

- Enables many people to see a presentation rather than crowding around a small computer screen.
- Avoids the need for several networked computers (for example, when looking at a video clip on an internet site, everybody can see the video on the large screen rather than logging on to a number of computers).

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Disadvantages of multimedia projectors

- Images can sometimes be fuzzy.
- Expensive to buy.
- Setting up projectors can be a little difficult.

Printers

This section will consider the use of the three most common types of printer:

» laser printer

» inkjet printer

» dot matrix printer.

Printers

This section will consider the use of the three most common types of printer:

» laser printer

» inkjet printer

» dot matrix printer.

Printers

Laser Printer:

- Produce very high-quality hard copy output.
- The print rate per page is very quick if a large number of pages are being printed.
- They rely on large buffer memories where the data for the whole document is stored before pages can be printed out.

Printers

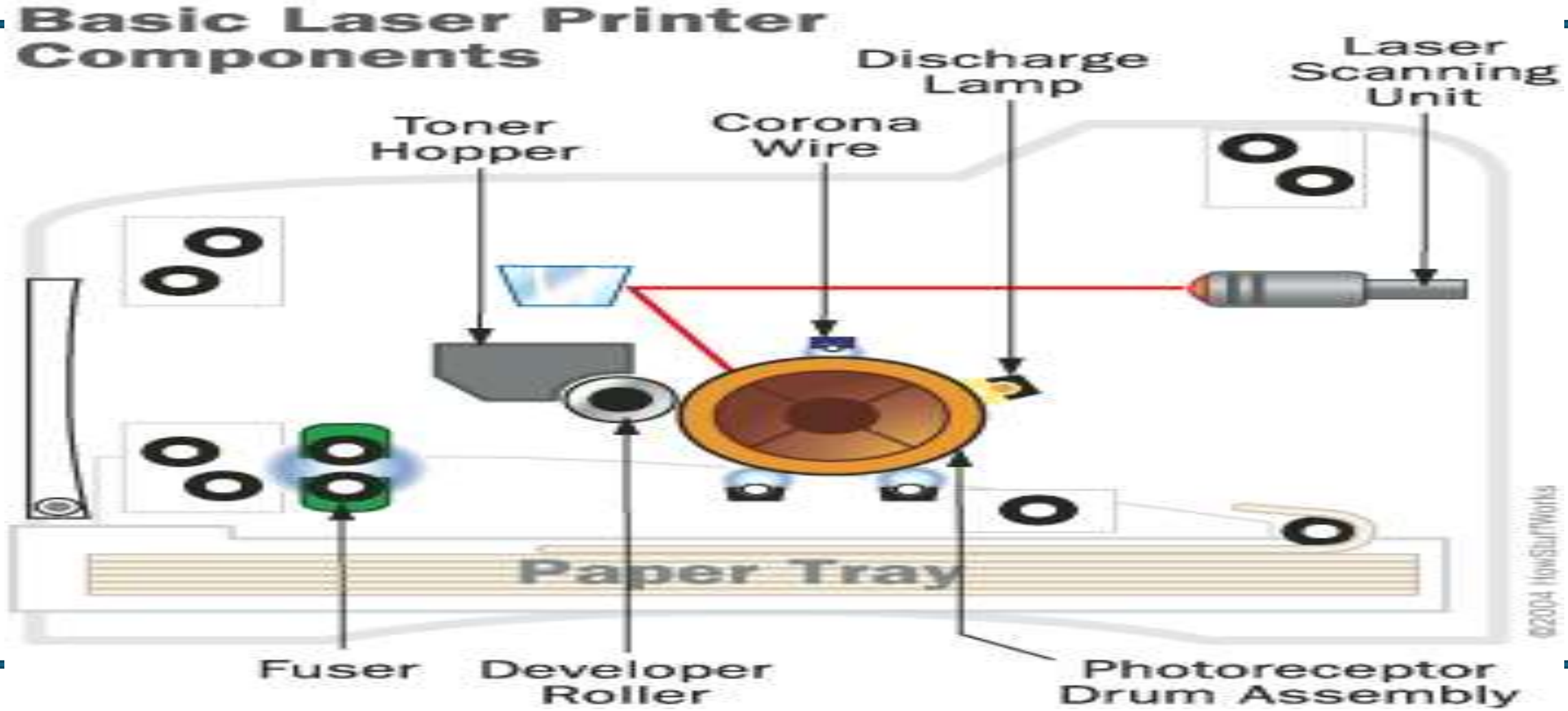
How Laser Printer print out a page?

The laser printing process begins with a positively charged drum. A laser removes the charge in specific areas, creating a pattern matching the text or image. Positively charged toner adheres to these negatively charged areas.

Printers

A negatively charged sheet of paper rolls over the drum, picking up the toner. The paper's charge is neutralized to prevent sticking, and it passes through heated rollers (fuser) to melt and fix the toner permanently. Finally, a discharge lamp resets the drum for the next print.

Printers

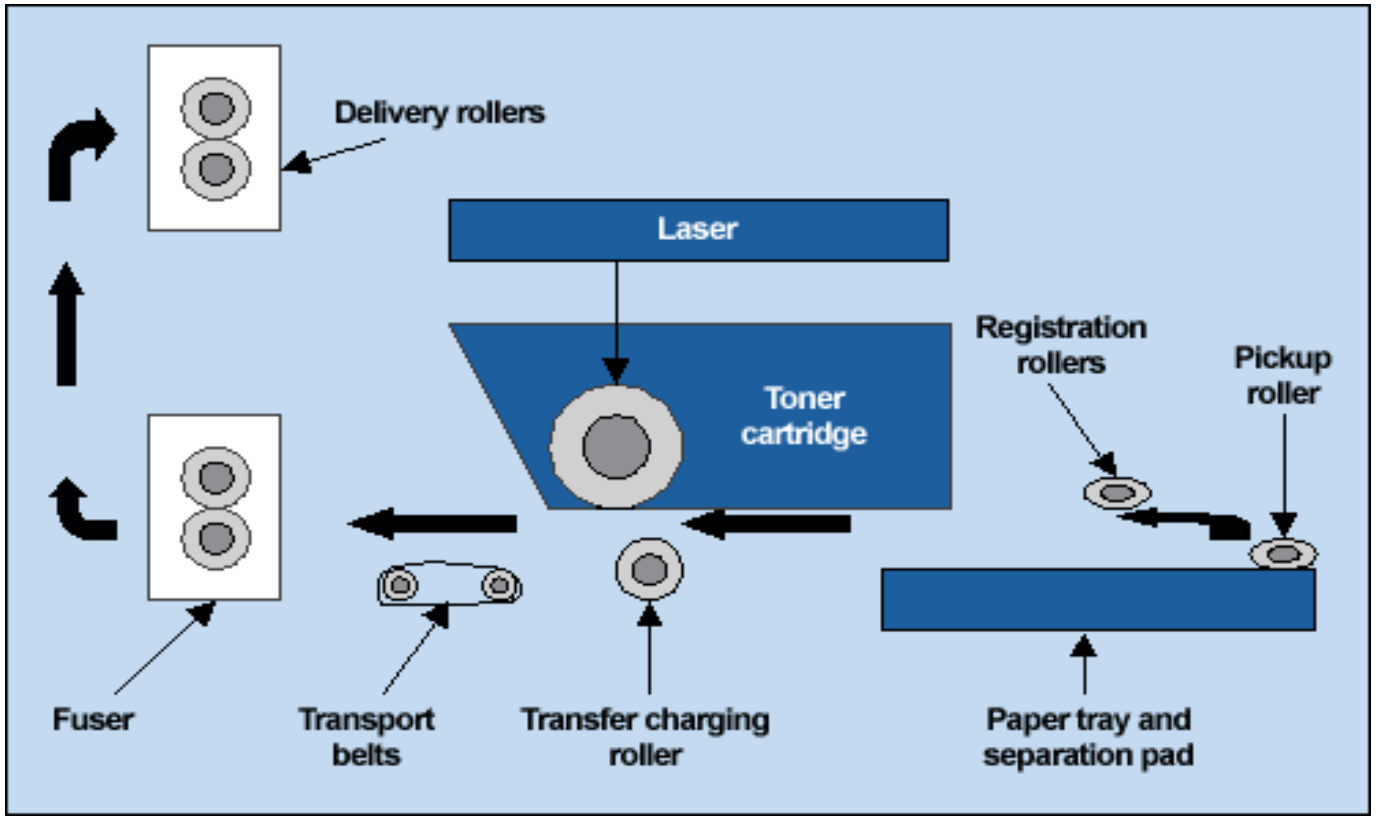

Basic Laser Printer Components
Toner Hopper
Corona Wire
Discharge Lamp
Laser Scanning Unit
Paper Tray
Fuser
Developer Roller
Photoreceptor Drum Assembly

Printers

There are six steps in the process of a laser printer.

They are:-

1. Cleaning
2. Conditioning
3. Writing
4. Developing
5. Transfer
6. Fusing.



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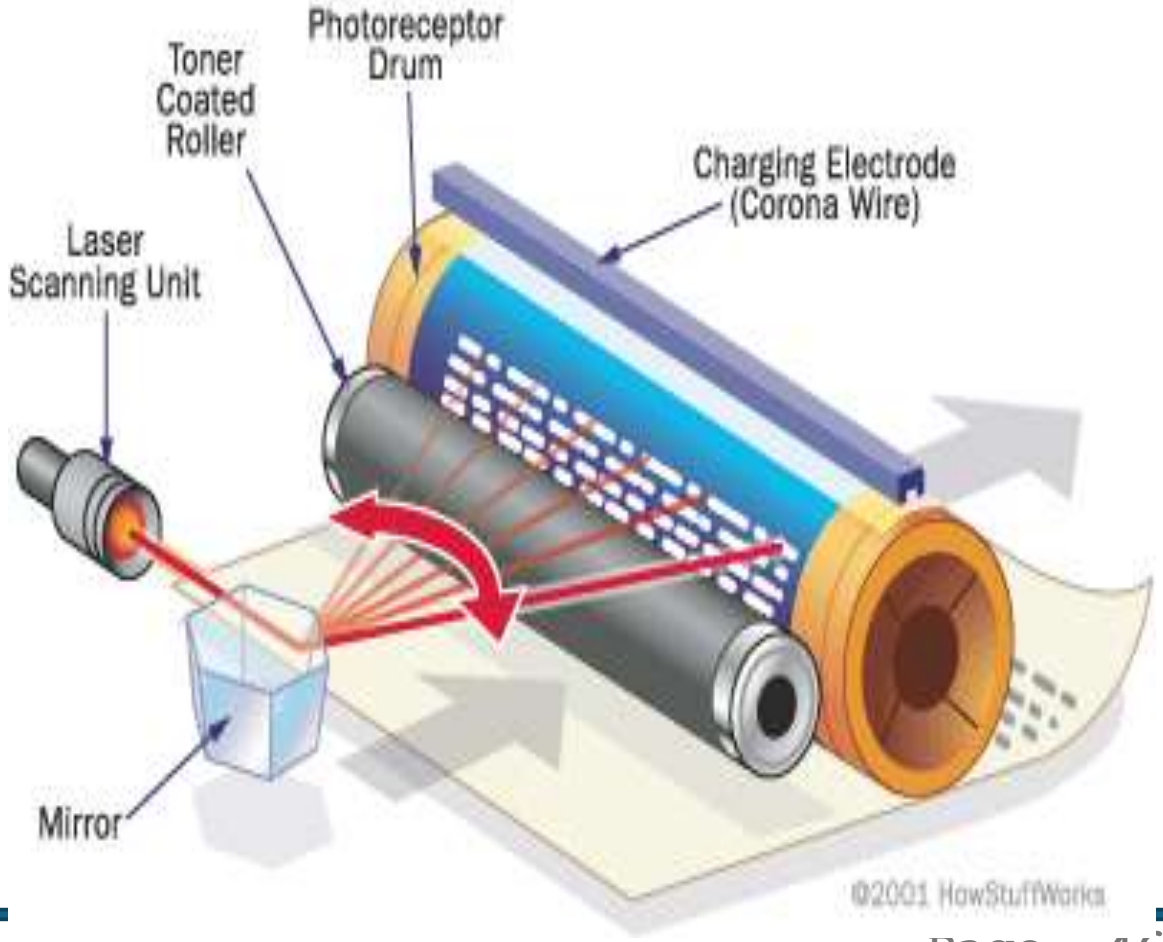
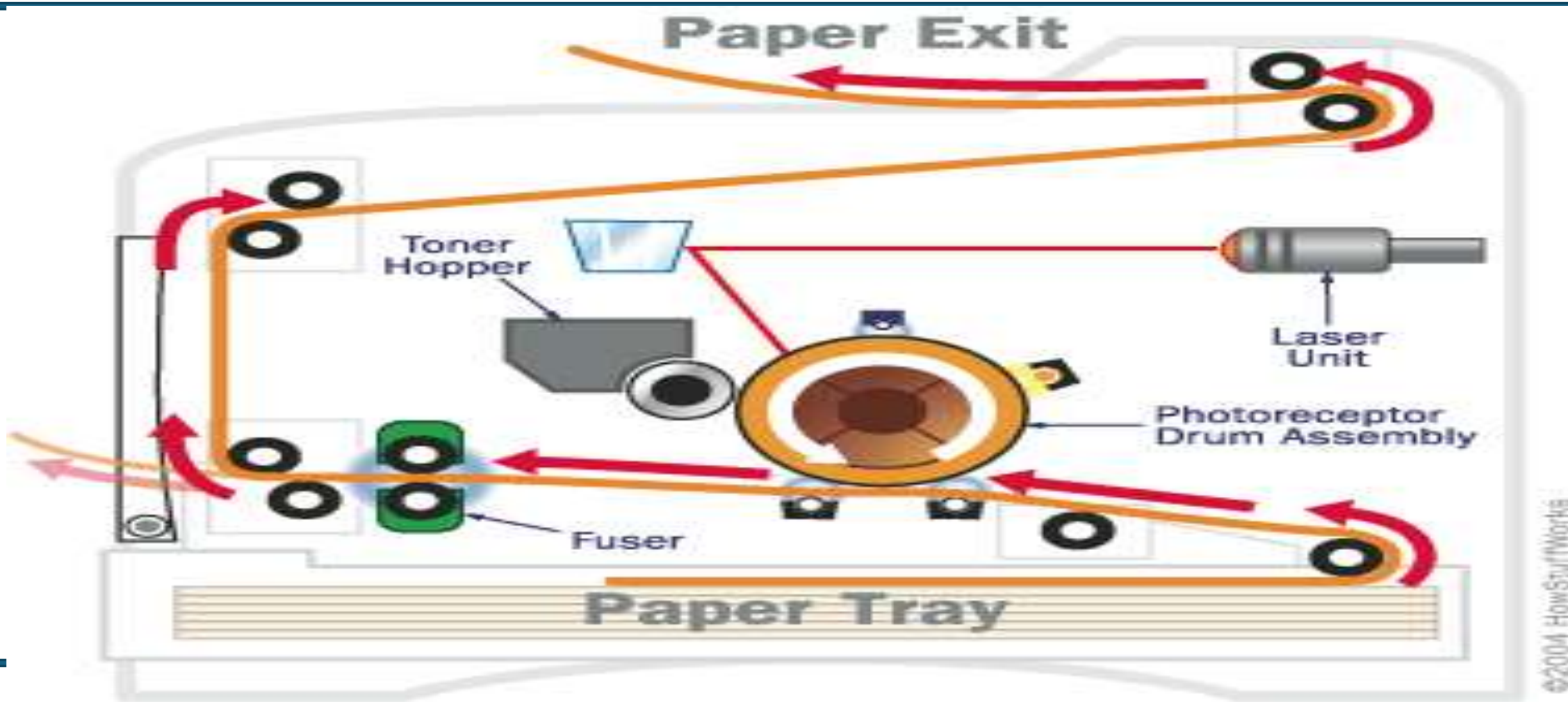


Printers


Paper Exit
Toner Hopper
Laser Unit
Photoreceptor Drum Assembly
Fuser
Paper Tray
©2004 HowStuffWorks

Printers

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They are:-

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2. ~~Conditioning~~
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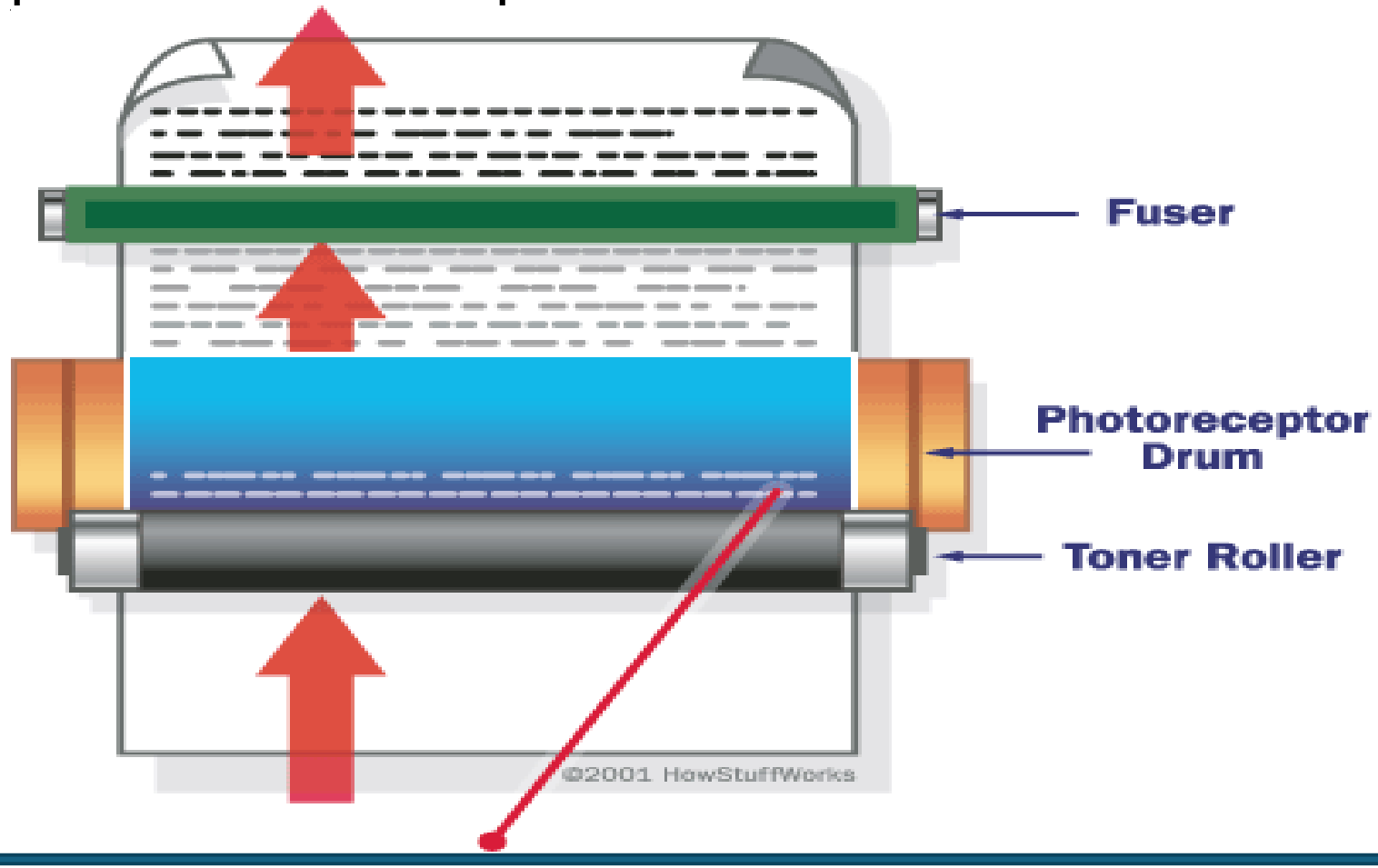
5. ~~Transfer~~
6. Fusing.



Printers

Components of Laser Printers cont.

Replacement toner and drum

Printers

Advantages of laser printers

- Printing is fast (unless only a few pages are to be printed, in which case they are little faster than inkjet printers).
- They can handle very large print jobs.
- The quality is consistently high.
- Toner cartridges last for a long time (and the printers can sometimes be a cost-effective option, particularly if colour outputs are not required).

Printers

Disadvantages of laser printers

- Only really fast if several copies are being made.
- Colour laser printers tend to be expensive to run (four-colour/black cartridges are needed, plus diffuser kits, which are expensive to purchase).
- They produce ozone and volatile organic compounds because of their method of printing and type of toner/ink used (these have been linked to health hazards in the office).

Printers

Inkjet printers

Inkjet printers are used to produce good-quality hard copies. Unlike laser printers, inkjet printers do not have large buffer memories, therefore printing is done a bit at a time. This is why printing is sometimes paused – the whole print job cannot be stored in the buffer, and it has to wait for the computer to send more data.

Uses of inkjet printers

- Used where low-output volumes are required (high-volume jobs are difficult to do because the ink cartridges tend to be used up very quickly).
- If high-quality printing is required for single pages (or only a small print job) then these printers are ideal; for example, they are very good at producing photo-quality printouts.
- 3D inkjet printers are now being used in industry to produce prototypes (see Section 2.3.6).

Printers

Advantages of inkjet printers

» High-quality output.

» Cheaper to buy than laser printers.

» Very lightweight and have a small physical footprint.

» Do not produce ozone and volatile organic compounds, unlike laser printers.

Printers

Disadvantages of inkjet printers

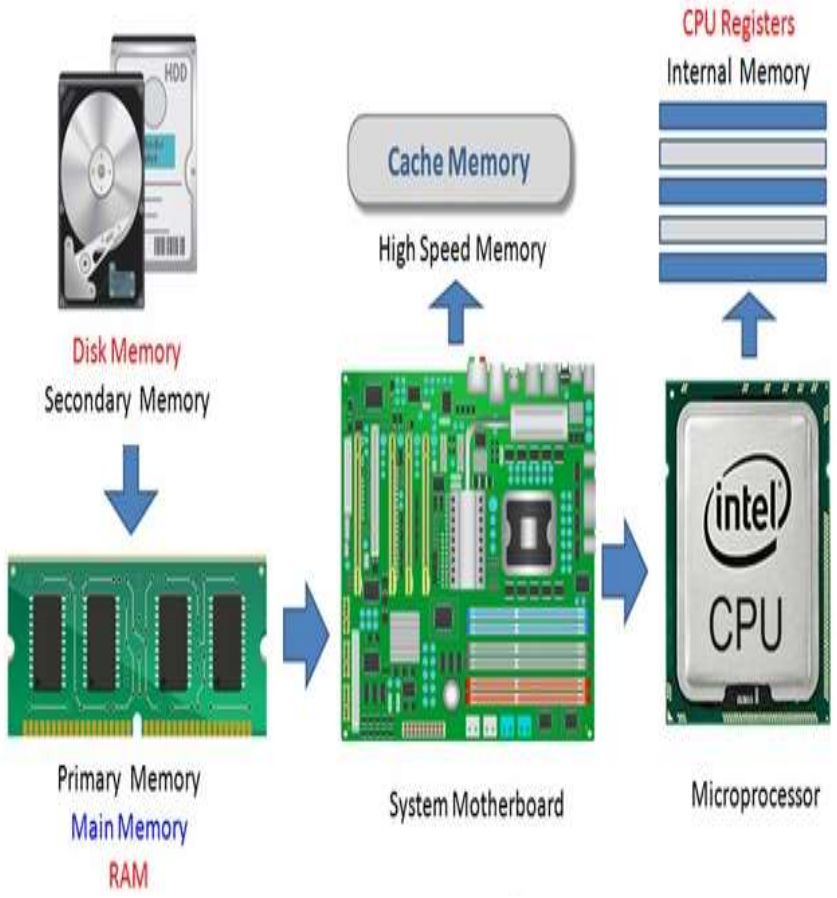
» Slow output if several copies are needed (little buffer capacity to store the pages).

» Cannot do large print jobs (ink cartridges run out too quickly).

» Printing can 'smudge' if the user is not careful.

» Can be expensive if used a lot (original ink cartridges are expensive to buy).

END Of Part 2 Lecture



Computer Fundamental

Lecture 3

Memory Types, CPU Components, and Computer Ports

Assist.Prof. Dr. Haider Noori Hussain

Topics Covered:

This lecture covers three essential components of computer systems:

- Memory Types
- CPU Components
- Computer Ports

Memory Types: Definition and Categories

Definition and Importance

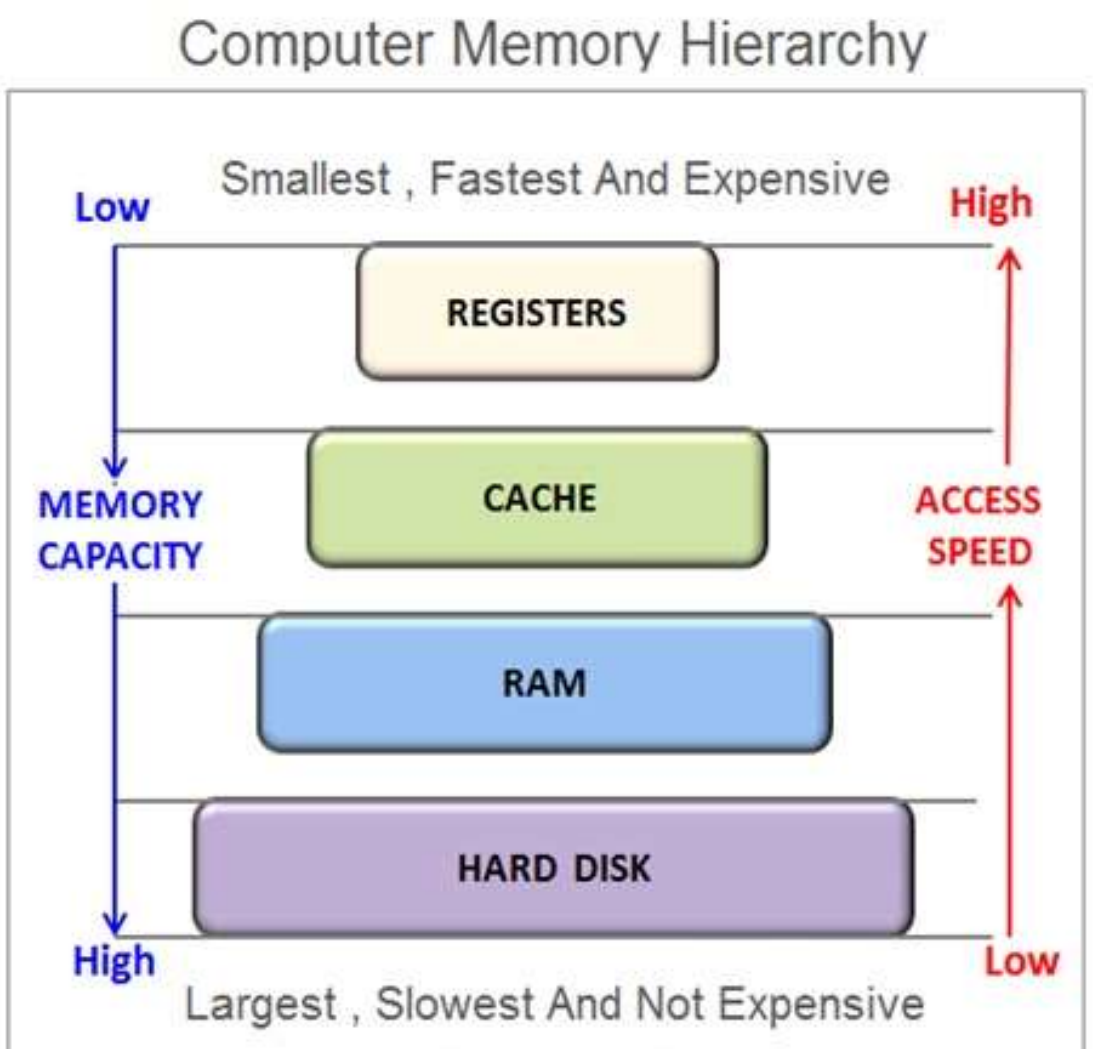
- Memory in a computer system refers to the physical devices used to store data or instructions temporarily or permanently.
- It is crucial because it directly affects the performance and capacity of a computer to execute tasks efficiently.

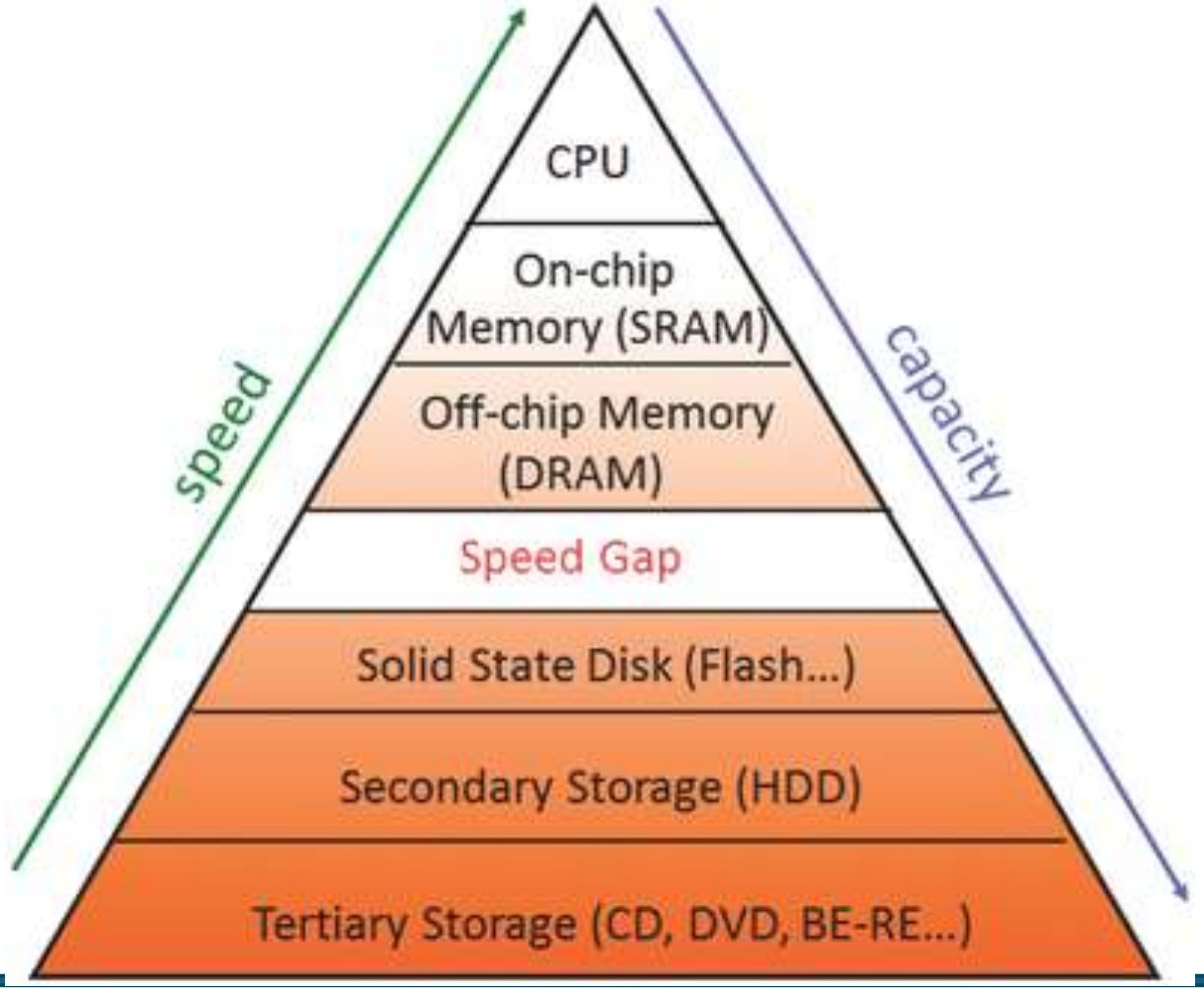
Memory Hierarchy

Memory organized by speed, cost, and size:

- Registers: Fastest, smallest capacity
- Cache Memory
- RAM: Main memory
- Secondary Storage: HDD, SSD
- Tertiary Storage: USB, Cloud

Memory Hierarchy





Memory Categories

1. Primary Memory (RAM, Registers, Cache)
   - Volatile, high-speed.
2. Secondary Memory (HDD, SSD)
   - Non-volatile, permanent storage.
3. Tertiary Memory (USB, Cloud Storage)
   - Backup and portable storage.

Memory Categories

1. Primary Memory (Volatile):

Random Access Memory (RAM):

- Temporary storage used to hold data and instructions currently in use. Volatile memory (data is lost when power is off)
- Used for temporary storage of data and instructions

Memory Categories

- Faster than secondary storage.

- Types of RAM:
  - Static RAM (SRAM): Faster and more expensive, used in cache memory.
  - Dynamic RAM (DRAM): Slower and less expensive, used in main memory.

Memory Categories

- ROM (Read-Only Memory):
  - Non-volatile memory (data persists even when power is off)
  - Stores firmware and boot instructions
  - Cannot be modified easily

Memory Categories

- Registers:
  - Small, high-speed storage areas within the CPU.
  - Store immediate data for processing.

Memory Categories

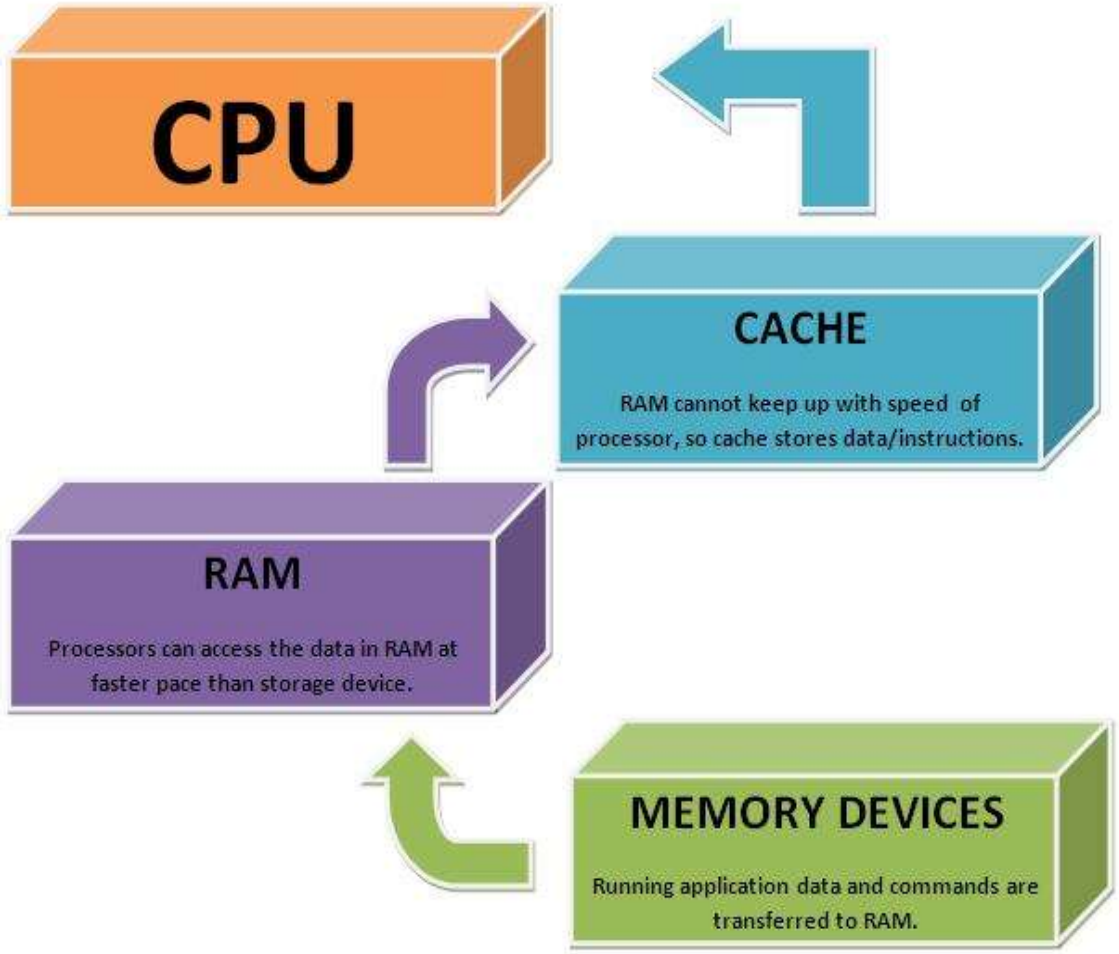
- Cache Memory:
- Cache memory, also called CPU memory, is high-speed memory that a CPU can access more quickly than it can access regular random access memory (RAM).
- This memory is typically integrated directly into the CPU chip.

Memory Categories

- The purpose of cache memory is to store program instructions and data that are used repeatedly in the operation of programs or information that the CPU is likely to need next.

Memory Categories

- Cache Memory:
  - A small, fast memory located inside or close to the CPU.
  - Reduces latency by storing frequently accessed data.



Memory Categories

2. Secondary Memory (Non-Volatile):

Used for permanent data storage.

Examples:

- Hard Disk Drives (HDD): Magnetic storage devices with large capacities but slower speeds.
- Solid State Drives (SSD): Faster, more durable storage using flash memory.

Memory Categories

3. Tertiary/External Memory:

- Used for data backup and portability.
- Examples:
- USB drives, optical discs (CDs/DVDs), and cloud storage.

Memory Categories

3. Comparison of Memory Types

Type	Speed	Cost	Capacity
Registers	Fastest	Highest	Smallest
Cache	Very Fast	High	Small
RAM	Fast	Moderate	Medium
HDD/SSD	Slow	Low	Large
External Memory	Slowest	Varies	Large

CPU Components: Overview

The CPU is the 'brain' of the computer. Key components:

- Control Unit (CU): Directs data flow

  Directs the flow of data and instructions between the CPU, memory, and input/output devices.

  Responsible for fetching, decoding, and executing instructions.

CPU Components: Overview

- Arithmetic Logic Unit (ALU):
- Performs calculations (addition, subtraction, etc.) and logical operations (AND, OR, NOT, etc.).
- Registers: Temporary data storage
- Cache Memory: Speeds up data access

CPU Components: Overview

- Registers:
- Small, high-speed storage areas inside the CPU.
- Temporarily store data, instructions, or intermediate results.

CPU Components: Overview

- Cache Memory: Speeds up data access.
- How?
- (Stores frequently accessed instructions and data to speed up processing).

CPU Instruction Cycle

The CPU processes instructions in cycles:

1. Fetch: Retrieve instruction from memory
2. Decode: Interpret instruction
3. Execute: Perform the operation
4. Store: Save the result back to memory or registers

CPU Instruction Cycle
Advanced CPUs:

Modern CPUs feature advanced technologies:

- Multi-core Processors:
  - Contain multiple cores to perform parallel processing.
- Graphics Processing Units (GPUs):
  - Specialized processors for handling graphics and complex mathematical computations.

Computer Ports: Overview

Ports are physical interfaces for connecting external devices.

Common Types:

- Input: USB, HDMI, VGA, Ethernet
- Output: HDMI, Audio Jacks, DisplayPort
- Specialized: Thunderbolt, eSATA, FireWire

Computer Ports: Input Ports

- **USB (Universal Serial Bus):**
  - Most common port for connecting peripherals like keyboards, mice, and external drives.
- **HDMI (High-Definition Multimedia Interface):**
  - Transfers audio and video to external displays or monitors.

Computer Ports: Input Ports

- **VGA (Video Graphics Array):**
  - Analog video port used for older monitors.
- **PS/2:**
  - Used for older keyboards and mice.
- **Ethernet:**
  - For wired internet connections.

Computer Ports: Output Ports

- HDMI: Supports both input and output in modern devices.
- Audio Jacks: Used for headphones, speakers, or microphones.
- DisplayPort: For high-definition video output.

Computer Ports: Specialized Ports

- Thunderbolt: High-speed data transfer and display connectivity.
- FireWire (IEEE 1394): Used in older systems for high-speed data transfer.
- eSATA: For connecting external storage devices.

Computer Ports:

Common Use Cases

- USB for charging and data transfer.
- HDMI for connecting to external monitors.
- Ethernet for stable internet connections in offices.

Integration of Components
:

To understand how memory, CPU, and ports work together:

1.A file stored on an external USB drive (port).

2.The file is loaded into RAM (memory).

3.The CPU processes the file, using cache and registers for intermediate data.

4.The processed file is saved back to the external drive or displayed on a monitor.

Conclusion

- Memory: Stores and accesses data.

- CPU: Processes and executes instructions.

- Ports: Enable communication with external devices.

Understanding these fundamentals is key to optimizing computer systems.

END Of Lecture

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Computer Fundamental

Lecture 4

Operating Systems and Graphical User Interfaces (GUI)

Assist.Prof. Dr. Haider Noori Hussain

Topics Covered:

- OS
- Functions of an OS
- Types of Operating Systems
- Graphical User Interface (GUI) Basics

Operating Systems and Graphical User Interfaces

Definition

- An **Operating System (OS)** is software that manages a computer's hardware and software, allowing users and applications to interact with the system. It controls resources **like the** CPU, memory, and storage, making the computer easy to use.

Operating Systems and Graphical User Interfaces

Is An Operating System Considered Software?

An Operating System (OS) is system software that acts as a bridge between computer hardware and users, managing hardware resources and supporting software programs.

Examples include Windows, macOS, Linux, Android, and iOS/iPadOS.

OR:

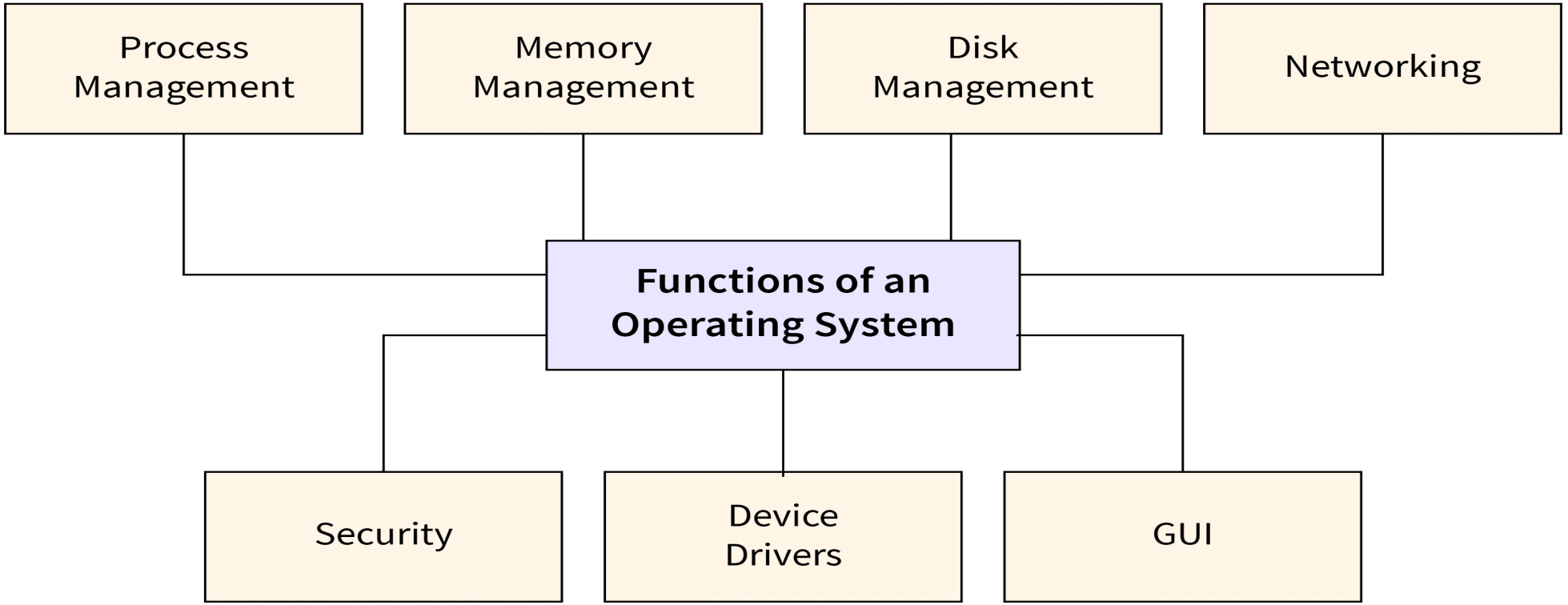
What is an Operating System (OS)?

An OS is: system software that manages computer hardware and software resources.

The operating system (OS) controls almost all functions on a computer.

Desktop OS	Mobile OS	Server OS	Real-Time OS
Windows, macOS, Linux (Ubuntu, Fedora).	Android (*Google*), iOS/iPad OS (*Apple*), HarmonyOS NEXT (*Huawei*).	Windows Server, Linux Server.	Used in embedded systems like robotics and IoT devices.

