NAGARJUNA

COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous college under VTU)

DEPARTMENT OF COMPUTER & APPLICATIONS

VISION

To empower BCA students with essential computer application skills and practical knowledge to enhance academic performance, professional competence, and readiness for the digital workplace.

MISSION

M1: To provide strong practical foundations in computer applications such as word processing, spreadsheets, presentations, and document preparation for effective academic and professional usage.

M2: To train students in using modern software tools to analyze data, create documents, reports, charts, and presentations to solve real-world problems.

M3: To develop analytical thinking, problem-solving ability, accuracy, and efficiency through hands-on laboratory exercises and assignments.

M4: To enhance communication skills, teamwork, and presentation skills through structured lab activities and project-based learning.

M5: To introduce technical documentation tools such as LaTeX and encourage professional reporting practices, lifelong learning, and adaptability to emerging technologies.

NAGARJUNA COLLEGE OF ENGINEERING &TECHNOLOGY

(An Autonomous College under VTU)
Venkatagiri post, Devanahalli, Bengaluru-562164

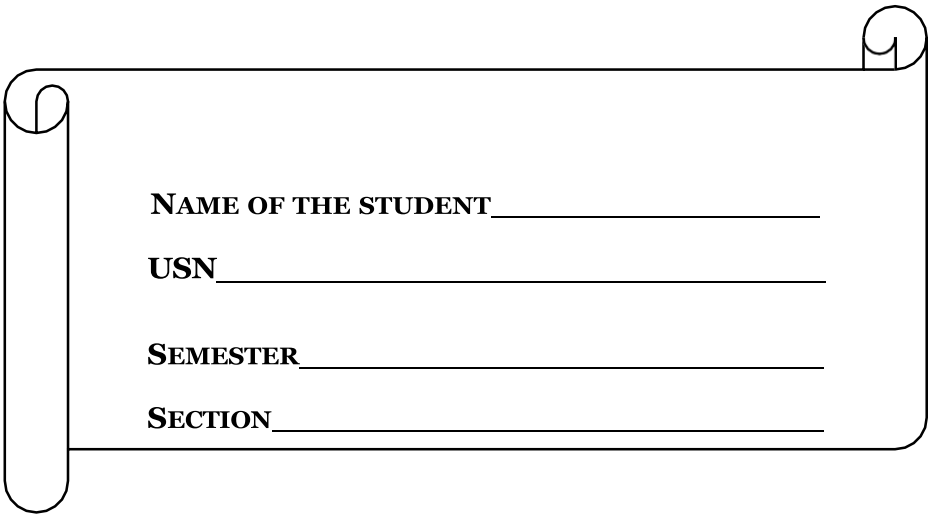
Department of Computer & Applications

LAB MANUAL

Semester: I

Course Name: Essentials Of Computer Laboratory

Course Code: 25BCL108



NAME OF THE STUDENT_____

USN_____

SEMESTER_____

SECTION_____

Program Outcome:

- **PO1:** Knowledge Application: Apply fundamental computer concepts and basic software tools to perform essential computational tasks.
- **PO2:** Problem Solving: Identify, analyze, and solve basic computing problems using appropriate software applications.
- **PO3:** Technical Skills: Develop hands-on skills in operating systems, word processing, spreadsheets, and presentation tools.
- **PO4:** Ethics and Safety: Demonstrate responsible use of computers by following digital ethics, cyber safety practices, and data protection guidelines.
- **PO5:**Communication Skills: Use digital tools effectively to create documents, spreadsheets, and presentations for clear communication and reporting.
- **PO6:** Lifelong Learning: Engage in continuous learning to keep pace with emerging software tools, technologies, and computing practices.

Program Educational Objectives (PEOs)

- **PEO1:** To provide foundational knowledge of computer operations, software tools, and internet usage.
- **PEO2:** To enable students to apply computer skills for academic tasks, data handling, and professional documentation.
- **PEO3:** To cultivate responsible digital citizens who follow safe computing practices and ethical digital behavior.
- **PEO4:** To encourage interdisciplinary learning by integrating computing skills with various academic and professional domains.

Program Specific Outcome (PSO):

PSO1. Basic Computing Skills: Understand computer components, operating system functions, and essential software applications.

PSO2. Productivity Tools: Use word processors, spreadsheets, and presentation software to create professional documents, perform calculations, and design visual and reports.

PSO3. Digital Practices: Apply safe internet practices, file management techniques, and data organization skills in computing environments.

PSO4. Ethical and Professional Use: Demonstrate ethical behavior in digital communication, cyber safety, and responsible handling of digital information.

ESSENTIALS OF COMPUTER LABORATORY

ESSENTIALS OF COMPUTER LABORATORY		SEMESTER	I
Course Code	**25BCL108**	CIE Marks	50
Teaching Hours/Week (L: P: SDA)	1:2:0	SEE Marks	50
Total Hours of Pedagogy	14 Sessions	Total Marks	100
Credits	02	Exam Hours	03
Type of the Course	Practical		

Course Objectives:

This course will enable students to :

- Learn to identify computer peripherals and components, assemble and disassemble them, and troubleshoot basic hardware issues.
- Gain skills in installing various operating systems, configuring system settings, and maintaining the system using built-in tools.
- Develop proficiency in using word processors, spreadsheets, presentation software, and internet browsers for various tasks.
- Acquire the ability to edit multimedia content and create flowcharts using Flowgorithm software for basic programming tasks.

Syllabus

Part A

1. Word Processor assignment to demonstrate usage of Page Setup, Page Background and Paragraph option of Page Layout tab by writing the description about Computer and its characteristics.
2. Word Processor assignment to demonstrate Bullets and Numbering, Headers and footers.
3. Word Processor assignment to demonstrate usage of mail merge by creating a letter to invite your parents for the annual day event. Prepare at least 5 letters.
4. Word Processor assignment to demonstrate usage of tables and encryption by preparing the timetable.
5. Demonstrate usage of formulas and charts in spreadsheet as directed below:

   a. Create a spreadsheet with following components:

SL No	Student Name	Sub 1	Sub 2	Sub 3	Total	Percentage	Grade

b. Insert the name and marks of 3 subjects of 5 or more students.
c. Calculate total marks obtained and percentage.
d. Calculate the grade by applying following criteria:
    i. If percentage >=90, then grade A
    ii. If percentage >=75 and <90, then grade B
    iii. If percentage >=60 and <75, then grade C
    iv. If percentage >=50 and <60, then grade D
    v. If percentage <50, then grade E
e. Insert column charts for various subjects
f. Insert pie chart for one student depicting composition of 3 subject marks.

6. Demonstrate usage of data validation in the spreadsheet as directed below:
    a. Create a spreadsheet with following components:

Emp No	Emp Name	Gender	Designation	DOB	Age	Basic Salary	DA	HRA	Gross Salary	Deduction	Net Salary

a. Insert 5 employee details in the columns Emp No., Emp Name, DOB, Basic Salary.
b. Add drop-down data validation for Gender and Designation columns
c. Add a formula to calculate Age based on DOB
d. Add the formula to calculate
    i. DA as 35% of Basic salary,
    ii. HRA as 25% of Basic salary
    iii. Deduction as 10% of Basic salary
e. Add the formula to calculate Gross Salary and Net Salary

7. Demonstrate conditional formatting in spreadsheet as directed below:

USN	Name	Date 1	Date 2	Date 3	-	Date N	No. of Classes Attended	Attendance Percentage

a. Create an attendance spreadsheet for 10 students.
b. Mark P for present and A for absent for respective dates.
c. Apply formula to calculate “No. of classes attended” and “Attendance Percentage” columns.
d. Apply conditional formatting to highlight a student if “Attendance Percentage” is less than 85%.

8. Create a power-point presentation to demonstrate the following:
    a. Layout option
    b. Insertion of date, time and slide numbers
    c. Insertion of Symbols

9. Create a power-point presentation to demonstrate the following:
    a. Themes
    b. Transitions
    c. Animation

10. Create a power-point presentation to demonstrate the following:
    a. Rehearse Timings
    b. Narrations
    Slide Sorter

Part B

1. Introduction to LaTeX Software
   a. Install LaTeX software on your system.
   b. Create a simple LaTeX document.
   c. Compile the document to generate a PDF output.
   d. Explore and explain the structure of a basic LaTeX document (preamble, document body, etc.).

2. Working with LaTeX Templates
   a. Download a predefined LaTeX template (e.g., article, report).
   b. Customize the template by adding your name, title, and date.
   c. Add different sections and subsections to organize the content.
   d. Compile and review the document structure.

3. Including Text in LaTeX
   a. Create a new LaTeX document using the article template.
   b. Add paragraphs of text, including bold, italic, and underlined text.
   c. Implement lists (ordered, unordered, and description lists).
   d. Use special characters and symbols in the text.

4. Creating Tables in LaTeX
   a. Create a LaTeX document and include a table using the `tabular` environment.
   b. Add rows, columns, and format the table with borders.
   c. Merge cells horizontally and vertically.
   d. Include a caption and label for the table for referencing.

5. Incorporating Math Formulae and Generating Reports
   a. Create a LaTeX document to write mathematical equations using the `equation` and `align` environments.
   b. Include inline and display-style equations.
   c. Add Greek symbols, fractions, and superscripts/subscripts.
   d. Compile the document to generate a final report with a title page, table of contents, and numbered sections.

Course Outcomes:

After the completion of the Course, students will be able to

CO1. Understand the identification, assembly, disassembly, and basic troubleshooting of computer hardware components, including peripherals, CPU, and system hardware.

CO2. Gain hands-on experience with networking basics, including LAN and WiFi setup and configuration.

CO3. Develop practical skills in installing and configuring various operating systems, including Windows, UNIX/Linux, and dual booting, along with system maintenance using BIOS settings, Registry Editor, and third-party tools.

CO4. Enhance proficiency in using office productivity software, including word processors, spreadsheets, presentation tools, and multimedia editing software.

CO5. Apply logical thinking to create flowcharts and perform tasks using algorithms software for arithmetic operations, shape area calculations, and understanding arrays and recursion.

Part A

1.Word Processor assignment to demonstrate usage of Page Setup, Page Background and Paragraph option of Page Layout tab by writing the description about Computer and its characteristics.

Step 1: Create document & add content

Computer

A computer is an electronic device that can store, retrieve, and process data.

It works according to a set of instructions called a program to perform various tasks such as calculations, data processing, document creation, and communication.

Characteristics of a Computer

1. Speed:

A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.

2. Accuracy:

Computers are highly accurate. Errors usually occur only because of wrong input or program instructions, not due to the computer itself.

3. Storage Capacity:

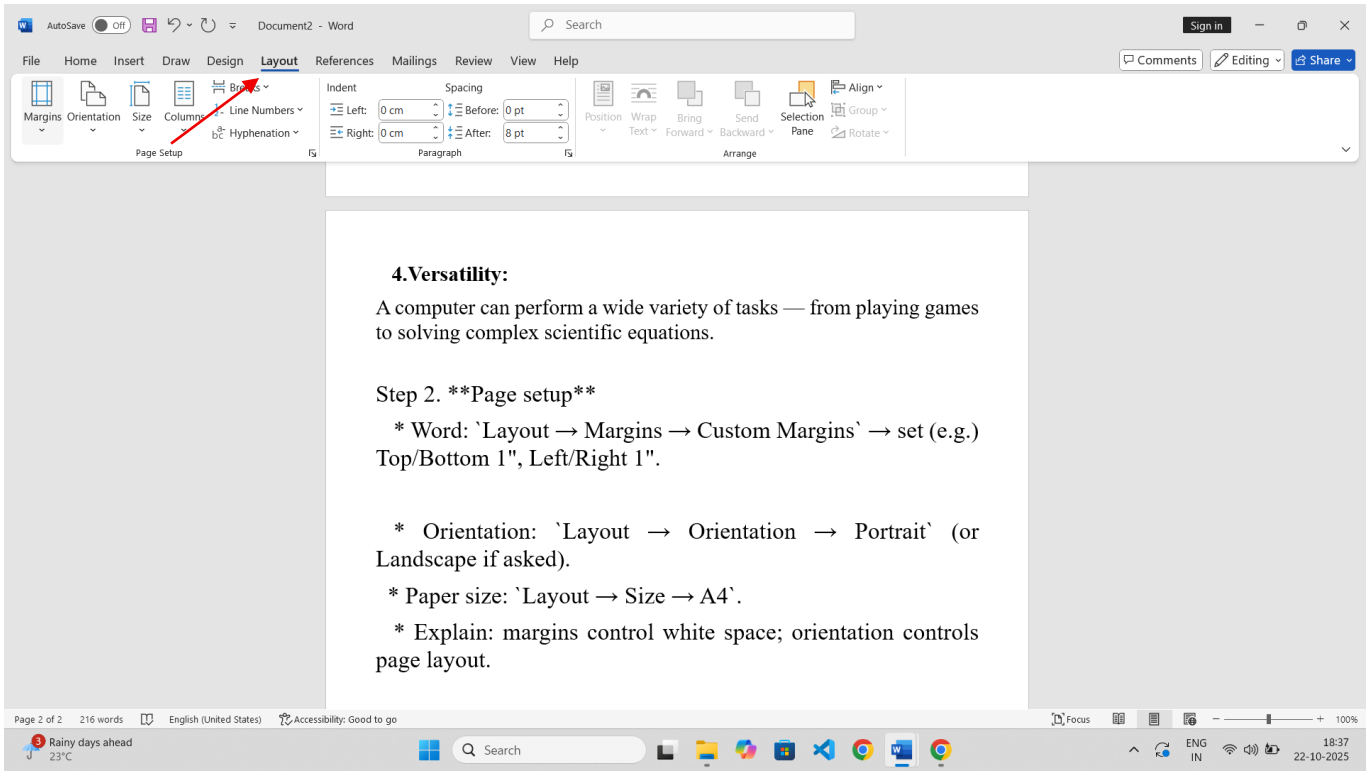
Computers can store vast amounts of data and retrieve it quickly whenever needed. This data can be text, images, audio, or video.

