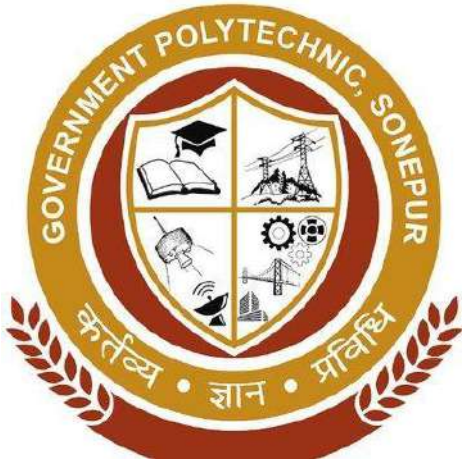


Government Polytechnic, Sonepur

LECTURE NOTE

SUBJECT NAME-INTRODUCTION TO IT SYSTEMS

PREPARED BY- STELLA KUJUR
LECTURER IN CSE
MATH & SCIENCE DEPARTMENT

Introduction to IT Systems

Course Code- TH 1(b) (Common to 1st & 2nd sem)

Period per week:	3	IA:	30 Marks
Total Period:	45	End Sem Exam:	70 Marks
Timing of End Exam:	3 Hours	No. Of Credit:	3

Course outcomes:

At the end of the course, students will be able to:

- ✓ Develop the skill to handle & operate computer and access the internet.
- ✓ Assemble the PC, install & configure OS and other software/Hardware.
- ✓ Design & develop the website using mark up language.
- ✓ Create and work with various office tools.
- ✓ Enhance the skill to protect the system and its information from cyber attacks

Course Content:

UNIT 1:

Basic Internet skills: Understanding browser, efficient use of search engines, awareness about Digital India portals (state and national portals) and college portals.

General understanding of various computer hardware components – CPU, Memory, Display, Key- board, Mouse, HDD and other Peripheral Devices.

UNIT 2:

OS Installation (Linux and MS Windows), Unix Shell and Commands, vi editor.

UNIT 3:

HTML4, CSS, making basic personal webpage.

UNIT 4:

Office Tools: OpenOffice Writer, OpenOffice Spreadsheet (Calc), OpenOffice Impress.

UNIT 5: Information security best practices.

Class lectures will only introduce the topic or demonstrate the tool, actual learning will take place in the Lab by practicing

regularly.

Suggested Lab Work:

This is a skill course. Topics/concepts taught in the class should be practiced in the Lab same week and practiced regularly during the semester till student becomes confident about it. This course is all about some theory and a lot of practice.

References:

1. Introduction to IT Systems (English) by Prof. Prashant Joshi (Download from https://ekumbh.aicte-india.org/dbook.php)
2. R.S. Salaria, Computer Fundamentals, Khanna Publishing House
3. Ramesh Bangia, PC Software Made Easy – The PC Course Kit, Khanna Publishing House
4. Online Resources, Linux man pages, Wikipedia
5. Mastering Linux Shell Scripting: A practical guide to Linux command-line, Bash scripting, and Shell programming, by Mokhtar Ebrahim, Andrew Mallett

UNIT - 1

INTERNET SKILLS AND COMPUTER BASICS

UNDERSTANDING THE FOUNDATION OF DIGITAL LIFE

MADE BY STELLA KUJUR

ABOUT THE UNIT

🧠 RATIONALE:

- IN TODAY'S TECH-DRIVEN WORLD, KNOWING HOW TO USE THE INTERNET AND BASIC COMPUTER SYSTEMS ISN'T OPTIONAL—IT'S ESSENTIAL.
- THIS UNIT BUILDS DIGITAL CONFIDENCE BY TEACHING PRACTICAL SKILLS NEEDED FOR STUDY, WORK, AND EVERYDAY LIFE.

🛠️ PRE-REQUISITES:

- NONE. THIS UNIT IS BEGINNER-FRIENDLY AND ASSUMES NO PRIOR KNOWLEDGE.

WHAT YOU'LL LEARN

- UNDERSTAND THE INTERNET AND HOW IT WORKS
- USE BROWSERS LIKE CHROME EFFECTIVELY
- SEARCH SMARTER USING TOOLS LIKE GOOGLE ADVANCED SEARCH
- ACCESS AND USE DIGITAL INDIA & COLLEGE PORTALS
- IDENTIFY AND UNDERSTAND KEY COMPUTER HARDWARE COMPONENTS
- APPLY THIS KNOWLEDGE IN REAL-LIFE SITUATIONS AND PRACTICAL TASKS

WHAT IS THE INTERNET?

THE INTERNET IS A GLOBAL NETWORK THAT CONNECTS MILLIONS OF COMPUTERS AND DEVICES, ALLOWING THEM TO SHARE DATA, COMMUNICATE, AND ACCESS SERVICES INSTANTLY.

- IT'S NOT A SINGLE PLACE—IT'S A COLLECTION OF NETWORKS.
- IT USES IP ADDRESSES, SERVERS, AND PROTOCOLS (LIKE HTTP) TO MOVE DATA.
- IT'S THE INFRASTRUCTURE BEHIND EMAIL, WEBSITES, SOCIAL MEDIA, APPS, ETC.

🌍 REAL-LIFE EXAMPLES:

- YOU USE THE INTERNET WHEN YOU:
  - CHAT ON WHATSAPP
  - WATCH YOUTUBE OR NETFLIX
  - SEARCH ON GOOGLE
  - PLAY BGMI OR ONLINE GAMES
  - USE UPI OR ONLINE BANKING
  - ORDER FOOD FROM ZOMATO

ANALOGY:

- THE INTERNET IS LIKE A HIGHWAY SYSTEM 🚗—
- ROADS = CABLES & CONNECTIONS
- CARS = DATA PACKETS
- TRAFFIC RULES = PROTOCOLS (LIKE HTTP)
- DESTINATIONS = WEBSITES OR SERVICES

"IF YOU'RE CONNECTED—YOU'RE ALREADY USING THE INTERNET!
THE INTERNET CONNECTS NOT JUST COMPUTERS—BUT PEOPLE, IDEAS, AND POSSIBILITIES."

1.1.2 COMMON APPLICATIONS OF THE INTERNET

USE CASE:	EXAMPLES:
 **COMMUNICATION**	WHATSAPP, GMAIL, ZOOM
 **ENTERTAINMENT**	YOUTUBE, NETFLIX, SPOTIFY
 **EDUCATION**	GOOGLE CLASSROOM, YOUTUBE EDU, COURSERA
 **ONLINE BANKING & PAYMENTS**	UPI, PAYTM, NET BANKING
 **E-COMMERCE**	AMAZON, FLIPKART
 **NEWS & INFO**	GOOGLE NEWS, WIKIPEDIA, TWITTER

BASIC WEB TERMS AND THEIR MEANINGS

- **WWW** WORLD WIDE WEB – AN INFORMATION SYSTEM THAT HOSTS FILES/RESOURCES WHICH ARE ACCESSED USING URLS AND PROTOCOLS LIKE HTTP.
- **URL** UNIFORM RESOURCE LOCATOR – UNIQUE WEB ADDRESS THAT DEFINES WHERE AND HOW TO ACCESS ONLINE CONTENT.
- **DOMAIN NAME** HUMAN-READABLE NAME OF A WEBSITE (E.G., GOOGLE.COM) THAT MAPS TO AN IP ADDRESS.
- **SUBDOMAIN** A DIVISION OF A DOMAIN, USED TO ORGANIZE CONTENT (E.G., MAIL.GOOGLE.COM IS A SUBDOMAIN OF GOOGLE.COM).
- **WEBPAGE** A SINGLE DOCUMENT DESIGNED TO BE VIEWED IN A BROWSER.
- **WEBSITE** A COLLECTION OF WEBPAGES UNDER ONE DOMAIN, PUBLISHED ON A SERVER.
- **BROWSER** A SOFTWARE APPLICATION (LIKE CHROME) USED TO ACCESS AND VIEW WEBPAGES.
- **HYPERLINK** A CLICKABLE WORD/IMAGE THAT LINKS TO ANOTHER PAGE OR DOCUMENT.

PROTOCOLS & NAVIGATION

- **HTTP / HTTPS** PROTOCOLS USED TO TRANSFER WEB DATA. HTTPS IS THE SECURE VERSION USING ENCRYPTION (SSL).
- **FTP** FILE TRANSFER PROTOCOL – USED FOR MOVING LARGE FILES BETWEEN SYSTEMS OVER THE INTERNET.
- **TCP/IP** FOUNDATIONAL PROTOCOLS THAT ALLOW COMPUTERS TO COMMUNICATE OVER THE INTERNET.
- **DNS** DOMAIN NAME SYSTEM – CONVERTS DOMAIN NAMES TO MACHINE-READABLE IP ADDRESSES.
- **MODEM** A DEVICE THAT CONVERTS DIGITAL DATA TO ANALOG (AND VICE VERSA) FOR INTERNET TRANSMISSION.
- **ISP** INTERNET SERVICE PROVIDER – COMPANY THAT PROVIDES INTERNET ACCESS.
- **NETWORK EQUIPMENT** DEVICES LIKE ROUTERS, SWITCHES, HUBS, ETC., USED TO BUILD NETWORKS.

BASIC WEB TERMS AND THEIR MEANINGS

- **SEARCH ENGINE** TOOL THAT FINDS RELEVANT DATA FROM THE WEB (E.G., GOOGLE, BING).
- **EMAIL** ELECTRONIC MAIL – EXCHANGING DIGITAL MESSAGES BETWEEN DEVICES.
- **PODCAST** AUDIO-BASED CONTENT PUBLISHED ONLINE FOR STREAMING OR DOWNLOAD.
- **FILETYPE** THE FORMAT OF ONLINE INFORMATION (E.G., .PDF, .MP3, .MP4).
- **DOWNLOAD** RECEIVING DATA FROM A SERVER TO YOUR DEVICE.
- **UPLOAD** SENDING DATA FROM YOUR DEVICE TO A SERVER.
- **CLOUD COMPUTING** USING ONLINE RESOURCES (LIKE STORAGE, APPS, PROCESSING) VIA THE INTERNET.

WHAT IS A BROWSER?

A WEB BROWSER IS A SOFTWARE APPLICATION THAT LETS YOU ACCESS AND VIEW WEBSITES ON THE INTERNET.

THINK OF IT AS YOUR WINDOW TO THE WEB—IT FETCHES CONTENT LIKE TEXT, IMAGES, AND VIDEOS FROM SERVERS AND DISPLAYS THEM ON YOUR DEVICE.

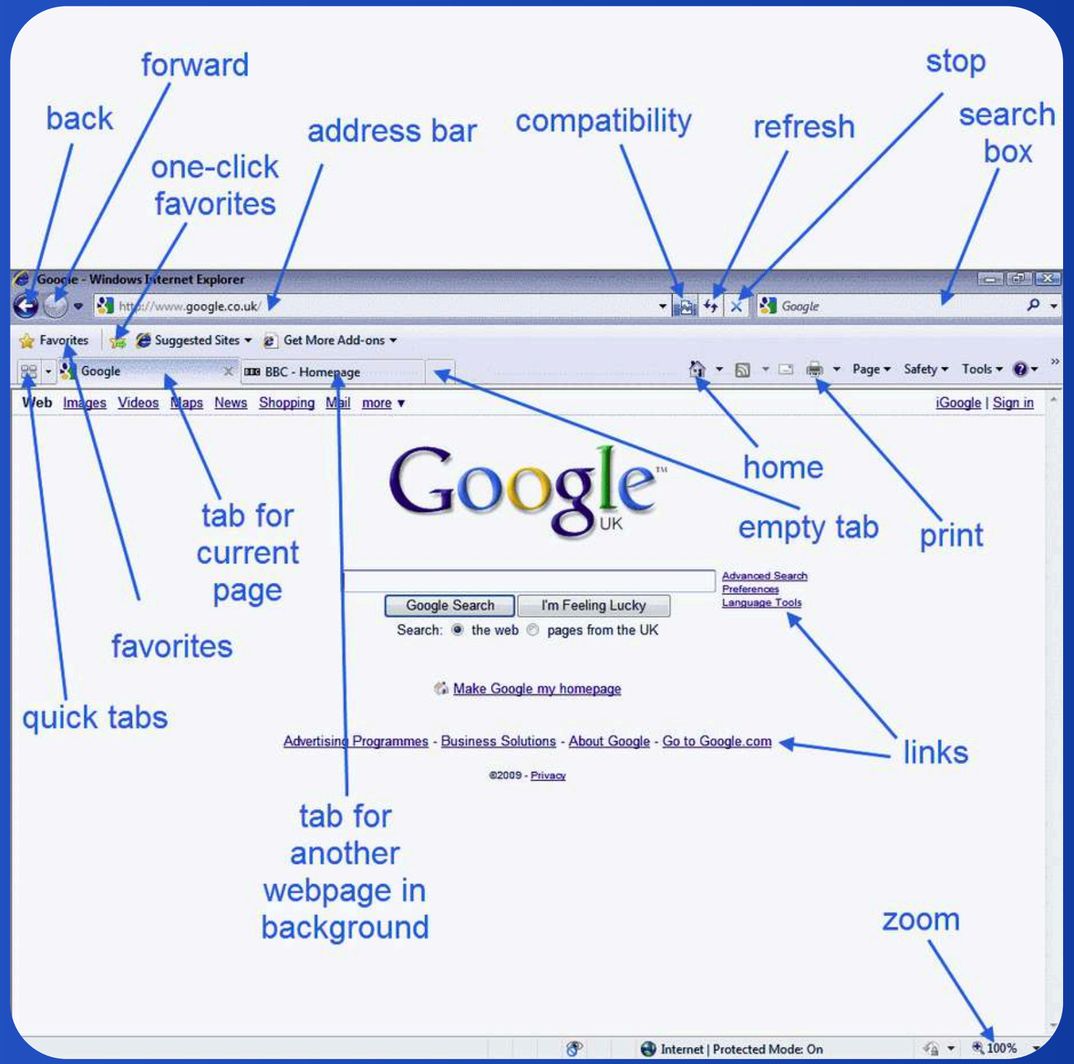
ELEMENTS LABELLED:

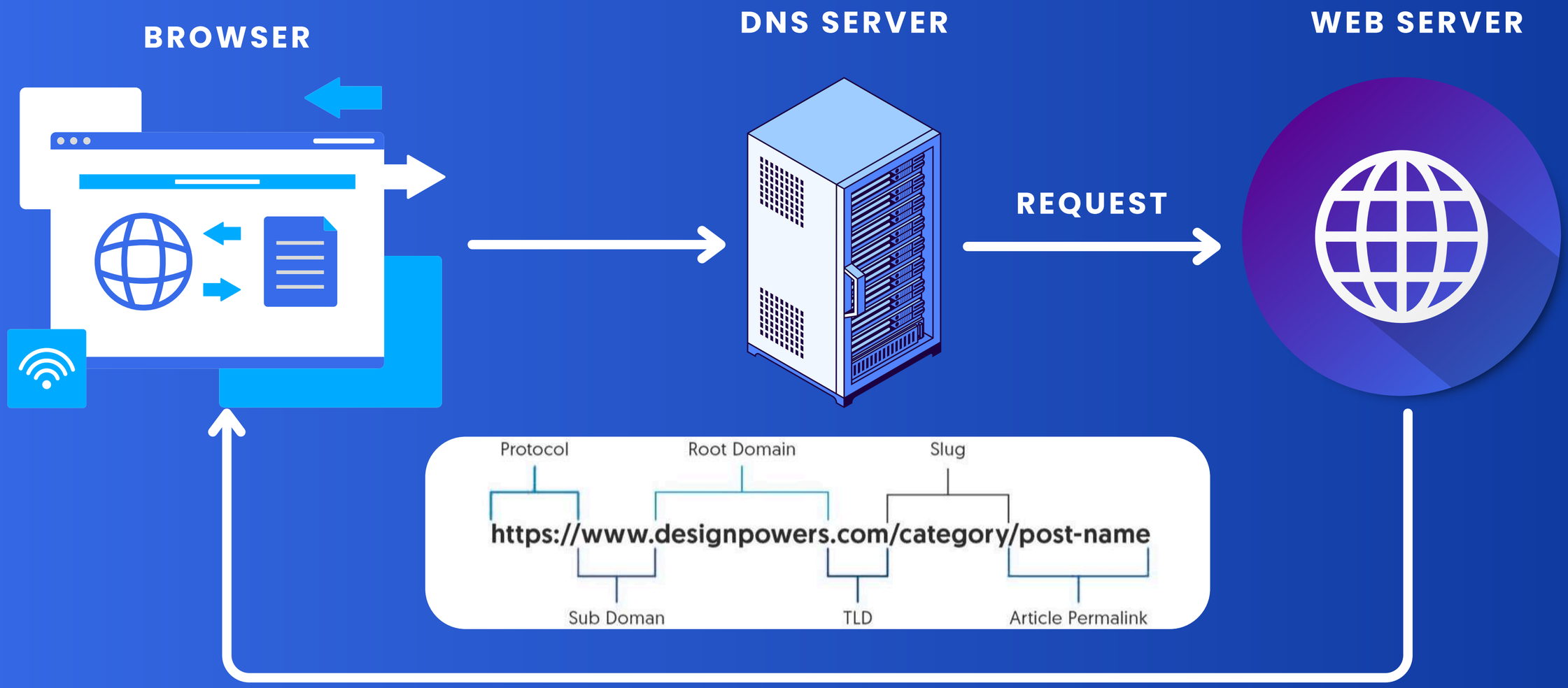
🔁 NAVIGATION CONTROLS:
- BACK, FORWARD, REFRESH, STOP

🔎 ADDRESS BAR VS SEARCH BOX:
- ADDRESS BAR = URL; SEARCH BOX = KEYWORD-BASED

🗂️ TABS:
- SWITCH BETWEEN MULTIPLE PAGES EASILY

💫 QUICK FEATURES:
- ZOOM IN/OUT, PRINT, HOME, ADD TO FAVORITES




BROWSER
DNS SERVER
WEB SERVER
REQUEST
Protocol
Root Domain
Slug
https://www.designpowers.com/category/post-name
Sub Doman
TLD
Article Permalink

1.2.3 COMMON BROWSER FEATURES

🔧 FEATURE	🧠 WHAT IT DOES
• **BOOKMARKS**	SAVE FAVORITE PAGES FOR EASY ACCESS LATER
• **HISTORY**	VIEW A LIST OF PREVIOUSLY VISITED SITES
• **DOWNLOADS**	CHECK AND MANAGE DOWNLOADED FILES
• **INCOGNITO MODE**	PRIVATE BROWSING WITHOUT SAVING HISTORY
• **AUTOFILL**	AUTOMATICALLY FILLS FORMS (NAME, EMAIL, ETC.)
• **ZOOM**	INCREASE/DECREASE PAGE SIZE
• **EXTENSIONS**	ADD EXTRA TOOLS LIKE AD BLOCKERS, TRANSLATORS
• **DEVELOPER TOOLS**	FOR ADVANCED USERS: INSPECT, DEBUG, ANALYZE WEB PAGES (OPTIONAL)

ALL BROWSERS LET YOU ACCESS WEBSITES, BUT SOME FOCUS ON SPEED (CHROME, EDGE), OTHERS ON PRIVACY (FIREFOX, BRAVE, TOR), AND SOME ON SYSTEM INTEGRATION (SAFARI FOR APPLE USERS). TRY A FEW TO SEE WHICH WORKS BEST FOR YOU.

1.2.4 SOME POPULAR BROWSER VARIANTS

BROWSER:	NOTE:
GOOGLE CHROME	MOST POPULAR, FAST, GOOGLE-LINKED
MOZILLA FIREFOX	OPEN-SOURCE, PRIVACY-FOCUSED
SAFARI	DEFAULT ON APPLE DEVICES
MICROSOFT EDGE	BUILT INTO WINDOWS, CHROMIUM-BASED
BRAVE	AD-BLOCKING, REWARDS-BASED, PRIVACY STRONG
TOR BROWSER	USED FOR DEEP PRIVACY & DARK WEB ACCESS

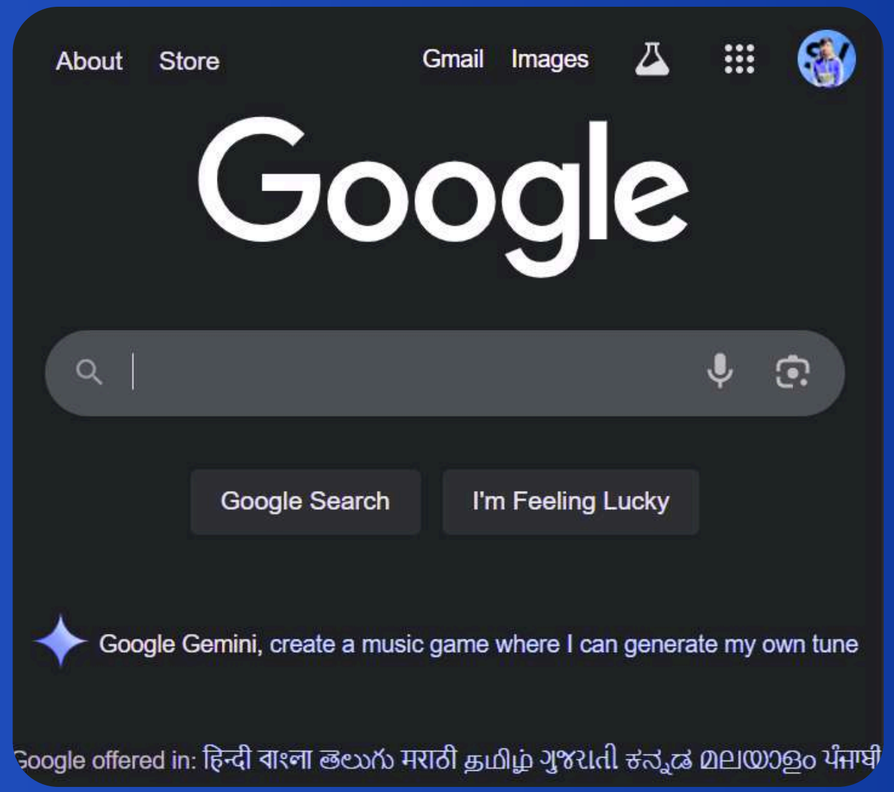
1.3.1 WHAT IS A SEARCH ENGINE?

A **SEARCH ENGINE** IS A TOOL OR SOFTWARE THAT HELPS USERS FIND INFORMATION ON THE INTERNET BY TYPING KEYWORDS OR QUESTIONS.

IT WORKS BY:

- SCANNING THE WEB
- INDEXING PAGES
- SHOWING RESULTS RANKED BY RELEVANCE

EXAMPLES: GOOGLE, BING, YAHOO, DUCKDUCKGO



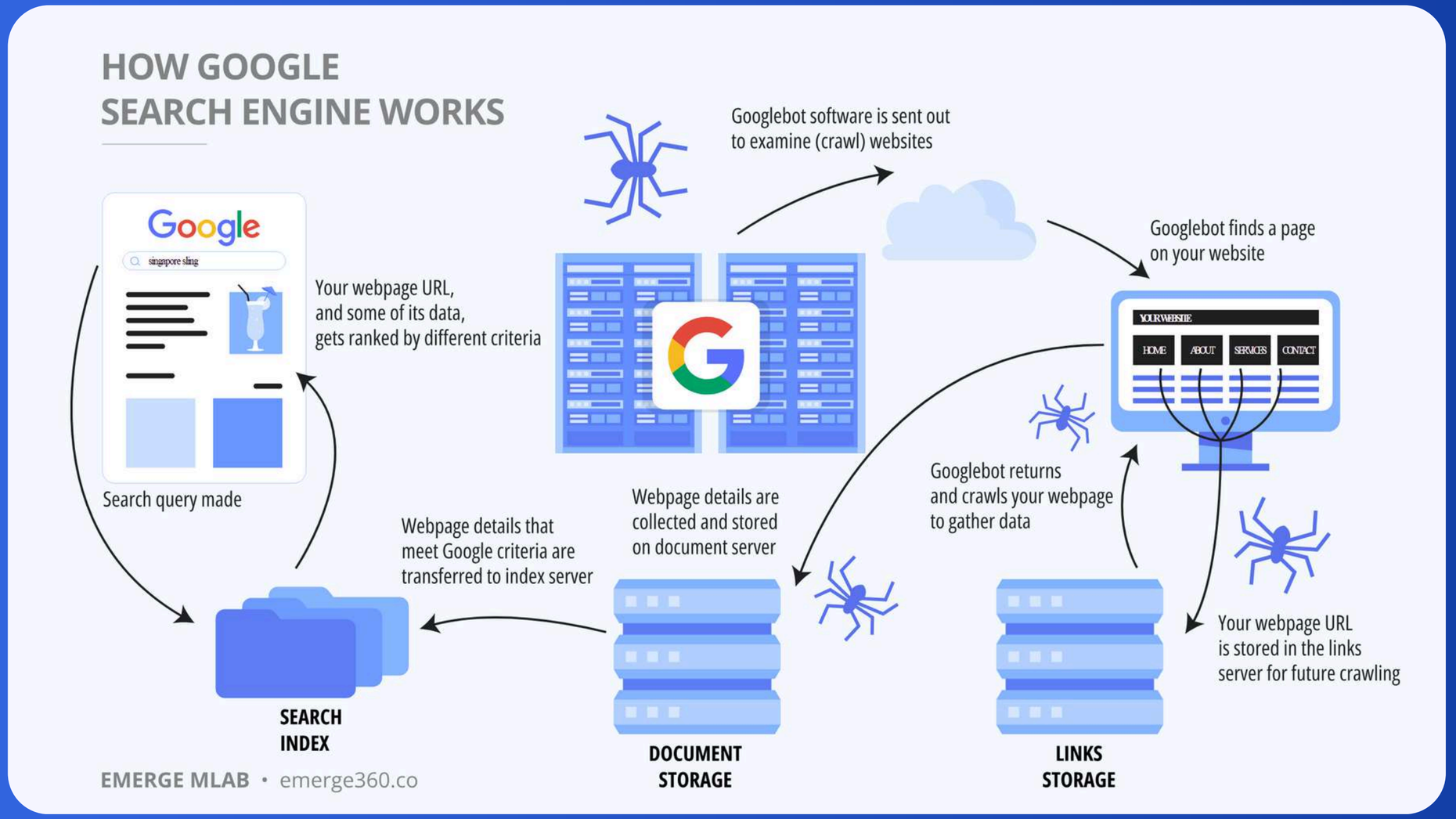
REAL-LIFE USE CASES

- 🔍 SEARCHING FOR RECIPES, FACTS, TUTORIALS
- 🎓 FINDING COLLEGES, SCHOLARSHIPS, ONLINE COURSES
- 🛒 COMPARING PRICES BEFORE SHOPPING
- 📷 REVERSE IMAGE SEARCH
- 📍 LOOKING UP MAPS, NEWS, OR TRANSLATIONS

THESE ARE NOT APPS—
THEY'RE TOOLS THAT HELP YOU FIND APPS, SITES, OR CONTENT.

"A SEARCH ENGINE IS LIKE A LIBRARIAN OF THE INTERNET 📚
YOU ASK IT A QUESTION, AND IT FETCHES THE MOST RELEVANT BOOK/PAGE"

BROWSER:	NOTE:
INFORMATIONAL	"WHAT IS CLOUD COMPUTING?" — TO LEARN OR UNDERSTAND
NAVIGATIONAL	"YOUTUBE LOGIN" — TO GO TO A SPECIFIC SITE
TRANSACTIONAL	"BUY WIRELESS MOUSE ONLINE" — TO MAKE A PURCHASE OR PERFORM A TASK
IMAGE SEARCH	REVERSE SEARCH AN IMAGE ON GOOGLE
VOICE SEARCH	ASK VIA GOOGLE ASSISTANT: “WHAT’S THE WEATHER TODAY?”
LOCATION-BASED SEARCH	"RESTAURANTS NEAR ME" — RESULTS BASED ON GPS OR IP LOCATION


HOW GOOGLE
SEARCH ENGINE WORKS
Googlebot software is sent out
to examine (crawl) websites
Googlebot finds a page
on your website
YOUR WEBSITE
HOME
ABOUT
SERVICES
CONTACT
Google
singapore sling
Your webpage URL,
and some of its data,
gets ranked by different criteria
Search query made
Webpage details are
collected and stored
on document server
Webpage details that
meet Google criteria are
transferred to index server
Googlebot returns
and crawls your webpage
to gather data
Your webpage URL
is stored in the links
server for future crawling
SEARCH
INDEX
DOCUMENT
STORAGE
LINKS
STORAGE
EMERGE MLAB • emerge360.co

🔤 OPERATOR / SYMBOL	🧠 WHAT IT DOES (WITH EXAMPLE)
""	SEARCH EXACT PHRASE → "CLIMATE CHANGE EFFECTS"
SITE:	SEARCH ONLY WITHIN A SPECIFIC WEBSITE → SITE:GOV.IN SCHOLARSHIPS
FILETYPE:	FIND SPECIFIC FILE TYPES → FILETYPE:PDF PYTHON NOTES
-	EXCLUDE A WORD → APPLE -FRUIT
OR	SEARCH FOR EITHER → COLLEGE OR UNIVERSITY ADMISSIONS
RELATED:	FIND SIMILAR WEBSITES → RELATED:YOUTUBE.COM
DEFINE:	GET DEFINITIONS → DEFINE:AI
*	WILDCARD → HOW TO * A WEBSITE (GOOGLE FILLS THE BLANK)

💡 ***USE ADVANCED SEARCH (CLICK SETTINGS > ADVANCED SEARCH ON GOOGLE) TO FILTER BY LANGUAGE, REGION, LAST UPDATED DATE, ETC.***

WHAT IS DIGITAL INDIA?

🇮🇳 DIGITAL INDIA IS A GOVERNMENT OF INDIA CAMPAIGN LAUNCHED IN 2015 TO TRANSFORM INDIA INTO A DIGITALLY EMPOWERED SOCIETY AND KNOWLEDGE ECONOMY.

KEY OBJECTIVES:

📶 PROVIDE HIGH-SPEED INTERNET IN RURAL AREAS

📱 INCREASE ACCESS TO DIGITAL SERVICES FOR EVERY CITIZEN

💳 PROMOTE CASHLESS ECONOMY AND DIGITAL PAYMENTS

🏛️ IMPROVE E-GOVERNANCE AND ONLINE SERVICE DELIVERY

👨‍💻 EMPOWER YOUTH WITH DIGITAL SKILLS AND JOBS

Digital India
Power To Empower

USE CASES AND THEIR IMPACTS:

- AADHAAR + MOBILE + JAN DHAN (JAM) - EASY KYC, BANK ACCESS, DIRECT BENEFITS
- UMANG APP - ACCESS 100+ GOVT SERVICES IN ONE APP
- DIGILOCKER - STORE YOUR CERTIFICATES ONLINE SAFELY
- ONLINE EDUCATION PLATFORMS - FREE SKILL TRAINING (SWAYAM, DIKSHA)
- UPI PAYMENTS - DIGITAL PAYMENTS, EVEN IN VILLAGES

1.4.2 PILLARS OF DIGITAL INDIA

BROADBAND HIGHWAY

INTERNET INFRASTRUCTURE IN RURAL AND URBAN AREAS

UNIVERSAL ACCESS TO MOBILE CONNECTIVITY

NETWORK ACCESS IN REMOTE & UNDERSERVED REGIONS

PUBLIC INTERNET ACCESS PROGRAMME

COMMON SERVICE CENTRES (CSCS), POST OFFICES AS DIGITAL ACCESS POINTS

E-GOVERNANCE

REFORMING GOVERNMENT PROCESSES THROUGH TECHNOLOGY

E-KRANTI (ELECTRONIC DELIVERY OF SERVICES)

PROVIDING GOVERNMENT SERVICES ELECTRONICALLY

INFORMATION FOR ALL

OPEN DATA, DIGITAL PLATFORMS FOR TRANSPARENCY

ELECTRONICS MANUFACTURING

PROMOTE MAKE-IN-INDIA FOR DIGITAL HARDWARE

IT FOR JOBS

TRAINING YOUTH IN IT AND DIGITAL SKILLS

EARLY HARVEST PROGRAMMES

SHORT-TERM QUICK-WIN PROJECTS (E.G., WI-FI IN UNIVERSITIES)

🟦 STATE PORTALS

STATE PORTALS ARE OFFICIAL GOVERNMENT WEBSITES PROVIDING ACCESS TO PUBLIC SERVICES, SCHEMES, AND INFORMATION RELATED TO THAT PARTICULAR STATE.

🔑 FEATURES:

- APPLY FOR CERTIFICATES
  - (CASTE, INCOME, DOMICILE)
- PAY UTILITY BILLS, TAXES
- TRACK APPLICATIONS AND COMPLAINTS
- DOWNLOAD DOCUMENTS
- JOB UPDATES AND EDUCATION INFO

✅ EXAMPLE:

HTTPS://WWW.ODISHA.GOV.IN
HTTPS://RAJASTHAN.GOV.IN

🟩 COLLEGE PORTALS

COLLEGE PORTALS ARE PLATFORMS FOR STUDENTS TO ACCESS ACADEMIC AND ADMINISTRATIVE SERVICES DIGITALLY.

🔑 FEATURES:

- VIEW ATTENDANCE, TIMETABLE, RESULTS
- APPLY FOR SCHOLARSHIPS, LEAVE
- COURSE MATERIALS & NOTICES
- FEE PAYMENT, EXAM FORMS

✅ EXAMPLE:

HTTPS://HTE.RAJASTHAN.GOV.IN/COLLEGE/GPCBARMER/HOME

💻 WHAT IS A COMPUTER SYSTEM?

A COMPUTER SYSTEM IS A COMBINATION OF HARDWARE AND SOFTWARE THAT WORKS TOGETHER TO PERFORM DATA PROCESSING TASKS.
IT RECEIVES INPUT, PROCESSES IT, STORES DATA, AND DELIVERS OUTPUT.

🔹 FOUR BASIC COMPONENTS:

COMPONENT	FUNCTION
INPUT UNIT	RECEIVES DATA FROM THE USER (E.G., KEYBOARD, MOUSE)
PROCESSING UNIT (CPU)	PROCESSES THE DATA AS PER INSTRUCTIONS
MEMORY/STORAGE UNIT	STORES DATA TEMPORARILY OR PERMANENTLY
OUTPUT UNIT	DISPLAYS THE RESULT TO THE USER (E.G., MONITOR, PRINTER)

FUNCTIONAL CYCLE

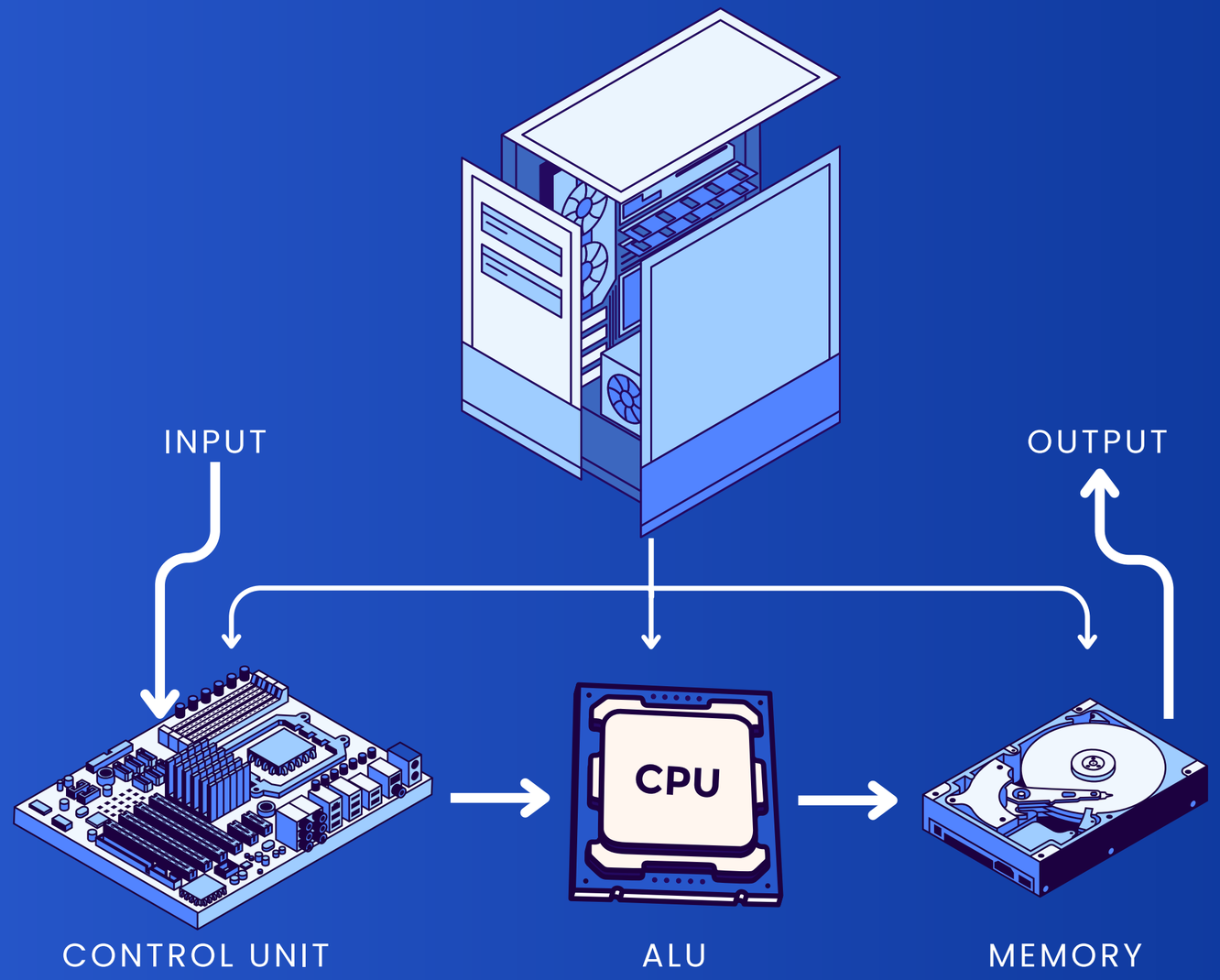
[INPUT DEVICES] -> [CPU + MEMORY] -> [OUTPUT DEVICES]
[PROCESSING & STORAGE]

WHAT IS A CPU?

THE CPU (CENTRAL PROCESSING UNIT) IS THE BRAIN OF THE COMPUTER.
IT FETCHES, DECODES, PROCESSES, AND EXECUTES INSTRUCTIONS TO PERFORM TASKS.

KEY OBJECTIVES:

- CONTROL UNIT (CU):
  - DIRECTS OPERATIONS INSIDE THE COMPUTER. IT TELLS MEMORY, ALU, AND INPUT/OUTPUT DEVICES WHAT TO DO.
- ARITHMETIC LOGIC UNIT (ALU):
  - HANDLES ALL ARITHMETIC (E.G., +, -) AND LOGICAL (E.G., >, ==) OPERATIONS.
- MEMORY UNIT:
  - TEMPORARILY STORES DATA AND INSTRUCTIONS DURING EXECUTION.
- MICROPROCESSOR:
  - A SILICON CHIP WITH ALU, REGISTER CIRCUITS AND CONTROL CIRCUITS.



MEMORY IN A COMPUTER SYSTEM

COMPUTER MEMORY STORES DATA TEMPORARILY OR PERMANENTLY SO THE CPU CAN ACCESS AND PROCESS IT.

🟩 1. PRIMARY MEMORY (MAIN MEMORY)

TYPE	DESCRIPTION
RAM (RANDOM ACCESS MEMORY)	TEMPORARY, FAST, VOLATILE. STORES ACTIVE DATA & PROGRAMS. GETS CLEARED WHEN POWER IS OFF.
ROM (READ-ONLY MEMORY)	PERMANENT, NON-VOLATILE. STORES STARTUP INSTRUCTIONS (FIRMWARE). CANNOT BE MODIFIED EASILY.

🟨 2. SECONDARY MEMORY (NON VOLATILE STORAGE)

TYPE	DESCRIPTION
HDD (HARD DISK DRIVE)	MECHANICAL, LARGER STORAGE, SLOWER
SSD (SOLID STATE DRIVE)	FASTER, NO MOVING PARTS, MORE RELIABLE
OTHERS	USB DRIVES, CDS, DVDS, MEMORY CARDS

WHAT ARE THE DISPLAY DEVICES?

DISPLAY DEVICES ARE OUTPUT UNITS THAT SHOW PROCESSED DATA TO THE USER AS VISUAL INFORMATION—TEXT, IMAGES, VIDEOS, GUIS, ETC.

🔸 TYPES OF DISPLAYS:

TYPE	DESCRIPTION
CRT (CATHODE RAY TUBE)	BULKY, OUTDATED MONITORS USED EARLIER. DEEP, HEAVY DESIGN.
LCD (LIQUID CRYSTAL DISPLAY)	FLAT-PANEL DISPLAY, USES BACKLIGHT. COMMON IN MONITORS, TVS.
LED (LIGHT EMITTING DIODE)	ADVANCED VERSION OF LCD WITH BETTER BRIGHTNESS, CONTRAST.
OLED/QLED	HIGH-END DISPLAY TECH USED IN MODERN TVS AND PHONES.
TOUCHSCREEN DISPLAYS	ACT AS INPUT + OUTPUT. FOUND IN MOBILES, ATMS, KIOSKS.

✅ USE-CASES:

- WATCHING VIDEOS
- CODING/WORKING
- GAMING
- INTERACTIVE LEARNING (SMART BOARDS)

📏 SCREEN SIZE IS MEASURED DIAGONALLY IN INCHES 🎯 HIGHER RESOLUTION = CLEARER VISUALS

WHAT IS A KEYBOARD?

A KEYBOARD IS AN INPUT DEVICE THAT ALLOWS USERS TO TYPE LETTERS, NUMBERS, AND SYMBOLS INTO THE COMPUTER SYSTEM.
USED FOR WRITING DOCUMENTS, CODING, NAVIGATION, AND SYSTEM SHORTCUTS.

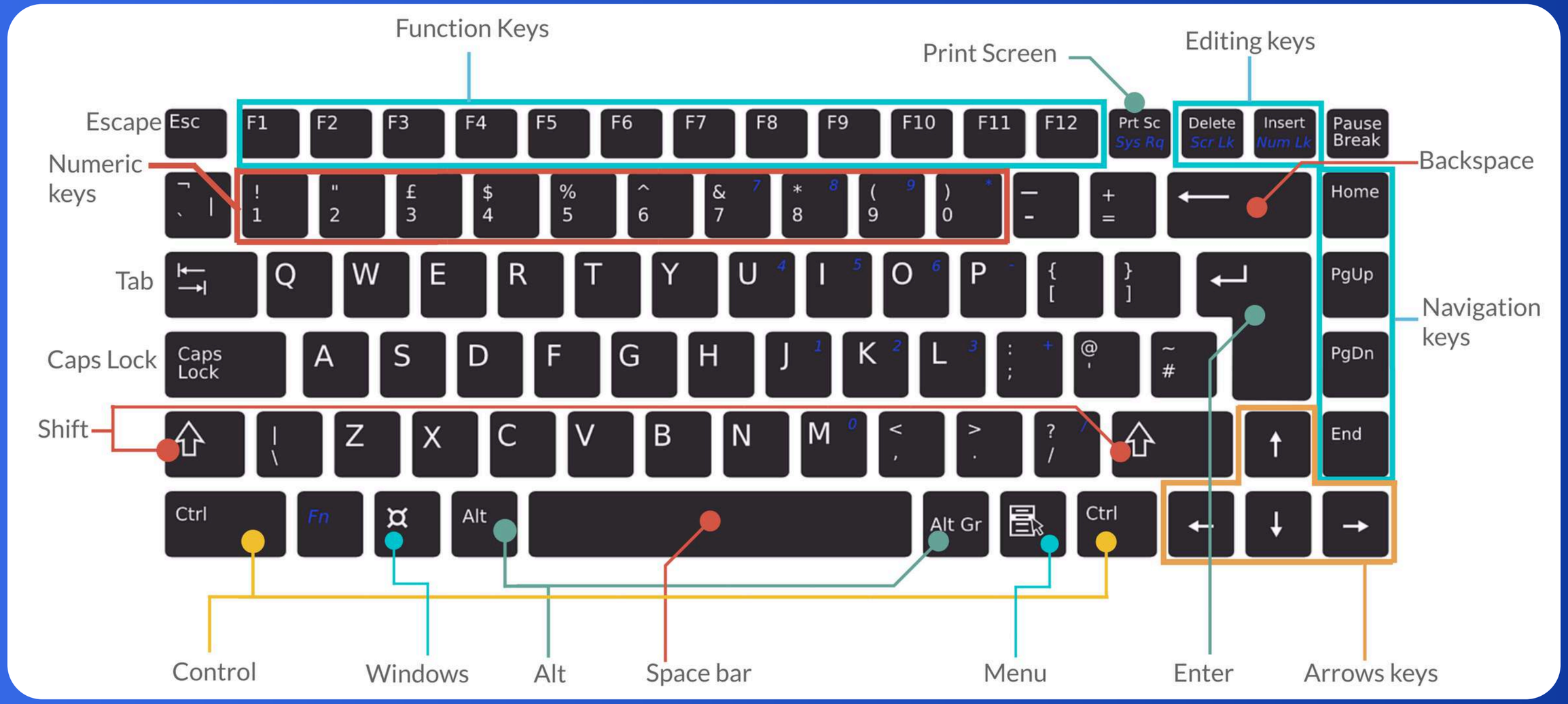
KEY TYPES / SECTIONS

KEY GROUP	USE
ALPHANUMERIC KEYS	A–Z, 0–9 — MAIN TYPING AREA
FUNCTION KEYS	F1 TO F12 — SHORTCUT FUNCTIONS
CONTROL KEYS	CTRL, ALT, ESC, WINDOWS — MODIFIER/COMMAND
NAVIGATION KEYS	ARROWS, HOME, END, PAGE UP/DOWN
NUMERIC KEYPAD	CALCULATOR-LIKE LAYOUT ON RIGHT SIDE
SPECIAL KEYS	ENTER, BACKSPACE, SHIFT, CAPS LOCK, TAB, SPACEBAR

TYPES OF KEYBOARDS BASED ON TYPE FEATURE

- STANDARD (WIRED) TRADITIONAL QWERTY LAYOUT
- MULTIMEDIA EXTRA KEYS FOR VOLUME, PLAY/PAUSE, ETC.
- WIRELESS/BLUETOOTH NO CABLE, BATTERY OPERATED
- MECHANICAL TACTILE FEEDBACK, GAMING
- MEMBRANE = SOFTER KEYS, GENERAL USE

THE QWERTY LAYOUT WAS DESIGNED TO SLOW DOWN TYPING ON TYPEWRITERS TO PREVENT KEY JAMS!