Functions of an OS:



Functions of an OS:

There are 5 main functions of operating system.

1. Input / Output Management
2. Process Management
3. Memory Management
4. File Management
5. Administration Management

Functions of an OS:

There are 5 functions of operating system.

1. Input / Output Management

- Operating system coordinates with different input / output device.
- Operating System manages the input and output of all programs running under its control.

Functions of an OS:

There are 5 functions of operating system.

2. Process Management

- Operating system manages the process which is processed one by one by the C.P.U. (Central Processing Unit) .

Functions of an OS:

- This management is again done by the Operating system and it is proportionally rationed out by the O.S. to enable each process or program to run properly.

Functions of an OS:

3. Memory Management

Operating System manage the memory were, the program is stored for future use.

4. File Management

The operating system manages all the files on the computer across different drives or locations.

Functions of an OS:

- It keeps track of the memory addresses where files are stored, allowing you to access them in the future. This ensures efficient storage, retrieval, and organization of files whenever needed.

Functions of an OS:

5. Administration Management

An operating system's **administration management** handles the overall administration of the computer. This includes managing users, resources, software, security, and network configurations to ensure the system operates efficiently and securely.

Types of Operating Systems:

Operating System can be classified into major parts.

1. According to User based
2. According to Interface based

According to user based:- In the classification Operating System is studied according to the capacity of serving user.

Types of Operating Systems:

According to user Operating System can be classified into two parts:-

1. Single user

In single user Operating System only one user can work at a time on computer. This Operating System is widely used with personal computer installed in home, office etc.

Types of Operating Systems:

2. Multi user

In Multi user Operating System more than one user can work on computer at a time, so, we called it Multi-tasking. For (e,g. Linux, UNIX).

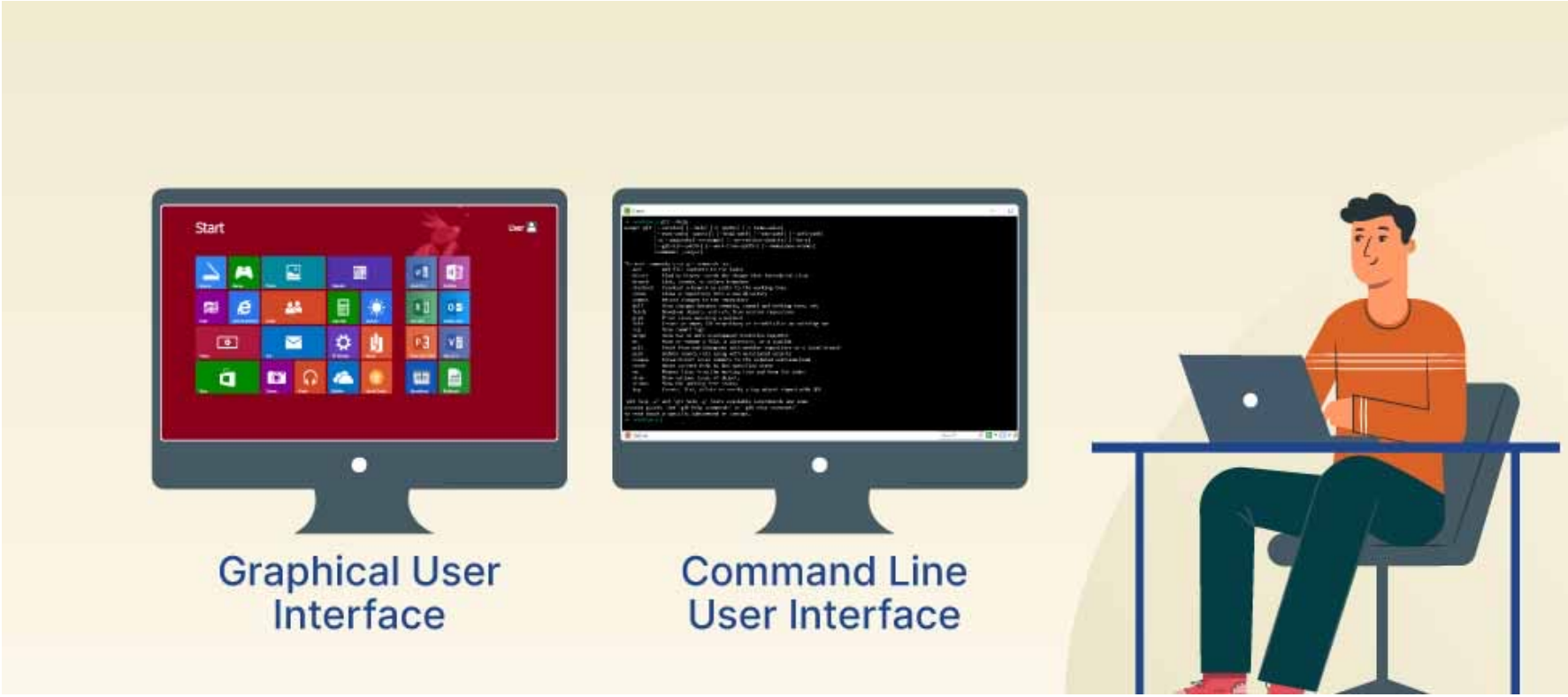
Types of Operating Systems:

According to Interface based There are two types of Operating System.

Graphical User Interface (GUI): The user interacts with menus and icons.

Command Line Interface (CLI): The user types commands at a prompt.

Types of Operating Systems:



Graphical User Interface (GUI) Basics

GUI allows interaction with devices using graphical elements like windows and icons.

• Characteristics:

- Visual Representation: Windows, icons, menus, and pointers.
- Interactive Elements: Drag-and-drop, clickable buttons.
- Ease of Use: No need for command-line knowledge.

Common GUI Components

Desktop: Main workspace with icons and shortcuts.

- Taskbar/Status Bar: Displays active programs, notifications, and system status.
- Windows: Title bar, menu bar, minimize/maximize buttons.
- Icons: Files, folders, shortcuts, apps.
- Menus: Dropdowns for options and commands.
- Toolbars: Quick access to frequently used tools.

User Interface Across Common Operating Systems

- Windows:
  - Features: Start menu, taskbar, file explorer.
  - Tools: Snipping Tool, Task Manager.
- macOS:
  - Features: Dock, Finder, Spotlight search.

User Interface Across Common Operating Systems

Linux:

- Highly customizable GUIs (e.g., GNOME, KDE).

- Mobile OS (Android/iOS): Touch-based interface, app stores.

Mouse Techniques in GUI

- Clicking: Left-click to select, right-click for context menus.
- Double-clicking: Open files or execute programs.
- Dragging: Click and hold to move items.
- Scrolling: Use the scroll wheel to navigate pages.
- Hovering: Move the pointer over an item to see a preview or tooltip.

Icons and Their Use

- Types of Icons:

  - Application Icons: Launch programs.

  - File Icons: Represent documents.

  - Folder Icons: Store files and subfolders.

  - Shortcut Icons: Links to files, programs, or web pages.

-

Icons and Their Use

Interacting with Icons:

- Single-click: Select.
- Double-click: Open.
- Drag-and-drop: Move or copy files.

Status Bar

- Location: Typically, at the bottom of the window or desktop.
- Displays:
  - Current application status.
  - Notifications (e.g., battery, updates).
  - Real-time information (e.g., page numbers, zoom levels).

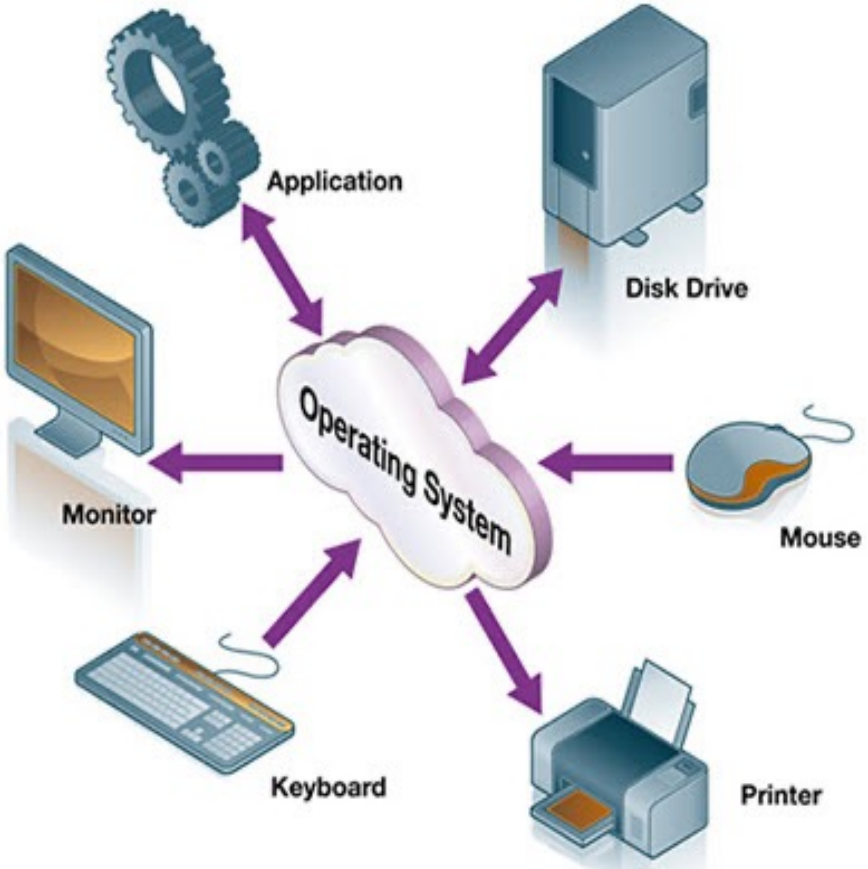
Benefits of GUI over CLI

- Ease of Use: Intuitive for beginners.
- Visual Representation: Easier to understand.
- Multitasking: Switch between multiple windows easily.
- Accessibility: Supports touchscreens and other input methods.

Recap and Conclusion

Roles of an Operating System

- All computers rely on an operating system (OS) to provide the interface for interaction between users, applications, and hardware.
- Almost all modern operating systems can support more than one user, task, or CPU.



Roles of an Operating System

- Control hardware access

  OS automatically discovers and configures PnP (Plug and Play) hardware.

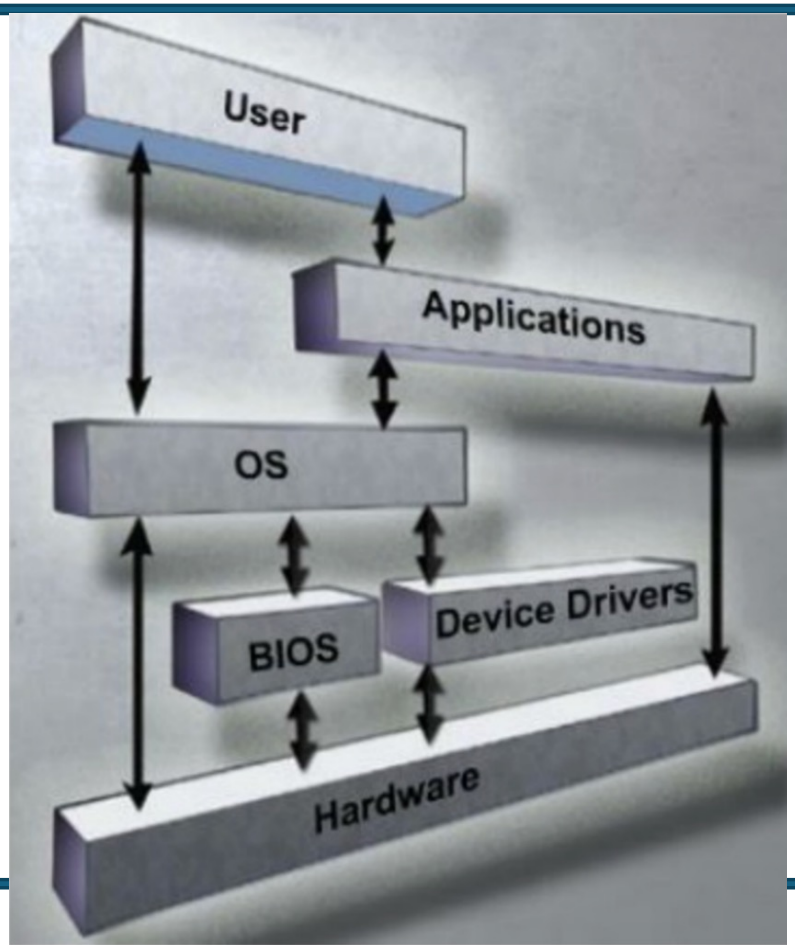
- File and folder management
- User interface

  Command line interface (CLI)

  Graphical user interface (GUI)

Roles of an Operating System

- Application management
  - Open Graphics Library (OpenGL)
  - DirectX



Conclusion

- OS is the backbone of computing devices.
- GUI makes interaction intuitive and efficient.
- Understanding basic OS and GUI features enhances productivity.

Questions?

END Of Lecture

Computer Fundamental

Lecture 5

Operating Systems and Graphical User Interfaces (GUI)

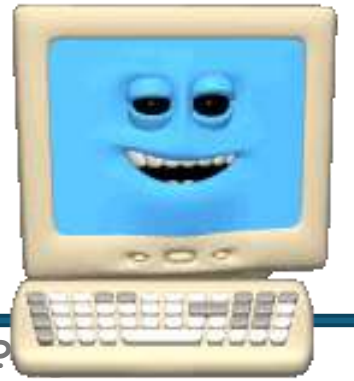
Assist.Prof. Dr. Haider Noori Hussain

Topics Covered:

- Use of Common Icons.
- The Status Bar.
- Using Menus and Menu Selection.
- Concept of Folders and Directories.
- Opening and Closing Different Windows
- Creating Shortcuts

Use of Common Icons

- Icons are small pictures that represent files, folders, programs, and other items.
- When you first start Windows, you'll see at least one icon on your desktop: the Recycle Bin (more on that later).
- Your computer manufacturer might have added other icons to the desktop.



Use of Common Icons

- Double-clicking a desktop icon starts or opens the item it represents. For example, double-clicking the Internet Explorer icon starts Internet Explorer.

Examples of desktop icons

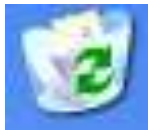
Use of Common Icons

From the icon shape we could conclude many things about it's type and it's work.

 : is a folder (place where files and folders stored).

 :is the My **Computer** icon which store all *drives* inside the computer

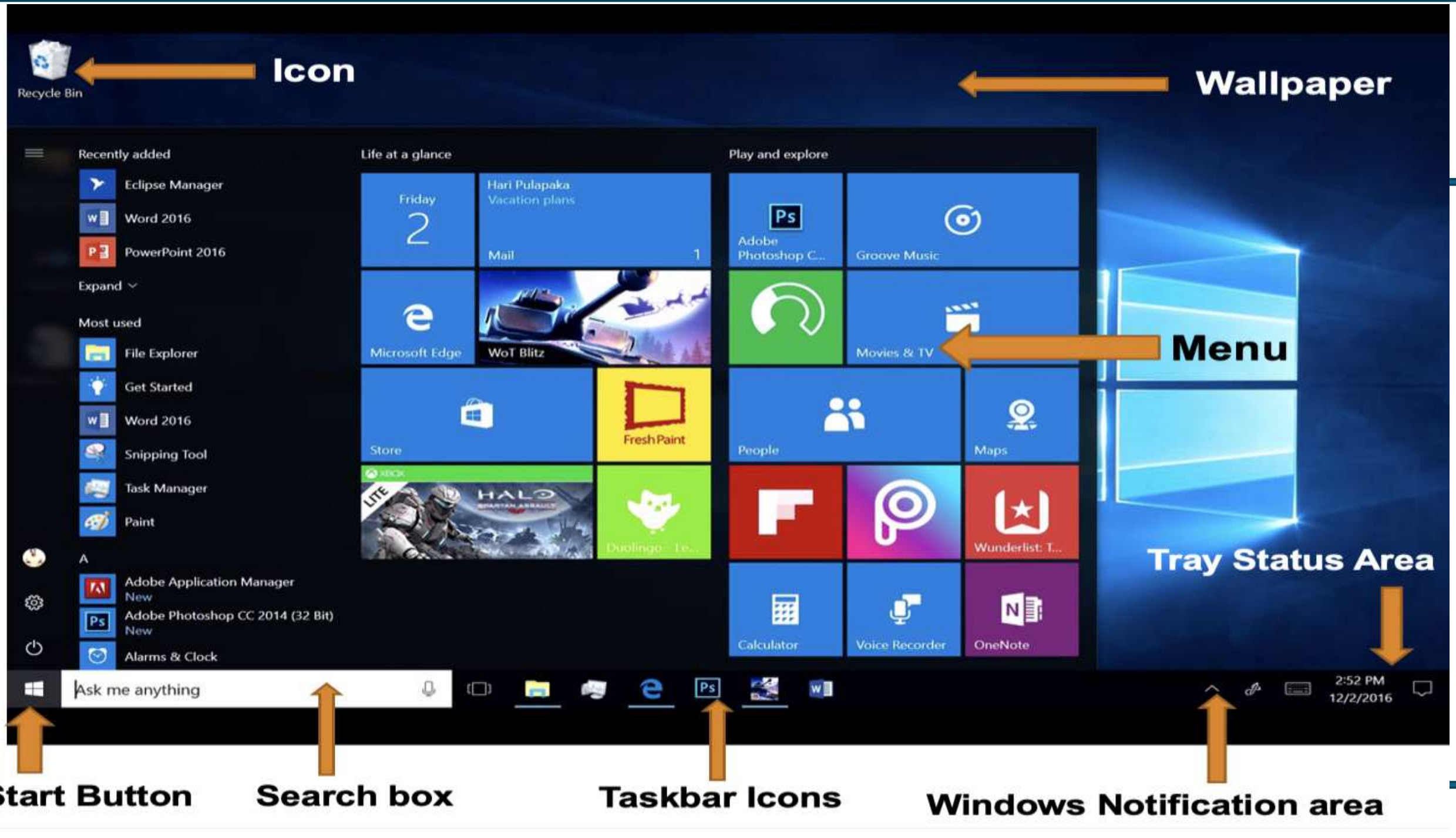
Use of Common Icons

 :is the **Recycle Bin** icon A *temporary storage* place for deleted files. You can use it to retrieve files deleted in error.

 :is a word file icon.

 :is a power point file icon.

   : are shortcut icons


Recycle Bin
Icon
Wallpaper
Recently added
Eclipse Manager
Word 2016
PowerPoint 2016
Expand
Most used
File Explorer
Get Started
Word 2016
Snipping Tool
Task Manager
Paint
A
Adobe Application Manager
New
Adobe Photoshop CC 2014 (32 Bit)
New
Alarms & Clock
Life at a glance
Friday
2
Hari Pulapaka
Vacation plans
Mail
1
Microsoft Edge
WoT Blitz
Store
Fresh Paint
Duolingo - Le...
Play and explore
Adobe Photoshop C...
Groove Music
Movies & TV
People
Maps
Wunderlist: T...
Calculator
Voice Recorder
OneNote
Menu
Tray Status Area
Ask me anything
2:52 PM
12/2/2016
Start Button
Search box
Taskbar Icons
Windows Notification area

The Status Bar

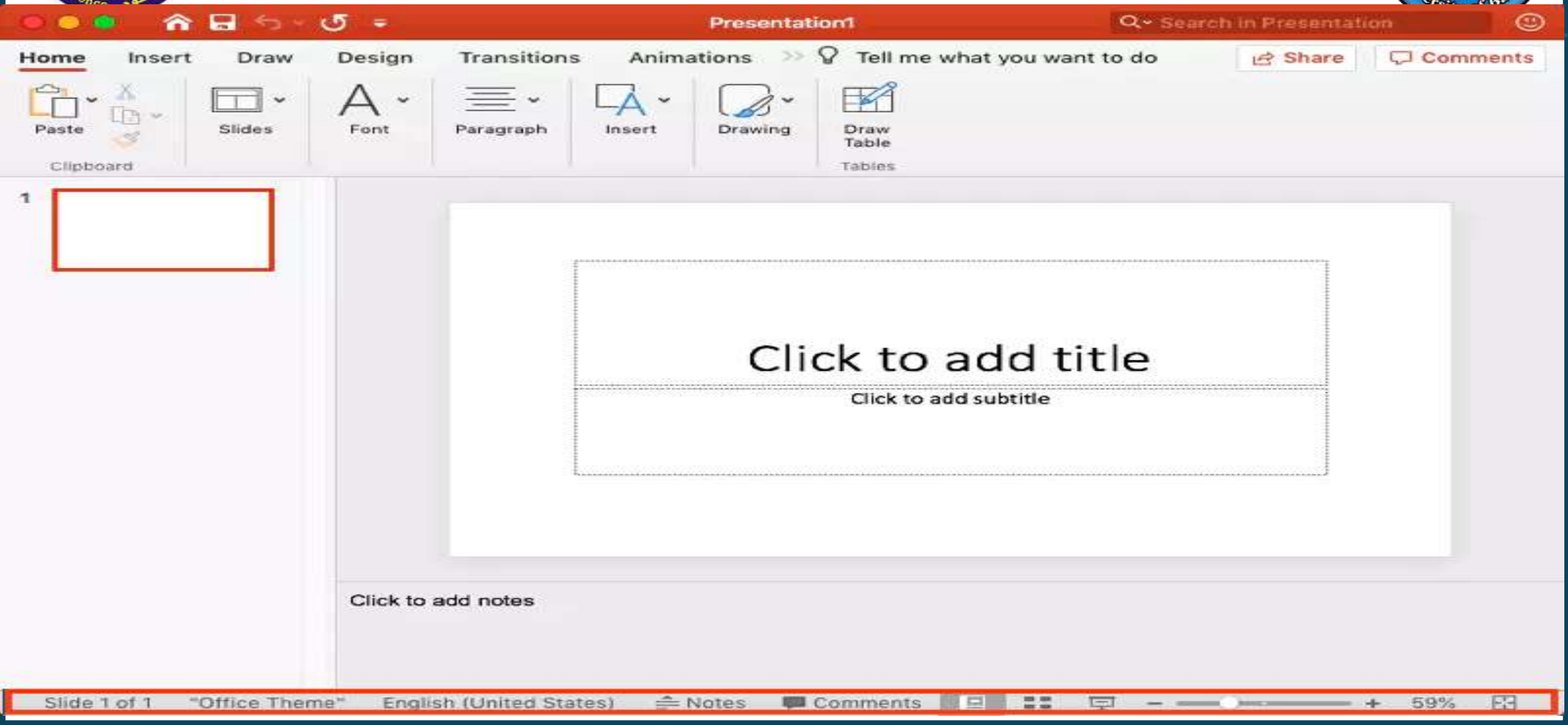
- Definition: A thin strip at the bottom of an application window displaying status information.

Features:

- Displays details such as current page, zoom level, or unsaved changes.

- Often includes shortcuts to additional settings.

The Status Bar MacOS Version



The Status Bar MacOS Version

A. Slide

This displays the active slide number, as well as the number of slides in the open presentation.

B. Theme name

Here you can see the Theme that's been applied to the open presentation.

The Status Bar MacOS Version

C. Language

This displays the language specified.

D. Notes

This is a toggle button to open or close the Notes pane.

The Status Bar MacOS Version

E. Comments

This again is a toggle button that opens and closes the Comments Task pane.

The Status Bar MacOS Version

F. View Buttons

Here you can select appropriate buttons to switch to Normal, Slide Sorter, or Slide Show views (highlighted in red within). (Shift + click the same buttons to access Slide Master view, Handout Master view, and the Set Up Show dialog box.

The Status Bar MacOS Version

F. View Buttons

Here you can select appropriate buttons to switch to Normal, Slide Sorter, or Slide Show views (highlighted in red). (Shift + click the same buttons to access Slide Master view, Handout Master view, and the Set Up Show dialog box.

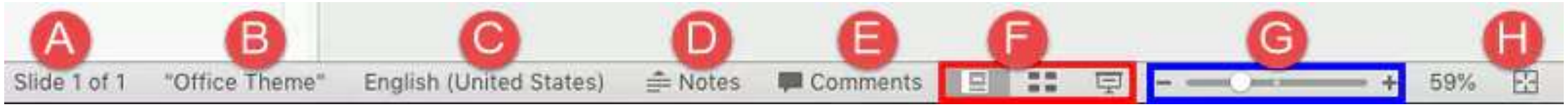
The Status Bar MacOS Version

G. Zoom

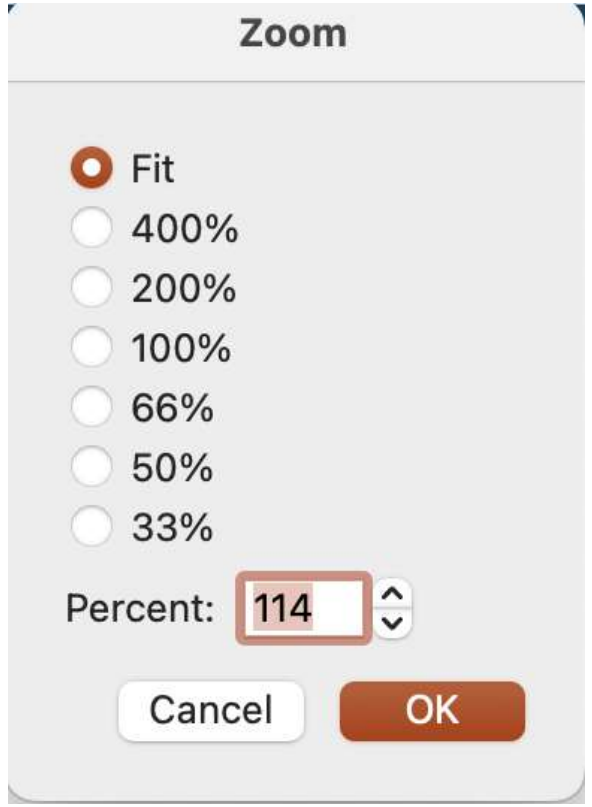
There are three options to zoom-in or zoom-out the slide as shown highlighted in blue above.

Pull the slider left or right, or click the plus or minus sign to zoom in or out.

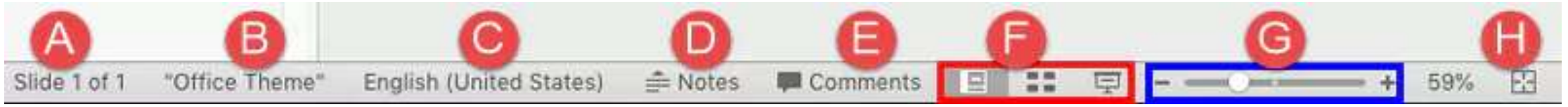
The Status Bar MacOS Version



You can also click the zoom percentage level value to bring up the Zoom dialog box as shown in Figure 3; here you can specify the zoom level.



The Status Bar MacOS Version

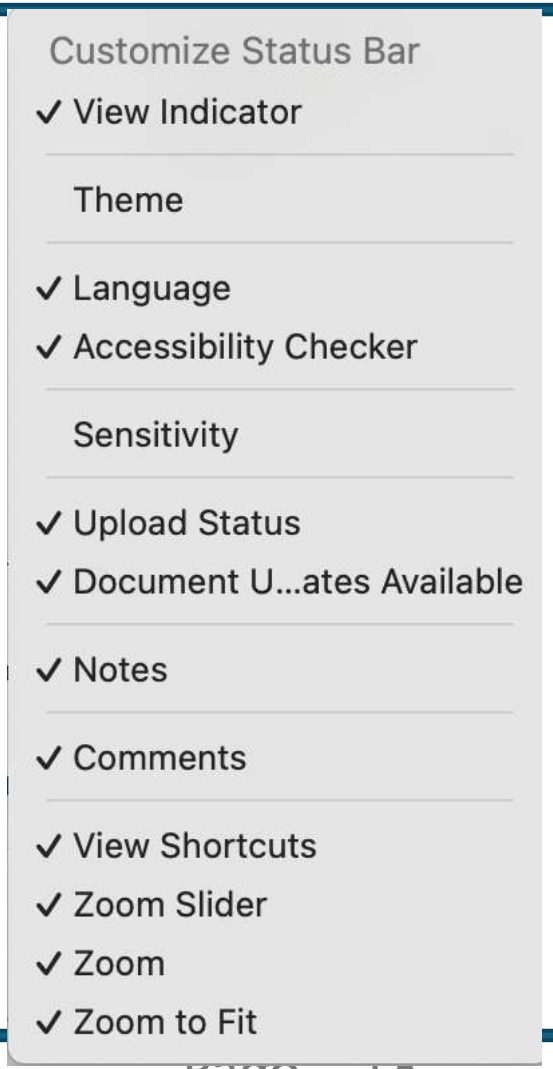


H. Fit slide to current window

Click this button to fit the slide in the available Slide Area.

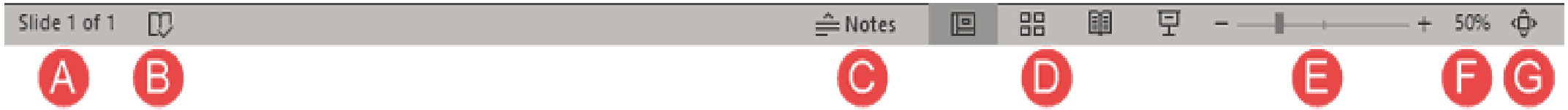
The Status Bar MacOS Version

You can customize what appears on the Status Bar by right-clicking (or CtrI) + clicking). Then, select or deselect options in the resultant Customize Status Bar menu, that you can see in Figure 4.



The Status Bar in Windows OS

The Status Bar in Windows OS



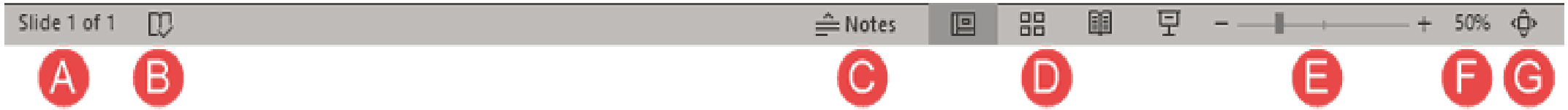
A. Slide Number

This displays the active slide number, as well as the number of slides in the open presentation.

B. Spell check

This sign indicates that spell check is enabled in the presentation.

The Status Bar in Windows OS

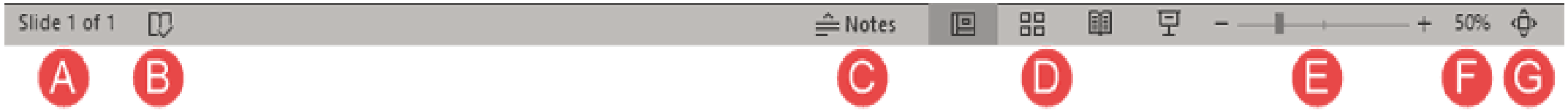


This sign has two different appearances:

Open book with red X: This sign indicates, that the spell check has finished, and spelling error are found.

The spelling error is underlined with a red squiggly line.

The Status Bar in Windows OS



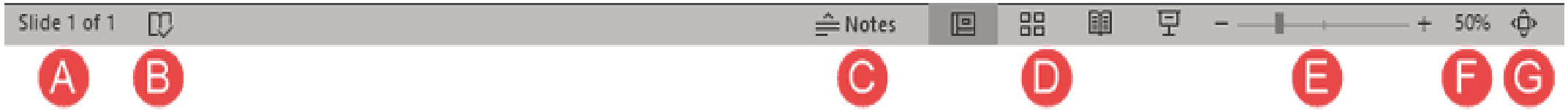
C. Notes

This is a toggle button to open or close the Notes Pane. Similar to D in the MacOS version.

D. View Shortcuts

Similar to F in the MacOS version.

The Status Bar in Windows OS



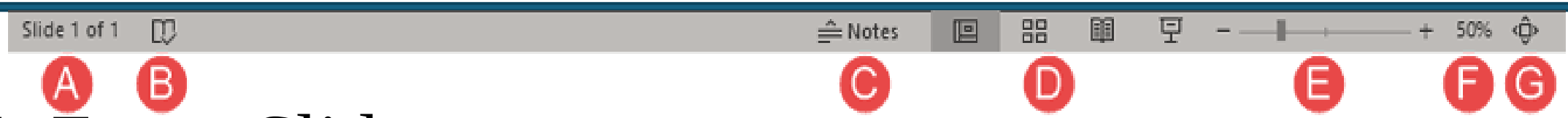
E. Zoom Slider

Pull the slider left or right to zoom in or out.

F. Zoom level

Click the zoom level to bring up the Zoom dialog box as shown, here you can specify the zoom level.

The Status Bar in Windows OS

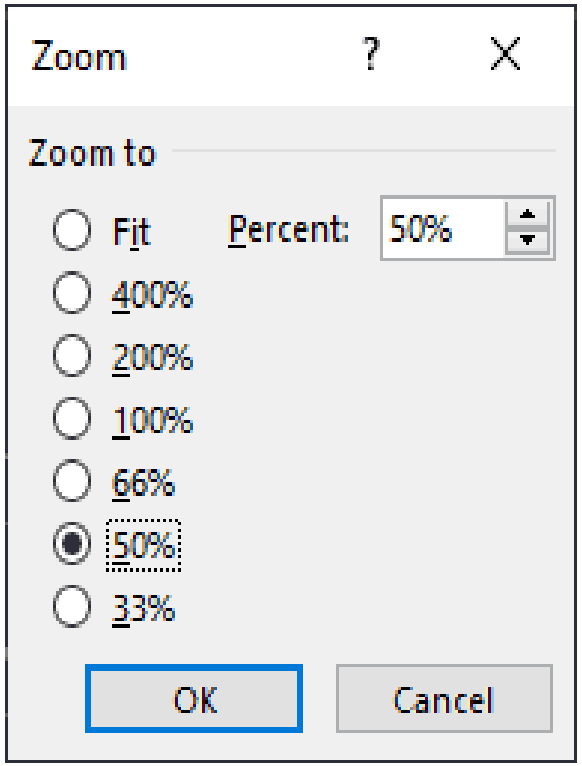


E. Zoom Slider

Pull the slider left or right to zoom in or out.

F. Zoom level

Click the zoom level to bring up the Zoom dialog box as shown, here you can specify the zoom level.

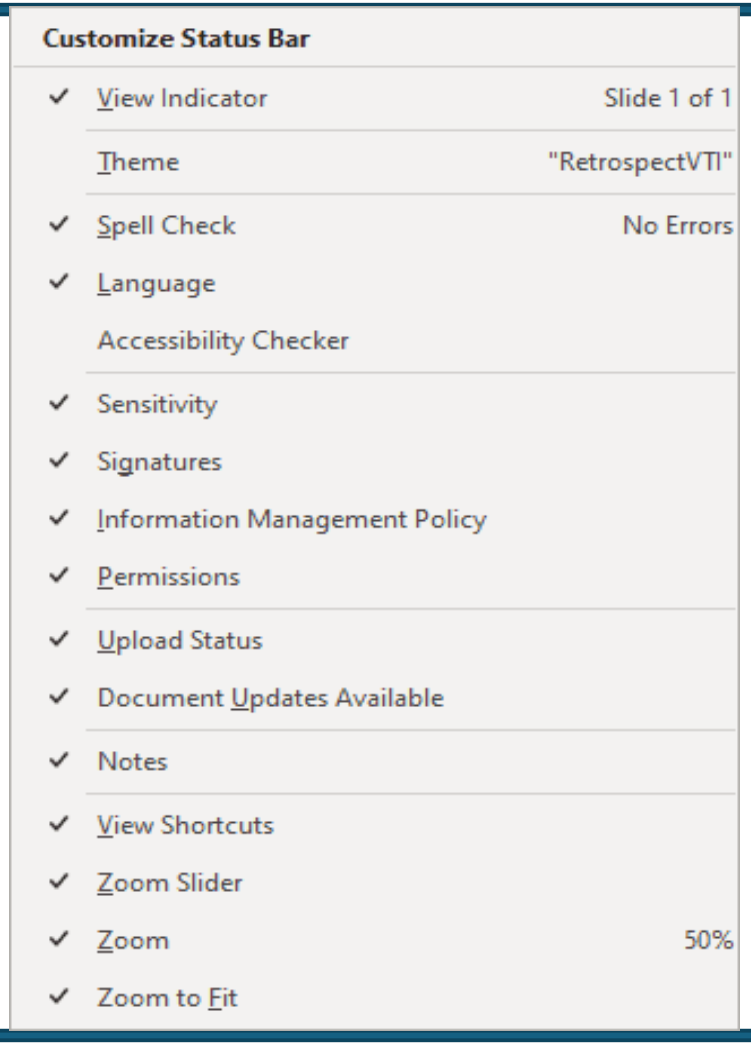


The Status Bar in Windows

G. Fit slide to current window

Click this button to fit the slide in the available Slide Area.

You can customize what appears on the Status Bar by right-clicking on it and selecting or deselecting the check boxes in the resultant Customize Status Bar menu.

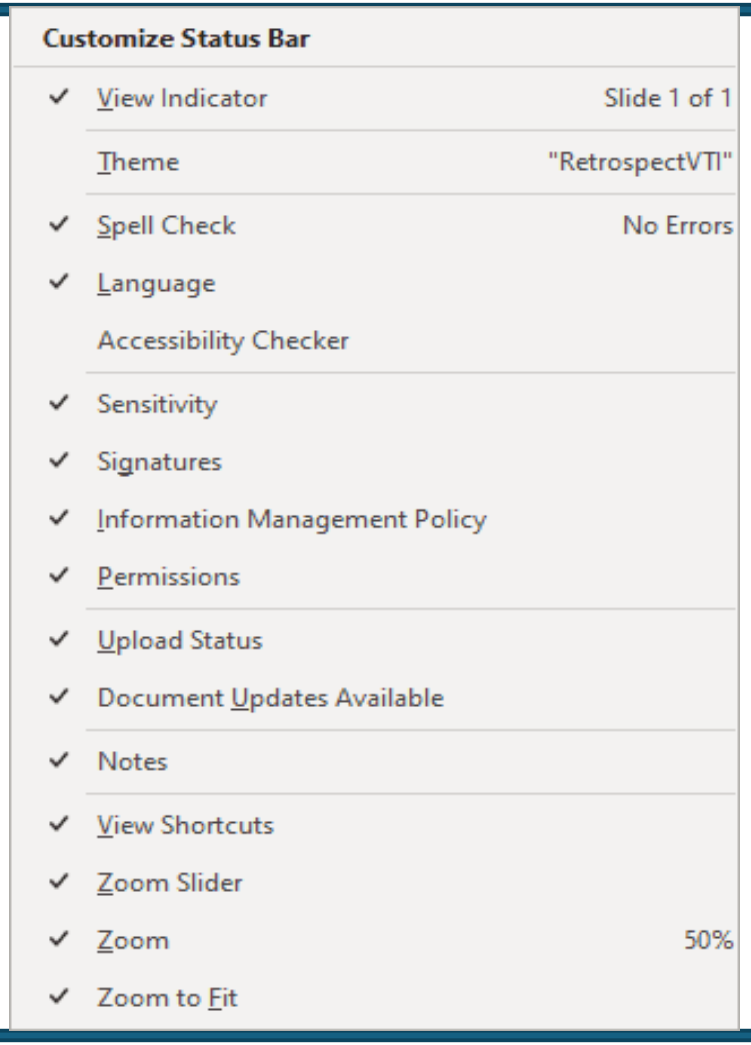


The Status Bar in Windows

G. Fit slide to current window

Click this button to fit the slide in the available Slide Area.

You can customize what appears on the Status Bar by right-clicking on it and selecting or deselecting the check boxes in the resultant Customize Status Bar menu.



Using Menus and Menu Selection

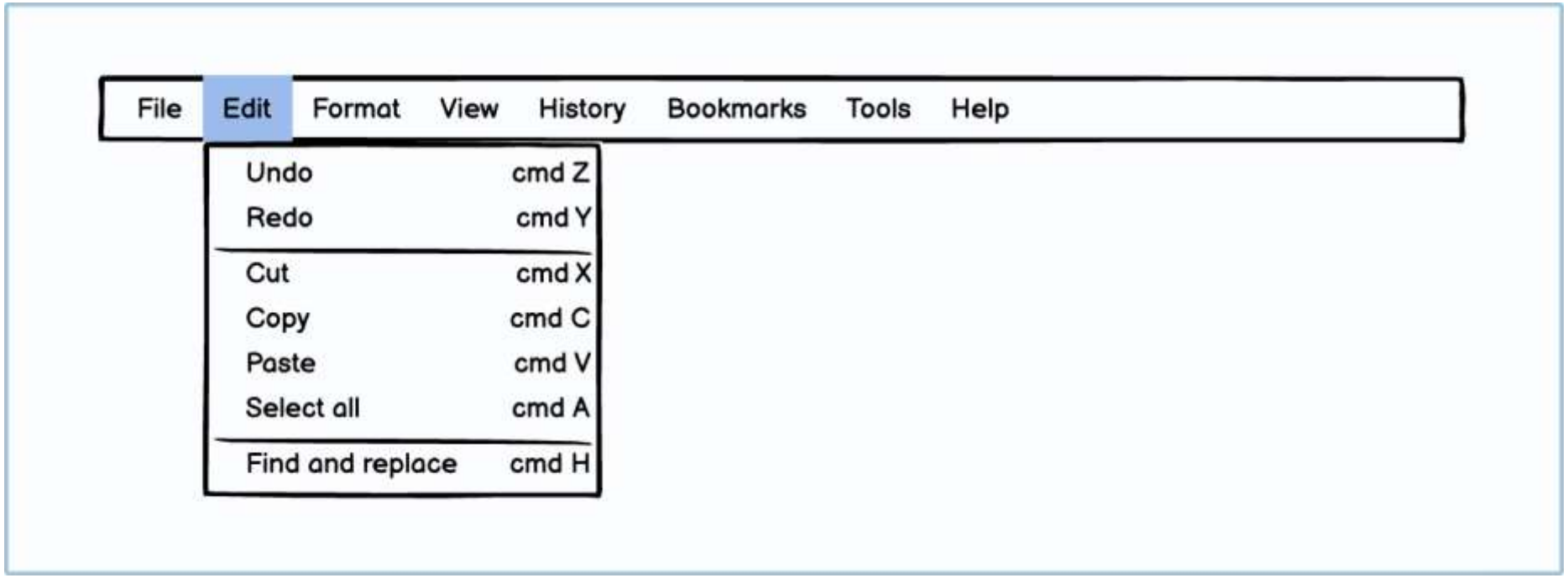
Definition: Menus are lists of options or commands available in software.

Types of Menus:

- Drop-down Menus: Accessed from a menu bar.
- Context Menus: Opened by right-clicking.
- Ribbon Menus: Modern graphical menus with grouped commands (e.g., MS Office).

Using Menus and Menu Selection

- Drop-down Menus: Accessed from a menu bar.



Concept of Folders and Directories

Definition:

- Folder: A container for organizing files.