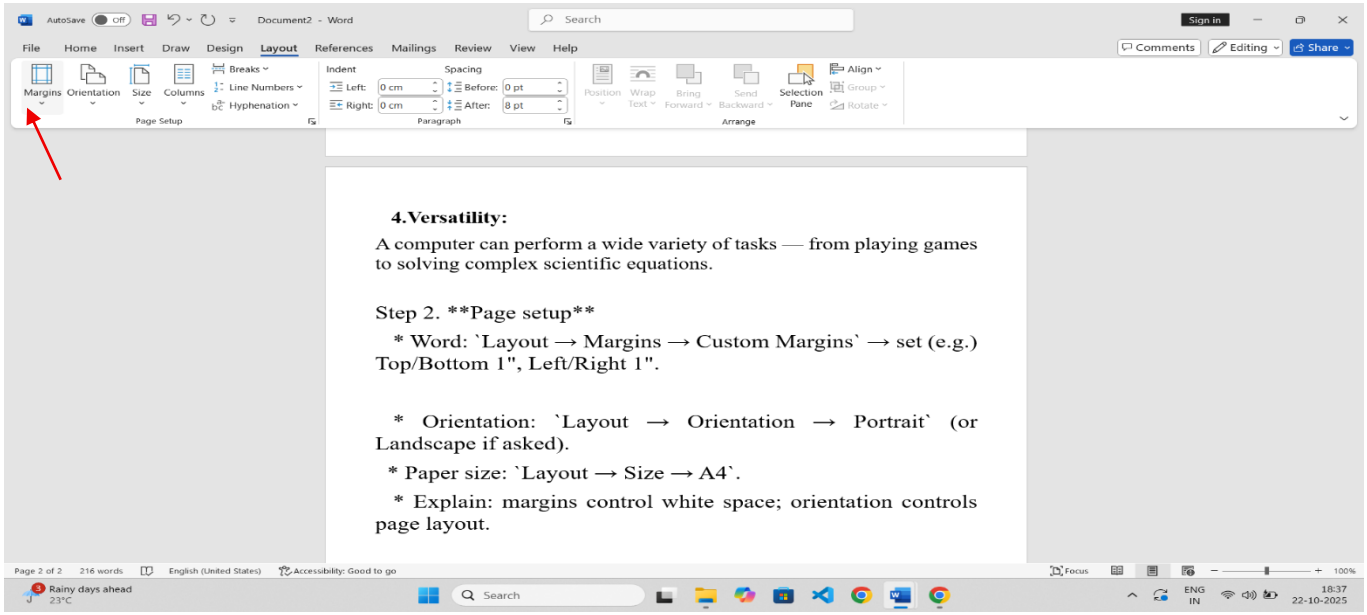
4.Versatility:

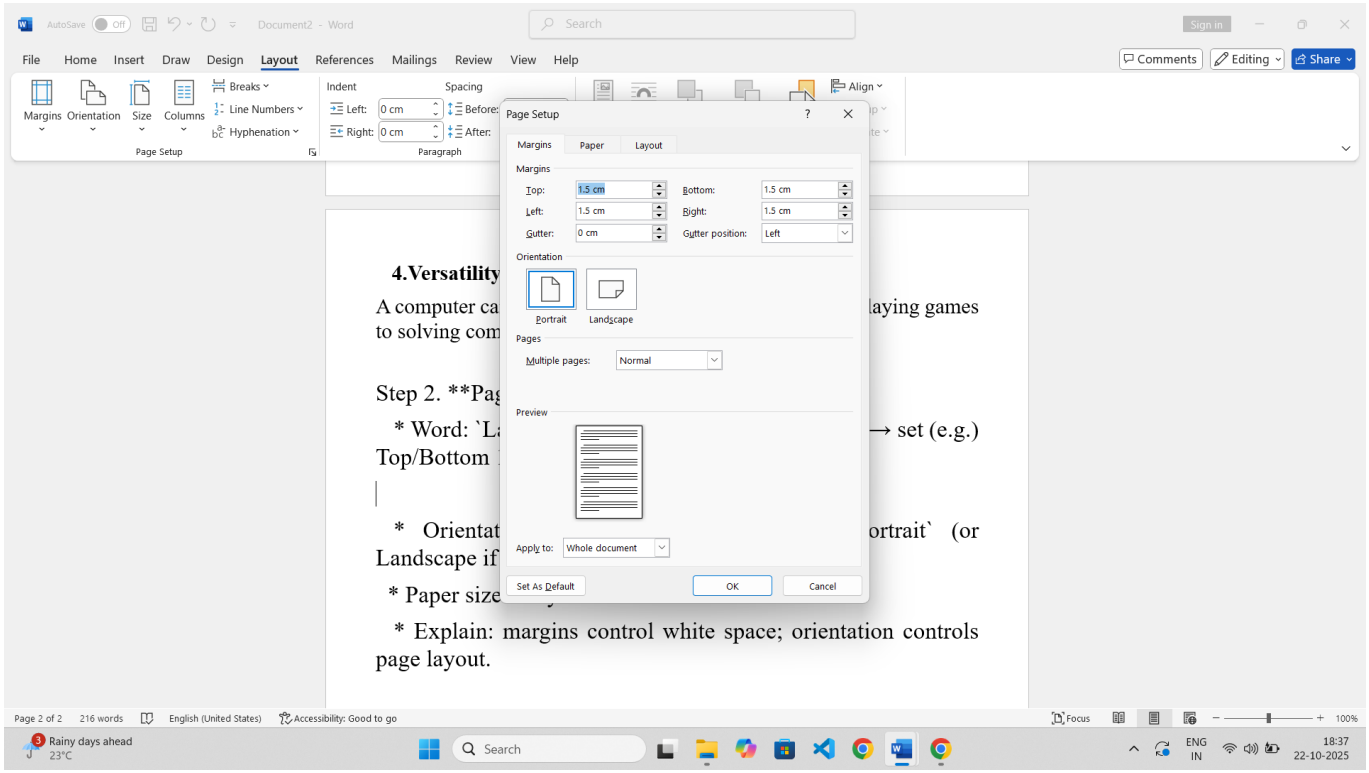
A computer can perform a wide variety of tasks — from playing games to solving complex scientific equations.

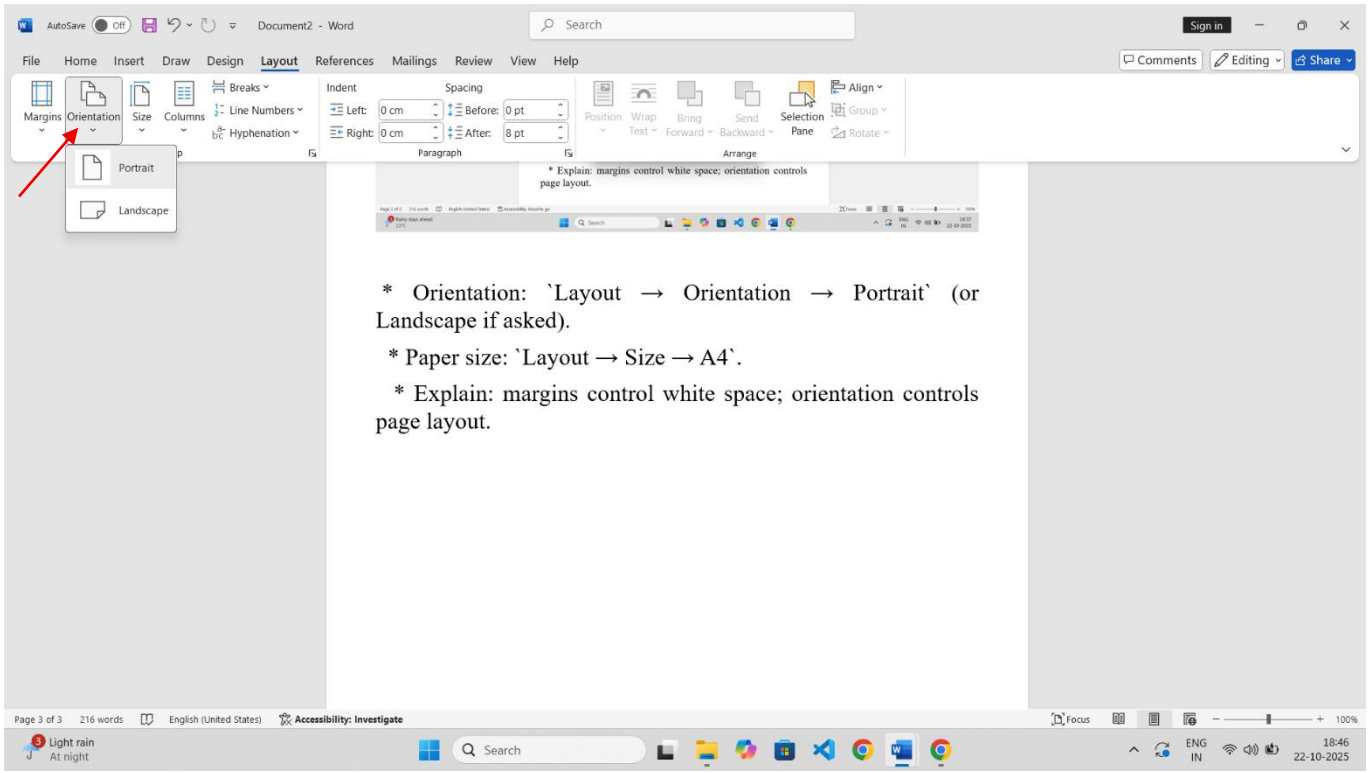
Step 2. Page setup

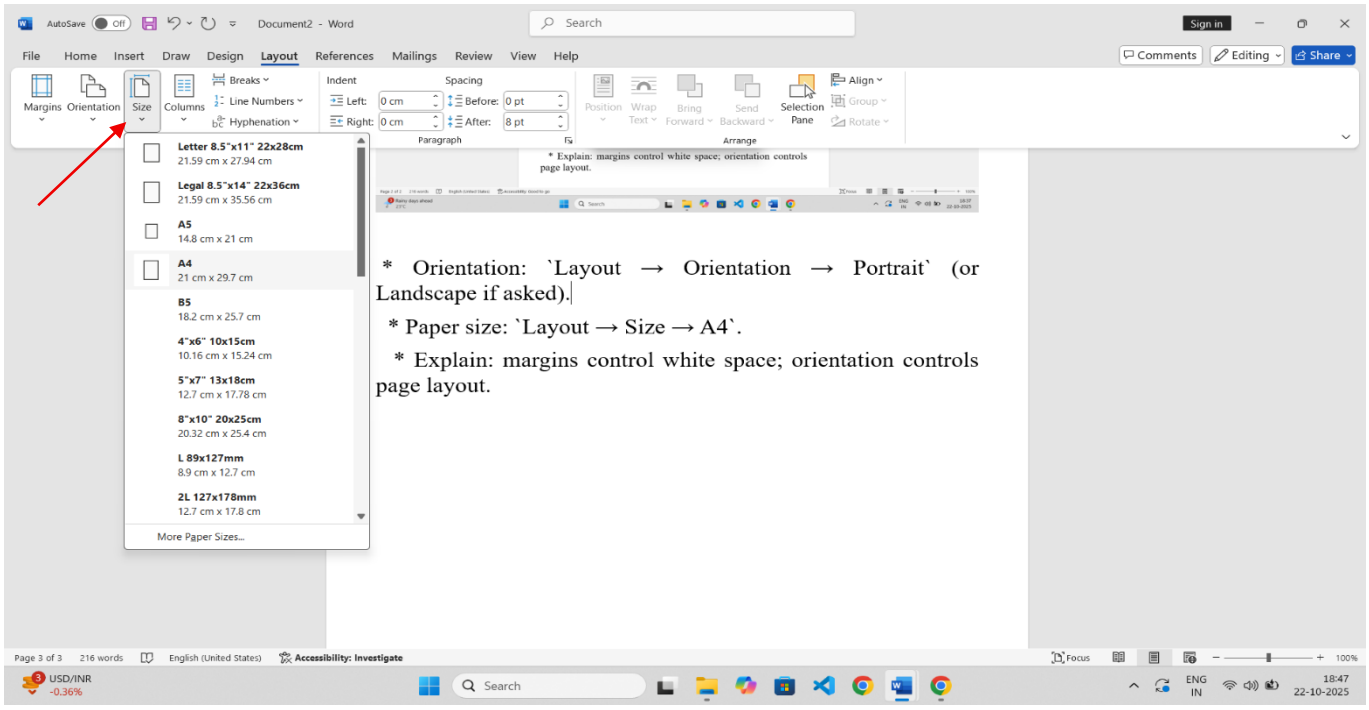
- Word: `Layout → Margins → Custom Margins` → set (e.g.) Top/Bottom 1", Left/Right 1".
- Orientation: `Layout → Orientation → Portrait` (or Landscape if asked).
- Paper size: `Layout → Size → A4`.




Document2 - Word
Search
File Home Insert Draw Design Layout References Mailings Review View Help
Margins Orientation Size Columns
Breaks
Line Numbers
Hyphenation
Page Setup
Indent
Left: 0 cm
Right: 0 cm
Spacing
Before: 0 pt
After: 8 pt
Paragraph
Position Wrap Text Bring Forward Send Backward Selection Pane
Align
Group
Rotate
Arrange
Comments
Editing
Share
4.Versatility:
A computer can perform a wide variety of tasks — from playing games to solving complex scientific equations.
Step 2. **Page setup**
* Word: `Layout → Margins → Custom Margins` → set (e.g.) Top/Bottom 1", Left/Right 1".
* Orientation: `Layout → Orientation → Portrait` (or Landscape if asked).
* Paper size: `Layout → Size → A4`.
* Explain: margins control white space; orientation controls page layout.
Page 2 of 2
216 words
English (United States)
Accessibility: Good to go
Focus
100%
Rainy days ahead
23°C
Search
ENG
IN
18:37
22-10-2025

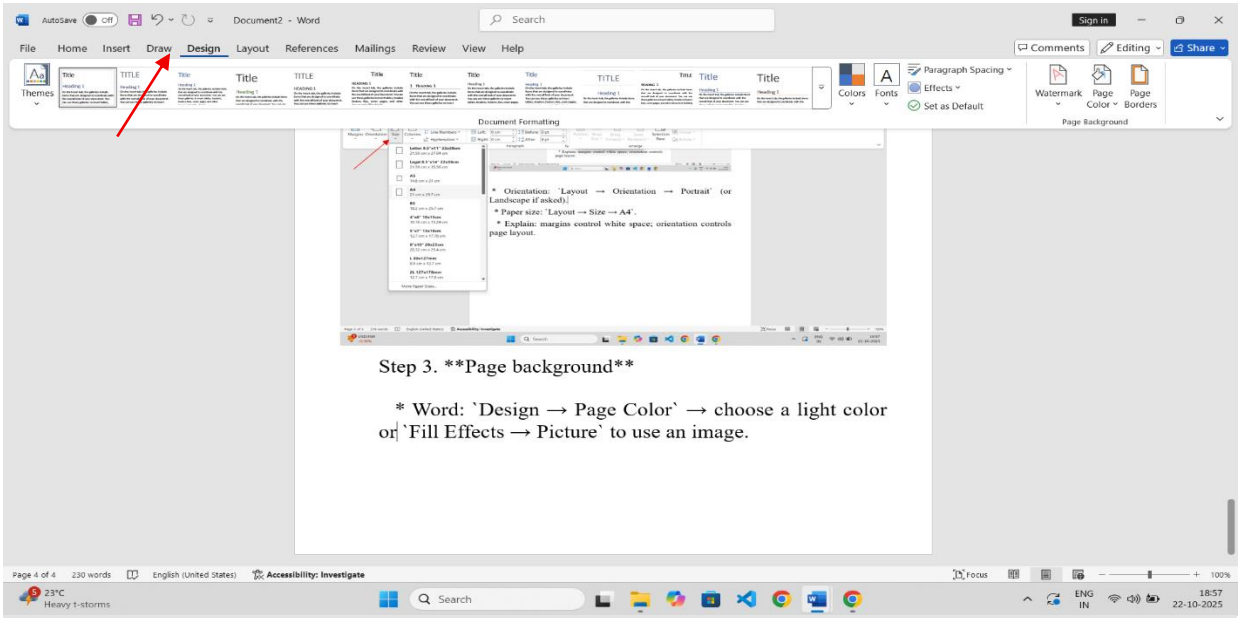

Document2 - Word
Search
File Home Insert Draw Design Layout References Mailings Review View Help
Comments
Editing
Share
Margins Orientation Size Columns
Breaks
Line Numbers
Hyphenation
Page Setup
Indent
Left: 0 cm
Right: 0 cm
Spacing
Before:
After:
Paragraph
Align
Page Setup
Margins
Paper
Layout
Margins
Top: 1.5 cm
Bottom: 1.5 cm
Left: 1.5 cm
Right: 1.5 cm
Gutter: 0 cm
Gutter position: Left
Orientation
Portrait
Landscape
Pages
Multiple pages: Normal
Preview
Apply to: Whole document
Set As Default
OK
Cancel
4.Versatility
A computer ca
laying games
to solving com
Step 2. **Pag
* Word: `La
→ set (e.g.)
Top/Bottom
* Orientat
ortrait` (or
Landscape if
* Paper size
* Explain: margins control white space; orientation controls page layout.
Page 2 of 2
216 words
English (United States)
Accessibility: Good to go
Focus
100%
Rainy days ahead
23°C
Search
ENG
IN
18:37
22-10-2025