Function Keys
Print Screen
Editing keys
Escape
Numeric keys
Backspace
Tab
Caps Lock
Shift
Navigation keys
Control
Windows
Alt
Space bar
Menu
Enter
Arrows keys
Esc
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
F11
F12
Prt Sc
Sys Rq
Delete
Scr Lk
Insert
Num Lk
Pause Break
Home
PgUp
PgDn
End
Caps Lock
Ctrl
Fn
Alt
Alt Gr
Ctrl

🖱️ WHAT IS A MOUSE?

A HDD IS A TRADITIONAL MECHANICAL STORAGE DEVICE THAT STORES DATA ON SPINNING MAGNETIC DISKS.
✅ COMMON IN OLDER LAPTOPS/DESKTOPS
🛠️ SLOWER BUT CHEAPER

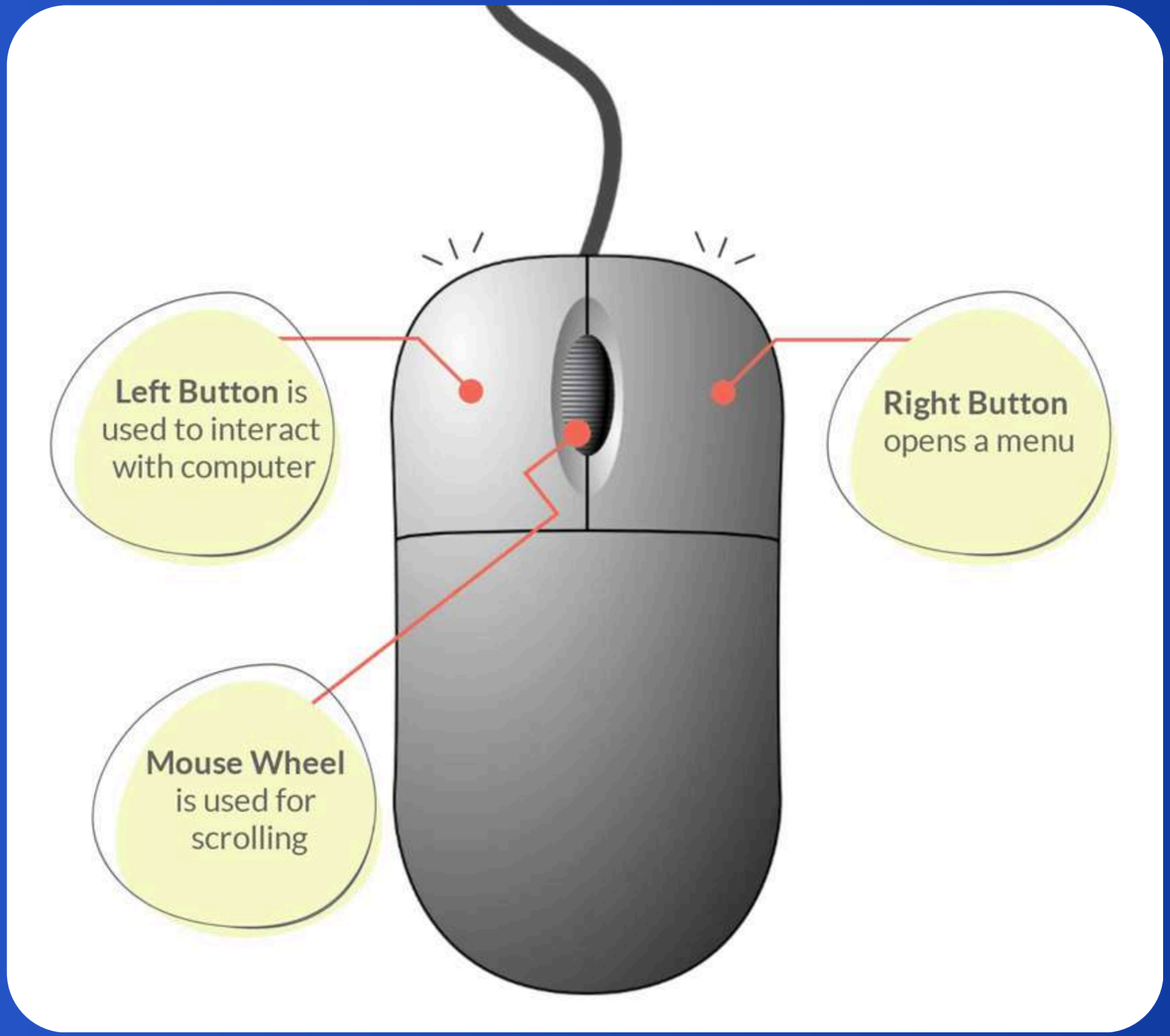
🔹 KEY TYPES / SECTIONS

KEY GROUP	USE
MECHANICAL MOUSE	USES ROLLING BALL — OUTDATED
OPTICAL MOUSE	USES LIGHT SENSORS — MOST COMMON TODAY
LASER MOUSE	WORKS ON MORE SURFACES, HIGHER PRECISION
WIRELESS MOUSE	USES BLUETOOTH OR USB RECEIVER
TRACKPAD/TOUCHPAD	FOUND ON LAPTOPS, NO EXTERNAL MOUSE NEEDED

✅ USE A MOUSEPAD TO IMPROVE PRECISION AND REDUCE WEAR ON SURFACES.
ADD IMAGE FOR CLICKS AND ALL OF MOUSE

🧠 Common Uses & Functions:

Action	What It Does
Left Click	Select, open, drag
Double Click	Open files/folders
Right Click	Show options menu
Scroll Wheel	Scroll up/down pages
Drag & Drop	Move or copy items

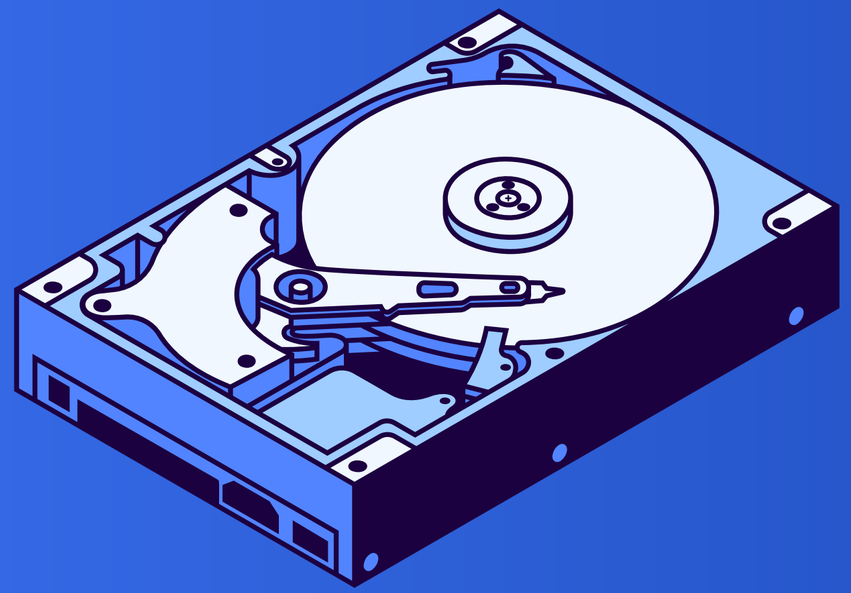


💾 WHAT IS A HARD DISK DRIVE (HDD)?

A MOUSE IS AN INPUT DEVICE USED TO CONTROL THE CURSOR/POINTER ON THE SCREEN. IT ENABLES CLICKING, DRAGGING, SELECTING, AND NAVIGATING GRAPHICAL INTERFACES (GUIS).

⚡ WHAT IS A SOLID STATE DRIVE (SSD)?

A SSD IS A NEWER TYPE OF STORAGE DEVICE WITH NO MOVING PARTS, USING FLASH MEMORY TO STORE DATA.
✅ USED IN MODERN PCS AND SMARTPHONES
🚀 FASTER, QUIETER, MORE POWER-EFFICIENT



🔍 HDD VS SSD – COMPARISON TABLE:

KEY GROUP	USE	USE
SPEED	SLOWER	MUCH FASTER (BOOT/APPS)
DURABILITY	MOVING PARTS, PRONE TO DAMAGE	NO MOVING PARTS, SHOCKPROOF
NOISE	AUDIBLE SPINNING SOUND	SILENT
POWER USAGE	HIGHER	LOWER
COST PER GB	CHEAPER	MORE EXPENSIVE
STORAGE CAPACITY	UP TO 10TB+	TYPICALLY 256GB–2TB
IDEAL FOR	BULK STORAGE, BACKUPS	OS, GAMING, SPEED TASKS

💡 **USE BOTH: SSD FOR SYSTEM SPEED (OS, APPS), HDD FOR BULK STORAGE (MOVIES, BACKUPS)**

1.13 OTHER PERIPHERAL DEVICES

PERIPHERAL DEVICES ARE ADDITIONAL HARDWARE COMPONENTS THAT HELP A COMPUTER SYSTEM INTERACT WITH THE USER AND THE OUTSIDE WORLD. THESE ARE GENERALLY CLASSIFIED INTO THREE CATEGORIES: INPUT, OUTPUT, AND STORAGE DEVICES.

INPUT DEVICES ARE USED TO SEND DATA INTO THE COMPUTER. COMMON EXAMPLES INCLUDE

- SCANNERS (TO DIGITIZE PHYSICAL DOCUMENTS)
- WEBCAMS (FOR VIDEO INPUT)
- MICROPHONES (FOR VOICE RECORDING)
- GAME CONTROLLERS OR JOYSTICKS (USED IN GAMING)
- BARCODE READERS (USED IN RETAIL FOR SCANNING ITEMS).
- TOUCHSCREENS, FOUND IN SMARTPHONES AND ATMS, ALSO SERVE AS BOTH INPUT AND OUTPUT DEVICES.

OUTPUT DEVICES DISPLAY OR PRODUCE THE RESULTS OF PROCESSED DATA. THESE INCLUDE

- PRINTERS (TO GET PHYSICAL COPIES OF DOCUMENTS)
- SPEAKERS (TO PLAY AUDIO)
- PROJECTORS (TO DISPLAY VISUALS ON A LARGE SCREEN FOR PRESENTATIONS)
- PLOTTERS ARE SPECIALIZED OUTPUT DEVICES USED TO DRAW LARGE-SCALE ENGINEERING DIAGRAMS
- WHILE MONITORS (PREVIOUSLY DISCUSSED) ARE THE MOST COMMON OUTPUT HARDWARE.

STORAGE DEVICES HELP IN SAVING DATA PERMANENTLY OR TEMPORARILY. WIDELY USED STORAGE DEVICES INCLUDE USB PEN DRIVES, MEMORY CARDS IN MOBILE DEVICES AND CAMERAS, EXTERNAL HARD DRIVES FOR BACKUPS, AND OLDER OPTICAL STORAGE LIKE CDS AND DVDS (NOW RARELY USED).

UNIT - 2

OPERATING SYSTEMS

THE BRAIN BEHIND THE MACHINE

MADE BY STELLA KUJUR

UNIT OVERVIEW

AN OPERATING SYSTEM (OS) IS THE ESSENTIAL SYSTEM SOFTWARE THAT ACTS AS A BRIDGE BETWEEN THE USER AND THE COMPUTER HARDWARE. IT MANAGES RESOURCES, CONTROLS DEVICES, AND PROVIDES A USER INTERFACE FOR SMOOTH INTERACTION.

THIS UNIT FOCUSES ON:

- UNDERSTANDING DIFFERENT OS TYPES AND THEIR PRACTICAL INSTALLATIONS (LINUX & WINDOWS)
- BASICS OF THE UNIX SHELL AND COMMANDS
- HANDS-ON EDITING USING THE VI EDITOR

THROUGH THIS, STUDENTS WILL LEARN TO INTERACT WITH OPERATING SYSTEMS CONFIDENTLY, UNDERSTAND SYSTEM PROCESSES, FILE STRUCTURES, AND GET COMFORTABLE WITH COMMAND-LINE ENVIRONMENTS — CRUCIAL SKILLS FOR IT CAREERS.

WHAT YOU'LL LEARN

- OS TYPES (LINUX, WINDOWS, UNIX)
- INSTALLATION PROCESS (PRACTICALS)
- SHELL & COMMANDS
- FILE HANDLING VIA CLI (COMMAND LINE INTERFACE)
- VI EDITOR FOR FILE EDITING IN TERMINAL

[USER] ↔ [OS] ↔ [HARDWARE]

POPULAR OPERATING SYSTEM VARIANTS

OPERATING SYSTEMS COME IN MANY TYPES, EACH DESIGNED FOR SPECIFIC USERS AND DEVICES. SOME ARE OPEN-SOURCE AND CUSTOMIZABLE, WHILE OTHERS ARE PROPRIETARY AND WIDELY USED FOR COMMERCIAL PURPOSES.

1. WINDOWS OS:
DEVELOPED BY MICROSOFT, IT IS THE MOST COMMONLY USED OS IN PERSONAL COMPUTERS. KNOWN FOR ITS USER-FRIENDLY INTERFACE, LARGE SOFTWARE SUPPORT, AND COMPATIBILITY WITH HARDWARE.

2. LINUX OS:
A POWERFUL OPEN-SOURCE OS WIDELY USED IN SERVERS, CLOUD ENVIRONMENTS, AND PROGRAMMING. IT IS HIGHLY SECURE, CUSTOMIZABLE, AND FREE. POPULAR DISTROS INCLUDE UBUNTU, FEDORA, AND DEBIAN.

3. MACOS:
DEVELOPED BY APPLE FOR MAC COMPUTERS. KNOWN FOR ITS SLEEK DESIGN, STRONG INTEGRATION WITH APPLE HARDWARE, AND CREATIVE TOOL SUPPORT.

4. UNIX:
AN OLDER, STABLE, AND MULTI-USER OS USED IN MANY ENTERPRISE SERVERS. FORMS THE FOUNDATION FOR LINUX AND MACOS.

5. ANDROID & IOS:
MOBILE OPERATING SYSTEMS. ANDROID (BY GOOGLE) IS OPEN-SOURCE AND WIDELY USED ON SMARTPHONES. IOS (BY APPLE) IS KNOWN FOR PERFORMANCE AND SECURITY IN APPLE DEVICES.

BEFORE YOU INSTALL – SYSTEM REQUIREMENTS

CHECKING SYSTEM REQUIREMENTS ENSURES SMOOTH INSTALLATION AND PREVENTS CRASHES OR INCOMPATIBILITY.

🐧 UBUNTU MINIMUM REQUIREMENTS:

- **PROCESSOR:** DUAL-CORE 2 GHZ
- **RAM:** 4 GB (8 GB RECOMMENDED)
- **STORAGE:** 25 GB FREE SPACE
- **USB/DVD:** BOOTABLE INSTALLATION MEDIUM
- **OTHERS:** INTERNET FOR UPDATES, UEFI/BIOS ACCESS

🪟 WINDOWS 11 MINIMUM REQUIREMENTS:

- **PROCESSOR:** 1 GHZ+ WITH 2+ CORES(64-BIT ONLY)
- **RAM:** 4 GB MINIMUM
- **STORAGE:** 64 GB
- **TPM 2.0 AND SECURE BOOT REQUIRED**
- **GRAPHICS:** DIRECTX 12 COMPATIBLE
- **DISPLAY:** 720P, >9”
- **UEFI BIOS**

BEFORE YOU INSTALL – PREPARING THE BOOTABLE USB (BOTH OS)

🛠️ WHAT YOU'LL NEED:

- 1 USB DRIVE (≥ 8 GB)
- ISO FILE OF UBUNTU / WINDOWS 11
- RUFUS / BALENA ETCHER / VENTOY FOR USB BOOTABLE SETUP
- ADMIN ACCESS TO A WORKING PC

🔧 STEPS:

1. DOWNLOAD ISO FROM OFFICIAL WEBSITE
   - UBUNTU: UBUNTU.COM
   - WINDOWS: MICROSOFT.COM/SOFTWARE-DOWNLOAD/WINDOWS11
2. PLUG USB DRIVE INTO PC
3. OPEN RUFUS OR TOOL OF CHOICE
4. SELECT ISO & USB DRIVE
5. CHOOSE PARTITION SCHEME
6. CLICK START – WAIT TILL DONE!

BEFORE YOU INSTALL – CREATING A BOOTABLE USB WITH RUFUS

STEP-BY-STEP – USING RUFUS

✅ **BEFORE YOU BEGIN:**

- ✔ DOWNLOAD RUFUS: RUFUS.IE
- ✔ PLUG IN A USB DRIVE (MIN. 8 GB)
- ✔ DOWNLOAD THE ISO FILE (UBUNTU / WINDOWS 11)

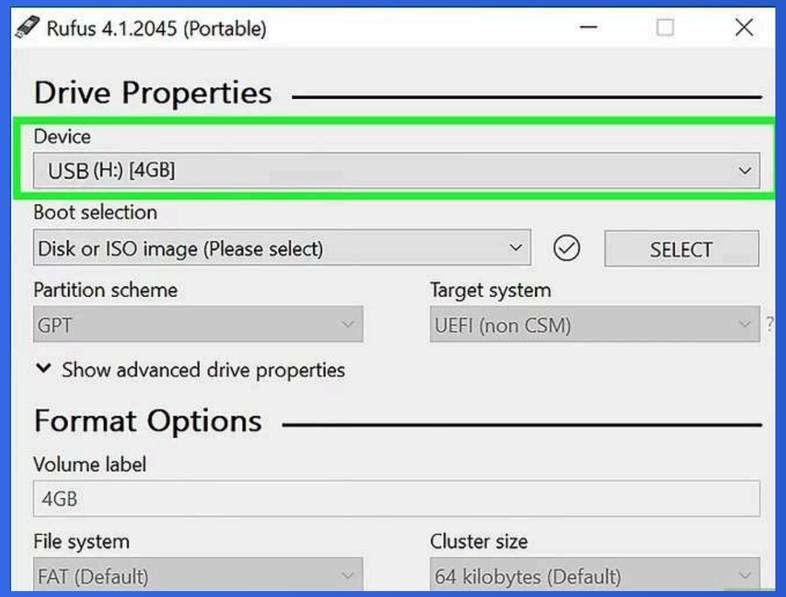
🧭 **STEPS IN RUFUS:**

DEVICE: SELECT YOUR USB DRIVE
BOOT SELECTION: CLICK “SELECT” AND CHOOSE THE .ISO FILE
PARTITION SCHEME:
◦ GPT (FOR UEFI SYSTEMS)
◦ MBR (FOR OLDER BIOS)
FILE SYSTEM: KEEP AS FAT32 (FOR UBUNTU) OR NTFS (FOR WINDOWS)
VOLUME LABEL: OPTIONAL NAME (E.G., UBUNTU22BOOT)
CLICK START → CONFIRM DATA WIPE → WAIT FOR PROGRESS BAR TO COMPLETE
WHEN DONE, YOU’LL SEE “READY” → EJECT USB SAFELY

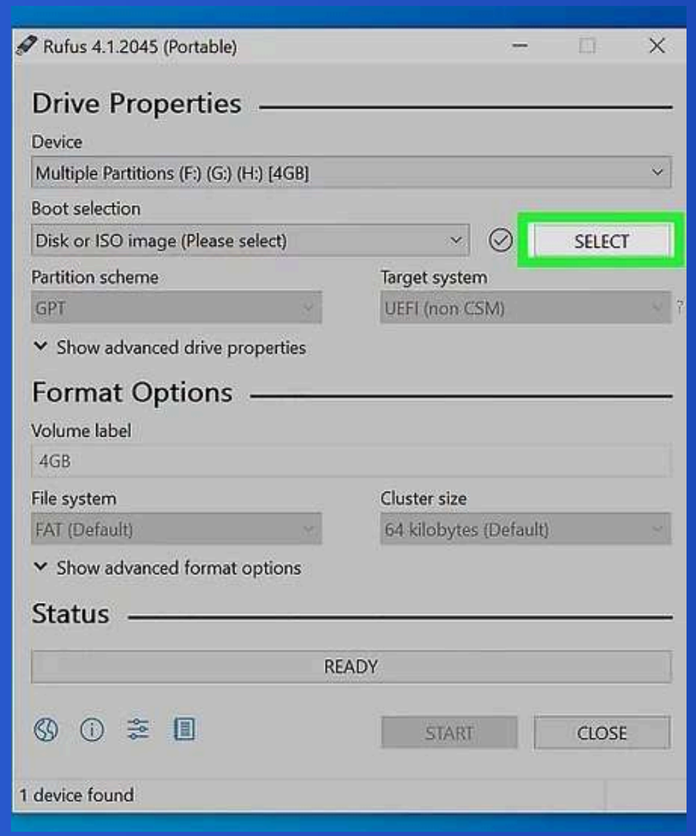
⚠️ **NOTE:**

⚠️ ALL DATA ON THE USB WILL BE ERASED. BACKUP BEFORE PROCEEDING!

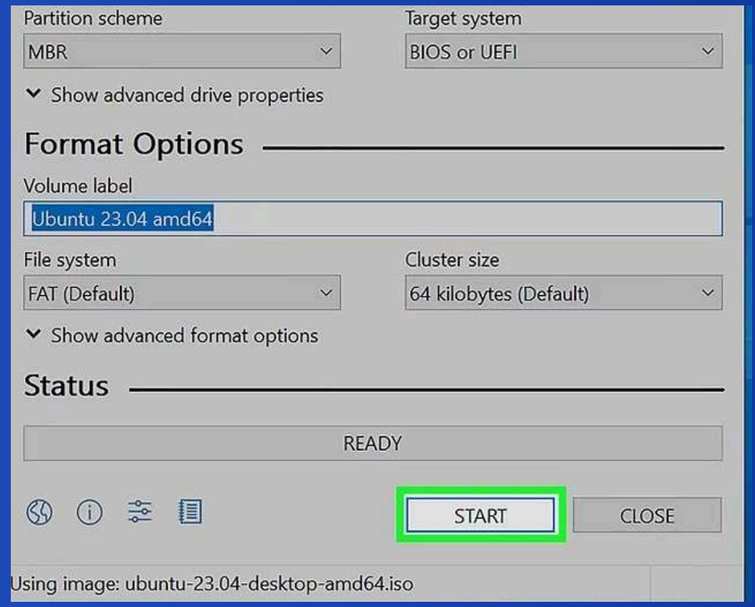
BEFORE YOU INSTALL – CREATING A BOOTABLE USB WITH RUFUS



1, 2



3, 4, 5



6, 7

BEFORE YOU INSTALL – BIOS SETUP – BOOTING FROM USB

🔑 **ENTER BIOS/UEFI MODE:**

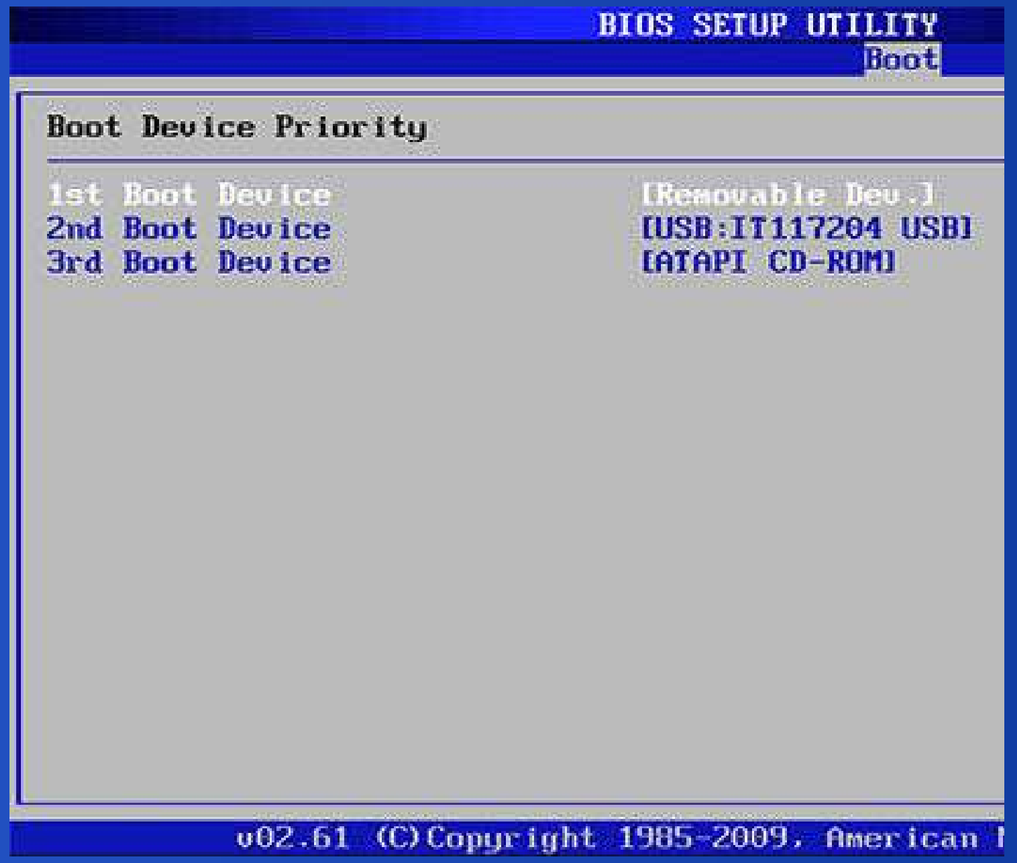
- RESTART PC → PRESS DEL, F2, ESC, OR F10 (VARIES BY BRAND)
- FIND BOOT ORDER/PRIORITY

⚙️ **SET USB AS FIRST BOOT DEVICE**

- MOVE USB DRIVE TO TOP OF LIST
- SAVE AND EXIT (F10)

💡 **TIP:**

ON SOME SYSTEMS, PRESS F12 OR F9 DURING STARTUP TO CHOOSE USB DIRECTLY (ONE-TIME BOOT MENU)



STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

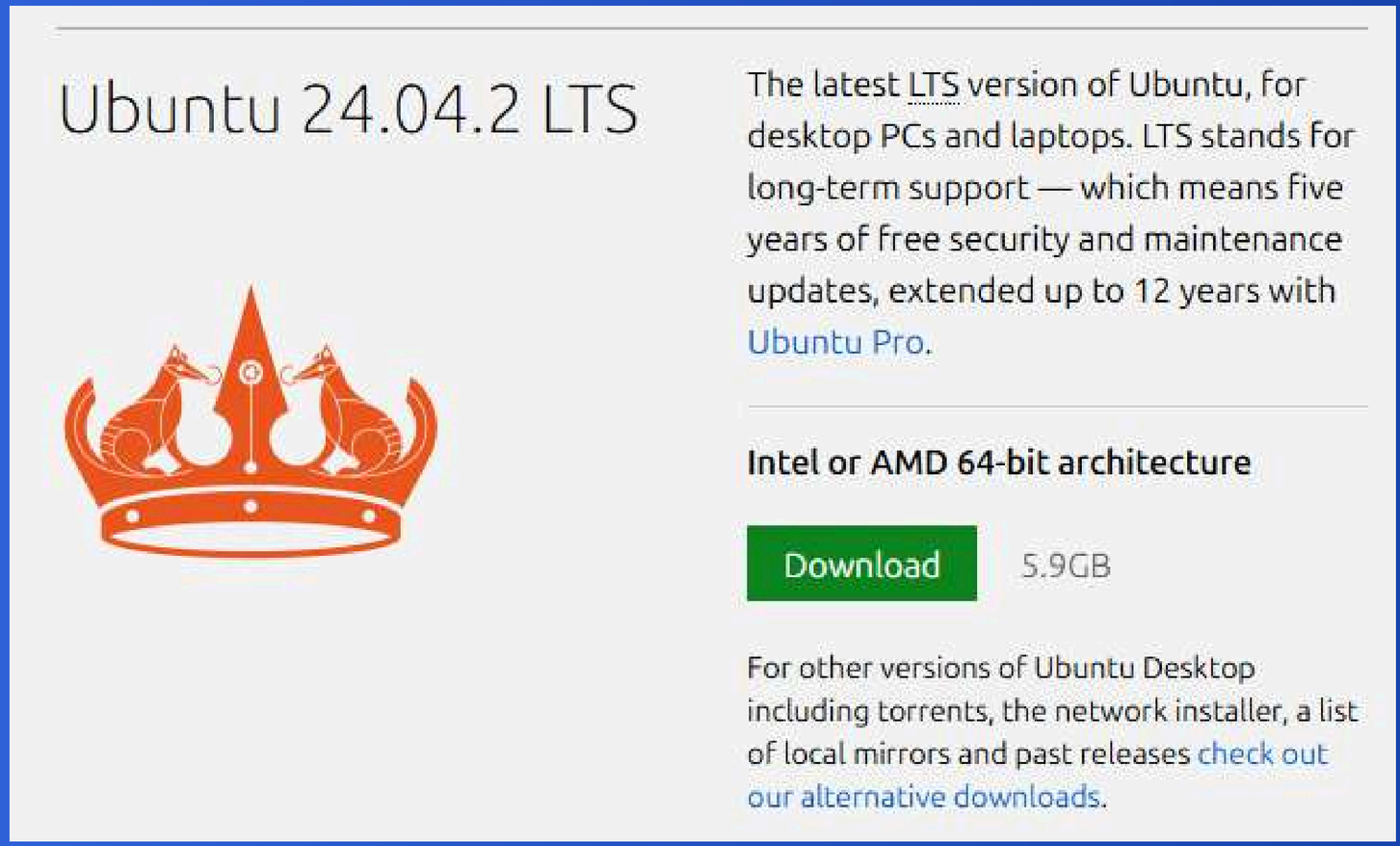
INSTALLING LINUX IS A FOUNDATIONAL SKILL FOR IT STUDENTS. THE PROCESS IS SIMPLE AND HELPS YOU UNDERSTAND SYSTEM SETUP, PARTITIONS, AND BOOTLOADERS.

- **DOWNLOAD ISO FILE**: GET THE OFFICIAL LINUX ISO FILE (E.G., FROM UBUNTU.COM)
- **CREATE BOOTABLE USB DRIVE:** USE TOOLS LIKE RUFUS (WINDOWS) OR BALENA ETCHER TO FLASH THE ISO ONTO A PEN DRIVE
- **ENTER BIOS/BOOT MENU:** RESTART PC AND PRESS KEY (F2/F12/DEL) TO OPEN BIOS OR BOOT MENU
- **BOOT FROM USB DRIVE:** SELECT THE USB DRIVE TO START THE LINUX INSTALLER
- **START INSTALLATION:** TRY UBUNTU ON YOUR PC, THEN CLICK ON INSTALL UBUNTU ON DESKTOP THEN SET UP FURTHER WITH → CHOOSE LANGUAGE, KEYBOARD LAYOUT, AND INSTALLATION TYPE (DUAL BOOT OR ERASE DISK)
- **PARTITION THE DISK:** ALLOCATE SPACE FOR / (ROOT), /HOME, AND SWAP (OPTIONAL)
- **CREATE USER ACCOUNT:** ENTER USERNAME AND PASSWORD
- **INSTALL BOOTLOADER (GRUB):** REQUIRED TO BOOT LINUX (USUALLY AUTO-SELECTED)
- **COMPLETE SETUP:** WAIT FOR INSTALLATION → REMOVE USB → REBOOT
- **LOGIN TO LINUX DESKTOP!**

💡 ***TRY INSTALLING LINUX ON A VIRTUAL MACHINE (VMWARE/VIRTUALBOX) FIRST IF YOU'RE NERVOUS***
💡 ***KEEP A BACKUP BEFORE FORMATTING OR DUAL BOOTING***

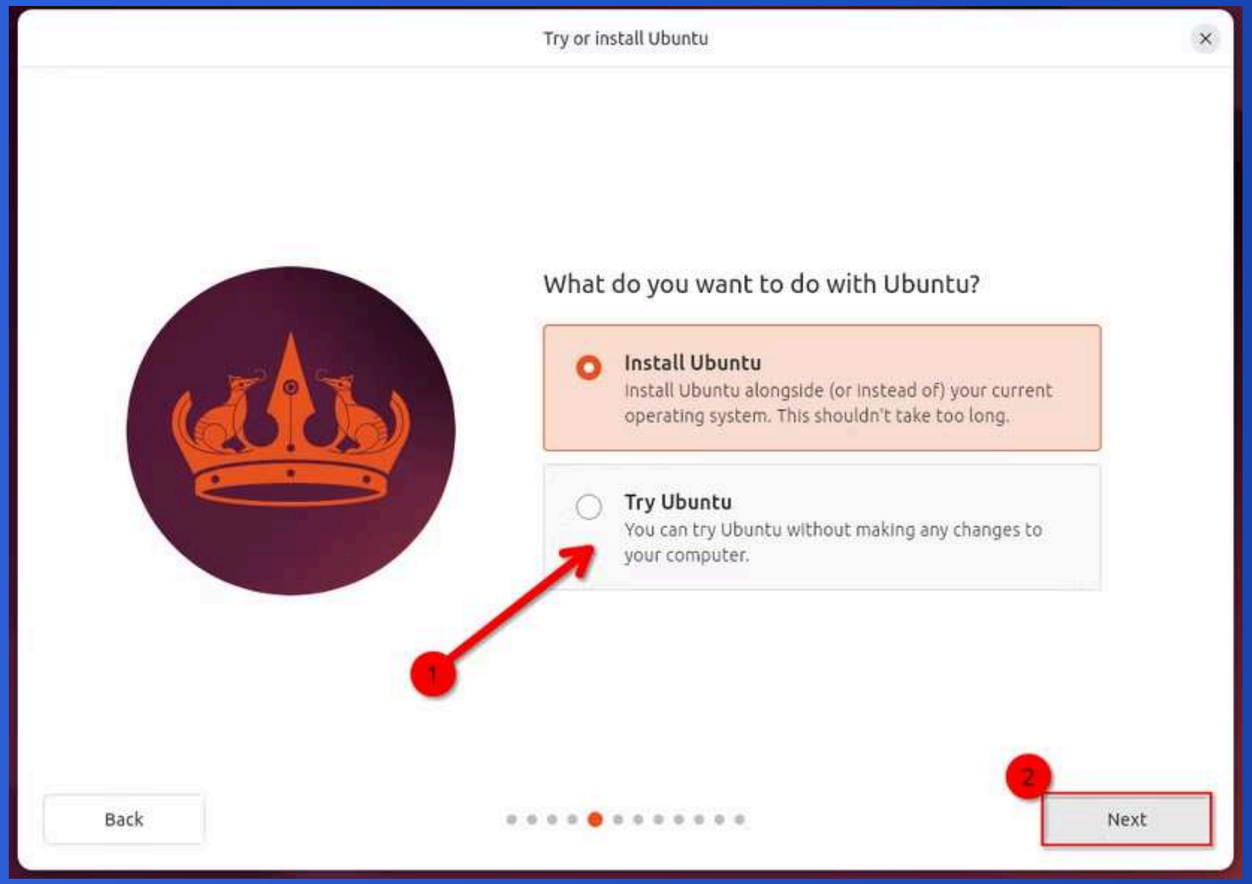
STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **DOWNLOADING ISO FILE**



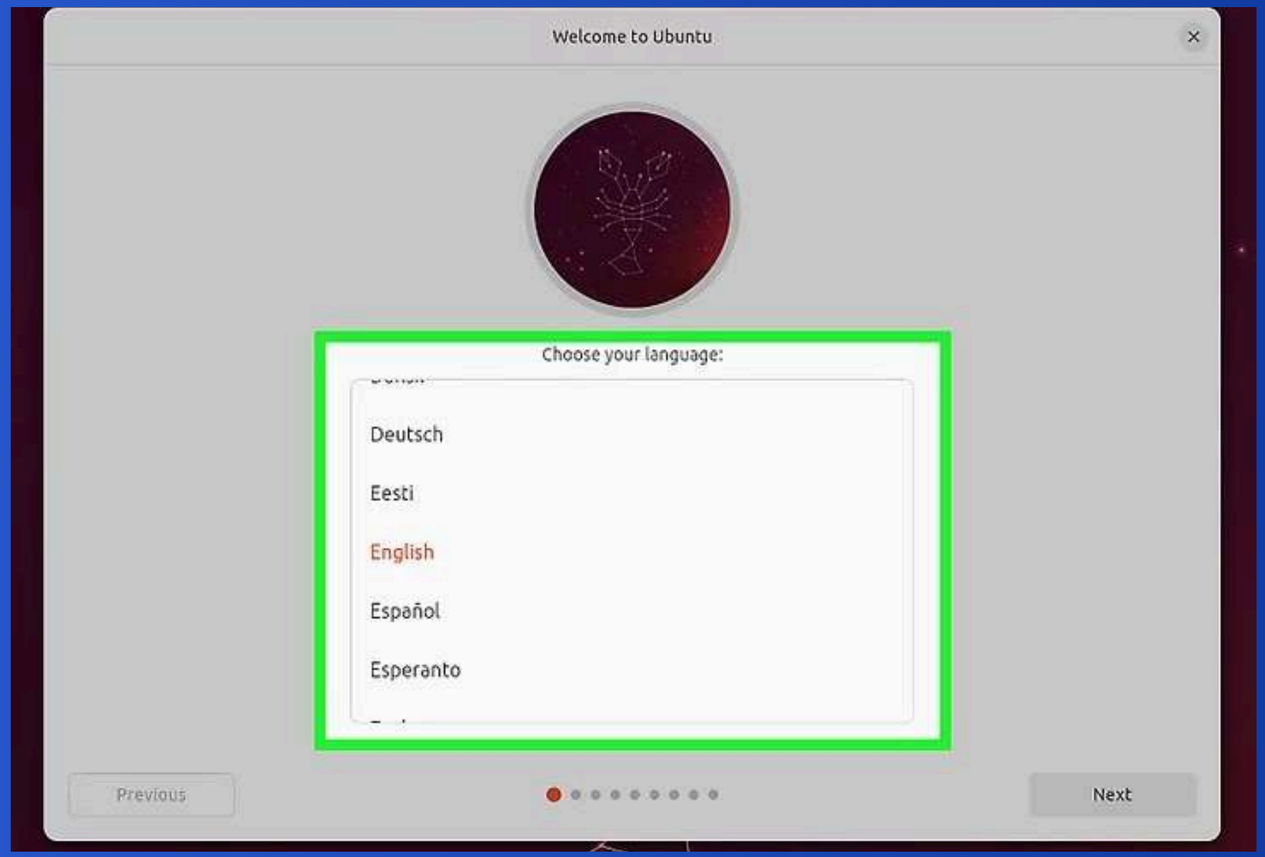
STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **TRY UBUNTU BEFORE INSTALLATION**



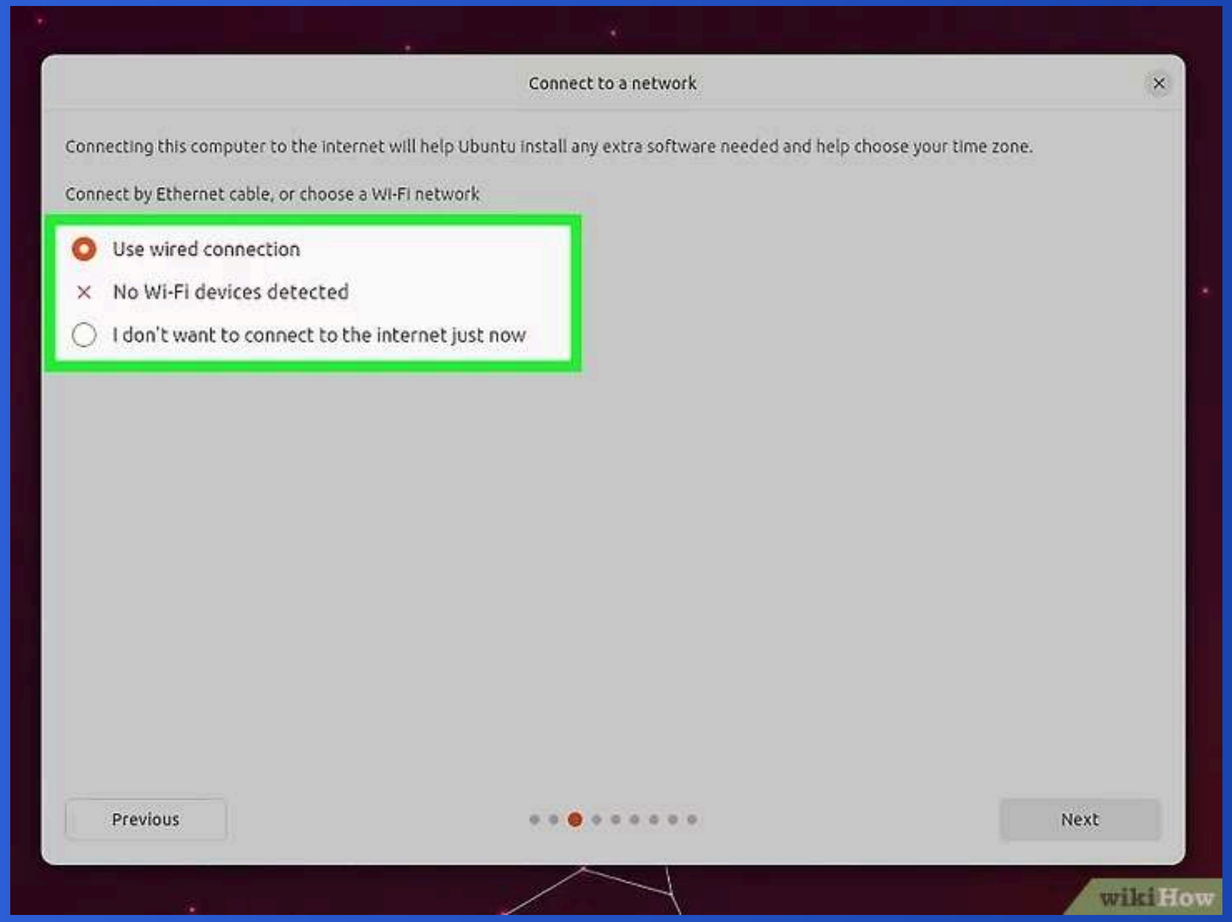
STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **INSTALLATION AND CHOOSING LANGUAGE**



STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **CONNECT INTERNET AS PER YOUR CONVENIENCE**

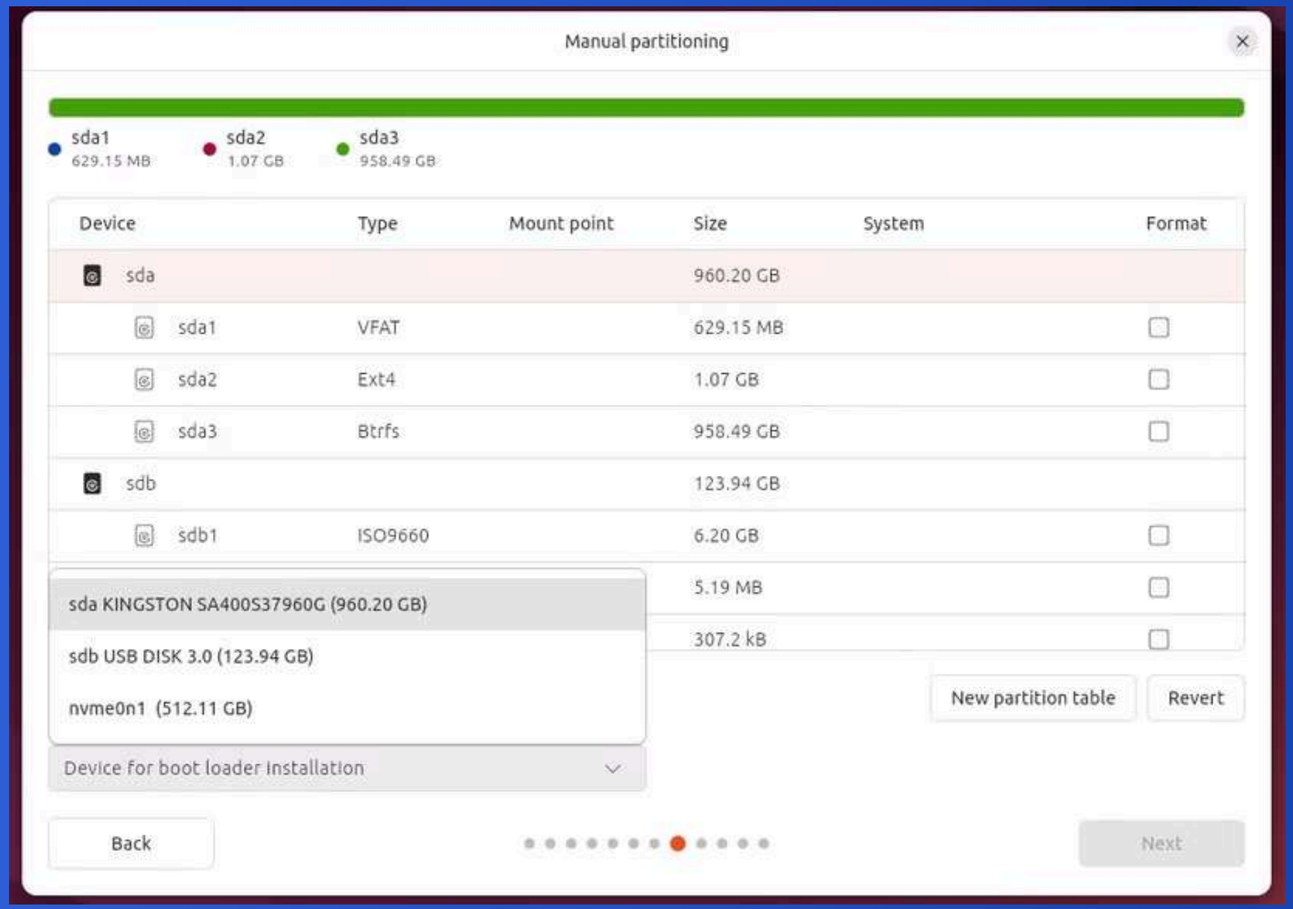


STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **CREATE USERNAME AND PASSWORD**