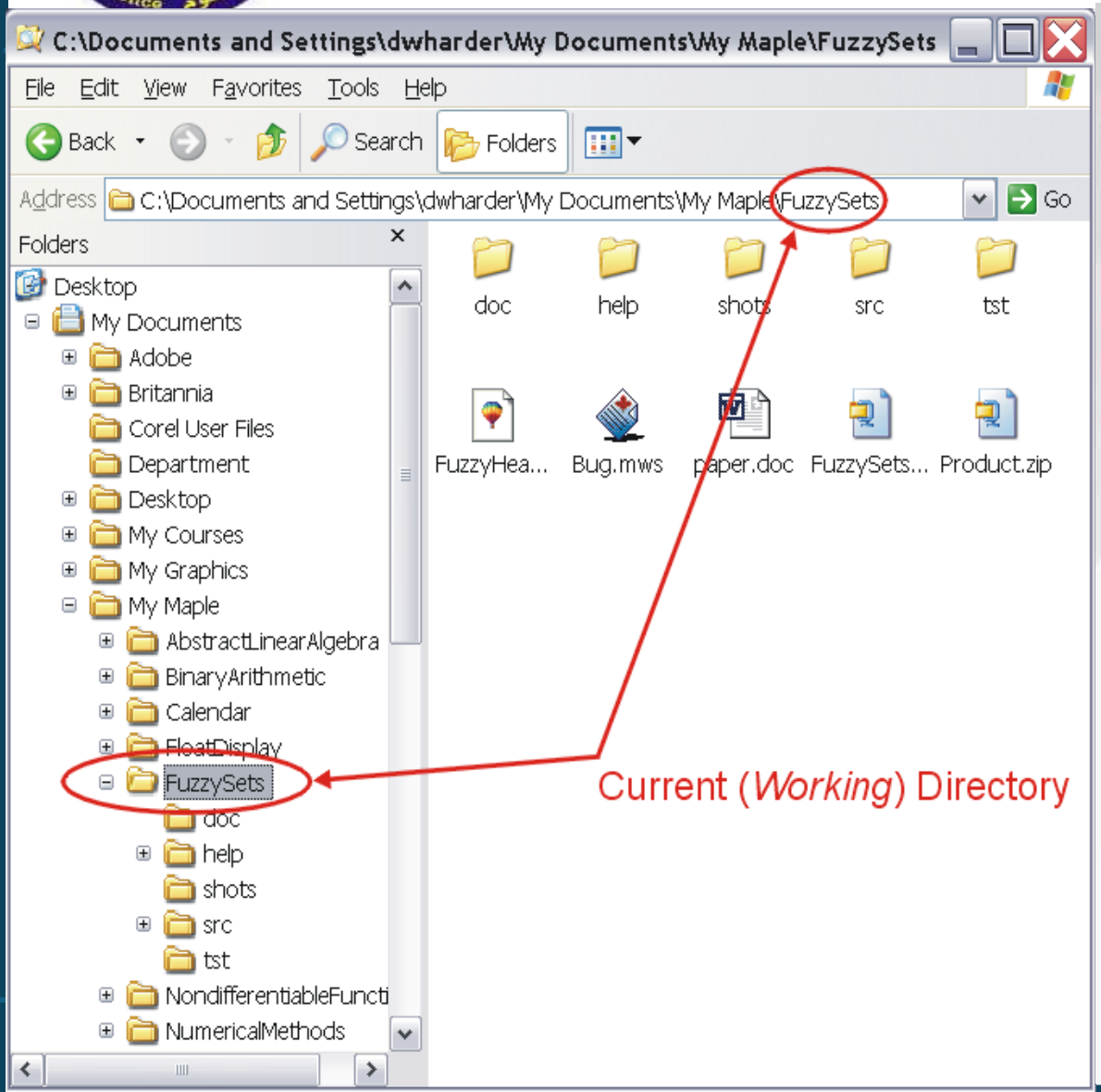
- Directory: The structure of folders forming a hierarchy.

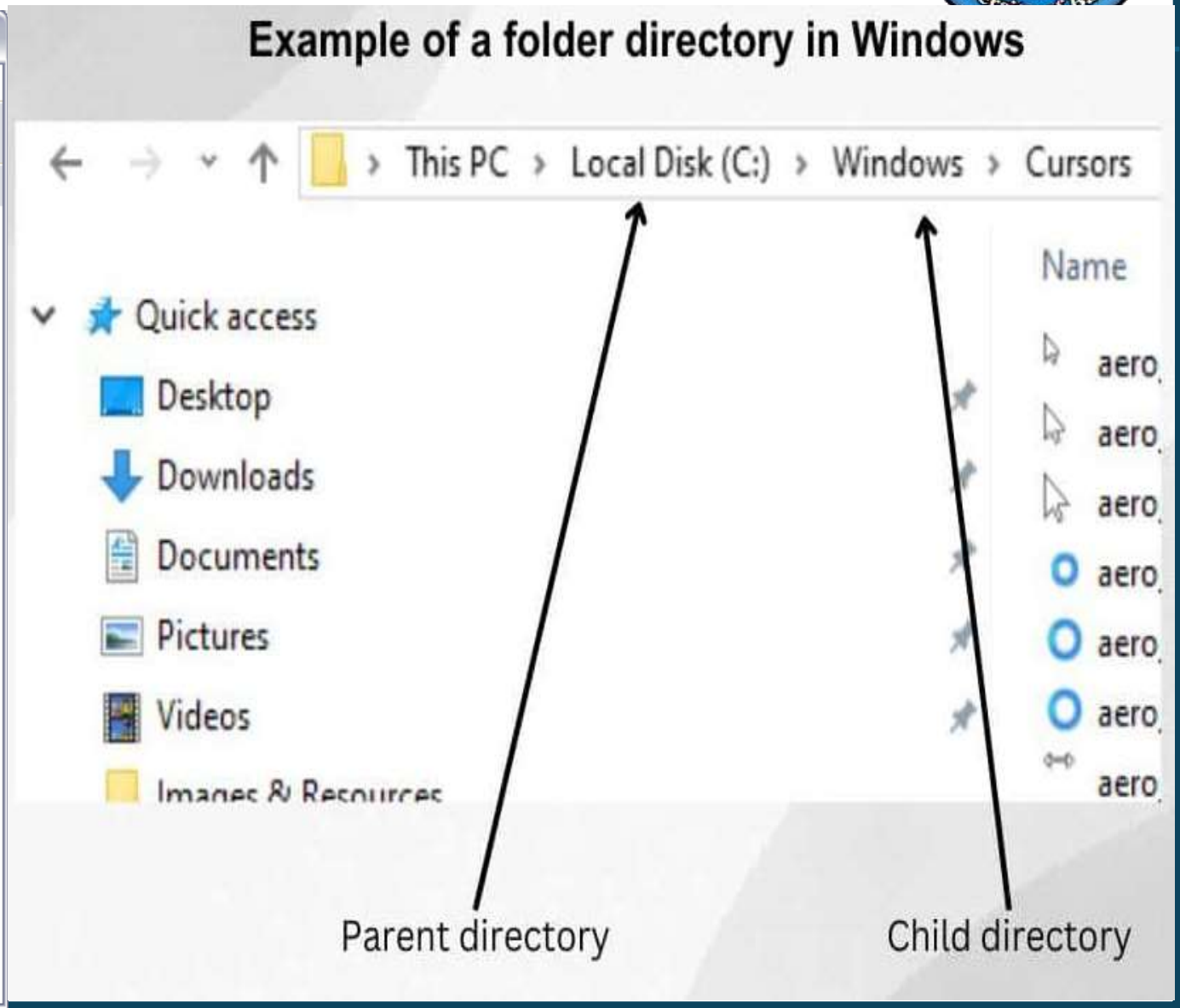
Structure:

- Parent Directory: The main folder.

- Child Directory: Subfolders within the main folder.

Concept of Folders and Directories





Concept of Folders and Directories

Importance:

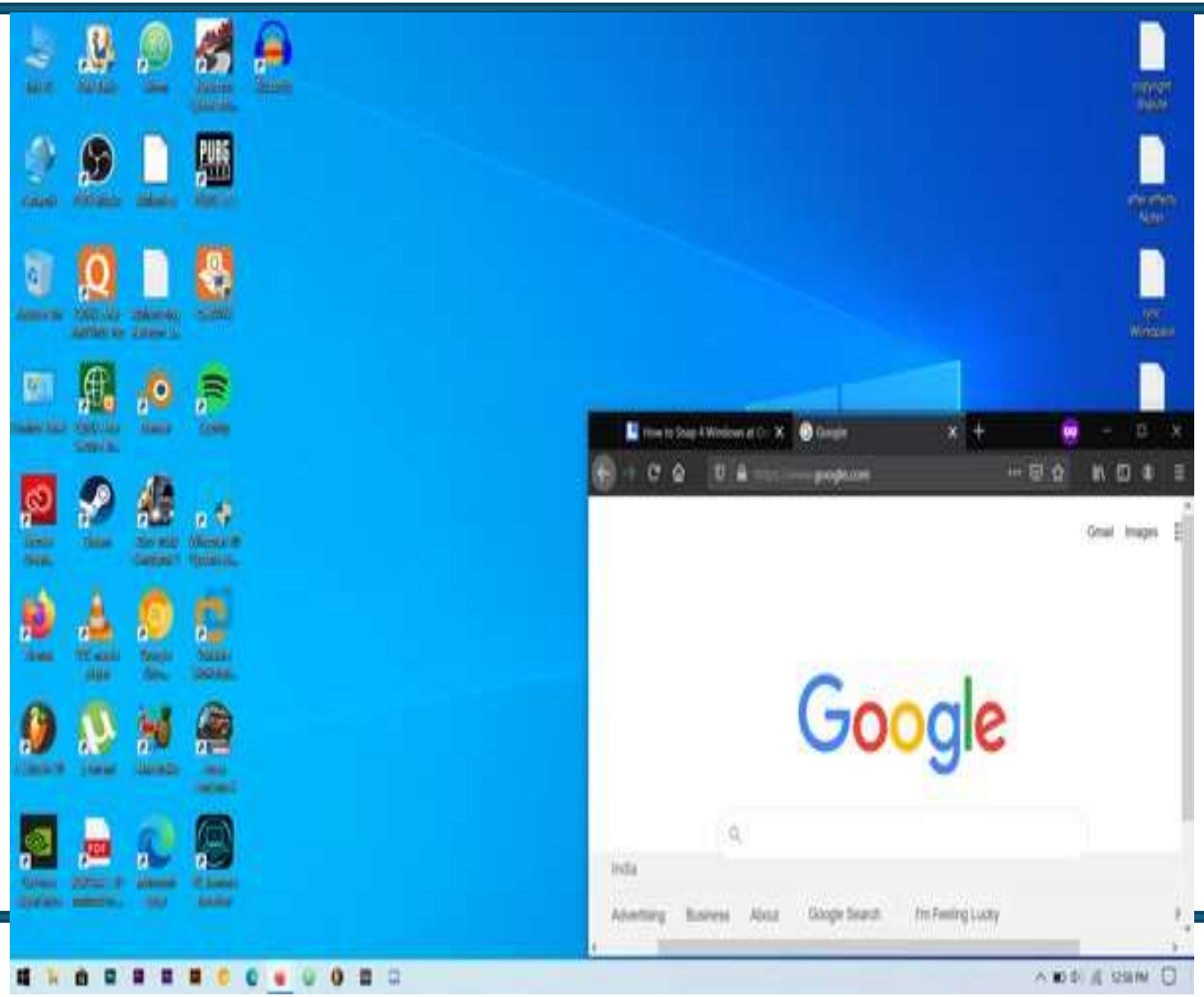
- Logical file organization.
- Simplifies navigation and retrieval.

Opening and Closing Different Windows

- Basics:

- Opening: Double-click a file or application icon.

- Closing: Click the 'X' button at the top right of the window.



Opening and Closing Different Windows

Advanced Features:

- Minimize: Temporarily hide a window.
- Maximize/Restore: Adjust window size.
- Task View: View and switch between open windows.

Creating Shortcuts

Definition: A link that provides quick access to a file, folder, or application.

Benefits:

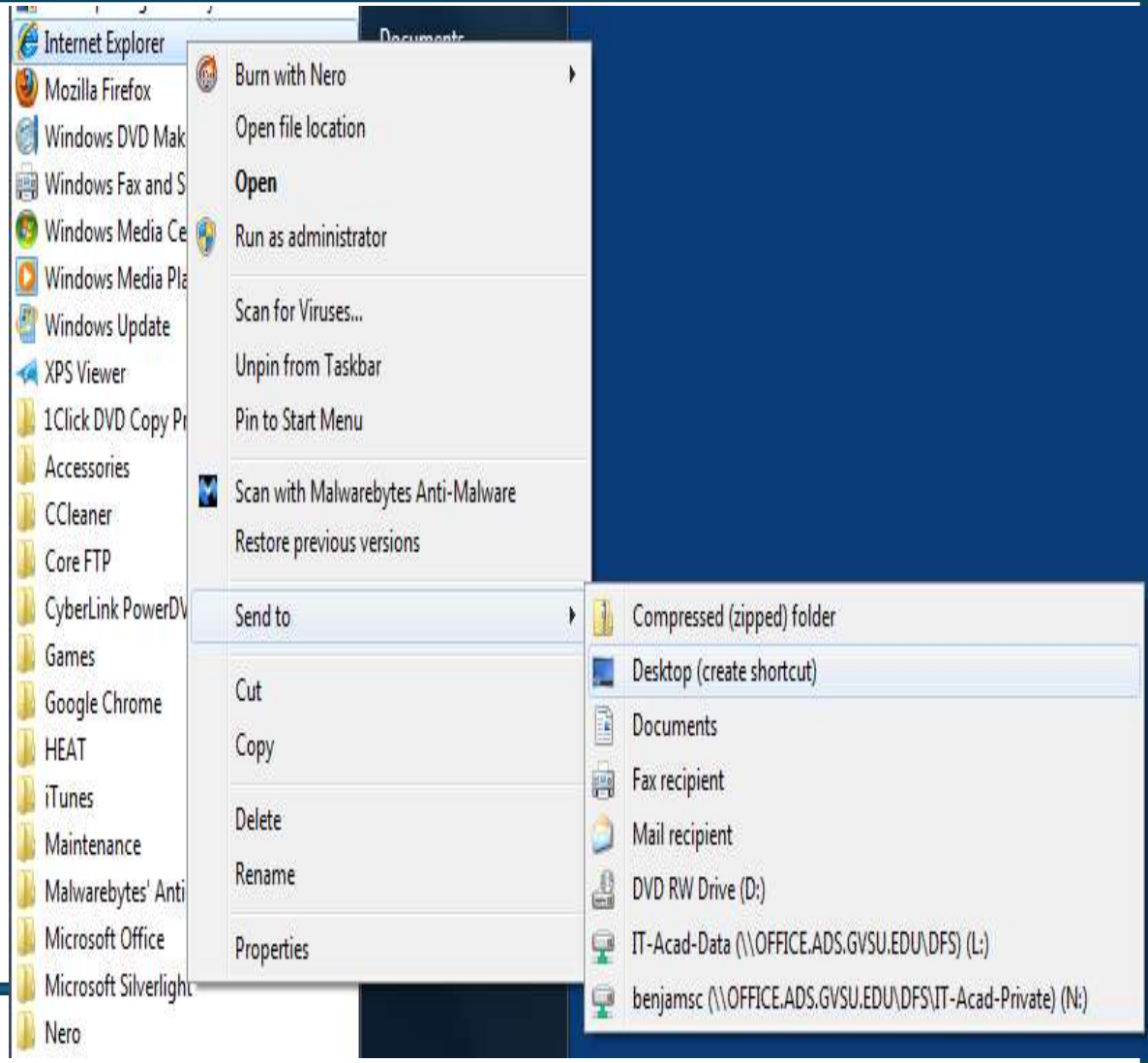
- Saves time.
- Reduces desktop clutter by grouping shortcuts.

Creating Shortcuts

How to Create:

- Right-click on a file/folder > 'Create Shortcut.'

- Drag and drop the file/folder while holding 'Ctrl + Shift.'



Creating Shortcuts

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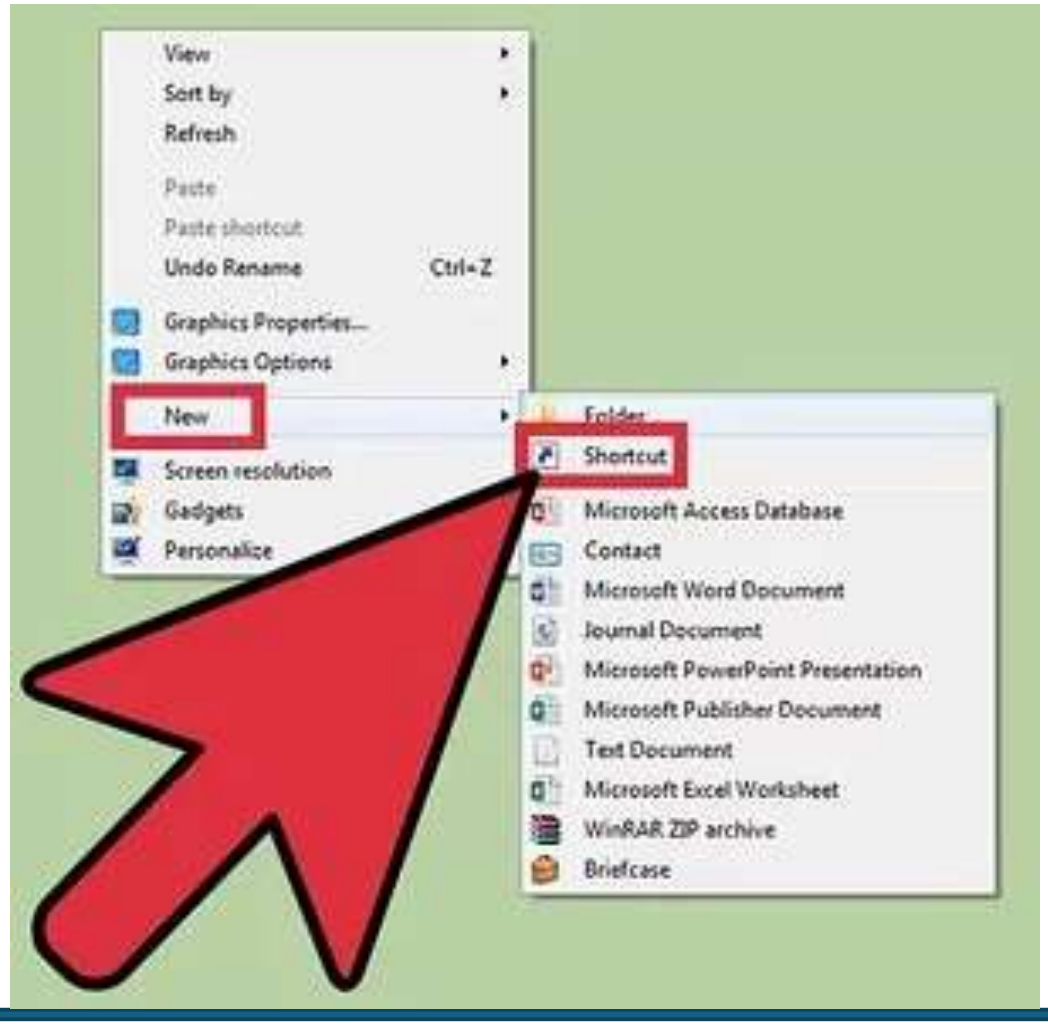

Creating Shortcuts

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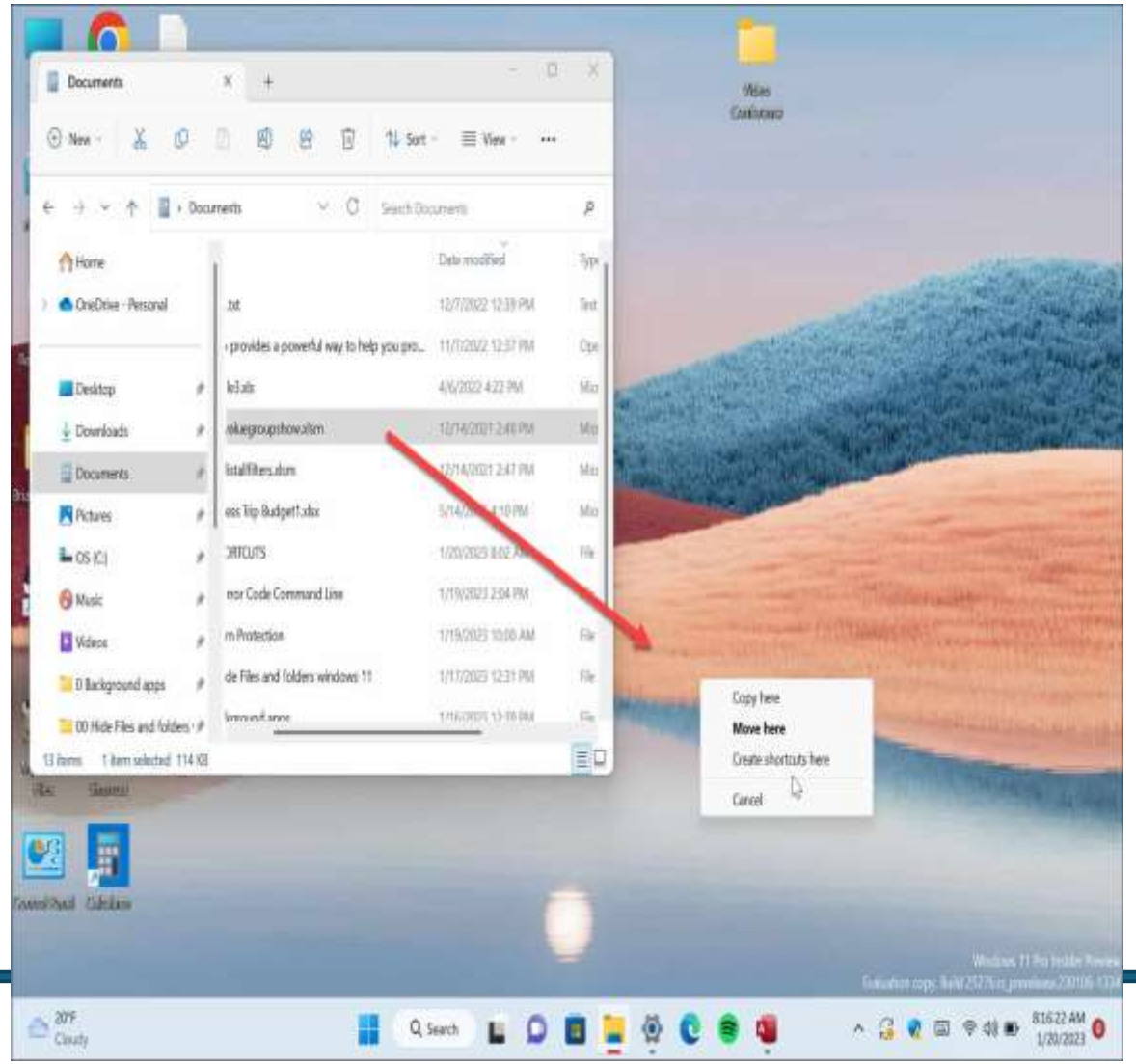


Conclusion

Recap of the topics covered:

- Common icons.
- Status bar functionality.
- Menus and their types.
- Folders and directory structure.
- Managing and creating shortcuts.

Key Takeaway: Mastering GUI elements enhances efficiency and user experience.

END Of Lecture

Computer Fundamental

Lecture 6

Microsoft Word Basics and Features Part 1

(Exploring Essential Tools and Functions)

Assist.Prof. Dr. Haider Noori Hussain

Topics Covered:

- Introduction to Microsoft Word.
- Starting Microsoft Word.
- The Word Interface.
- Creating and Managing Documents.
- Text Creation and Editing.
- Formatting Text and Paragraphs.
- Using Templates
- Customizing the Ribbon

Introduction to Microsoft Word

What is Microsoft Word?

- A widely used word processor designed by Microsoft.

- Part of the Microsoft Office Suite but can also be a stand-alone application.

- Initially launched in 1983, now available for Windows and macOS.

- Microsoft Word is often called simply Word or MS Word.

Starting Microsoft Word

Launching Microsoft Word

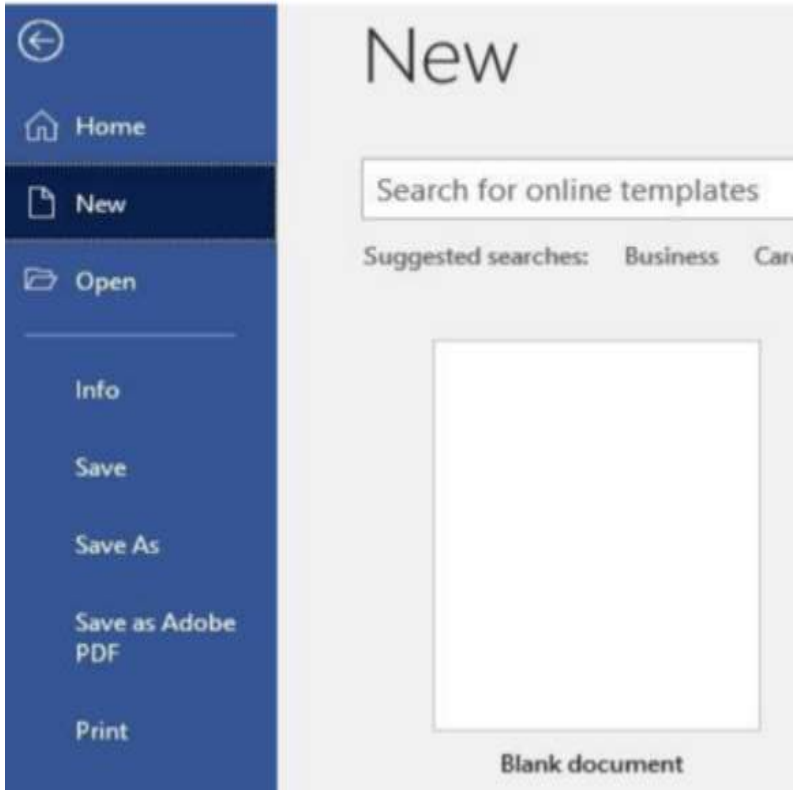
- Steps:
  1. Click the Start button in Windows.
  2. Select "Microsoft Word" from the menu.

Starting Microsoft Word

Options:

- Open a blank document.
- Choose a template.
- Open a recent document.

- Tip: Pin the Microsoft Word icon to the taskbar for quicker access.



Starting Microsoft Word

The Word Interface

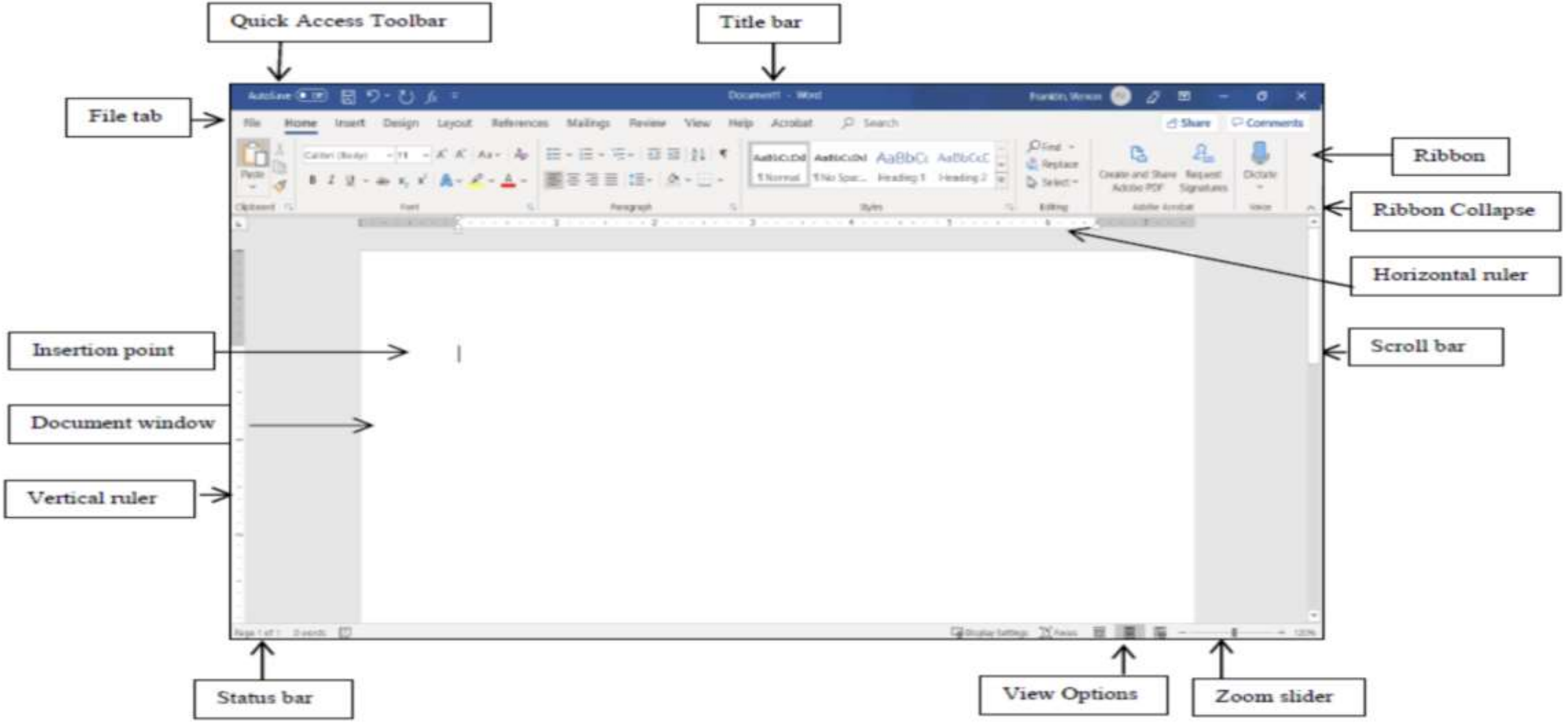
Microsoft Word Interface Overview

- Ribbon: Divided into Tabs, Groups, and Commands for efficient navigation.

- Quick Access Toolbar: Shortcut storage for frequently used features.

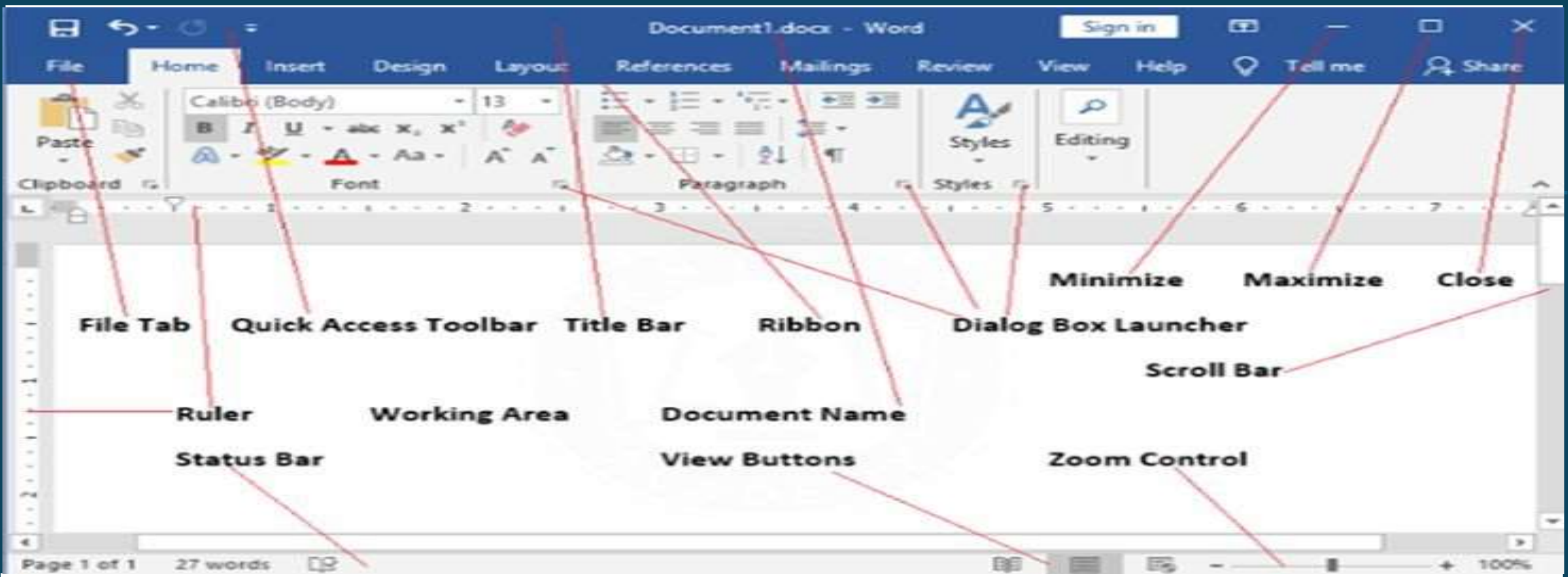
- Cursor Behavior: Changes based on interaction (e.g., arrow, I-beam).

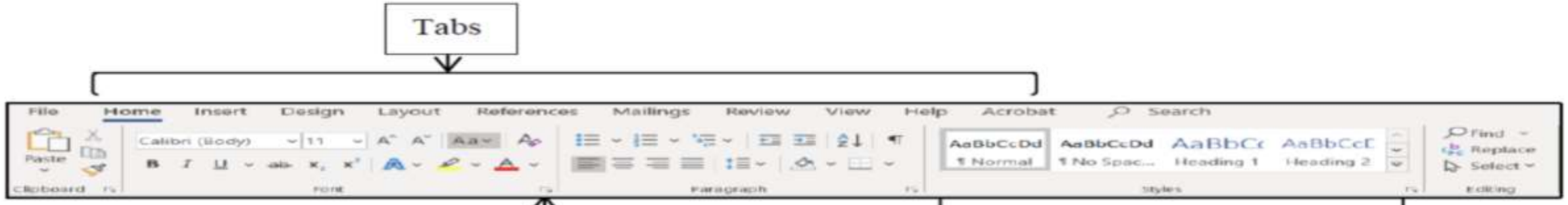
The Word Interface



The Word Interface

	Term	Description
1	**Quick Access Toolbar**	Displays quick access to commonly used commands.
4	**File Tab**	The File tab has replaced the Office button in 2007. This area is called the Backstage which helps you to manage the Microsoft application and provides access to its options such as Open, New, Save As, Print, etc.
2	**Ribbon Tab**	Title or name of the specific Ribbon.
3	**Ribbon**	Displays groups of related commands within tabs. Each tab provides buttons for commands.
5	**Group**	Contain category of command buttons.
6	**Show Dialog Box**	Show additional options.


Document1.docx - Word
Sign in
File
Home
Insert
Design
Layout
References
Mailings
Review
View
Help
Tell me
Share
Paste
Clipboard
Font
Paragraph
Styles
Editing
Minimize
Maximize
Close
File Tab
Quick Access Toolbar
Title Bar
Ribbon
Dialog Box Launcher
Scroll Bar
Ruler
Working Area
Document Name
Status Bar
View Buttons
Zoom Control
Page 1 of 1
27 words
100%

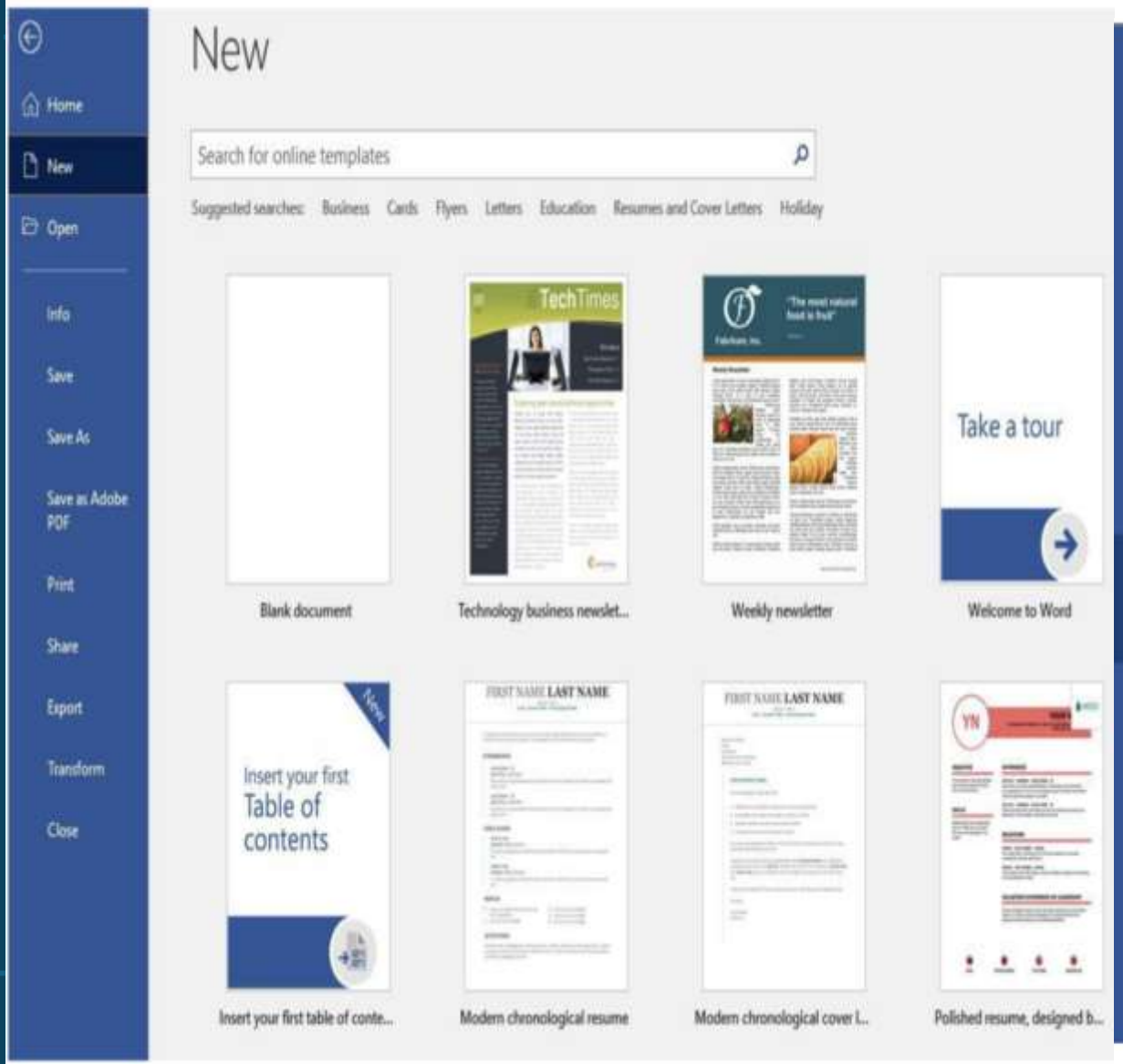

Tabs
File
Home
Insert
Design
Layout
References
Mailings
Review
View
Help
Acrobat
Search
Paste
Clipboard
Font
Paragraph
Styles
Editing
Find
Replace
Select
Dialog box launcher
Group

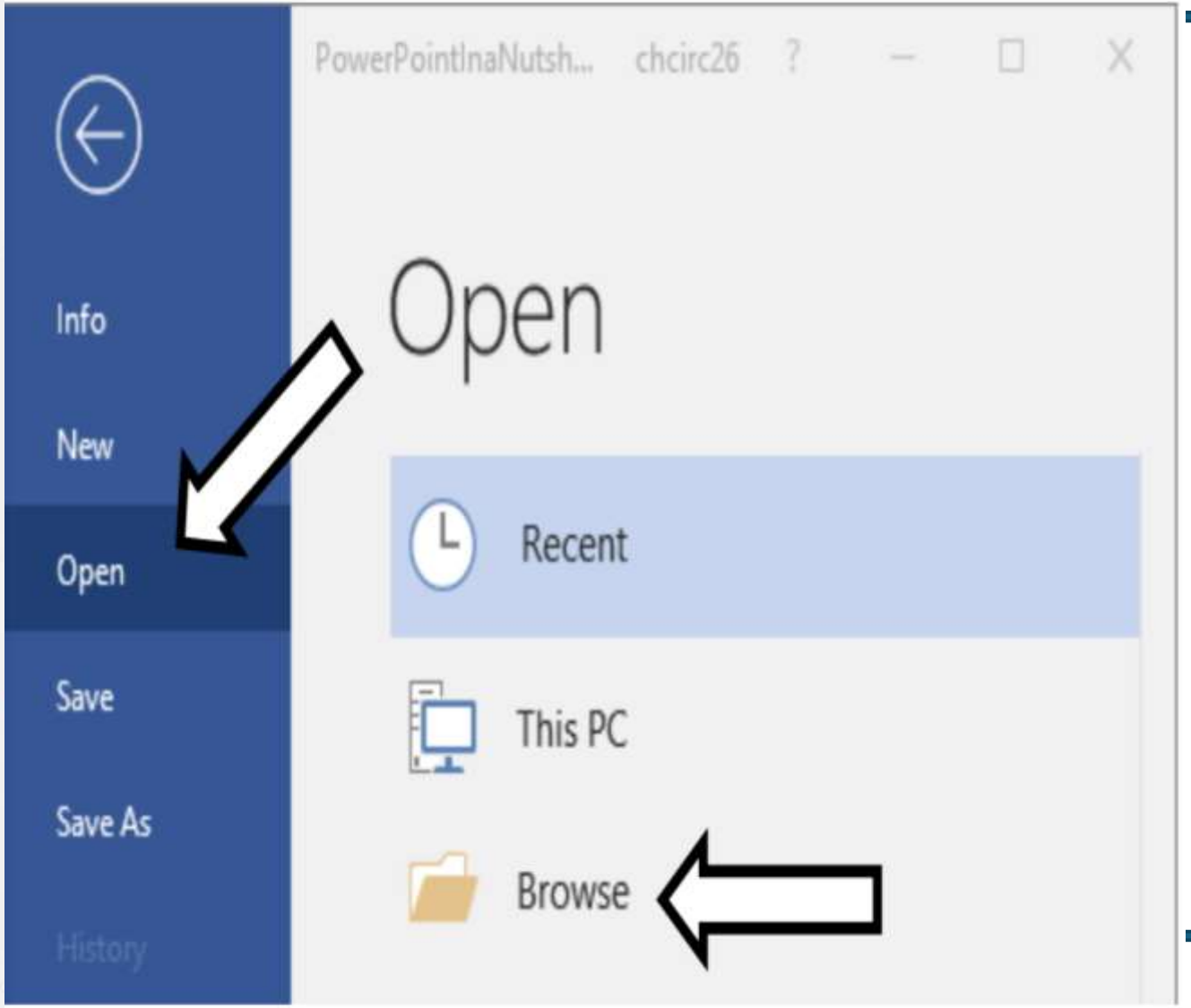
Creating and Managing Documents

Working with Documents

- Creating Documents:
  - Open a blank document or select a template.
- Opening Existing Documents:
  - File > Open > Browse for files.

Creating and Managing Documents





Creating and Managing Documents

- Saving Documents:
  - File > Save As, choose location, name, and format.
  - Shortcut: Ctrl+S.
- Printing:
  - File > Print, customize settings, and print.

Text Creation and Editing

- Adding and Editing Text
- Adding Text:
  - Type directly in the document. Text automatically wraps to the next line.

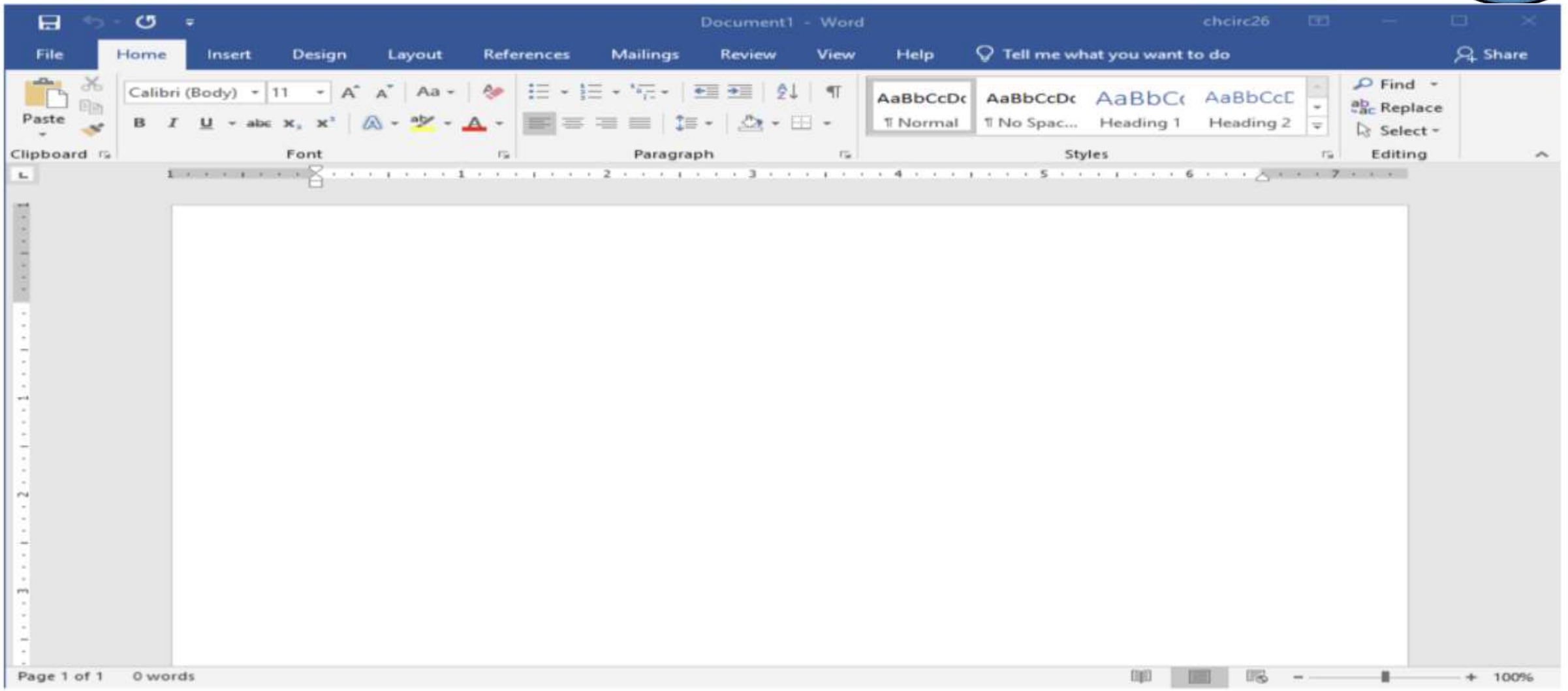
Editing Text:

  - Insert or delete text using the cursor.
  - Use Backspace or Delete keys.