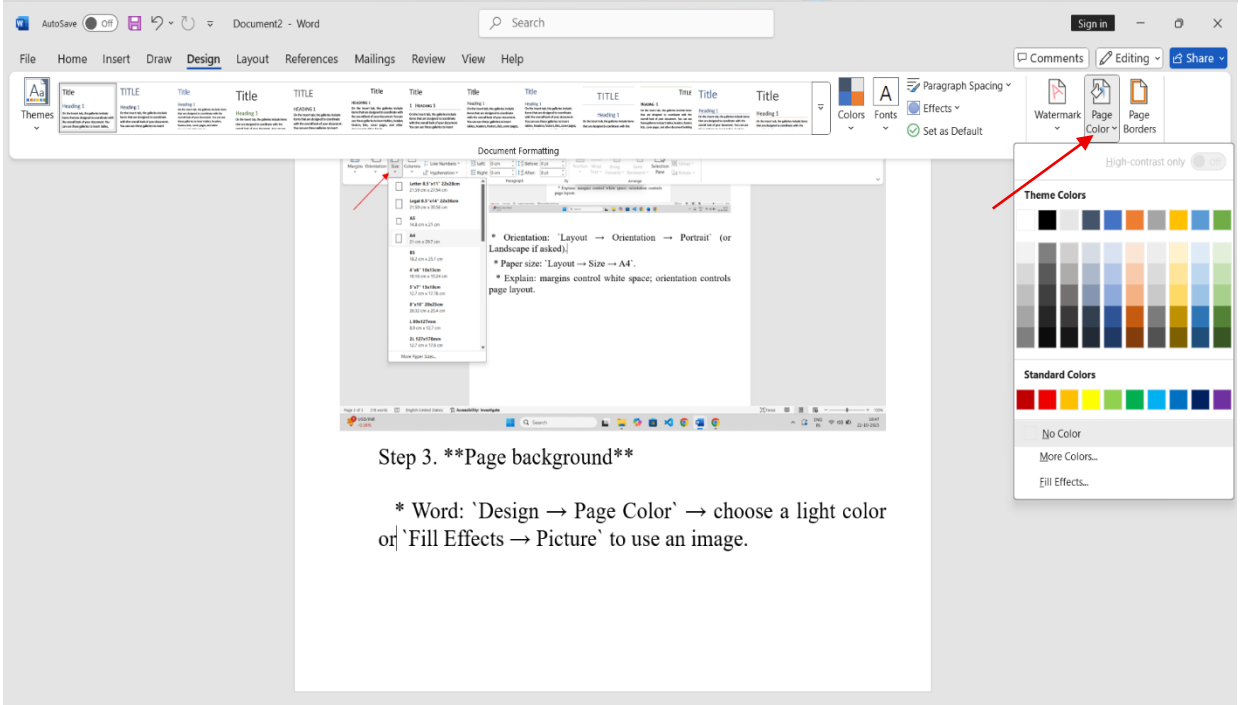


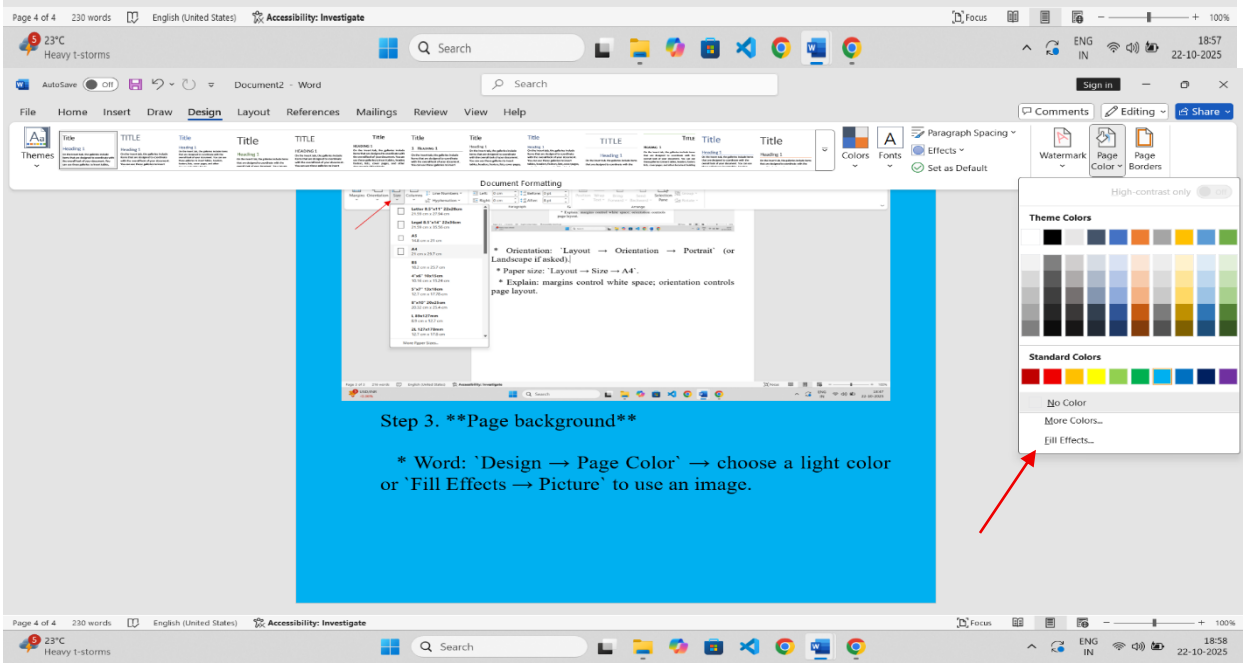


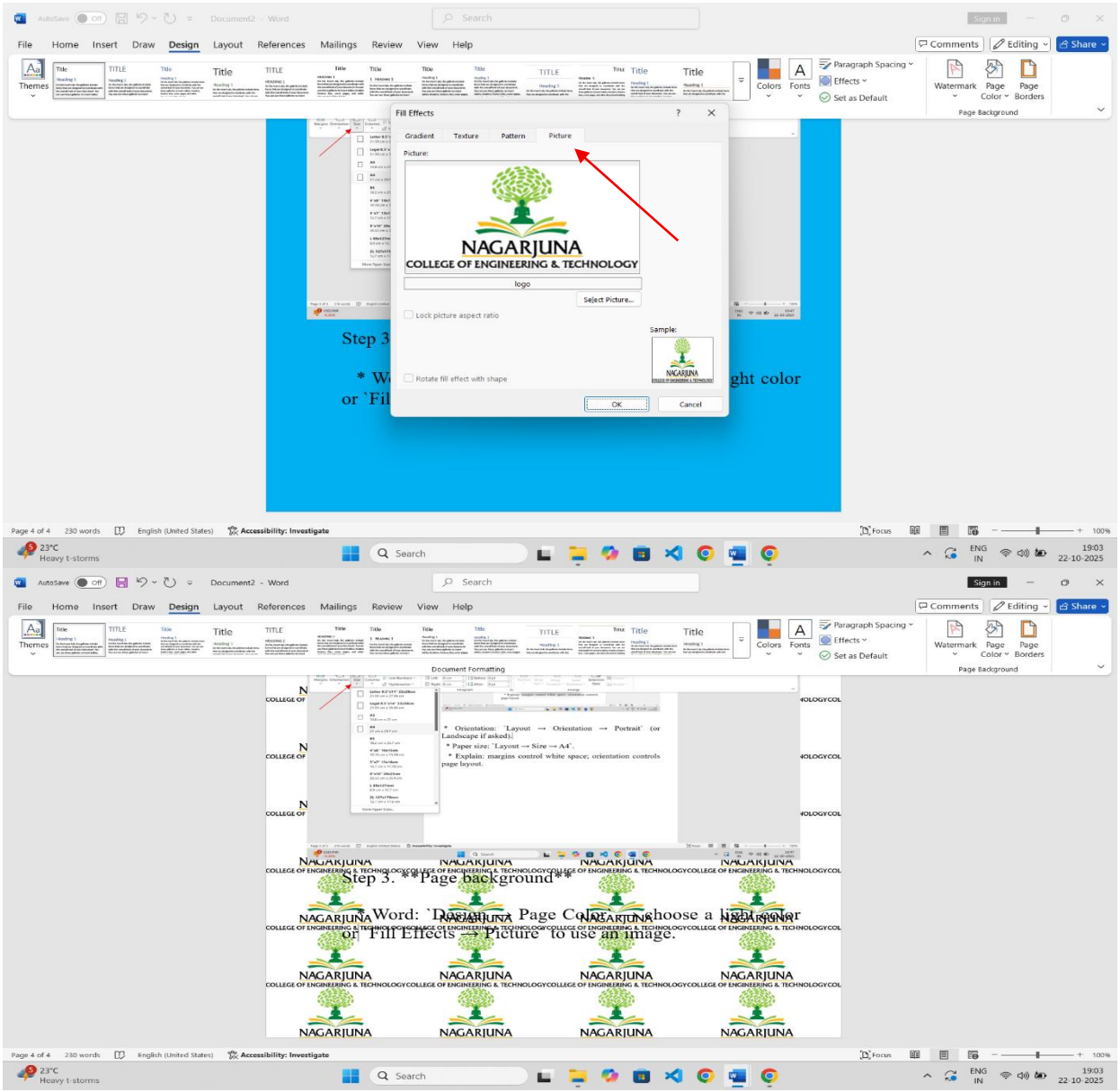
Step 3. Page background

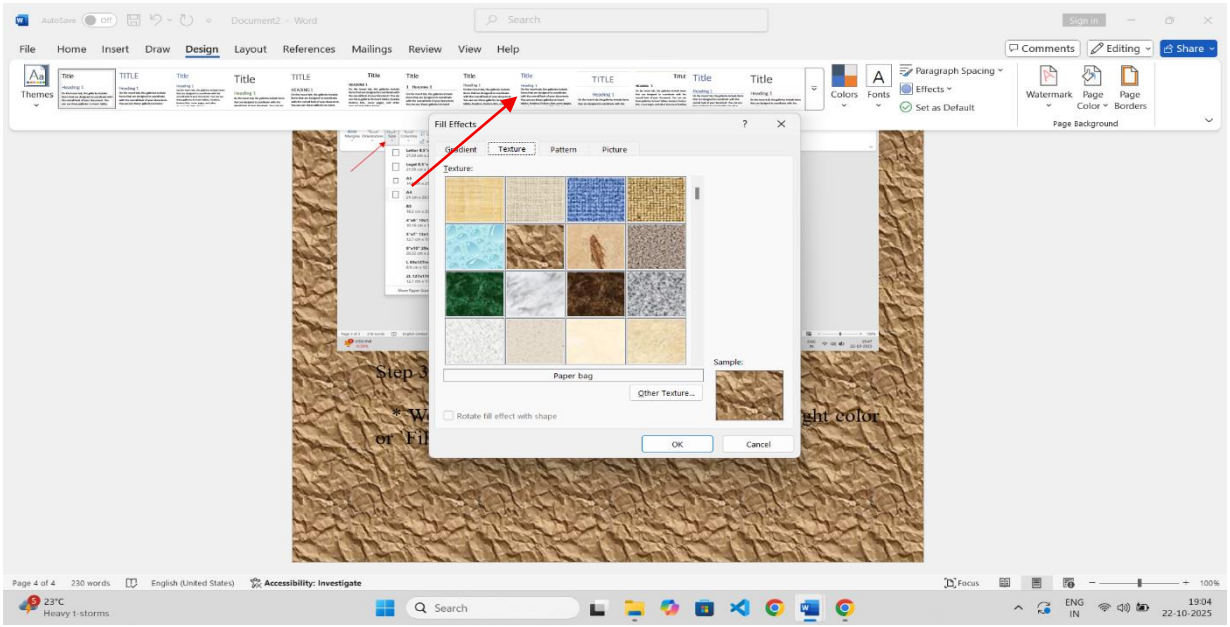
*Word: `Design → Page Color` → choose a light color or `Fill Effects → Picture` to use an image.

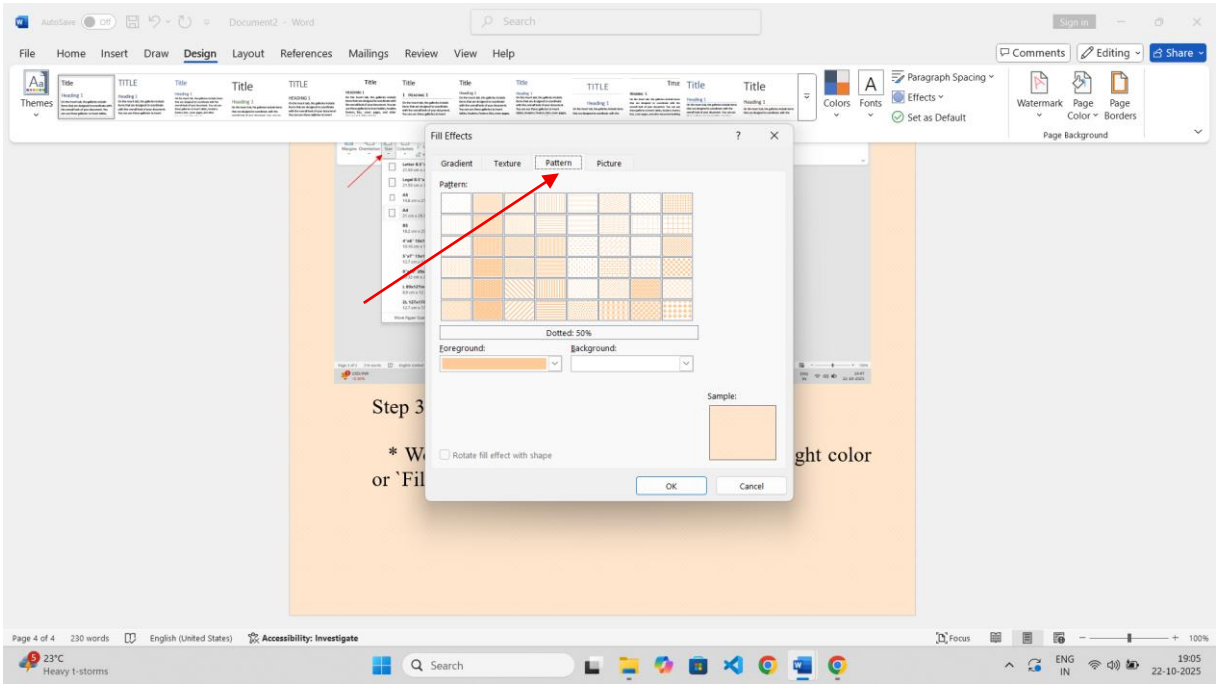

Step 3. **Page background**
* Word: `Design → Page Color` → choose a light color or `Fill Effects → Picture` to use an image.