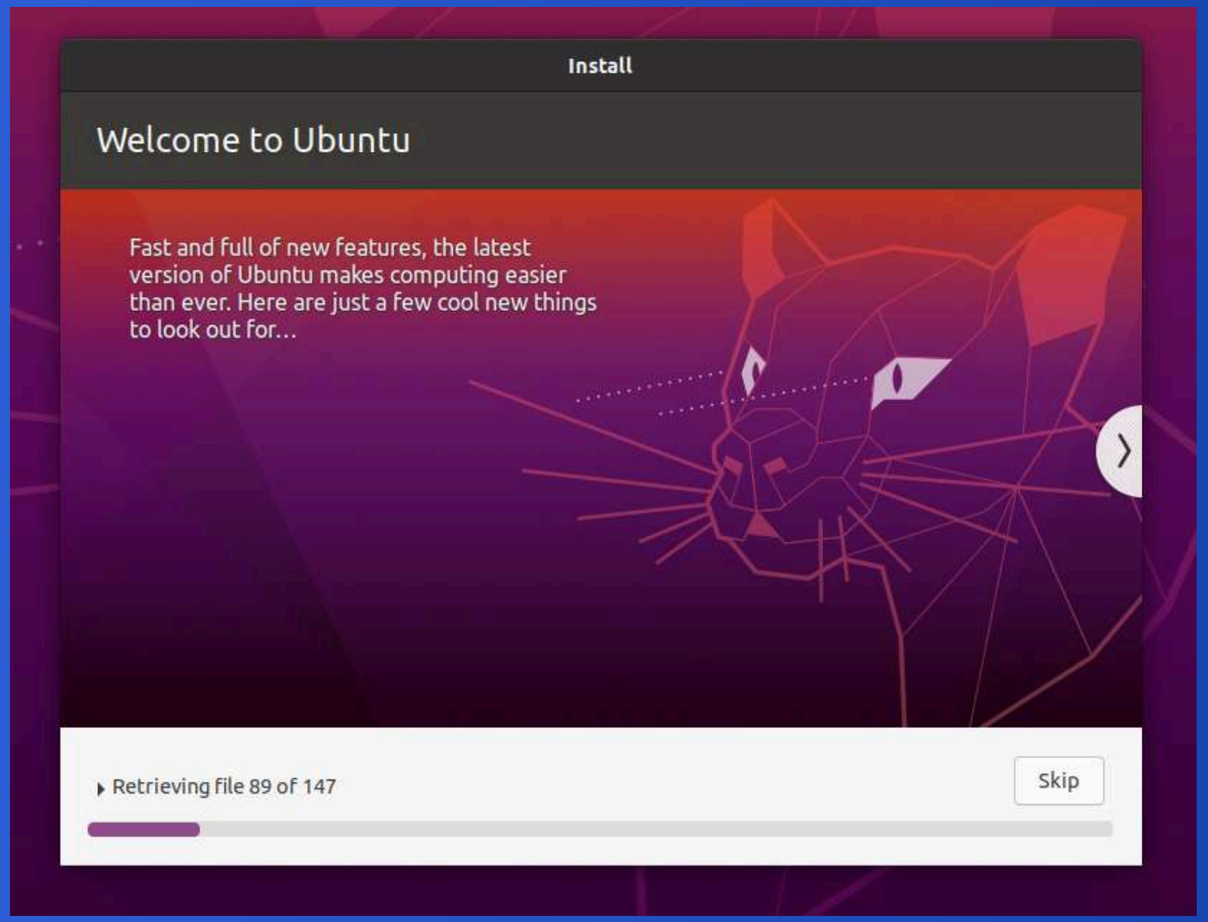
STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- PARTITION THE DISK IF NEEDED ELSE DESTROS LIKE UBUNTU HAVE PRESETS



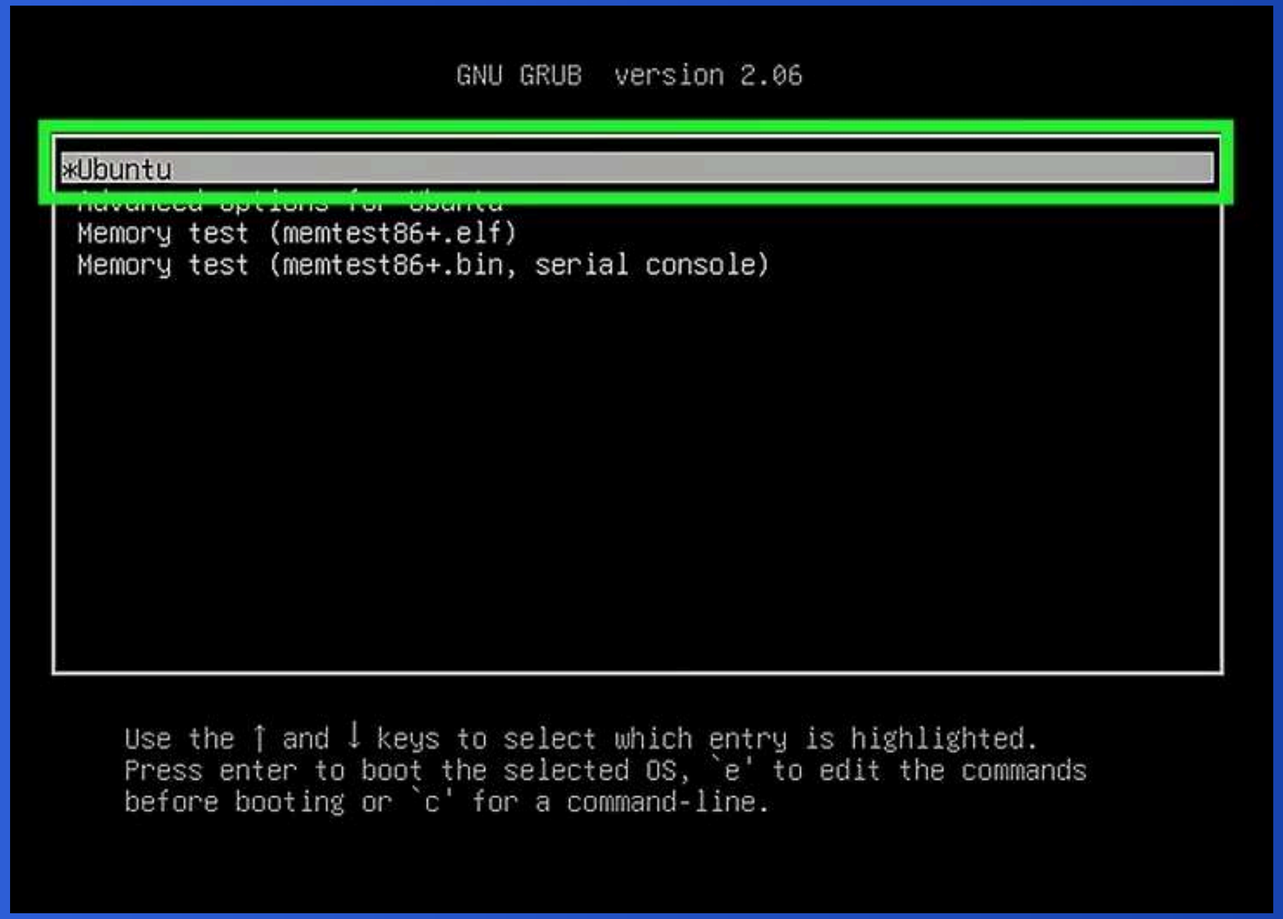
STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **WAIT FOR INSTALLATION → REMOVE USB → REBOOT → LOGIN TO LINUX DESKTOP!**



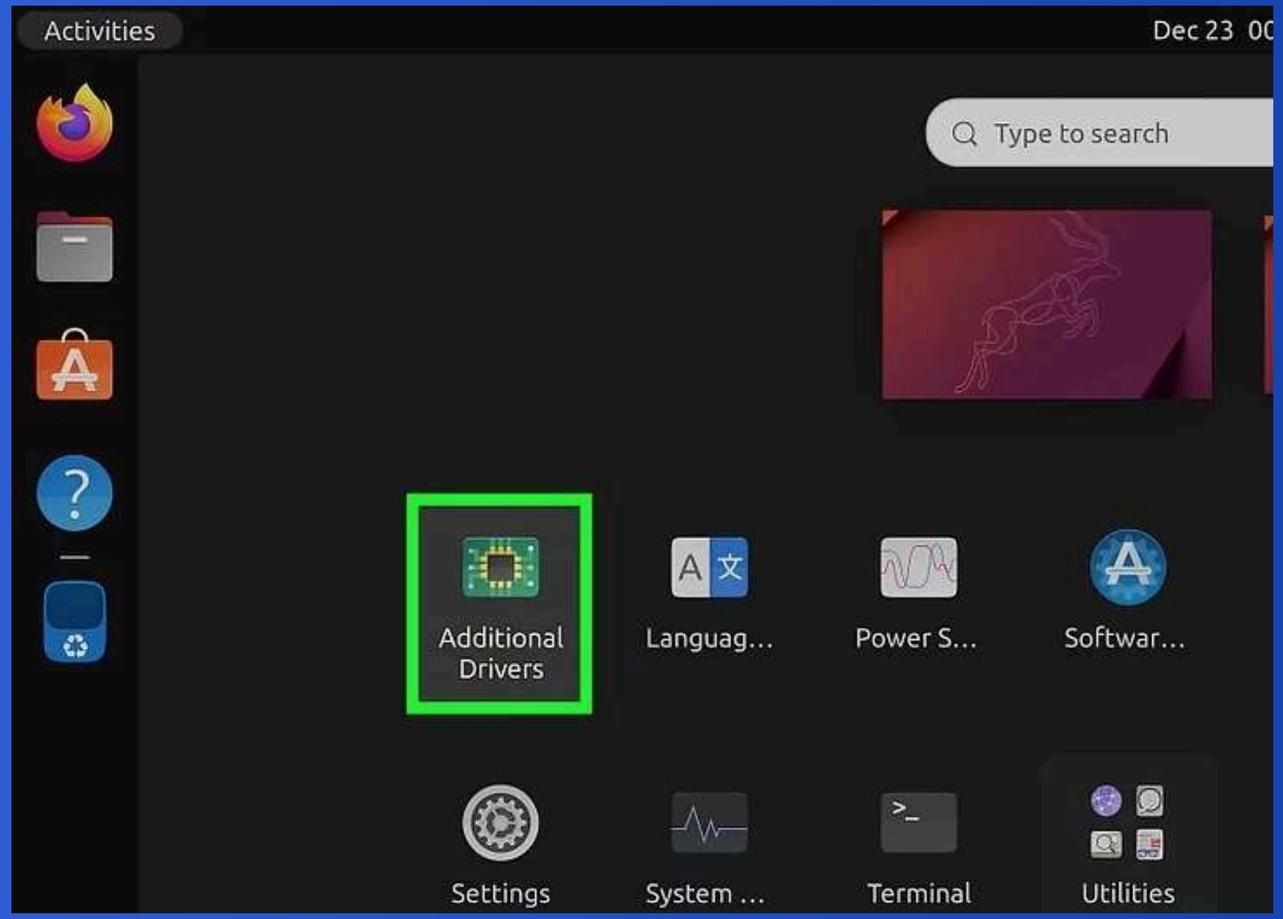
STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **BOOT INTO LINUX (UBUNTU) USING GRUB**



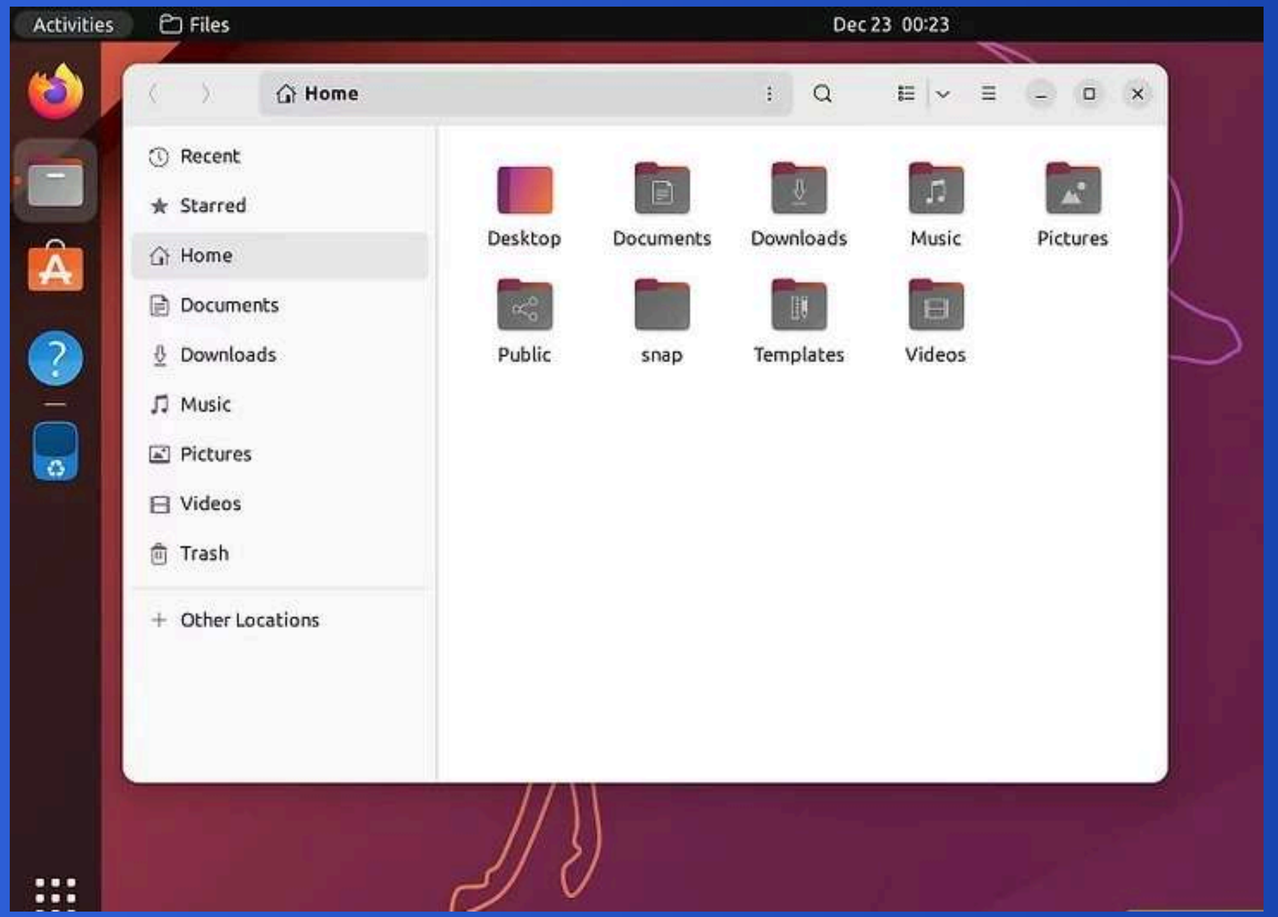
STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **CHECK HARDWARE AND DRIVERS**



STEPS TO INSTALL A LINUX DISTRIBUTION (E.G., UBUNTU):

- **START USING LINUX**



STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

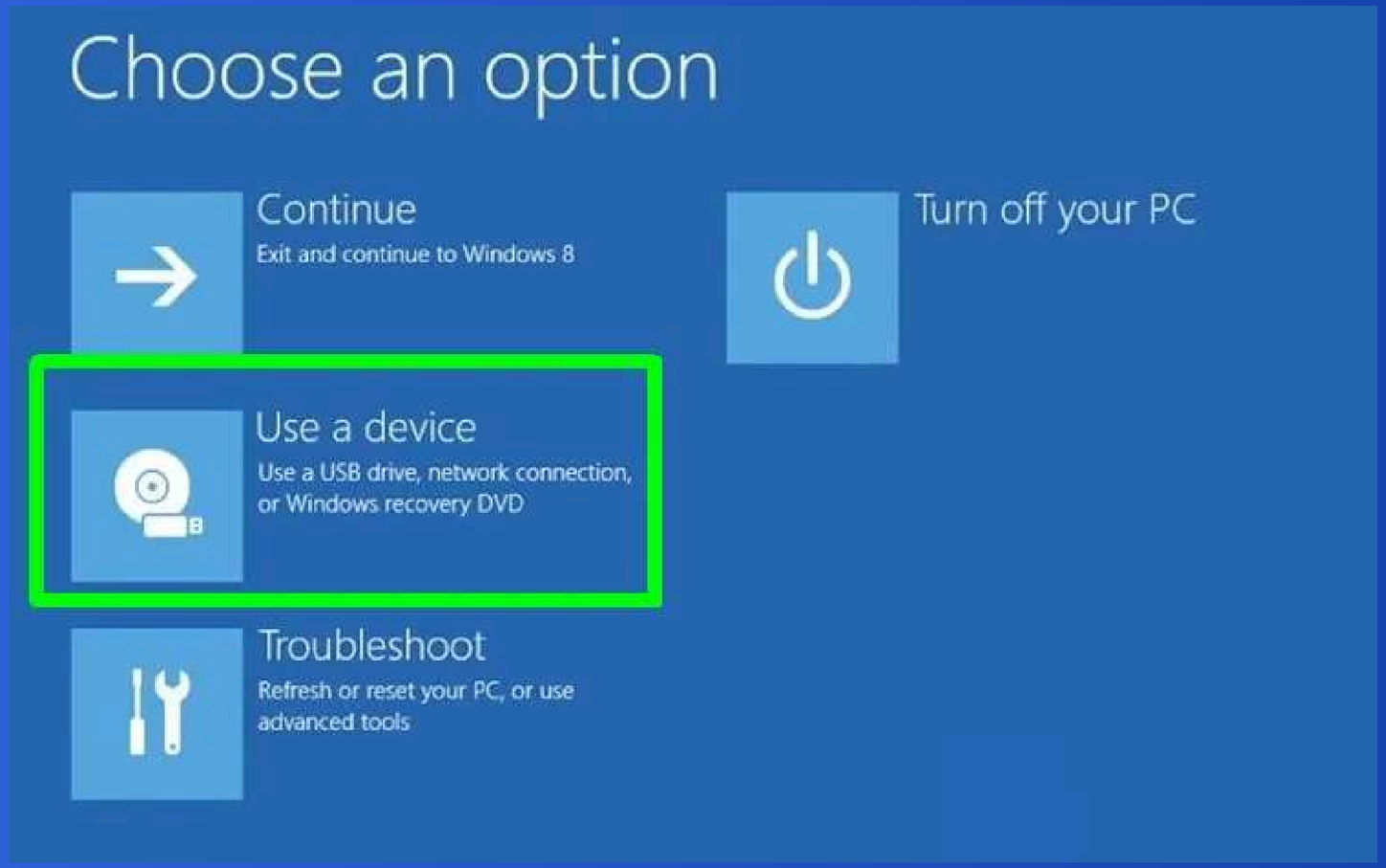
INSTALLING WINDOWS HELPS STUDENTS LEARN ABOUT SYSTEM FORMATTING, PARTITIONS, AND LICENSE ACTIVATION — A USEFUL LIFE SKILL FOR TECH USERS.

- **DOWNLOAD ISO FILE:** GET WINDOWS ISO FROM THE OFFICIAL MICROSOFT WEBSITE.
- **CREATE BOOTABLE USB:** USE RUFUS OR WINDOWS MEDIA CREATION TOOL TO FLASH THE ISO ONTO A USB.
- **ENTER BIOS/BOOT MENU:** RESTART THE PC AND PRESS THE APPROPRIATE KEY (F2, F12, ESC, OR DEL).
- **BOOT FROM USB:** SELECT USB DRIVE AS THE BOOT DEVICE.
- **BEGIN INSTALLATION WIZARD:** CHOOSE LANGUAGE, KEYBOARD LAYOUT, AND CLICK “INSTALL NOW”.
- **ENTER PRODUCT KEY:** IF PROMPTED, ENTER YOUR LICENSE KEY OR SKIP TO ACTIVATE LATER.
- **CHOOSE INSTALLATION TYPE:** SELECT CUSTOM (ADVANCED) FOR A FRESH INSTALL.
- **PARTITION THE DISK:** DELETE OLD PARTITIONS IF NEEDED AND CREATE A NEW ONE (USUALLY C: FOR WINDOWS).
- **INSTALL WINDOWS:** THE SYSTEM WILL COPY FILES, INSTALL FEATURES, AND RESTART SEVERAL TIMES.
- **SET UP USER ACCOUNT:** CHOOSE USERNAME, PASSWORD, AND SECURITY QUESTIONS.
- **FINISH SETUP:** CONNECT TO WI-FI, ADJUST PRIVACY SETTINGS, AND REACH THE WINDOWS DESKTOP!

💡 ***BACK UP YOUR FILES BEFORE INSTALLING OR FORMATTING.***
💡 ***USE UEFI BOOT MODE FOR NEWER SYSTEMS AND FASTER PERFORMANCE.***
💡 ***YOU CAN ACTIVATE WINDOWS LATER USING SETTINGS → ACTIVATION.***

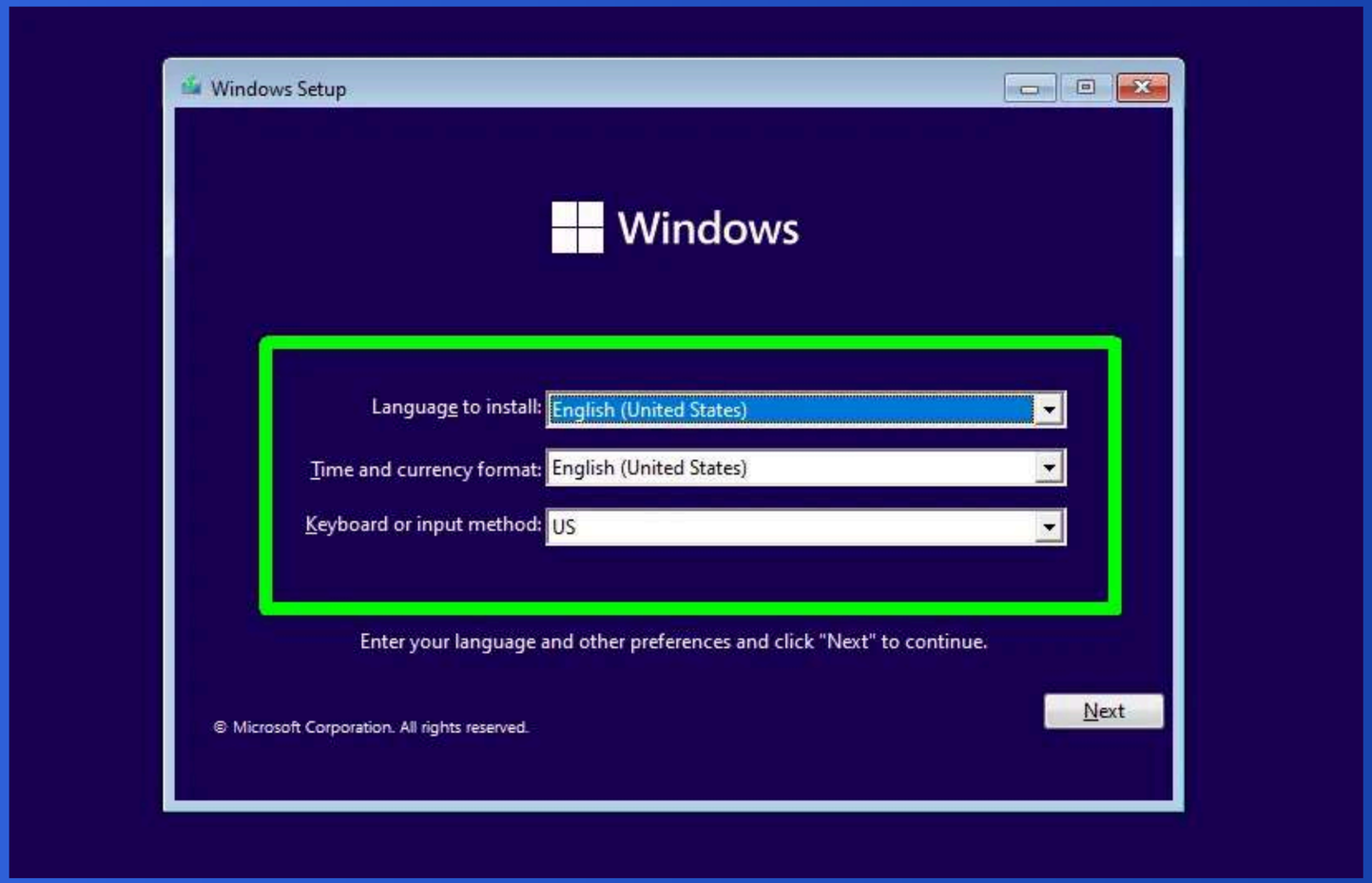
STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

- **ENTERING BIOS AND BOOT MENU**



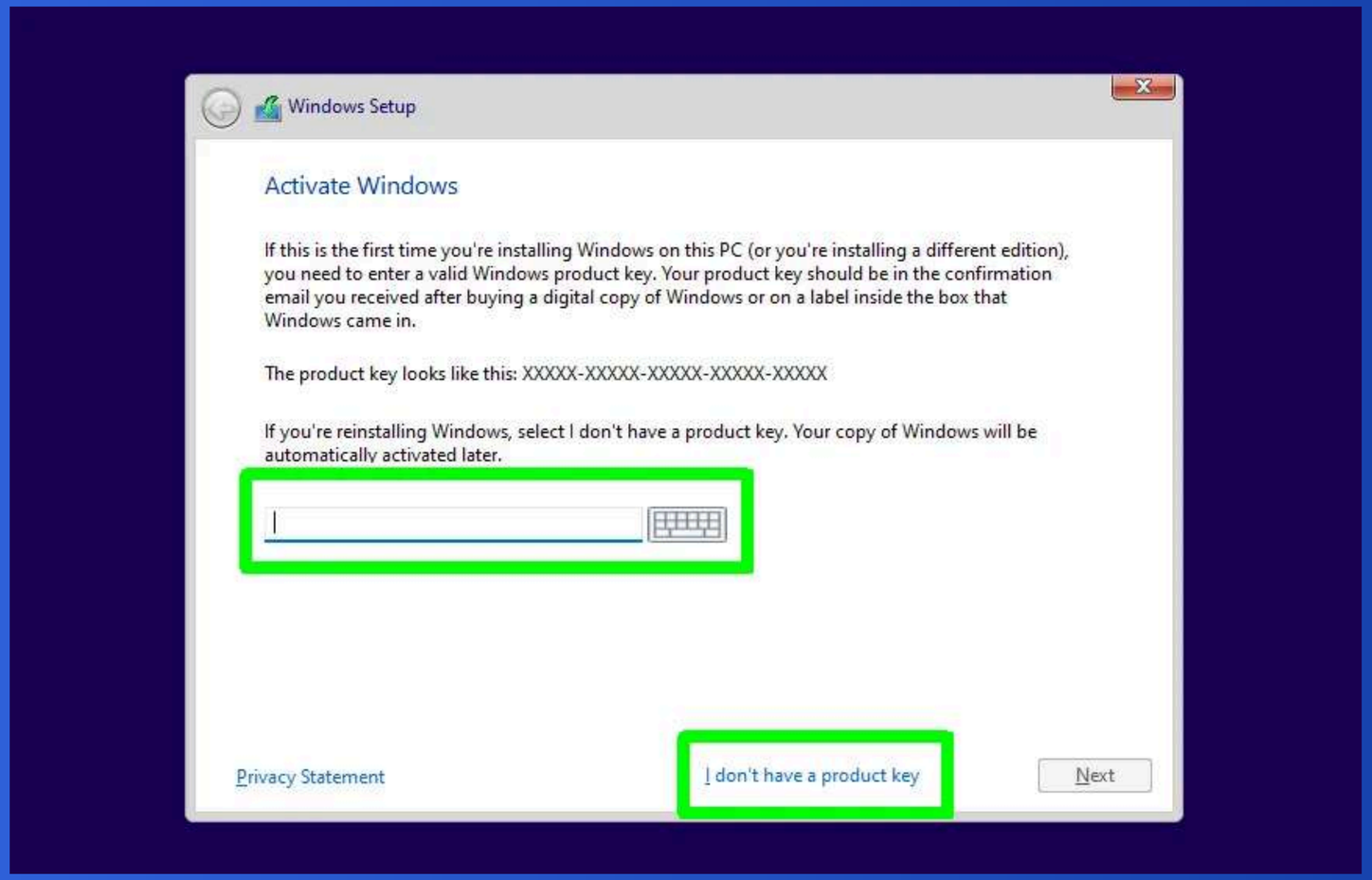
STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

BEGIN INSTALLATION WIZARD THEN CHOOSE LANGUAGE, TIME AND KEYBOARD/INPUT METHODS



STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

ENTER PRODUCT KEY OR SKIP FOR LATER

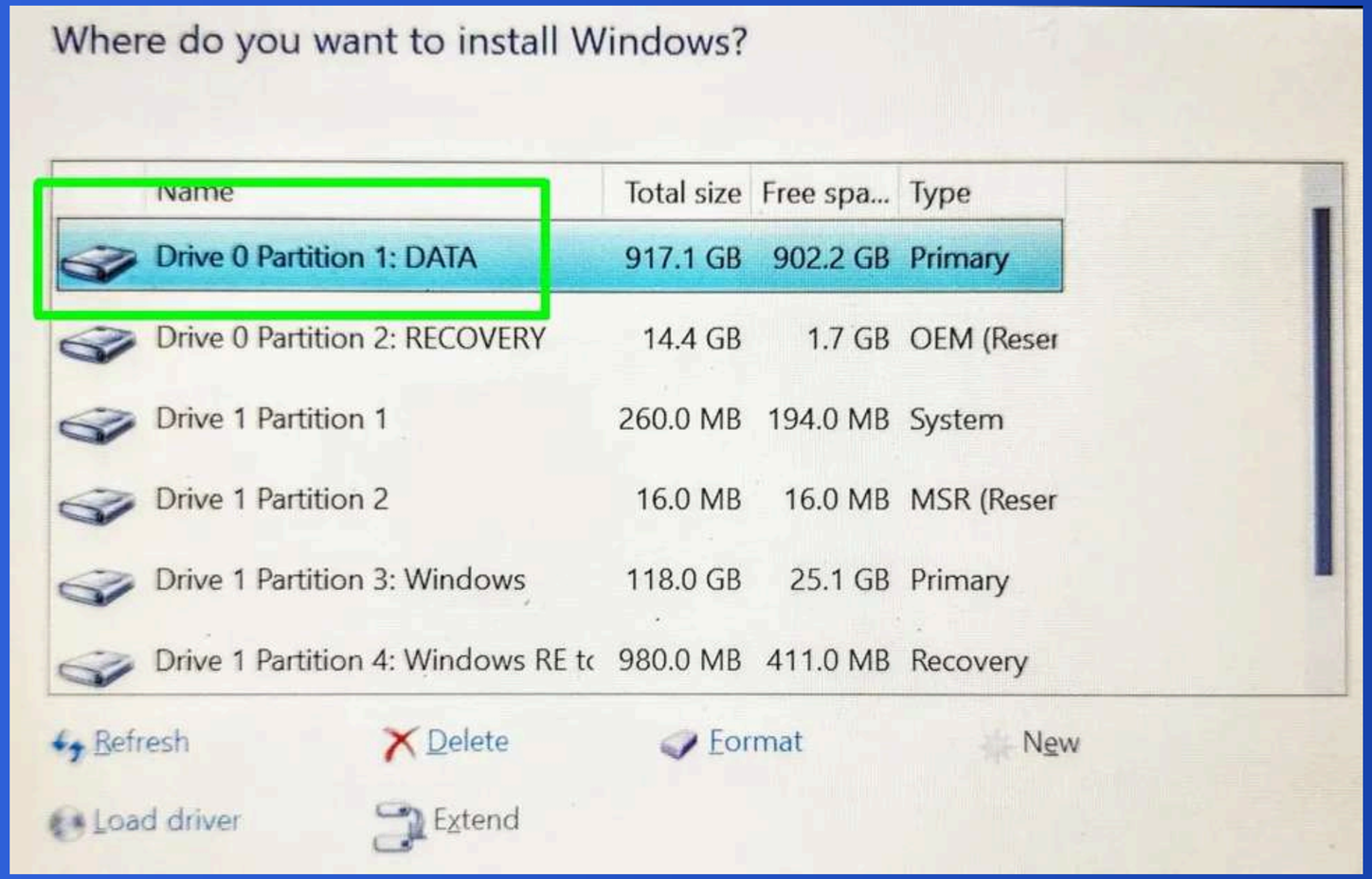


STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

CHOOSE INSTALLATION TYPE

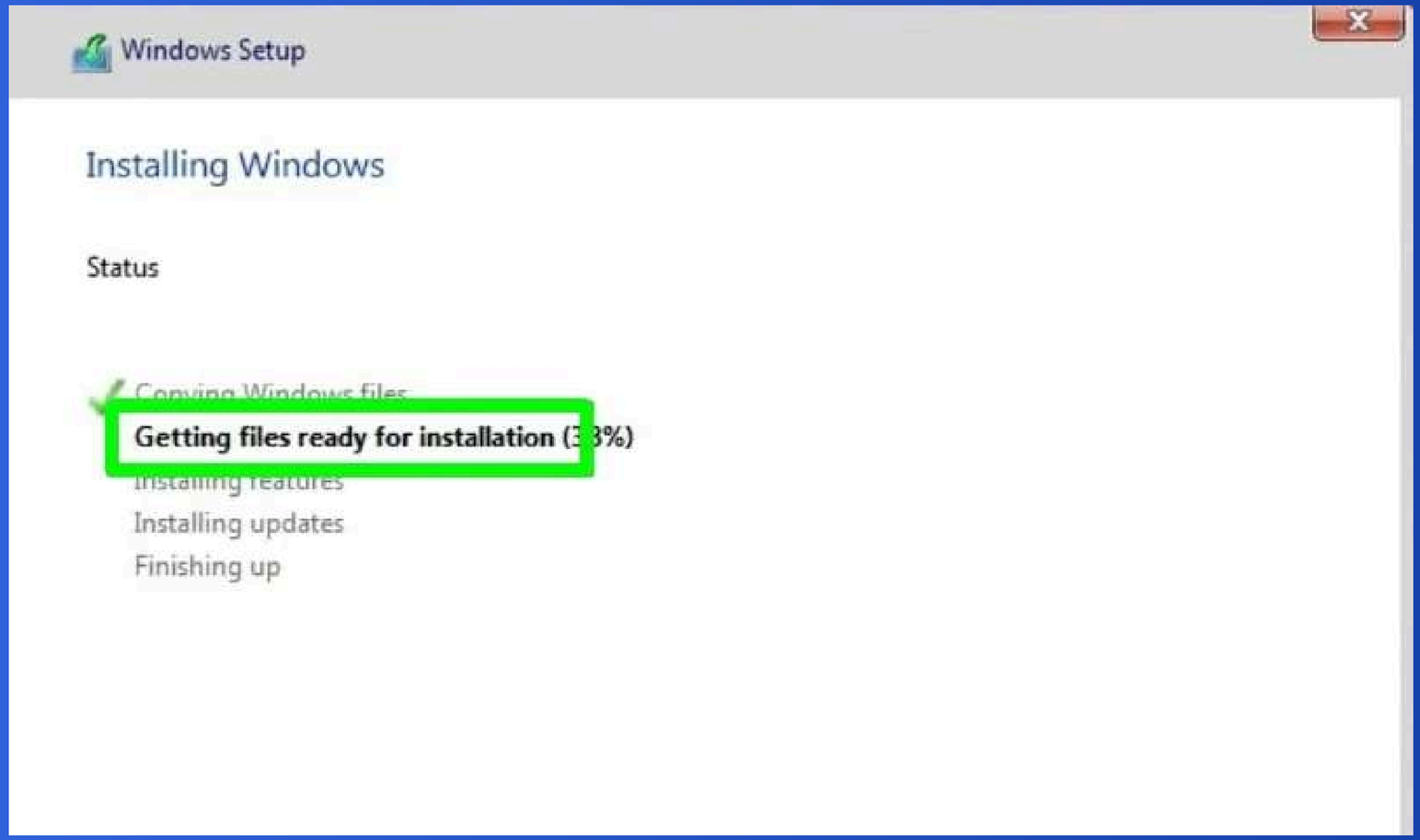
STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

CHOOSE PARTITION TYPE



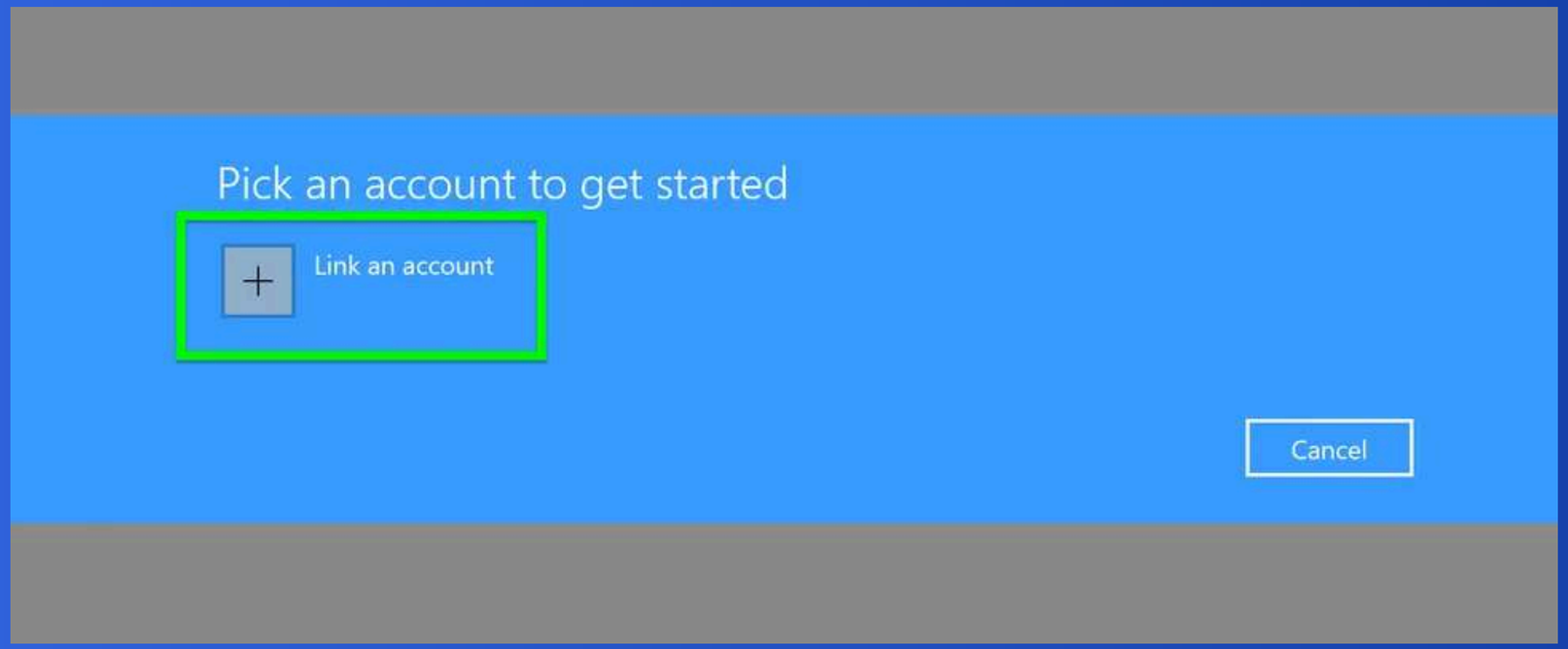
STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

WAIT FOR INSTALLATION TO COMPLETE



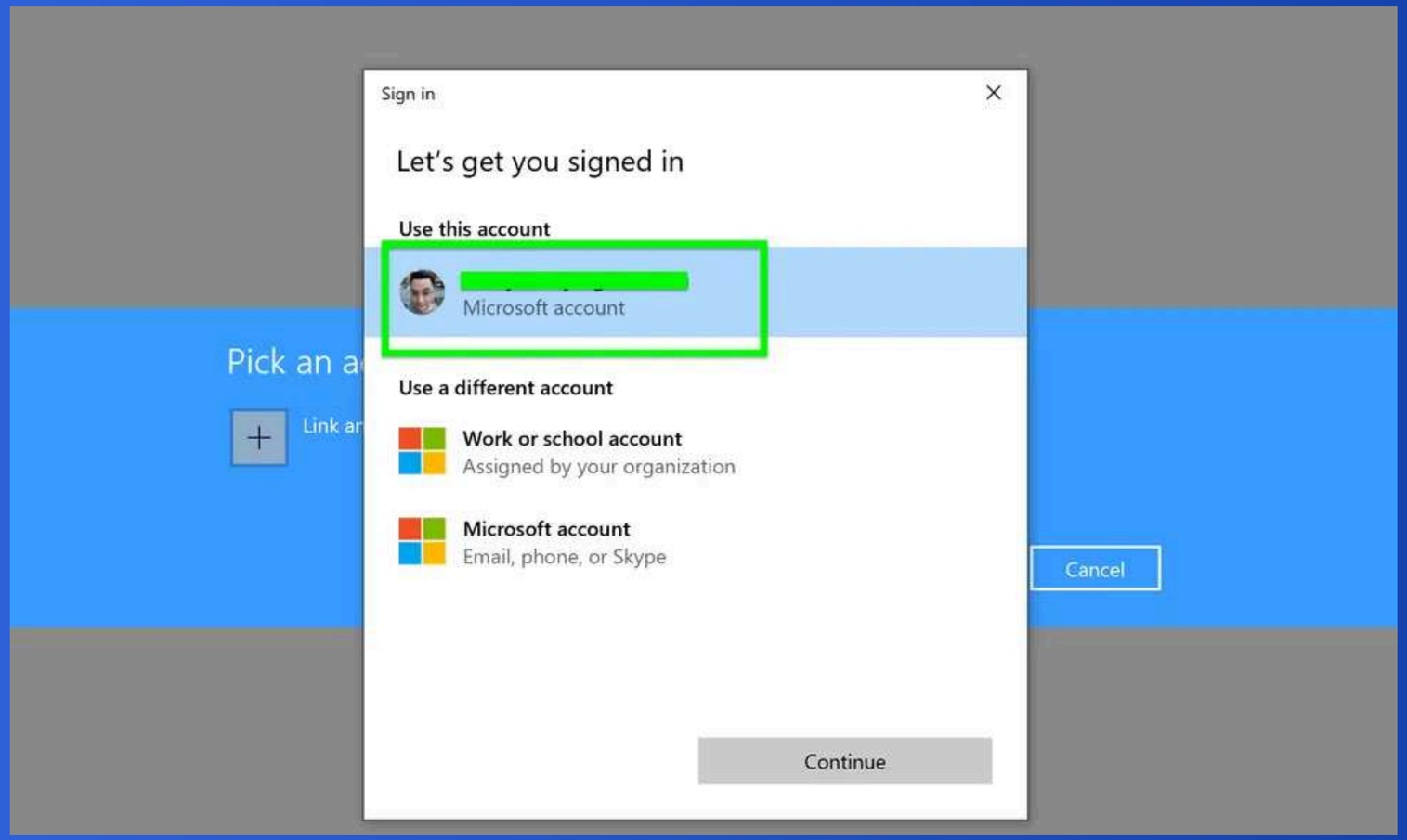
STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

SET UP USER ACCOUNT AND COMPLETE SETUP BY CONNECTING INTERNET



STEPS TO INSTALL WINDOWS (E.G., WINDOWS 10/11):

SET UP USER ACCOUNT AND COMPLETE SETUP BY CONNECTING INTERNET



WHAT IS UNIX SHELL?

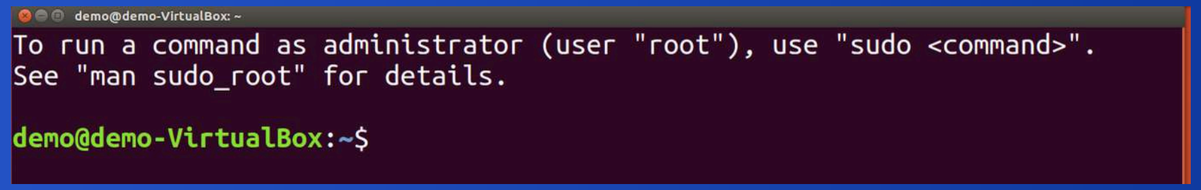
THE UNIX SHELL IS A POWERFUL COMMAND-LINE INTERFACE THAT LETS USERS INTERACT DIRECTLY WITH THE OPERATING SYSTEM THROUGH TEXT COMMANDS. IT'S LIKE TALKING TO THE SYSTEM IN ITS OWN LANGUAGE — PRECISE, FAST, AND FLEXIBLE.

WHAT IS A SHELL?

A SHELL IS A COMMAND INTERPRETER THAT TRANSLATES USER INPUTS (COMMANDS) INTO ACTIONS FOR THE SYSTEM.

IT ALLOWS USERS TO:

- MANAGE FILES AND FOLDERS
- RUN PROGRAMS
- AUTOMATE TASKS WITH SCRIPTS
- NAVIGATE THE SYSTEM FASTER THAN USING A GUI



🐧 **ON UBUNTU/LINUX:**

- PRESS CTRL + ALT + T
  - INSTANTLY OPENS THE TERMINAL

OR

- CLICK ACTIVITIES/SEARCH > TYPE “TERMINAL” > CLICK TO OPEN

🪟 **ON WINDOWS (FOR LINUX SHELL VIA WSL):**

IF YOU HAVE WSL (WINDOWS SUBSYSTEM FOR LINUX) INSTALLED:

- PRESS WIN + S > TYPE “UBUNTU” > PRESS ENTER
  - OPENS LINUX SHELL IN A WINDOW

2.4.1 SHELL COMMANDS – FILE & DIRECTORY OPERATIONS

THESE BASIC UNIX SHELL COMMANDS HELP YOU NAVIGATE THE SYSTEM, MANAGE FOLDERS, AND HANDLE FILES. THEY FORM THE CORE OF DAILY TERMINAL USE.

- 📂 **DIRECTORY NAVIGATION:**
- PWD – PRINT WORKING DIRECTORY
  - SHOWS YOUR CURRENT LOCATION IN THE FILE SYSTEM.
- CD [FOLDER] – CHANGE DIRECTORY
  - MOVE INTO ANOTHER FOLDER (CD DOCUMENTS/)
- LS – LIST CONTENTS
  - DISPLAYS FILES AND FOLDERS IN THE CURRENT DIRECTORY
- USE LS -L FOR DETAILED VIEW

🗂️ **DIRECTORY OPERATIONS:**

- MKDIR [FOLDER] – MAKE DIRECTORY
  - CREATES A NEW FOLDER
- RMDIR [FOLDER] – REMOVE DIRECTORY
  - DELETES AN EMPTY FOLDER

📄 **FILE OPERATIONS:**

- TOUCH [FILE] – CREATE FILE
  - MAKES A BLANK FILE INSTANTLY
- CAT [FILE] – VIEW FILE CONTENT
  - DISPLAYS THE ENTIRE FILE ON TERMINAL
- RM [FILE] – REMOVE FILE
  - DELETES A FILE (USE WITH CAUTION!)
- MV [SOURCE] [TARGET] – MOVE/RENAME
  - MOVE FILE OR RENAME IT
- CP [SOURCE] [TARGET] – COPY FILE
  - DUPLICATE A FILE

💡 USE THE TAB KEY TO AUTO-COMPLETE FOLDER OR FILE NAMES.
💡 ALWAYS DOUBLE-CHECK BEFORE USING RM, AS IT'S PERMANENT.