Text Creation and Editing

- Selecting Text:
  - Highlight using the mouse or Ctrl+A for all text.
- Undo/Redo:
  - Undo (Ctrl+Z), Redo (Ctrl+Y).

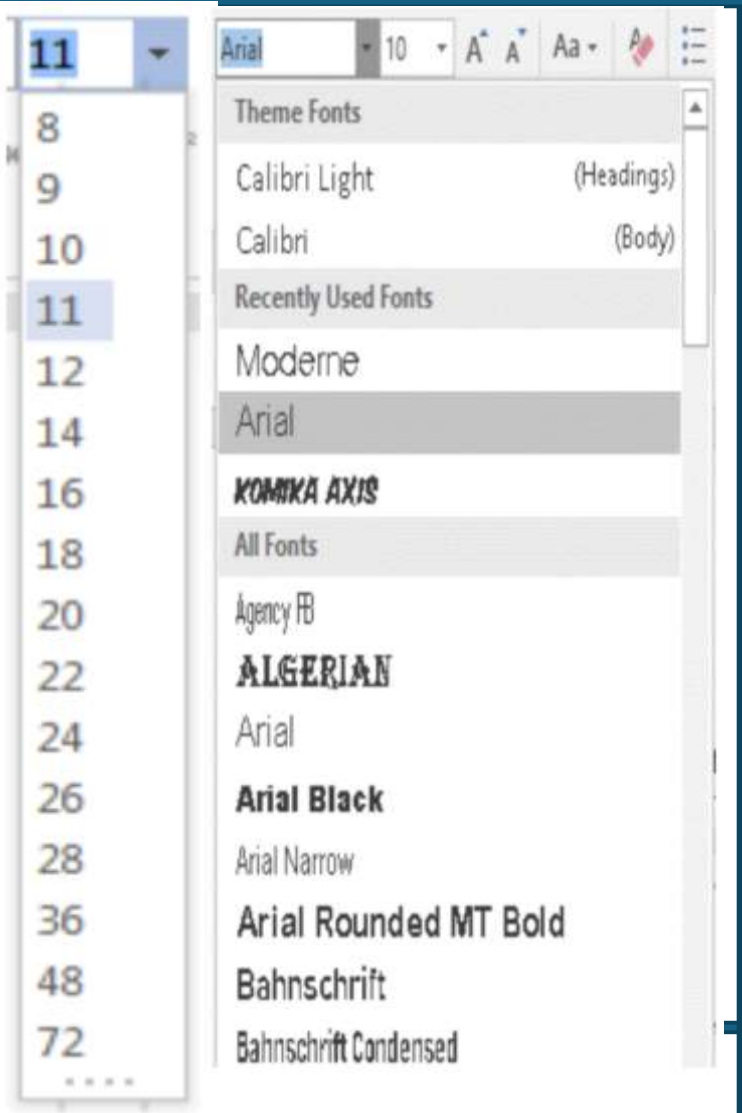
Text Creation and Editing



Formatting Text and Paragraphs

Formatting Text and Paragraphs

- Formatting Essentials
- Font Styles:
  - Change font type, size, and color.
  - Apply bold, italic, or underline.



Formatting Text and Paragraphs

Paragraph Formatting:

- Alignment: Left, Center, Right, Justify.
- Line Spacing: Adjust for readability.

- Lists:
  - Create numbered or bulleted lists.

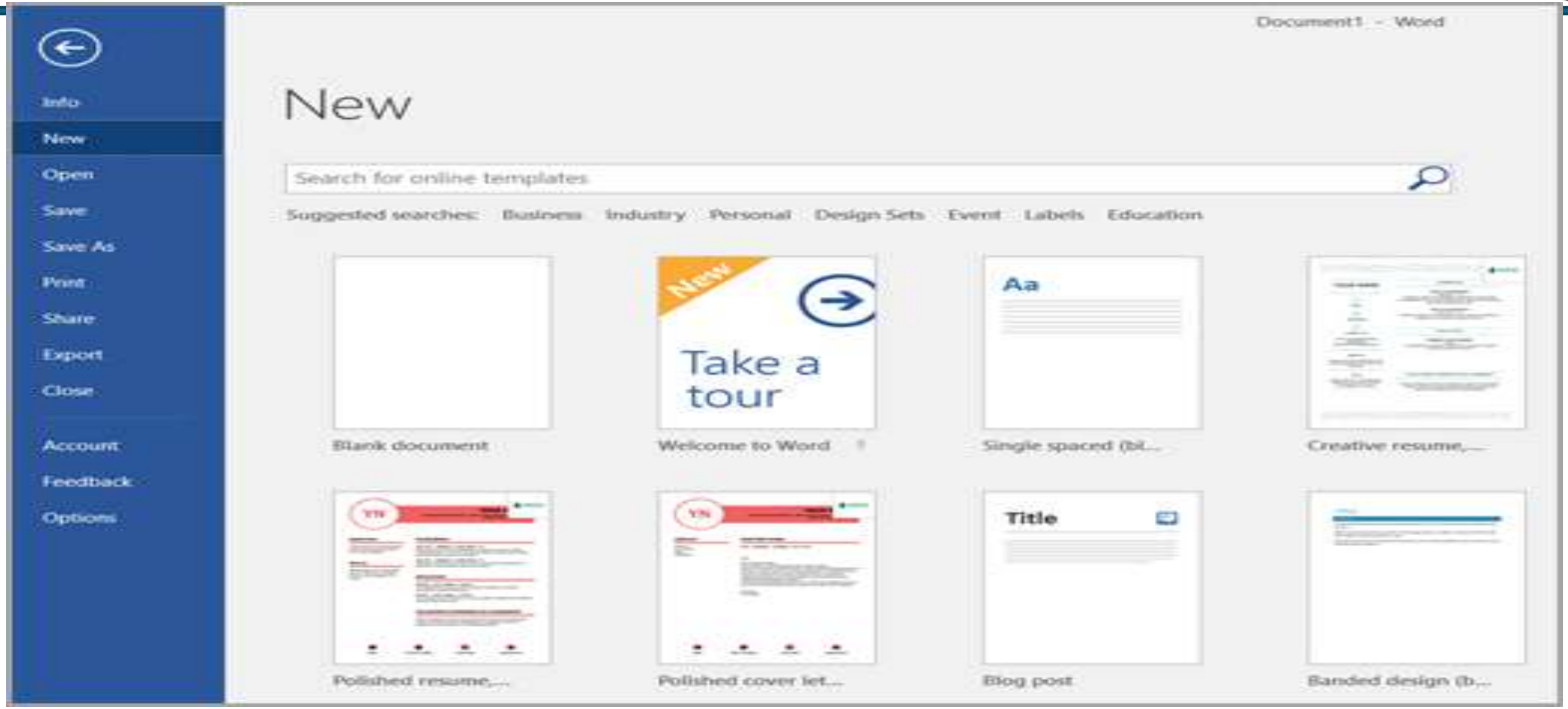
Using Templates

Document Templates

- What Are Templates?

  - Pre-designed layouts for resumes, reports, letters, etc.

Using Templates



Using Templates

- How to Access Templates:
  - File > New > Search templates.
- Customization:
  - Replace placeholder text and adapt the design.

Customizing the Ribbon

- Personalizing the Ribbon
- Steps to Customize:
  1. File > Options > Customize Ribbon.
  2. Add frequently used commands.
  3. Save preferences for efficiency.
- Benefits: Streamline access to essential tools.

Key Features for Productivity

- Productivity Features

- Spell Check: Highlights misspelled words (red underline) and grammar issues (green underline).

- Page Numbers: Insert via Insert tab > Page Number.

Key Features for Productivity

- Headers and Footers: Add page titles, dates, or page numbers for consistency.
- Keyboard Shortcuts: Save time (e.g., Ctrl+C, Ctrl+V, Ctrl+X).

Conclusion

- Microsoft Word is a powerful tool for creating and managing text documents.
- Familiarity with basic features boosts productivity.
- Customization options help streamline workflows .

END Of Lecture

Computer Fundamental

Lecture 7

Microsoft Word Basics and Features Part 2

(Creating and Managing Tables, Utilizing Styles and Themes, Spell Check and Grammar Tools, Using Headers and Footers)

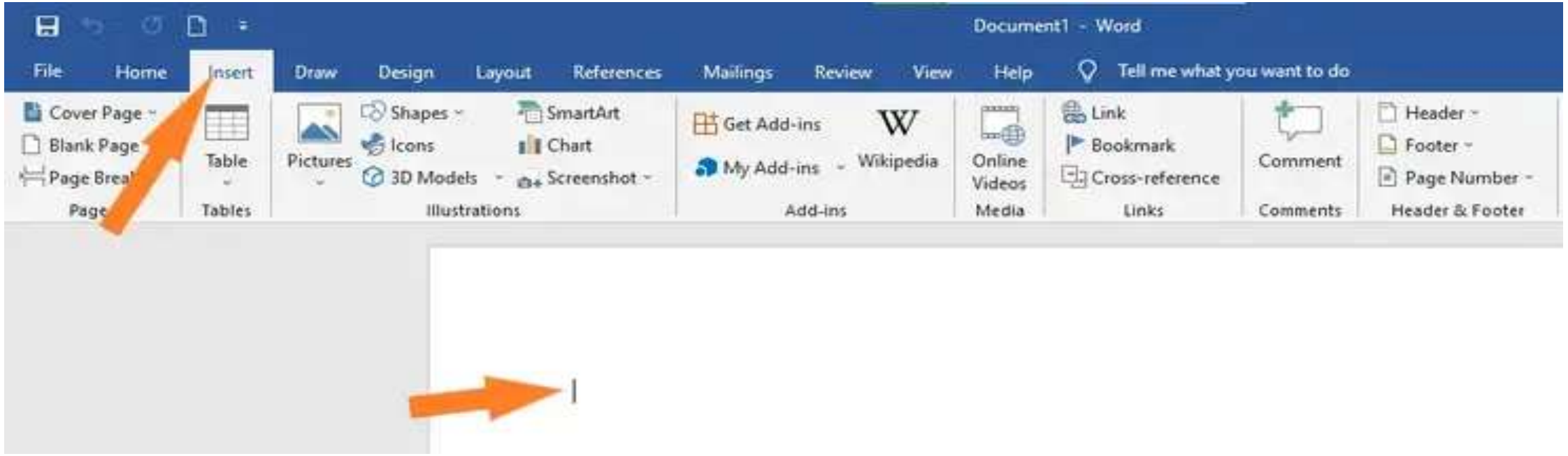
Assist.Prof. Dr. Haider Noori Hussain

Topics Covered :

Overview of Advanced Word Processing Tools.

- Create Tables for structured data.
- Styles and Themes for consistent formatting.
- Tools for error-free writing.
- Headers and Footers for professional document layout.

Create Tables for structured data



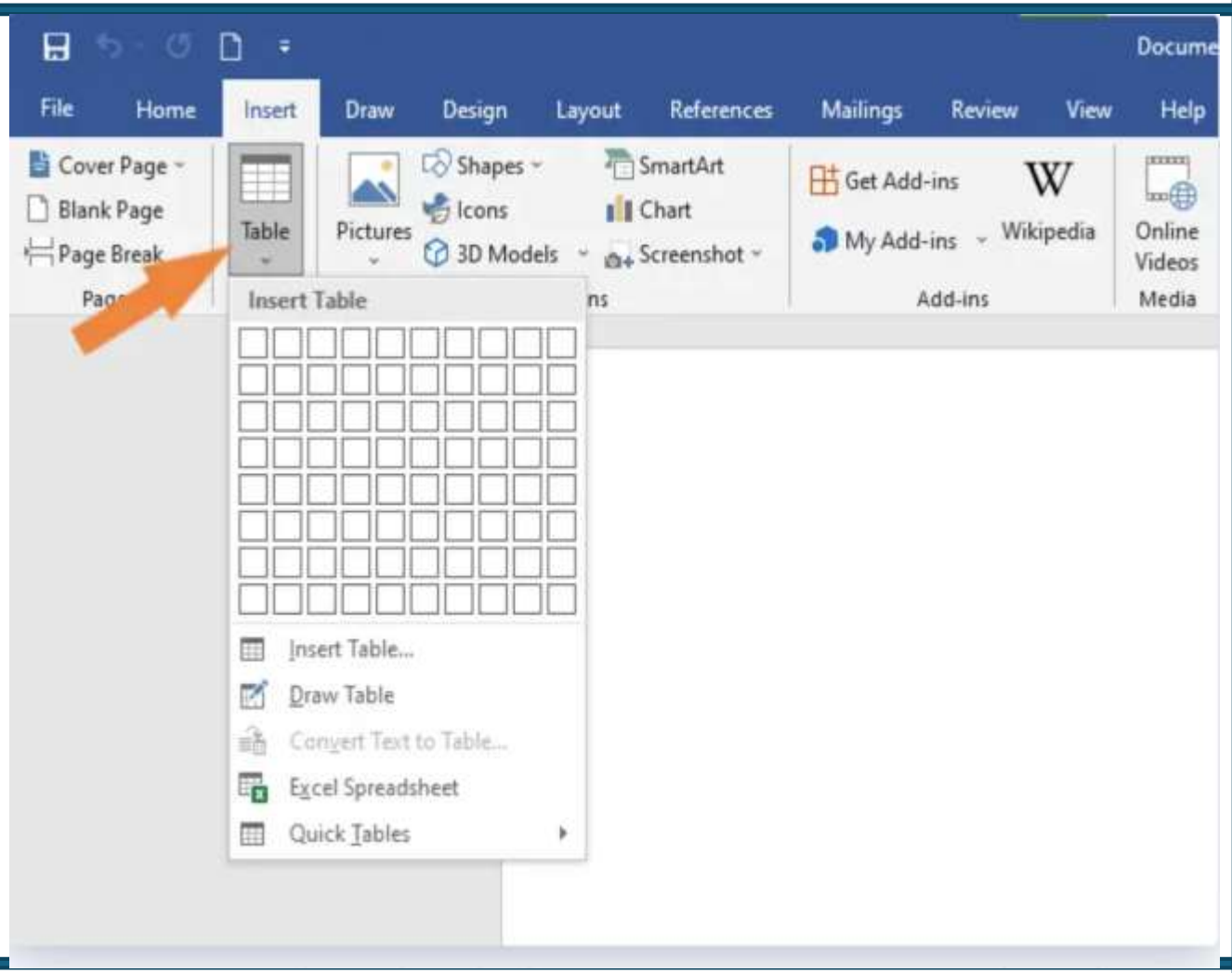
- Tables offer a convenient way to display information that might otherwise be confusing and cluttered.

Create Tables for structured data

- To create a table in Microsoft Word, click on the Insert ribbon.
- The Table button is the only one option on the Tables group.

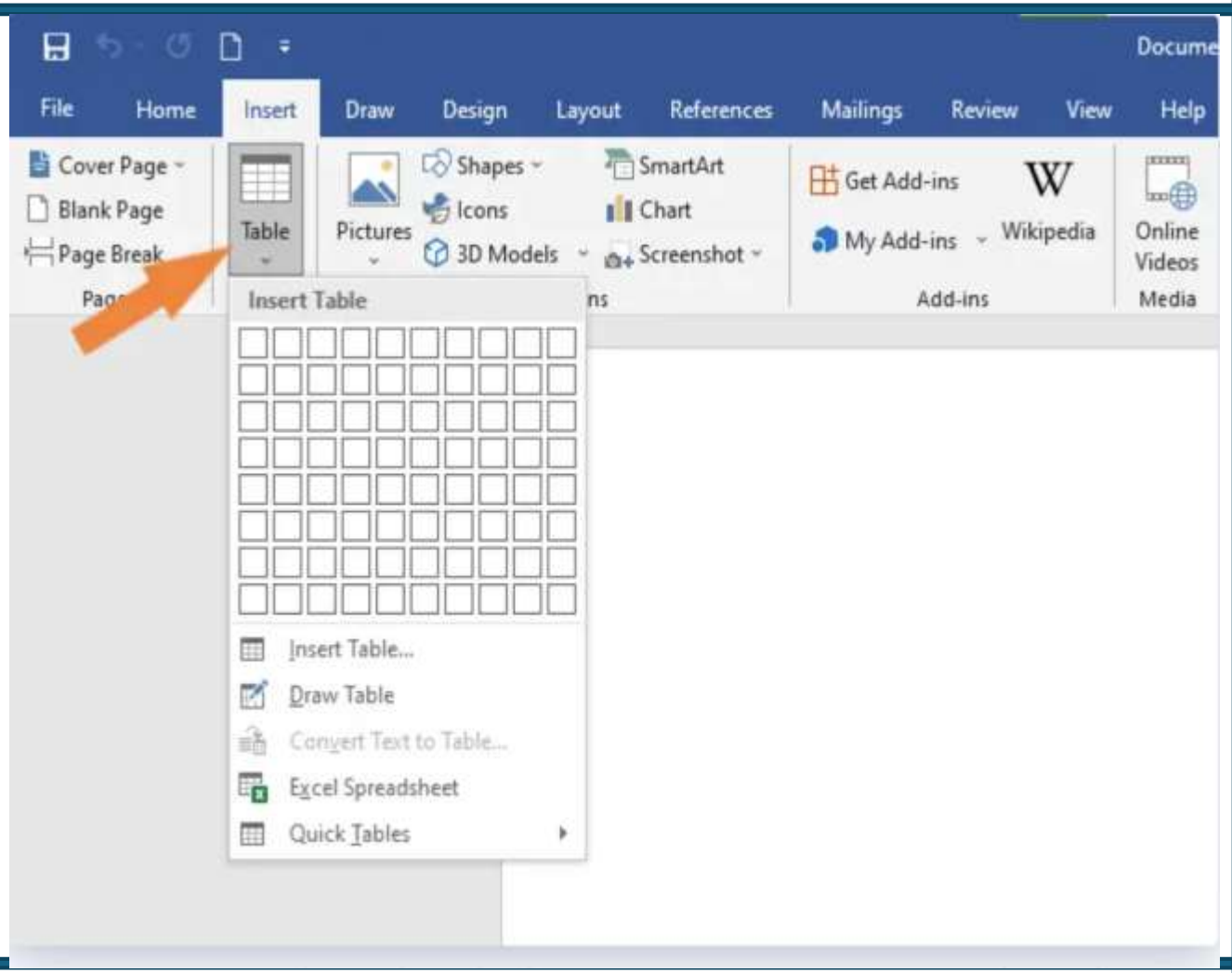
Create Tables for structured data

1. Click on the Insert ribbon, and then click on the Table button.
2. The Table panel will appear.
3. Select the rows and columns needed.



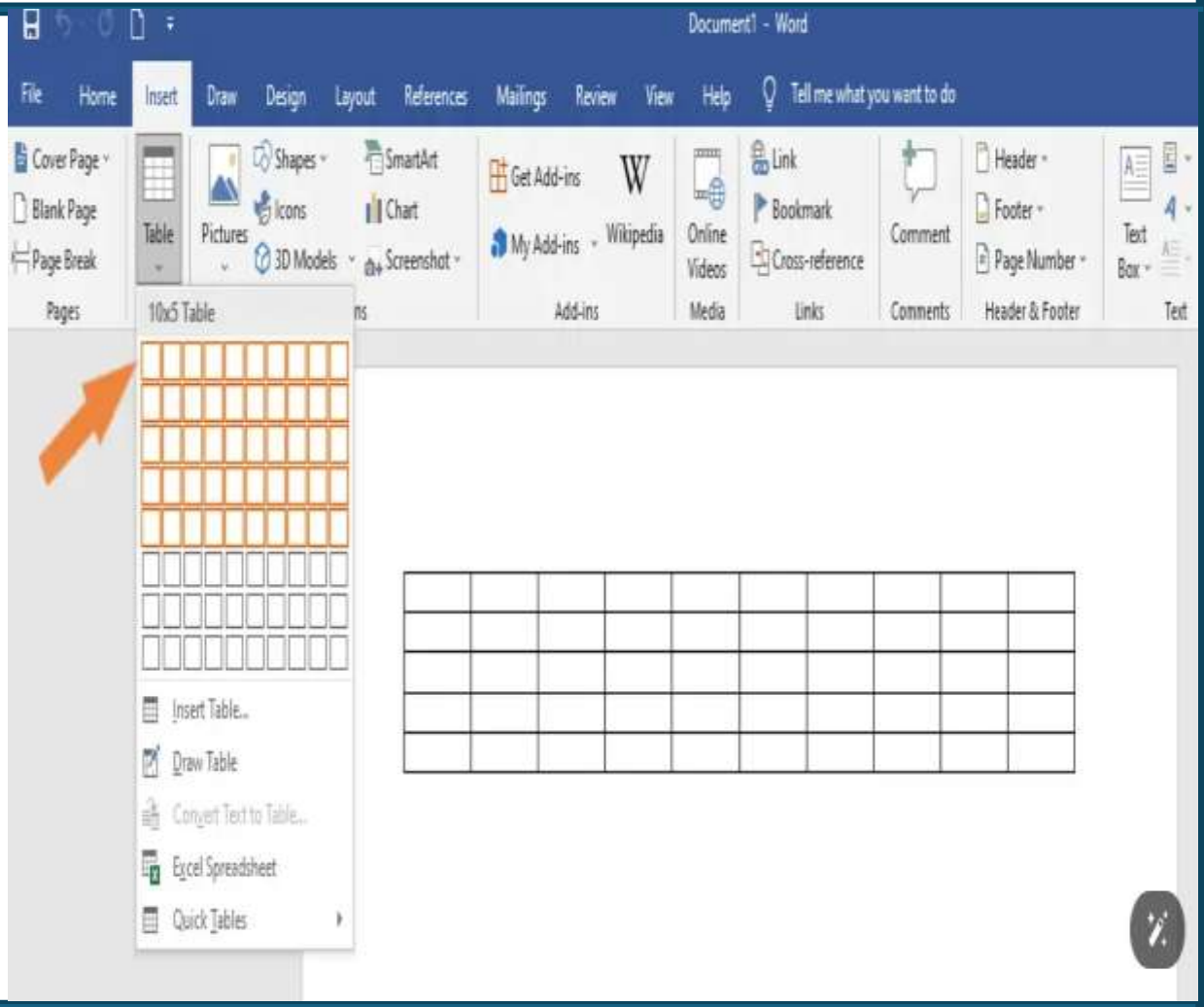
Create Tables for structured data

To insert a table onto your document, move the mouse pointer over the number of rows and columns you desire.



Create Tables for structured data

4. The cell selection will be highlighted as you move the mouse. When the desired rows and columns are highlighted, click on the last cell.



Create Tables for structured data

Enter Data in a Table:

Place the cursor in the cell where you wish to enter the information. Begin typing

Note: The Table Tools tab only appears when a table is selected.

Modify the Tables Structure and Format a Table

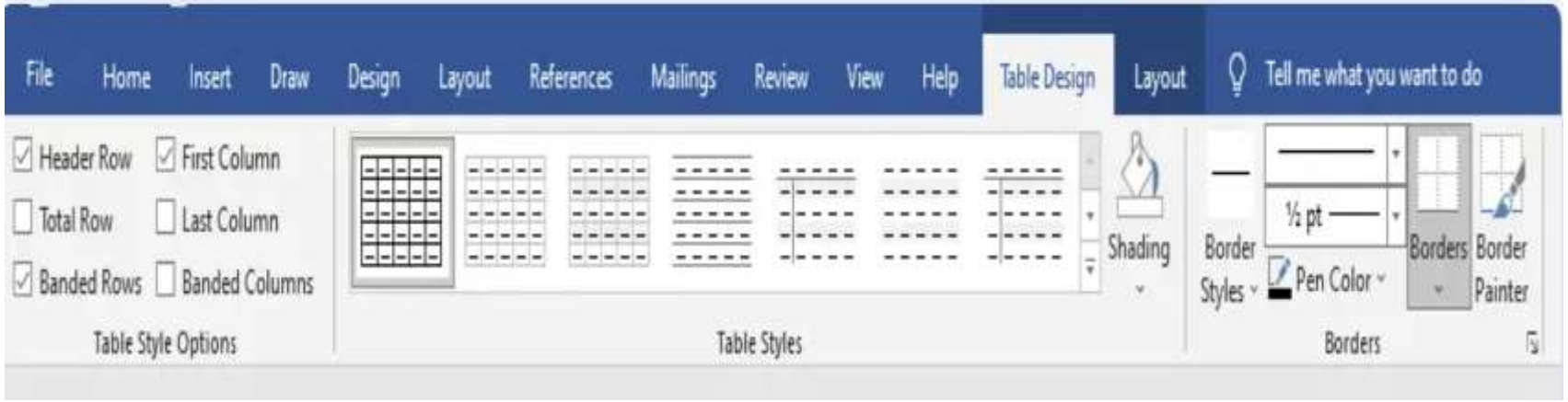
To modify the structure of a table:

- Click the table and notice that you have two new tabs on the Ribbon: Design and Layout. These pertain to the table design and layout.

Modify the Tables Structure and Format a Table

On the Design Tab, you can choose:

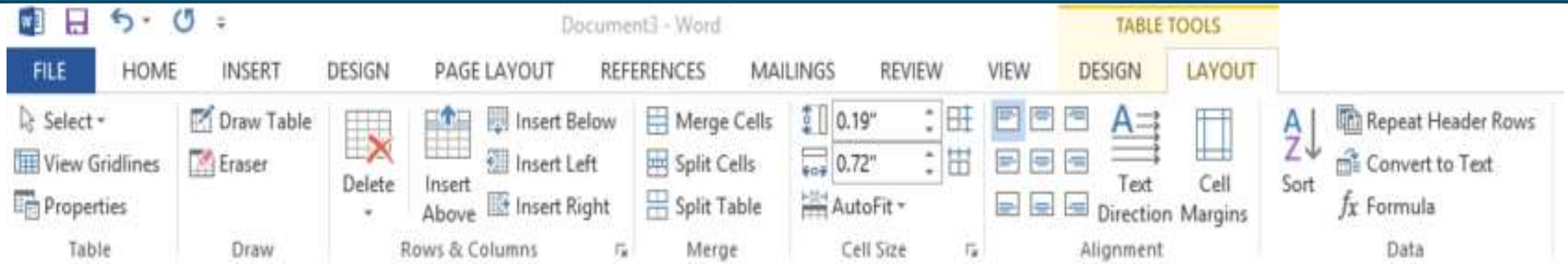
- Table Style Options
- Table Shading
- Borders Style
- Draw Borders



Modify the Tables Structure and Format a Table

To Format a table, click the table and then click the Layout Tab on the Ribbon. This Layout Tab allows you to:

Modify the Tables Structure and Format a Table



To Format a table, click the table and then click the Layout Tab on the Ribbon. This Layout Tab allows you to:

Modify the Tables Structure and Format a Table

- View Gridlines and Properties (from the Table Group)
- Draw Table, Eraser (from the Draw Group)
- Delete the Table, Rows and/or Columns (from the Rows & Columns Group)

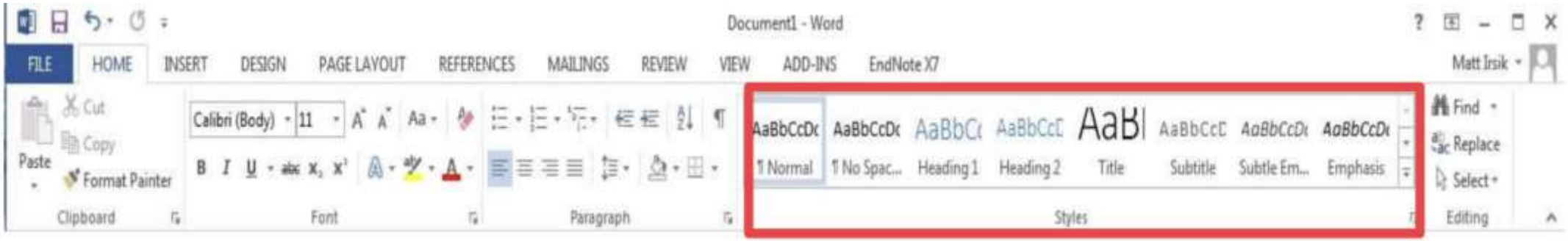
Modify the Tables Structure and Format a Table

- Insert Rows and Columns (from the Rows & Columns Groups)
- Merge or Split Cells (from the Merge Group)
- Increase and Decrease cell size (cell size Group)
- Align text within the cells and change text directions (Alignment Group)

Styles and Themes for consistent formatting

What Are Styles?

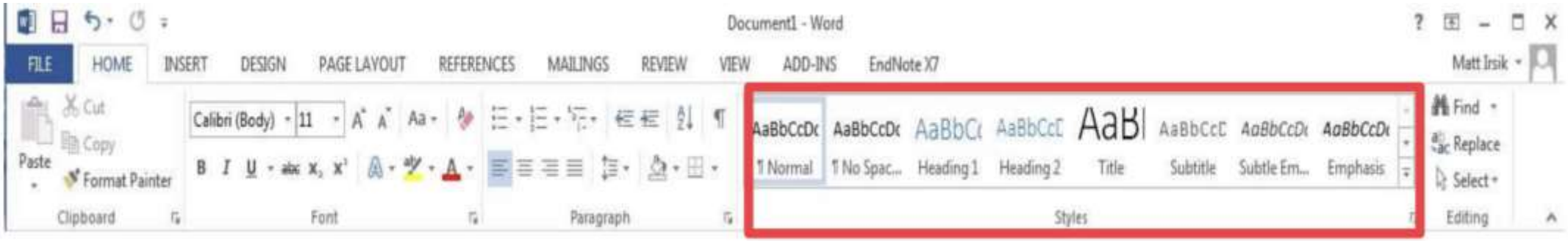
- Predefined sets of formatting for text (e.g., fonts, sizes, colors).
- Examples: Headings, Normal text, Title, Subtitles.



Styles and Themes for consistent formatting

How to Apply Styles:

- Navigate to the Home tab > Styles group > Choose a style.
- Example: Apply "Heading 1" to a chapter title.



Styles and Themes for consistent formatting

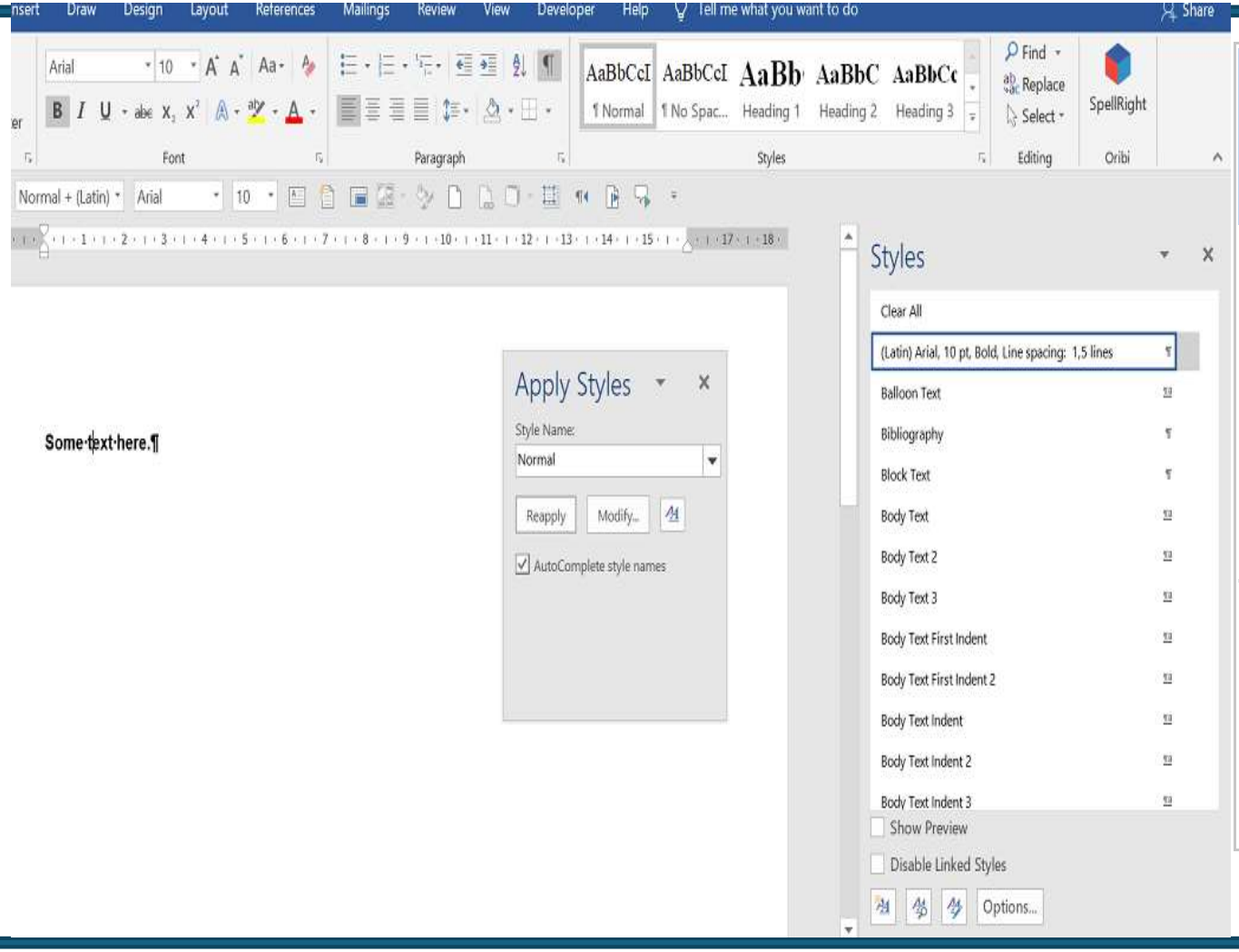
Modifying Styles:

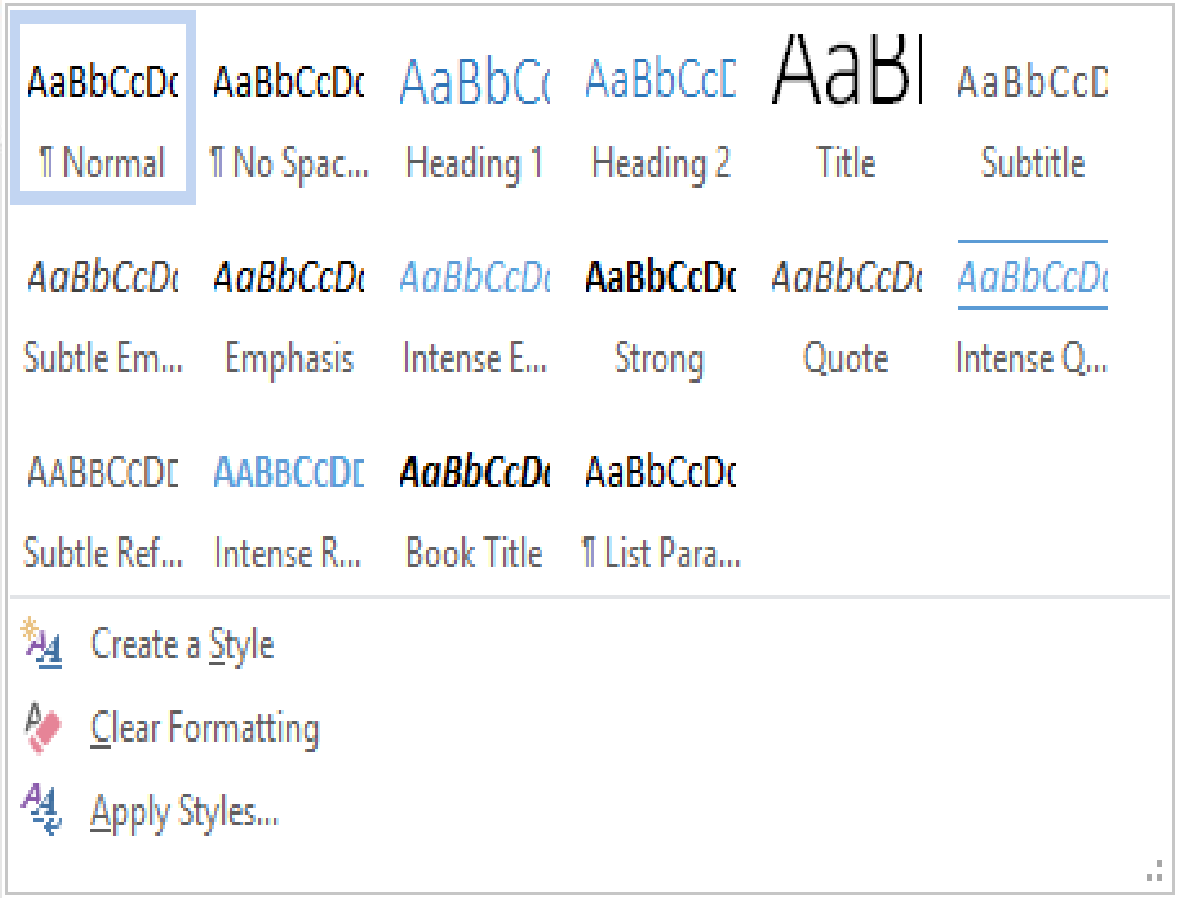
- Right-click on a style > Modify to adjust font, size, or alignment.
- Save changes for reuse.

Benefits:

- Maintains consistency across the document.
- Simplifies formatting for large documents.

Styles and Themes for consistent formatting





Themes for consistent formatting

Themes:

Before diving into how to use Microsoft Word themes, it is important to understand what they are. A theme in Word is a collection of design elements that work together to create a consistent and polished appearance throughout your document. It includes font styles, font colors, paragraph spacing, heading styles, and more.

Themes for consistent formatting

Applying a Theme to a Document:

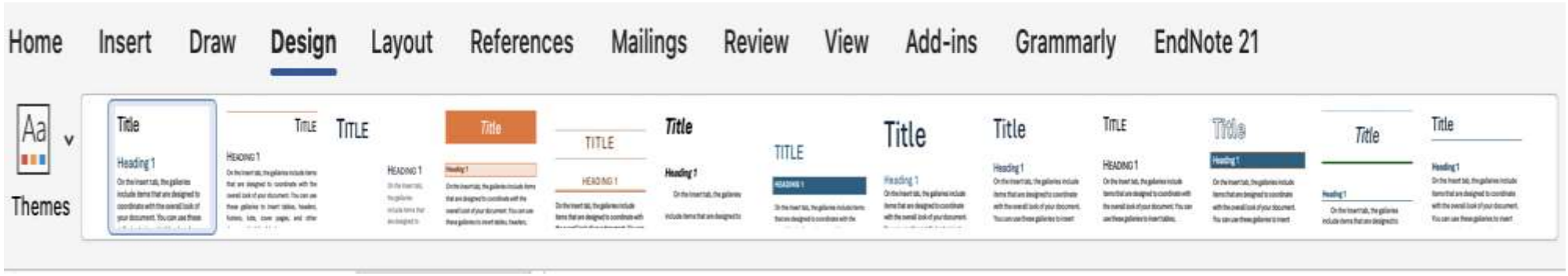
To apply a pre-designed theme to a document in Microsoft Word, follow these steps:

1. Open the Word document you want to format.
2. Go to the "Design" tab on the ribbon.
3. In the "Document Formatting" group, click on the "Themes" button.

Themes for consistent formatting

Applying a Theme to a Document:

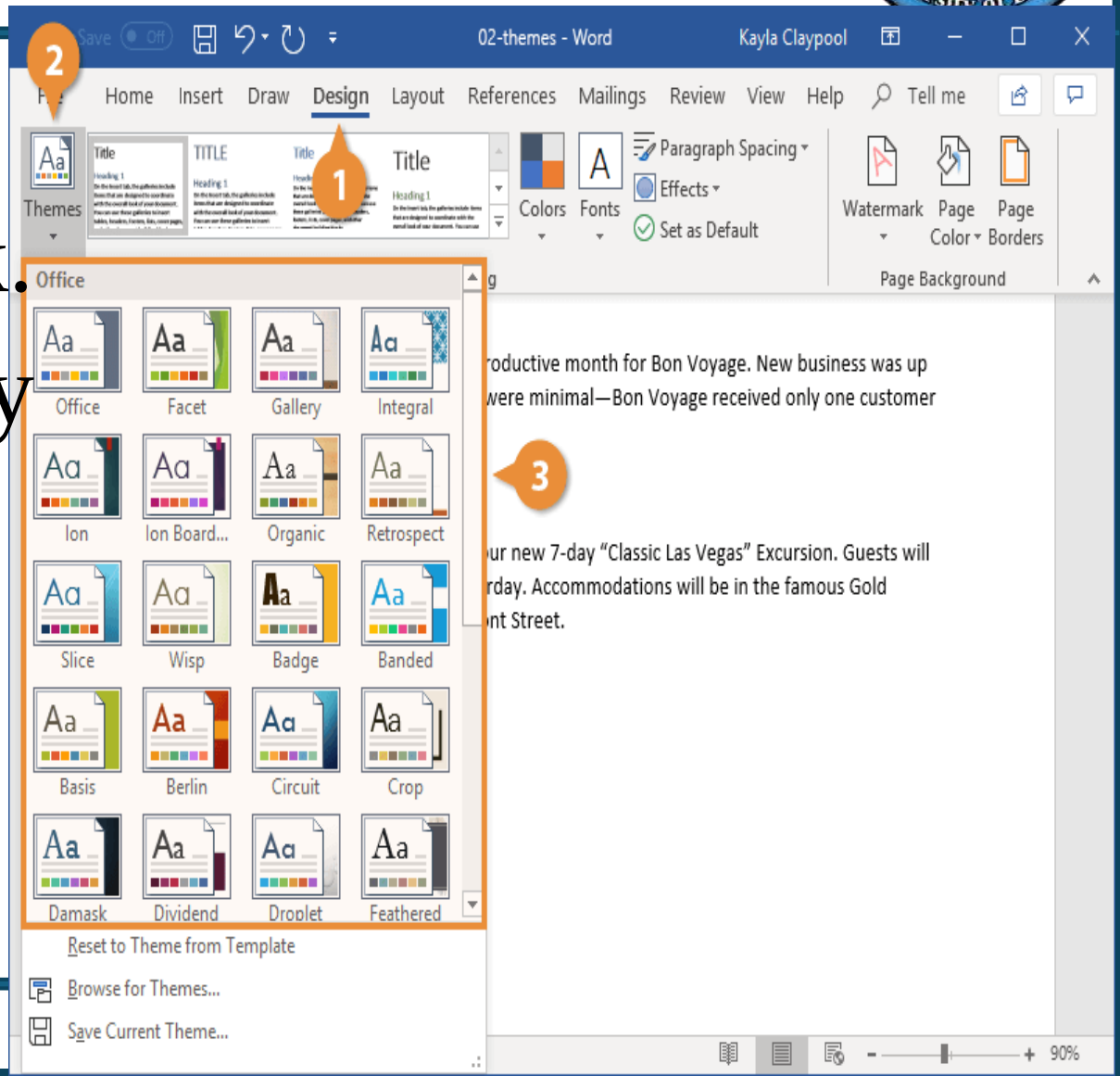
4. A drop-down menu will appear, showing a list of built-in themes.
5. Select the desired theme by clicking on it.



Themes for consistent formatting

Advantages:

1. Creates a professional look.
2. Ensures brand consistency in business documents.



Tools for error-free writing (Spell Check and Grammar Tools)

- Microsoft Word 2013 automatically checks for incorrect spelling and grammar.
- As you type in the document, Word uses wavy red underlines to indicate possible spelling errors and wavy green underlines to indicate possible grammatical errors.