Step 3. **Page background**
* Word: `Design → Page Color` → choose a light color or `Fill Effects → Picture` to use an image.
Theme Colors
Standard Colors
No Color
More Colors...
Fill Effects...


Step 3. **Page background**
* Word: `Design → Page Color` → choose a light color or `Fill Effects → Picture` to use an image.
Theme Colors
Standard Colors
No Color
More Colors...
Fill Effects...

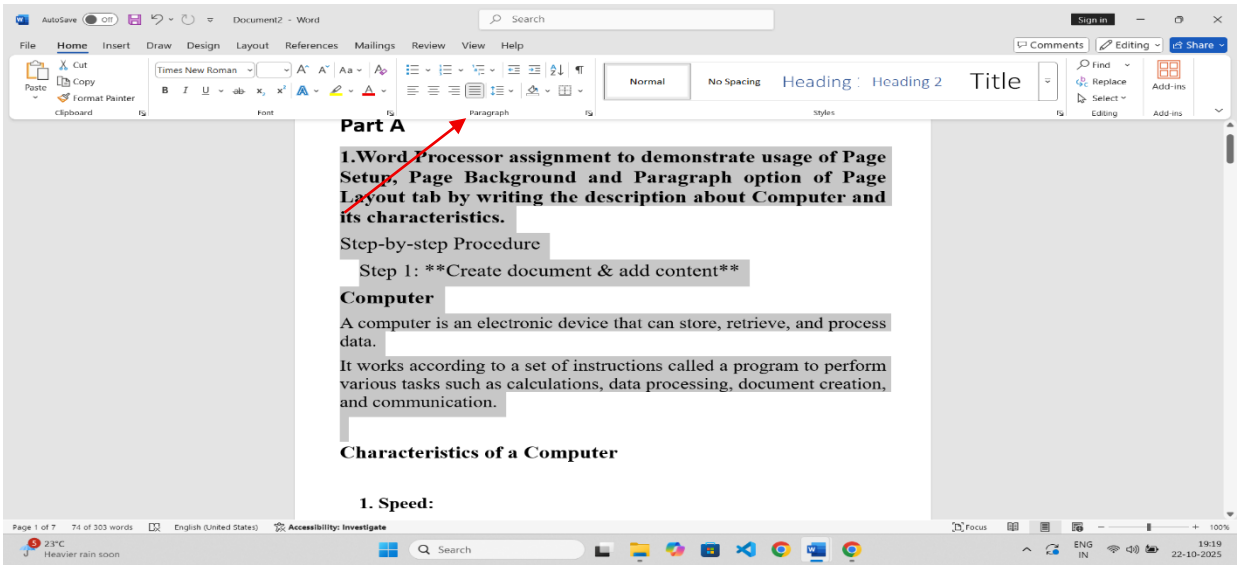

Fill Effects
Gradient
Texture
Pattern
Picture
Picture:
NAGARJUNA
COLLEGE OF ENGINEERING & TECHNOLOGY
logo
Select Picture...
Lock picture aspect ratio
Sample:
Rotate fill effect with shape
OK
Cancel
Step 3
ght color
or `Fil
Document Formatting
* Orientation: `Layout → Orientation → Portrait` (or Landscape if asked).
* Paper size: `Layout → Size → A4`.
* Explain: margins control white space; orientation controls page layout.
Step 3: **Page background**
Word: `Design → Page Color` → choose a light color
or `Fill Effects → Picture` to use an image.

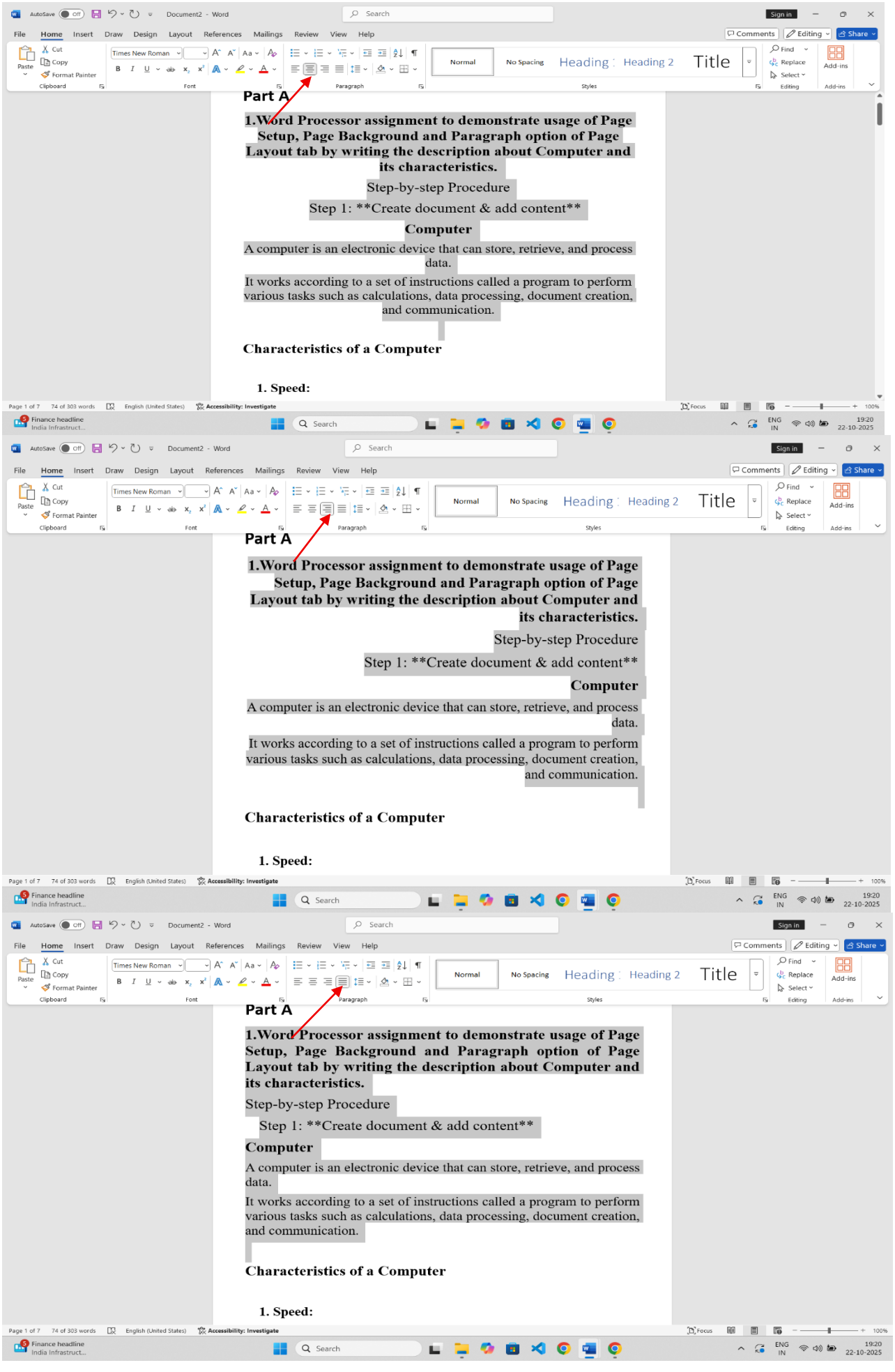

Fill Effects
Gradient
Texture
Pattern
Picture
Texture:
Paper bag
Other Texture...
Sample:
Rotate fill effect with shape
OK
Cancel
ght color

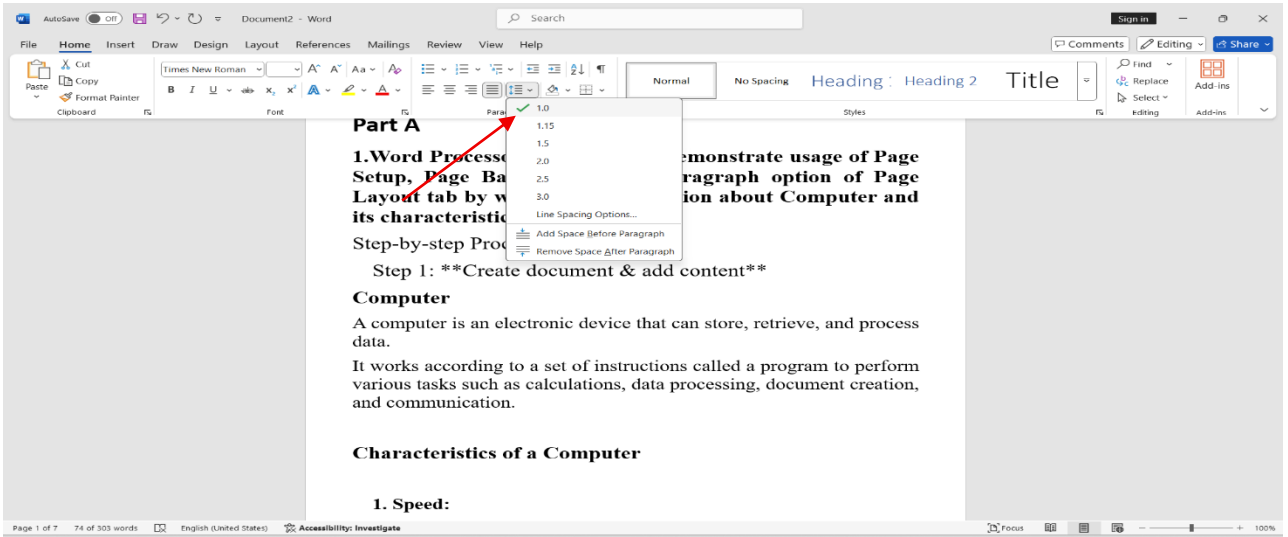


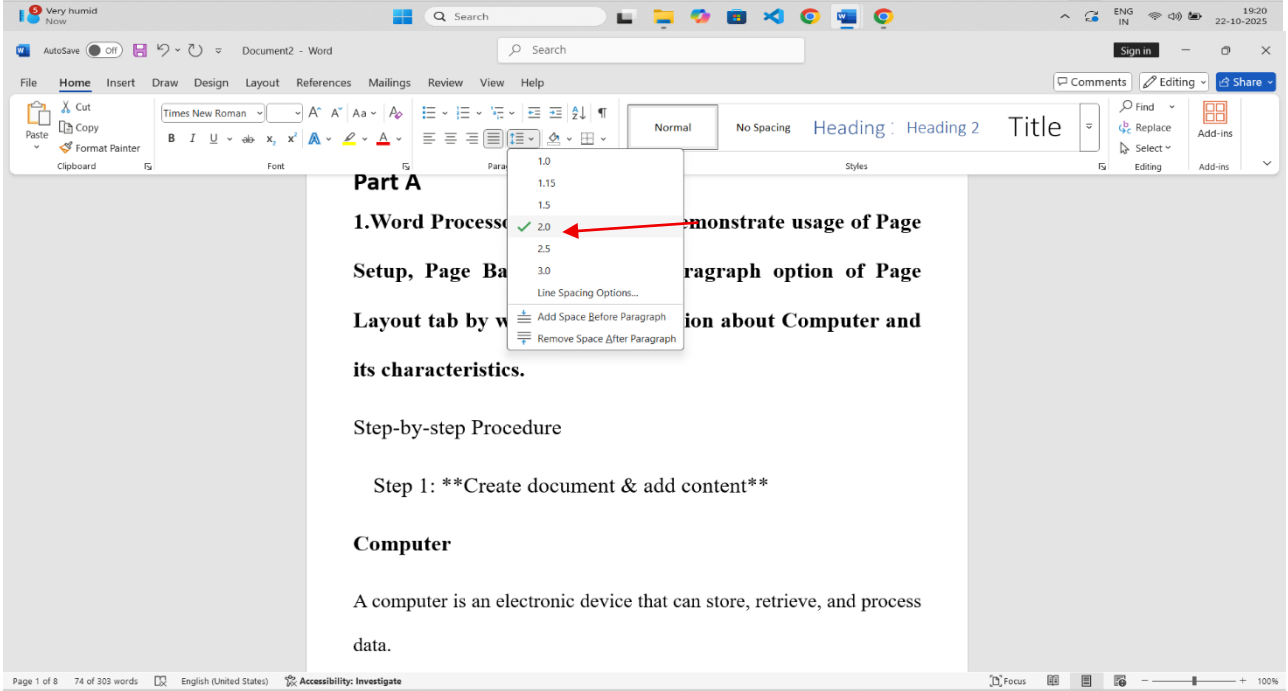
Step4.Paragraph formatting (spacing, alignment, indentation)

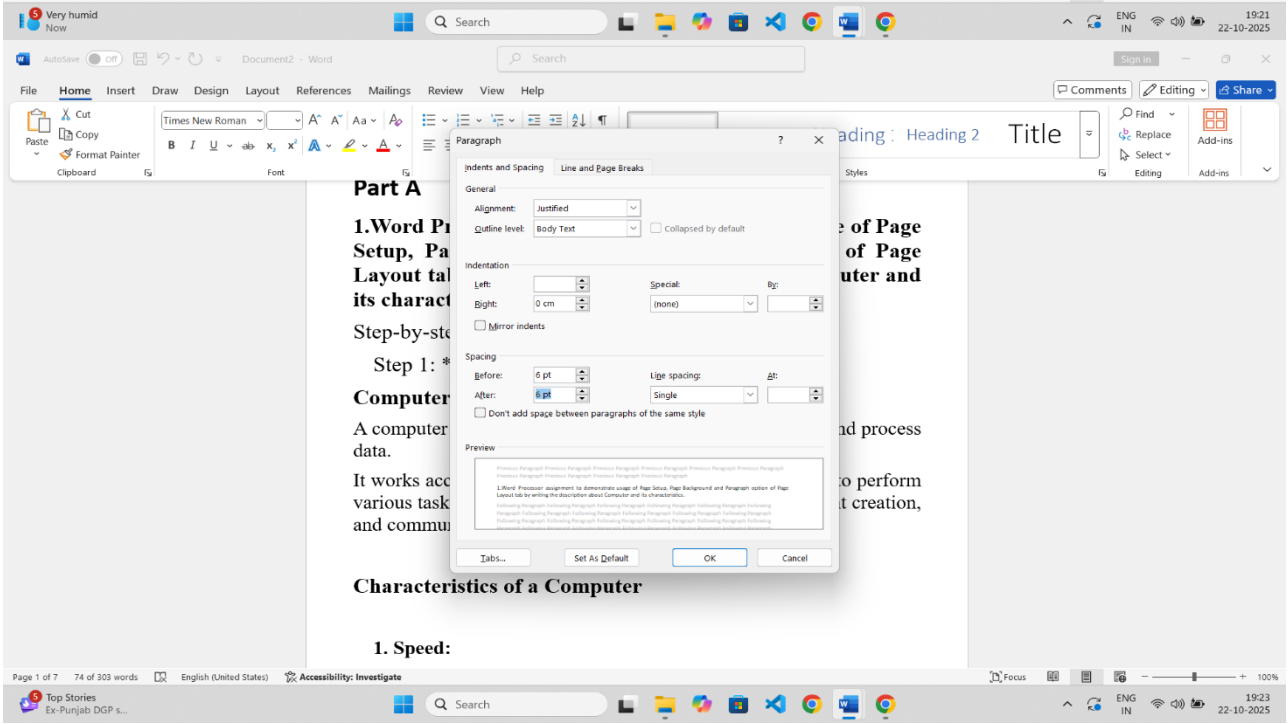
* Select the paragraph → `Home → Paragraph group`:
* Alignment: choose `Left`, `Center` or `Justify`.
* Spacing Before/After: set `Before = 6 pt`, `After = 6 pt`.
* Indentation: `Paragraph → Special → First line → 0.5"` to show first-line indent.