2.4.1 SHELL COMMANDS – FILE & DIRECTORY OPERATIONS

```
# Show current directory path
pwd

# Change directory
cd /home  # or cd Documents

# List files & folders
ls
ls -l  # detailed view
ls -a  # includes hidden files

# Make a directory
mkdir demo_folder

# Remove an empty directory
rmdir demo_folder

# Remove a file
touch test.txt
rm test.txt
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\ASUS> # Show current directory path
PS C:\Users\ASUS> pwd

Path
----
C:\Users\ASUS
```

```
PS C:\Users\ASUS>
PS C:\Users\ASUS> # List files & folders
PS C:\Users\ASUS> ls


    Directory: C:\Users\ASUS


Mode                 LastWriteTime
----                 -------------
d-----         3/28/2024  12:48 PM
d-----         6/24/2025   4:08 PM
d-----         1/28/2025   9:46 PM
d-----         4/30/2025   9:25 AM
d-----          4/8/2025  10:32 PM
d-----         4/18/2024  12:00 PM
d-----          4/8/2025   9:38 PM
d-----          4/9/2025  12:50 AM
d-----         5/10/2024   7:08 PM
d-r---         1/29/2025   7:36 PM
d-----         1/28/2025  10:30 PM
d-r---          7/4/2025   1:49 PM
d-r---         1/29/2025   7:36 PM
d-r---         1/29/2025   7:36 PM
d-r---         1/29/2025   7:36 PM
```

```
PS C:\Users\ASUS>
PS C:\Users\ASUS> # Make a directory
PS C:\Users\ASUS> mkdir demo_folder


    Directory: C:\Users\ASUS


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----          7/4/2025   9:19 PM                demo_folder


PS C:\Users\ASUS>
PS C:\Users\ASUS> # Remove an empty directory
PS C:\Users\ASUS> rmdir demo_folder
```

2.4.2 TERMINAL INFORMATION & UTILITY COMMANDS

THESE SHELL COMMANDS PROVIDE HELPFUL FEEDBACK, SYSTEM INFO, OR QUICK UTILITY FUNCTIONS TO MAKE WORKING IN THE TERMINAL MORE EFFECTIVE.

🧼 BASIC TERMINAL MANAGEMENT:

- CLEAR – CLEARS THE TERMINAL SCREEN FOR A CLEAN VIEW
- ECHO "TEXT" – DISPLAYS THE TEXT OR VALUE OF A VARIABLE

🕘 SESSION COMMANDS:

- HISTORY – LISTS ALL PREVIOUSLY USED COMMANDS
  - USE **!NUMBER** TO REPEAT A COMMAND FROM HISTORY
- REPEAT [N] [COMMAND] – RUNS A COMMAND MULTIPLE TIMES
  - NOT AVAILABLE IN ALL SHELLS BY DEFAULT (ZSH SUPPORTS)

🆘 HELP & INFO:

- HELP – SHOWS BUILT-IN SHELL HELP
- MAN [COMMAND] – OPENS THE MANUAL PAGE FOR A COMMAND
  - E.G., MAN LS GIVES DETAILED INFO ABOUT LS

📊 TEXT & FILE UTILITIES:

- WC [FILE] – WORD COUNT: SHOWS LINES, WORDS, CHARACTERS
- DIFF FILE1 FILE2 – SHOWS DIFFERENCES BETWEEN TWO FILES
- CMP FILE1 FILE2 – COMPARES FILES BYTE-BY-BYTE
- GREP "WORD" FILE – SEARCHES FOR A PATTERN INSIDE FILES

💡 **COMBINE COMMANDS WITH PIPES (|) TO FILTER OR CHAIN ACTIONS**
EXAMPLE: CAT FILE.TXT | GREP "ERROR"

2.5 VI EDITOR – MODES & BASIC USAGE

THE VI EDITOR IS A POWERFUL TERMINAL-BASED TEXT EDITOR IN UNIX/LINUX SYSTEMS. IT'S WIDELY USED FOR EDITING CONFIGURATION FILES, WRITING SCRIPTS, OR MODIFYING CODE DIRECTLY FROM THE SHELL.

✨ VI HAS TWO MAIN MODES:

- **COMMAND MODE (DEFAULT ON OPENING):**
  - USED TO NAVIGATE, DELETE, COPY, OR MOVE TEXT
  - PRESS ESC TO RETURN HERE FROM ANY OTHER MODE
  - EXAMPLE COMMANDS:
    - DD (DELETE LINE)
    - YY (COPY LINE)
    - P (PASTE)

- **INSERT MODE (FOR TYPING):**
  - ALLOWS YOU TO INSERT OR EDIT TEXT
  - ENTER INSERT MODE WITH:
    - I (INSERT BEFORE CURSOR)
    - A (APPEND AFTER CURSOR)
    - O (OPEN NEW LINE BELOW)

🔚 SAVING & EXITING VI:

- :W → SAVE THE FILE
- :Q → QUIT
- :WQ OR ZZ → SAVE AND QUIT
- :Q! → QUIT WITHOUT SAVING

🧠 WHY LEARN VI?

- IT'S LIGHTWEIGHT, AVAILABLE IN ALMOST EVERY LINUX DISTRO, AND ESSENTIAL FOR SERVER-SIDE EDITING OR RECOVERY MODE WORK.

🚀 TO OPEN THE EDITOR:

- ENTER VI FILENAME.TXT
  - IF THE FILE DOESN'T EXIST, IT WILL BE CREATED.

📝 **INSIDE VI: TYPE THE FOLLOWING**

- (AFTER PRESSING I TO ENTER INSERT MODE)

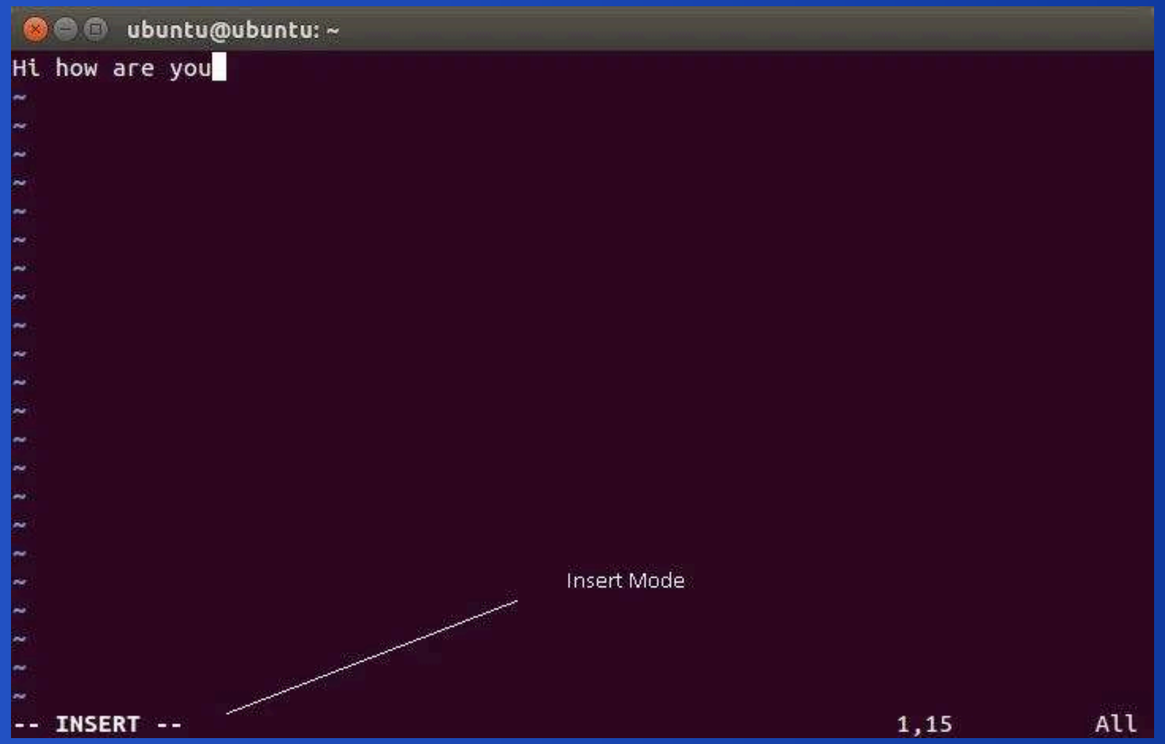
```
This is my first note in vi editor.
It is a powerful tool for editing files.
I can write, modify, and save text.
```

⌨️ **THEN PRESS:**

- ESC → TO EXIT INSERT MODE
- TYPE :WQ → THEN PRESS ENTER TO SAVE AND EXIT

✅ **FILE MYNOTE.TXT IS NOW SAVED. YOU CAN CHECK ITS CONTENTS WITH:**

```
cat mynote.txt
```



UNIT - 3

HTML & CSS

BUILDING BLOCKS OF THE WEB

MADE BY STELLA KUJUR

WHAT IS HTML & CSS?

THIS UNIT INTRODUCES STUDENTS TO WEB DEVELOPMENT USING TWO ESSENTIAL TECHNOLOGIES:

- **HTML (HYPER TEXT MARKUP LANGUAGE)** – THE SKELETON OF A WEBPAGE THAT DEFINES ITS CONTENT AND STRUCTURE.
- **CSS (CASCADING STYLE SHEETS)** – THE STYLING LAYER THAT CONTROLS HOW HTML ELEMENTS LOOK ON SCREEN.

TOGETHER, THEY ARE THE FOUNDATION OF ALMOST EVERYTHING YOU SEE ONLINE — FROM SIMPLE BLOGS TO FULL-FEATURED WEBSITES.

🌐 WHY LEARN HTML & CSS?

- HELPS YOU CREATE PERSONAL WEBSITES, PORTFOLIOS, AND BLOGS
- ESSENTIAL FOR CAREERS IN WEB DEVELOPMENT, UI/UX, AND DIGITAL DESIGN
- ENHANCES UNDERSTANDING OF HOW THE WEB WORKS BEHIND THE SCENES

📘 TOPICS COVERED:

- HTML STRUCTURE, TAGS, TABLES, FORMS, AND LINKS
- INSERTING IMAGES AND LISTS
- STYLING PAGES USING CSS
- BUILDING A BASIC PERSONAL WEBPAGE

EVERY BUTTON YOU CLICK, EVERY FORM YOU FILL, EVERY LAYOUT YOU SCROLL THROUGH — IS POWERED BY HTML & CSS.

WHAT IS HTML4?

HTML (HYPERTEXT MARKUP LANGUAGE) IS THE STANDARD LANGUAGE USED TO CREATE AND STRUCTURE CONTENT ON THE WEB.

HTML4 IS AN OLDER BUT WIDELY USED VERSION THAT INTRODUCED FEATURES FOR FORMATTING, LAYOUT, TABLES, FORMS, AND MULTIMEDIA CONTENT.

HTML ISN'T A PROGRAMMING LANGUAGE — IT'S A MARKUP LANGUAGE THAT TELLS THE WEB BROWSER HOW TO DISPLAY TEXT, IMAGES, LINKS, AND OTHER ELEMENTS. EVERYTHING YOU SEE ON A BASIC WEBPAGE — HEADINGS, PARAGRAPHS, IMAGES, LINKS — IS DEFINED USING HTML TAGS.

```html
<html>
  <head><title>My First Page</title></head>
  <body>
    <h1>Hello, World!</h1>
    <p>This is my first HTML page.</p>
  </body>
</html>
```

THE TERM "HYPERTEXT" REFERS TO LINKS THAT CONNECT PAGES AND CONTENT ACROSS THE INTERNET, WHILE "MARKUP" MEANS USING TAGS TO FORMAT AND ORGANIZE TEXT.

🧱 HTML IS LIKE THE BRICKS AND LAYOUT OF A BUILDING. IT GIVES SHAPE AND STRUCTURE TO YOUR WEBPAGE — WHERE THINGS GO, WHAT THEY ARE, AND HOW THEY CONNECT.

3STRUCTURE OF AN HTML DOCUMENT

AN HTML DOCUMENT FOLLOWS A STANDARD STRUCTURE THAT HELPS BROWSERS UNDERSTAND HOW TO READ AND RENDER THE CONTENT.

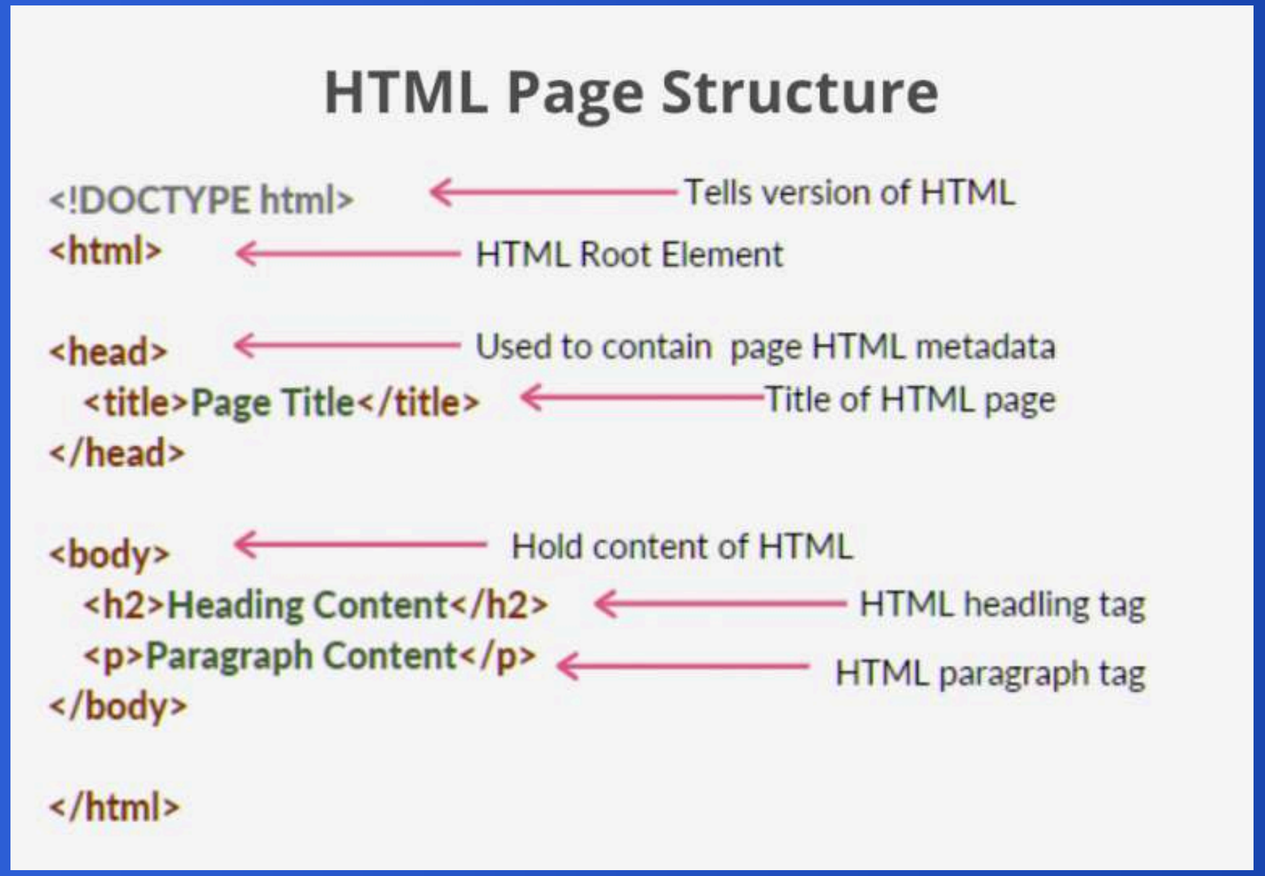
🧠 **WHAT EACH PART MEANS:**

- <HTML>: THE ROOT TAG — WRAPS EVERYTHING IN YOUR WEBPAGE.
- <HEAD>: CONTAINS METADATA LIKE THE PAGE TITLE, LINKS TO STYLESHEETS, AND SCRIPTS. THIS PART IS NOT VISIBLE ON THE PAGE.
- <TITLE>: SETS THE NAME SHOWN IN THE BROWSER TAB.
- <BODY>: THE MAIN CONTENT SECTION — EVERYTHING VISIBLE TO THE USER (TEXT, IMAGES, LINKS, ETC.)

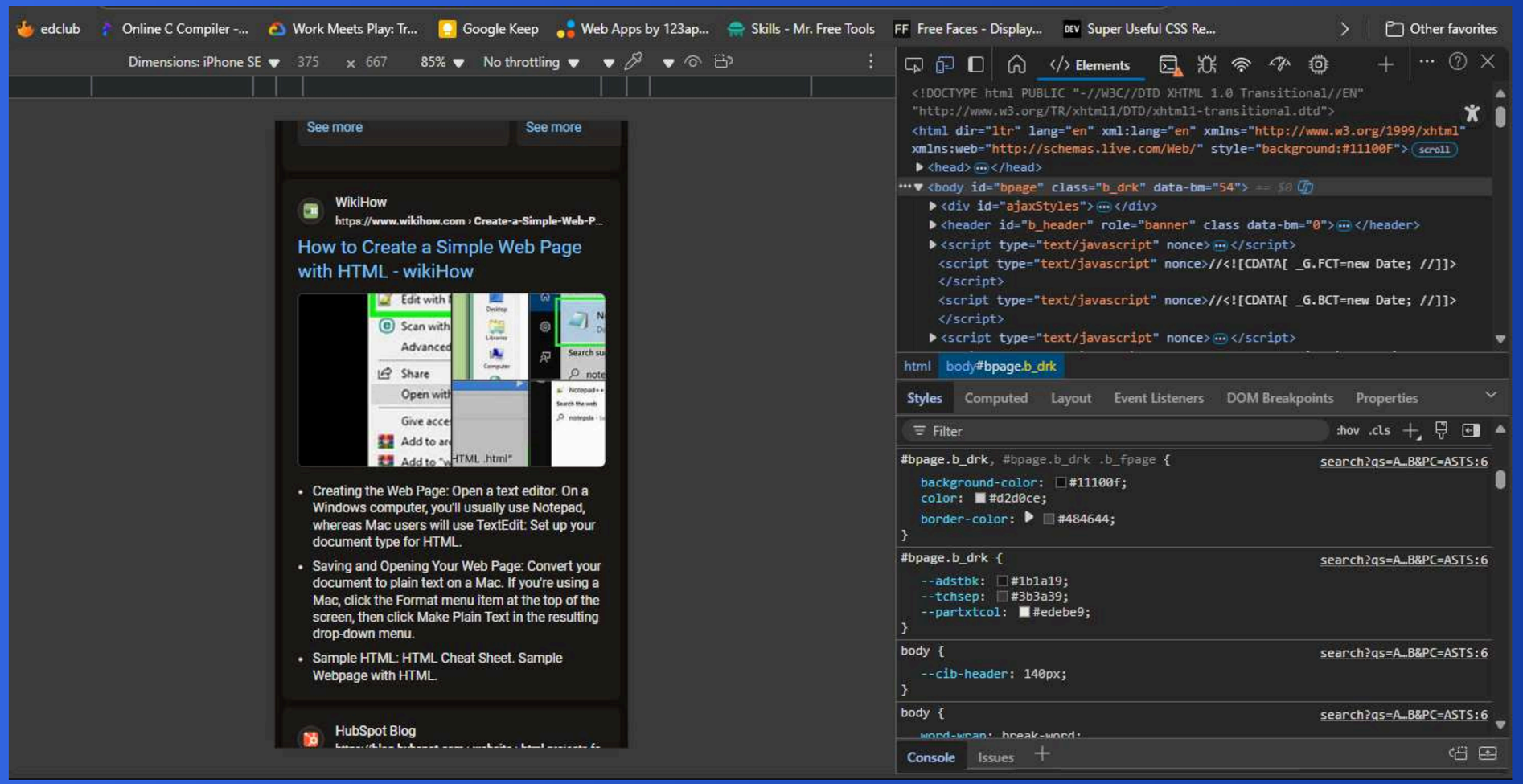
```
<html>
  <head>
    <title>Page Title</title>
  </head>
  <body>
    <!-- Page Content Goes Here -->
  </body>
</html>
```

3STRUCTURE OF AN HTML DOCUMENT

AN HTML DOCUMENT FOLLOWS A STANDARD STRUCTURE THAT HELPS BROWSERS UNDERSTAND HOW TO READ AND RENDER THE CONTENT.



INSPECTING HTML AND CSS ELEMENTS IN A PAGE



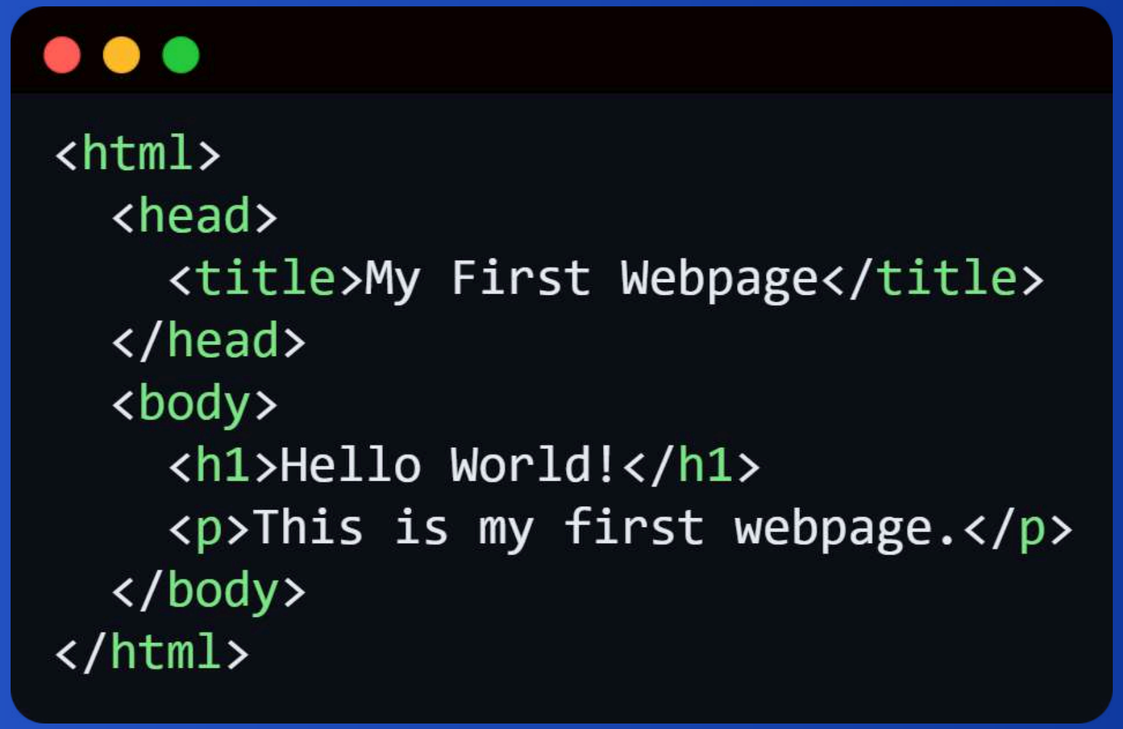
HOW TO CREATE A WEBPAGE?

📄 STEPS TO CREATE YOUR FIRST HTML PAGE:

- OPEN A TEXT EDITOR:
- USE NOTEPAD (WINDOWS), TEXTEDIT (MAC), OR ANY CODE EDITOR LIKE VS CODE, SUBLIME TEXT.
- WRITE BASIC HTML CODE:
- SAVE THE FILE:
- SAVE WITH .HTML EXTENSION, E.G., INDEX.HTML
- OPEN IN BROWSER:
- DOUBLE-CLICK THE FILE OR OPEN IT USING ANY BROWSER (CHROME, FIREFOX, EDGE)

🔁 YOU CAN EDIT AND REFRESH:

MAKE CHANGES TO THE HTML CODE → SAVE → REFRESH THE BROWSER TAB TO SEE UPDATES INSTANTLY.

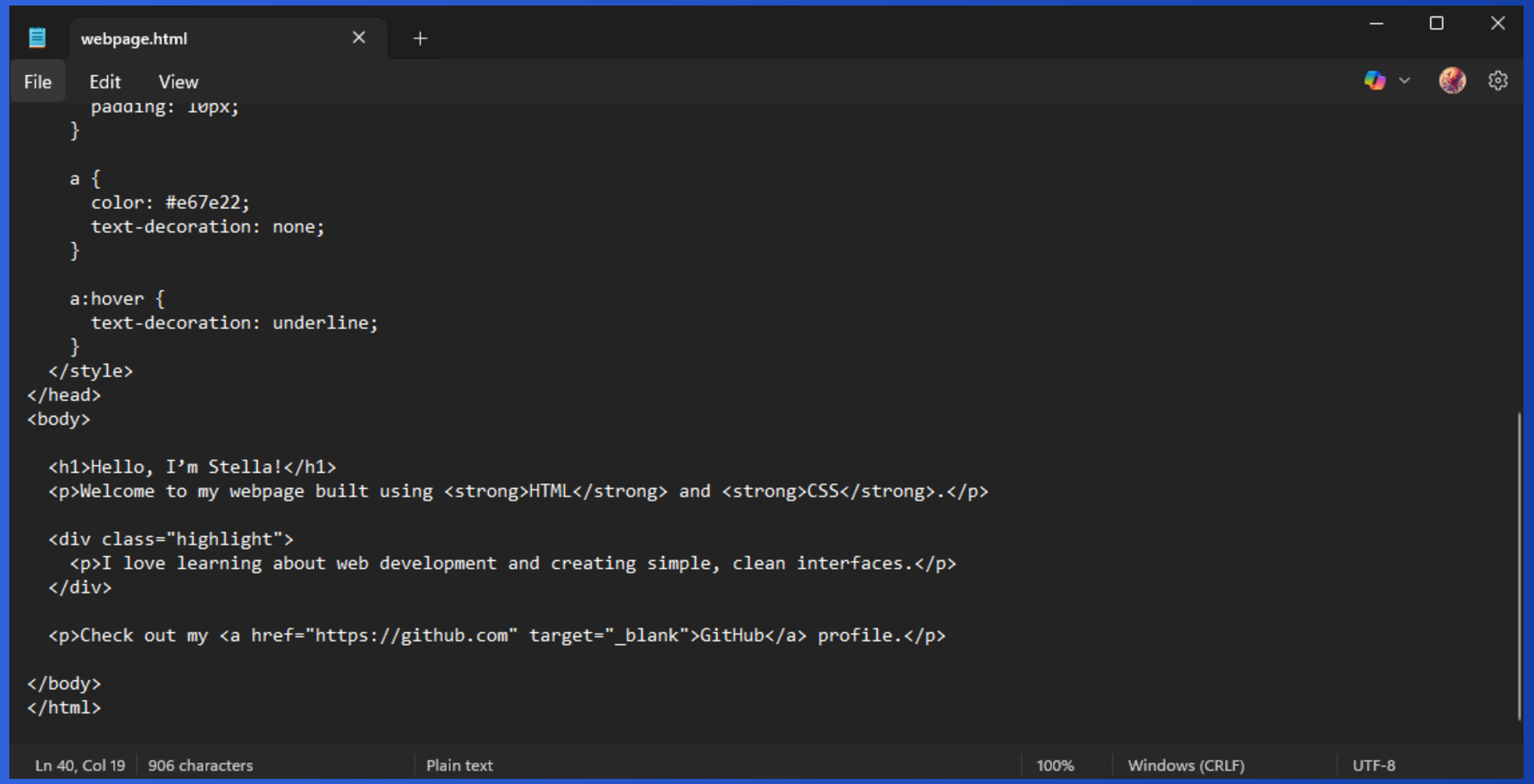


```
<html>
  <head>
    <title>My First Webpage</title>
  </head>
  <body>
    <h1>Hello World!</h1>
    <p>This is my first webpage.</p>
  </body>
</html>
```

YOU'VE JUST CREATED YOUR FIRST DIGITAL IDENTITY — EVEN THE WORLD'S BIGGEST WEBSITES START FROM THIS EXACT POINT.

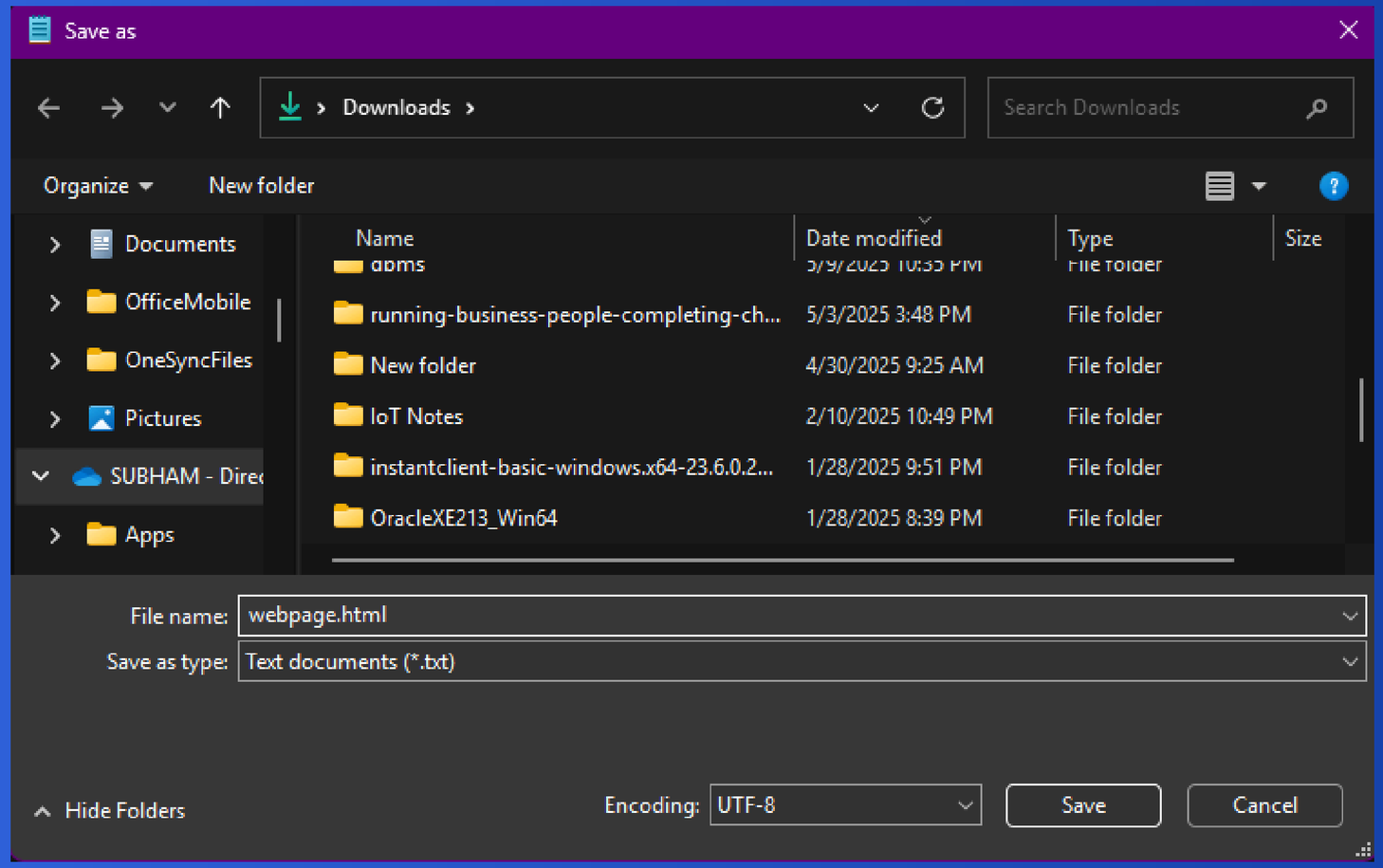
CREATING YOUR FIRST WEBPAGE

OPENING NOTEPAD AND WRITING BASIC HTML CODE



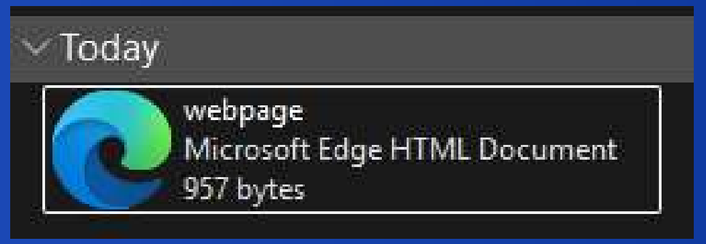
CREATING YOUR FIRST WEBPAGE

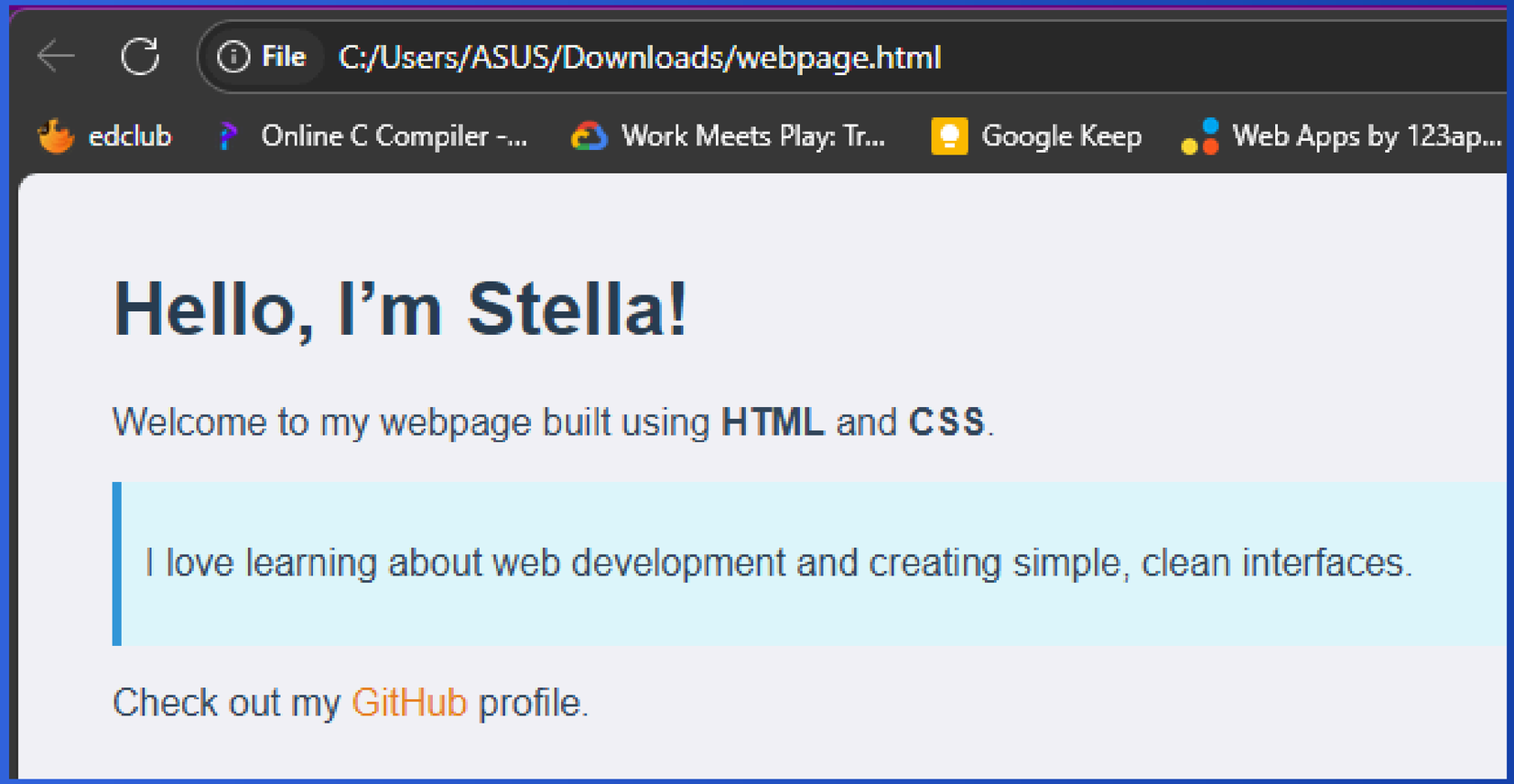
SAVING FILE WITH .HTML EXTENSION



CREATING YOUR FIRST WEBPAGE

OPENING YOUR WEBPAGE IN BROWSER



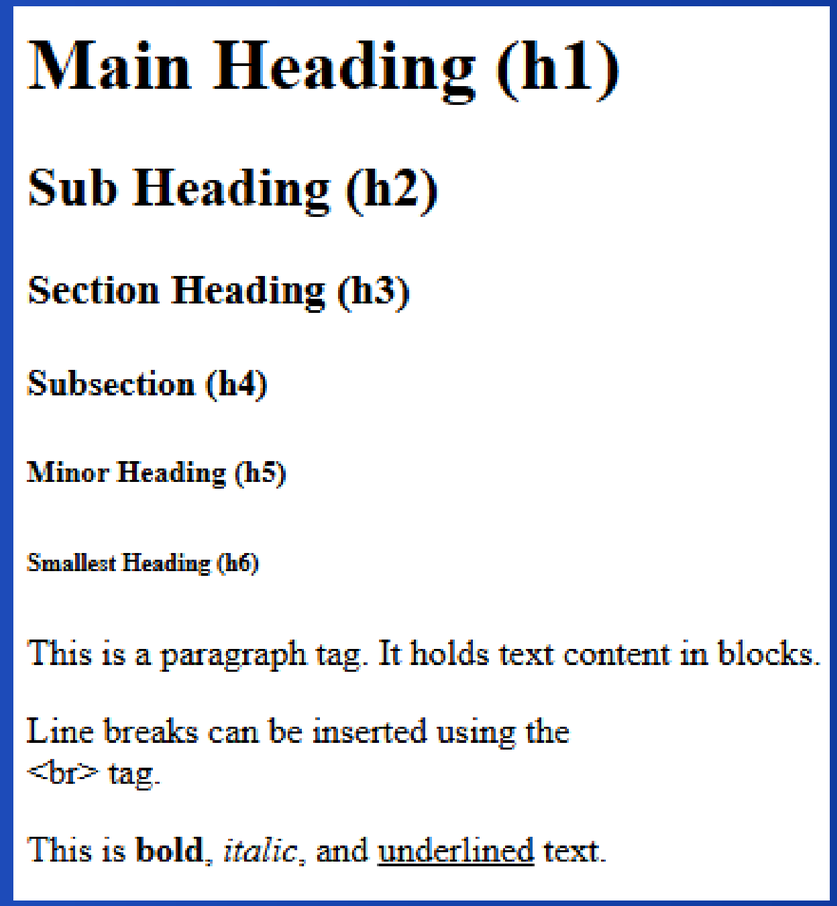


BASIC HTML TAGS

HTML USES TAGS TO DEFINE ELEMENTS ON A WEBPAGE. TAGS ARE ENCLOSED IN ANGLE BRACKETS (< >) AND USUALLY COME IN PAIRS: OPENING (<TAG>) AND CLOSING (</TAG>).

🏷️ **COMMON HTML TAGS:**

- HEADINGS:
  - <H1> TO <H6> — LARGER TO SMALLER HEADINGS
  - EXAMPLE: <H1>WELCOME</H1>
- PARAGRAPH:
  - <P> — DEFINES A BLOCK OF TEXT
  - EXAMPLE: <P>THIS IS A PARAGRAPH.</P>
- BOLD & ITALIC:
  - <B> OR <STRONG> → BOLD
  - <I> OR <EM> → ITALIC
- LINE BREAK & HORIZONTAL LINE:
  -
 → INSERTS A LINE BREAK (NO CLOSING TAG)
  - <HR> → INSERTS A HORIZONTAL LINE
- COMMENTS:
  - <!-- THIS IS A COMMENT --> → NOT SHOWN IN BROWSER



BASIC HTML TAGS

```
<!-- Heading Example -->
<h1>Hello World</h1>
<!-- Output: BIG bold heading saying "Hello World" -->

<!-- Paragraph Example -->
<p>This is a paragraph.</p>
<!-- Output: Regular text block saying "This is a paragraph." -->

<!-- Bold and Italic Text -->
<p>This is <b>bold</b> and this is <i>italic</i>.</p>
<!-- Output: "This is bold and this is italic." (with appropriate styles) -->

<!-- Line Break -->
<p>Line One<br>Line Two</p>
<!-- Output: "Line One" on first line, "Line Two" on second -->

<!-- Horizontal Line -->
<hr>
<!-- Output: A horizontal line across the page -->

<!-- Comment -->
<!-- This is a comment and will not be displayed in the browser -->
```

PAGE SETTING TAGS

IN HTML4, PAGE SETTING TAGS CONTROL HOW THE WEB PAGE APPEARS VISUALLY — LIKE SETTING BACKGROUND COLOR, FONT SIZE, OR TEXT COLOR.
THESE TAGS WERE USED BEFORE CSS BECAME THE STANDARD. THEY'RE STILL USEFUL TO UNDERSTAND LEGACY CODE AND BASIC CUSTOMIZATION.

<BODY> WITH ATTRIBUTES

YOU CAN DIRECTLY STYLE THE PAGE USING THESE ATTRIBUTES INSIDE <BODY>:

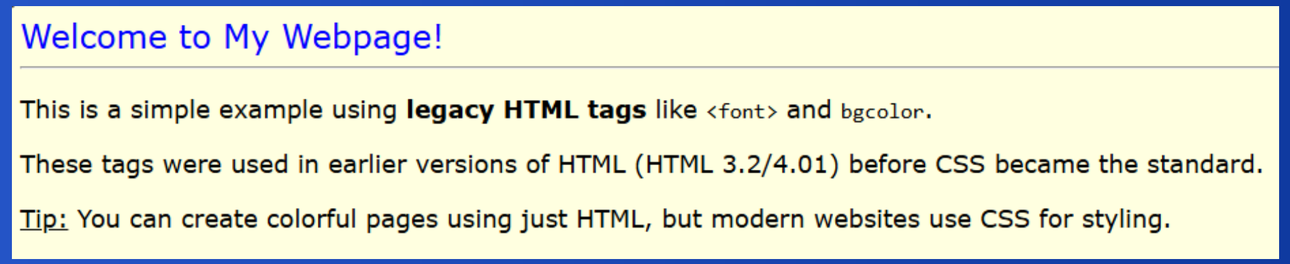
- BGCOLOR – SETS THE BACKGROUND COLOR OF THE PAGE
- TEXT – SETS THE DEFAULT TEXT COLOR
- LINK – COLOR OF UNVISITED LINKS
- VLINK – COLOR OF VISITED LINKS

```html
<body bgcolor="lightyellow">
  <font face="Verdana" size="5" color="blue">
    Welcome to My Webpage!
  </font>
</body>
```

🔠 FONT TAG (OLD METHOD):

- FACE → FONT TYPE
- SIZE → TEXT SIZE (1 TO 7 SCALE)
- COLOR → FONT COLOR

NOTE: THESE TAGS ARE OUTDATED IN HTML5.
USE CSS INSTEAD FOR MODERN WEB DESIGN.

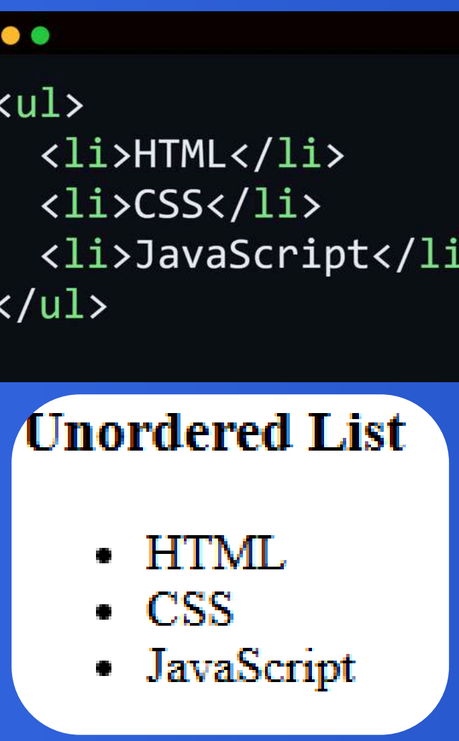


LISTING TAGS IN HTML

HTML PROVIDES TAGS TO CREATE DIFFERENT TYPES OF LISTS FOR ORGANIZING INFORMATION ON A WEBPAGE. THESE ARE USEFUL FOR MENUS, STEPS, ITEMS, FAQS, ETC.

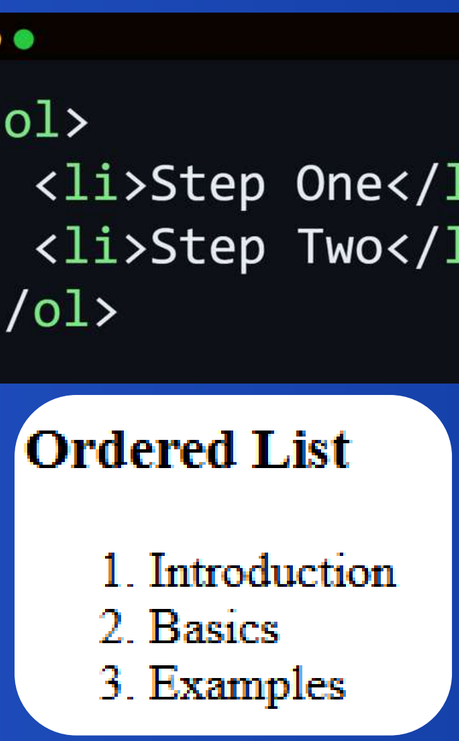
UNORDERED LIST (BULLET POINTS):

```
<ul>
  <li>HTML</li>
  <li>CSS</li>
  <li>JavaScript</li>
</ul>
```



ORDERED LIST (NUMBERED LIST):

```
<ol>
  <li>Step One</li>
  <li>Step Two</li>
</ol>
```



LISTING TAGS IN HTML

HTML PROVIDES TAGS TO CREATE DIFFERENT TYPES OF LISTS FOR ORGANIZING INFORMATION ON A WEBPAGE. THESE ARE USEFUL FOR MENUS, STEPS, ITEMS, FAQS, ETC.

DEFINITION LIST (GLOSSARY STYLE):

- <DL> = DEFINITION LIST
- <DT> = TERM
- <DD> = DEFINITION

OUTPUT:

HTML
Hyper Text Markup Language
CSS
Cascading Style Sheets

```
<dl>
  <dt>HTML</dt>
  <dd>Hyper Text Markup Language</dd>
  <dt>CSS</dt>
  <dd>Cascading Style Sheets</dd>
</dl>
```

ADDING GRAPHICS TO HTML

IMAGES MAKE WEB PAGES VISUALLY APPEALING AND INFORMATIVE. IN HTML, YOU USE THE <IMG> TAG TO EMBED GRAPHICS INTO YOUR PAGE.

🖼️ BASIC IMAGE TAG:

- SRC: THE PATH OR URL OF THE IMAGE FILE
- ALT: DESCRIPTIVE TEXT IF IMAGE FAILS TO LOAD (HELPS ACCESSIBILITY)
- WIDTH & HEIGHT: CONTROLS IMAGE SIZE (IN PIXELS)

📦 IMAGE FORMATS SUPPORTED:

- .JPG / .JPEG – GOOD FOR PHOTOS
- .PNG – SUPPORTS TRANSPARENCY
- .GIF – USED FOR ANIMATIONS
- .SVG – SCALABLE VECTOR GRAPHICS


```
<img src="image.jpg" alt="My Image" width="300" height="200">
```

LINKING WEBPAGES

LINKS ARE THE CORE OF HOW THE WEB WORKS — THEY CONNECT PAGES, SECTIONS, OR EXTERNAL RESOURCES. HTML USES THE <A> TAG (ANCHOR TAG) TO CREATE HYPERLINKS.