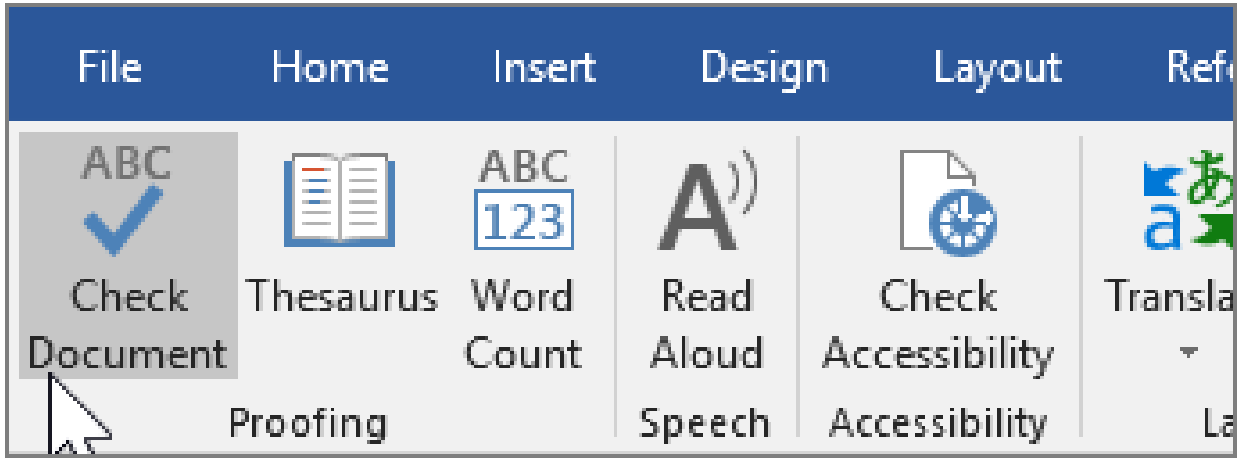
Tools for error-free writing (Spell Check and Grammar Tools)

- To correct an error, right-click on a word with a wavy underline, and then click on the correction from the option panel that you desire.
- You can also edit the error directly in the document if no suggestions are applicable.

Tools for error-free writing (Spell Check and Grammar Tools)

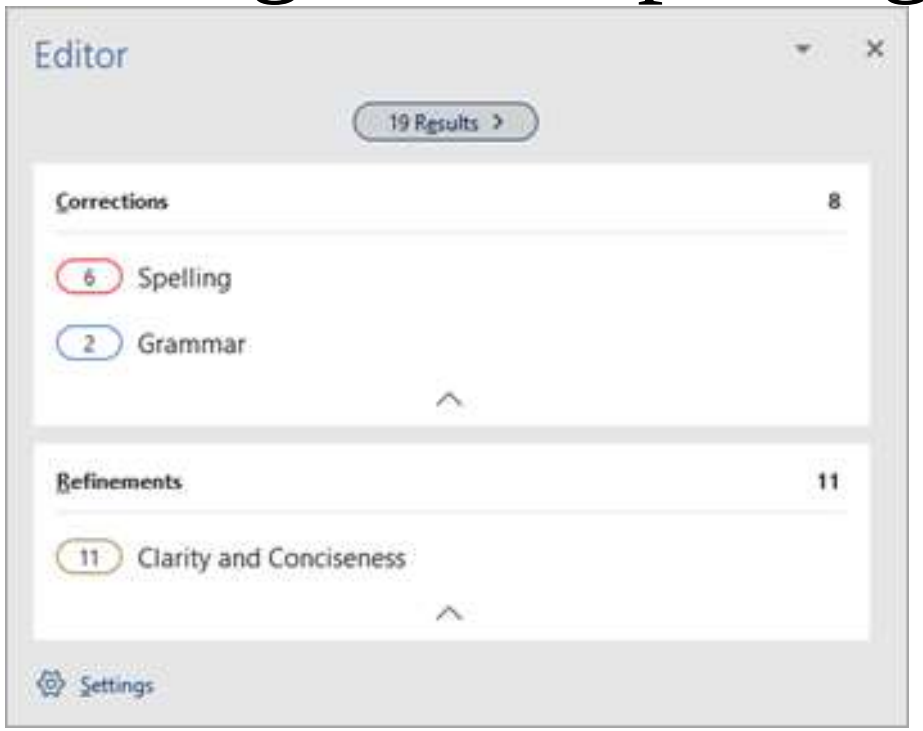
- Open the Editor pane to address issues by category.

1. On the Review tab, select Check Document.



Tools for error-free writing (Spell Check and Grammar Tools)

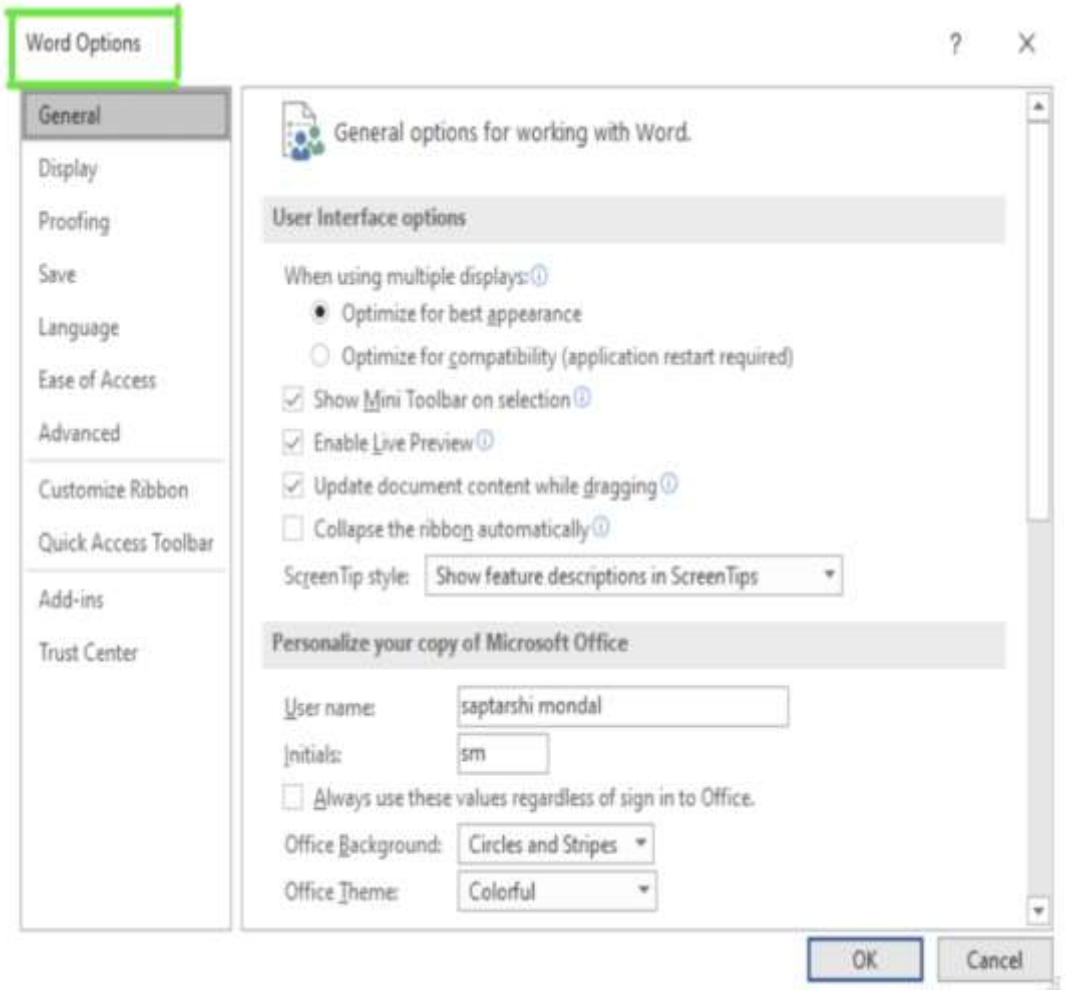
2. The Editor pane categorizes spelling, grammar, and stylistic issues.



3. Click each category to address the issues.

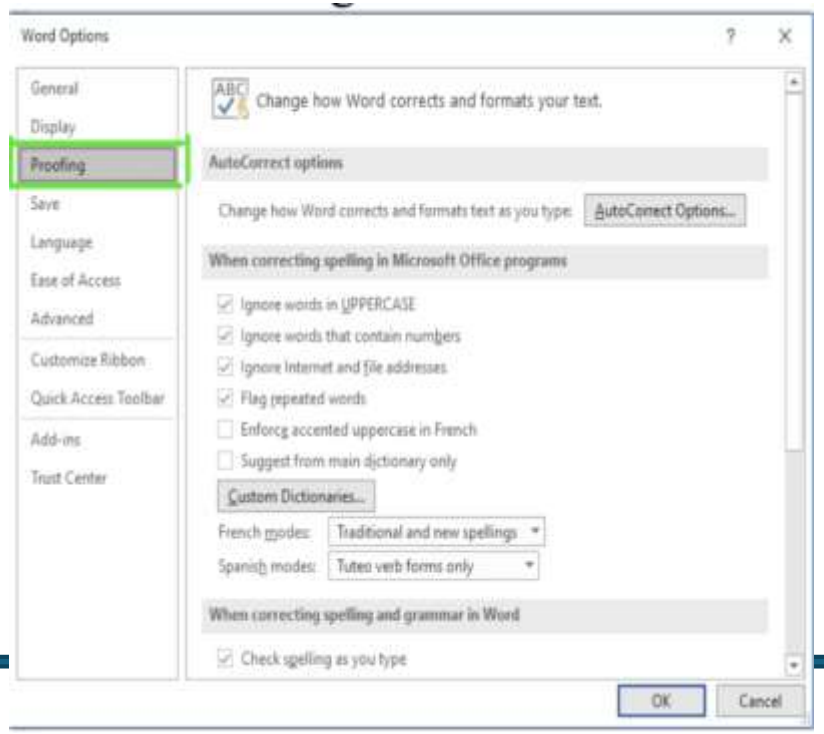
Steps to enable Spell Checker in MS Word

1. On the navigation menu bar click on the File option.
2. Next click on the options button as shown in the figure.
3. A word options dialog box will appear on the screen.

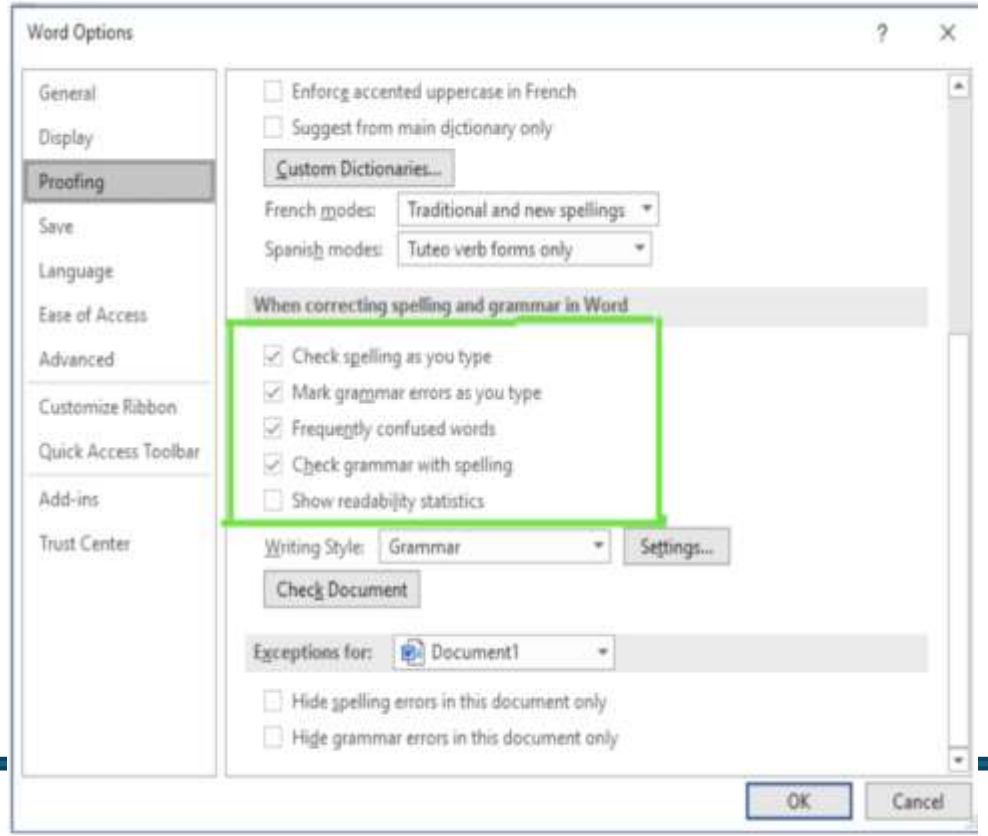


Steps to enable Spell Checker in MS Word

3. Now select the Proofing option from the left menu as shown in the figure

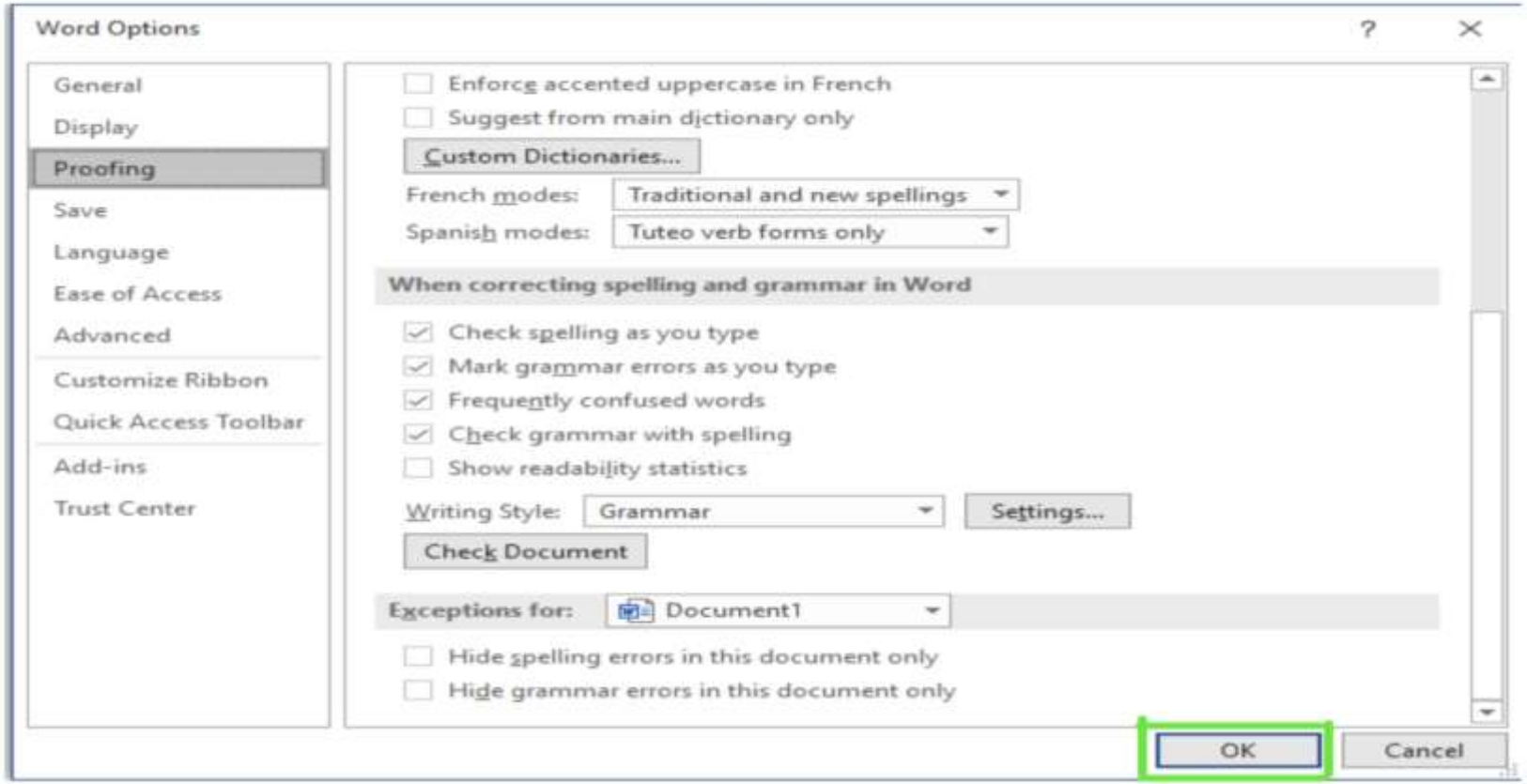


4. Check all boxes as shown in the figure



Steps to enable Spell Checker in MS Word

6. Next click on the OK button. Finally, Spell Check is enabled in MS Word

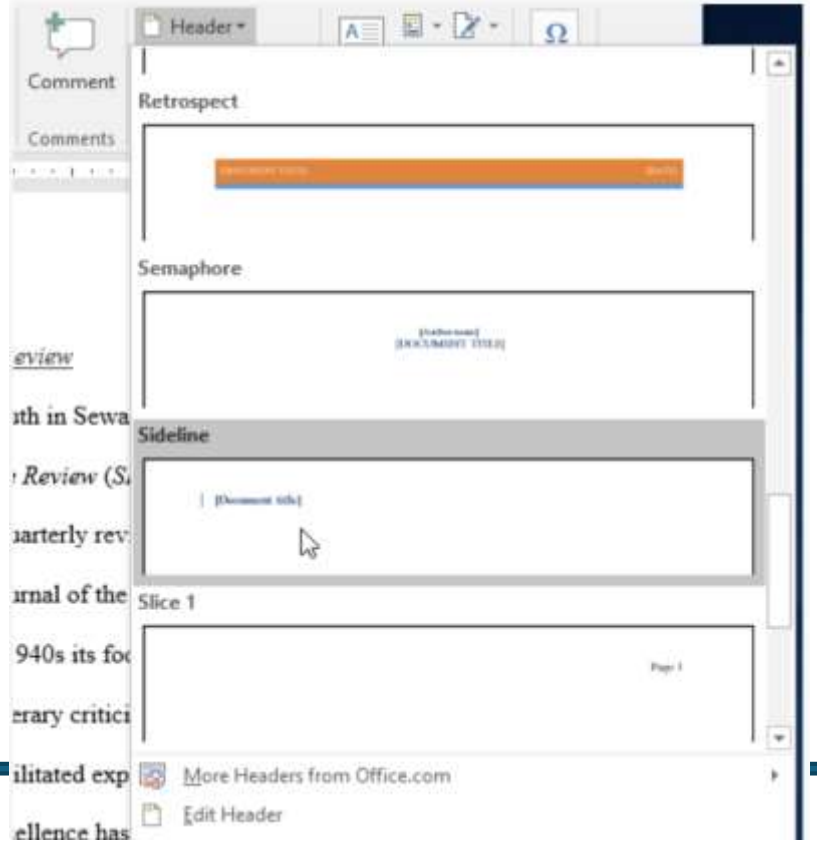


Headers and Footers for professional document layout.

- Navigate to the Insert tab on the Ribbon.
- Click on "Header" or "Footer" to view a drop-down menu of preset designs.
- Select a design that suits your needs. The chosen header or footer will appear in your document, often containing placeholders known as Content Control fields.

Headers and Footers for professional document layout.

- Click on these fields to input your specific information, such as the document title or author's name.



Headers and Footers for professional document layout.

Adding Page Numbers:

1. With the header or footer section active, place the cursor where you want the page number to appear.
2. Go to the Design tab and click on "Page Number."
3. Choose your preferred page number style and position.

Headers and Footers for professional document layout.

Inserting Date and Time:

1. While in the header or footer, position the cursor where you want to add the date or time.
2. On the Design tab, click "Date & Time."
3. Select your desired format from the dialog box and click "OK."

Headers and Footers for professional document layout.

Removing Headers or Footers:

1. To delete a header or footer, double-click on the respective area to activate it.
2. Delete the content within the header or footer.
3. Click "Close Header and Footer" or press Esc to finalize the changes.

Conclusion

This lecture covered advanced Word processing features that can significantly enhance the functionality and professionalism of your documents. Here's a recap:

1.Tables: You learned how to create, manage, and format tables to organize data efficiently.

Conclusion

2. Styles and Themes: These tools ensure consistency and provide a cohesive design across your document, saving time and effort in formatting.
3. Spell Check and Grammar Tools: These features help ensure error-free, polished content by identifying spelling and grammatical issues while providing suggestions.

Conclusion

4. Headers and Footers: By adding elements like page numbers, dates, and titles, you can improve your document's organization and appearance.

END Of Lecture

MICROSOFT EXCEL

Computer Fundamental

Lecture 8

Microsoft Excel

(Exploring Essential Tools and Functions)

Assist.Prof. Dr. Haider Noori Hussain

Objectives

- Describe the purpose and utility of spreadsheets in organizing and analyzing data.
- Explain the identification and usage of rows and columns, highlighting their roles in structuring data.
- Define functions and formulas, emphasizing their roles in calculations and data manipulation.

Introduction to Spreadsheet Software

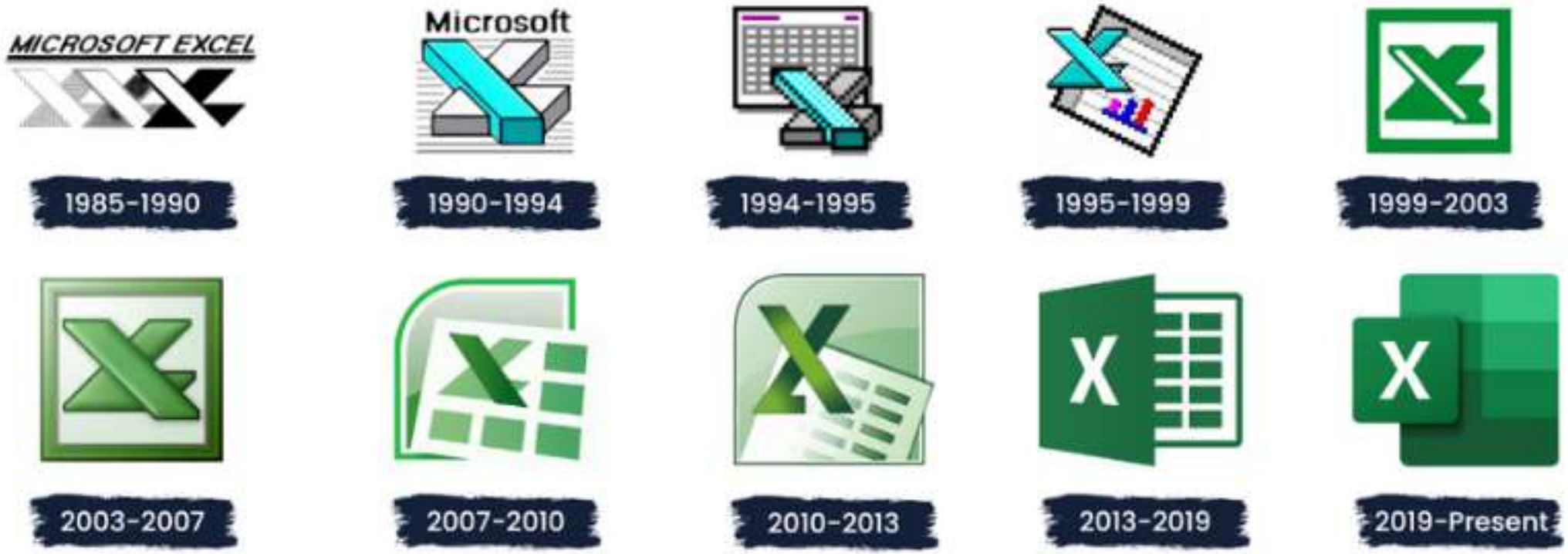
- Definition: A program for organizing, analyzing, and storing data in rows and columns.
- Key Features: Data entry, calculations, visualization, analysis tools.
- Examples: **Microsoft Excel,** Google Sheets, LibreOffice Calc.
- Applications: Financial modeling, academic analysis, inventory management, reporting.

INTRODUCTION TO SPREADSHEETS

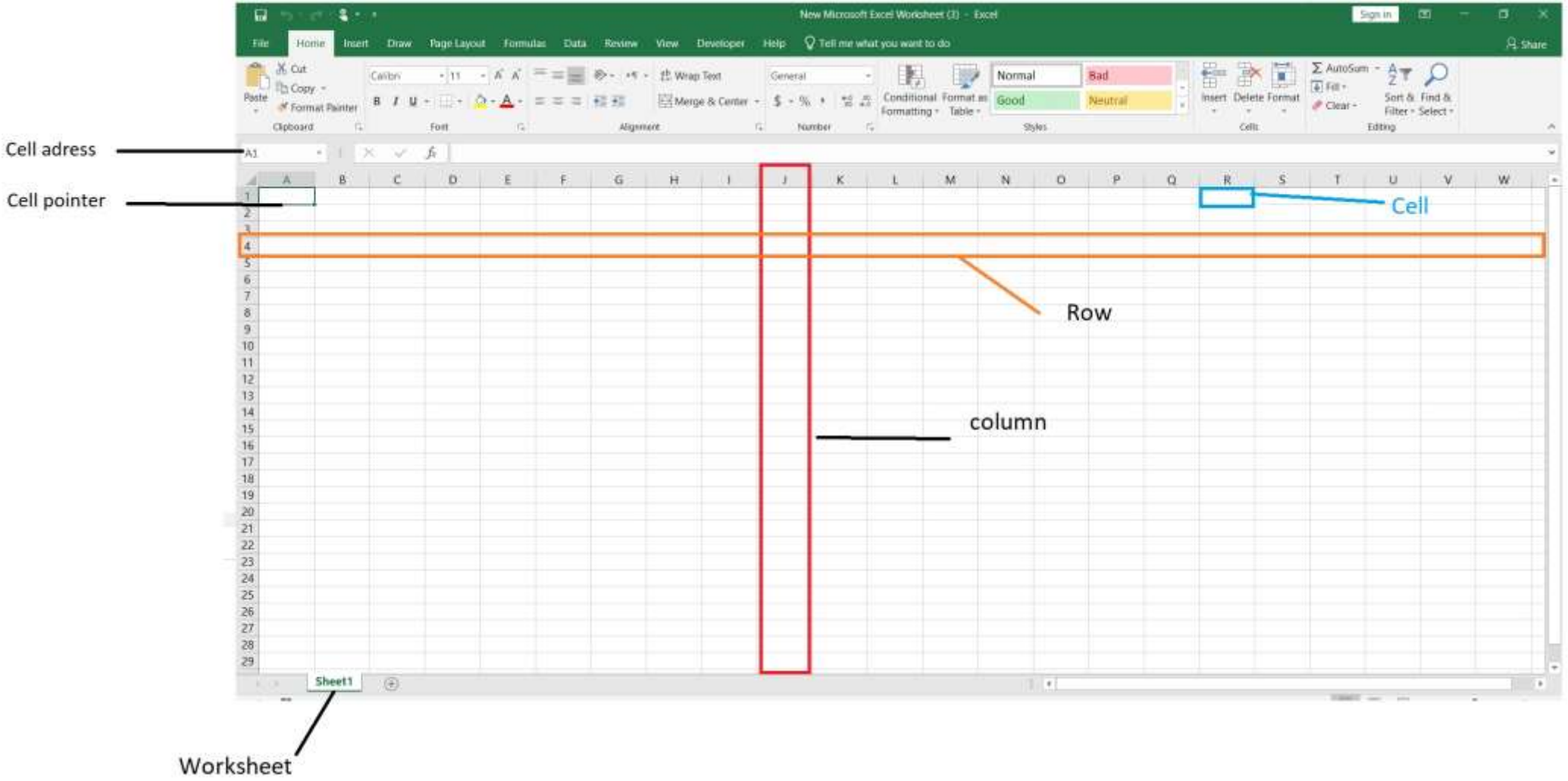
- Common user interface on all Office applications
  - Menus and toolbars are similar to Word and Power Point
- Worksheet is an Excel spreadsheet
- Workbook contains one or more worksheets
- Toolbars--Standard and Formatting
- File menu--Save, Save As, Open and Print commands

INTRODUCTION TO SPREADSHEETS

History of MS Excel and its evolution



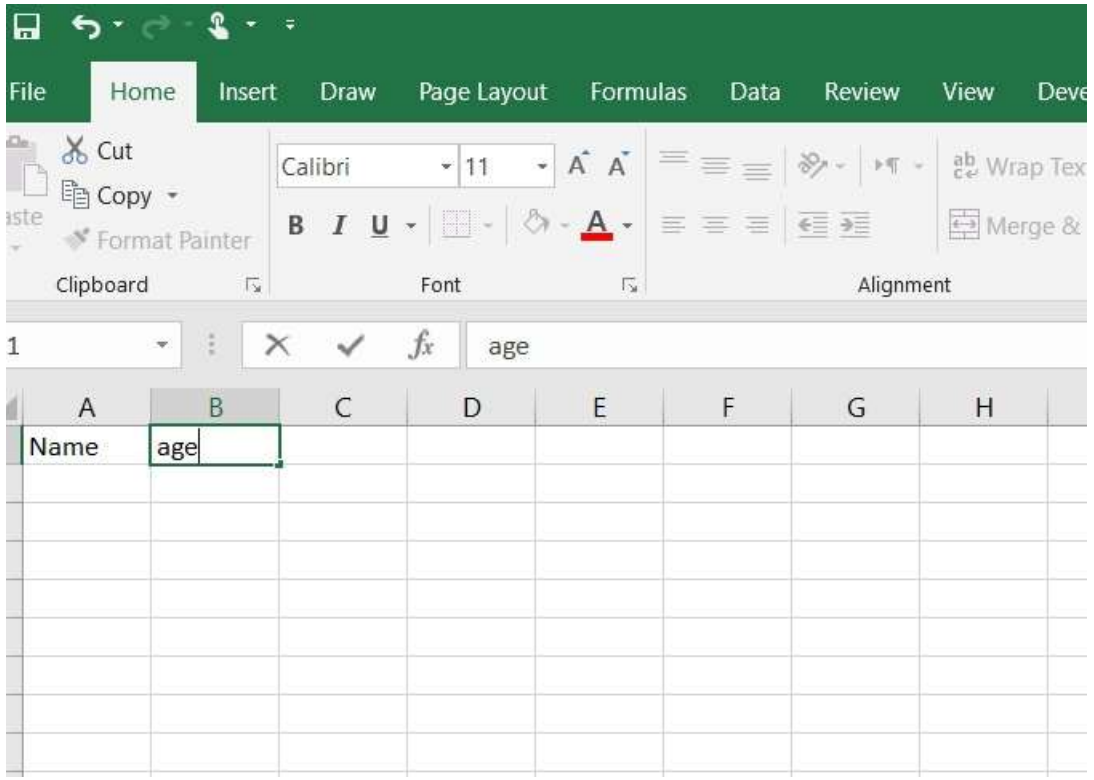
OVERVIEW OF SPREADSHEET PROGRAMS



OVERVIEW OF SPREADSHEET PROGRAMS

- To work with a spreadsheet, you enter data in the cells of the spreadsheet.
- You enter data by clicking a cell and typing the data.
- To replace data in a cell, you click the specific cell and type the new data.
- To edit data in a cell, you double click in the cell and type additional data.

Note: when editing data, a blinking cursor appears.



WORKING IN A SPREADSHEET (CONT.)

❖You can enter three types of data in a spreadsheet:

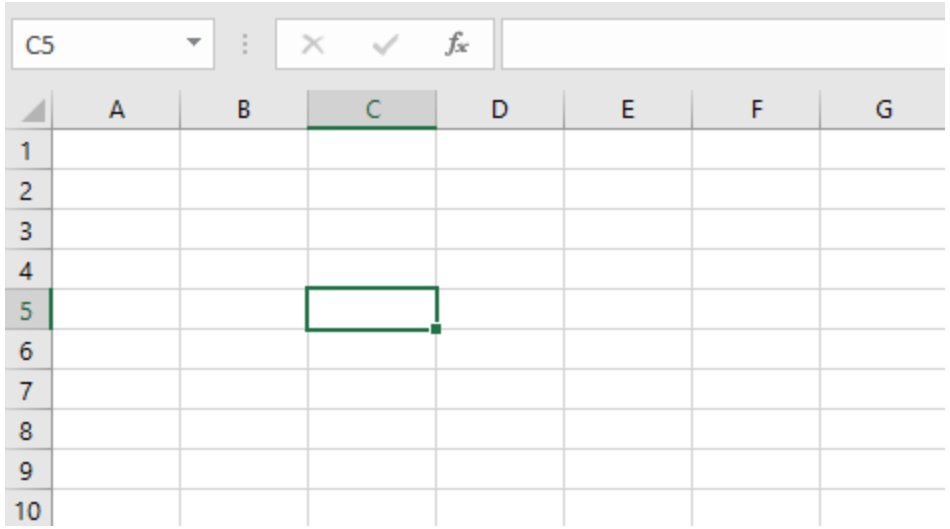
- **Text**: Text data has no numeric value associated with it.
- **Numbers**: A number has a constant numeric value.
- **Formulas and functions**: Formulas and functions are mathematical equations.

Cell Basics Cont.

- Cells are the basic building blocks of a worksheet. You'll need to learn the basics of **cells** and **cell content** to calculate, analyze, and organize data in Excel.

Understanding cells

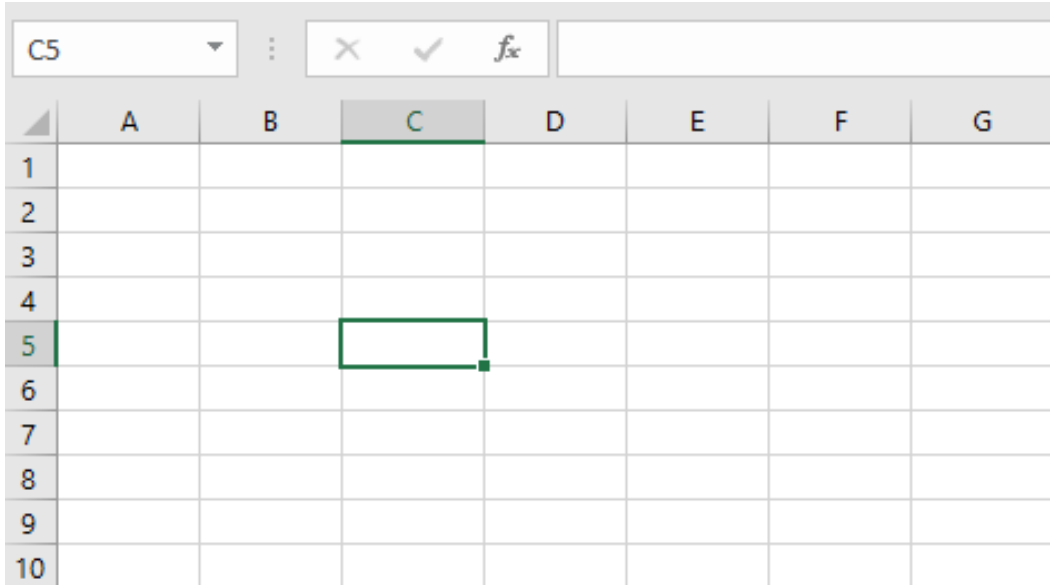
- Every worksheet is made up of thousands of rectangles, which are called **cells**. A cell is the **intersection** of a **row** and a **column**—in other words, where a row and column meet.



Cell Basics Cont.

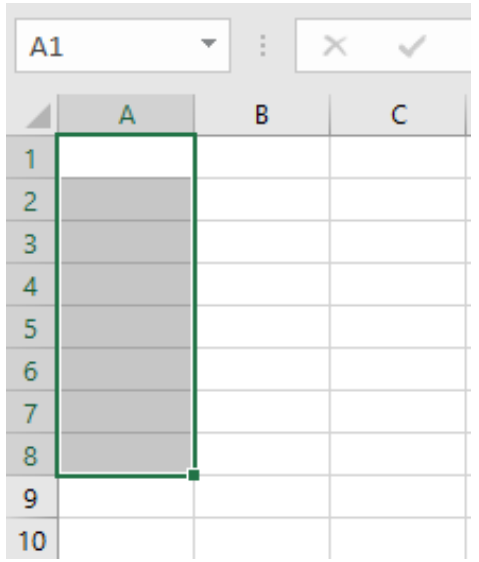
❑Understanding cells

Columns are identified by **letters (A, B, C)**, while **rows** are identified by **numbers (1, 2, 3)**. Each cell has its own **name**—or **cell address**—based on its column and row. In the example below, the selected cell intersects **column C** and **row 5**, so the cell address is **C5**.



Cell Basics Cont.

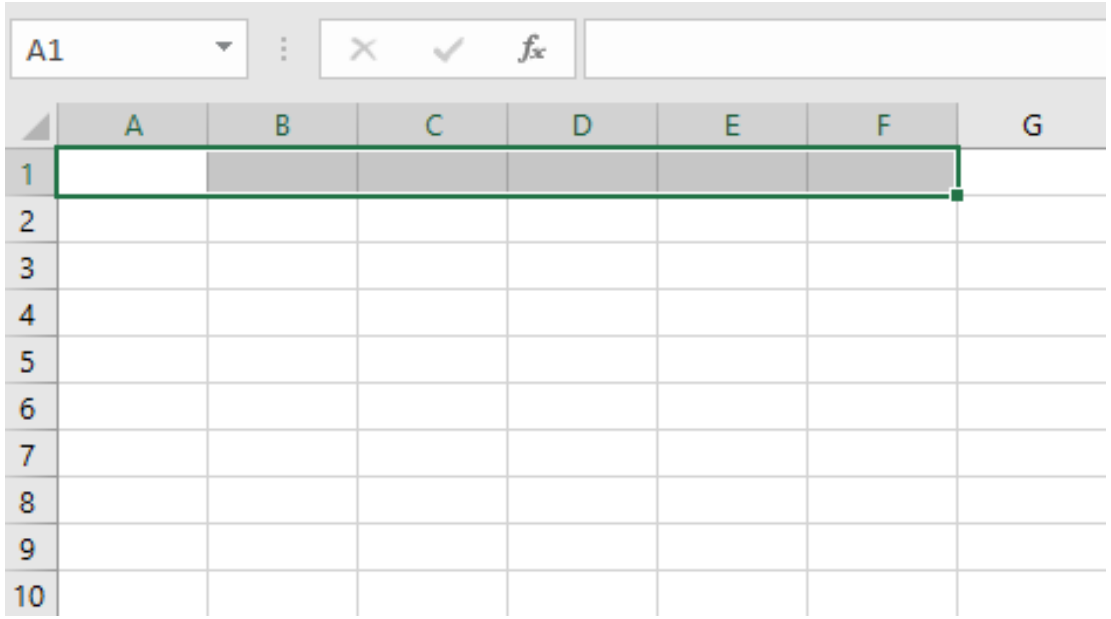
- Note that the cell address also appears in the **Name box** in the top-left corner, and that a cell's **column** and **row headings** are **highlighted** when the cell is selected.
- You can also select **multiple cells** at the same time. A group of cells is known as a **cell range**. Rather than a single cell address, you will refer to a cell range using the cell addresses of the **first** and **last** cells in the cell range, separated by a **colon**. For example, a cell range that included cells A1, A2, A3, A4,A5,A6,A7 and A8 would be written as **A1:A8**. Take a look at the different cell ranges below



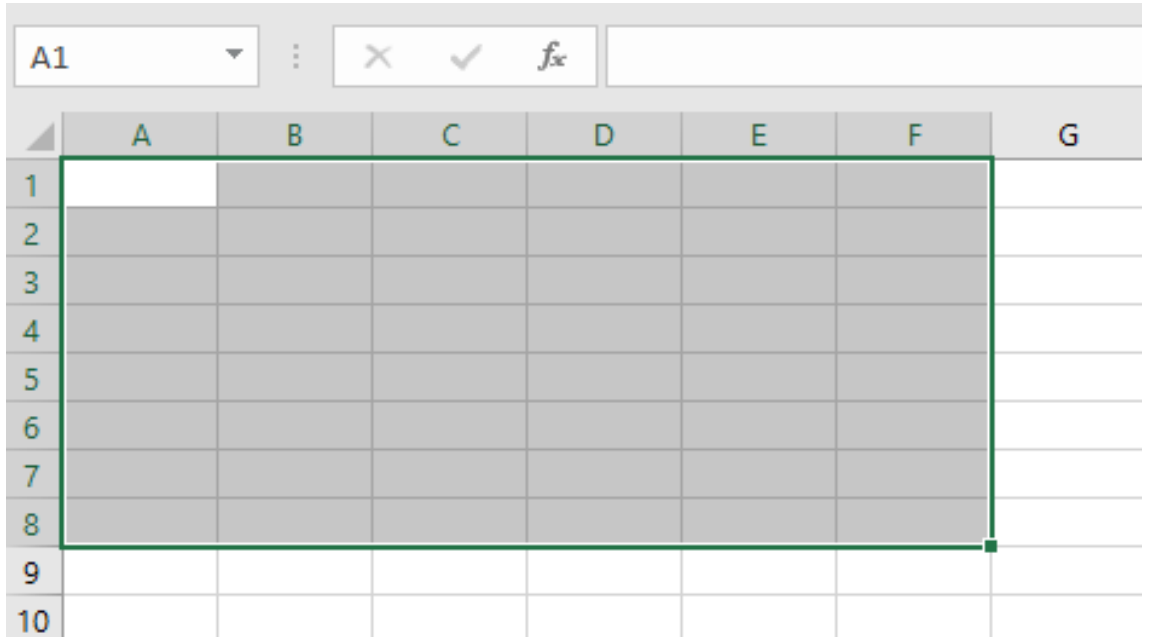
➢ Cell range **A1:A8**

Cell Basics Cont.

➢Cell range A1:F1



➢Cell range A1:F8



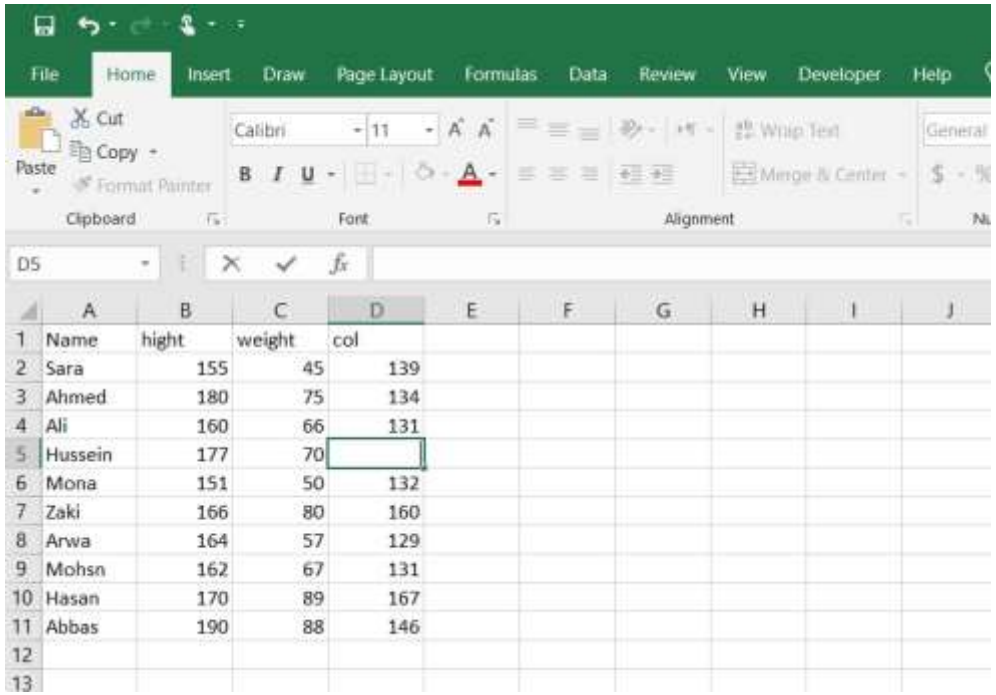
Cell Basics Cont.

❑ To select a cell:

- To input or edit cell content, you'll first need to **select** the cell.

1. Click a **cell** to select it. In our example, we'll select cell **D5**.

2. A **border** will appear around the selected cell, and the **column heading** and **row heading** will be highlighted. The cell will remain selected until you click another cell in the worksheet.



	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	
6	Mona	151	50	132
7	Zaki	166	80	160
8	Arwa	164	57	129
9	Mohsn	162	67	131
10	Hasan	170	89	167
11	Abbas	190	88	146
12				
13				

- You can also select cells using the **arrow keys** on your keyboard.