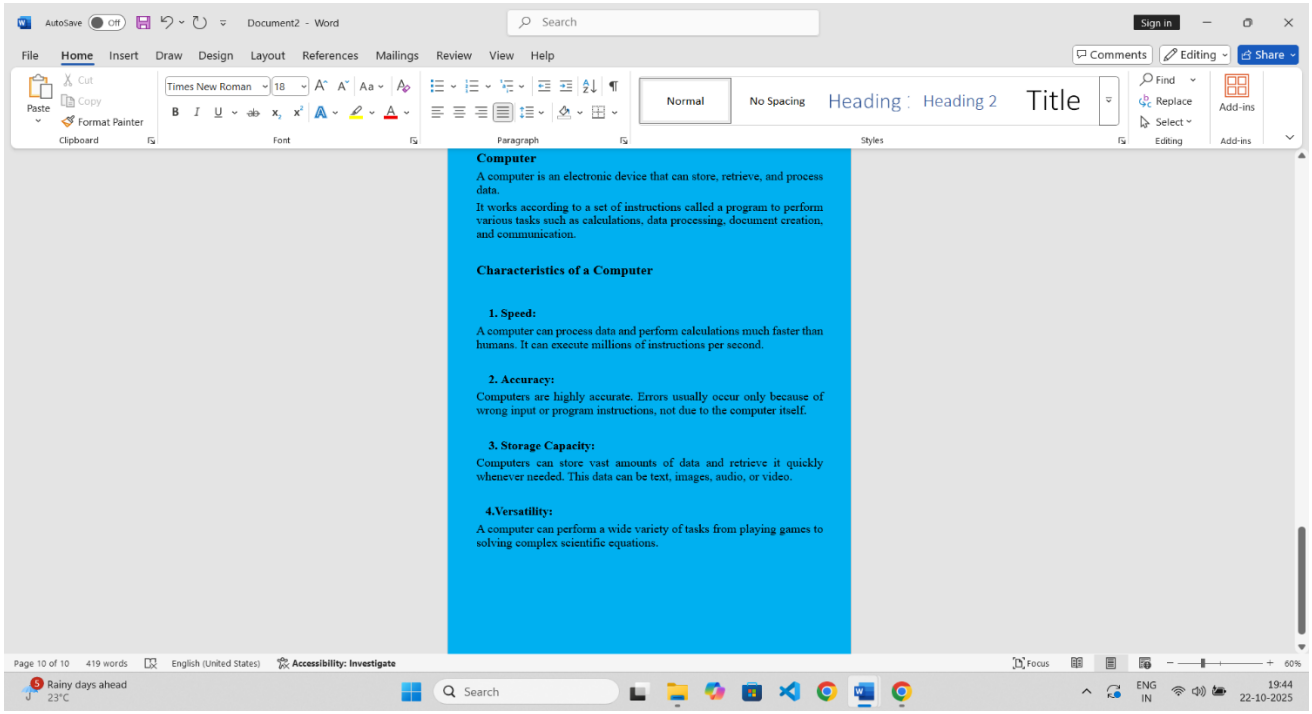

Part A
1.Word Processor assignment to demonstrate usage of Page Setup, Page Background and Paragraph option of Page Layout tab by writing the description about Computer and its characteristics.
Step-by-step Procedure
Step 1: **Create document & add content**
Computer
A computer is an electronic device that can store, retrieve, and process data.
It works according to a set of instructions called a program to perform various tasks such as calculations, data processing, document creation, and communication.
Characteristics of a Computer
1. Speed:


Part A
1.Word Processe monstrate usage of Page
Setup, Page Ba ragraph option of Page
Layout tab by w ion about Computer and
its characteristi
Step-by-step Proc
Step 1: **Create document & add content**
Computer
A computer is an electronic device that can store, retrieve, and process data.
It works according to a set of instructions called a program to perform various tasks such as calculations, data processing, document creation, and communication.
Characteristics of a Computer
1. Speed:

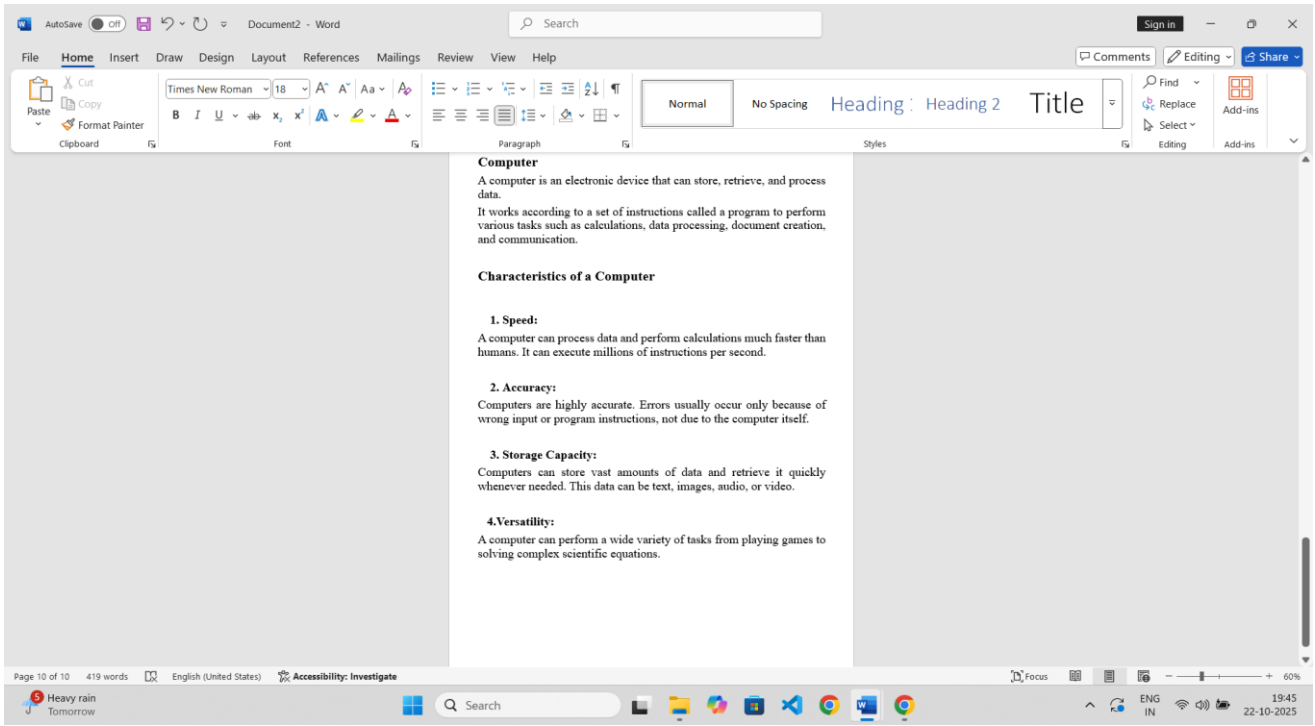

Part A
1.Word Processe monstrate usage of Page
Setup, Page Ba ragraph option of Page
Layout tab by w ion about Computer and
its characteristics.
Step-by-step Procedure
Step 1: **Create document & add content**
Computer
A computer is an electronic device that can store, retrieve, and process data.


Paragraph
Indents and Spacing
Line and Page Breaks
Part A
Characteristics of a Computer
1. Speed:

Step 5. Output



OR



* Save as `Computer.docx`.

2. Word Processor assignment to demonstrate Bullets and Numbering, Headers and footers

Step1. Create lists

* Type five lines for characteristics, select them → `Home → Bullets`.

* Type three lines for uses, select → `Home → Numbering`.

Characteristics of a Computer

1. Speed:

A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.

2. Accuracy:

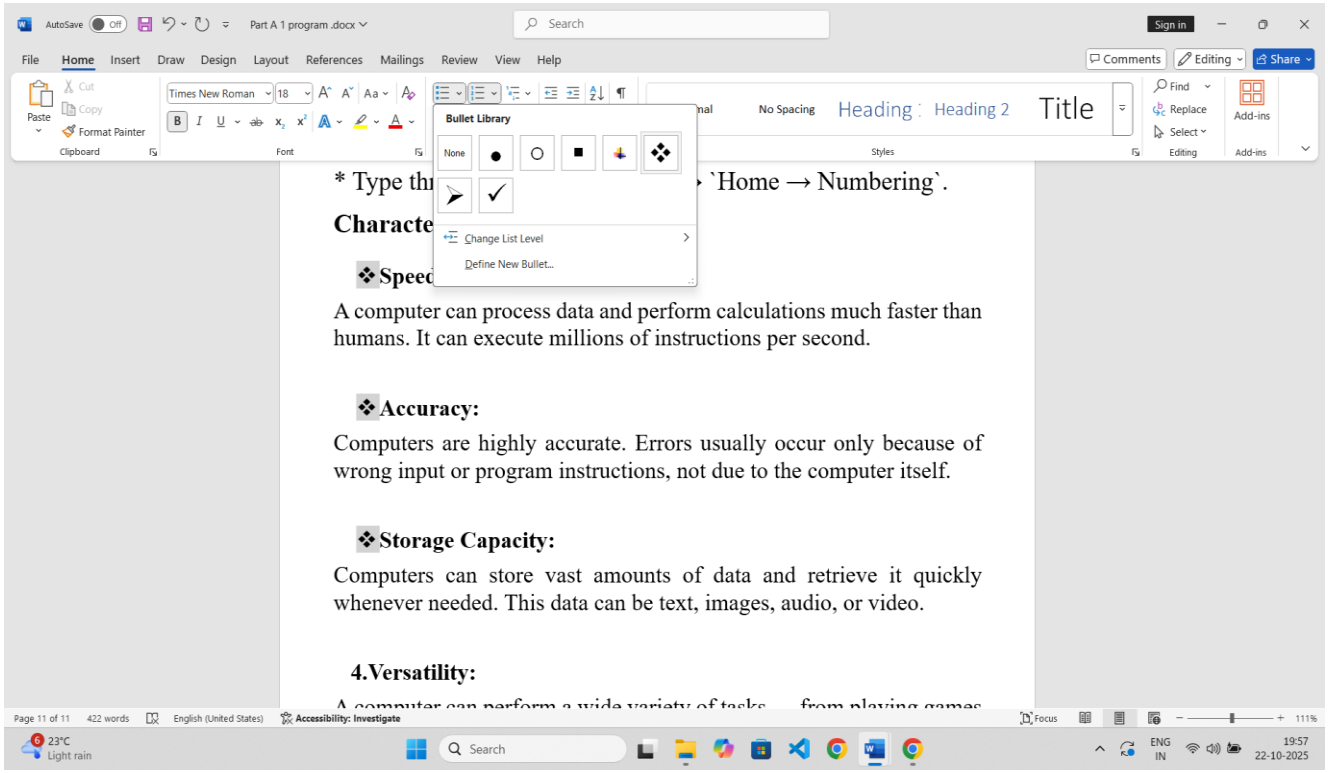
Computers are highly accurate. Errors usually occur only because of wrong input or program instructions, not due to the computer itself.