EXAMPLE – BASIC LINK:
THIS CREATES A CLICKABLE LINK THAT TAKES THE USER TO THE "ABOUT.HTML" PAGE.

```
<a href="about.html">About Us</a>
```

TYPES OF LINKS:

- EXTERNAL LINKS – NAVIGATE TO A PAGE OUTSIDE YOUR WEBSITE
- <A HREF="HTTPS://WWW.GOOGLE.COM">VISIT GOOGLE</A>
- INTERNAL LINKS – LINK TO ANOTHER PAGE WITHIN YOUR OWN SITE
- <A HREF="CONTACT.HTML">CONTACT</A>
- SAME PAGE (ANCHOR) LINKS – JUMP TO A SECTION ON THE SAME PAGE
  - FIRST, MARK A SECTION: <A NAME="TOP"></A> OR USE AN ID
  - THEN LINK TO IT: <A HREF="#TOP">GO TO TOP</A>
- IMAGES AS LINKS – MAKE AN IMAGE CLICKABLE:

```
<a href="home.html">
 <img src="home.png" alt="Home Button">
</a>
```

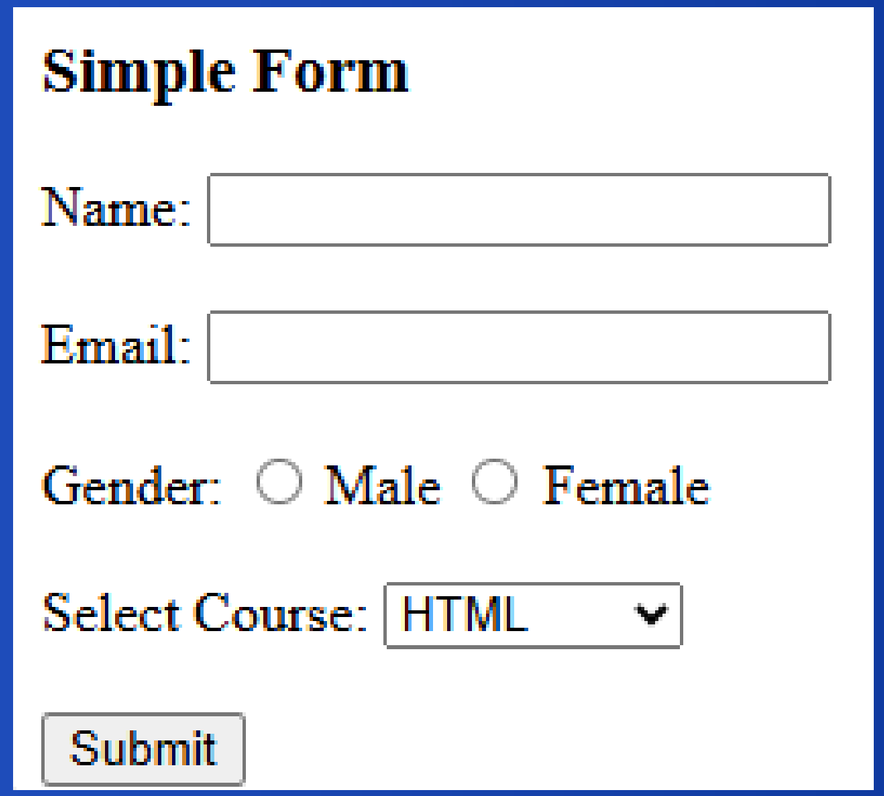
HTML FORMS – COLLECTING USER INPUT

HTML FORMS ARE USED TO COLLECT INFORMATION FROM USERS — SUCH AS LOGIN DETAILS, FEEDBACK, OR SEARCH QUERIES. THEY INCLUDE VARIOUS INPUT TYPES LIKE TEXT FIELDS, BUTTONS, CHECKBOXES, AND DROPDOWNS.

📄 BASIC FORM STRUCTURE:

- ACTION: WHERE TO SEND THE FORM DATA
- METHOD: GET (VISIBLE IN URL) OR POST (SECURE, NOT SHOWN IN URL)

```html
<form action="submit.html" method="post">
  <!-- Input fields go here -->
</form>
```



HTML FORMS – COLLECTING USER INPUT

TEXT FIELD

```
<input type="text" name="username" placeholder="Enter your name">
```

DROPDOWN BOX

```
<select name="course">
  <option value="html">HTML</option>
  <option value="css">CSS</option>
</select>
```

TEXTAREA (MULTI-LINE INPUT)

```
<textarea name="message" rows="4" cols="30"></textarea>
```

SUBMIT BUTTON

```
<input type="submit" value="Submit">
```

CHECKBOXES (MULTIPLE SELECTION ALLOWED)

RADIO BUTTONS (ONLY ONE OPTION ALLOWED)

```
<label><input type="checkbox" name="skills" value="html"> HTML</label>
<label><input type="checkbox" name="skills" value="css"> CSS</label>
<label><input type="radio" name="gender" value="male"> Male</label>
<label><input type="radio" name="gender" value="female"> Female</label>
```

WHAT IS CSS?

CSS (CASCADING STYLE SHEETS) IS USED TO CONTROL THE APPEARANCE OF HTML ELEMENTS — SUCH AS COLOR, SIZE, FONT, LAYOUT, AND SPACING.
WHILE HTML IS THE STRUCTURE, CSS IS THE STYLE — TOGETHER, THEY BUILD BEAUTIFUL, FUNCTIONAL WEBSITES.

🧥 WHAT CSS CAN DO:

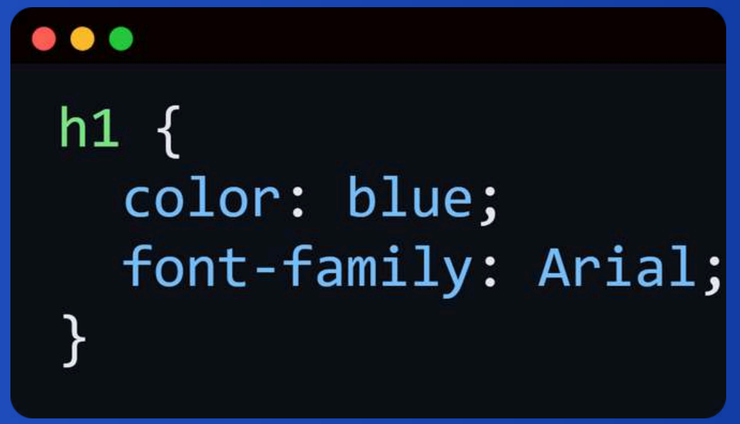
- CHANGE FONT STYLE, SIZE, AND COLOR
- SET BACKGROUND COLORS OR IMAGES
- ADD SPACING (MARGINS, PADDING)
- CREATE LAYOUTS (LIKE 2-COLUMN OR GRID VIEWS)
- ADD HOVER EFFECTS AND TRANSITIONS

💡 WHY “CASCADING”?

BECAUSE STYLES ARE APPLIED IN A TOP-DOWN HIERARCHY:

1. BROWSER DEFAULTS
2. EXTERNAL STYLESHEETS
3. INTERNAL STYLES
4. INLINE STYLES

LATER STYLES OVERRIDE EARLIER ONES IF THERE’S A CONFLICT.



🩹 EXAMPLE CSS RULE: THIS SETS ALL <H1> HEADINGS TO BLUE AND USES THE ARIAL FONT.

WAYS TO APPLY CSS TO AN HTML DOCUMENT

CSS CAN BE APPLIED IN THREE MAIN WAYS. EACH HAS DIFFERENT USE CASES DEPENDING ON HOW REUSABLE OR CLEAN YOU WANT YOUR CODE TO BE.

INLINE CSS

- STYLES ARE WRITTEN INSIDE THE HTML ELEMENT USING THE STYLE ATTRIBUTE.

🟢 USE FOR: QUICK TESTING OR STYLING A SINGLE ELEMENT

🔴 NOT RECOMMENDED FOR LARGER PROJECTS — HARD TO MAINTAIN

```html
<p style="color: red; font-size: 16px;">This is red text.</p>
```

INTERNAL CSS

- STYLES ARE DEFINED INSIDE A <STYLE> TAG IN THE <HEAD> OF THE HTML DOCUMENT.

🟢 USE FOR: STYLING A SINGLE HTML FILE

🔴 NOT REUSABLE ACROSS MULTIPLE PAGES

```html
<html>
<head>
  <style>
    h1 { color: blue; }
    p { font-family: Arial; }
  </style>
</head>
<body>
  <h1>Hello</h1>
  <p>Paragraph text.</p>
</body>
</html>
```

WAYS TO APPLY CSS TO AN HTML DOCUMENT

CSS CAN BE APPLIED IN THREE MAIN WAYS. EACH HAS DIFFERENT USE CASES DEPENDING ON HOW REUSABLE OR CLEAN YOU WANT YOUR CODE TO BE.

EXTERNAL CSS

- STYLES ARE WRITTEN IN A SEPARATE .CSS FILE AND LINKED TO THE HTML USING <LINK>.

🟢 USE FOR: PROFESSIONAL WEBSITES AND MULTIPLE-PAGE STYLING
✅ BEST PRACTICE — CLEAN, REUSABLE, AND SCALABLE

```html
<!-- HTML file -->
<link rel="stylesheet" href="style.css">
```

```css
/* style.css */
body { background-color: lightgray; }
h1 { color: green; }
```

💡 **REAL-LIFE ANALOGY:**

- INLINE = STICKY NOTE
- INTERNAL = HANDWRITTEN NOTE INSIDE A PAGE
- EXTERNAL = A FULL INSTRUCTION MANUAL YOU CAN REUSE

CSS SELECTORS

SELECTORS IN CSS ARE USED TO “SELECT” OR TARGET SPECIFIC HTML ELEMENTS SO YOU CAN APPLY STYLES TO THEM.

🎯 **TYPES OF SELECTORS:**

ELEMENT SELECTOR

- TARGETS ALL ELEMENTS OF A SPECIFIC TYPE.

📌 AFFECTS: ALL <P> TAGS

```css
p {
  color: blue;
}
```

CLASS SELECTOR

TARGETS ELEMENTS WITH A SPECIFIC CLASS. USE . BEFORE CLASS NAME.

```css
.highlight {
  background-color: yellow;
}
```

APPLY IN HTML:

```html
<p class="highlight">This text is highlighted</p>
```

CSS SELECTORS

SELECTORS IN CSS ARE USED TO “SELECT” OR TARGET SPECIFIC HTML ELEMENTS SO YOU CAN APPLY STYLES TO THEM.

🎯 TYPES OF SELECTORS:

ID SELECTOR

- TARGETS AN ELEMENT WITH A UNIQUE ID. USE # BEFORE ID NAME.

```css
#title {
  font-size: 24px;
}
```

APPLY IN HTML:

```html
<h1 id="title">Welcome</h1>
```

UNIVERSAL SELECTOR

- APPLIES TO ALL ELEMENTS.

```css
* {
  margin: 0;
  padding: 0;
}
```

ACCOMPANIED BY RELEVANT HTML CODE

TIP: USE CLASS FOR MULTIPLE ELEMENTS, ID FOR ONE UNIQUE ELEMENT, AND ELEMENT SELECTORS FOR GENERAL STYLING.

CSS PROPERTIES – STYLE YOUR WEBPAGE

CSS PROPERTIES DEFINE WHAT GETS CHANGED — LIKE COLOR, SIZE, SPACING, BORDERS, ETC. EACH PROPERTY IS FOLLOWED BY A VALUE AND ENDS WITH A SEMICOLON.

🎨 COMMON CSS PROPERTIES:

🖍️ TEXT AND FONT STYLING:

```
color: red;                 /* Text color */
font-size: 18px;            /* Text size */
font-family: Arial;         /* Font type */
text-align: center;         /* Centered text */
```

📦 BOX MODEL & SPACING:

```
margin: 20px;               /* Space outside the element */
padding: 10px;              /* Space inside the element */
border: 1px solid black;    /* Adds border around element */
```

CSS PROPERTIES – STYLE YOUR WEBPAGE

CSS PROPERTIES DEFINE WHAT GETS CHANGED — LIKE COLOR, SIZE, SPACING, BORDERS, ETC. EACH PROPERTY IS FOLLOWED BY A VALUE AND ENDS WITH A SEMICOLON.

🎨 **COMMON CSS PROPERTIES:**

🎨 **BACKGROUND AND APPEARANCE:**

```css
background-color: lightblue;
background-image: url("bg.jpg");
border-radius: 10px;       /* Rounded corners */
```

🔧 **STRUCTURE:**

```
selector {
  property: value;
  property: value;
}
```

```
p {
  color: green;
  font-size: 16px;
}
```

CSS WORKS ON THE BOX MODEL: EVERY HTML ELEMENT IS TREATED LIKE A BOX — YOU CONTROL ITS SIZE, SPACING, BORDERS, AND CONTENT.

LET'S BRING EVERYTHING TOGETHER!
A PERSONAL WEBPAGE IS A GREAT STARTING POINT — A DIGITAL "HELLO" TO THE WORLD WITH YOUR NAME, INTERESTS, AND CONTACT INFO.

✨ WHAT TO INCLUDE IN THE WEBPAGE:

- HEADING – YOUR NAME
- PARAGRAPH – SHORT BIO OR INTRO
- IMAGE – YOUR PROFILE PHOTO
- LIST – HOBBIES OR SKILLS
- LINKS – SOCIAL MEDIA OR EMAIL
- FORM – CONTACT SECTION (OPTIONAL)
- STYLE – USE CSS FOR LAYOUT AND COLORS
- AND MORE...

```html
<!DOCTYPE html>
<html>
<head>
  <title>My Webpage</title>
  <style>
    body { font-family: Arial; background-color: #f0f0f0; }
    h1 { color: navy; }
    p { font-size: 16px; }
  </style>
</head>
<body>
  <h1>Hi, I'm Asha</h1>
  <p>I'm learning web development. I love reading and designing websites.</p>
  <img src="asha.jpg" width="150" alt="Asha's photo">
  <ul>
    <li>Web Development</li>
    <li>Graphic Design</li>
    <li>Photography</li>
  </ul>
  <a href="mailto:asha@example.com">Email Me</a>
</body>
</html>
```

UNIT - 4

OPEN OFFICE TOOLS

WORKING WITH WORD PROCESSOR, SPREADSHEETS, AND PRESENTATIONS

MADE BY STELLA KUJUR

ABOUT THE UNIT

- **INTRODUCTION**
  - OPENOFFICE IS A FREE, OPEN-SOURCE OFFICE SUITE THAT INCLUDES TOOLS FOR WORD PROCESSING, SPREADSHEETS, PRESENTATIONS, AND MORE.
- **WHY LEARN THIS?**
  - IT OFFERS PRACTICAL, JOB-READY SKILLS FOR DOCUMENT CREATION, DATA HANDLING, AND DIGITAL PRESENTATION — WITHOUT NEEDING PAID SOFTWARE LIKE MICROSOFT OFFICE.

WHAT YOU'LL LEARN

BY THE END OF THIS UNIT, LEARNERS WILL BE ABLE TO:

- INSTALL AND SET UP OPENOFFICE
- CREATE AND EDIT DOCUMENTS USING WRITER (LIKE MS WORD)
- USE CALC (LIKE EXCEL) FOR SPREADSHEETS AND CHARTS
- BUILD AND DELIVER PRESENTATIONS USING IMPRESS (LIKE POWERPOINT)

STEP-BY-STEP INSTALLATION

1. DOWNLOAD THE INSTALLER FROM OPENOFFICE.ORG
2. DOUBLE-CLICK THE .EXE FILE TO START INSTALLATION
3. CHOOSE:
   - LANGUAGE
   - INSTALLATION TYPE (TYPICAL OR CUSTOM)
4. CLICK NEXT AND THEN INSTALL
5. AFTER INSTALLATION, LAUNCH OPENOFFICE FROM THE START MENU OR DESKTOP ICON

TIP: OPENOFFICE MAY ASK FOR USER DETAILS (LIKE NAME) DURING FIRST LAUNCH FOR DEFAULT FILE SETTINGS.

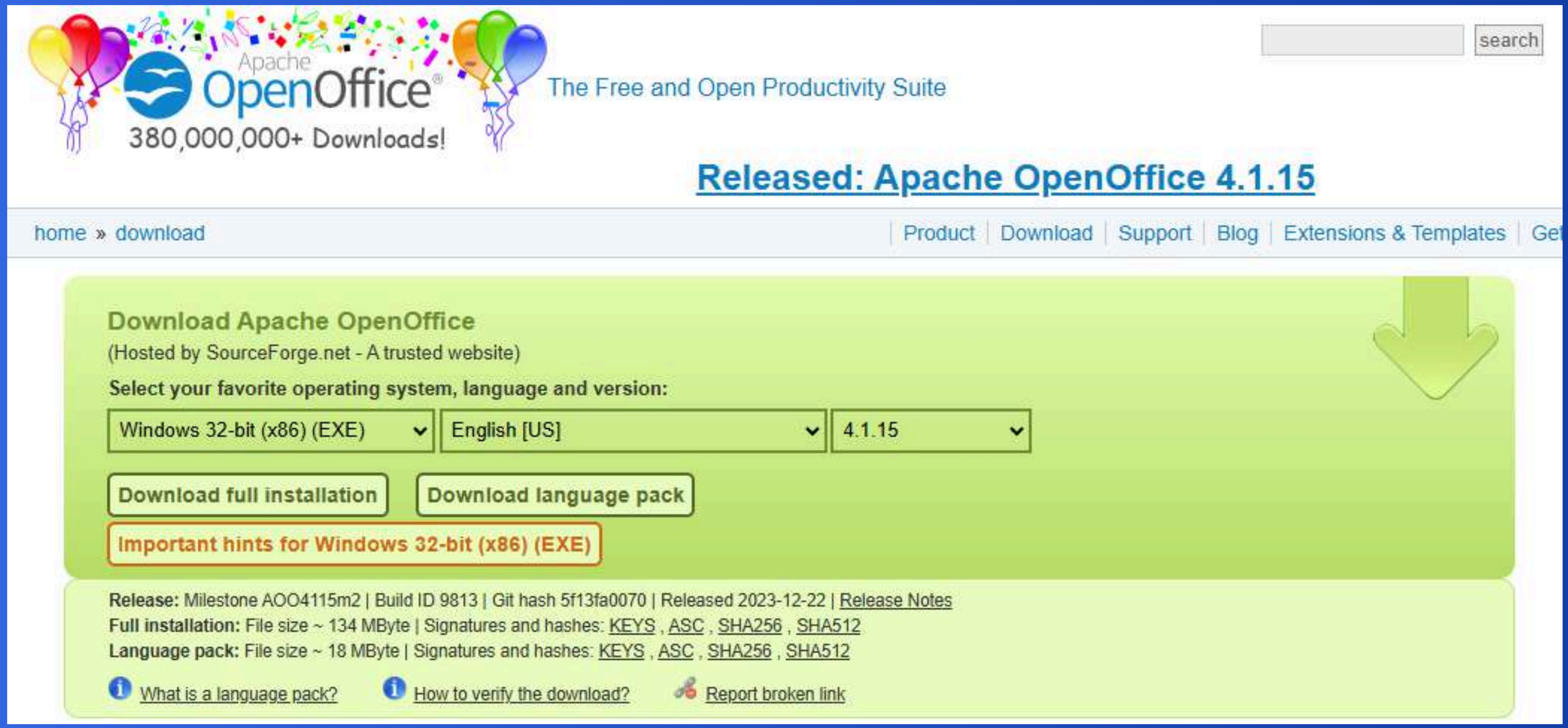
ADVANTAGES OF OPENOFFICE

1. 🆓 **FREE & OPEN SOURCE**
   - NO LICENSING FEES
   - OPEN FOR COMMUNITY-DRIVEN IMPROVEMENTS
2. 💻 **CROSS-PLATFORM**
   - WORKS ON WINDOWS, MACOS, AND LINUX
3. 🧩 **COMPATIBLE WITH MS OFFICE FILES**
   - CAN OPEN AND SAVE .DOCX, .XLSX, .PPTX, ETC.
4. 🧠 **SIMPLE, USER-FRIENDLY INTERFACE**
   - EASY FOR BEGINNERS
   - SIMILAR LAYOUT TO MS OFFICE
5. 🌐 **MULTILINGUAL SUPPORT**
   - AVAILABLE IN MANY INDIAN AND INTERNATIONAL LANGUAGES
6. 📦 **INCLUDES ALL MAJOR TOOLS**
   - WRITER (WORD), CALC (EXCEL), IMPRESS (POWERPOINT), DRAW, BASE, MATH

✅ ***IDEAL FOR STUDENTS, EDUCATORS, AND OFFICES WHERE COST OR LICENSING IS A CONCERN.***

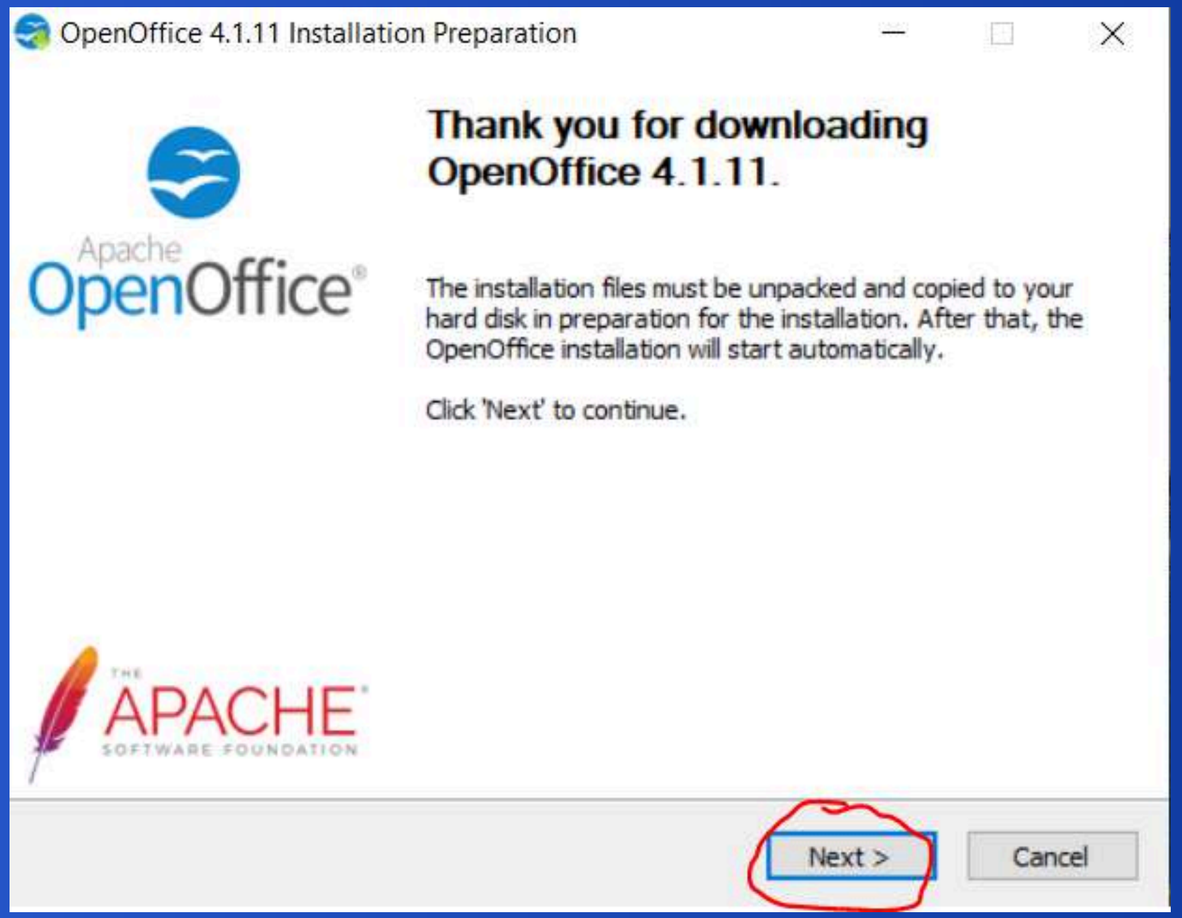
STEP-BY-STEP INSTALLATION

DOWNLOADING THE INSTALLER FROM OPENOFFICE.ORG



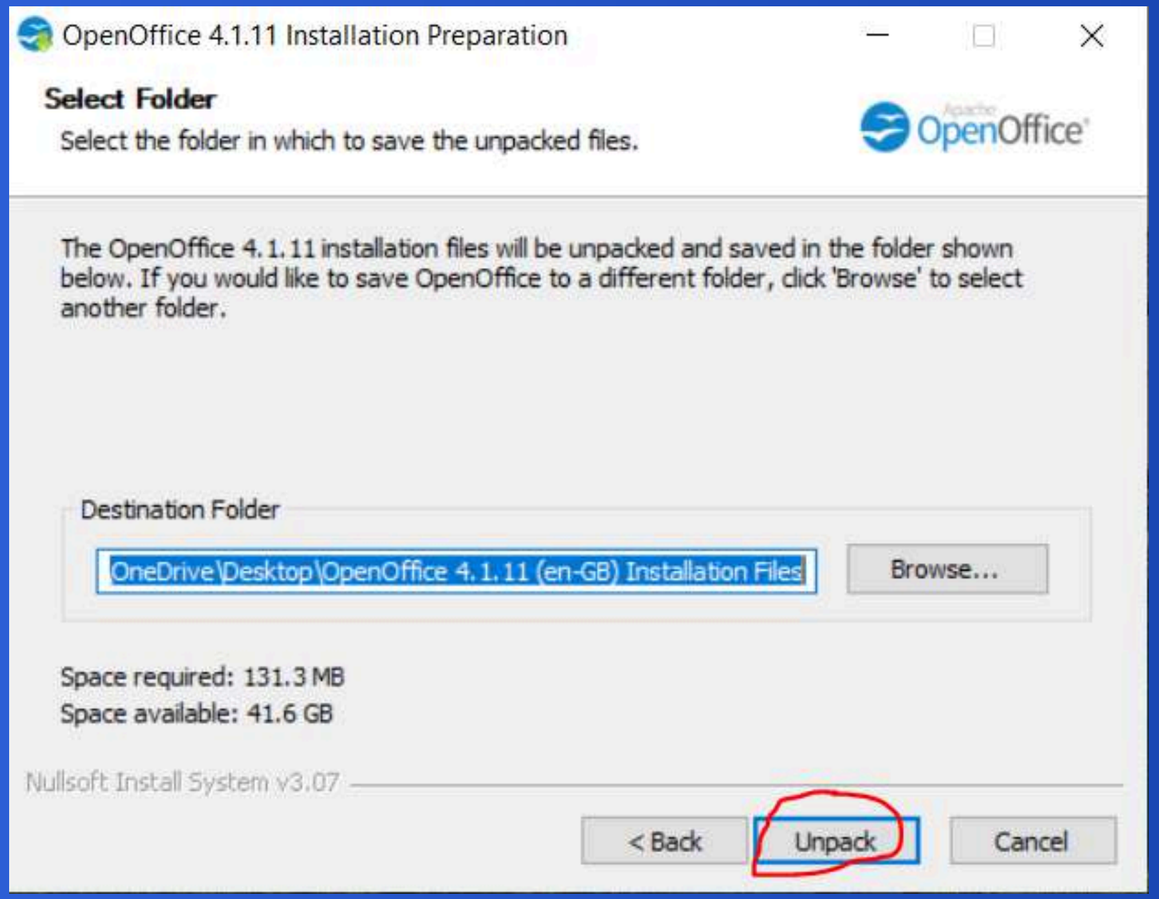
STEP-BY-STEP INSTALLATION

BEGIN INSTALLATION BY DOUBLE CLICKING .EXE FILE WE JUST DOWNLOADED



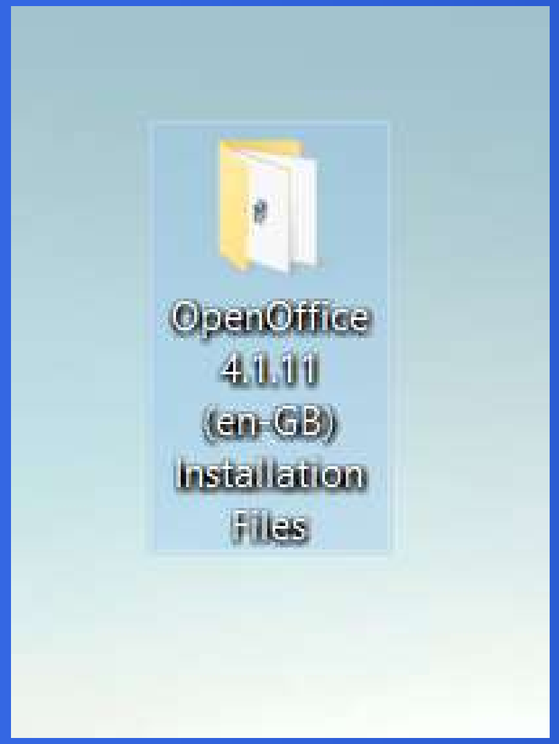
STEP-BY-STEP INSTALLATION

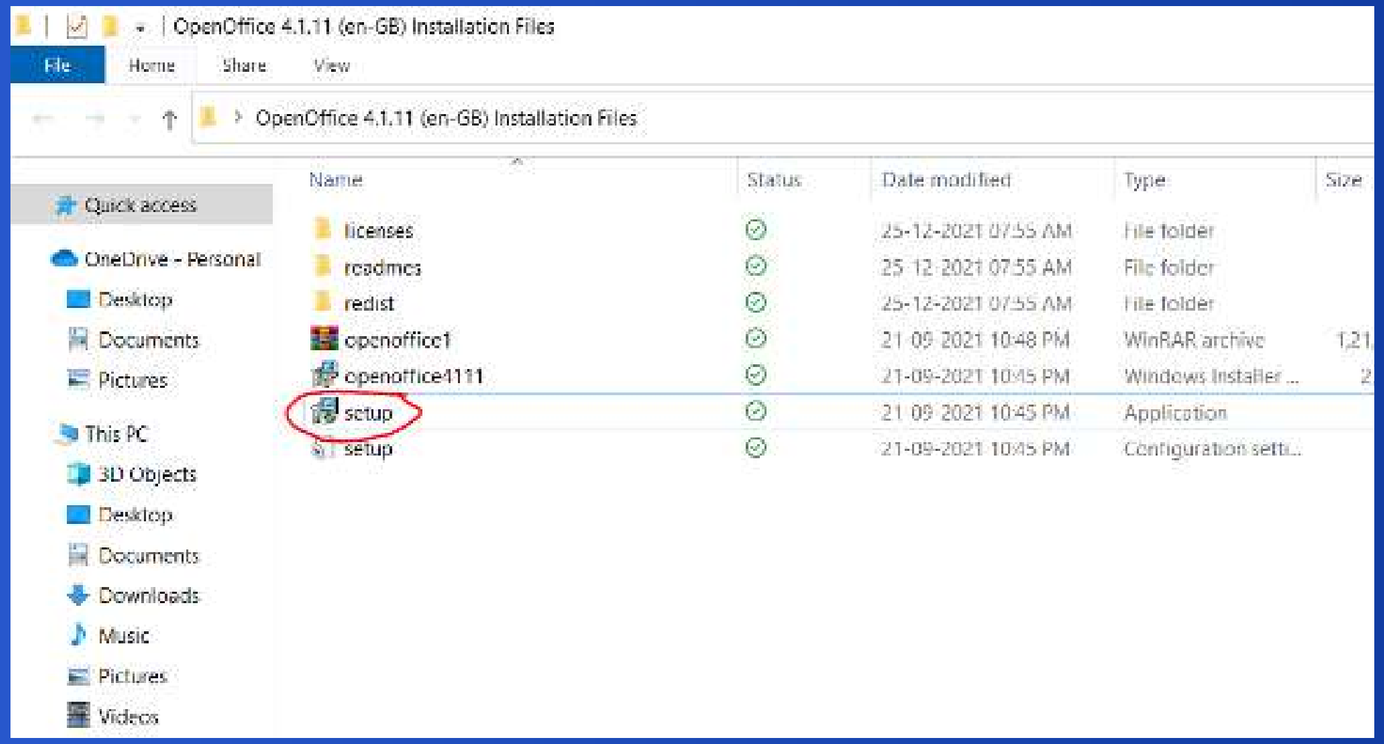
BEGIN UNPACKING BY SETTING LOCATION



STEP-BY-STEP INSTALLATION

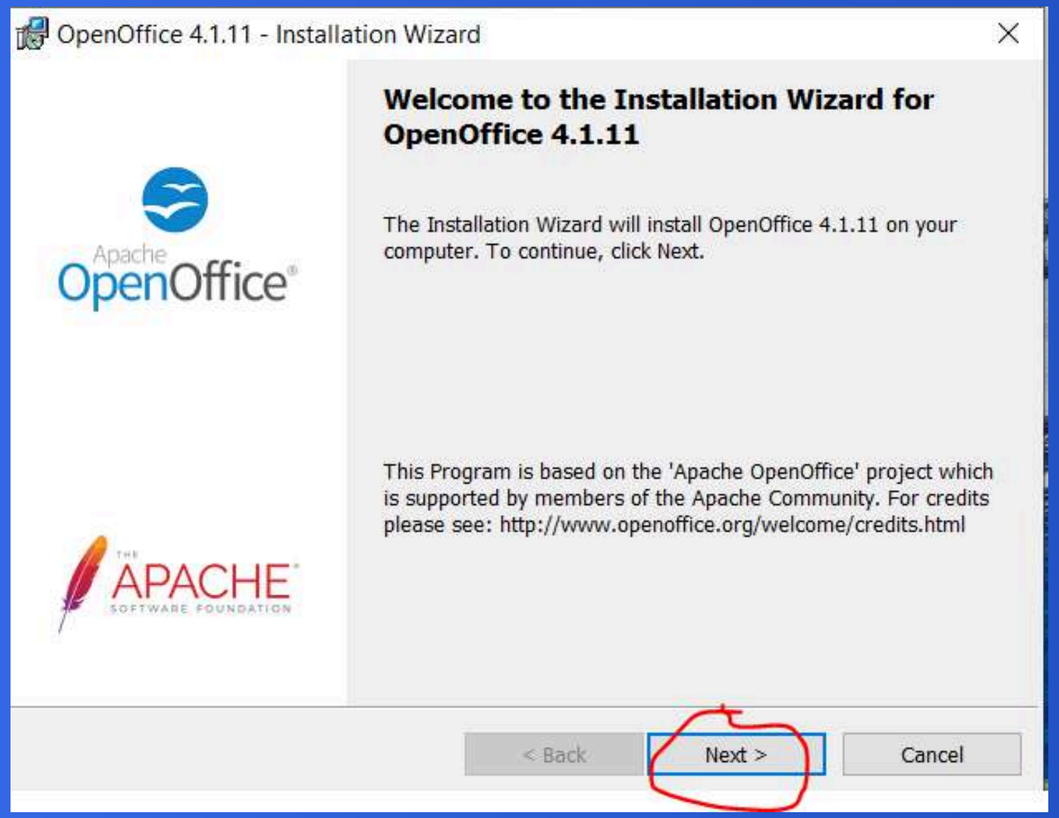
AFTER UNPACK THE SETUP WILL AUTOMATICALLY START IF NOT STARTED THEN FIND YOUR PLACE WHERE YOU UNPACK YOUR SETUP AND OPEN THAT FOLDER. NOW IN THE FOLDER YOU FIND MANY FILES BUT CLICK ONLY ON THE SETUP TO CONTINUE YOUR INSTALLATION.

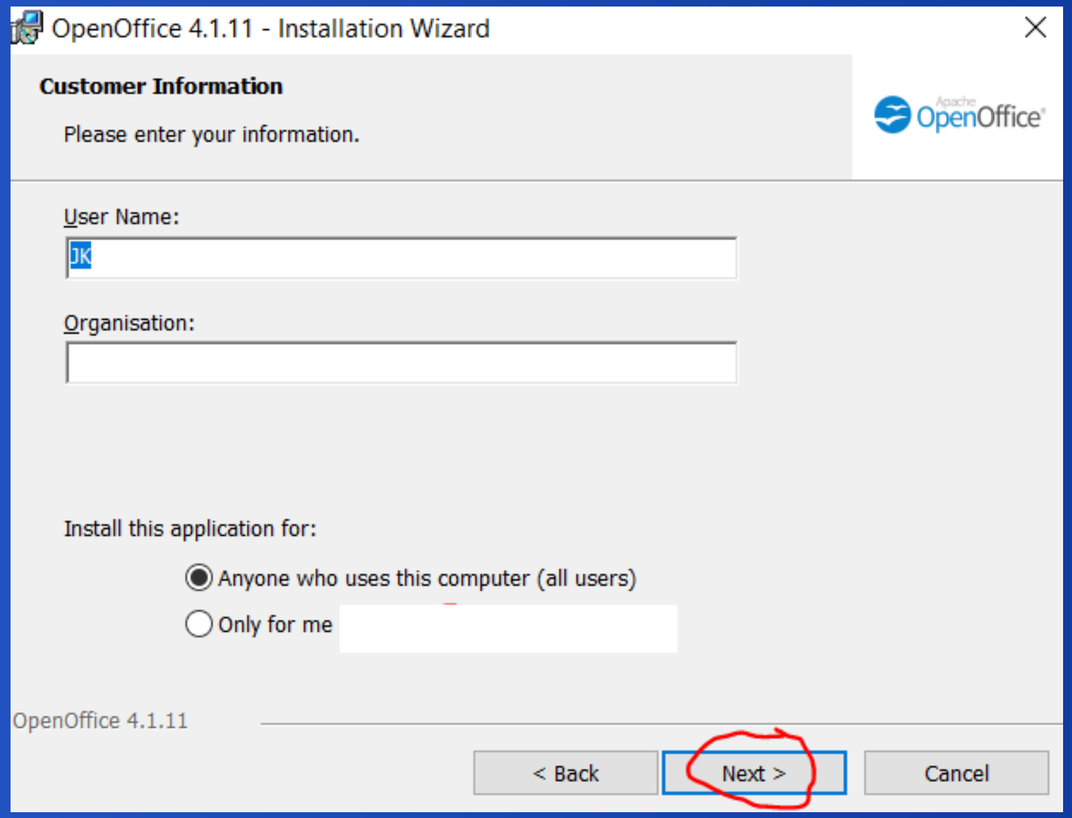




STEP-BY-STEP INSTALLATION

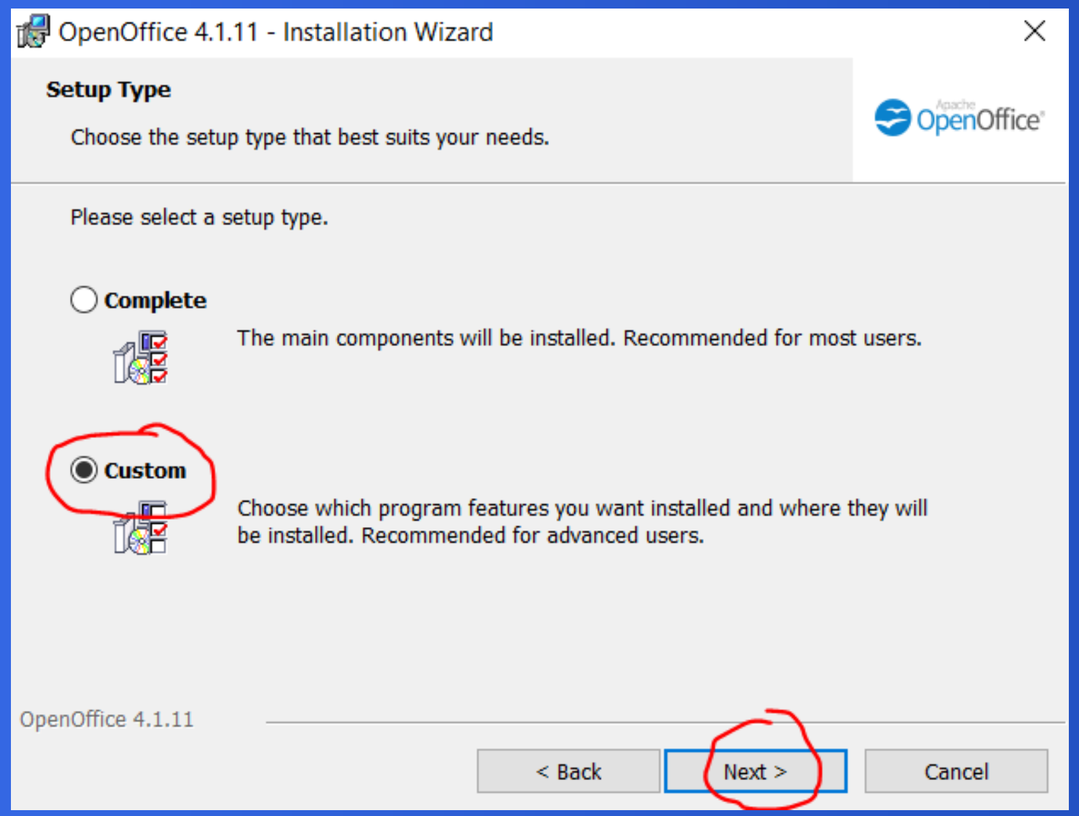
THE SETUP WILL START NOW CLICK ON THE NEXT BUTTON. NEXT SCREEN WILL BE OF CUSTOMER INFORMATION WHERE YOU WRITE YOUR NAME AND ORGANIZATION NAME, USED FOR IF YOU WANT TO OTHERWISE CLICK ON THE NEXT BUTTON.