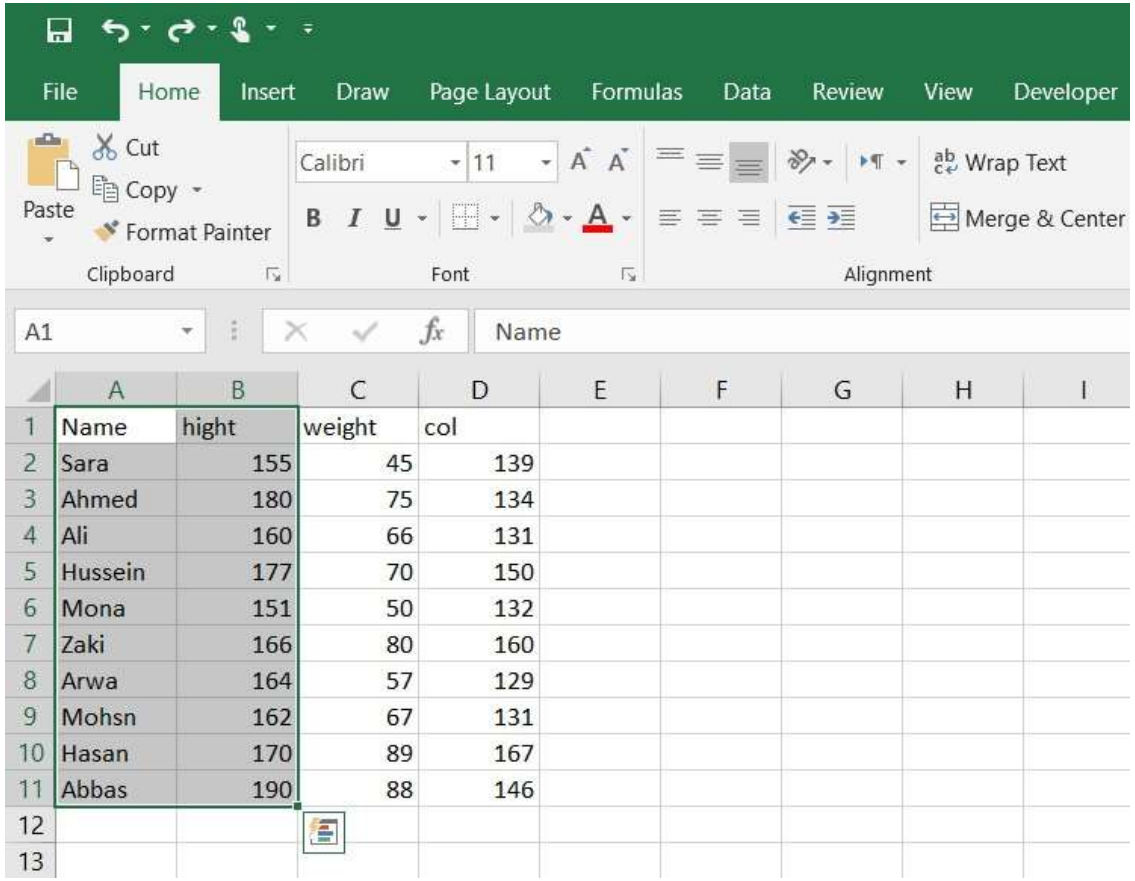
Cell Basics Cont.

❑ To select a cell range:

- Sometimes you may want to select a larger group of cells, or a **cell range**.

1. Click and drag the mouse until all of the **adjoining cells** you want to select are **highlighted**. In our example, we'll select the cell range **A1:B11**.

2. Release the mouse to **select** the desired cell range. The cells will remain selected until you click another cell in the worksheet.

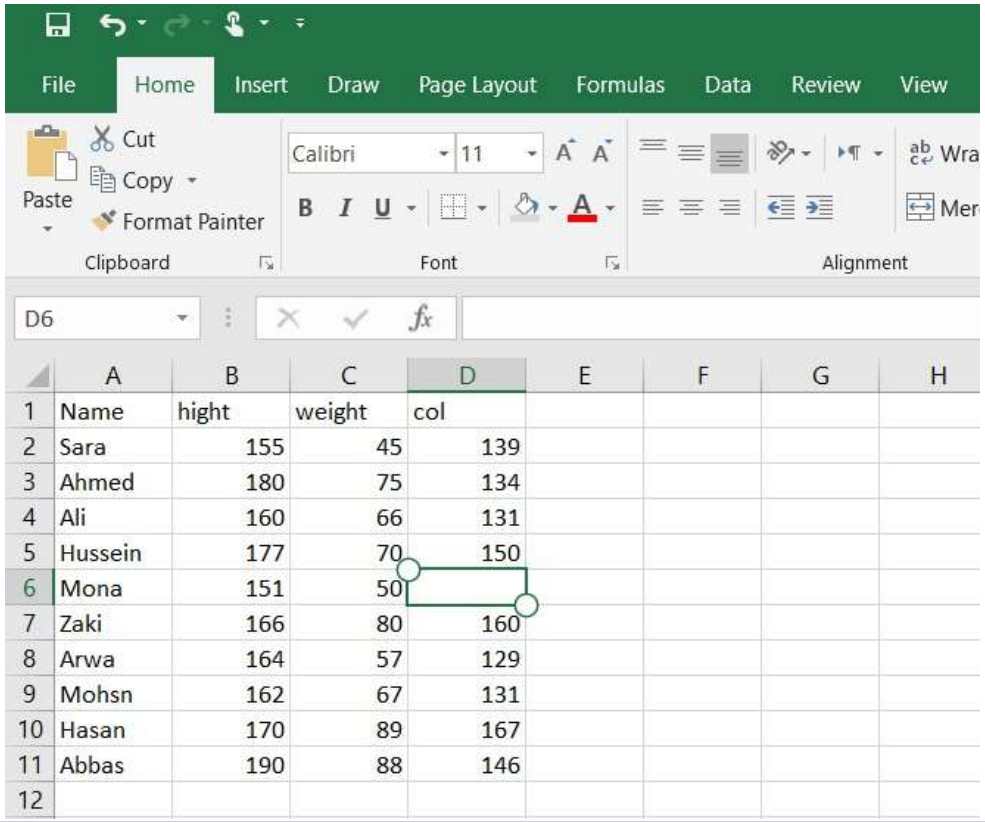


	A	B	C	D	E	F	G	H	I
1	Name	hight	weight	col					
2	Sara	155	45	139					
3	Ahmed	180	75	134					
4	Ali	160	66	131					
5	Hussein	177	70	150					
6	Mona	151	50	132					
7	Zaki	166	80	160					
8	Arwa	164	57	129					
9	Mohsn	162	67	131					
10	Hasan	170	89	167					
11	Abbas	190	88	146					
12									
13									

Cell Basics Cont.

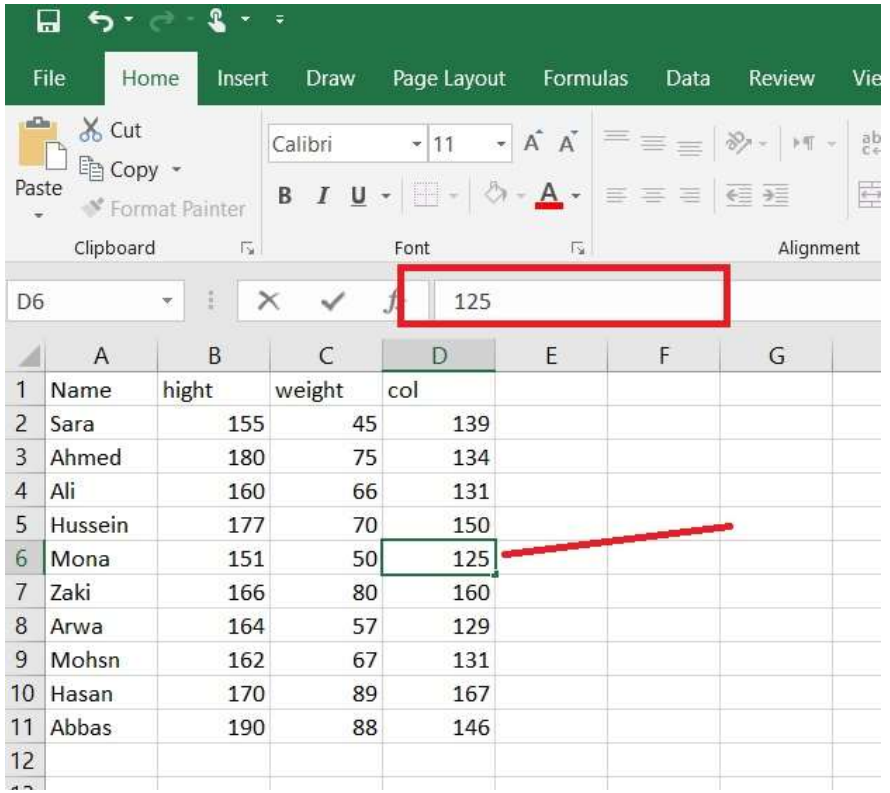
❑ To insert content:

1. Click a **cell** to select it. In our example, we'll select cell **D6**.



	A	B	C	D	E	F	G	H
1	Name	hight	weight	col				
2	Sara	155	45	139				
3	Ahmed	180	75	134				
4	Ali	160	66	131				
5	Hussein	177	70	150				
6	Mona	151	50					
7	Zaki	166	80	160				
8	Arwa	164	57	129				
9	Mohsn	162	67	131				
10	Hasan	170	89	167				
11	Abbas	190	88	146				
12								

2. Type something into the selected cell, then press **Enter** on your keyboard. The content will appear in the **cell** and the **formula bar**. You can also input and edit cell content in the formula bar.

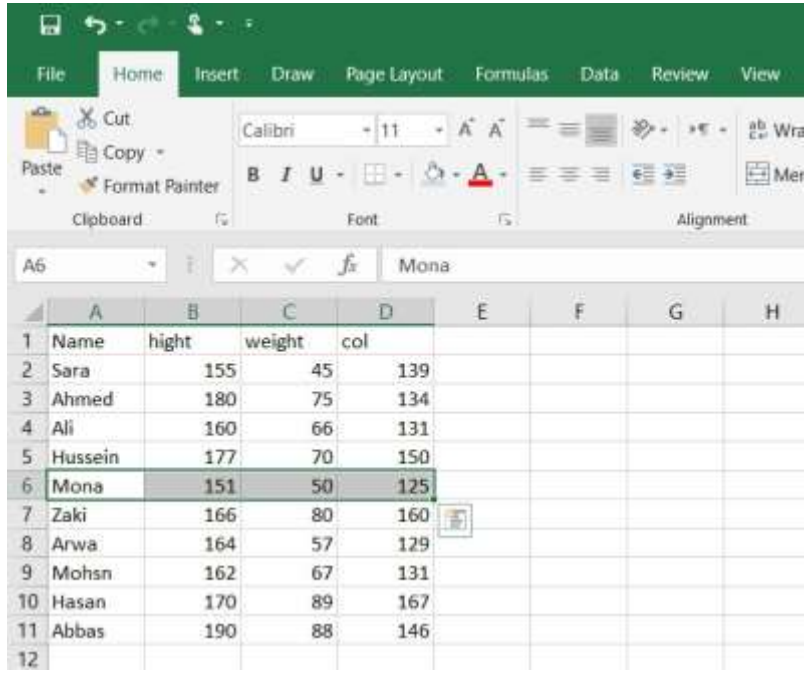


	A	B	C	D	E	F	G
1	Name	hight	weight	col			
2	Sara	155	45	139			
3	Ahmed	180	75	134			
4	Ali	160	66	131			
5	Hussein	177	70	150			
6	Mona	151	50	125			
7	Zaki	166	80	160			
8	Arwa	164	57	129			
9	Mohsn	162	67	131			
10	Hasan	170	89	167			
11	Abbas	190	88	146			
12							

Cell Basics Cont.

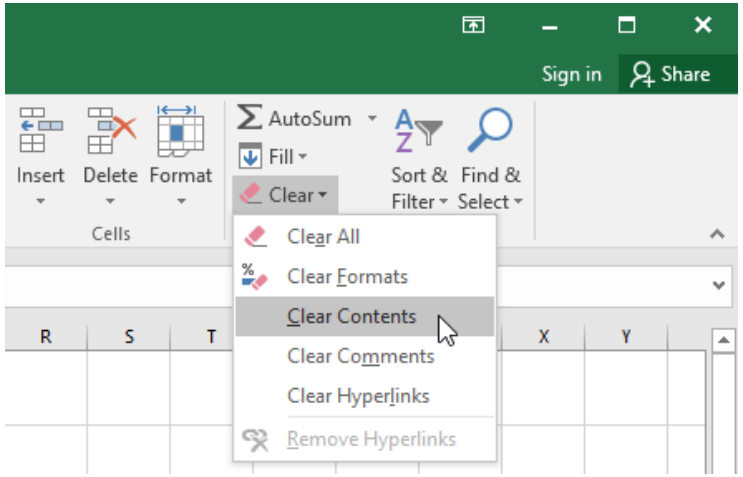
❑ To delete (or clear) cell content:

1. Select the **cell(s)** with content you want to delete. In our example, we'll select the cell range **A6:D6**.



	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Mona	151	50	125
7	Zaki	166	80	160
8	Arwa	164	57	129
9	Mohsn	162	67	131
10	Hasan	170	89	167
11	Abbas	190	88	146
12				

2. Select the **Clear** command on the **Home** tab, then click **Clear Contents**.



3. The cell contents will be deleted.

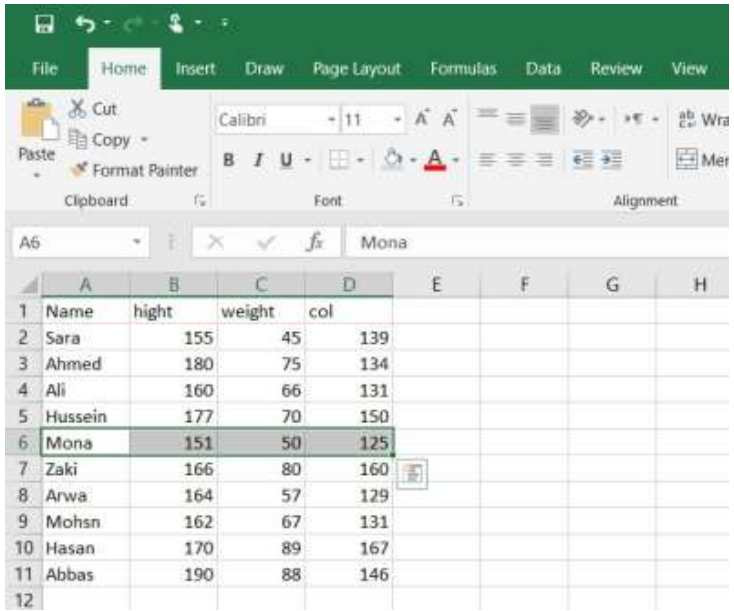
- ❖ You can also use the **Delete** key on your keyboard to delete content from **multiple cells** at once.
- ❖ The **Backspace** key will only delete content from one cell at a time

Cell Basics Cont.

❑ To delete cells:

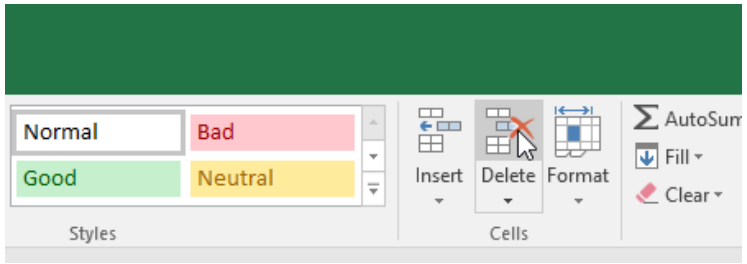
- There is an important difference between deleting the content of a cell and **deleting the cell itself**. If you delete the entire cell, the cells below it will **shift to fill in the gaps** and **replace the deleted cells.**

1. Select the **cell(s)** you want to delete. In our example, we'll select **A6:D6**.

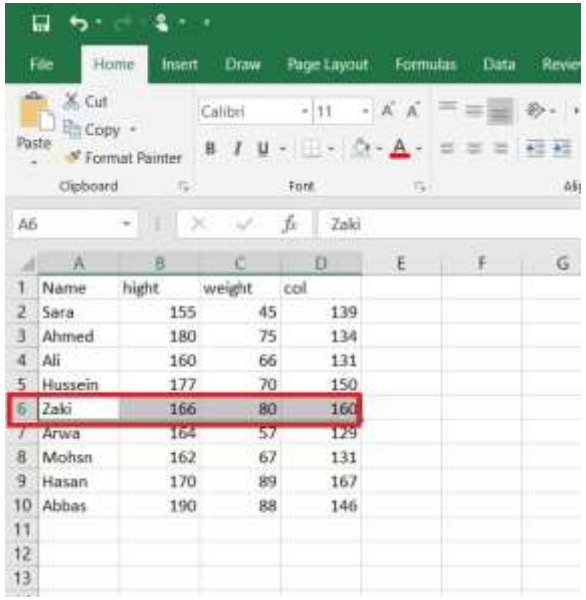


	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Mona	151	50	125
7	Zaki	166	80	160
8	Arwa	164	57	129
9	Mohsn	162	67	131
10	Hasan	170	89	167
11	Abbas	190	88	146
12				

2. Select the **Delete** command from the **Home** tab on the **Ribbon**.



3. The cells below will **shift up** and **fill in the gaps**.



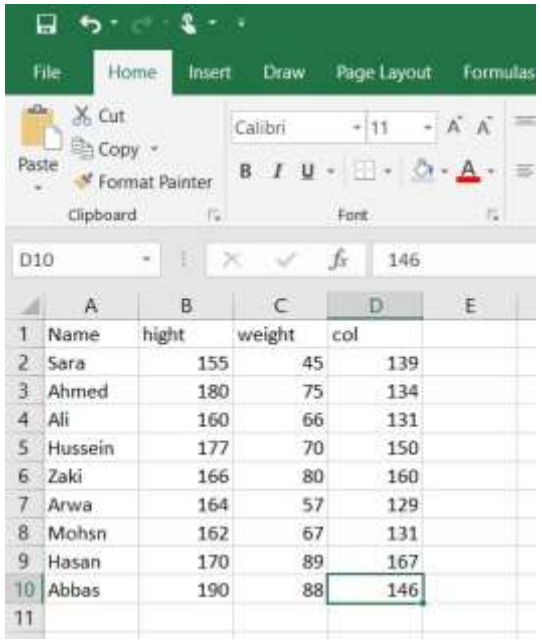
	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Zaki	166	80	160
7	Arwa	164	57	129
8	Mohsn	162	67	131
9	Hasan	170	89	167
10	Abbas	190	88	146
11				
12				
13				

Cell Basics Cont.

❑ To copy and paste cell content:

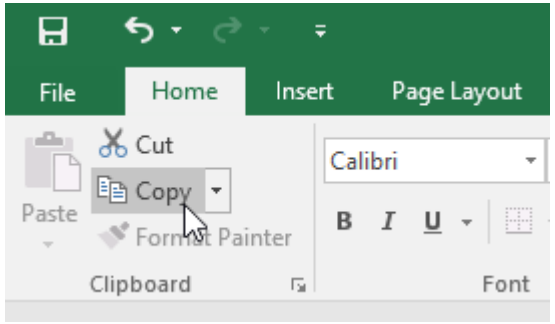
- Excel allows you to **copy** content that is already entered into your spreadsheet and **paste** that content to other cells, which can save you time and effort.

1. Select the **cell(s)** you want to **copy**. In our example, we'll select **D10**.

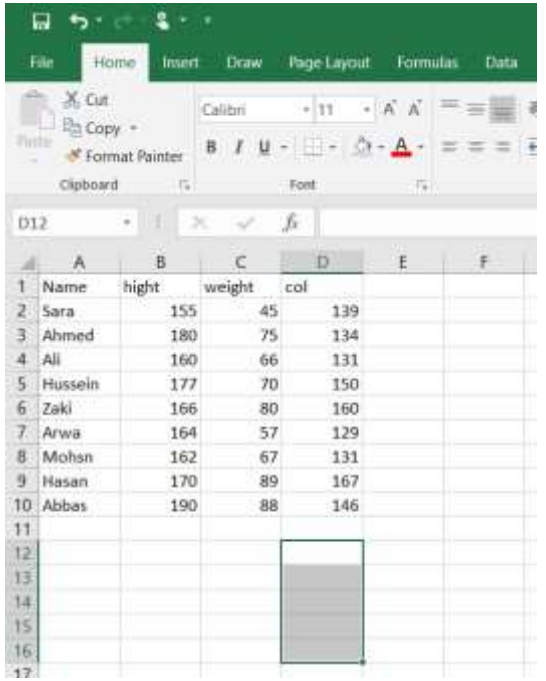


	A	B	C	D	E
1	Name	hight	weight	col	
2	Sara	155	45	139	
3	Ahmed	180	75	134	
4	Ali	160	66	131	
5	Hussein	177	70	150	
6	Zaki	166	80	160	
7	Arwa	164	57	129	
8	Mohsn	162	67	131	
9	Hasan	170	89	167	
10	Abbas	190	88	146	
11					

2. Click the **Copy** command on the **Home** tab, or press **Ctrl+C** on your keyboard.

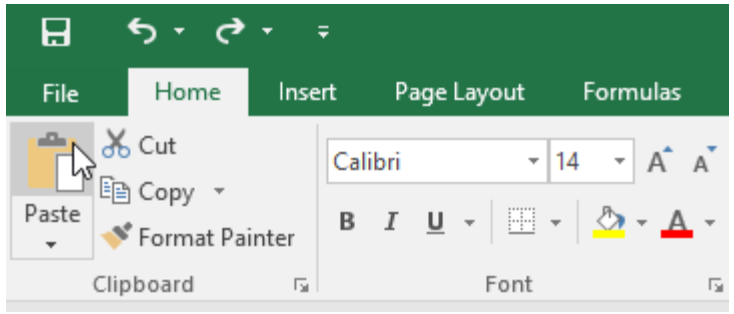


3. Select the **cell(s)** where you want to **paste** the content. In our example, we'll select **D12:D16**. The copied cell(s) will have a **dashed box** around them.

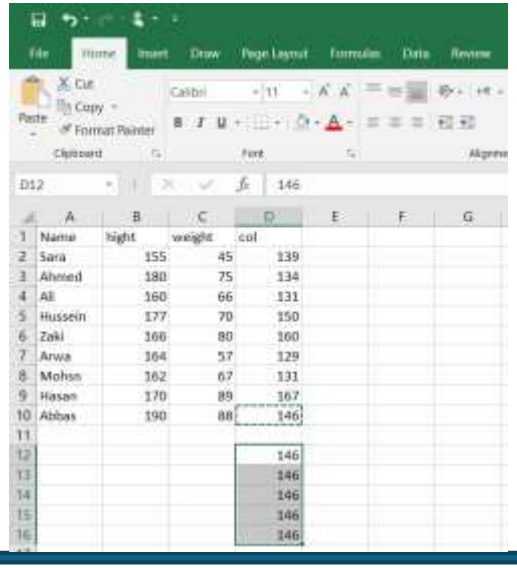


	A	B	C	D	E	F
1	Name	hight	weight	col		
2	Sara	155	45	139		
3	Ahmed	180	75	134		
4	Ali	160	66	131		
5	Hussein	177	70	150		
6	Zaki	166	80	160		
7	Arwa	164	57	129		
8	Mohsn	162	67	131		
9	Hasan	170	89	167		
10	Abbas	190	88	146		
11						
12						
13						
14						
15						
16						

4. Click the **Paste** command on the **Home** tab, or press **Ctrl+V** on your keyboard.



5.The content will be **pasted** into the selected cells.

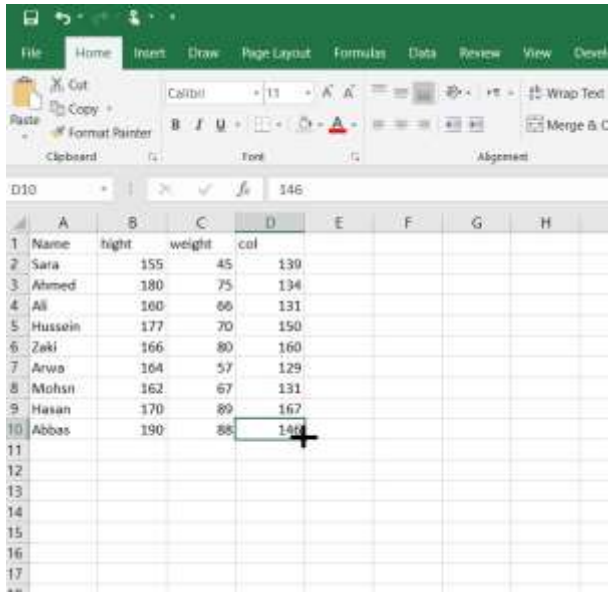


	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Zaki	166	80	160
7	Arwa	164	57	129
8	Mohsn	162	67	131
9	Hasan	170	89	167
10	Abbas	190	88	146
11				
12				146
13				146
14				146
15				146
16				146

❑To use the fill handle:

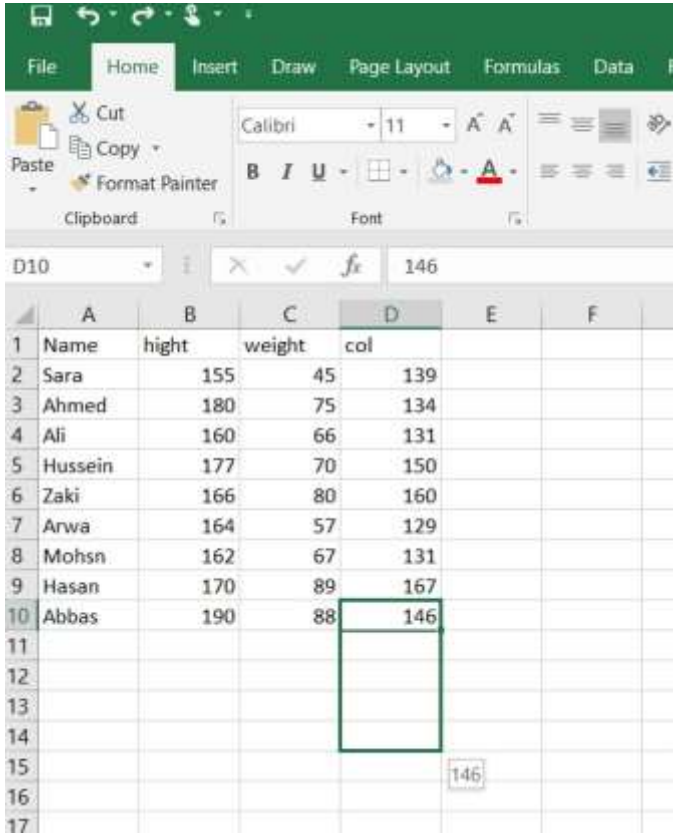
- If you're copying cell content to adjacent cells in the same row or column, the **fill handle** is a good alternative to the copy and paste commands.

1. Select the **cell(s)** containing the content you want to use, then hover the mouse over the lower-right corner of the cell so the **fill handle** appears.



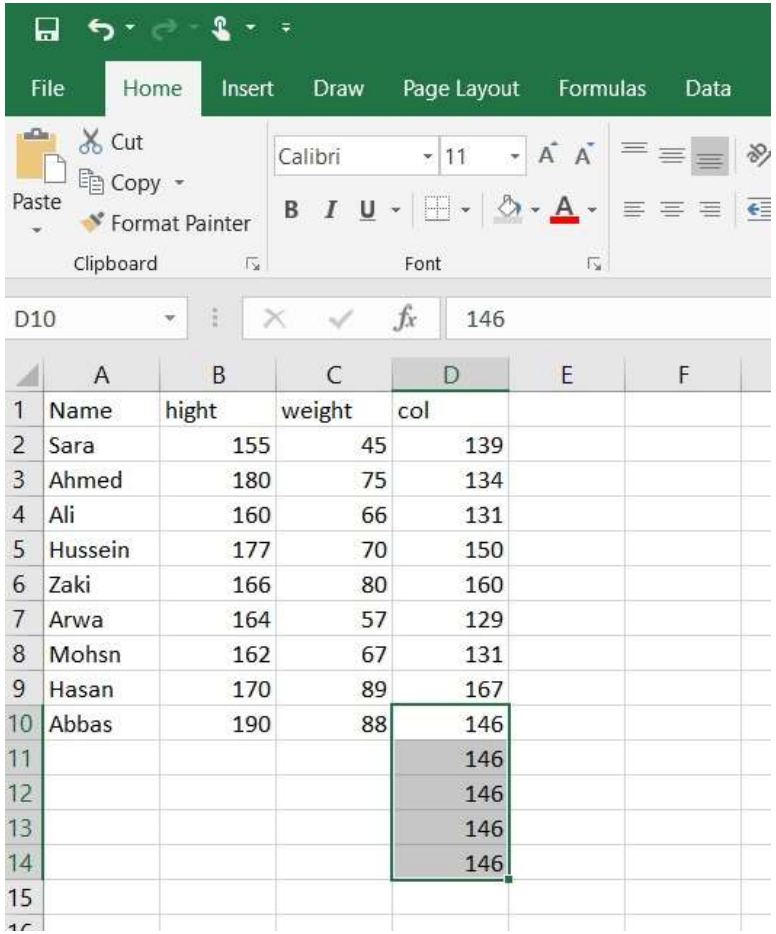
	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Zaki	166	80	160
7	Arwa	164	57	129
8	Mohsn	162	67	131
9	Hasan	170	89	167
10	Abbas	190	88	146

2.Click and drag the **fill handle** until all of the cells you want to fill are selected. In our example, we'll select **D11:D14**.



	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Zaki	166	80	160
7	Arwa	164	57	129
8	Mohsn	162	67	131
9	Hasan	170	89	167
10	Abbas	190	88	146
11				
12				
13				
14				
15				
16				
17				

3. Release the mouse to **fill** the selected cells.



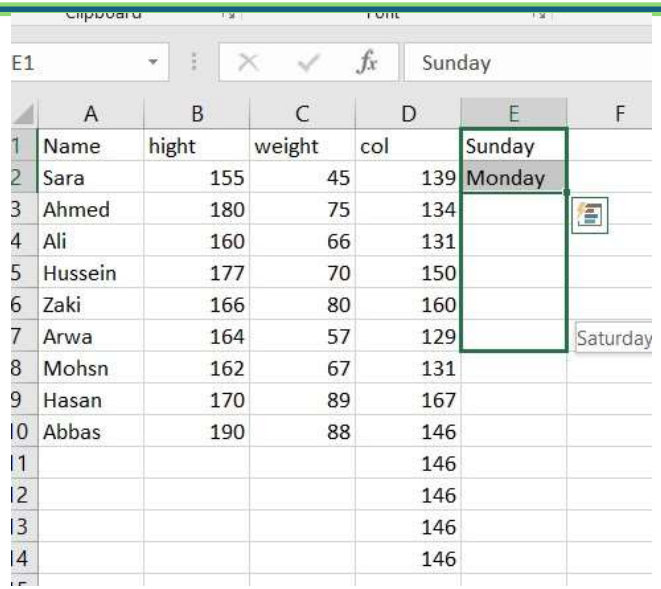
	A	B	C	D	E	F
1	Name	hight	weight	col		
2	Sara	155	45	139		
3	Ahmed	180	75	134		
4	Ali	160	66	131		
5	Hussein	177	70	150		
6	Zaki	166	80	160		
7	Arwa	164	57	129		
8	Mohsn	162	67	131		
9	Hasan	170	89	167		
10	Abbas	190	88	146		
11				146		
12				146		
13				146		
14				146		
15						

❑ To continue a series with the fill handle:

- The fill handle can also be used to **continue a series**. Whenever the content of a row or column follows a sequential order, like **numbers (1, 2, 3)** or **days (Monday, Tuesday, Wednesday)**, the fill handle can guess what should come next in the series. In most cases, you will need to select **multiple cells** before using the fill handle to help Excel determine the series order

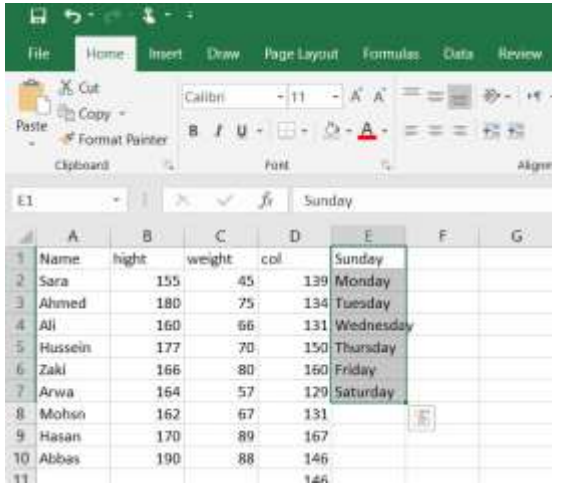
1. Select the cell range that contains the series you want to continue. In our example, we'll select **E1:E7**.

2. Click and drag the fill handle to continue the series.



	A	B	C	D	E	F
1	Name	hight	weight	col	Sunday	
2	Sara	155	45	139	Monday	
3	Ahmed	180	75	134		
4	Ali	160	66	131		
5	Hussein	177	70	150		
6	Zaki	166	80	160		
7	Arwa	164	57	129		
8	Mohsn	162	67	131		
9	Hasan	170	89	167		
10	Abbas	190	88	146		
11				146		
12				146		
13				146		
14				146		

3. Release the mouse. If Excel understood the series, it will be continued in the selected cells.

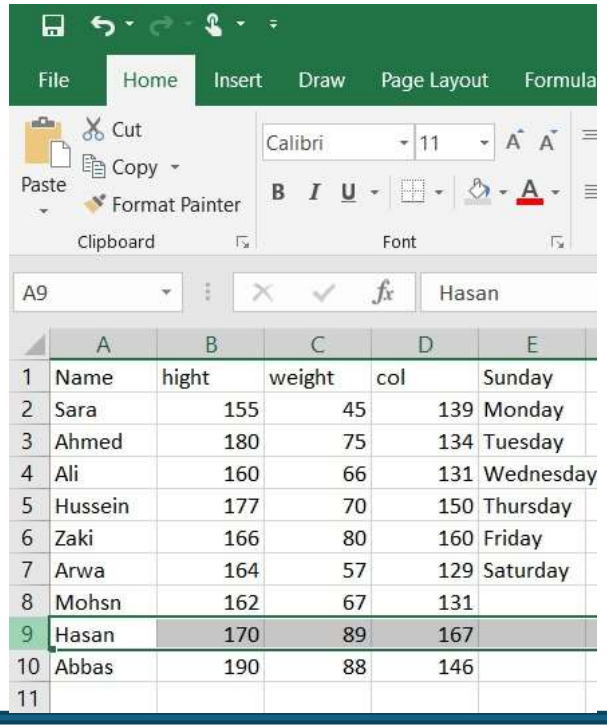


	A	B	C	D	E	F	G
1	Name	hight	weight	col	Sunday		
2	Sara	155	45	139	Monday		
3	Ahmed	180	75	134	Tuesday		
4	Ali	160	66	131	Wednesday		
5	Hussein	177	70	150	Thursday		
6	Zaki	166	80	160	Friday		
7	Arwa	164	57	129	Saturday		
8	Mohsn	162	67	131			
9	Hasan	170	89	167			
10	Abbas	190	88	146			
11				146			

❑ To delete a row or column:

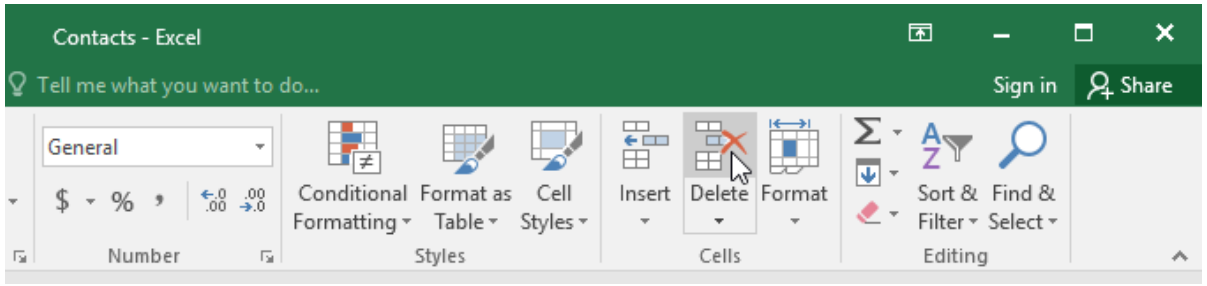
- It's easy to delete a row or column that you no longer need. In our example we'll delete a row, but you can delete a column the same way.

1. Select the **row** you want to delete. In our example, we'll select **row 9**.

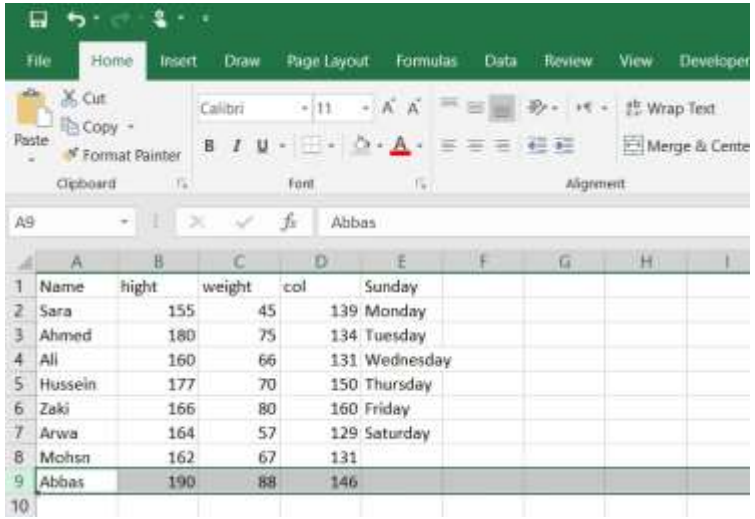


	A	B	C	D	E
1	Name	hight	weight	col	Sunday
2	Sara	155	45	139	Monday
3	Ahmed	180	75	134	Tuesday
4	Ali	160	66	131	Wednesday
5	Hussein	177	70	150	Thursday
6	Zaki	166	80	160	Friday
7	Arwa	164	57	129	Saturday
8	Mohsn	162	67	131	
9	Hasan	170	89	167	
10	Abbas	190	88	146	
11					

2. Click the **Delete** command on the **Home** tab.

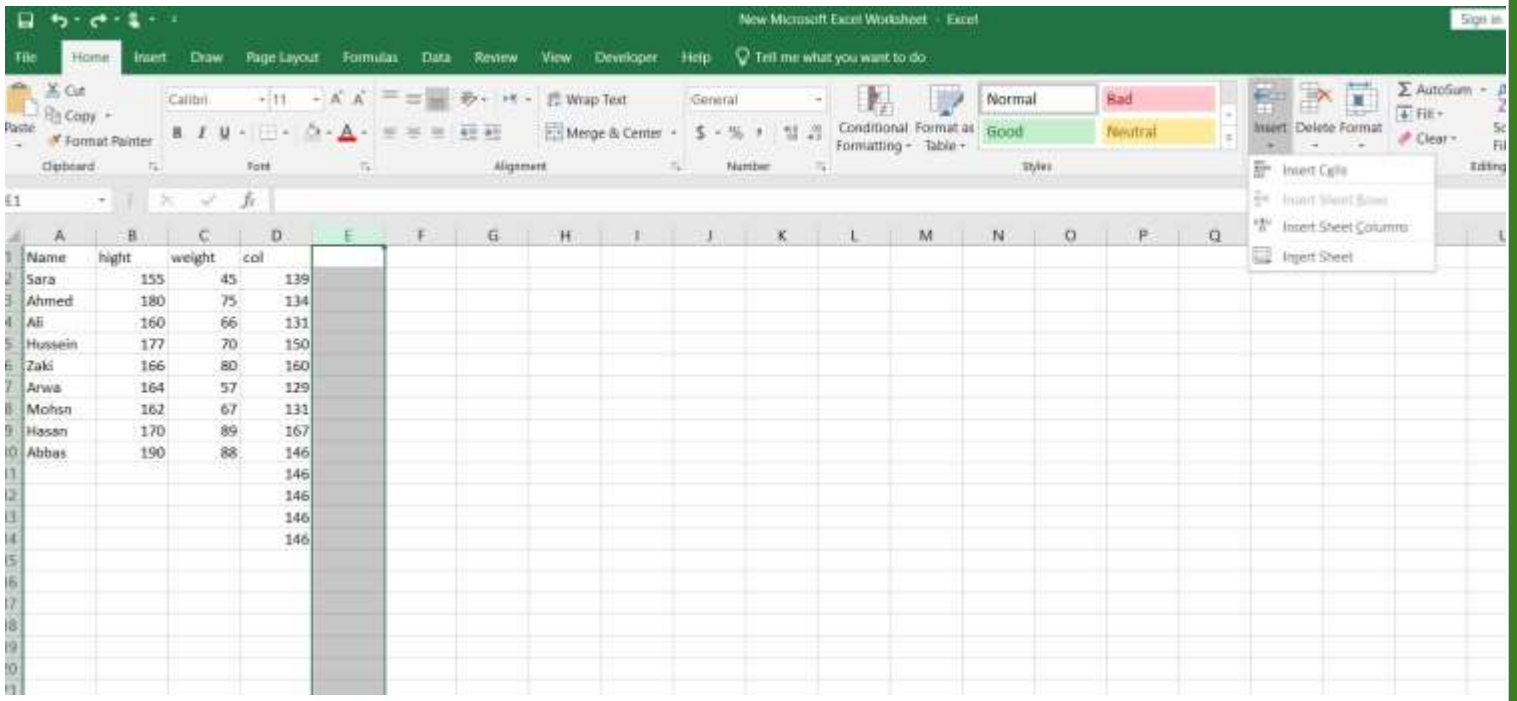


3. The **selected row** will be deleted, and those around it will **shift**. In our example, **row 10** has moved up, so it's now **row 9**.



	A	B	C	D	E
1	Name	hight	weight	col	Sunday
2	Sara	155	45	139	Monday
3	Ahmed	180	75	134	Tuesday
4	Ali	160	66	131	Wednesday
5	Hussein	177	70	150	Thursday
6	Zaki	166	80	160	Friday
7	Arwa	164	57	129	Saturday
8	Mohsn	162	67	131	
9	Abbas	190	88	146	
10					

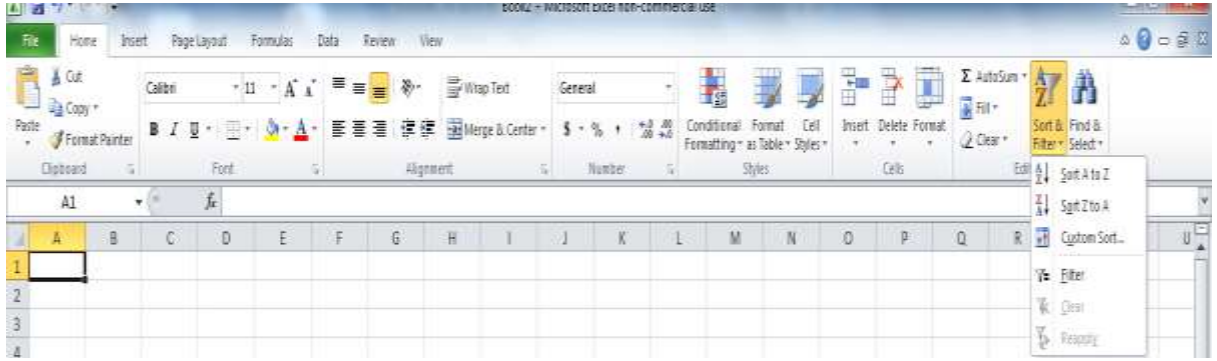
- To INSERT a Row/Column:
  - Select the row/column heading,
  - Click the Home Tab,
  - Click the Insert button from the Cells Group.



- The insertion occurs before the selected column/row.

- You can expand the width of a column or the height of the row to increase the visible space in each cell.

- To begin changing the width of the column, move the mouse pointer over the right edge of column heading until the mouse pointer changes to a double-headed arrow.



- You may want to organize or rearrange data in your worksheet. To sort data in the worksheet, click the column heading and then click **Sort & Filter** in the Editing Group on the Home Tab.

❑ Intro to Formulas

One of the most powerful features in Excel is the ability to **calculate** numerical information using **formulas**. Just like a calculator, Excel can add, subtract, multiply, and divide.

❑ Mathematical operators

Excel uses standard operators for formulas, such as a **plus sign** for addition (+), a **minus sign** for subtraction (-), an **asterisk** for multiplication (*), a **forward slash** for division (/), and a **caret** (^) for exponents.

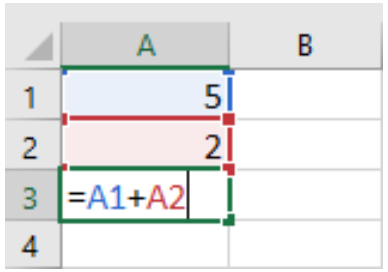
Addition	+
Subtraction	-
Multiplication	*
Division	/
Exponents	^

All formulas in Excel must begin with an **equals sign** (=). This is because the cell contains, or is equal to, the formula and the value it calculates.