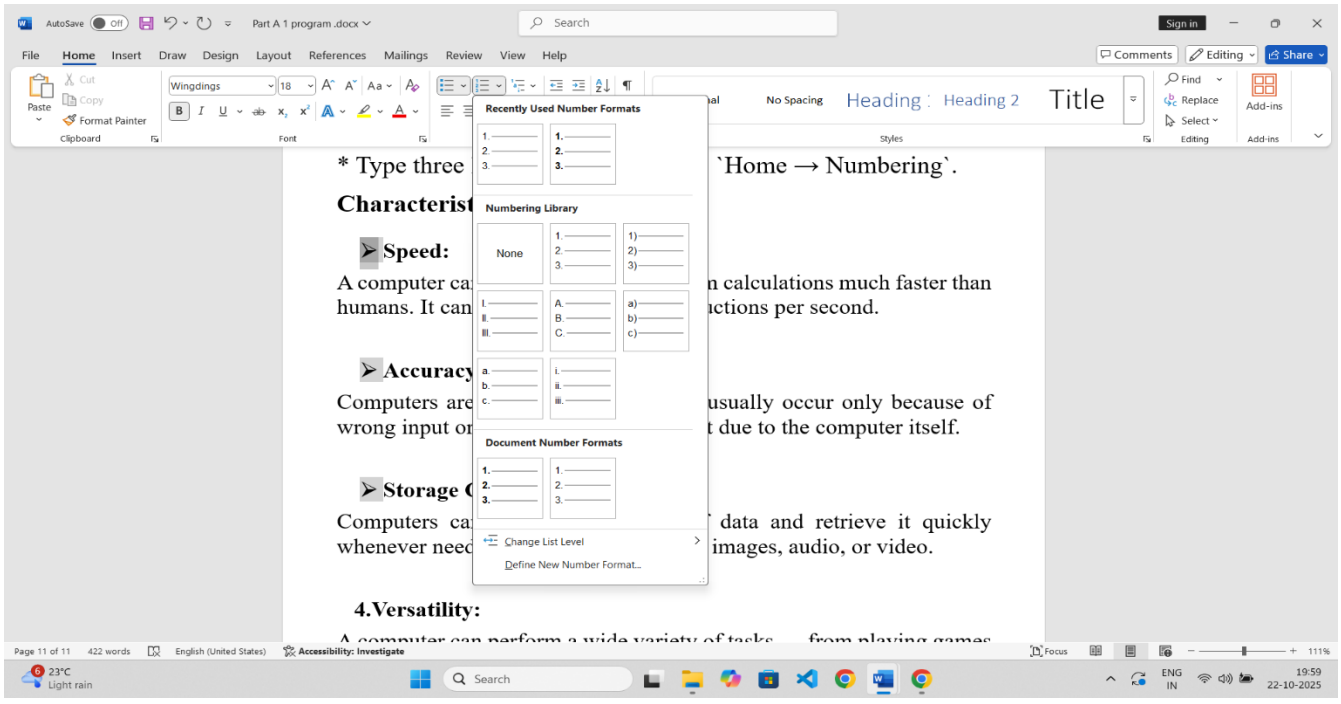
3. Storage Capacity:

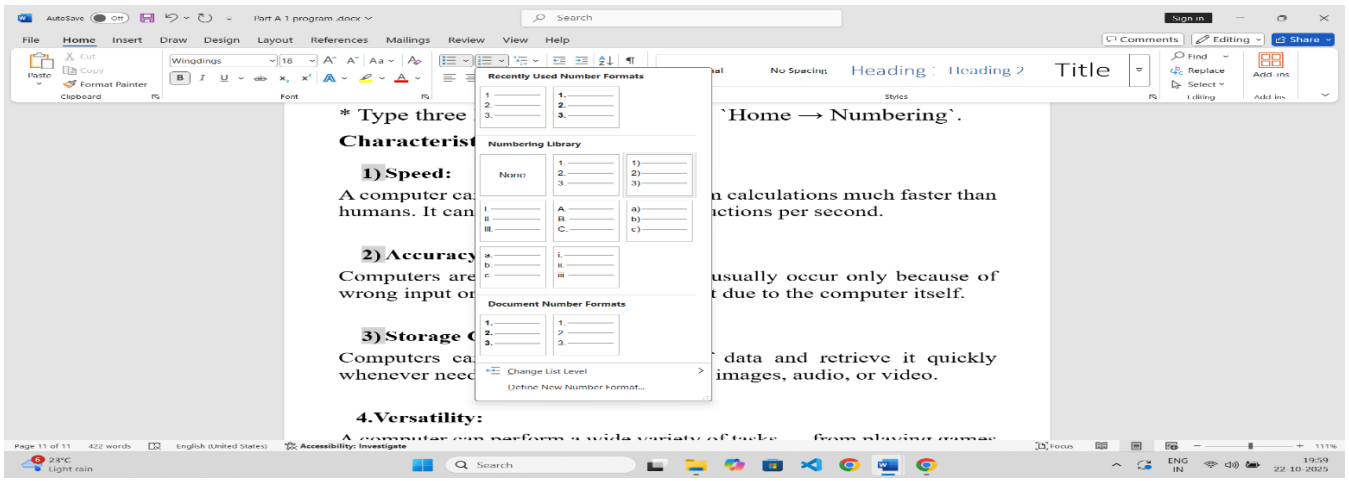
Computers can store vast amounts of data and retrieve it quickly whenever needed. This data can be text, images, audio, or video.

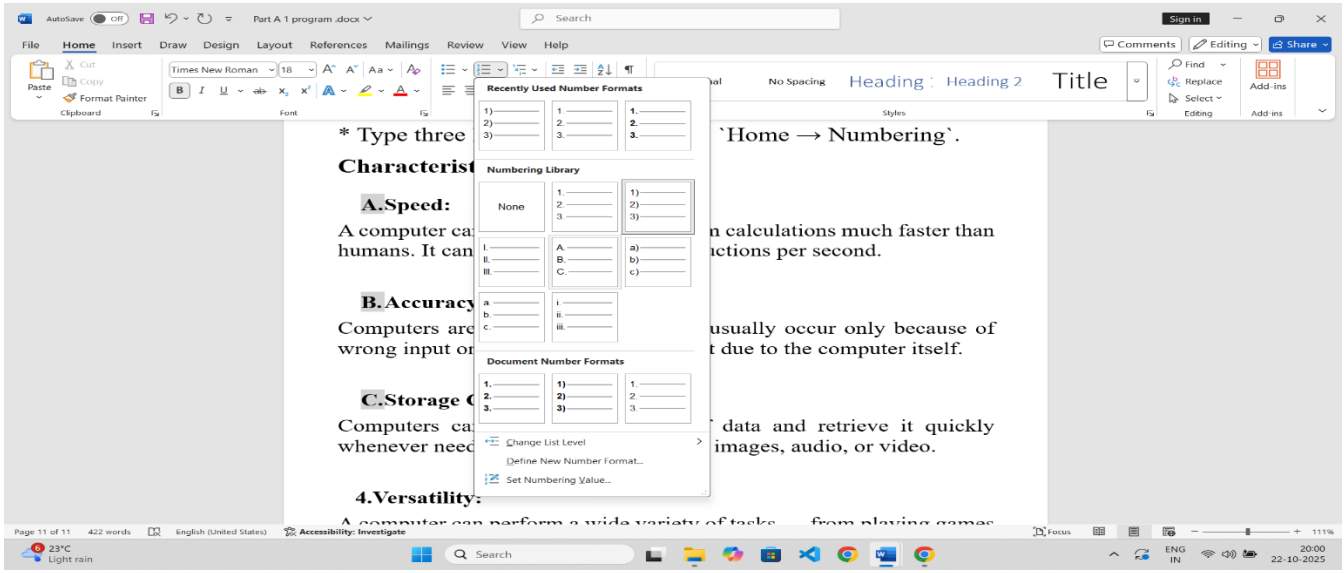
4.Versatility:

A computer can perform a wide variety of tasks — from playing games to solving complex scientific equations.


Bullet Library
None
Change List Level
Define New Bullet...
* Type thr
`Home → Numbering`.
Characte
❖Speed
A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.
❖Accuracy:
Computers are highly accurate. Errors usually occur only because of wrong input or program instructions, not due to the computer itself.
❖Storage Capacity:
Computers can store vast amounts of data and retrieve it quickly whenever needed. This data can be text, images, audio, or video.
4.Versatility:


Recently Used Number Formats
Numbering Library
None
Document Number Formats
Change List Level
Define New Number Format...
* Type three
`Home → Numbering`.
Characterist
➢Speed:
A computer ca
n calculations much faster than
humans. It can
ictions per second.
➢Accuracy
Computers are
usually occur only because of
wrong input or
t due to the computer itself.
➢Storage C
Computers ca
data and retrieve it quickly
whenever need
images, audio, or video.
4.Versatility:

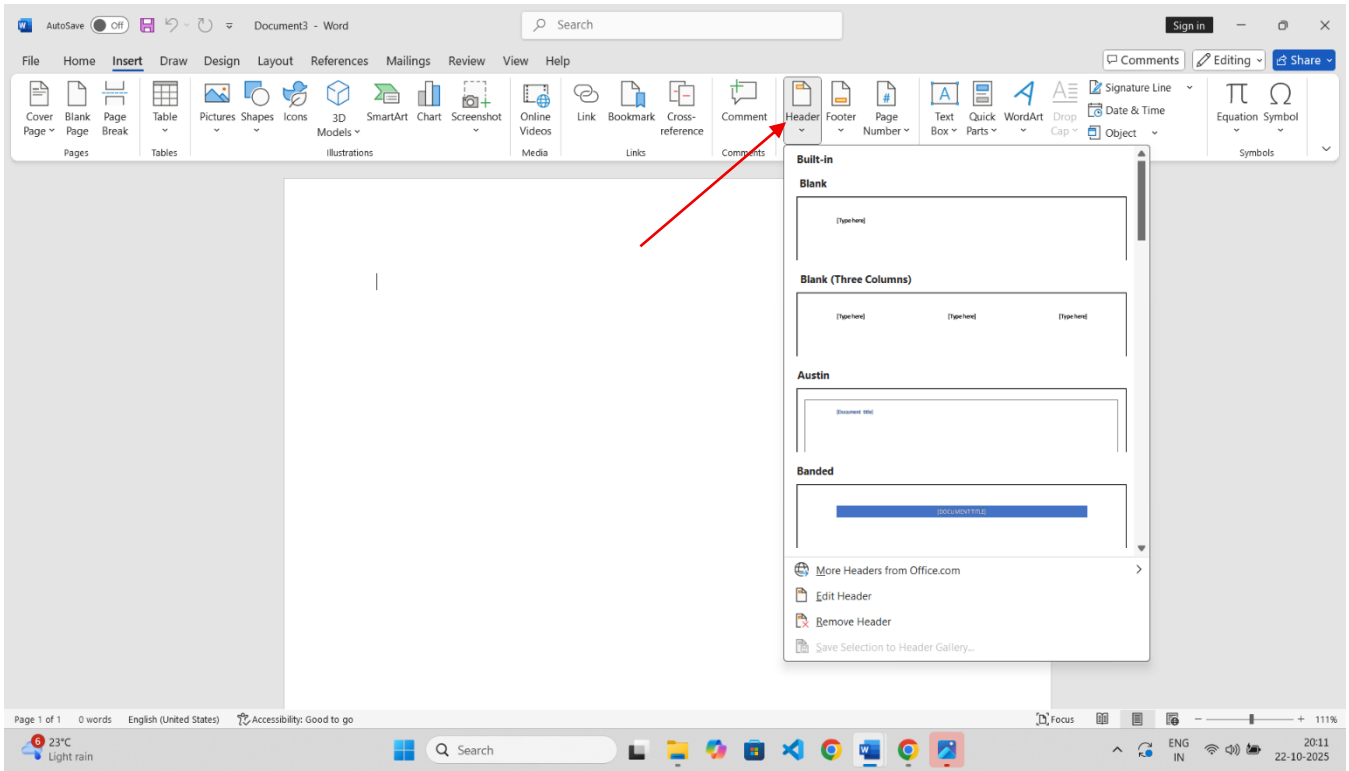

Recently Used Number Formats
Numbering Library
None
Document Number Formats
Change List Level
Define New Number Format...
* Type three
`Home → Numbering`.
Characterist
1) Speed:
A computer ca
n calculations much faster than
humans. It can
ictions per second.
2) Accuracy
Computers are
usually occur only because of
wrong input or
t due to the computer itself.
3) Storage C
Computers ca
data and retrieve it quickly
whenever need
images, audio, or video.
4.Versatility:

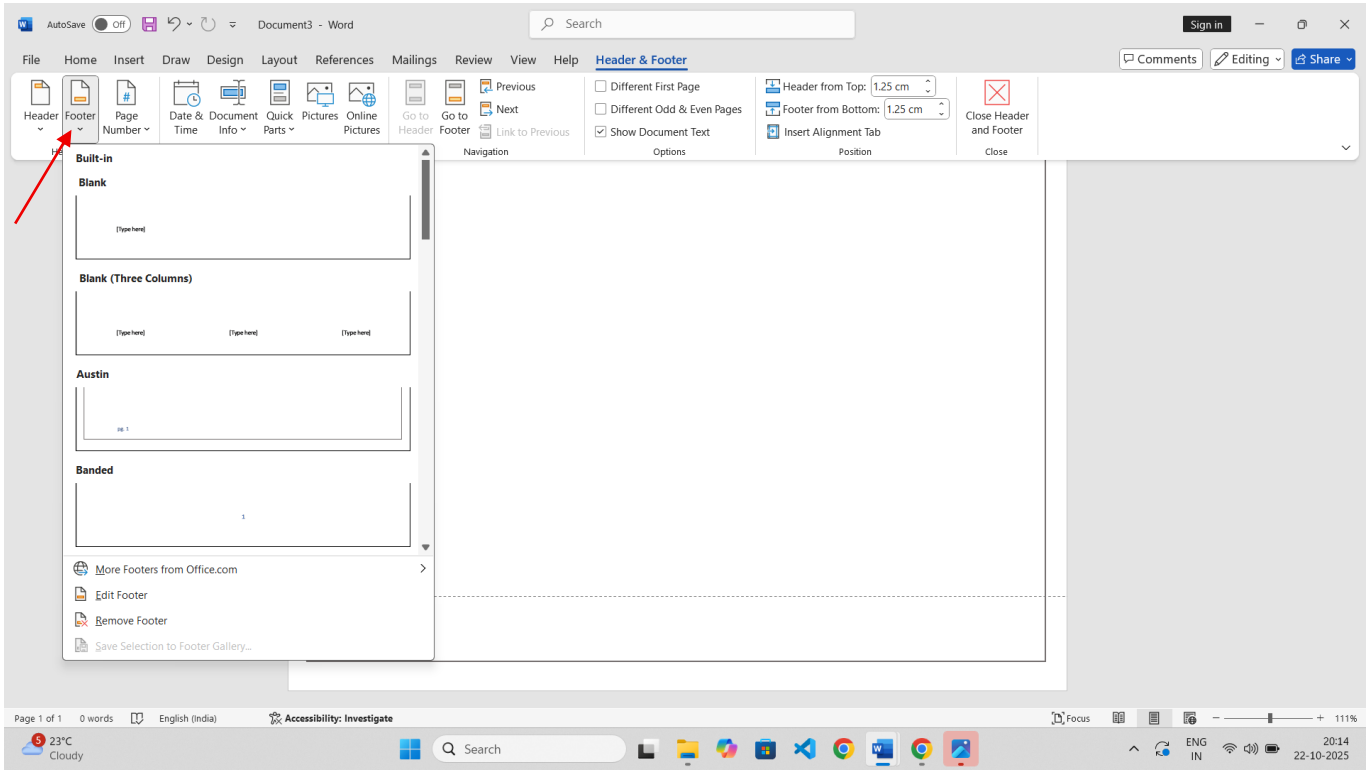


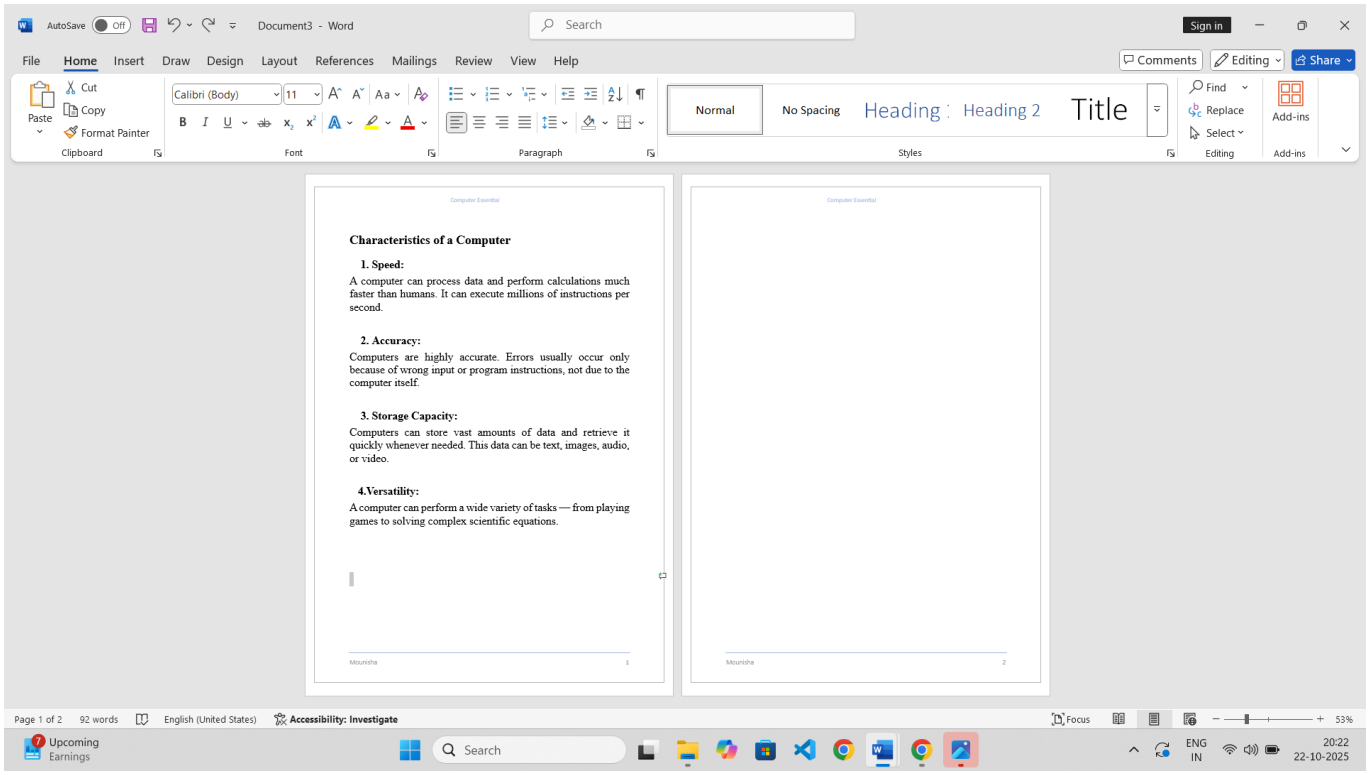
Step2. Add header and footer

* `Insert → Header` → choose blank or template → type document title (center).

* `Insert → Footer` → type your name (left) and `Insert → Page Number` → choose bottom right.

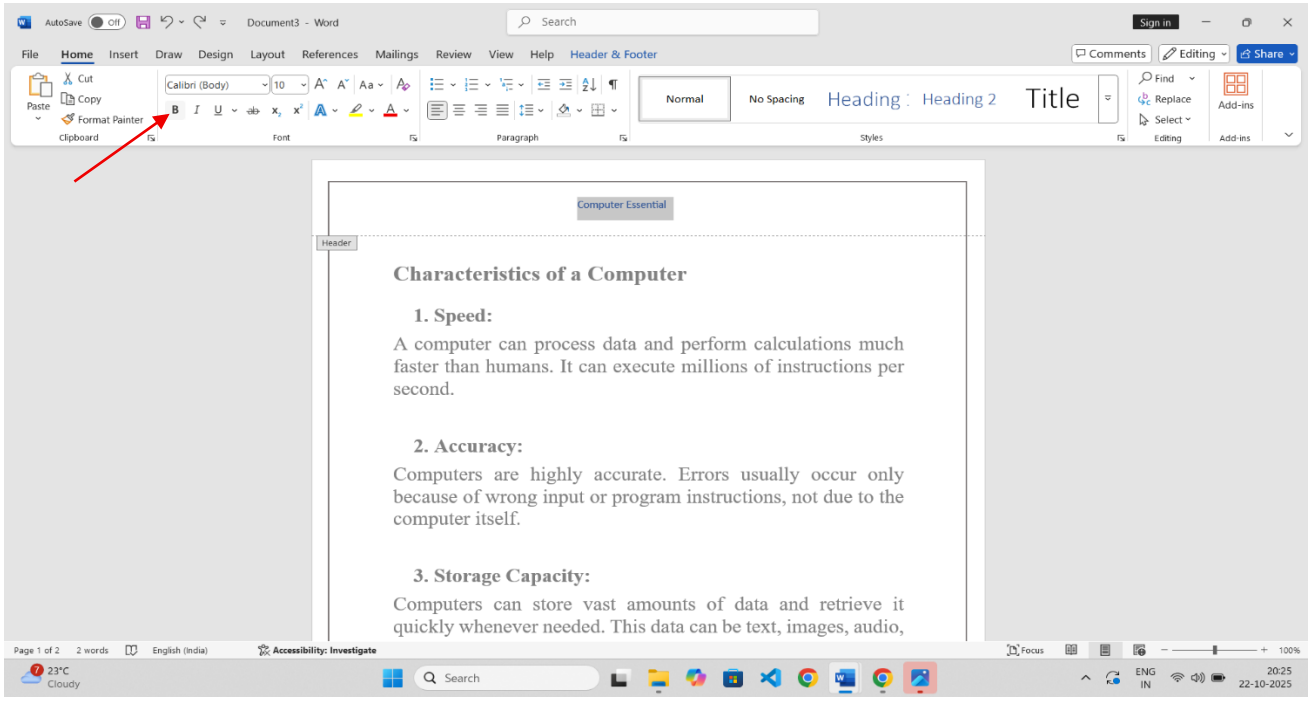


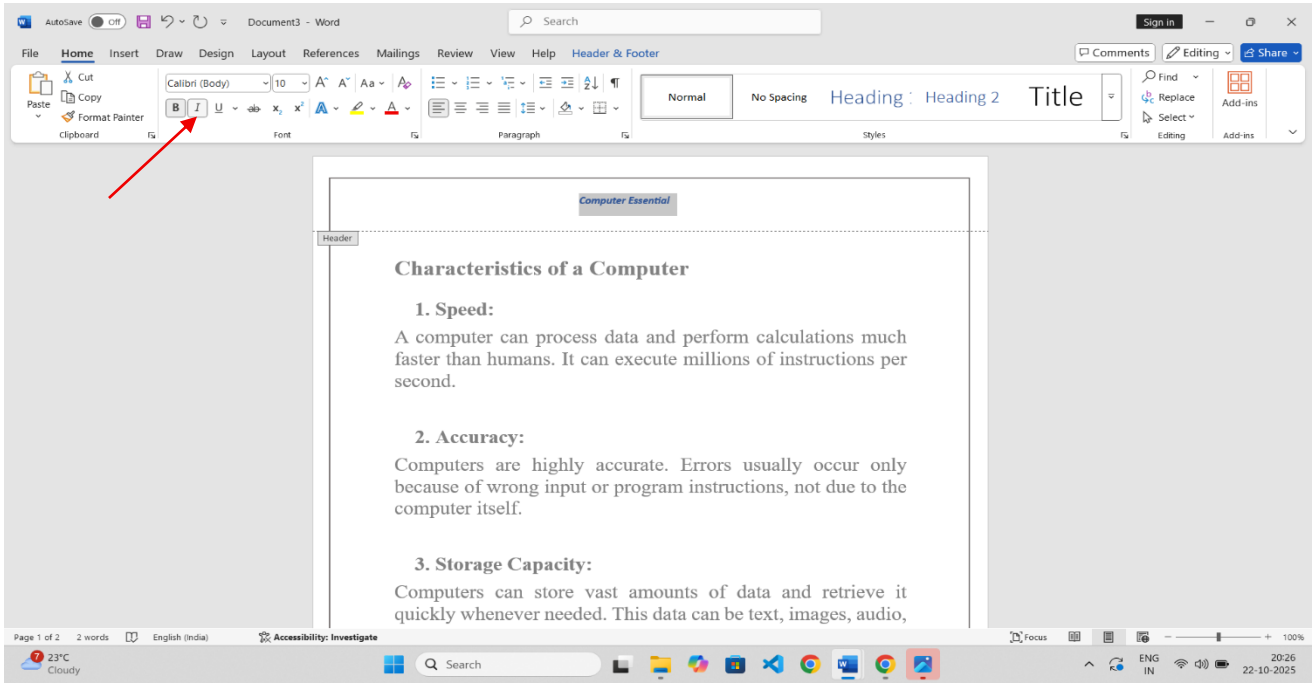




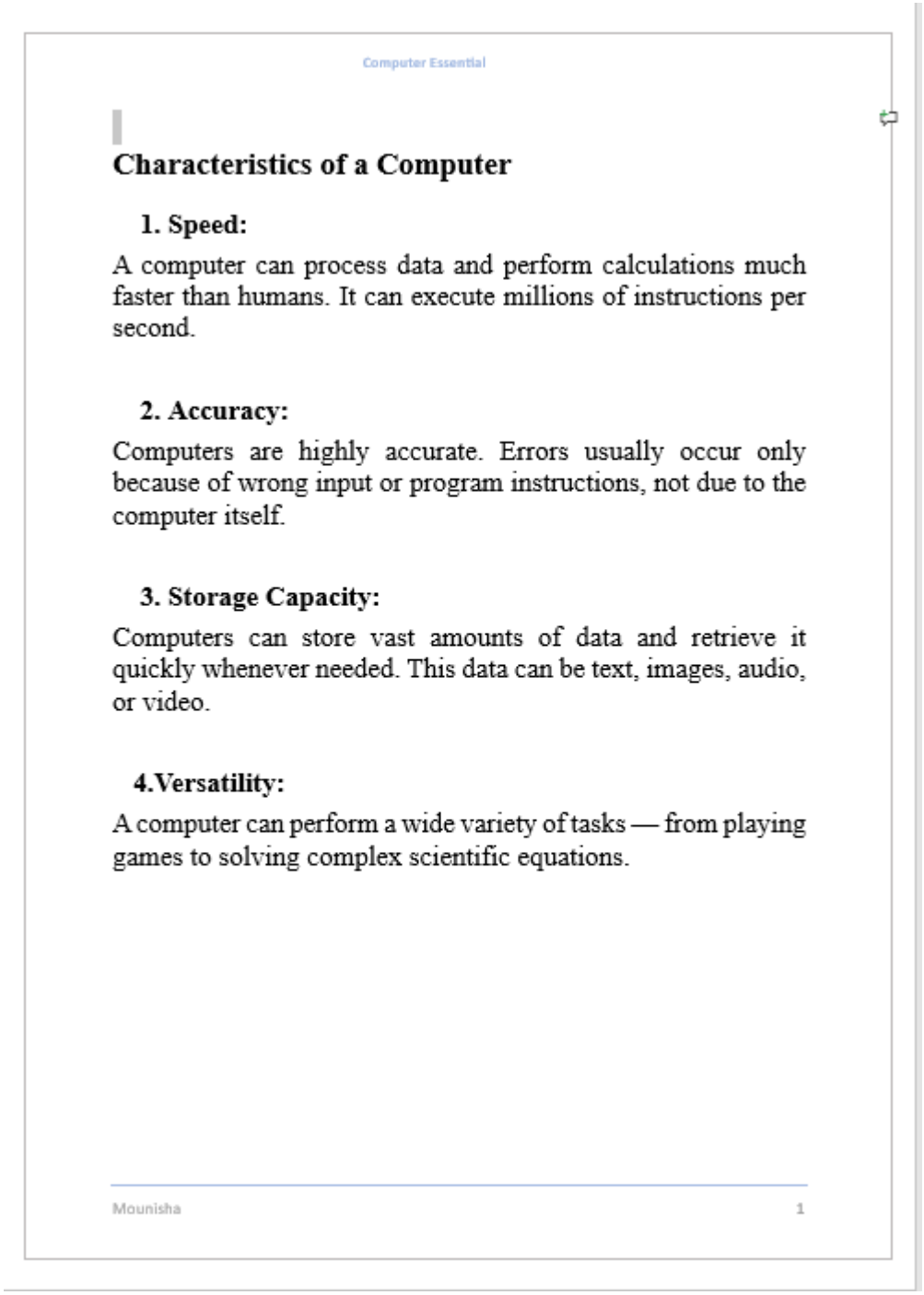
Step3. Formatting

* Make header font `Bold, 14 pt` and footer `Italic, 10 pt`.


Computer Essential
Header
Characteristics of a Computer
1. Speed:
A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.
2. Accuracy:
Computers are highly accurate. Errors usually occur only because of wrong input or program instructions, not due to the computer itself.
3. Storage Capacity:
Computers can store vast amounts of data and retrieve it quickly whenever needed. This data can be text, images, audio,


Computer Essential
Header
Characteristics of a Computer
1. Speed:
A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.
2. Accuracy:
Computers are highly accurate. Errors usually occur only because of wrong input or program instructions, not due to the computer itself.
3. Storage Capacity:
Computers can store vast amounts of data and retrieve it quickly whenever needed. This data can be text, images, audio,

Step 4. Output



3.Word Processor assignment to demonstrate usage of mail merge by creating a letter to invite your parents for the annual day event. Prepare at least 5 letters.

Step 1: Create the Main Letter

Open MS Word → create a new document and type the main invitation letter.

Example letter:

Annual Day Invitation Letter

[Your School Name]

[School Address]

[Date]

Dear [Parent_Name],

We are delighted to invite you to our school's Annual Day Celebration to be held on [Event_Date] at [Venue]. Your presence will inspire our students and make the event more special.

The program will begin at [Start_Time] and include cultural performances, awards, and other exciting events.

We look forward to welcoming you and your family.

Warm regards,

[Principal_Name]

Principal, [School_Name]

Step 2: Create a Data Source

Open MS Excel → Enter details for at least 5 parents.

Parents Name	Event_Date	Venue	Start_Time	Principal	College_Name
Mr. Ramesh Kumar	25-Oct-25	School Auditorium	10:00 AM	Mrs. Latha Rao	NCET
Mrs. Anjali Devi	25-Oct-25	School Auditorium	10:00 AM	Mrs. Latha Rao	NCET
Mr. Arjun Patel	25-Oct-25	School Auditorium	10:00 AM	Mrs. Latha Rao	NCET
Mrs. Kavitha Nair	25-Oct-25	School Auditorium	10:00 AM	Mrs. Latha Rao	NCET
Mr. Suresh Babu	25-Oct-25	School Auditorium	10:00 AM	Mrs. Latha Rao	NCET

Save the file as ParentsList.xlsx.

Step 3: Link Data Source to Word

In Word:

1. Go to Mailings → Start Mail Merge → Letters

2. Click Select Recipients → Use an Existing List

3. Choose your Excel file (ParentsList.xlsx)

4. Insert merge fields:

Click Insert Merge Field → Parent_Name, etc.

Your letter will now look like:

Dear «Parent_Name»,

We are delighted to invite you to our school's Annual Day Celebration to be held on «Event_Date» at «Venue».

...