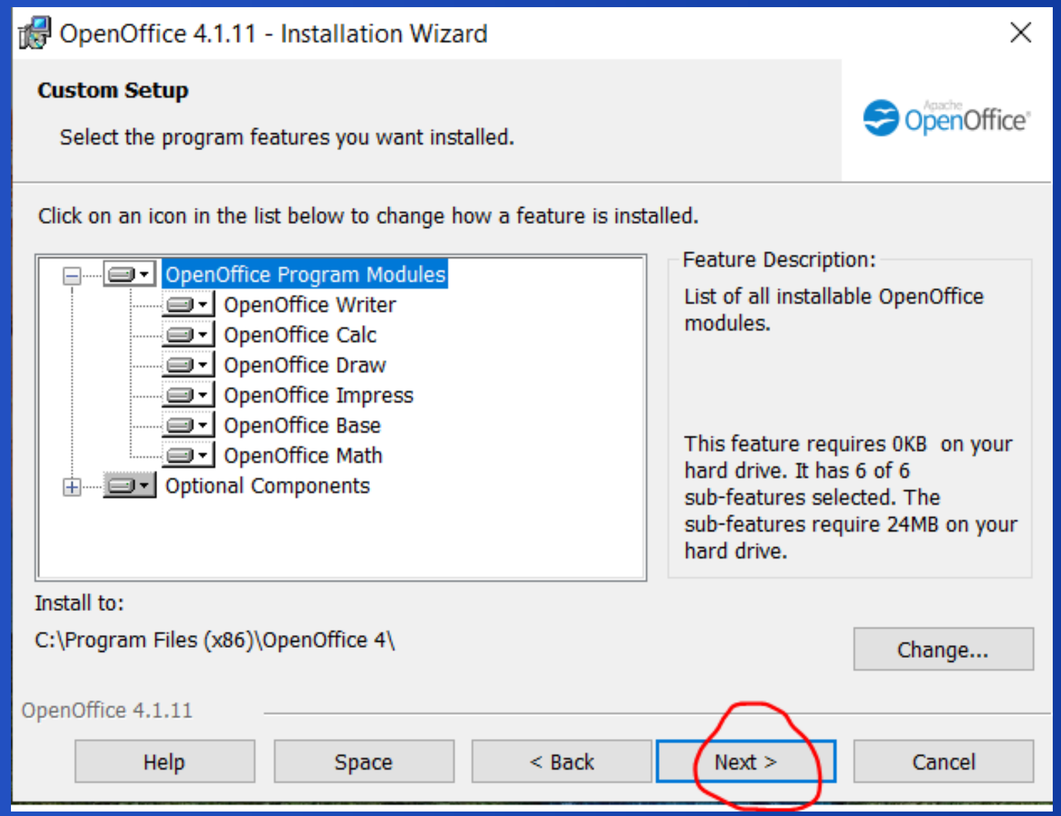




STEP-BY-STEP INSTALLATION

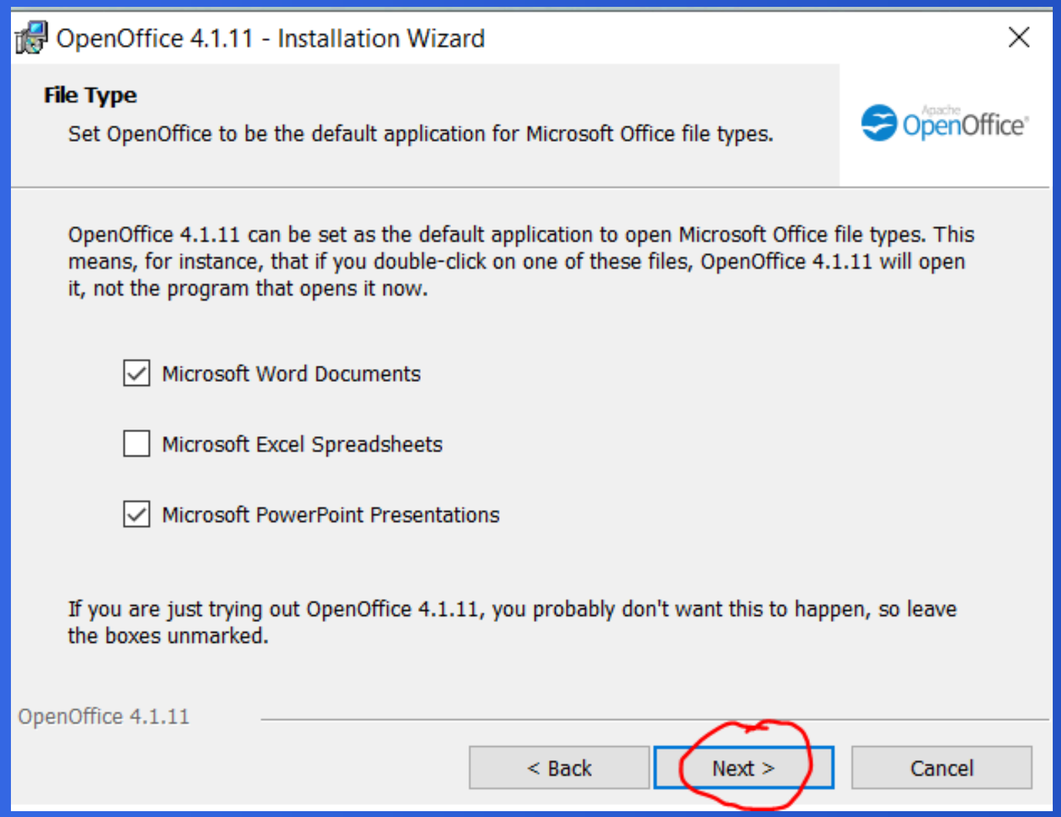
SELECT NSTALLATION TYPE AND PROGRAMS TO BE INSTALLED

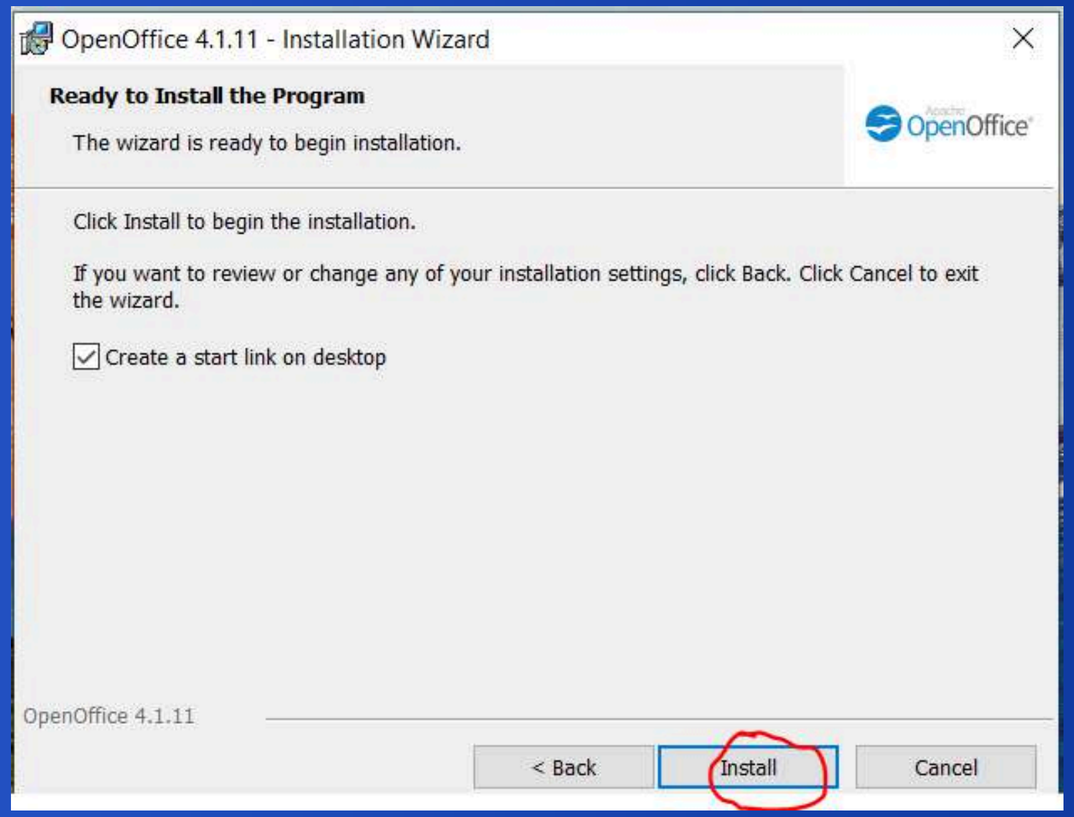




STEP-BY-STEP INSTALLATION

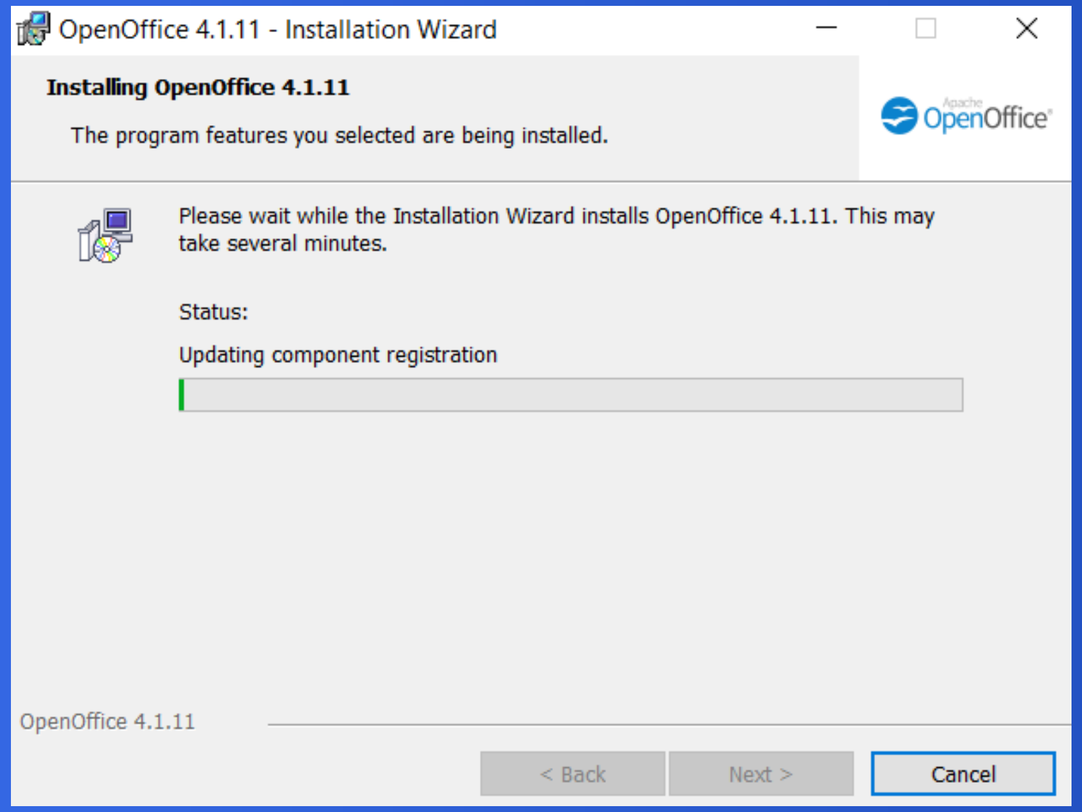
SELECT OPENOFFICE AS DEFAULT APPLICATION THEN INSTALL AND WAIT FOR COMPLETION

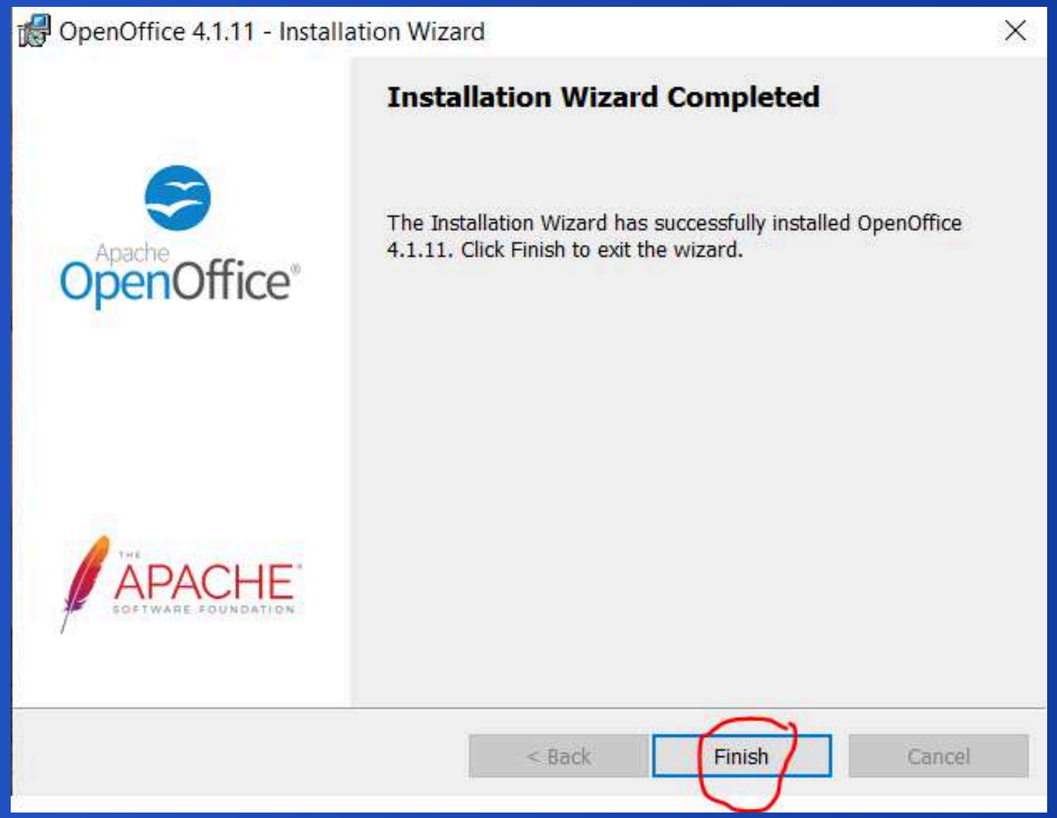




STEP-BY-STEP INSTALLATION

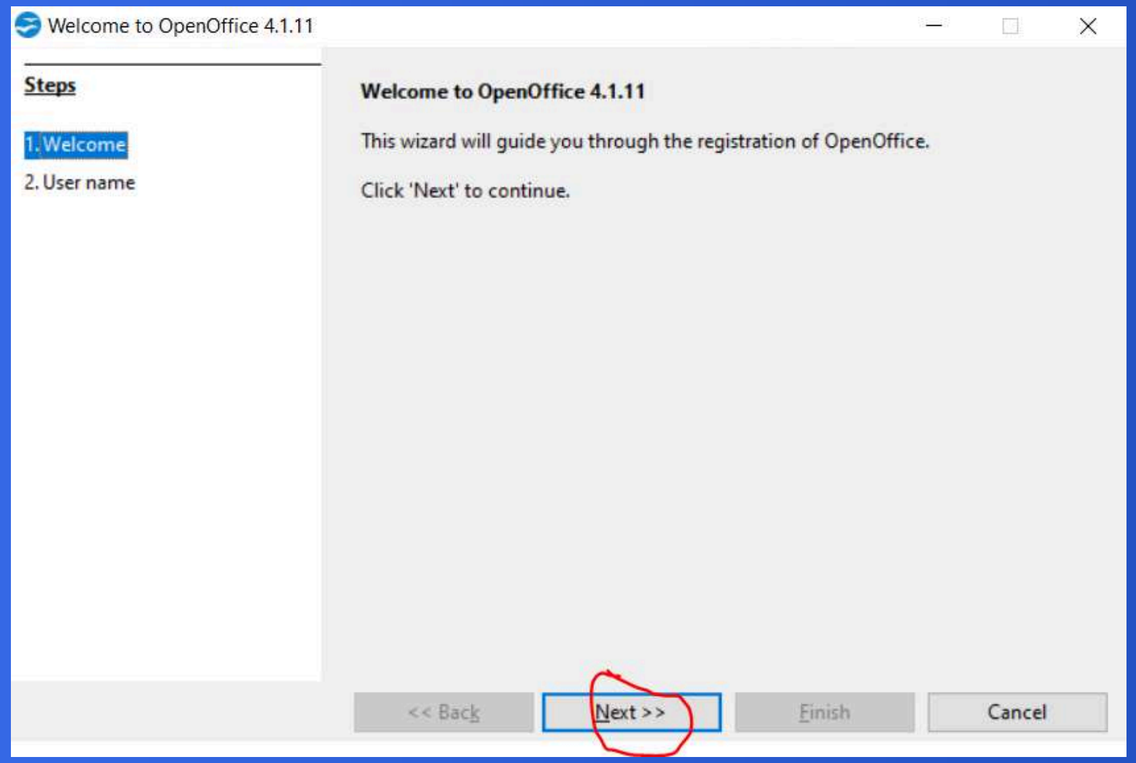
INSTALLATION COMPLETED

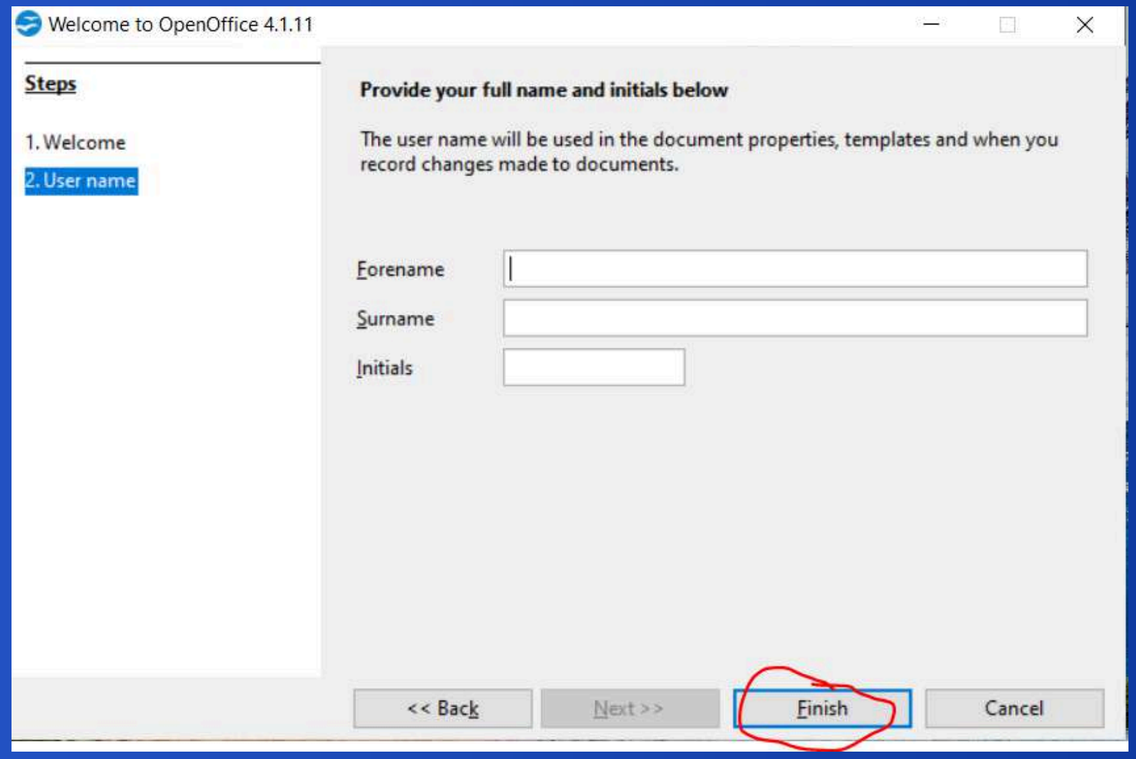




STEP-BY-STEP INSTALLATION

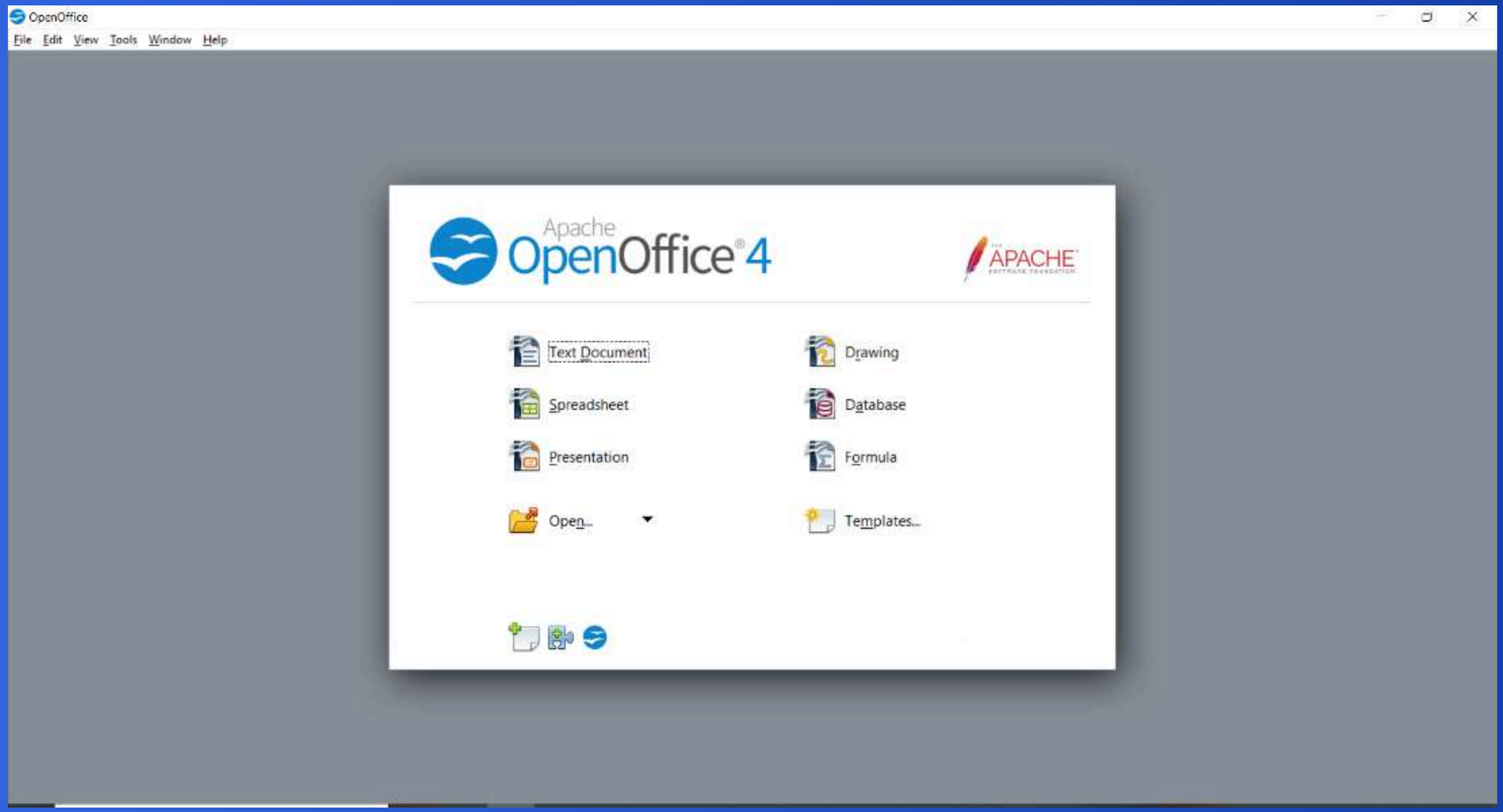
OPEN OPENOFFICE THEN SET UP USER PROFILE ACCORDINGLY





STEP-BY-STEP INSTALLATION

BEGIN BY CREATING YOUR FIRST PROJECT

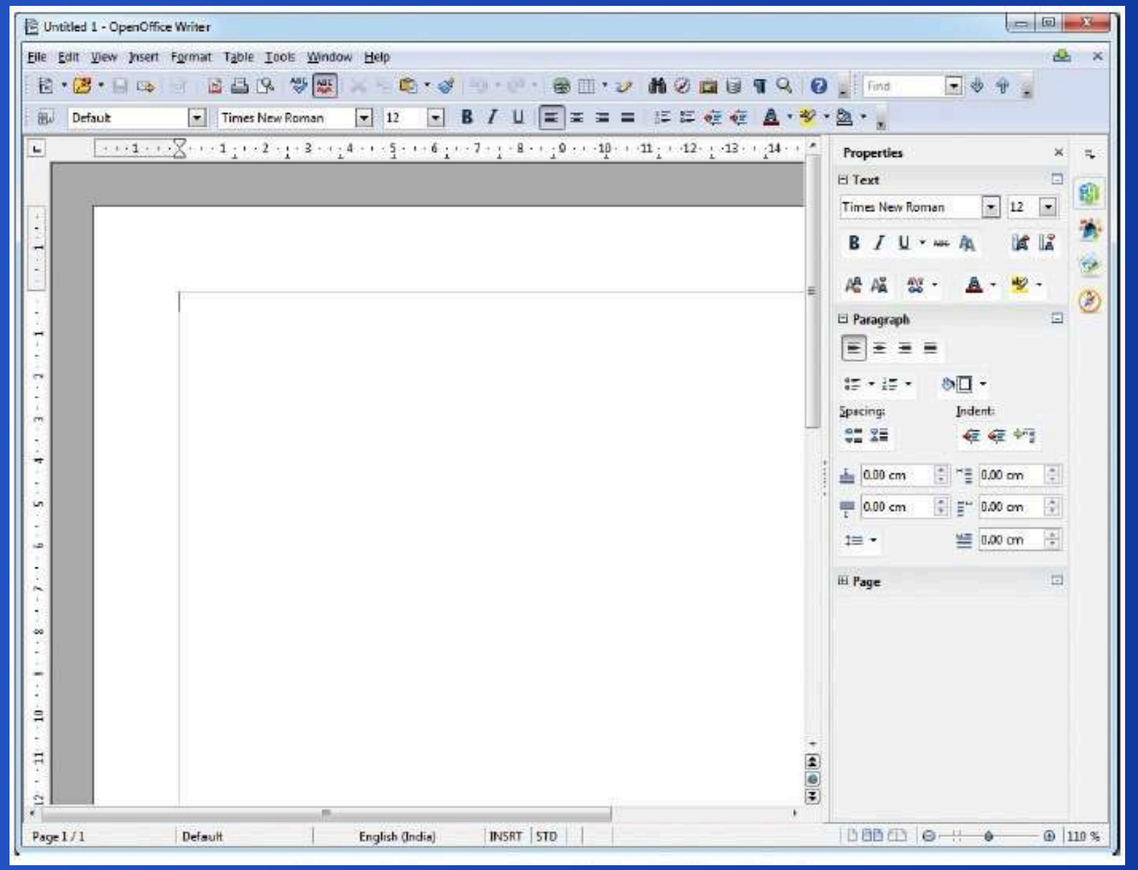


WHAT IS WRITER?

WRITER IS OPENOFFICE'S WORD PROCESSOR — SIMILAR TO MS WORD — USED TO CREATE, EDIT, AND FORMAT DOCUMENTS LIKE LETTERS, REPORTS, ASSIGNMENTS, AND MORE.

🧠 **KEY USES:**

- WRITING AND EDITING TEXT
- INSERTING IMAGES, TABLES, AND HYPERLINKS
- FORMATTING PARAGRAPHS AND PAGES
- SPELL-CHECK AND AUTOCORRECT
- SAVING DOCUMENTS IN .ODT, .DOC, .PDF, AND MORE



PARTS OF OPENOFFICE WRITER INTERFACE

🧩 1. TITLE BAR

- LOCATED AT THE TOP OF THE WINDOW
- DISPLAYS THE NAME OF THE CURRENTLY OPENED DOCUMENT
- SHOWS "UNTITLED1" FOR NEW DOCUMENTS
- INCLUDES MINIMIZE, MAXIMIZE, AND CLOSE BUTTONS

🧭 2. MENU BAR

- JUST BELOW THE TITLE BAR
- CONTAINS DROP-DOWN MENUS:
- FILE, EDIT, VIEW, INSERT, FORMAT, TABLE, TOOLS, ETC.
- EVERY MAJOR FEATURE CAN BE ACCESSED FROM HERE

🛠️ 3. TOOLBARS

- USUALLY TWO BY DEFAULT:
- STANDARD TOOLBAR: NEW, OPEN, SAVE, PRINT, UNDO, ETC.
- FORMATTING TOOLBAR: FONT, SIZE, BOLD, ITALIC, COLOR, ALIGNMENT
- CAN BE CUSTOMIZED OR MOVE**D**

🎯 4. RIGHT-CLICK (CONTEXT MENUS)

- WHEN YOU RIGHT-CLICK ON TEXT OR AN OBJECT QUICK OPTIONS APPEAR
- USEFUL FOR FORMATTING, INSERTING LINKS/IMAGES, SPELL-CHECK, ETC.

PARTS OF OPENOFFICE WRITER INTERFACE

📏 5. RULER

- APPEARS HORIZONTALLY AND VERTICALLY
- HELPS ALIGN TEXT, IMAGES, AND TABLES
- ALLOWS YOU TO SET MARGINS, INDENTS, AND TAB STOPS

📊 6. STATUS BAR

- LOCATED AT THE BOTTOM OF THE WINDOW
- DISPLAYS USEFUL INFO LIKE:
  - PAGE NUMBER
  - WORD COUNT
  - LANGUAGE
  - ZOOM LEVEL
  - DOCUMENT EDITING MODE

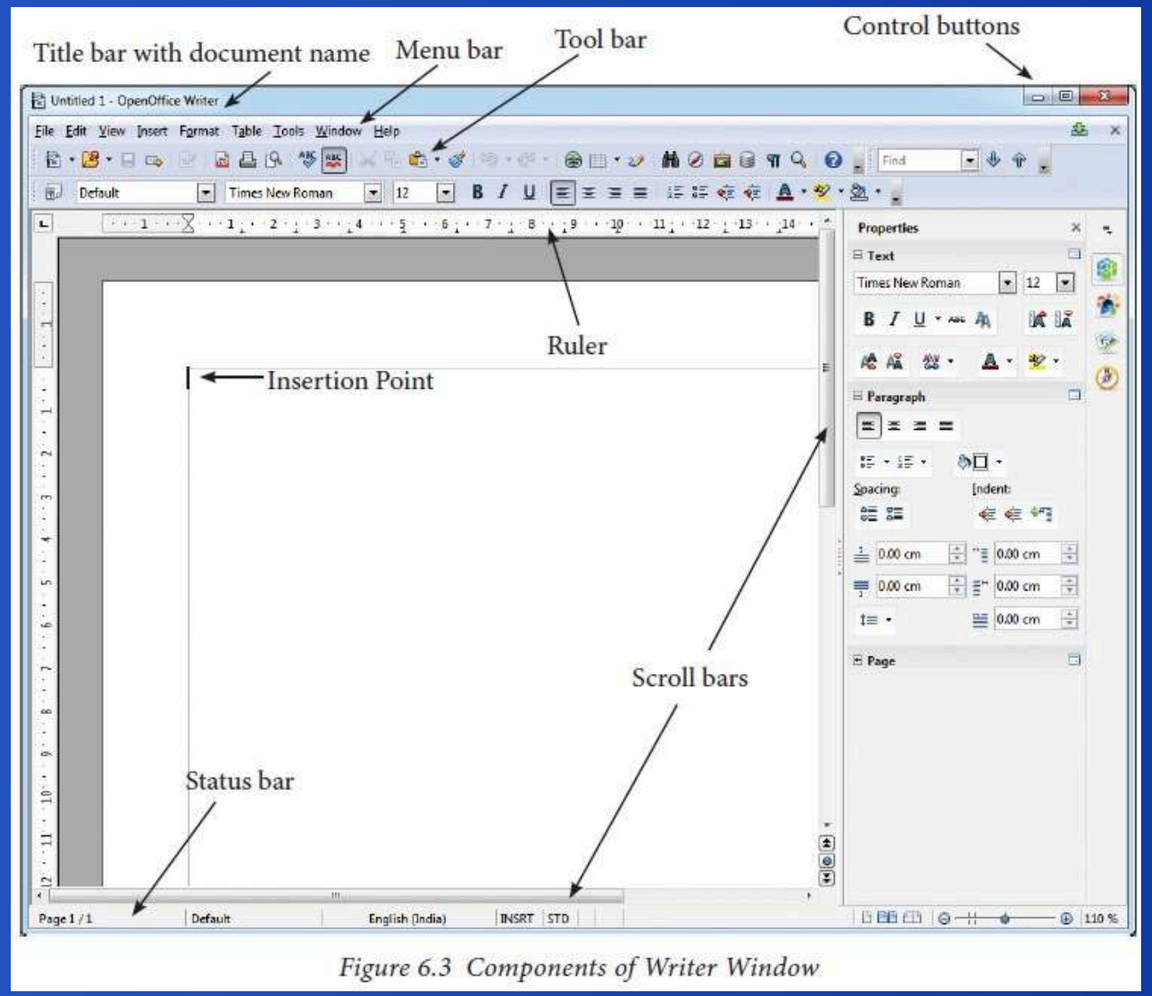


Figure 6.3 Components of Writer Window

STARTING, OPENING, SAVING, AND CLOSING A DOCUMENT

📄 STARTING A NEW DOCUMENT

- OPEN WRITER → AUTOMATICALLY STARTS A NEW UNTITLED DOCUMENT
- OR GO TO:
- FILE > NEW > TEXT DOCUMENT
- YOU CAN ALSO OPEN EXISTING FILES WITH FILE > OPEN

📂 OPENING A DOCUMENT

- MENU PATH: FILE > OPEN
- BROWSE AND SELECT ANY .ODT, .DOC, .TXT, OR COMPATIBLE FILE
- QUICK ACCESS ICON ALSO AVAILABLE ON THE TOOLBAR

💾 SAVING A DOCUMENT

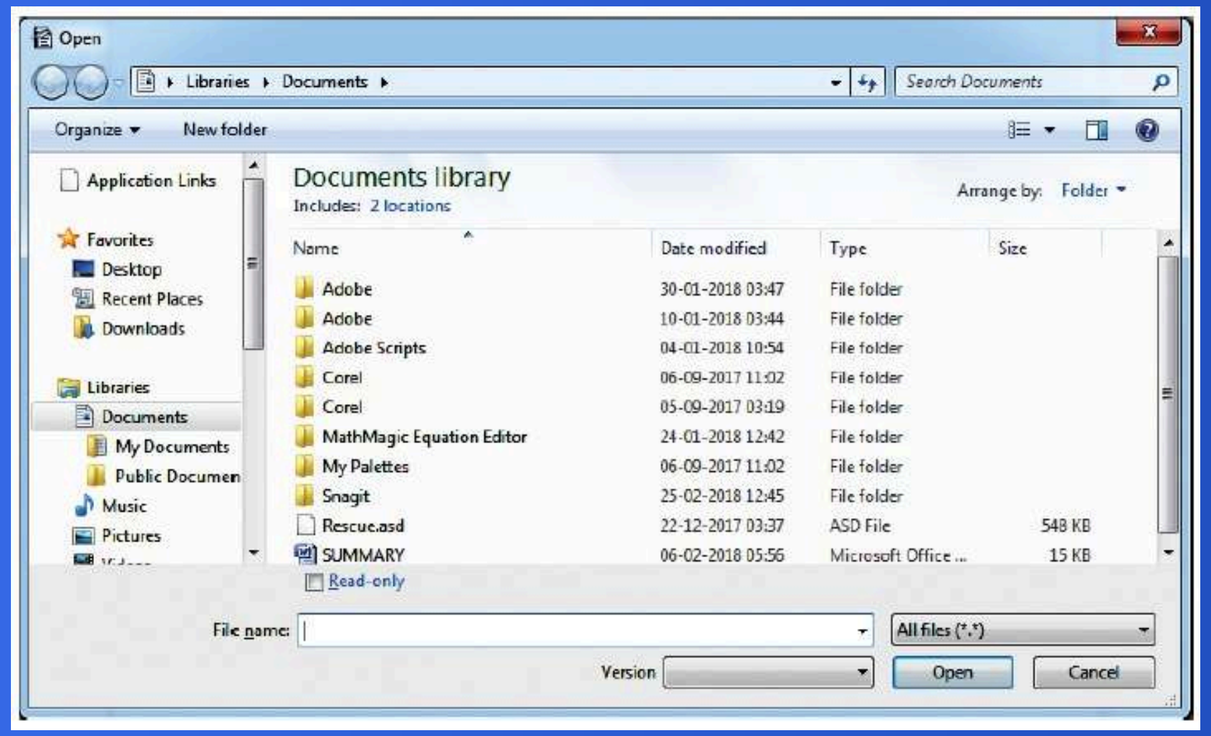
- MENU PATH: FILE > SAVE OR CTRL + S
- FIRST-TIME SAVE PROMPTS FOR FILE NAME AND LOCATION
- COMMON FORMATS:
- .ODT (DEFAULT)
- .DOC OR .DOCX (MS WORD)
- .PDF (VIA EXPORT AS PDF)

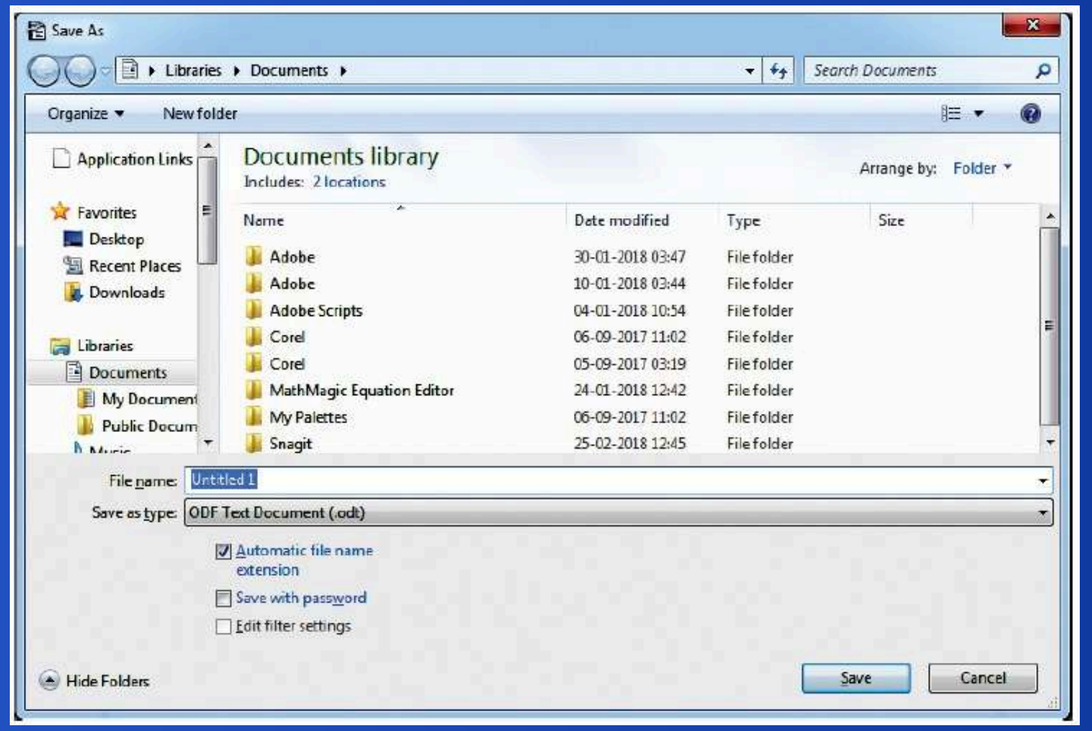
❌ CLOSING A DOCUMENT

- MENU PATH: FILE > CLOSE
- IF CHANGES ARE UNSAVED, IT WILL ASK TO SAVE BEFORE CLOSING
- TO EXIT OPENOFFICE COMPLETELY: FILE > EXIT

🔄 **SAVE REGULARLY TO PREVENT DATA LOSS. USE CTRL + S AS A HABIT!**

OPENING (RIGHT) AND SAVING (LEFT) A DOCUMENT





EDITING TEXT – SELECTION, CUT, COPY, PASTE

👉 SELECTING TEXT
- USE MOUSE OR KEYBOARD (SHIFT + ARROW KEYS)
- SELECTED TEXT IS HIGHLIGHTED
- REQUIRED BEFORE PERFORMING FORMATTING OR COPY/PASTE

✂️ CUTTING TEXT
- MENU: EDIT > CUT OR SHORTCUT CTRL + X
- REMOVES TEXT FROM CURRENT LOCATION AND STORES IT IN CLIPBOARD

📋 COPYING TEXT
- MENU: EDIT > COPY OR CTRL + C
- MAKES A DUPLICATE WITHOUT REMOVING ORIGINAL TEXT

📌 PASTING TEXT
- MENU: EDIT > PASTE OR CTRL + V
- INSERTS CLIPBOARD CONTENT AT CURSOR'S POSITION

Operation	Action	Icons	Shortcut Key
CUT	Cuts the selected text		Ctrl +X
COPY	To make a duplication of the text.		Ctrl +C
PASTE	To paste the text to a new location after cut or copy process.		Ctrl +V
UNDO	Cancels the previous operation that was performed		Ctrl +Z

CHARACTER & PARAGRAPH FORMATTING

🔠 CHARACTER FORMATTING

- AFFECTS THE APPEARANCE OF INDIVIDUAL LETTERS, WORDS, OR SENTENCES.
  - FONT TYPE & SIZE
    - FORMAT > CHARACTER OR USE TOOLBAR OPTIONS
  - BOLD / ITALIC / UNDERLINE
    - TOOLBAR ICONS OR CTRL+B, CTRL+I, CTRL+U
  - FONT COLOR & HIGHLIGHT
    - ADD COLOR TO EMPHASIZE IMPORTANT TEXT
  - SUPERSCRIPT / SUBSCRIPT
    - USED IN FORMULAS (E.G., X^2 OR H_2O)

📄 PARAGRAPH FORMATTING

- AFFECTS THE STRUCTURE AND LAYOUT OF WHOLE PARAGRAPHS.
  - TEXT ALIGNMENT
    - LEFT, CENTER, RIGHT, JUSTIFY
  - LINE SPACING
    - 1.0,1.5,2.0 LINES – USE FORMAT > PARAGRAPH
  - INDENTATION
    - ADD SPACE FROM MARGIN USING RULER OR SETTINGS
  - BULLETS AND NUMBERING
    - FOR LISTS AND STEPS

GOOD FORMATTING IMPROVES READABILITY AND MAKES YOUR DOCUMENT LOOK PROFESSIONAL.

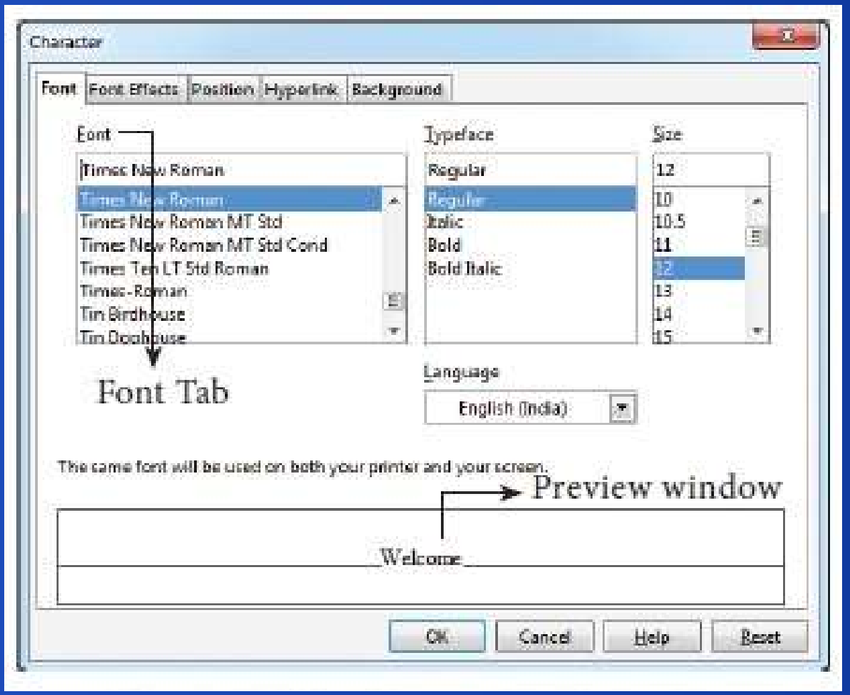
CHARACTER FORMATTING

OPERATION	ACTION	ICON	SHORTCUT KEY
BOLD	Makes the text bold	B	Ctrl + B
ITALICS	Italicizes the text	I	Ctrl +I
UNDERLINE	Underlines the text	U	Ctrl +U

The default font type is **Times New Roman** and the type of font can be changed by clicking on the **Font Type icon** Times New Roman

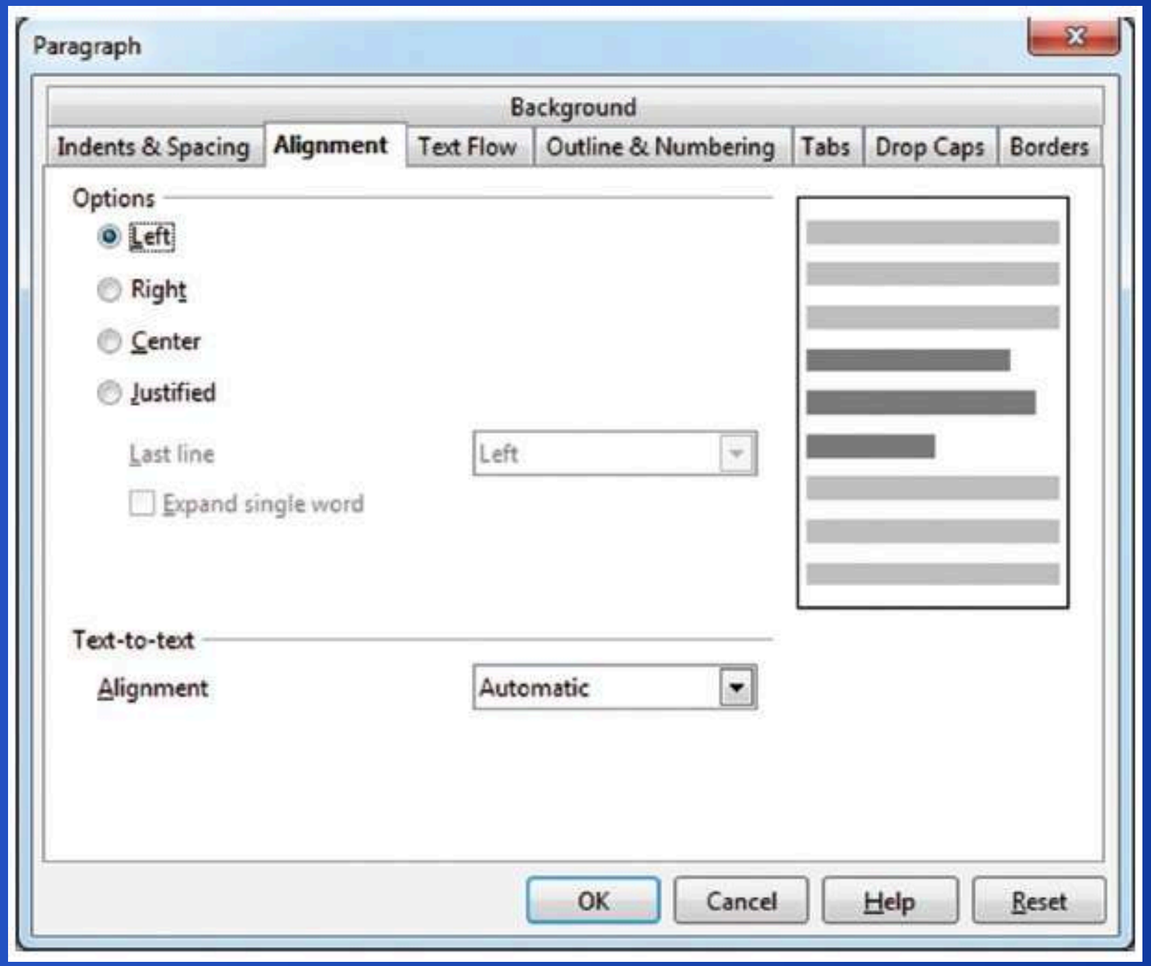
The default size of font is **12 points** which can be changed by clicking on the **FontSize** icon 12

The default font color is **black** and the font color can be changed by clicking on the **Font colour icon** which shows the color palette from which the required color can be selected.