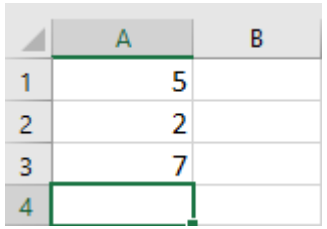
❑ Understanding cell references

While you can create simple formulas in Excel using numbers (for example, **=2+2** or **=5*5**), most of the time you will use **cell addresses** to create a formula. This is known as making a **cell reference**. Using cell references will ensure that your formulas are always accurate because you can change the value of referenced cells without having to rewrite the formula

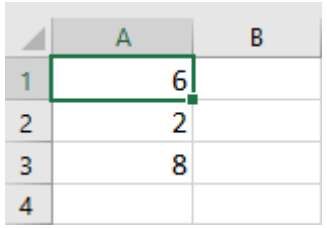
- In the formula below, cell A3 adds the values of cells A1 and A2 by making cell references:



- When you press Enter, the formula calculates and displays the answer in cell A3:



- If the values in the referenced cells change, the formula automatically recalculates:

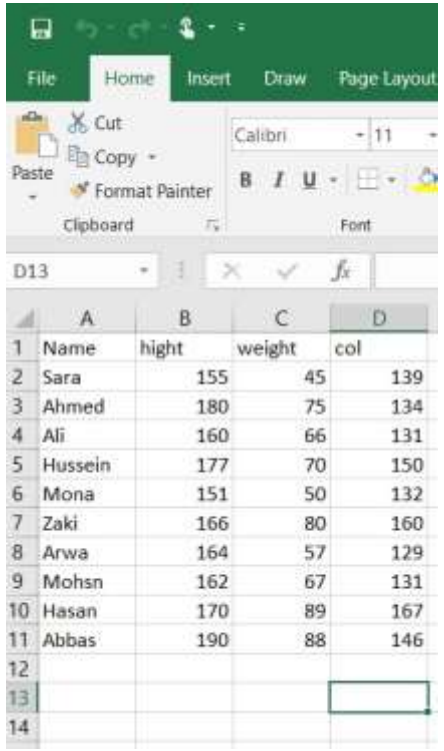


- By combining a mathematical operator with cell references, you can create a variety of simple formulas in Excel. Formulas can also include a combination of cell references and numbers, as in the examples below:

=A1+A2	Adds cells A1 and A2
=C4-3	Subtracts 3 from cell C4
=E7/J4	Divides cell E7 by J4
=N10*1.05	Multiplies cell N10 by 1.05
=R5^2	Finds the square of cell R5

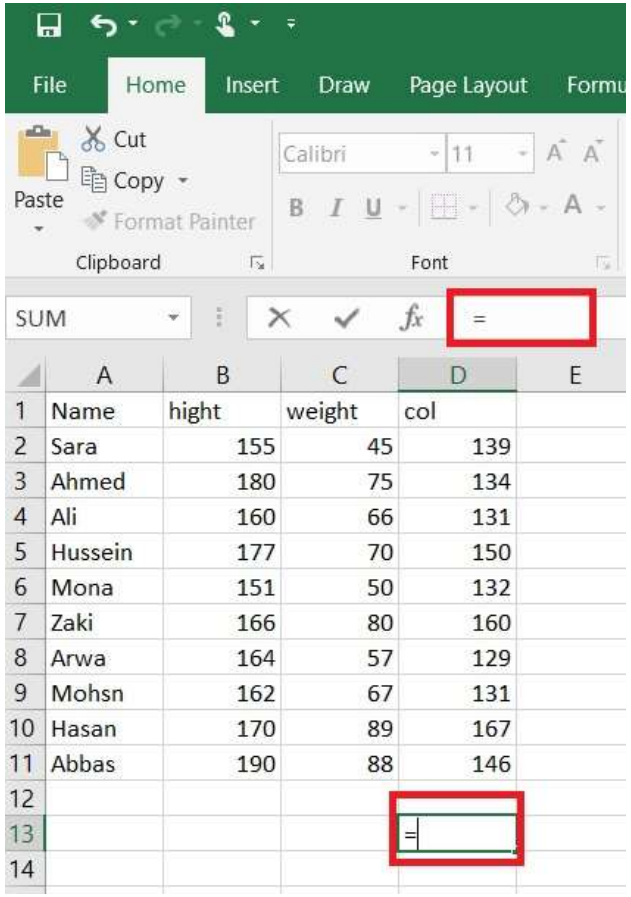
❑ To create a formula:

1. Select the **cell** that will contain the formula. In our example, we'll select cell **D13**.



	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Mona	151	50	132
7	Zaki	166	80	160
8	Arwa	164	57	129
9	Mohsn	162	67	131
10	Hasan	170	89	167
11	Abbas	190	88	146
12				
13				
14				

2. Type the **equals sign (=)**. Notice how it appears in both the **cell** and the **formula bar**.



	A	B	C	D	E
1	Name	hight	weight	col	
2	Sara	155	45	139	
3	Ahmed	180	75	134	
4	Ali	160	66	131	
5	Hussein	177	70	150	
6	Mona	151	50	132	
7	Zaki	166	80	160	
8	Arwa	164	57	129	
9	Mohsn	162	67	131	
10	Hasan	170	89	167	
11	Abbas	190	88	146	
12					
13				=	
14					

3.Type the **cell address** of the cell you want to reference first in the formula: cell **C9** A **blue border** will appear around the referenced cell.

4. Type the **mathematical operator** you want to use. In our example, we'll type the **addition sign (+).**

5. Type the **cell address** of the cell you want to reference second in the formula: cell **C10** in our example. A **red border** will appear around the referenced cell

	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Mona	151	50	132
7	Zaki	166	80	160
8	Arwa	164	57	129
9	Mohsn	162	67	131
10	Hasan	170	89	167
11	Abbas	190	88	146
12				
13				=c9+c10
14				

6. Press **Enter** on your keyboard. The formula will be **calculated**, and the **value** will be displayed in the cell. If you select the cell again, notice that the cell displays the result, while the formula bar displays the formula

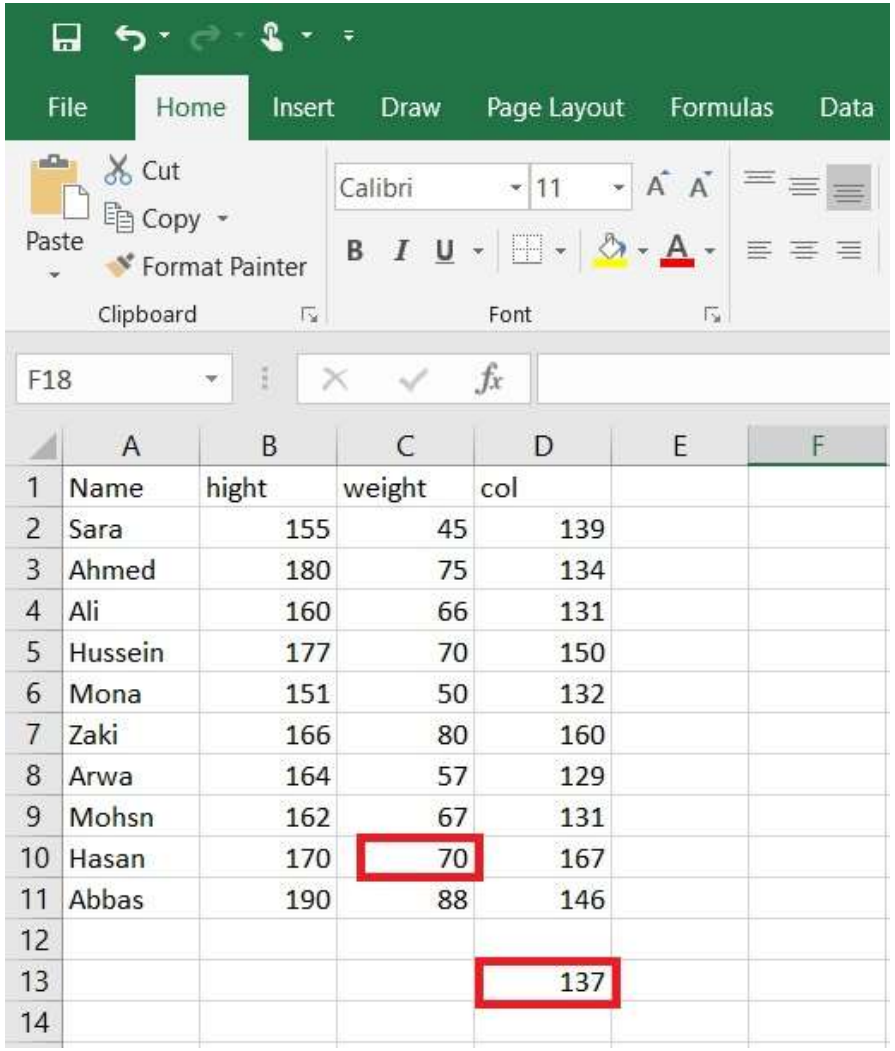
D13 | =C9+C10

	A	B	C	D	E
1	Name	hight	weight	col	
2	Sara	155	45	139	
3	Ahmed	180	75	134	
4	Ali	160	66	131	
5	Hussein	177	70	150	
6	Mona	151	50	132	
7	Zaki	166	80	160	
8	Arwa	164	57	129	
9	Mohsn	162	67	131	
10	Hasan	170	89	167	
11	Abbas	190	88	146	
12					
13				156	
14					
15					

- If the result of a formula is too large to be displayed in a cell, it may appear as **pound signs** (#######) instead of a value. This means the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.

❑Modifying values with cell references

The true advantage of cell references is that they allow you to **update data** in your worksheet without having to rewrite formulas. In the example, we've modified the value of cell C10 from 89 to 70. The formula in **D13** will automatically recalculate and display the new value in cell **D13**.

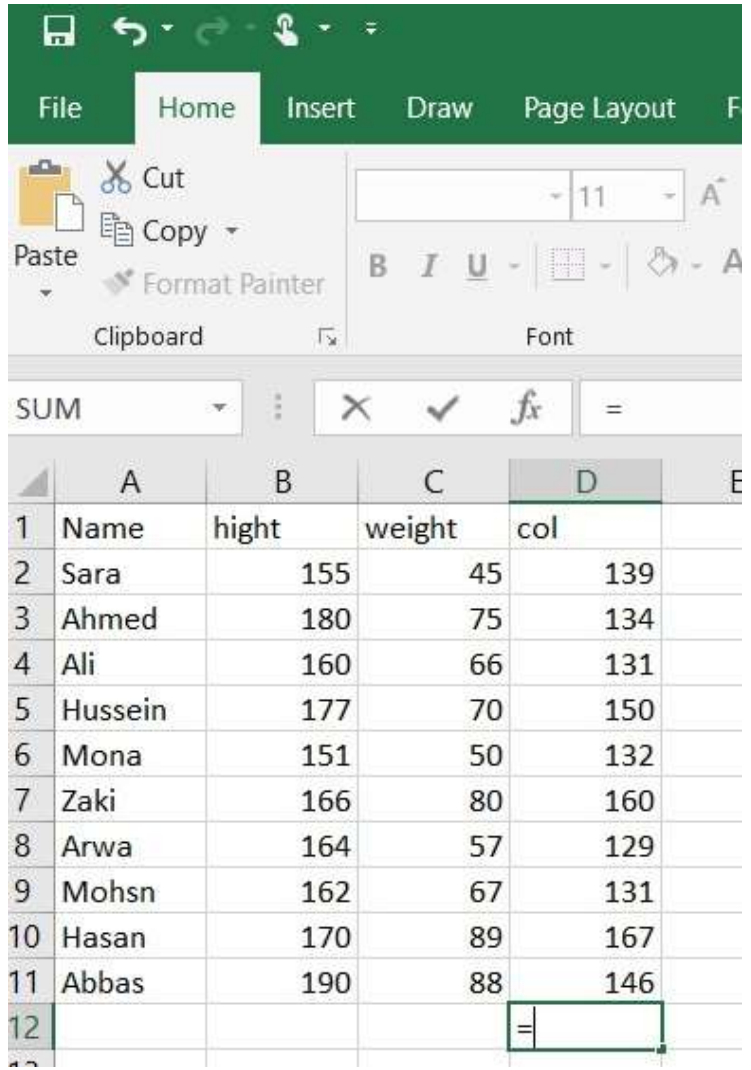


	A	B	C	D	E	F
1	Name	hight	weight	col		
2	Sara	155	45	139		
3	Ahmed	180	75	134		
4	Ali	160	66	131		
5	Hussein	177	70	150		
6	Mona	151	50	132		
7	Zaki	166	80	160		
8	Arwa	164	57	129		
9	Mohsn	162	67	131		
10	Hasan	170	70	167		
11	Abbas	190	88	146		
12						
13				137		
14						

❑ To create a formula using the point-and-click method:

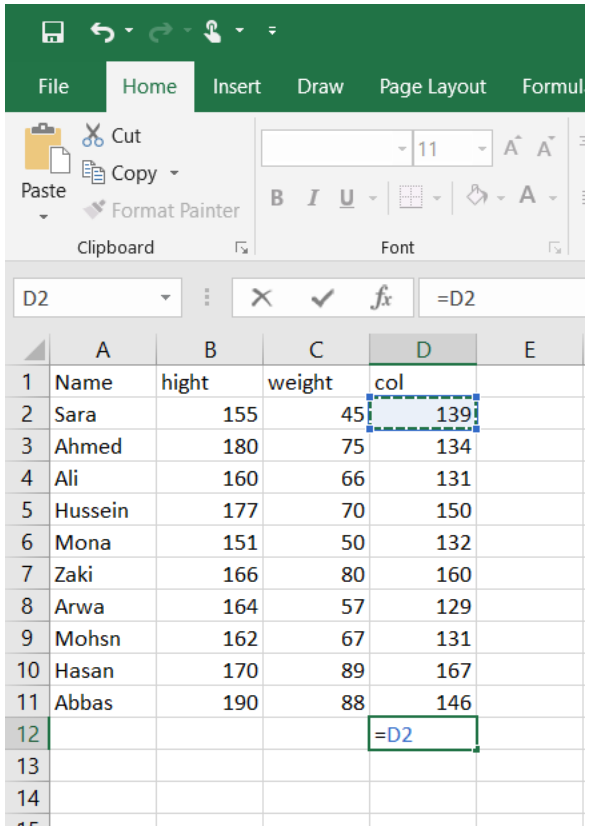
Instead of typing cell addresses manually, you can **point and click** the cells you want to include in your formula. This method can save a lot of time and effort when creating formulas. In our example below, we'll create a formula to calculate the cost of ordering several boxes of plastic silverware.

1. Select the **cell** that will contain the formula. In our example, we'll select cell **D12** and Type the **equals sign (=)**.



	A	B	C	D
1	Name	hight	weight	col
2	Sara	155	45	139
3	Ahmed	180	75	134
4	Ali	160	66	131
5	Hussein	177	70	150
6	Mona	151	50	132
7	Zaki	166	80	160
8	Arwa	164	57	129
9	Mohsn	162	67	131
10	Hasan	170	89	167
11	Abbas	190	88	146
12				=

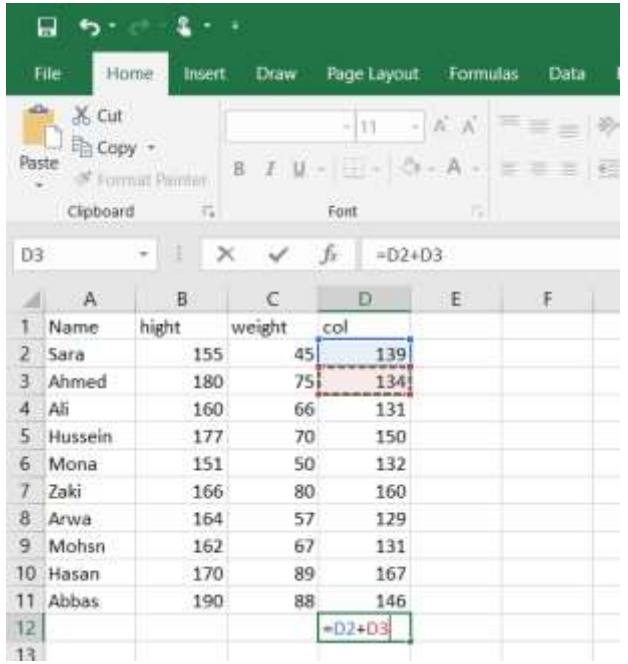
2. Select the **cell** you want to reference first in the formula: cell **D2** in our example. The **cell address** will appear in the formula.



	A	B	C	D	E
1	Name	hight	weight	col	
2	Sara	155	45	139	
3	Ahmed	180	75	134	
4	Ali	160	66	131	
5	Hussein	177	70	150	
6	Mona	151	50	132	
7	Zaki	166	80	160	
8	Arwa	164	57	129	
9	Mohsn	162	67	131	
10	Hasan	170	89	167	
11	Abbas	190	88	146	
12				=D2	
13					
14					

3. Type the **mathematical operator** you want to use.

4. Select the **cell** you want to reference second in the formula: cell **D3** in our example. The **cell address** will appear in the formula.



	A	B	C	D	E	F
1	Name	hight	weight	col		
2	Sara	155	45	139		
3	Ahmed	180	75	134		
4	Ali	160	66	131		
5	Hussein	177	70	150		
6	Mona	151	50	132		
7	Zaki	166	80	160		
8	Arwa	164	57	129		
9	Mohsn	162	67	131		
10	Hasan	170	89	167		
11	Abbas	190	88	146		
12				=D2+D3		
13						

Functions

- **Function** is a **predefined formula** that performs calculations using specific values in a particular order. Excel includes many common functions that can be used to quickly find the **sum**, **average**, **count**, **maximum value**, and **minimum value** for a range of cells. In order to use functions correctly, you'll need to understand the different **parts of a function** and how to create **arguments** to calculate values and cell references.

Functions

❑ The parts of a function

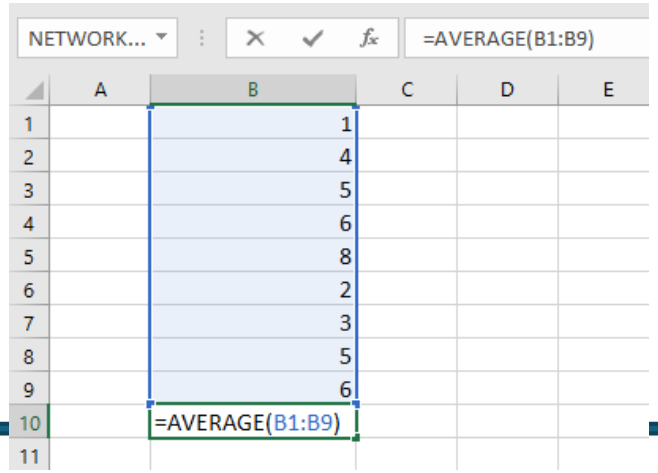
In order to work correctly, a function must be written a specific way, which is called the **syntax**. The basic syntax for a function is the **equals sign (=)**, the **function name** (SUM, for example), and one or more **arguments**. Arguments contain the information you want to calculate. The function in the example below would add the values of the cell range A1:A20.

Functions

❑ Working with arguments

- Arguments can refer to both **individual cells** and **cell ranges** and must be enclosed within **parentheses**. You can include one argument or multiple arguments, depending on the syntax required for the function.

- For example, the function **=AVERAGE(B1:B9)** would calculate the **average** of the values in the cell range B1:B9. This function contains only one argument.



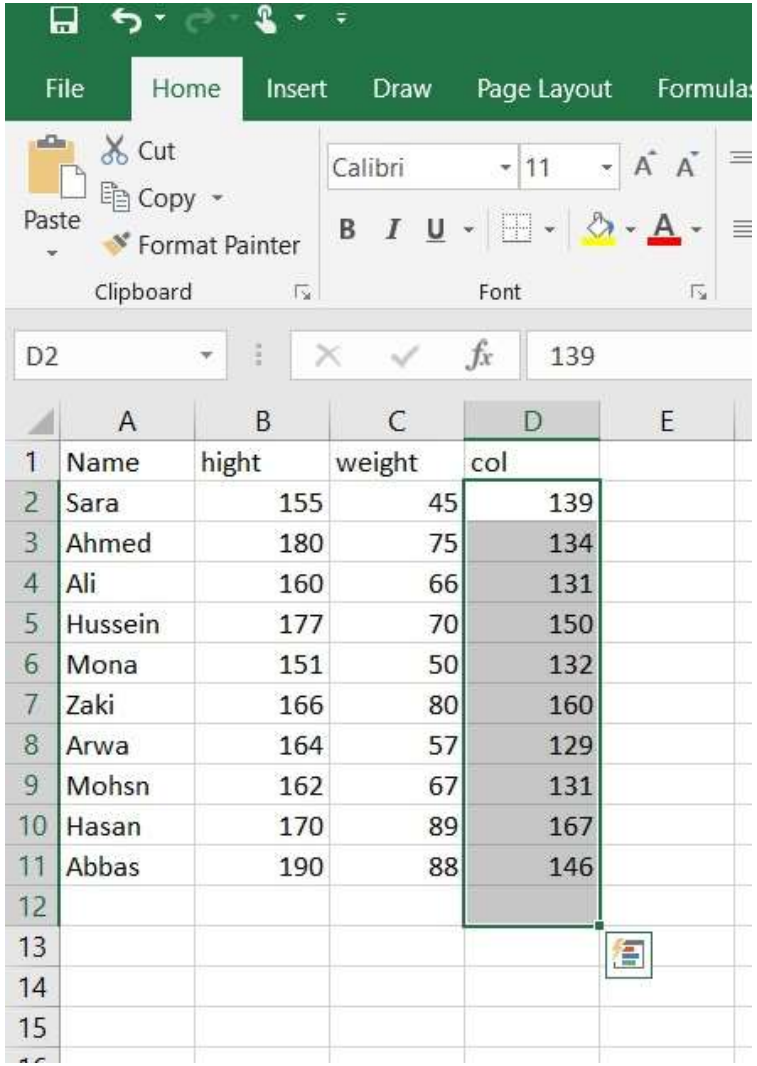
❑ Creating a function

- **SUM**: This function **adds** all of the values of the cells in the argument.
- **AVERAGE**: This function determines the **average** of the values included in the argument. It calculates the sum of the cells and then divides that value by the number of cells in the argument.
- **COUNT**: This function **counts** the number of cells with numerical data in the argument. This function is useful for quickly counting items in a cell range.
- **MAX**: This function determines the **highest cell value** included in the argument.
- **MIN**: This function determines the **lowest cell value** included in the argument.

Functions

❑ To create a function using the AutoSum command:

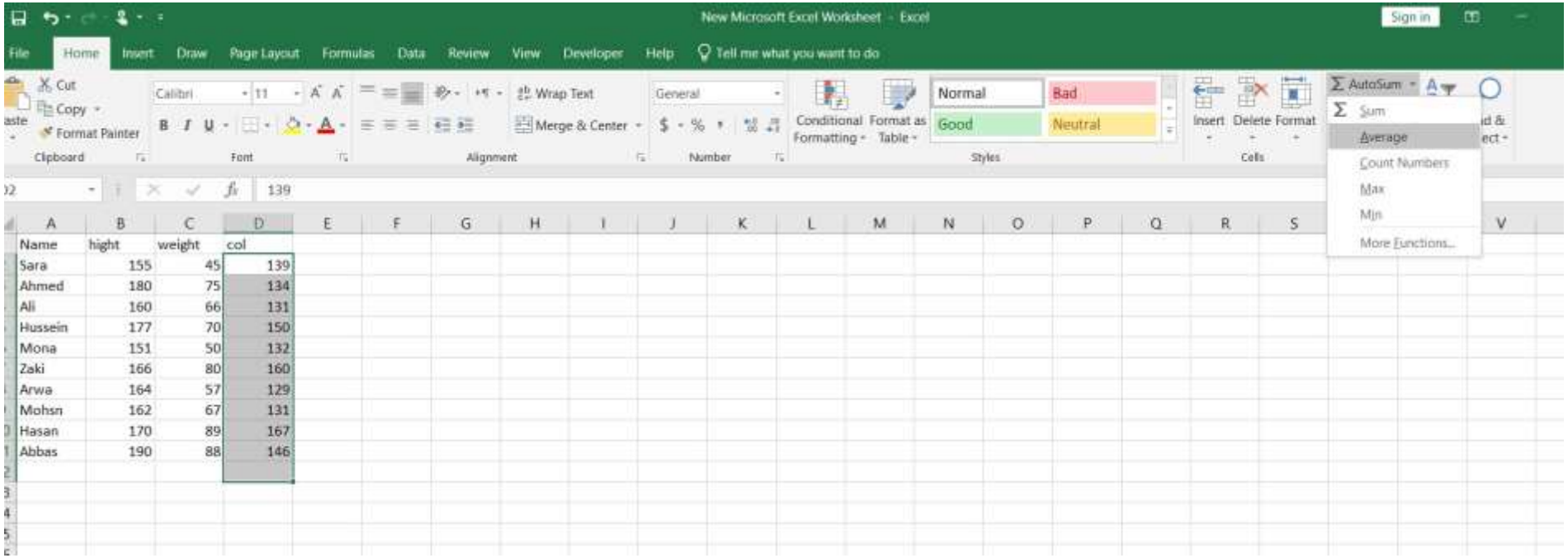
- The **AutoSum** command allows you to automatically insert the most common functions into your formula, including SUM, AVERAGE, COUNT, MIN, and MAX. In the example below, we'll use the **SUM** function to calculate the **total cost** for a list of recently ordered items
- In the **Editing** group on the **Home** tab, click the **arrow** next to the **AutoSum** command. Next, choose the **desired function** from the drop-down menu. In our example, we'll select **Sum**



	A	B	C	D	E
1	Name	hight	weight	col	
2	Sara	155	45	139	
3	Ahmed	180	75	134	
4	Ali	160	66	131	
5	Hussein	177	70	150	
6	Mona	151	50	132	
7	Zaki	166	80	160	
8	Arwa	164	57	129	
9	Mohsn	162	67	131	
10	Hasan	170	89	167	
11	Abbas	190	88	146	
12					
13					
14					
15					

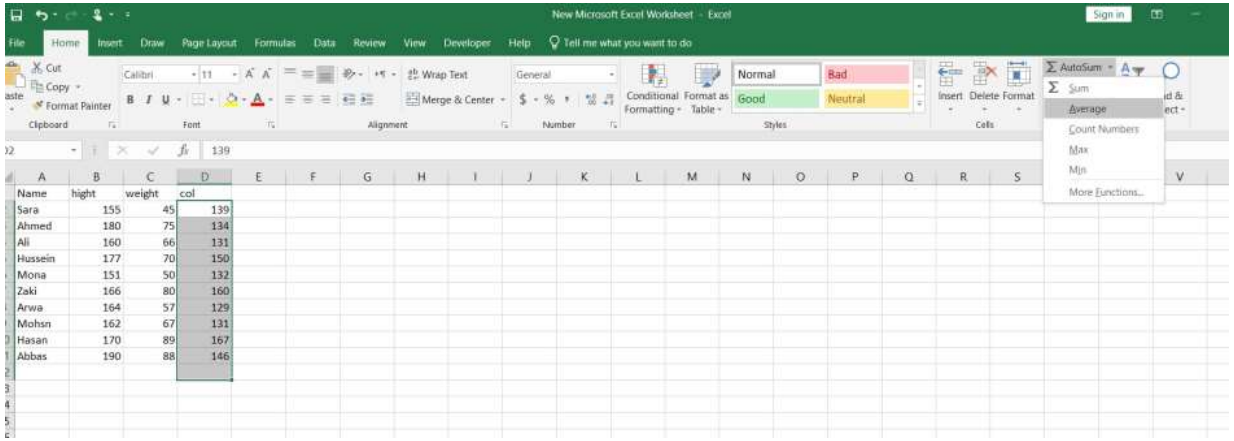
Functions

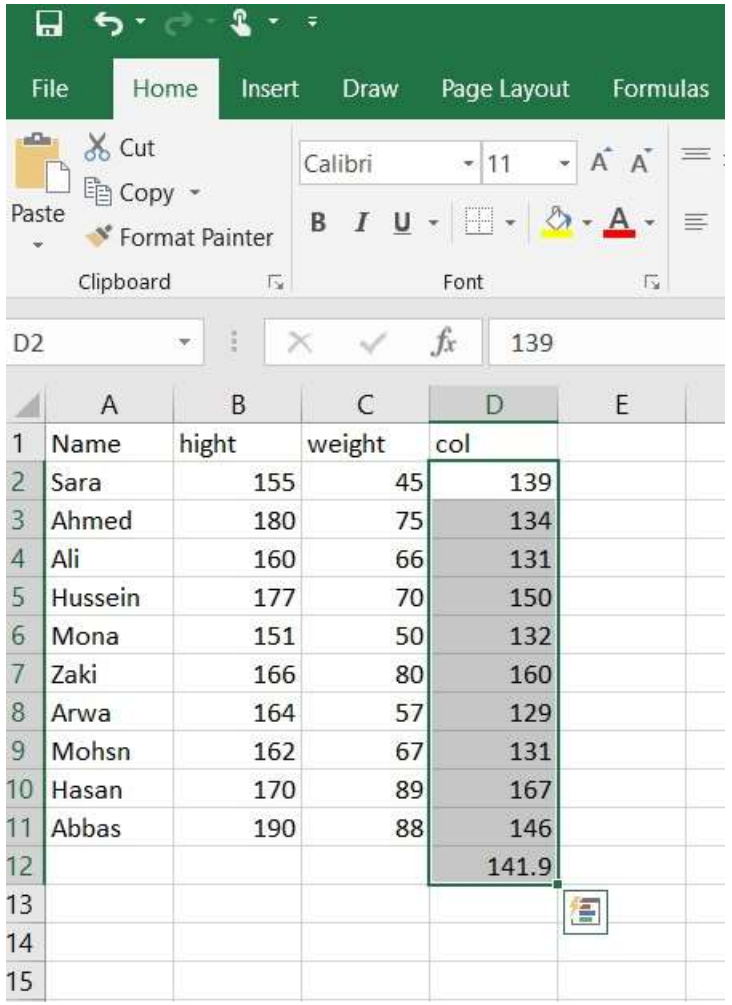
- Select the **desired function** from the drop-down menu. In our example, we'll select the **Average** function, which will count the number of cells in the **Items** column that are not empty.



Functions

- Select the **desired function** from the drop-down menu. In our example, we'll select the **Average** function, which will count the number of cells in the **Items** column that are not empty.



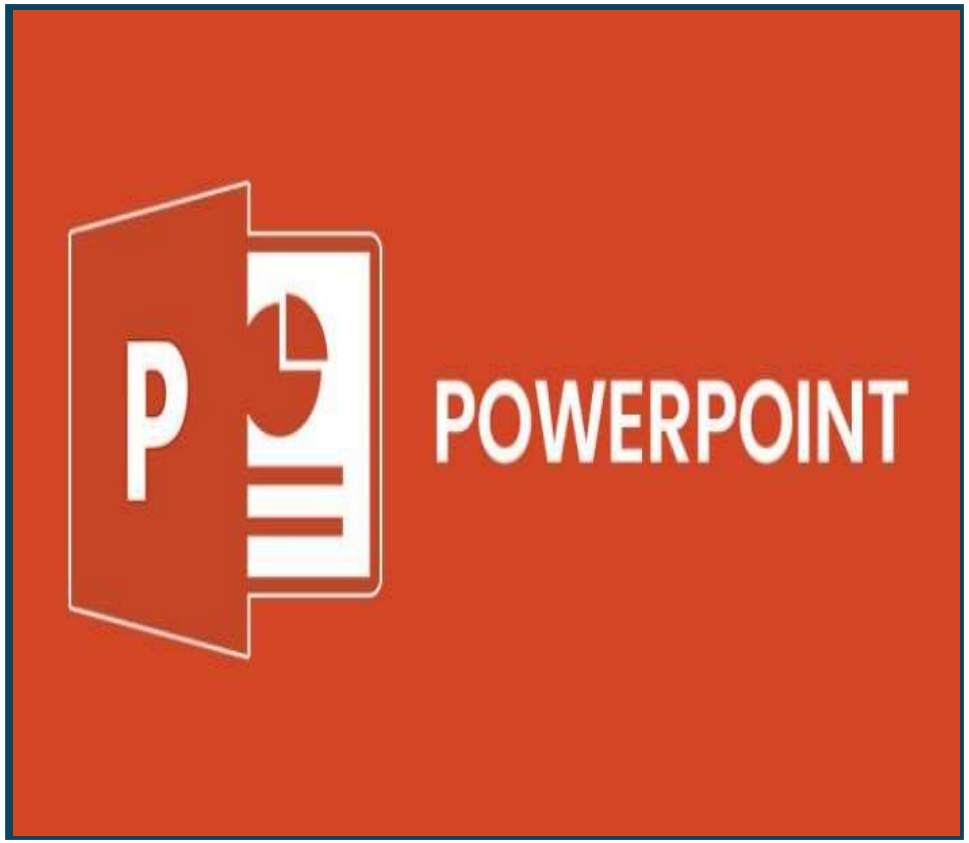


	A	B	C	D	E
1	Name	hight	weight	col	
2	Sara	155	45	139	
3	Ahmed	180	75	134	
4	Ali	160	66	131	
5	Hussein	177	70	150	
6	Mona	151	50	132	
7	Zaki	166	80	160	
8	Arwa	164	57	129	
9	Mohsn	162	67	131	
10	Hasan	170	89	167	
11	Abbas	190	88	146	
12				141.9	
13					
14					
15					

END SESSION QUESTIONS

1. What is the scope of cells for A1:A10 in Microsoft Excel ?
2. Write steps to find the average of three cells (C1,C2 and C3)?
3. Explain by example the use of “if statement” in Microsoft Excel?
4. How it is possible to sort group of cells in Microsoft Excel?
5. Write steps to draw any style of chart in Microsoft Excel?
6. List five functions with their operations?

Thank you for Listening!



Computer Fundamental

Lecture 9

Microsoft PowerPoint

Assist.Prof. Dr. Haider Noori Hussain

Objectives

By the end of this lecture, students will be able to:

- Create a structured PowerPoint presentation.
- Apply formatting and design principles to improve visual impact.

INTRODUCTION

Microsoft PowerPoint is an electronic presentation program that helps people present a speech using a collection of slides. A PowerPoint presentation is a collection of slides that can be used to create oral presentations. By default, documents saved in PowerPoint are saved with the **.pptx** extension whereas, the file extension of the prior PowerPoint versions is **.ppt.**

Benefits of Power Point

PowerPoint provides multiple benefits to users, including:

- It is widely used, and considered the "standard" for presentation software. If you create a PowerPoint presentation, it's likely that anyone you want to share it with will be able to open and view it, either with PowerPoint or with a compatible application.

Benefits of Power Point Cont.

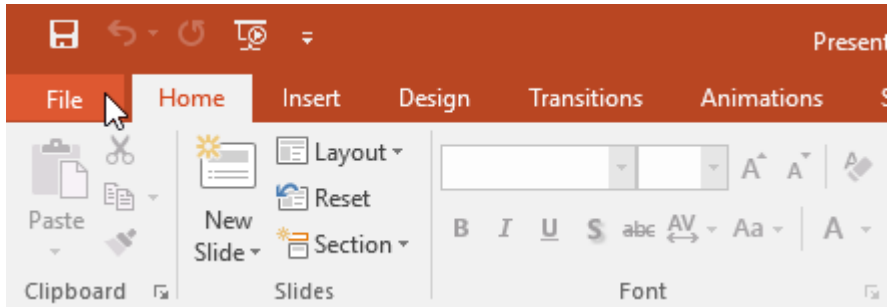
- It includes many optional presentation features, including slide transitions, animations, layouts, templates, and more.
- It offers the option to export its slides to alternative file formats, including GIF and JPG images, MPEG-4 video, PDF, RTF (rich text format), WMV (Windows Media Video), and PowerPoint XML.

Microsoft PowerPoint

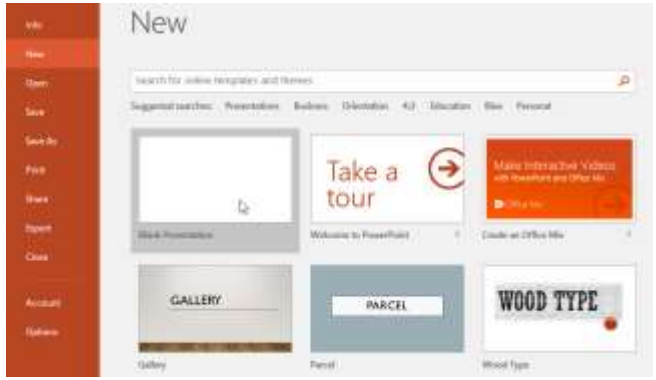
- PowerPoint files are called **presentations**. Whenever you start a new project in PowerPoint, you'll need to **create a new presentation**, which can either be **blank** or from a **template**.

- **To create a new presentation:**

1. Select the **File** tab to go to **Backstage view**.



2. Select **New** on the left side of the window, then click **Blank Presentation**.

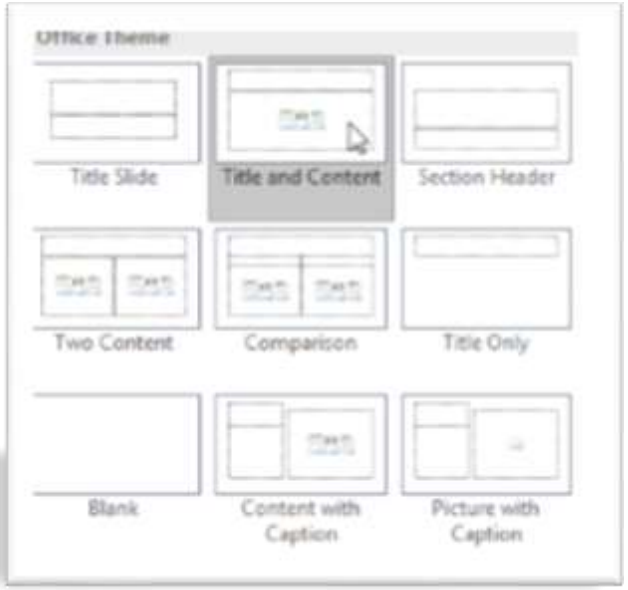


Slide Basics

- Every PowerPoint presentation is composed of a series of **slides**. To begin creating a slide show, you'll need to know the basics of working with slides. You'll need to feel comfortable with tasks like **inserting** a new slide, **changing the layout** of a slide, **arranging** existing slides, **changing the slide view**, and **adding notes** to a slide.

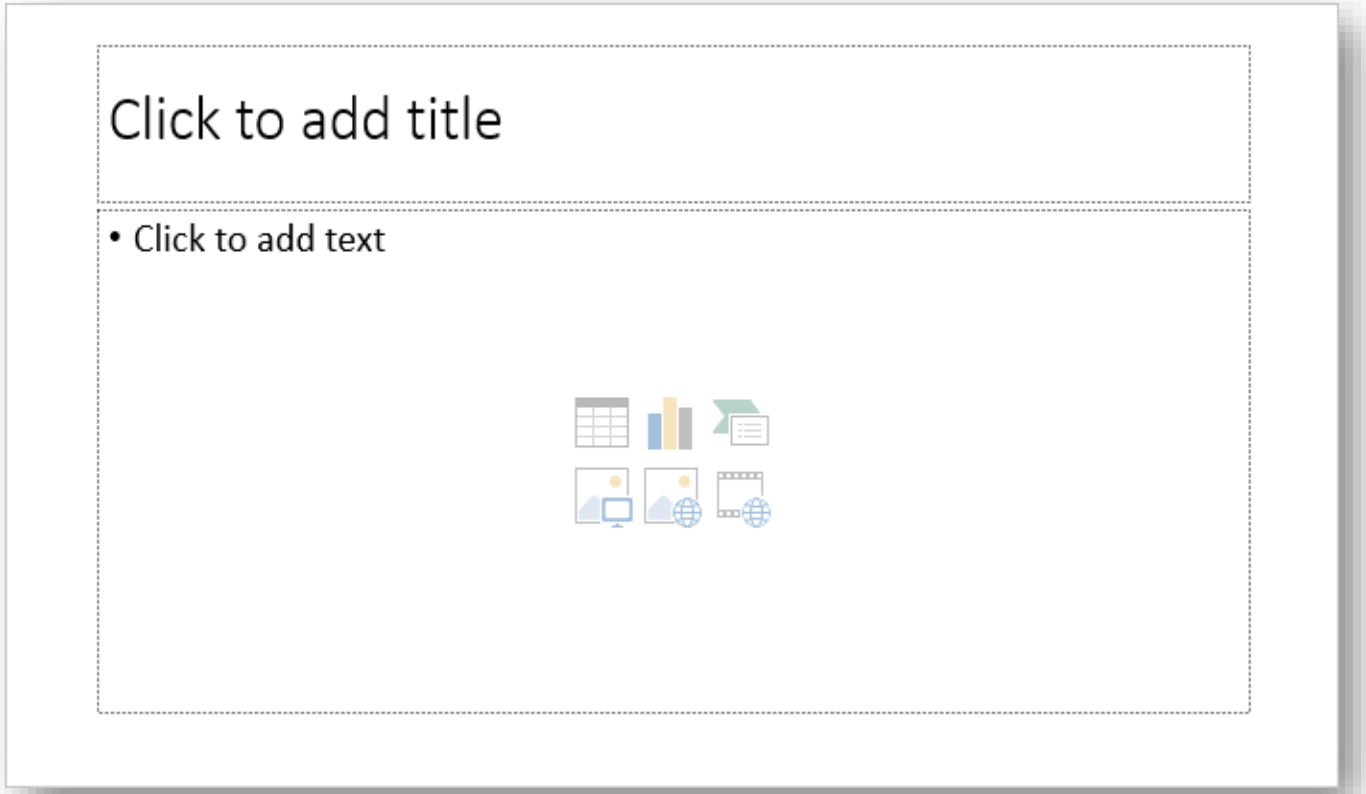
❖ Understanding slides and slide layouts

- When you insert a **new slide**, it will usually have **placeholders** to show you where content will be placed. Slides have different **layouts** for placeholders, depending on the type of information you want to include. Whenever you create a new slide, you'll need to choose a slide layout that fits your content.



Slide Basics

- Placeholders can contain different types of content, including text, images, and videos. Many placeholders have **thumbnail icons** you can click to add specific types of content. In the example below, the slide has placeholders for the **title** and **content**.

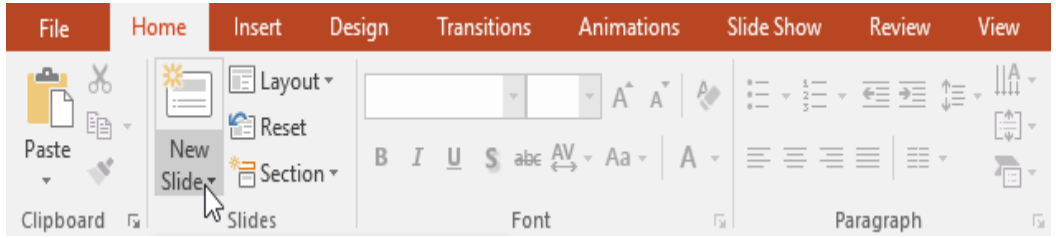


Slide Basics

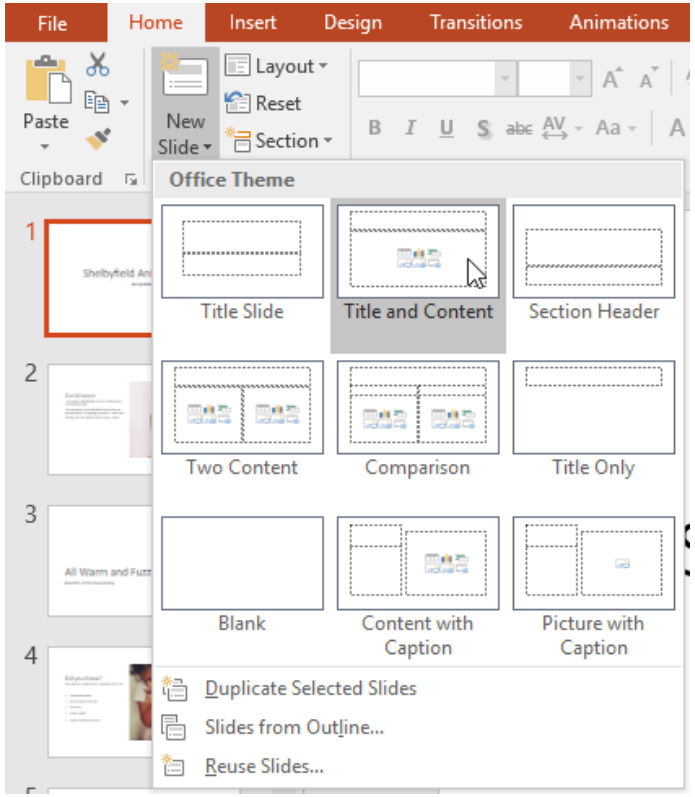
❖ To insert a new slide:

- Whenever you start a new presentation, it will contain **one slide** with the **Title Slide** layout. You can insert as many slides as you need from a variety of layouts.