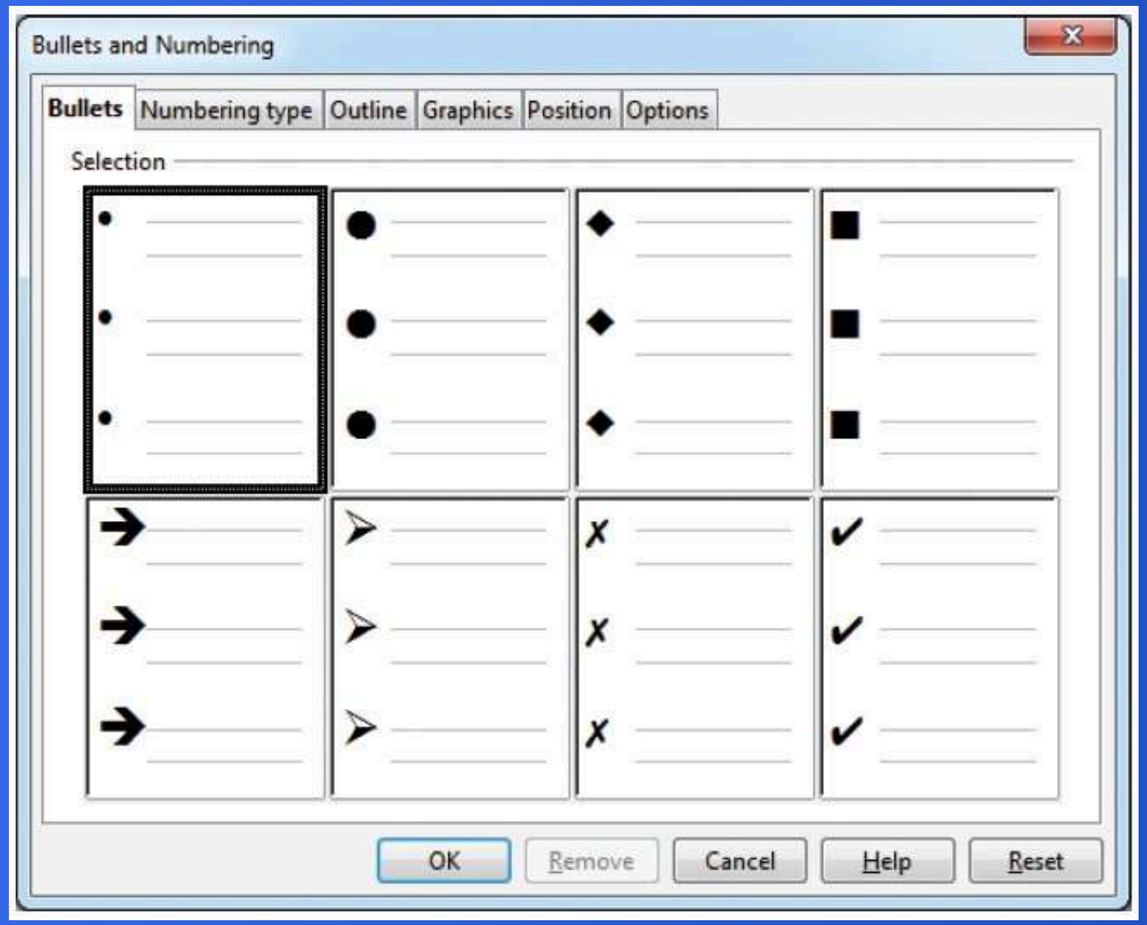


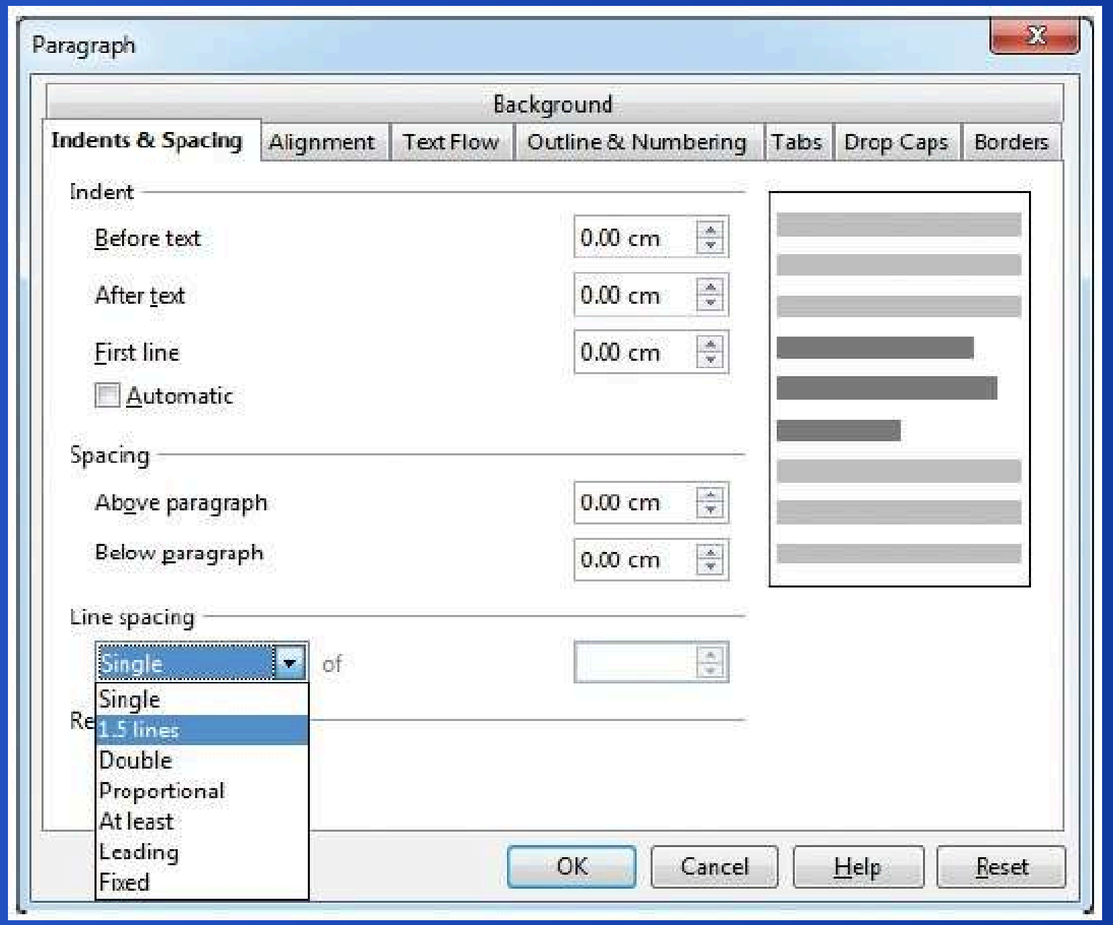
PARAGRAPH FORMATTING (ALIGNMENTS)

ALIGNMENT	ACTION	ICON	SHORT CUT KEY
LEFT	Aligns the paragraph with respect to the left margin		Ctrl + L
RIGHT	Aligns the paragraph with respect to the right margin		Ctrl + R
CENTER	Aligns the paragraph with respect to the center of the page		Ctrl + E
JUSTIFIED	Aligns the paragraph with respect to both the left and right margin		Ctrl + J

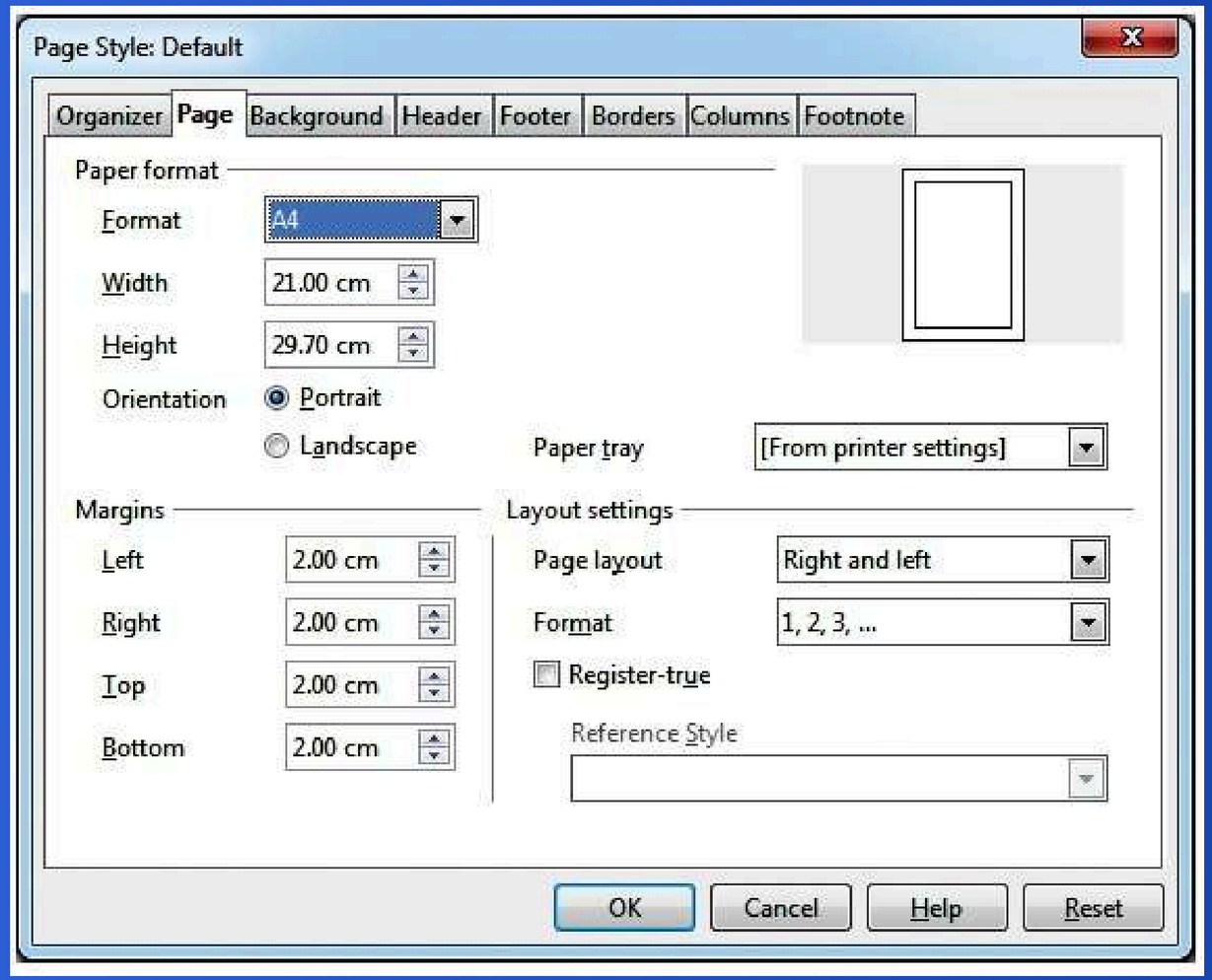


PARAGRAPH FORMATTING





PAGE FORMATTING



FIND & REPLACE, SPELL CHECK & AUTOCORRECT

🔎 FIND & REPLACE

- QUICKLY SEARCH FOR WORDS OR PHRASES AND REPLACE THEM.
  - ACCESS: EDIT > FIND & REPLACE OR CTRL + F
  - ENTER THE WORD TO FIND
  - ENTER THE WORD TO REPLACE WITH
  - CLICK REPLACE OR REPLACE ALL
- USEFUL FOR CORRECTING REPEATED ERRORS
  - (E.G., CHANGING "HTE" TO "THE")

🧠 SPELLING AND GRAMMAR CHECK

- CHECKS YOUR DOCUMENT FOR SPELLING MISTAKES AND BASIC GRAMMAR ISSUES.
  - ACCESS: TOOLS > SPELLING AND GRAMMAR OR PRESS F7
  - MISSPELLED WORDS ARE UNDERLINED IN RED
  - SUGGESTIONS ARE GIVEN TO CORRECT ERRORS
- HELPS MAINTAIN A PROFESSIONAL TONE

🪄 AUTOCORRECT

- AUTOMATICALLY FIXES COMMON TYPING MISTAKES AS YOU TYPE.
  - ACCESS: TOOLS > AUTOCORRECT OPTIONS
  - EXAMPLE: TYPING "TEH" WILL CORRECT TO "THE"
- YOU CAN CUSTOMIZE OR DISABLE CORRECTIONS
- GREAT FOR SAVING TIME AND REDUCING TYPOS

WHAT IS CALC?

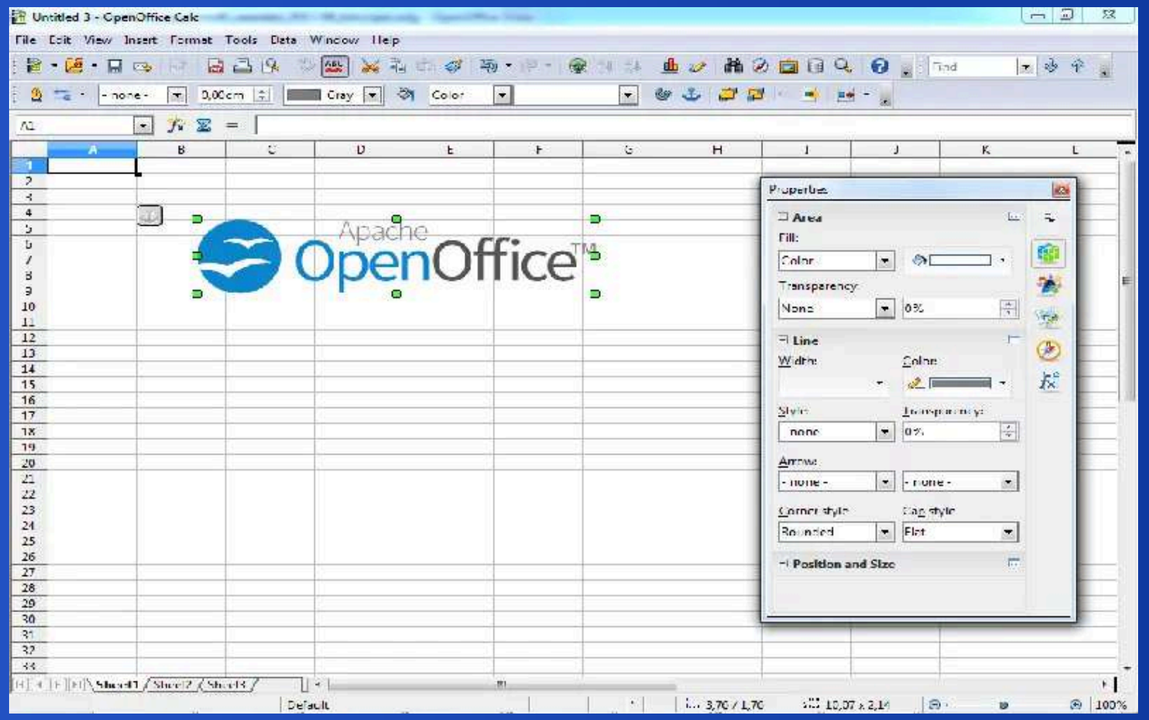
CALC IS OPENOFFICE'S SPREADSHEET APPLICATION — SIMILAR TO MICROSOFT EXCEL — USED FOR WORKING WITH DATA, NUMBERS, FORMULAS, AND CHARTS. CALC IS IDEAL FOR ANYONE MANAGING STRUCTURED DATA — EVEN SMALL SHOPS, SCHOOL PROJECTS, OR PERSONAL FINANCES.

🧠 KEY CONCEPTS:

- A SPREADSHEET IS A FILE MADE OF ROWS AND COLUMNS
- EACH RECTANGLE IS CALLED A CELL, WHICH STORES DATA
- A SHEET IS A SINGLE TAB INSIDE A SPREADSHEET FILE
- YOU CAN USE CALC FOR:
- BUDGETING
- ATTENDANCE TRACKING
- SIMPLE DATABASES
- DATA VISUALIZATION WITH CHARTS

📁 FILE TYPE:

- .ODS (OPEN DOCUMENT SPREADSHEET)
- ALSO SUPPORTS .XLS, .XLSX (EXCEL FORMATS)



PARTS OF OPENOFFICE CALC INTERFACE

📌 1. FORMULA BAR

- LOCATED NEAR THE TOP
- DISPLAYS THE ACTIVE CELL'S CONTENT
- USED TO WRITE OR EDIT FORMULAS AND TEXT
- BEGINS WITH = FOR FORMULAS
  - (E.G., =SUM(A1:A5))

🔲 2. CELLS & CELL ADDRESSING

- EACH CELL HAS A UNIQUE ADDRESS
  - (E.G., B2 = COLUMN B, ROW 2)
- CLICK A CELL TO SELECT AND EDIT IT
- DOUBLE-CLICK TO TYPE DIRECTLY

📄 3. SHEET TABS

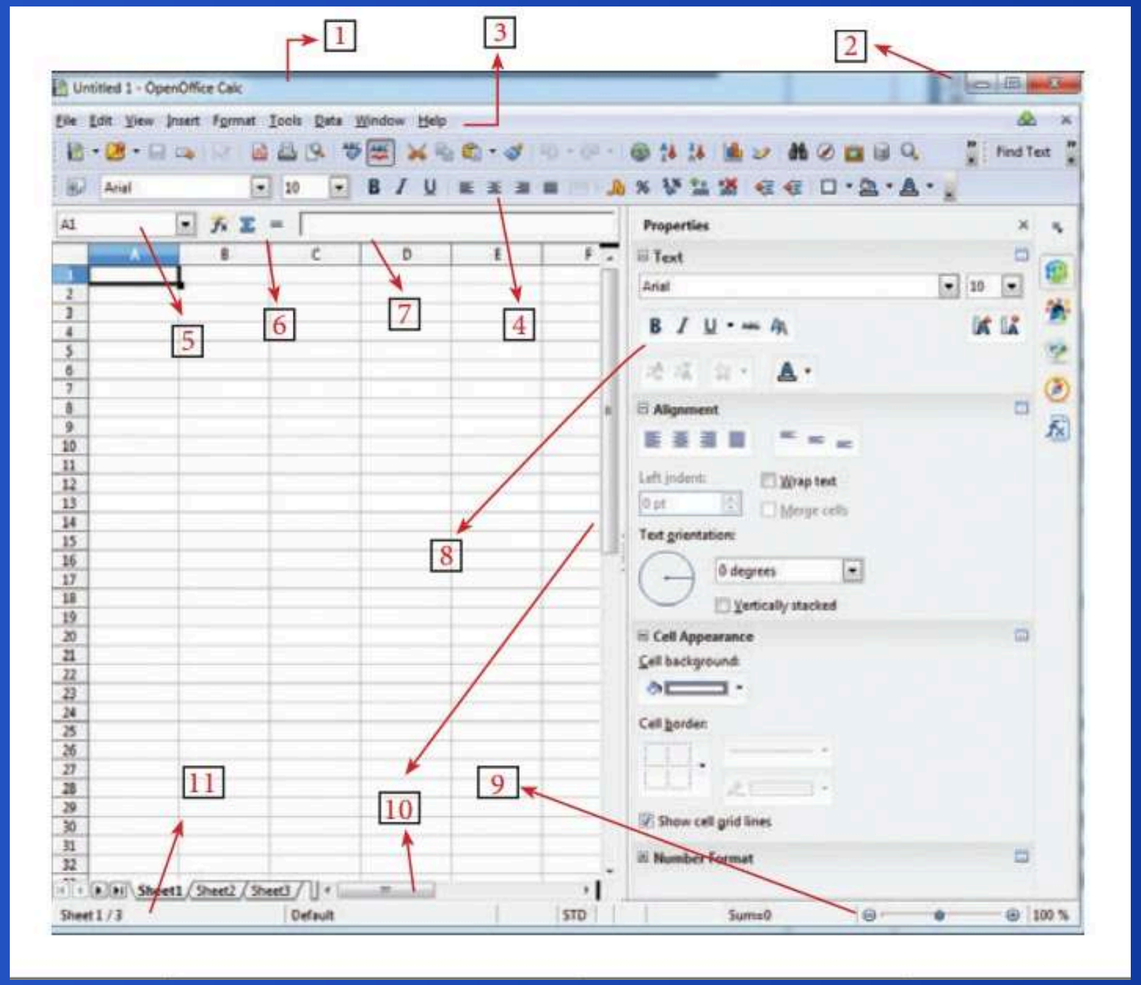
- LOCATED AT THE BOTTOM
- YOU CAN HAVE MULTIPLE SHEETS IN ONE FILE
- CLICK TABS TO SWITCH BETWEEN SHEETS
  - (SHEET1, SHEET2…)

🔧 OTHER ELEMENTS:

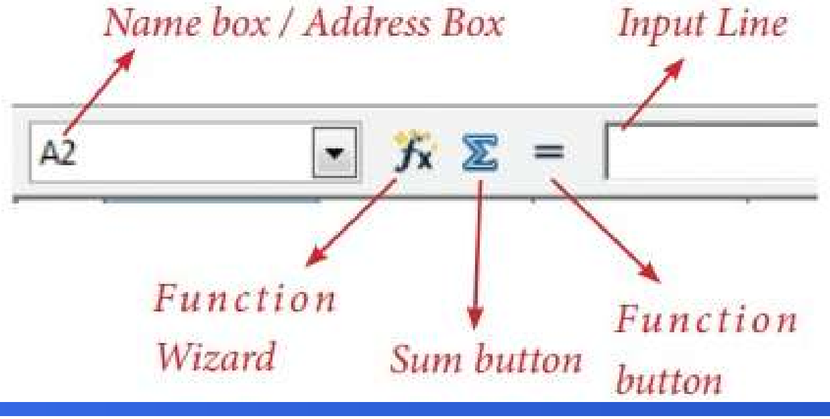
- TOOLBAR
  - STANDARD OPERATIONS (SAVE, PRINT, FORMAT)
- COLUMN/ROW HEADERS
  - HELP IN NAVIGATING DATA
- STATUS BAR
  - SHOWS SHEET DETAILS LIKE SUM OR AVERAGE WHEN CELLS ARE SELECTED

PARTS OF OPENOFFICE CALC INTERFACE

No.	Component Name	Function / Purpose
1	**Title Bar**	Displays the name of the current file and application.
2	**Control Buttons**	Minimize, Maximize/Restore, and Close the window.
3	**Menu Bar**	Provides access to all main functions like File, Edit, View, Insert, etc.
4	**Tools Bar**	Contains quick-access icons for common tools like save, print, undo, redo, etc.
5	**Name Box / Address Box**	Displays the name/address of the currently selected cell (e.g., A1).
6	**Quick Function Wizard**	Helps insert common functions (like SUM, AVERAGE) quickly into cells.
7	**Formula Bar / Input Line**	Used to enter or edit data/formulas in the selected cell.
8	**Formatting Properties**	Allows formatting of text, alignment, borders, number formats, etc.
9	**Zoom**	Adjusts the zoom level of the spreadsheet view.
10	**Scroll Bars**	Navigates through rows and columns that don't fit on the screen.
11	**Status Bar**	Shows information about the current selection (sum, count), and current sheet view settings.



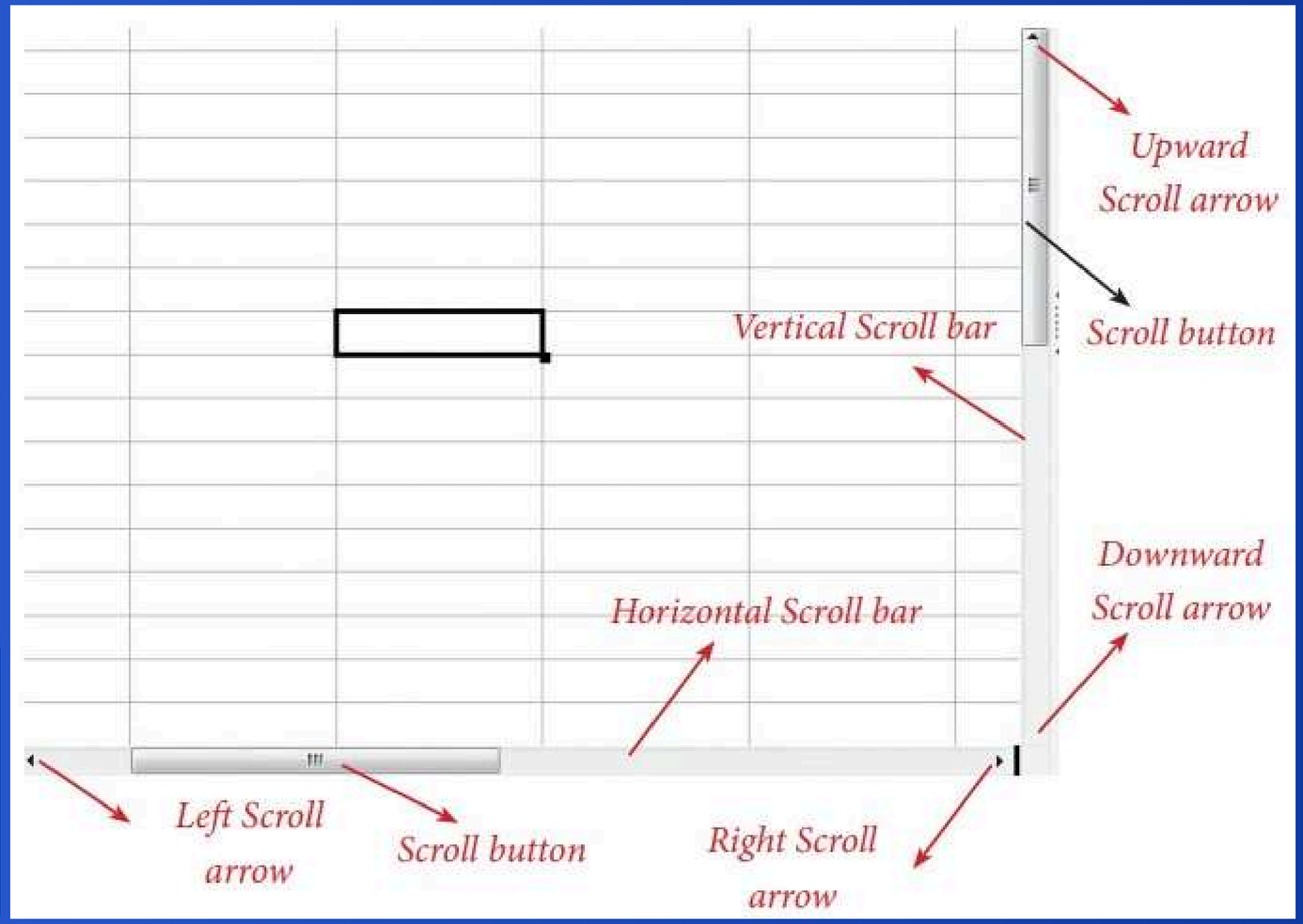
PARTS OF OPENOFFICE CALC INTERFACE



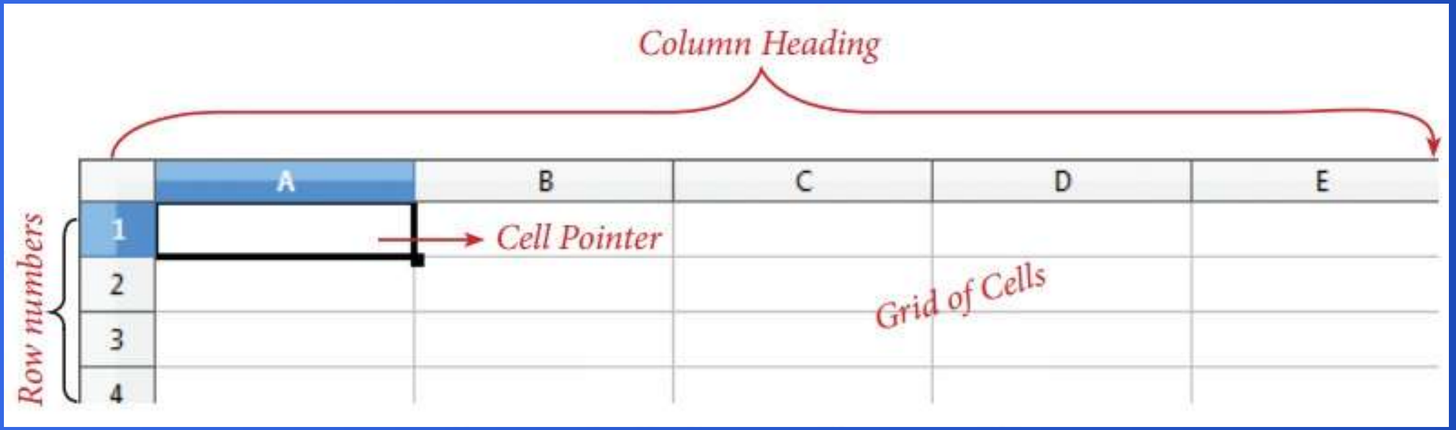
Name box : It display the current cell address

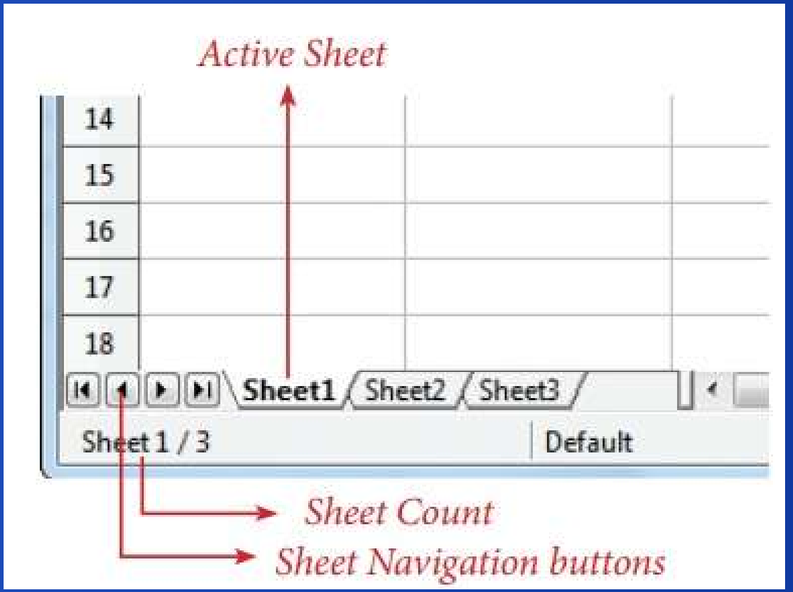
Function Wizard : It is used to insert function

Sum button : It is used to quickly insert sum function.



PARTS OF OPENOFFICE CALC INTERFACE





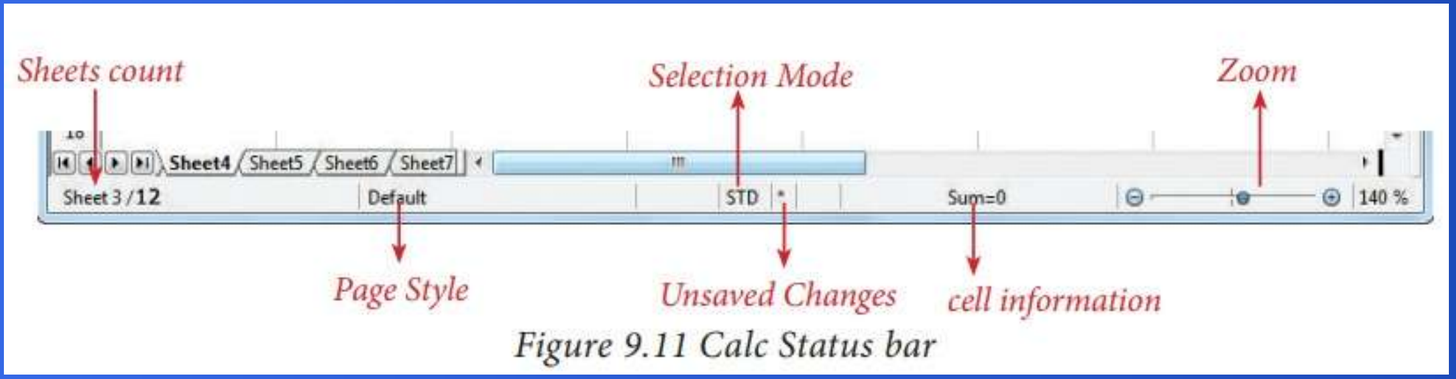
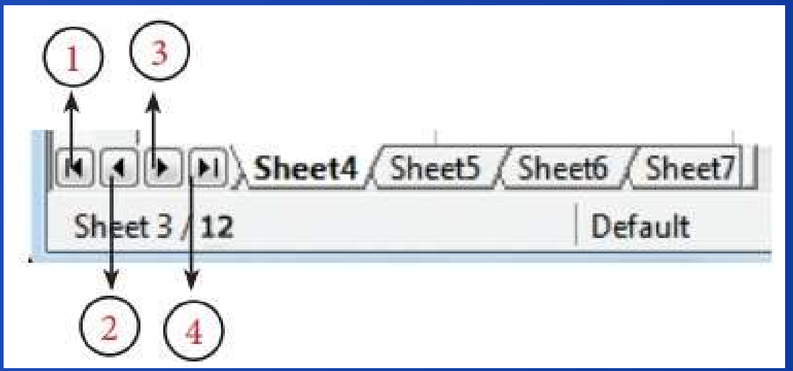


Figure 9.11 Calc Status bar



OPENING, SAVING & FREEZING ROWS/COLUMNS

📂 OPENING, SAVING, AND CLOSING FILES

- OPEN A SPREADSHEET
  - FILE > OPEN → BROWSE FOR .ODS, .XLS, ETC.
- SAVE A SPREADSHEET
  - FILE > SAVE OR CTRL + S → SAVES CURRENT SHEET
  - USE SAVE AS TO CHANGE FORMAT OR FILE NAME
- CLOSE THE FILE
  - FILE > CLOSE TO EXIT THE SHEET
  - FILE > EXIT TO QUIT OPENOFFICE COMPLETELY

❄️ FREEZING ROWS & COLUMNS

- HELPS KEEP HEADINGS VISIBLE WHILE SCROLLING.
- ✅ TO FREEZE:
  - CLICK THE CELL JUST BELOW AND RIGHT OF THE ROWS/COLUMNS YOU WANT TO FREEZE
  - GO TO WINDOW > FREEZE
    - EXAMPLE: TO FREEZE ROW 1 AND COLUMN A, CLICK CELL B2 BEFORE FREEZING.
- 🔓 TO UNFREEZE:
  - GO TO WINDOW > FREEZE AGAIN TO TOGGLE OFF

💡 TIP:

- USE FREEZE WHEN WORKING WITH LONG LISTS LIKE ATTENDANCE SHEETS, PRICE CHARTS, OR INVENTORY.

CREATING CHARTS AND FORMULAS IN CALC

📊 CREATING A CHART

- CHARTS HELP YOU VISUALIZE DATA QUICKLY.

- **STEPS:**
  - SELECT THE DATA RANGE (E.G., A1:B5)
  - CLICK INSERT > CHART
  - CHOOSE CHART TYPE:
    - COLUMN
    - PIE
    - LINE
    - BAR
  - CUSTOMIZE TITLES, LABELS, AND COLORS
  - CLICK FINISH

EXAMPLE:

- SALES DATA → SELECT → INSERT → COLUMN CHART = 📈 CLEAR VISUAL!

➕ CREATING FORMULAS

- FORMULAS HELP PERFORM CALCULATIONS AUTOMATICALLY.

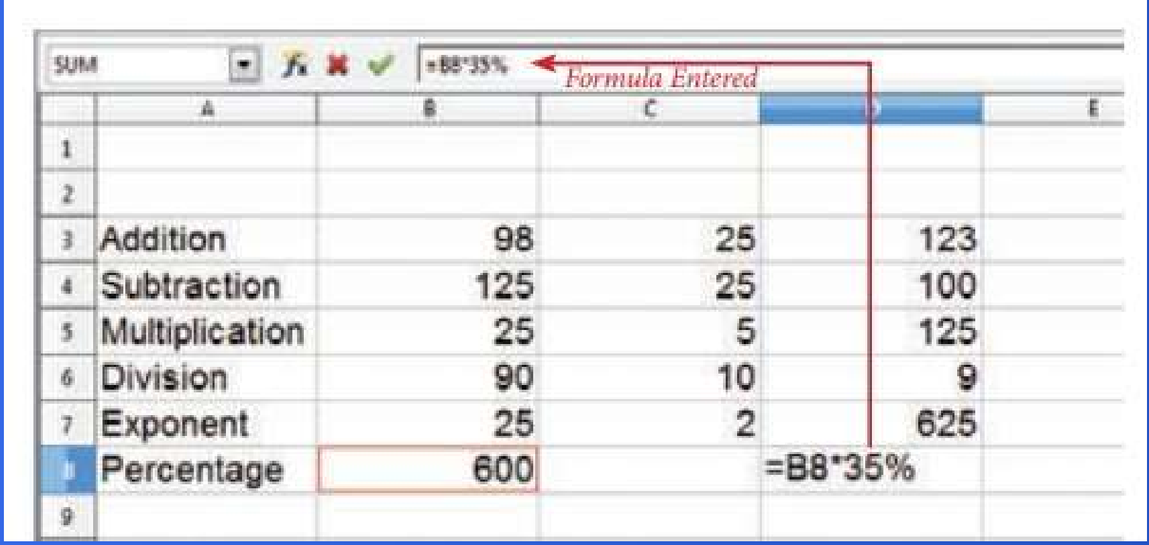
🔢 COMMON FORMULAS:

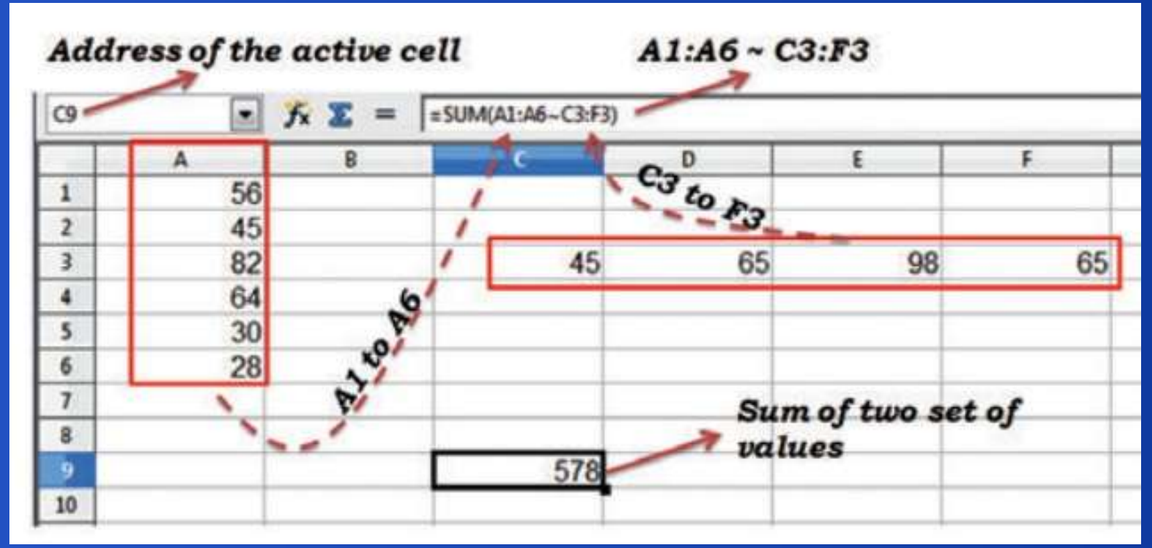
- =SUM(A1:A5) → ADDS VALUES IN CELLS A1 TO A5
- =AVERAGE(B2:B6) → CALCULATES AVERAGE
- =A1*B1 → MULTIPLIES VALUES
- =IF(C1>50; "PASS"; "FAIL") → CONDITIONAL OUTPUT
- START ALL FORMULAS WITH AN = SYMBOL.

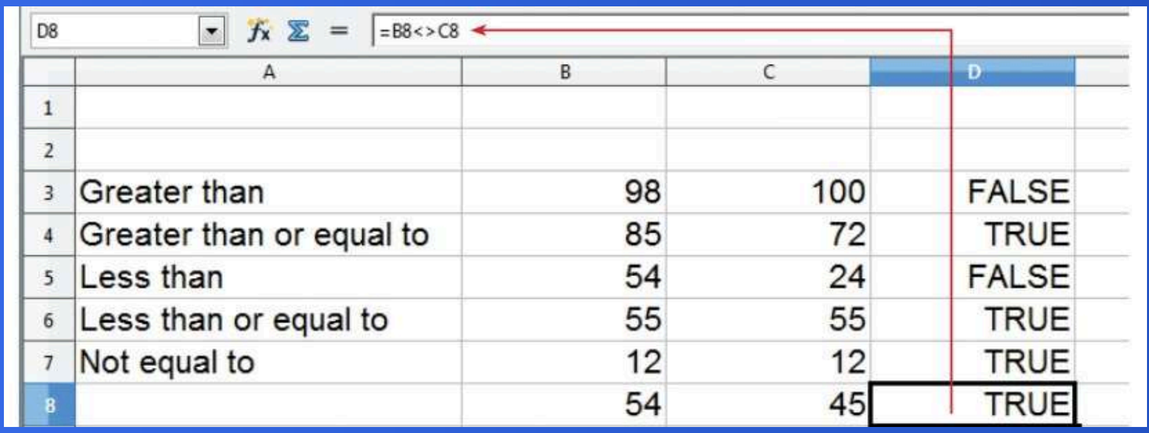
💡 TIP:

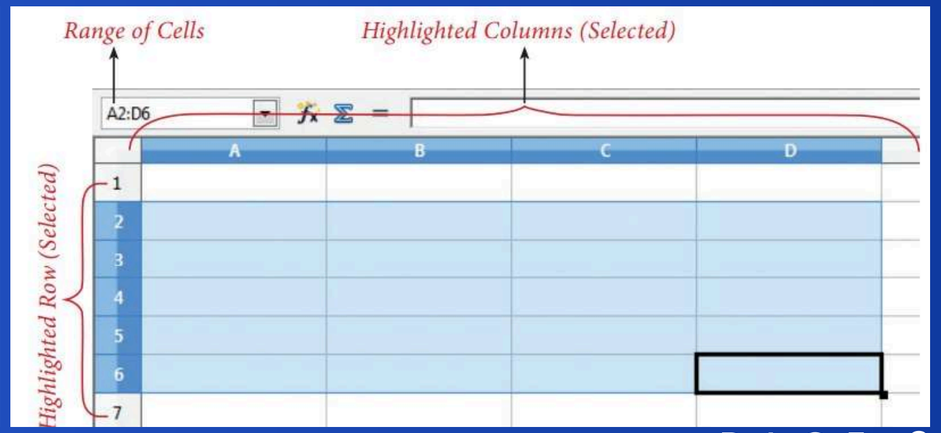
- USE CHARTS TO PRESENT REPORTS CLEARLY, AND FORMULAS TO ELIMINATE MANUAL CALCULATION ERRORS.

CREATING CHARTS AND FORMULAS IN CALC







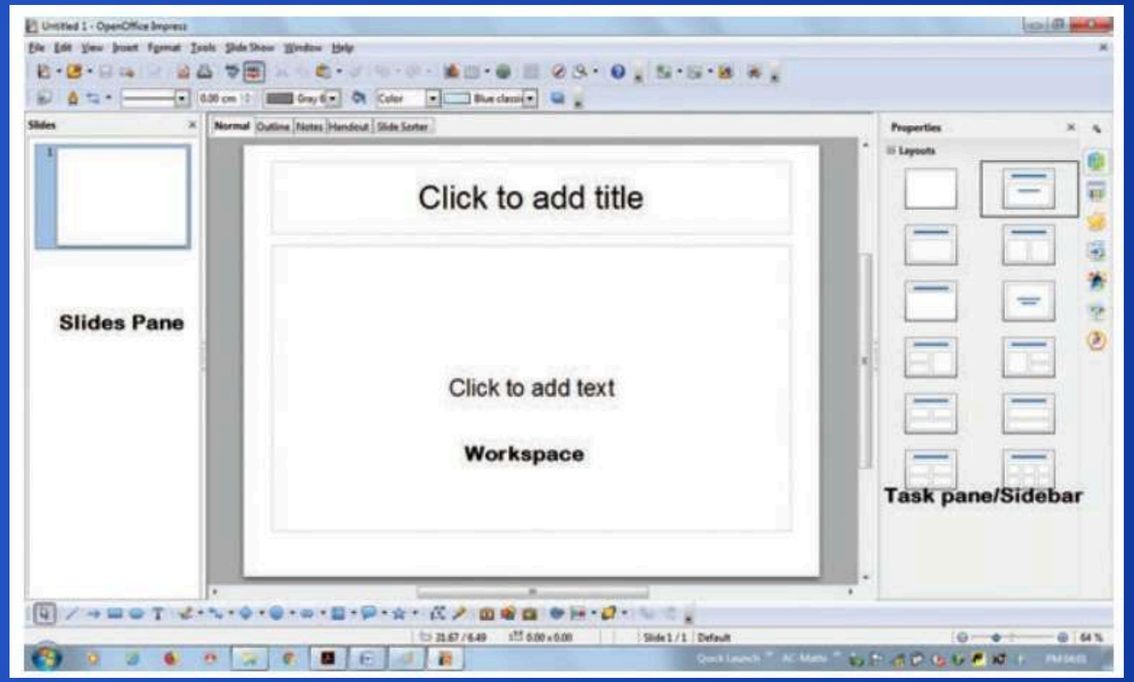


WHAT IS IMPRESS?

IMPRESS IS OPENOFFICE'S PRESENTATION SOFTWARE, SIMILAR TO MICROSOFT POWERPOINT.
IT'S USED TO CREATE SLIDESHOW PRESENTATIONS FOR TEACHING, MEETINGS, OR PERSONAL USE.

- 📦 **KEY FEATURES:**
  - CREATE SLIDES WITH TEXT, IMAGES, VIDEOS, AND ANIMATIONS
  - CHOOSE FROM VARIOUS LAYOUTS AND TEMPLATES
  - ADD ANIMATIONS AND TRANSITIONS TO MAKE IT ENGAGING
  - SAVE

- 🎯 **IDEAL FOR:**
  - CLASSROOM LESSONS
  - BUSINESS PRESENTATIONS
  - PERSONAL PROJECT SHOWCASES
  - PRESENTATIONS IN .ODP, .PPT, OR .PDF



PARTS OF IMPRESS INTERFACE

- **SLIDES PANE (LEFT):**
  - SHOWS ALL SLIDES IN YOUR PRESENTATION
  - LETS YOU NAVIGATE OR REARRANGE THEM EASILY
- **WORKSPACE (CENTER):**
  - MAIN SLIDE EDITING AREA
  - ADD AND EDIT TEXT, IMAGES, SHAPES, ETC.
- **TASKS PANE (RIGHT):**
  - CHOOSE SLIDE LAYOUTS, ANIMATIONS, AND DESIGN TEMPLATES
- **TOOLBARS:**
  - STANDARD EDITING OPTIONS: FONT, COLOR, SHAPES, ALIGNMENTS
- **STATUS BAR (BOTTOM):**
  - SLIDE NUMBER, VIEW OPTIONS, ZOOM
- **NAVIGATOR:**
  - JUMP BETWEEN SLIDES OR ELEMENTS QUICKLY

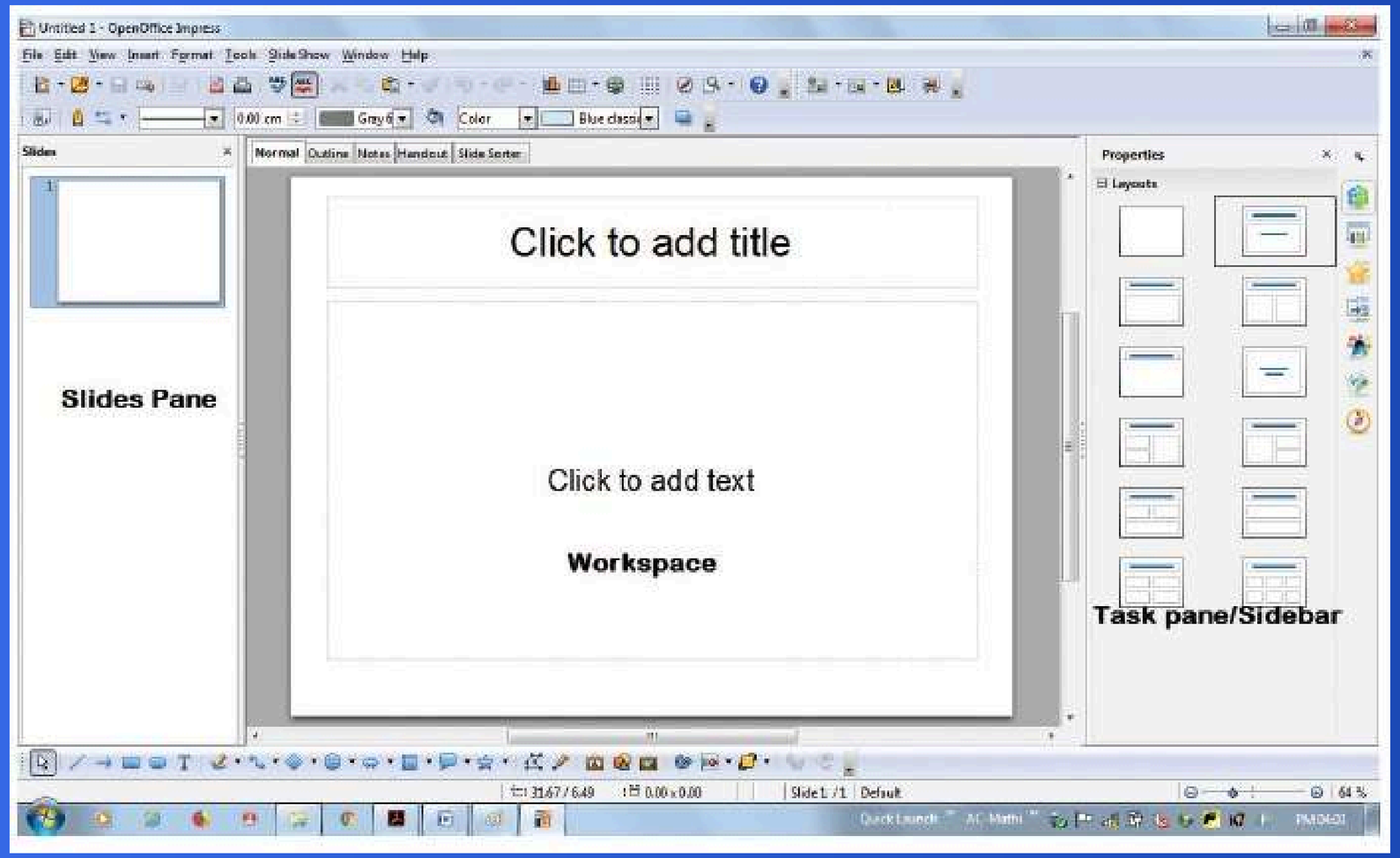
🧱 **CREATING A NEW PRESENTATION**

- START IMPRESS → CHOOSE A TEMPLATE (OR BLANK)
- USE INSERT > SLIDE OR RIGHT-CLICK TO ADD NEW SLIDES
- SELECT LAYOUT: TITLE SLIDE, TEXT + IMAGE, BULLET POINTS, ETC.

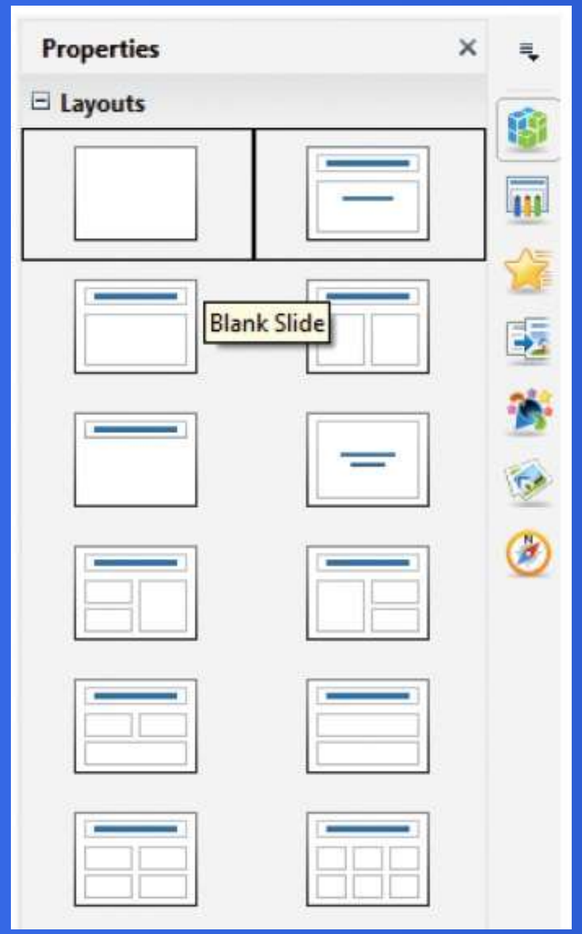
💡 **TIP:**

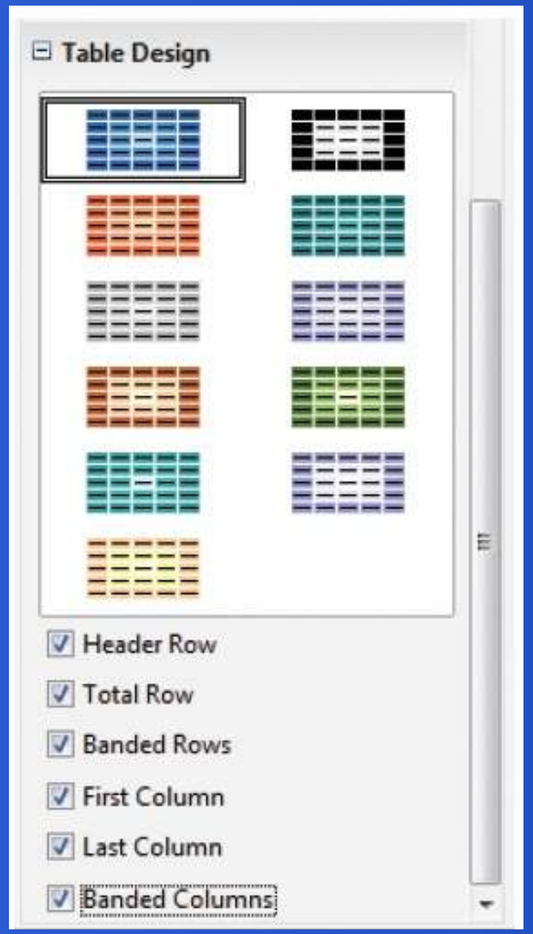
- KEEP SLIDES CLEAN AND FOCUSED. USE LAYOUT TEMPLATES TO MAINTAIN CONSISTENCY.

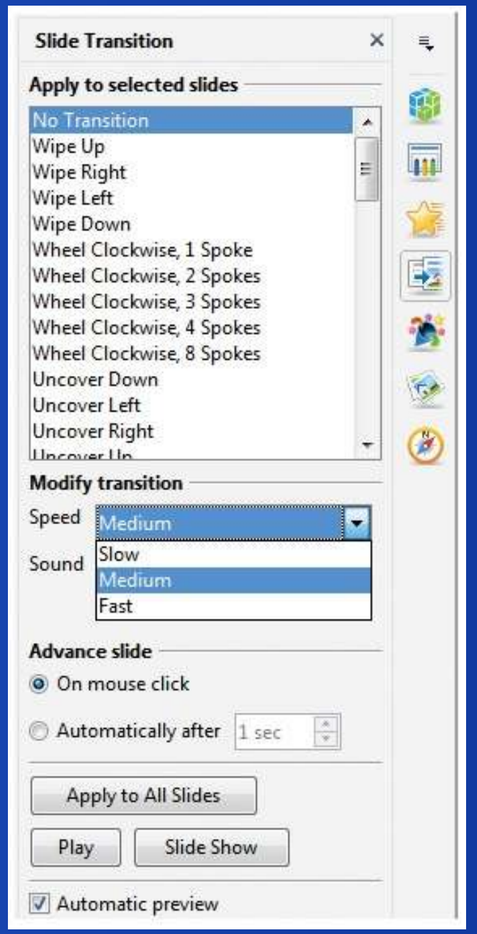
PARTS OF IMPRESS INTERFACE



PARTS OF IMPRESS INTERFACE







CREATING A NEW PRESENTATION AND FORMATTING SLIDES

🧱 CREATING A NEW PRESENTATION

- START IMPRESS → CHOOSE A TEMPLATE (OR BLANK)
- USE INSERT > SLIDE OR RIGHT-CLICK TO ADD NEW SLIDES
- SELECT LAYOUT: TITLE SLIDE, TEXT + IMAGE, BULLET POINTS, ETC.

💡 TIP:

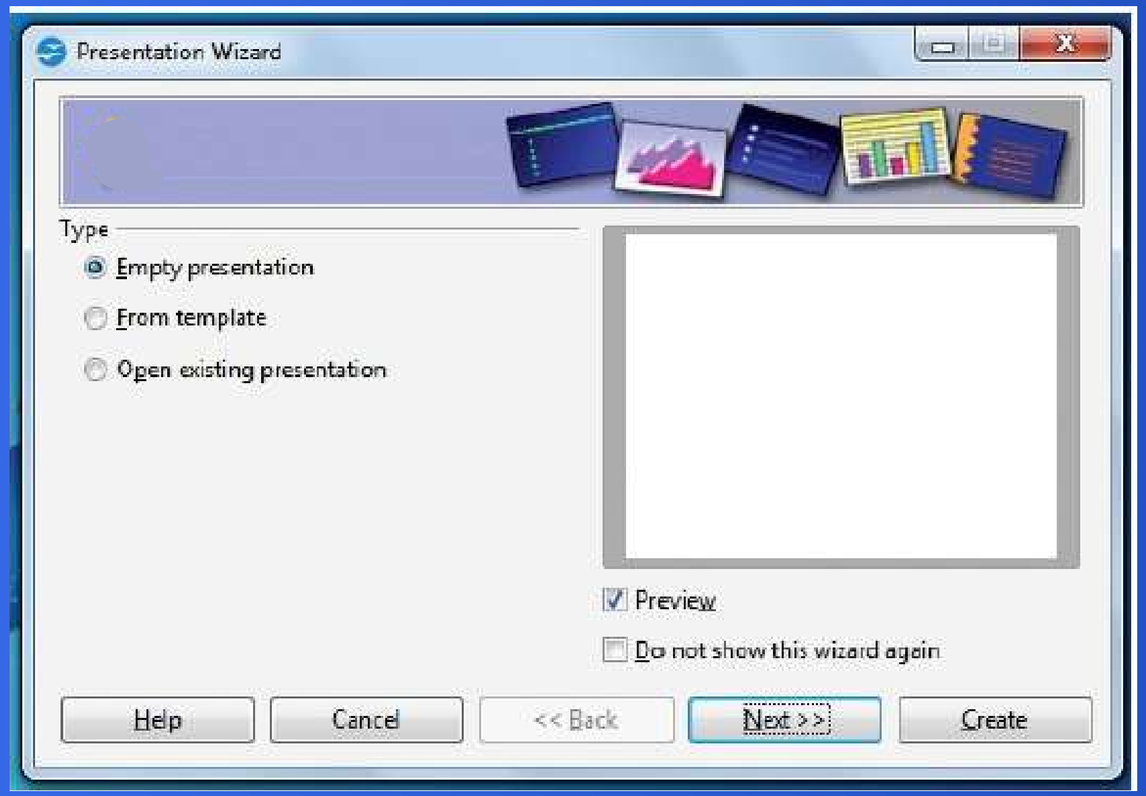
- KEEP SLIDES CLEAN AND FOCUSED. USE LAYOUT TEMPLATES TO MAINTAIN CONSISTENCY.

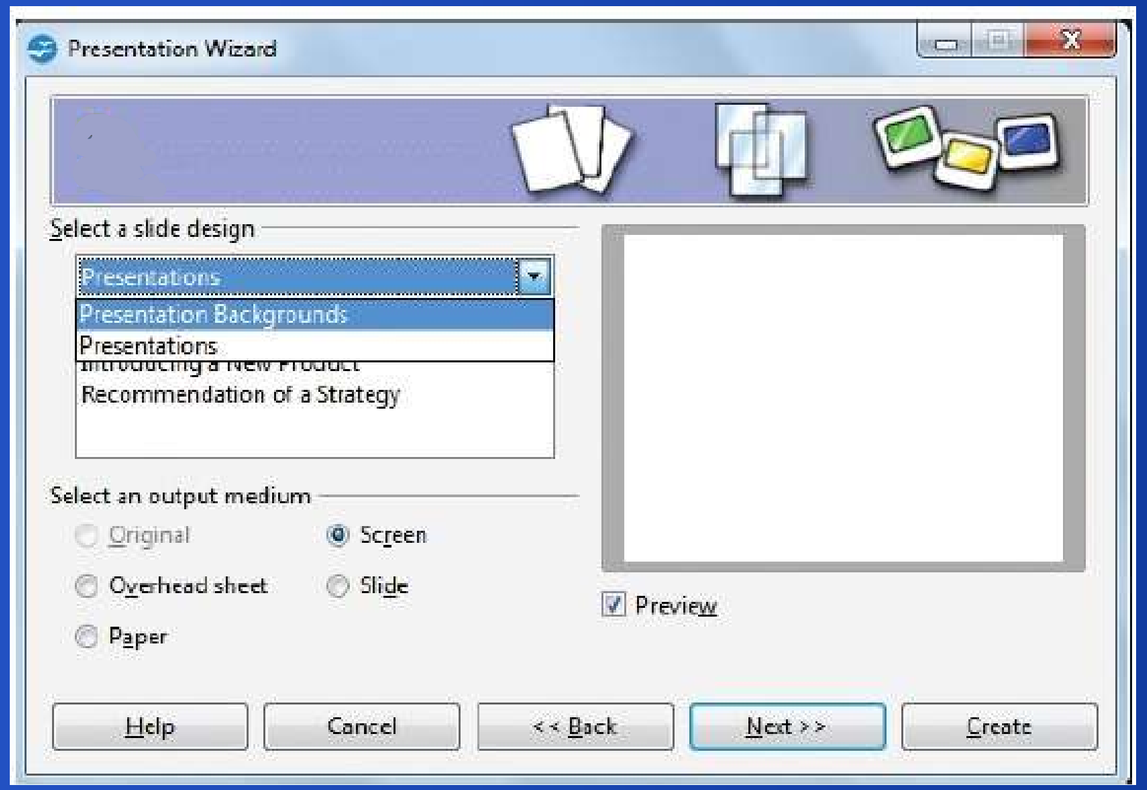
🎨 FORMATTING SLIDES

- USE THE TASKS PANE TO:
- CHANGE BACKGROUND OR SLIDE DESIGN
- APPLY A LAYOUT: TITLE, CONTENT, IMAGE, CHART, ETC.
- CUSTOMIZE TEXT WITH FONT STYLES, BULLET POINTS, COLORS
- INSERT:
  - IMAGES, CHARTS
    - TABLES: INSERT > PICTURE/TABLE/CHART
  - SHAPES OR TEXT BOXES: USE TOOLBAR

CREATING A NEW PRESENTATION

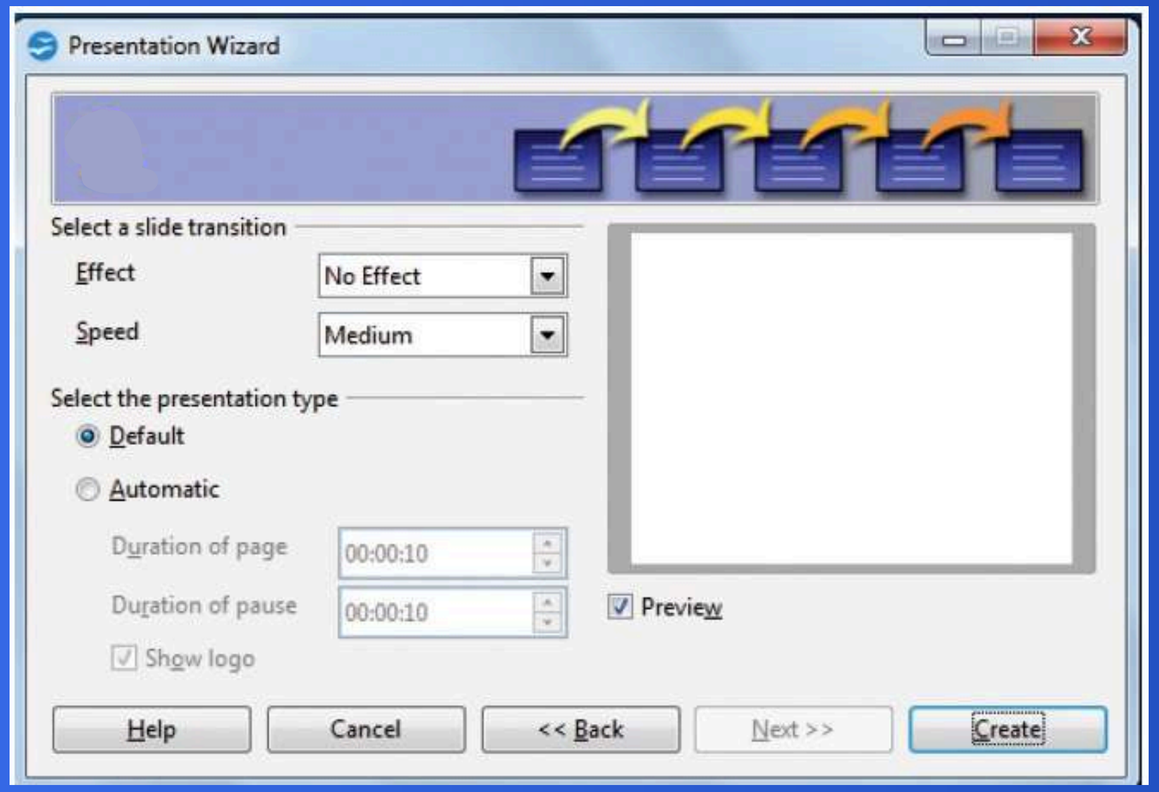
USING EMPTY PRESENTATION → SELECT A SLIDE DESIGN AND OUTPUT MEDIUM





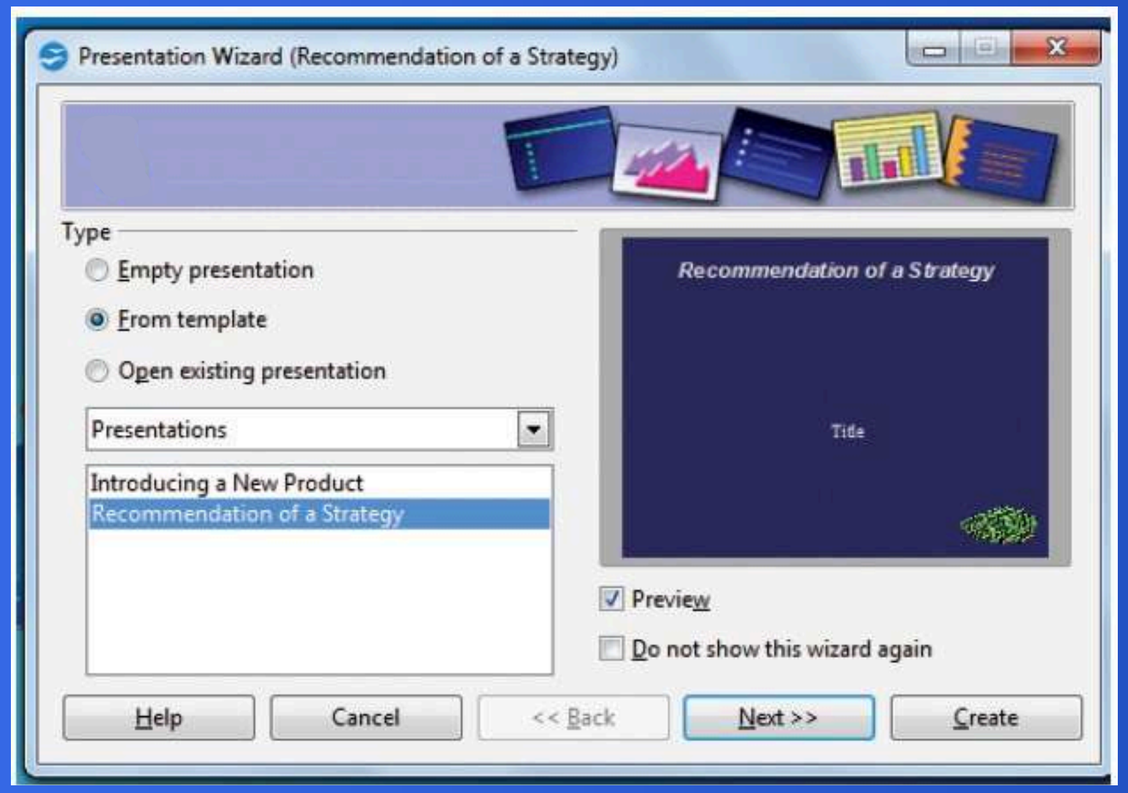
CREATING A NEW PRESENTATION

SELECT SLIDE TRANSITION EFFECT → CREATE



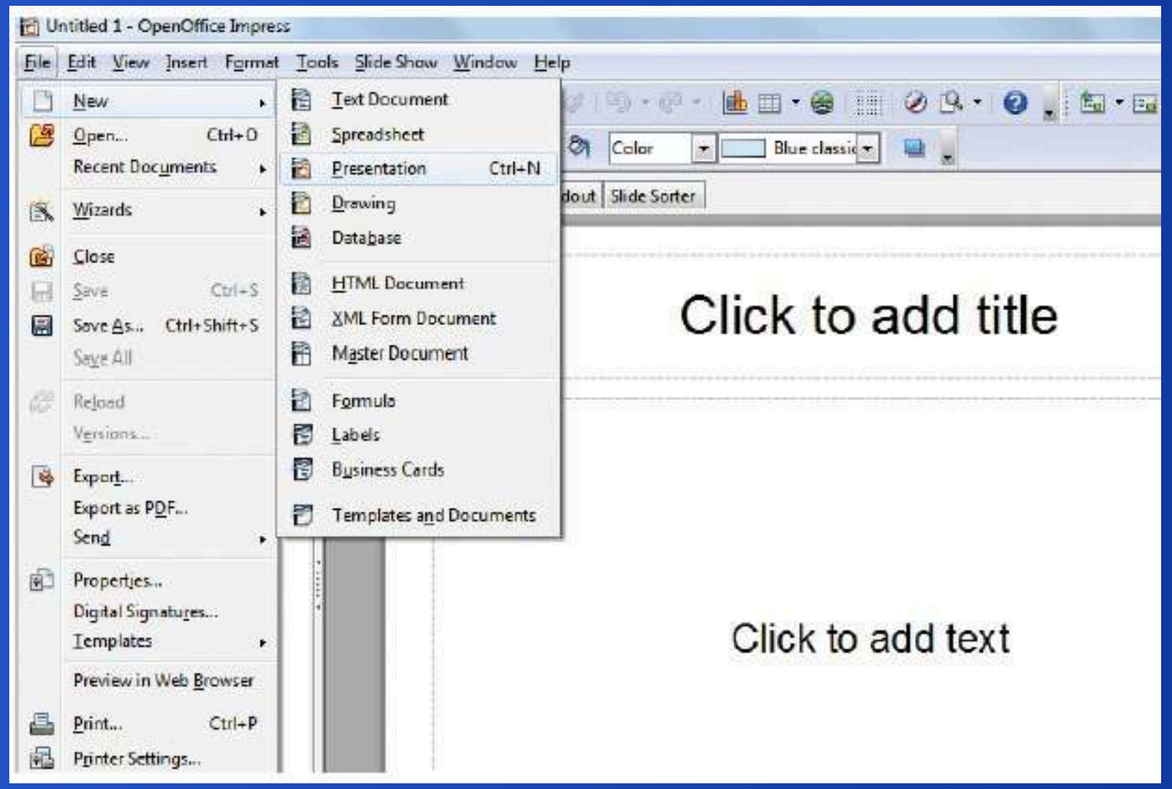
CREATING A NEW PRESENTATION

USING TEMPLATE → SELECT TEMPLATE → CREATE



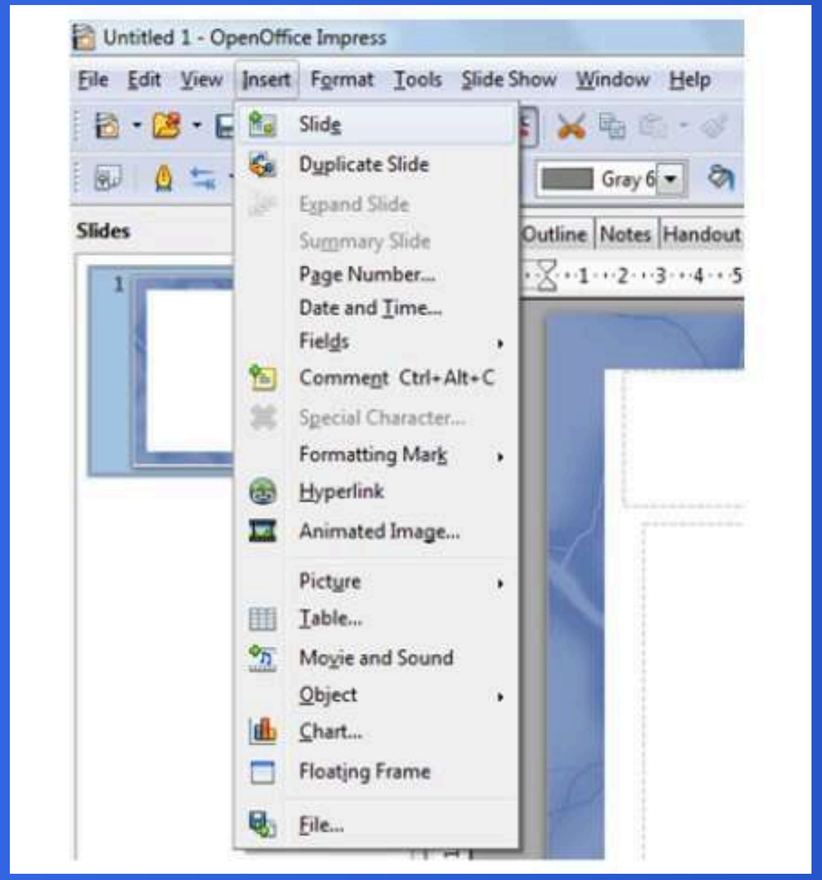
CREATING A NEW PRESENTATION

USING OPEN EXISTING PRESENTATION OR CHOOSE FILE → NEW → PRESENTATION

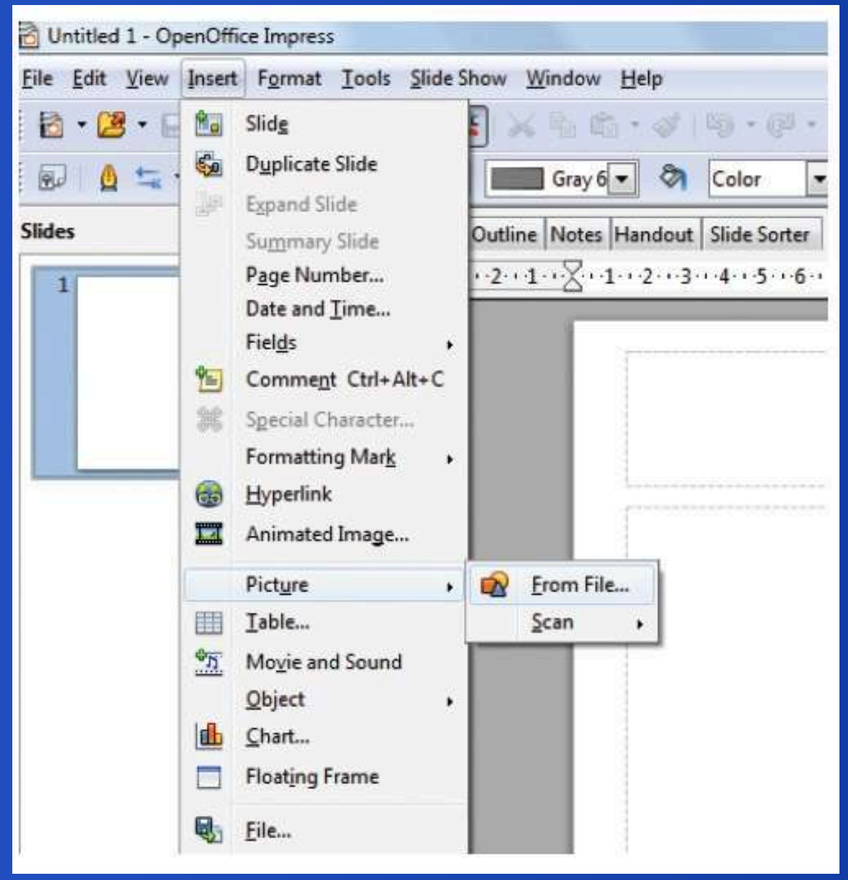


CREATING A NEW PRESENTATION

INSERT, DELETE OR MODIFY SLIDES



INSERTING INTO SLIDES



CREATING ANIMATIONS & SLIDESHOW

✨ APPLYING ANIMATIONS

- SELECT AN OBJECT (TEXT/IMAGE)
  - → SLIDE SHOW > CUSTOM ANIMATION
- CHOOSE ANIMATION TYPE:
  - ENTRANCE, EMPHASIS, EXIT
- SET TIMING:
  - ON CLICK, WITH PREVIOUS, AFTER PREVIOUS
- MAKES PRESENTATIONS DYNAMIC AND ENGAGING

💻 RUNNING A SLIDE SHOW

- START FROM FIRST SLIDE: F5
- START FROM CURRENT SLIDE: SHIFT + F5
- USE MOUSE OR ARROW KEYS TO NAVIGATE

DON'T OVERUSE ANIMATIONS. USE THEM ONLY TO HIGHLIGHT KEY POINTS OR TRANSITIONS.

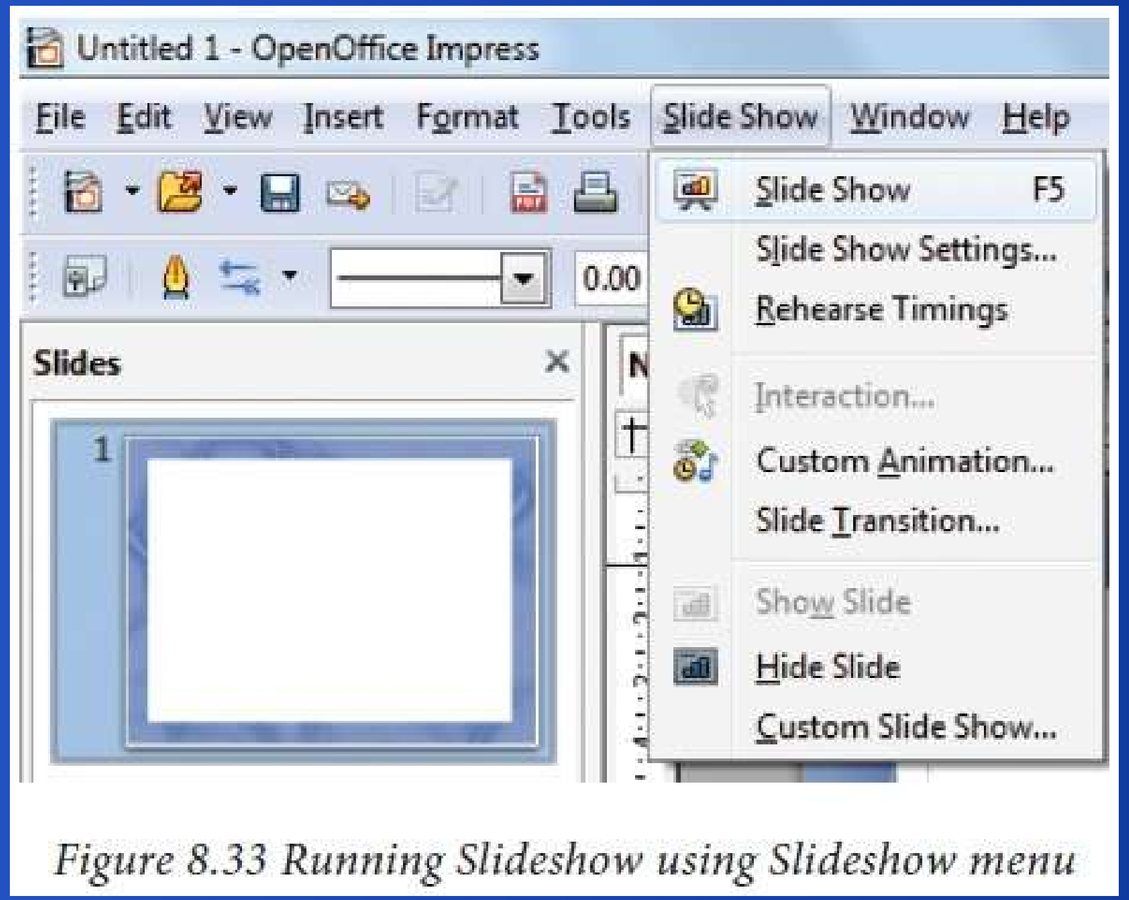


Figure 8.33 Running Slideshow using Slideshow menu

UNIT - 5

INFORMATION SECURITY BEST PRACTICES

STAYING SAFE IN THE DIGITAL WORLD

MADE BY STELLA KUJUR

ABOUT THE UNIT

THIS UNIT WILL HELP YOU:

- UNDERSTAND WHAT INFORMATION SECURITY IS AND WHY IT MATTERS
- LEARN ABOUT COMMON THREATS LIKE MALWARE, PHISHING, SOCIAL ENGINEERING
- EXPLORE WAYS TO PROTECT YOUR DATA, DEVICES, AND IDENTITY
- PRACTICE SAFE HABITS ONLINE AND OFFLINE

WHAT YOU'LL LEARN

- GRASP THE GOALS OF INFORMATION SECURITY (CIA: CONFIDENTIALITY, INTEGRITY, AVAILABILITY)
- IDENTIFY TYPES OF CYBER THREATS
- APPLY BEST PRACTICES IN USING:
- COMPUTERS
- INTERNET
- EMAILS
- WI-FI
- SMART DEVICES
- SOCIAL MEDIA
- FINANCIAL TRANSACTIONS

📄 WHAT IS INFORMATION?

- INFORMATION IS PROCESSED DATA THAT CARRIES MEANING.
- EXAMPLE:
  - RAW DATA: 96 97 98
  - INFORMATION: “STUDENT SCORED 96, 97, AND 98 IN THREE SUBJECTS.”

🔑 IN DIGITAL TERMS:

- INFORMATION INCLUDES FILES, PASSWORDS, PHOTOS, FINANCIAL RECORDS, AND MESSAGES.

🔐 WHAT IS INFORMATION SECURITY?

- IT REFERS TO PROTECTING INFORMATION FROM:
  - UNAUTHORIZED ACCESS
  - MODIFICATION
  - DESTRUCTION
  - THEFT
  - ENSURES DATA IS SAFE, PRIVATE, AND AVAILABLE WHEN NEEDED.

- 🔄 **REAL-LIFE ANALOGY:**
  - LOCKING YOUR HOME WHEN YOU LEAVE IS PHYSICAL SECURITY.
  - LOCKING YOUR EMAIL, SETTING STRONG PASSWORDS, OR ENCRYPTING DATA IS INFORMATION SECURITY.

GOALS OF INFORMATION SECURITY – THE CIA TRIAD

THE THREE CORE GOALS:

CONFIDENTIALITY

- KEEP INFORMATION PRIVATE
- ONLY AUTHORIZED USERS SHOULD ACCESS IT
  - EXAMPLE: PASSWORD-PROTECTED DOCUMENTS, ENCRYPTED CHATS

INTEGRITY

- ENSURE DATA IS ACCURATE AND UNCHANGED
- PREVENT UNAUTHORIZED MODIFICATION OR CORRUPTION
  - EXAMPLE: DIGITAL SIGNATURES, CHECKSUMS, VERSION CONTROL

AVAILABILITY

- ENSURE INFORMATION IS ACCESSIBLE WHEN NEEDED
- SYSTEMS MUST BE RELIABLE AND RESISTANT TO DOWNTIME
  - EXAMPLE: BACKUP SERVERS, UPS, 24/7 CLOUD ACCESS

🧠 **WHY IT MATTERS:**

- THINK OF A BANK:
  - 🧾 CONFIDENTIALITY = YOUR ACCOUNT INFO IS PRIVATE
  - 🔁 INTEGRITY = YOUR BALANCE ISN'T WRONGLY CHANGED
  - 🔓 AVAILABILITY = YOU CAN WITHDRAW MONEY ANYTIME

COMMON THREATS TO INFORMATION SECURITY

🦠 1. MALWARE (MALICIOUS SOFTWARE)

- SOFTWARE DESIGNED TO HARM OR EXPLOIT SYSTEMS.
  - VIRUSES
    - ATTACH TO FILES, SPREAD WHEN OPENED
  - WORMS
    - SPREAD AUTOMATICALLY WITHOUT USER ACTION
  - TROJANS
    - DISGUISED AS USEFUL SOFTWARE
  - RANSOMWARE
    - LOCKS DATA AND DEMANDS PAYMENT
  - SPYWARE/KEYLOGGERS
    - STEAL PERSONAL INFO SILENTLY

🎭 2. SOCIAL ENGINEERING ATTACKS

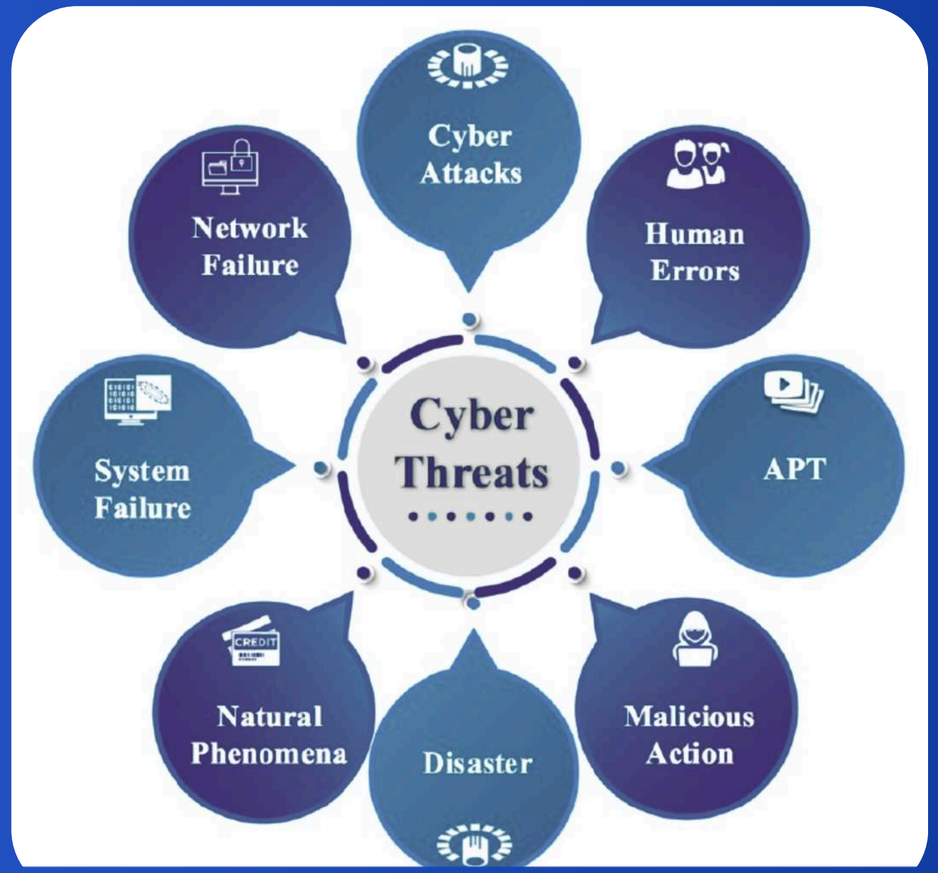
- TRICK PEOPLE INSTEAD OF HACKING DEVICES.
- PHISHING
  - FAKE EMAILS/WEBSITES TO STEAL CREDENTIALS
- VISHING
  - VOICE-BASED PHISHING OVER CALLS
- SMISHING
  - PHISHING VIA SMS
- BAITING
  - FAKE OFFERS TO LURE USERS
- IMPERSONATION
  - PRETENDING TO BE SOMEONE YOU TRUST

COMMON THREATS TO INFORMATION SECURITY

🌐 3. NETWORK THREATS

- ATTACKS OVER INTERNET OR LAN/WI-FI.
  - MAN-IN-THE-MIDDLE (MITM)
    - HACKER INTERCEPTS COMMUNICATION
  - DENIAL OF SERVICE (DOS)
    - OVERLOADS SYSTEM TO SHUT IT DOWN
  - SNIFFING
    - MONITORING UNENCRYPTED TRAFFIC
  - UNAUTHORIZED ACCESS
    - HACKING INTO SYSTEMS OR NETWORKS

HUMANS ARE OFTEN THE WEAKEST LINK IN SECURITY.
AWARENESS = PROTECTION.



🧰 TOOLS & TECHNIQUES FOR PROTECTION:

🔥 1. FIREWALL
- BLOCKS UNAUTHORIZED ACCESS TO OR FROM YOUR NETWORK.
- ACTS LIKE A GATEKEEPER BETWEEN YOUR COMPUTER AND THE INTERNET.

💾 2. DATA BACKUP
- MAKE REGULAR COPIES OF IMPORTANT FILES.
- USE EXTERNAL DRIVES OR CLOUD STORAGE.
- RECOVER DATA AFTER ATTACKS, CRASHES, OR LOSS.

🥷♂️ 3. VIRTUAL PRIVATE NETWORK (VPN)
- ENCRYPTS YOUR INTERNET CONNECTION.
- PROTECTS YOUR ONLINE ACTIVITY FROM HACKERS AND TRACKING.

🦠 4. ANTIVIRUS SOFTWARE
- DETECTS AND REMOVES MALWARE.
- ALWAYS KEEP IT UPDATED!

🧬 5. ENCRYPTION
- CONVERTS DATA INTO UNREADABLE FORMAT (CIPHERTEXT).
- ONLY AUTHORIZED PEOPLE WITH KEYS CAN READ IT.

🚨 6. INTRUSION DETECTION SYSTEM (IDS)
- MONITORS FOR SUSPICIOUS ACTIVITY OR SECURITY POLICY VIOLATIONS.

🛑 7. INTRUSION PREVENTION SYSTEM (IPS)
- NOT ONLY DETECTS, BUT BLOCKS INTRUSIONS AUTOMATICALLY.

💡 TIP:
- USE MULTIPLE LAYERS OF DEFENSE — ONE TOOL IS NOT ENOUGH.

INFORMATION SECURITY BEST PRACTICES – DAILY USE

💻 1. GENERAL COMPUTER USAGE

- KEEP YOUR OS, SOFTWARE, AND ANTIVIRUS UPDATED
- AVOID INSTALLING UNKNOWN PROGRAMS
- USE GENUINE SOFTWARE ONLY
- LOCK YOUR COMPUTER WHEN UNATTENDED

🌐 2. INTERNET BROWSING

- ONLY BROWSE HTTPS WEBSITES
- NEVER CLICK SUSPICIOUS LINKS OR POP-UPS
- USE AD BLOCKERS AND DISABLE AUTO - DOWNLOADS
- CLEAR CACHE AND COOKIES PERIODICALLY

🔐 3. PASSWORD MANAGEMENT

- USE STRONG, UNIQUE PASSWORDS
  - (E.G., GR8$ECURE2025!)
- DON’T REUSE THE SAME PASSWORD EVERYWHERE
- PREFER A PASSWORD MANAGER
- ENABLE 2-FACTOR AUTHENTICATION (2FA) WHEREVER POSSIBLE

💾 4. USB & EXTERNAL DEVICES

- SCAN USB DRIVES BEFORE OPENING
- AVOID USING UNKNOWN OR PUBLIC USBS
- DON’T AUTO-RUN FILES FROM EXTERNAL DEVICES

EMAIL, WI-FI & SOCIAL MEDIA SECURITY BEST PRACTICES

📬 1. EMAIL COMMUNICATION

- NEVER OPEN ATTACHMENTS FROM UNKNOWN SENDERS
- AVOID CLICKING ON SUSPICIOUS LINKS
- CHECK EMAIL ADDRESSES CAREFULLY (E.G., @GMAIL.COM VS @GMAI1.COM)
- DON'T SHARE SENSITIVE INFO VIA EMAIL
- USE SPAM FILTERS AND REPORT PHISHING

📶 2. HOME WI-FI NETWORK

- CHANGE THE DEFAULT ROUTER PASSWORD
- USE STRONG WI-FI ENCRYPTION (WPA2/WPA3)
- HIDE YOUR SSID (WI-FI NAME) IF NEEDED
- REGULARLY UPDATE YOUR ROUTER FIRMWARE

🤳 3. SOCIAL MEDIA & NETWORKING

- DON'T OVERSHARE PERSONAL INFO (ADDRESS, PHONE, LOCATION)
- SET YOUR PROFILES TO PRIVATE
- BE CAUTIOUS OF UNKNOWN FRIEND REQUESTS
- DON'T CLICK UNVERIFIED POSTS OR PROMOTIONS
- USE TWO-FACTOR AUTHENTICATION ON ACCOUNTS

🧠 REMINDER:

- HACKERS TARGET CARELESS USERS, NOT JUST WEAK SYSTEMS.

SMART DEVICES, IMS, ATMS & PUBLIC COMPUTERS

📱 1. SMART DEVICES (PHONES, TABLETS, ETC.)

- SET SCREEN LOCK (PIN/PATTERN/FINGERPRINT)
- KEEP OS & APPS UPDATED
- INSTALL APPS ONLY FROM OFFICIAL APP STORES
- DISABLE BLUETOOTH & GPS WHEN NOT IN USE
- USE DEVICE ENCRYPTION & BACKUP DATA REGULARLY

✅ ANDROID SECURITY CHECKLIST:

- PLAY PROTECT ENABLED
- NO UNKNOWN SOURCES ALLOWED
- FIND MY DEVICE ENABLED

💬 2. INSTANT MESSAGING (IM)

- USE TRUSTED, END-TO-END ENCRYPTED APPS (E.G., SIGNAL, WHATSAPP)
- DON'T SHARE PERSONAL DETAILS OR OTPS
- TURN OFF AUTO-DOWNLOAD FOR MEDIA FILES
- BE CAUTIOUS OF FORWARDED MESSAGES OR LINKS

🏧 3. ONLINE TRANSACTIONS & ATM USAGE

- USE SECURE SITES (HTTPS://) FOR PAYMENTS
- NEVER SHARE CARD DETAILS VIA MESSAGE/EMAIL
- COVER KEYPAD WHILE ENTERING PIN
- AVOID ATM MACHINES THAT LOOK TAMPERED

💻 4. PUBLIC COMPUTERS (CYBER CAFES, LIBRARIES)

- NEVER LOG IN TO PERSONAL ACCOUNTS ON SHARED SYSTEMS
- IF NECESSARY, USE INCOGNITO MODE
- NEVER SAVE PASSWORDS
- ALWAYS LOG OUT AND CLEAR HISTORY

💡 TIP:

- TREAT YOUR SMARTPHONE LIKE YOUR WALLET — SECURE IT, MONITOR IT, AND NEVER LEAVE IT EXPOSED.

🔑 KEY TAKEAWAYS:

🔐 WHAT IS INFORMATION SECURITY?

- PROTECTING DATA FROM UNAUTHORIZED ACCESS, ALTERATION, OR DESTRUCTION

🎯 SECURITY GOALS: THE CIA TRIAD

- CONFIDENTIALITY
  - KEEP DATA PRIVATE
- INTEGRITY
  - KEEP DATA ACCURATE AND TRUSTWORTHY
- AVAILABILITY
  - ENSURE DATA IS ACCESSIBLE WHEN NEEDED

⚠️ COMMON THREATS:

- MALWARE, PHISHING, SOCIAL ENGINEERING, NETWORK ATTACKS

🛠️ SECURITY MEASURES:

- FIREWALLS
- ANTIVIRUS
- VPN
- ENCRYPTION
- DATA BACKUPS
- IDS/IPS SYSTEMS

📋 BEST PRACTICES:

- USE STRONG PASSWORDS
- KEEP DEVICES AND SOFTWARE UPDATED
- BE CAREFUL WITH EMAILS, LINKS, AND ATTACHMENTS
- BROWSE SAFELY AND AVOID PUBLIC WI-FI WITHOUT VPN
- THINK BEFORE YOU CLICK, INSTALL, OR SHARE

🧭 FINAL ADVICE:

- CYBERSECURITY ISN'T A ONE-TIME SETUP — IT'S A DAILY HABIT. STAY ALERT, STAY SAFE.