1. From the **Home** tab, click the **bottom half** of the **New Slide** command.

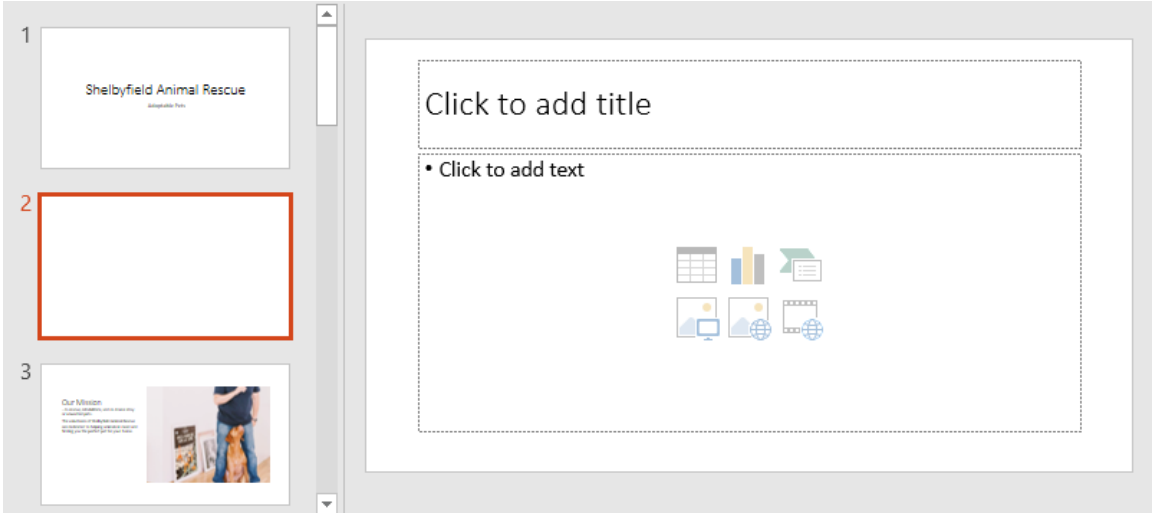


2. Choose the desired **slide layout** from the menu that appears.

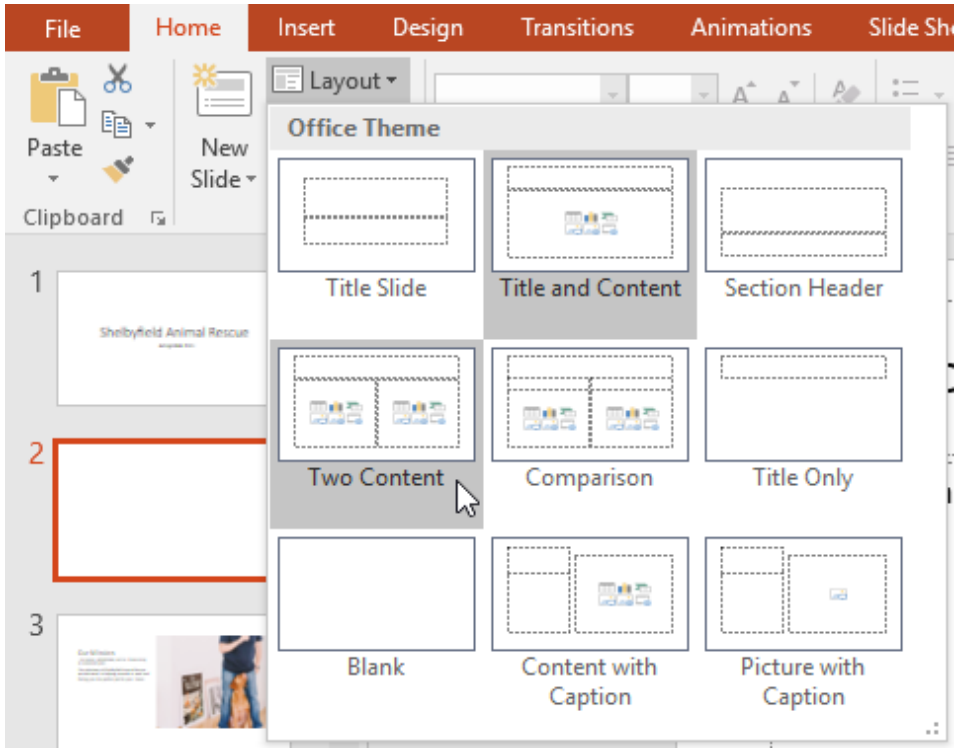


Slide Basics

3. The new slide will appear. Click any **placeholder** and begin typing to add text. You can also click an **icon** to add other types of content, like a **picture** or **chart**.

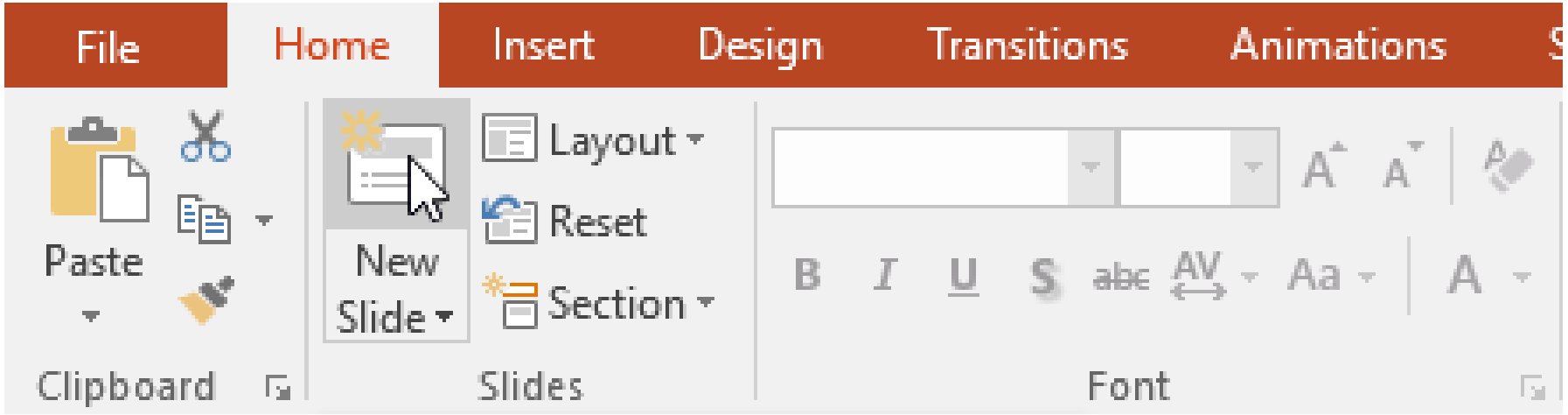


❖ To change the layout of an existing slide, click the **Layout** command, then choose the desired layout



Slide Basics

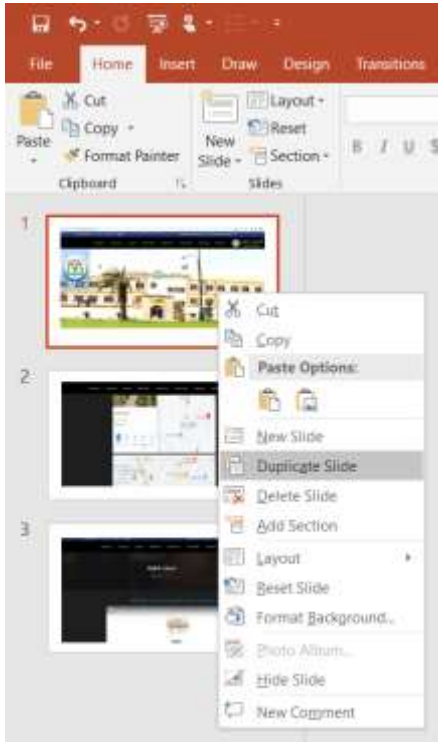
❖To quickly add a slide that uses the same layout as the selected slide, click the **top half** of the **New Slide** command.



Organizing Slides

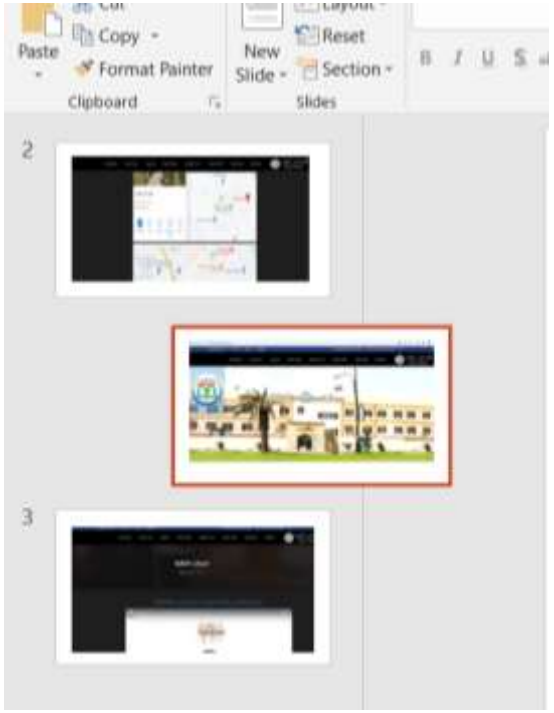
- PowerPoint presentations can contain as many slides as you need. The **Slide Navigation pane** on the left side of the screen makes it easy to **organize** your slides. From there, you can **duplicate**, **rearrange**, and **delete** slides in your presentation.

  - ✓**Duplicate slides**: If you want to copy and paste a slide quickly, you can **duplicate** it. To duplicate slides, select the slide you want to **duplicate**, right-click the mouse, and choose **Duplicate Slide** from the menu that appears. You can also duplicate **multiple slides** at once by selecting them first.



Organizing Slides

- **Move slides**: It's easy to change the **order** of your slides. Just click and drag the **desired slide** in the Slide Navigation pane to the desired position.



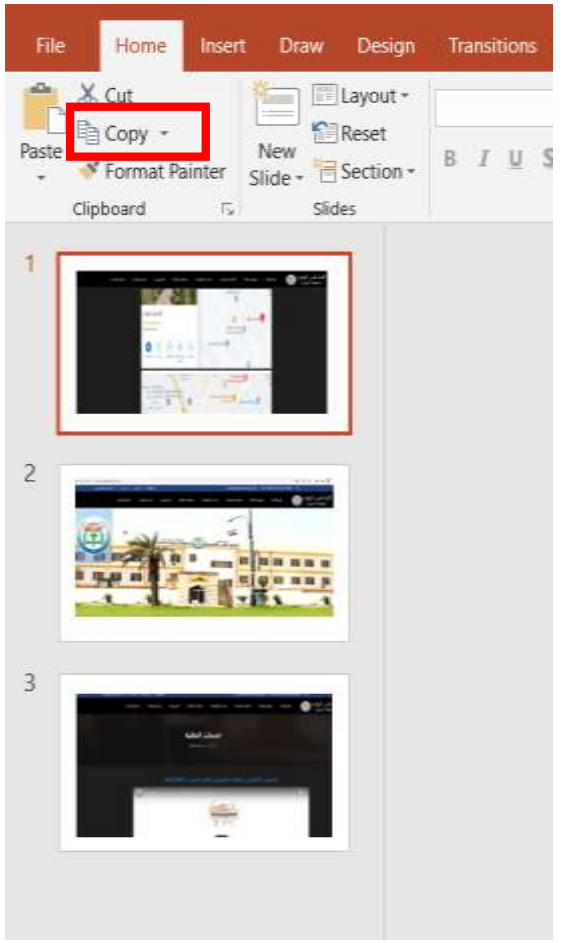
- **Delete slides**: If you want to remove a slide from your presentation, you can **delete** it. Simply select the slide you want to delete, then press the **Delete** or **Backspace** key on your keyboard.

Organizing Slides

❖ To copy and paste slides:

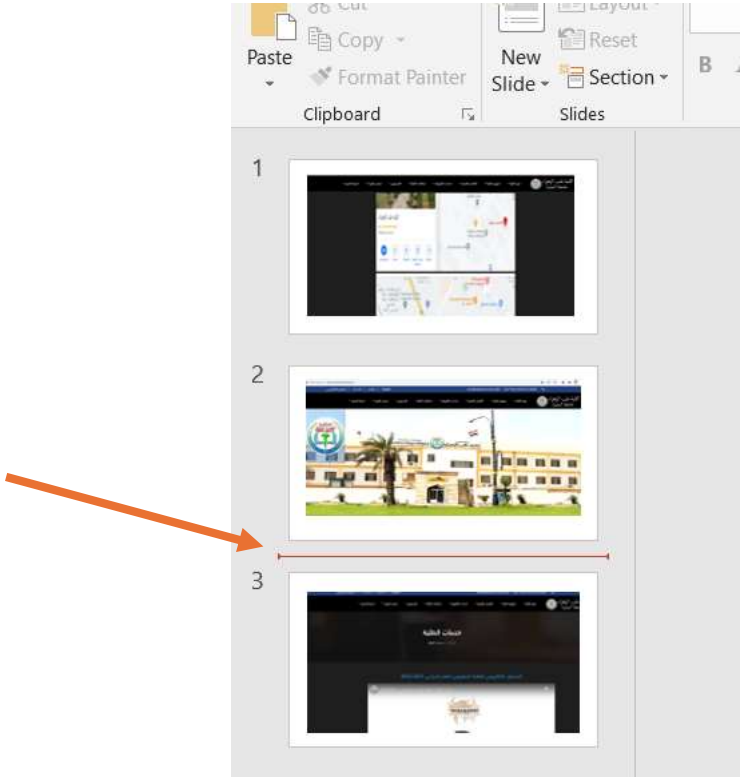
If you want to create several slides with the same layout, you may find it easier to **copy and paste** a slide you've already created instead of starting with an empty slide.

1. Select the **slide** you want to copy in the Slide Navigation pane, then click the **Copy** command on the **Home** tab. You can also press **Ctrl+C** on your keyboard

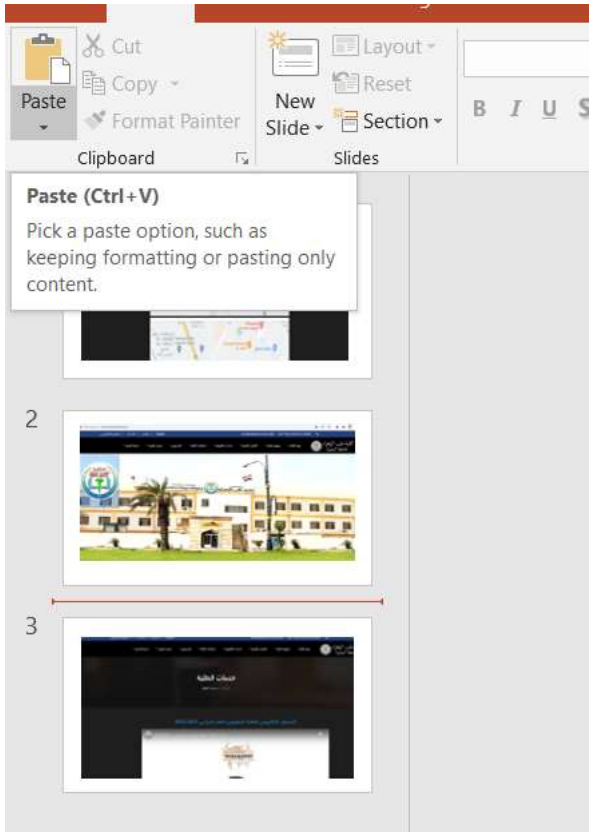


Organizing Slides

2. In the Slide Navigation pane, click just below a slide (or between two slides) to choose a paste location. A **horizontal insertion point** will appear.



3.Click the **Paste** command on the **Home** tab. You can also press **Ctrl+V** on your keyboard.



Customizing slide layouts

- Sometimes you may find that a slide layout doesn't exactly fit your needs. **For example**, a layout might have too many—or too few—placeholders. You might also want to change how the placeholders are arranged on the slide. Fortunately, PowerPoint makes it easy to adjust slide layouts as needed.

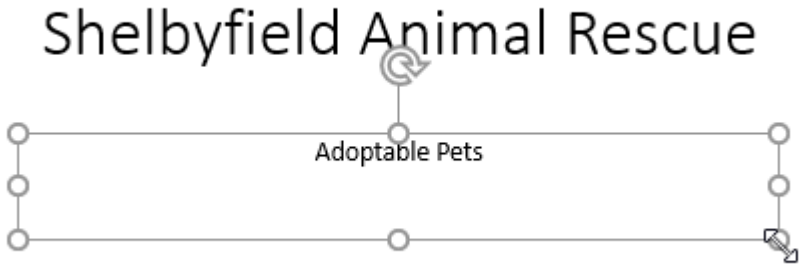
❖ Adjusting placeholders

- **To select a placeholder**: Hover the mouse over the edge of the placeholder and click (you may need to click the text in the placeholder first to see the border). A selected placeholder will have a **solid line** instead of a dotted line.

Customizing slide layouts

- **To move a placeholder**: Select the placeholder, then click and drag it to the desired location.

- **To resize a placeholder**: Select the placeholder you want to resize. **Sizing handles** will appear. Click and drag the **sizing handles** until the placeholder is the desired size. You can use the corner sizing handles to change the placeholder's **height** and **width** at the same time.



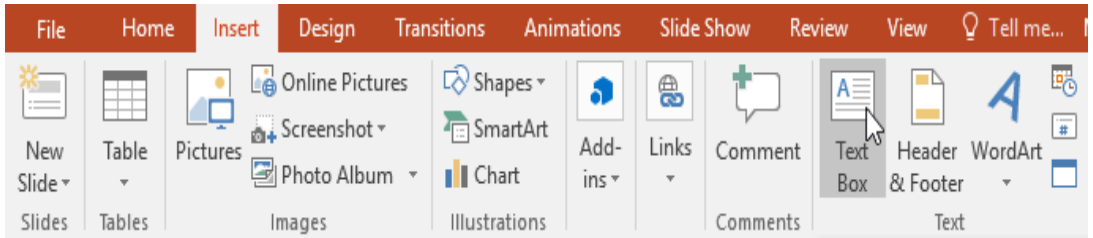
•**To delete a placeholder**: Select the placeholder you want to delete, then press the **Delete** or **Backspace** key on your keyboard.

Customizing slide layouts

❖ To add a text box:

- Text can be inserted into both **placeholders** and **text boxes**. Inserting **text boxes** allows you to add to the slide layout. Unlike placeholders, text boxes always stay in the same place, even if you change the theme.

1. From the **Insert** tab, select the **Text Box** command.



2. Click and drag to draw the text box on the slide.

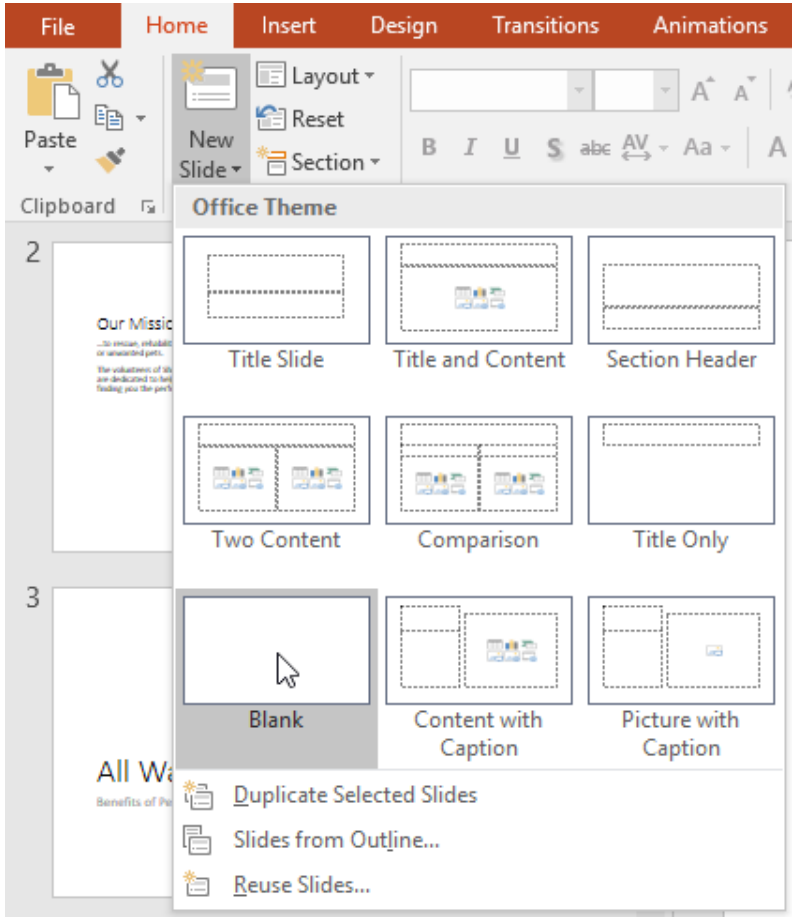
3. The text box will appear. To add text, simply click the text box and begin typing.

Customizing slide layouts

❖ Using blank slides

- If you want even more control over your content, you may prefer to use a **blank slide**, which contains no placeholders. Blank slides can be customized by adding your own text boxes, pictures, charts, and more.

- To insert a blank slide, click the bottom half of the **New Slide** command, then choose **Blank** from the menu that appears.



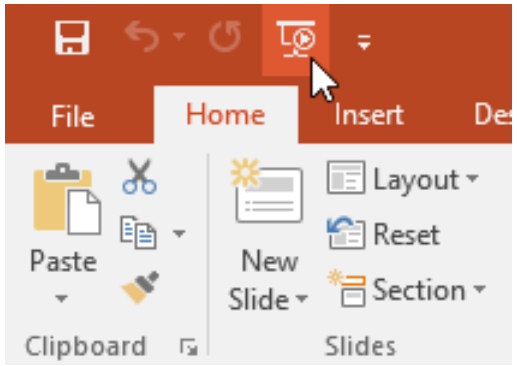
➢ While blank slides offer more flexibility, keep in mind that you won't be able to take advantage of the predesigned layouts included in each theme.

Customizing slide layouts

❖ To play the presentation:

- Once you've arranged your slides, you may want to **play** your presentation. This is how you will present your slide show to an audience.

Click the **Start From Beginning** command on the Quick Access Toolbar to see your presentation.



1. The presentation will appear in full-screen mode.

2. You can advance to the next slide by **clicking your mouse** or pressing the **spacebar** on your keyboard. You can also use the **arrow keys** on your keyboard to move forward or backward through the presentation.

3. Press the **Esc** key to exit presentation mode.

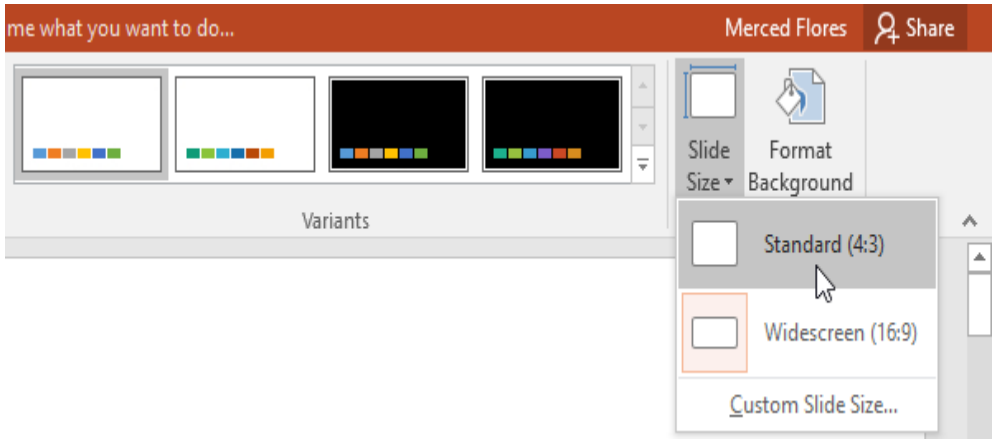
- You can also press the **F5** key at the top of your keyboard to start a presentation.

Customizing slide layouts

❖ To change the slide size:

- By default, all slides in PowerPoint 2013 use a **16-by-9**—or **widescreen**—aspect ratio. You might know that widescreen TVs also use the 16-by-9 aspect ratio. Widescreen slides will work best with widescreen monitors and projectors. However, if you need your presentation to fit a **4-by-3** screen, it's easy to change the slide size to fit.

- To change the slide size, select the **Design** tab, then click the **Slide Size** command. Choose the desired slide size from the menu that appears, or click **Custom Slide Size** for more options.



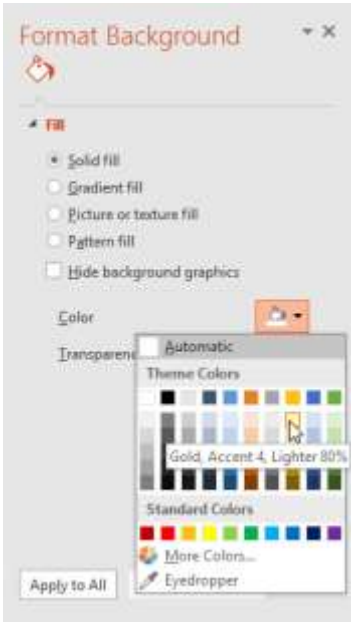
Customizing slide layouts

❖ To format the slide background:

- By default, all slides in your presentation use a **white background**. It's easy to change the background style for some or all of your slides. Backgrounds can have a **solid**, **gradient**, **pattern**, or **picture** fill.

1. Select the **Design** tab, then click the **Format Background** command.

2. The **Format Background** pane will appear on the right. Select the desired fill options. In our example, we'll use a **Solid fill** with a **light gold** color.



3. The background style of the selected slide will update.

- If you want, you can click **Apply to All** to apply the same background style to all slides in your presentation.

Themes

- A theme is a **predefined combination** of colors, fonts, and effects. Different themes also use different **slide layouts**. You've already been using a theme, even if you didn't know it: the default **Office** theme. You can choose from a variety of new themes at any time, giving your entire presentation a consistent, professional look.

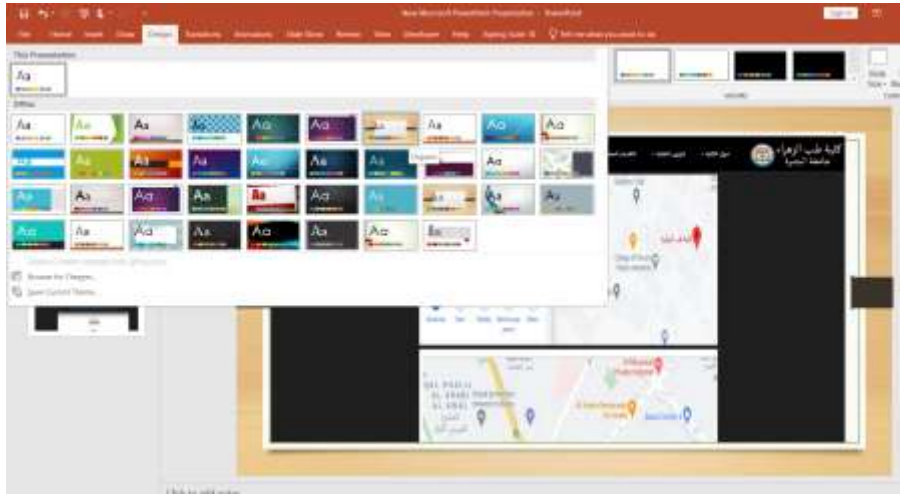
- Each theme uses its own set of **slide layouts**. These layouts control the way your content is arranged, so the effect can be dramatic. In the examples below, you can see that the **placeholders**, **fonts**, and **colors** are different.

Themes

❖ To apply a theme:

1. Select the **Design** tab on the Ribbon, then click the **More** drop-down arrow to see all of the available themes.

2. Select the **desired theme**.



3. The theme will be applied to your **entire presentation**.

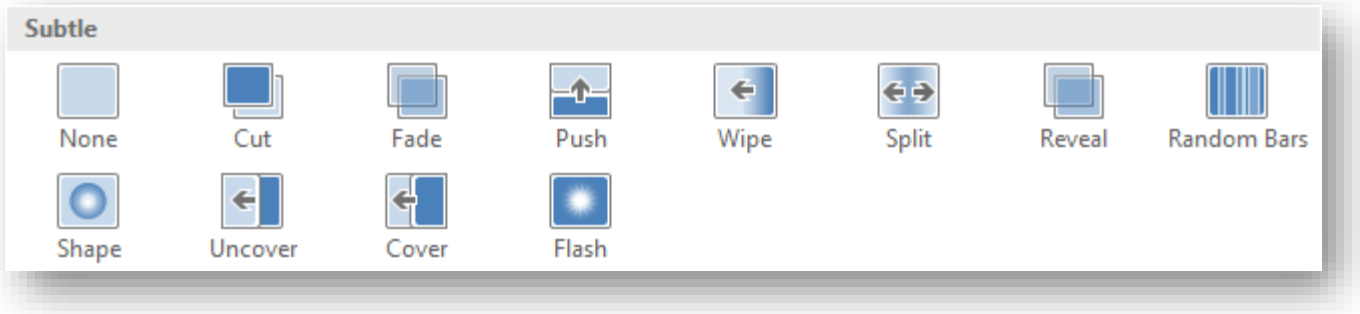
- Once you've applied a theme, you can select a **variant** for the theme from the **Variants** group. Variants use **different theme colors** while preserving a theme's overall look.

Applying Transitions

- If you've ever seen a PowerPoint presentation that had special effects between each slide, you've seen **slide transitions**. **A transition** can be as simple as fading to the next slide or as flashy as an eye-catching effect. PowerPoint makes it easy to apply transitions to some or all of your slides, giving your presentation a polished, professional look.

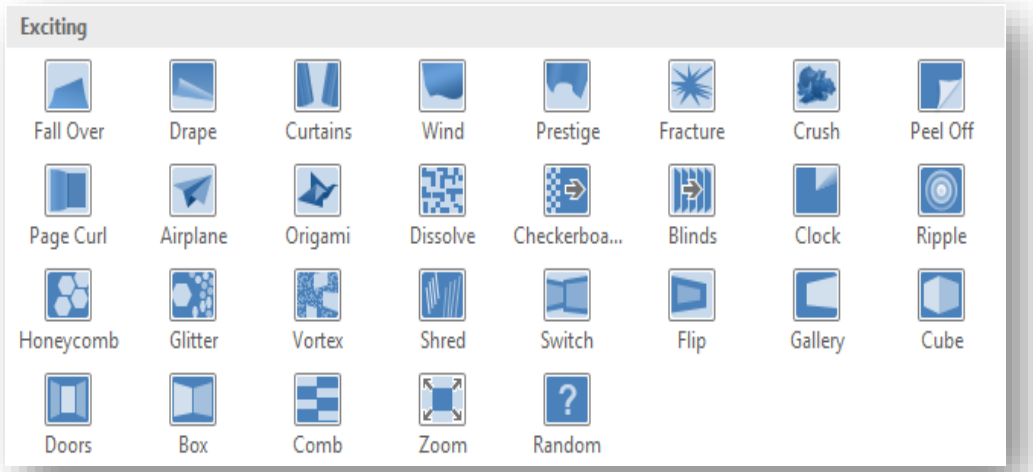
❖ **There are three categories of unique transitions to choose from, all of which can be found on the Transitions tab.**

1. **Subtle**: These are the most basic types of transitions. They use **simple animations** to move between slides.

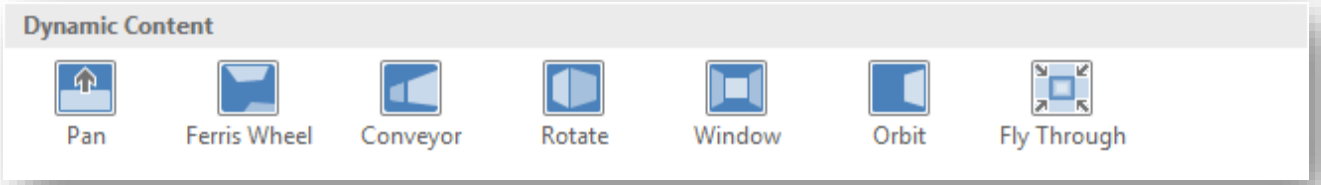


Applying Transitions

2. Exciting: These use more **complex animations** to transition between slides. While they're more visually interesting than **Subtle** transitions, adding too many can make your presentation look less professional. However, when used in moderation they can add a nice touch between important slides.



3. Dynamic Content: If you're transitioning between two slides that use similar **slide layouts**, dynamic transitions will move only the **placeholders**, not the slides themselves. When used correctly, dynamic transitions can help **unify** your slides and add a further level of polish to your presentation.



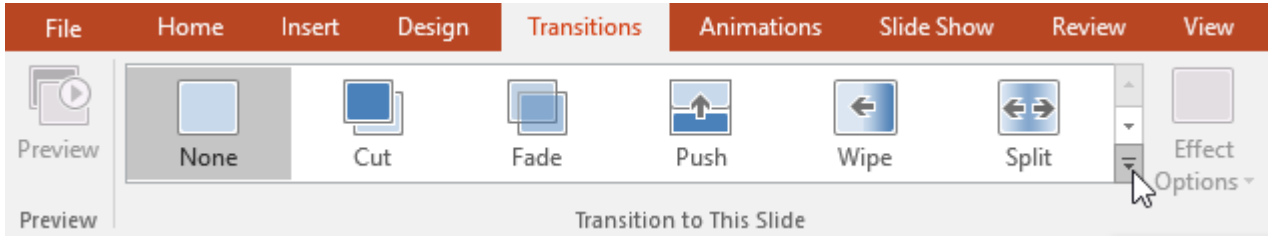
Applying Transitions

❖ **To apply a transition:**

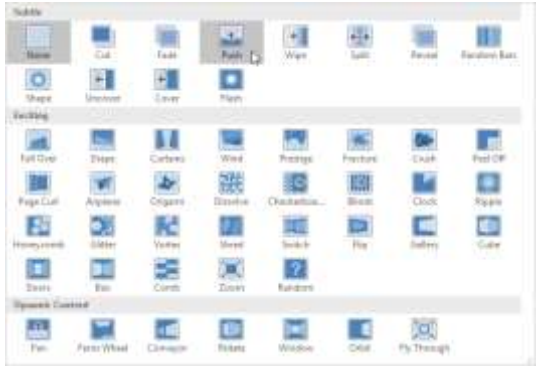
1. Select the **desired slide** from the **Slide Navigation** pane. This is the slide that will appear **after** the transition.

2. Click the **Transitions** tab, then locate the **Transition to This Slide** group. By default, **None** is applied to each slide.

3. Click the **More** drop-down arrow to display all transitions.

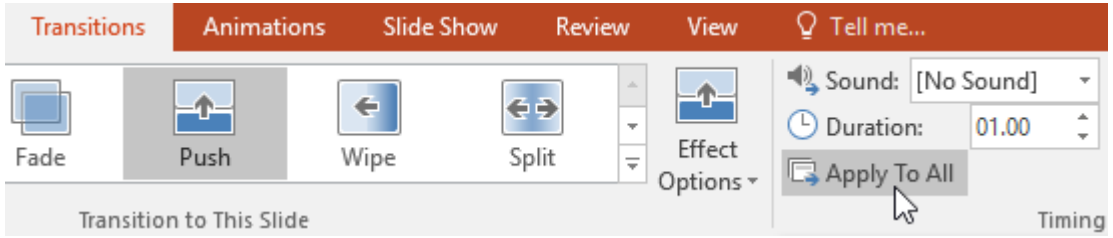


4.Click a **transition** to apply it to the selected slide. This will automatically preview the transition.



Applying Transitions

- You can use the **Apply To All** command in the **Timing** group to apply the same transition to all slides in your presentation. Keep in mind that this will modify any other transitions you've applied.

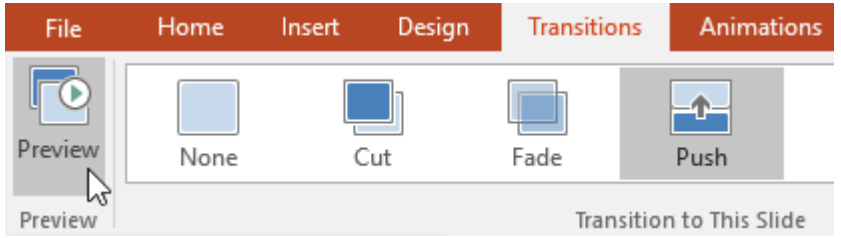


- Try applying a few types of transitions to various slides in your presentation. You may find that some transitions work better than others, depending on the content of your slides.

❖ To preview a transition:

You can **preview** the transition for a selected slide at any time using one of these two methods:

1. Click the **Preview** command on the **Transitions** tab.



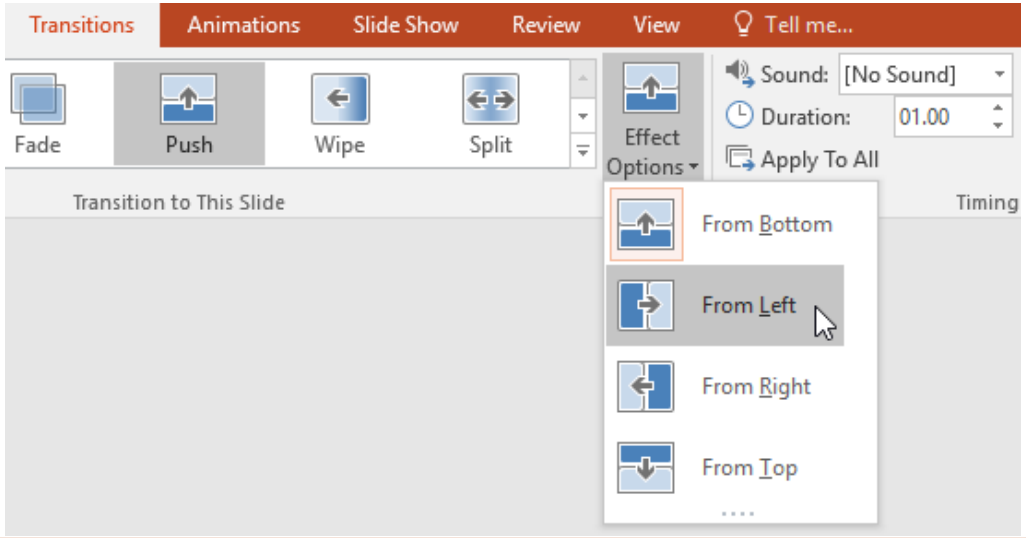
2. Click the **Play Animations** command in the **Slide Navigation** pane.

Applying Transitions

❖ Modifying transitions

You can quickly customize the look of a transition by changing its **direction**.

1. Select the **slide** with the transition you want to modify.
2. Click the **Effect Options** command and choose the desired option. These options will vary depending on the selected transition.



3. The transition will be **modified**, and a **preview** of the transition will appear.

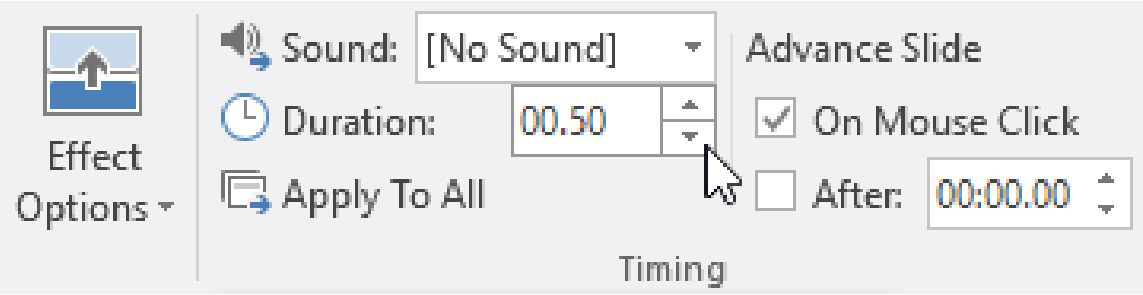
- Some transitions do not allow you to modify the direction.

Applying Transitions

❖ To modify the transition duration:

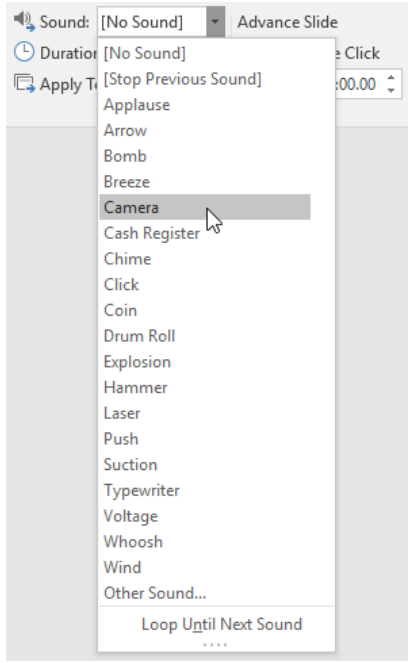
1. Select the **slide** with the transition you want to modify.

2. In the **Duration** field in the **Timing** group, enter the **desired time** for the transition. In this example, we'll decrease the time to half a second—or 00.50—to make the transition **faster**.



❖ To add sound:

1. Select the **slide** with the transition you want to modify.
2. Click the **Sound** drop-down menu in the **Timing** group.
3. Click a **sound** to apply it to the selected slide, then preview the transition to hear the sound.

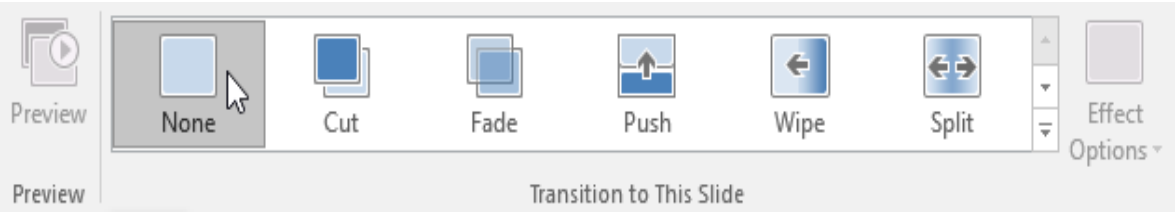


Applying Transitions

❖ To remove a transition:

1. Select the **slide** with the transition you want to remove.

2. Choose **None** from the **Transition to This Slide** group. The transition will be removed.



- To remove transitions from **all slides**, apply the **None** transition to a slide, then click the **Apply to All** command.

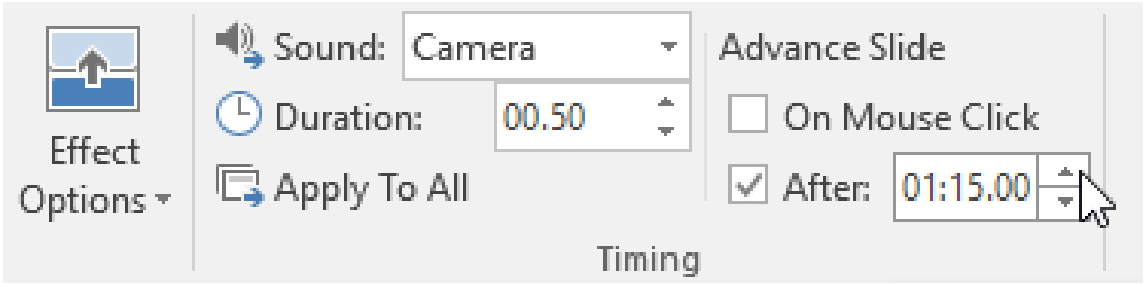
❖ Advancing slides

Normally, in Slide Show view you would advance to the next slide by clicking your mouse or by pressing the spacebar or arrow keys on your keyboard. The **Advance Slides** setting in the **Timing** group allows the presentation to advance **on its own** and display each slide for a specific amount of time. This feature is especially useful for **unattended presentations**, such as those at a trade show booth.

❖ To advance slides automatically:

1. Select the slide you want to modify.
2. Locate the **Timing** group on the **Transitions** tab. Under **Advance Slide**, uncheck the box next to **On Mouse Click**.

3.In the **After** field, enter the amount of time you want to display the slide. In this example, we will advance the slide automatically after 1 minute and 15 seconds, or 01:15:00



4. Select another slide and repeat the process until all slides have the desired timing. You can also click the **Apply to All** command to apply the same timing to all slides.

- If you need to advance to the next slide before an automatic transition, you can always **click the mouse** or press the **spacebar** to advance the slides as normal.

End-Session Questions

1. What is the default file extension for presentations created in PowerPoint?
2. Name three key benefits of using PowerPoint for presentations.
3. What is the purpose of placeholders in PowerPoint slides?
4. How can you insert a new slide with a specific layout?
5. Explain how to duplicate a slide in PowerPoint.
6. Describe the steps to move a slide to a different position in the Slide Navigation pane.

End-Session Questions

7. What is the default file extension for presentations created in PowerPoint?

8. What is the difference between a text box and a placeholder?

9. What are the three categories of transitions in PowerPoint? Provide an example of each.

10. How can you preview a transition applied to a slide?

Thank you

END Of Lecture