Warm regards,

«Principal_Name»

Principal, «School_Name»

Step 4: Preview and Finish

1. Click Preview Results to see each personalized letter.
2. Then click Finish & Merge → Edit Individual Documents
3. Save the final letters as a single file or print them.

Output

5 personalized letters for 5 parents.

Each letter should contain their name and same event details.

Annual Day Invitation Letter

Annual Day Invitation Letter

«College_Name»
«Event_Date»

Dear «Parents_Name»,

We are delighted to invite you to our school's Annual Day Celebration to be held on «Event_Date» at «Venue». Your presence will inspire our students and make the event more special.

The program will begin at «Start_Time» and include cultural performances, awards, and other exciting events.

We look forward to welcoming you and your family.

Warm regards,
«Principal»
Principal, «College_Name»

Annual Day Invitation Letter

NCET
10/25/2025

Dear Mr. Ramesh Kumar,

We are delighted to invite you to our school's Annual Day Celebration to be held on 10/25/2025 at School Auditorium. Your presence will inspire our students and make the event more special.

The program will begin at 10:00:00 AM and include cultural performances, awards, and other exciting events.

We look forward to welcoming you and your family.

Warm regards,
Mrs. Latha Rao
Principal, NCET

Annual Day Invitation Letter

NCET
10/25/2025

Dear Mrs. Anjali Devi,

We are delighted to invite you to our school's Annual Day Celebration to be held on 10/25/2025 at School Auditorium. Your presence will inspire our students and make the event more special.

The program will begin at 10:00:00 AM and include cultural performances, awards, and other exciting events.

We look forward to welcoming you and your family.

Warm regards,
Mrs. Latha Rao
Principal, NCET

Annual Day Invitation Letter

NCET
10/25/2025

Dear Mr. Arjun Patel,

We are delighted to invite you to our school's Annual Day Celebration to be held on 10/25/2025 at School Auditorium. Your presence will inspire our students and make the event more special.

The program will begin at 10:00:00 AM and include cultural performances, awards, and other exciting events.

We look forward to welcoming you and your family.

Warm regards,
Mrs. Latha Rao
Principal, NCET

Annual Day Invitation Letter

NCET
10/25/2025

Dear Mrs. Kavitha Nair,

We are delighted to invite you to our school's Annual Day Celebration to be held on 10/25/2025 at School Auditorium. Your presence will inspire our students and make the event more special.

The program will begin at 10:00:00 AM and include cultural performances, awards, and other exciting events.

We look forward to welcoming you and your family.

Warm regards,
Mrs. Latha Rao
Principal, NCET

Annual Day Invitation Letter

NCET
10/25/2025

Dear Mr. Suresh Babu,

We are delighted to invite you to our school's Annual Day Celebration to be held on 10/25/2025 at School Auditorium. Your presence will inspire our students and make the event more special.

The program will begin at 10:00:00 AM and include cultural performances, awards, and other exciting events.

We look forward to welcoming you and your family.

Warm regards,
Mrs. Latha Rao
Principal, NCET

4.Word Processor assignment to demonstrate usage of tables and encryption by preparing the timetable.

Step1 Insert table

* `Insert → Table` → choose 6 columns (Day + 5 or 7 periods depending on layout) and 6 rows (header + 5 weekdays). Example header row: `Day | Period1 | Period2 | Period3 | Period4 | Period5`.

Day	Period 1	Period 2	Period 3	Period 4	Period 5
MON					
TUE					
WED					
THUR					
FRI					

Step2. Fill subjects

* Populate each cell with subject names (e.g., Math, Science).

Day	Period 1	Period 2	Period 3	Period 4	Period 5
MON					
TUE	maths		cs		
WED					
THUR					
FRI					

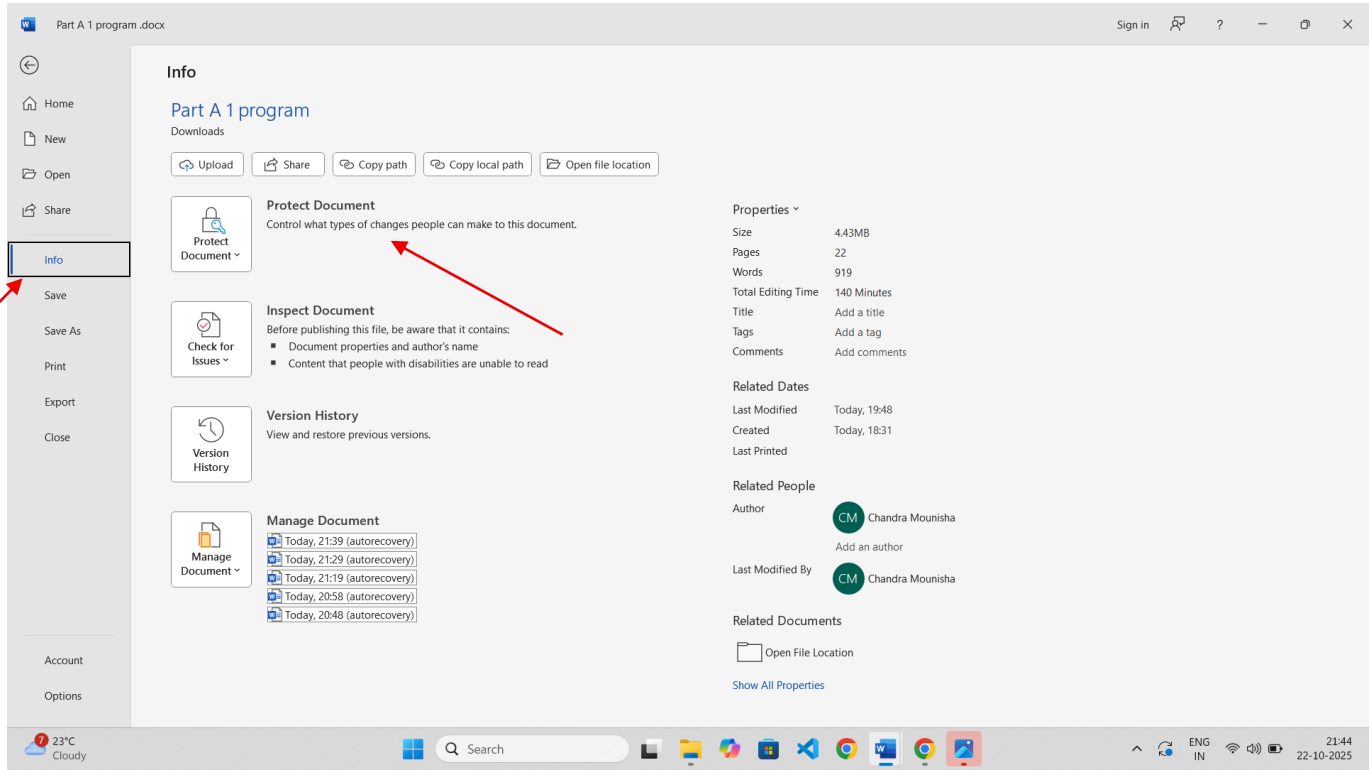
Step3. Format table

* Select table → `Table Design`:
* Choose `Shading` for header row.
* Apply `Borders` → `All Borders`.
* Adjust column widths by dragging.

Day	Period 1	Period 2	Period 3	Period 4	Period 5
MON	C	Eng	CE	EVS	Iks
TUE	maths	Evs	C	Kan	CE
WED	CE	Iks	Eng	C	maths
THUR	Evs	CE	maths	Nptel	Kan

Step4. Encrypt (Protect) document

* `File → Info → Protect Document → Encrypt with Password` → enter password and confirm.



5.Demonstrate usage of formulas and charts in spreadsheet as directed below:

SL No	Student Name	Sub 1	Sub 2	Sub 3	Total	Percentage	Grade

a. Create a spreadsheet with following components:

b. Insert the name and marks of 3 subjects of 5 or more students.

c. Calculate total marks obtained and percentage.

d. Calculate the grade by applying following criteria:

i. If percentage >=90, then grade A
ii. If percentage >=75 and <90, then grade B
iii. If percentage >=60 and <75, then grade C

iv. If percentage >=50 and <60, then grade D
v. If percentage <50, then grade E

e. Insert column charts for various subjects

f. Insert pie chart for one student depicting composition of 3 subject marks

solution : Step 1: Create a spreadsheet

Step 2: a b c->Formulas to calculate:

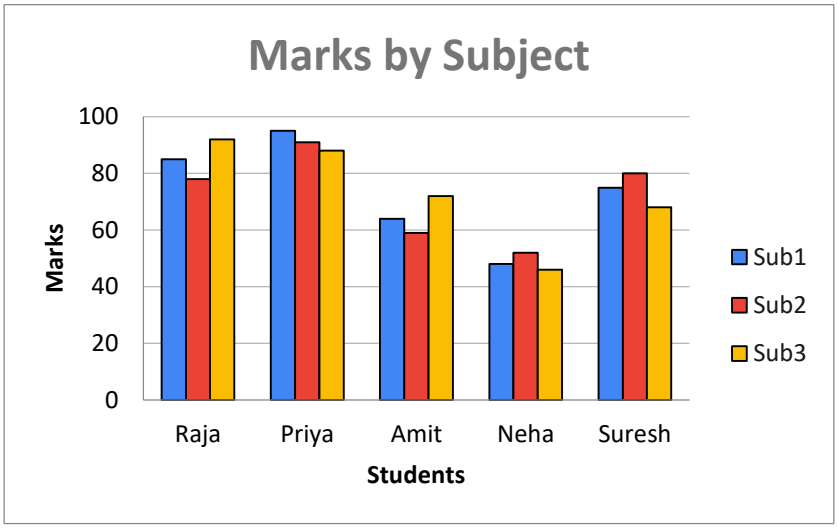
Total: =SUM(C2:E2)

Percentage: =F2/300*100

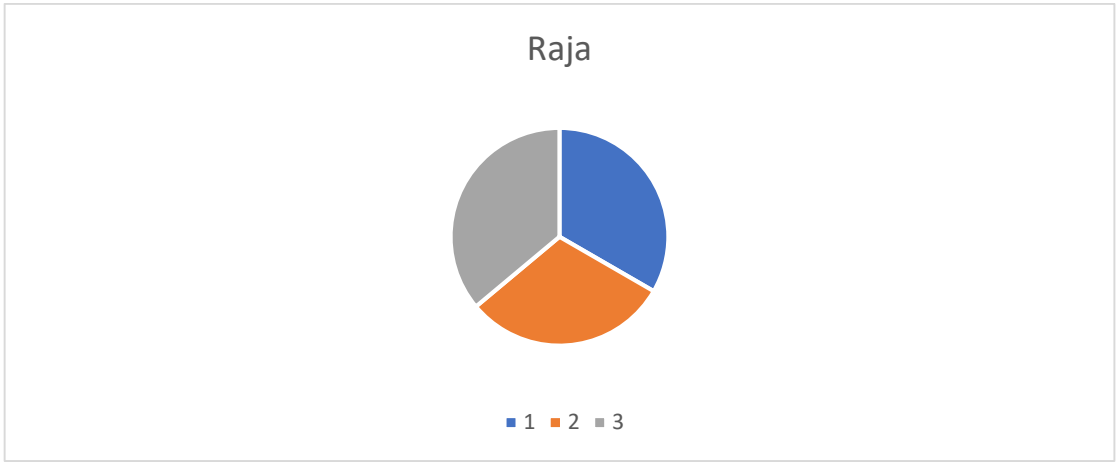
Grade:
=IF(G2>=90,"A",IF(G2>=75,"B",IF(G2>=60,"C",IF(G2>=50,"D","E"))))

e->Column Chart for various Subjects:

SL No	Student Name	Sub1	Sub2	Sub3	Total	Percentage	Grade
1	Raja	85	78	92	255	85	B
2	Priya	95	91	88	274	91.3333	A
3	Amit	64	59	72	195	65	C
4	Neha	48	52	46	146	48.6667	E
5	Suresh	75	80	68	223	74.3333	C



f-> Pie chart for one student depicting composition of 3 subject marks



6.Demonstrate usage of data validation in the spreadsheet as directed below:

a. Create a spreadsheet with following components:

Emp No	Emp Name	Gender	Designation	DOB	Age	Basic Salary	DA	HRA	Gross Salary	Deduction	Net Salary

a. Insert 5 employee details in the columns Emp No., Emp Name, DOB, Basic Salary.

b. Add drop-down data validation for Gender and Designation columns Add a formula to calculate Age based on DOB

c. Add the formula to calculate

DA as 35% of Basic salary,

HRA as 25% of Basic salary

Deduction as 10% of Basic salary

d. Add the formula to calculate Gross Salary and Net Salary

solution : Step 1: Create a spreadsheet

Emp No	Emp Name	Gender	Designation	DOB	Age	Basic Salary	DA	HRA	Gross Salary	Deduction	Net Salary
101	Kavya	Female	Lecturer	1990-05-12	35	25000	8750	6250	40000	2500	37500
102	Raj	Male	Assistant Prof	1985-11-03	40	40000	14000	10000	64000	4000	60000
103	Anu	Female	Lab Asst	1996-02-20	29	18000	6300	4500	28800	1800	27000

Step 2: b c d->Formulas to calculate:

Age: =DATEDIF(E2,TODAY(),"Y") Deduction: =G2*0.1
Net Salary: =J2-K2

DA: =G2*0.35

HRA: =G2*0.25

Gross Salary: =G2+H2+I2

7.Demonstrate conditional formatting in spreadsheet as directed below:

USN	Name	Date 1	Date 2	Date 3	-	Date N	No. of Classes Attended	Attendance Percentage

a. Create an attendance spreadsheet for 10 students
b. Mark P for present and A for absent for respective dates.
c. Apply formula to calculate “No. of classes attended” and “Attendance Percentage” columns
d. Apply conditional formatting to highlight a student if “Attendance Percentage” is less than 85%.

solution : Step 1: Create a spreadsheet

Step 2: ->Formulas to calculate:

->No. of classes attended: =COUNTIF(C2:L2,"P")

-> Attendance Percentage: =M2/10*100

USN	Name	Date1	Date2	Date3	Date4	Date5	Date6	Date7	Date8	Date9	Date10	No. of Classes Attended	Attendance Percentage
1NT21CS001	Rohan	P	P	A	P	P	A	P	P	P	A	7	70
1NT21CS002	Maya	P	P	P	P	P	P	P	P	P	P	10	100
1NT21CS003	Isha	A	P	A	P	A	P	A	P	A	P	5	50

d. conditional formatting to highlight a student if “Attendance Percentage” is less than 85%.

Attendance Percentage
70
100
50

8. Create a power-point presentation to demonstrate the following:

   a. Layout option

   b. Insertion of date, time and slide numbers

   c. Insertion of Symbols.

   Solution:

   A. Layout Option

Step 1:Open PowerPoint

Start a new presentation → A blank slide will appear.

Step 2:Go to the Home tab

On the ribbon (top menu), click Home.

Step 3:Click Layout

You will see a button called Layout with a dropdown arrow.

Step 4:Choose any layout

Different layouts:

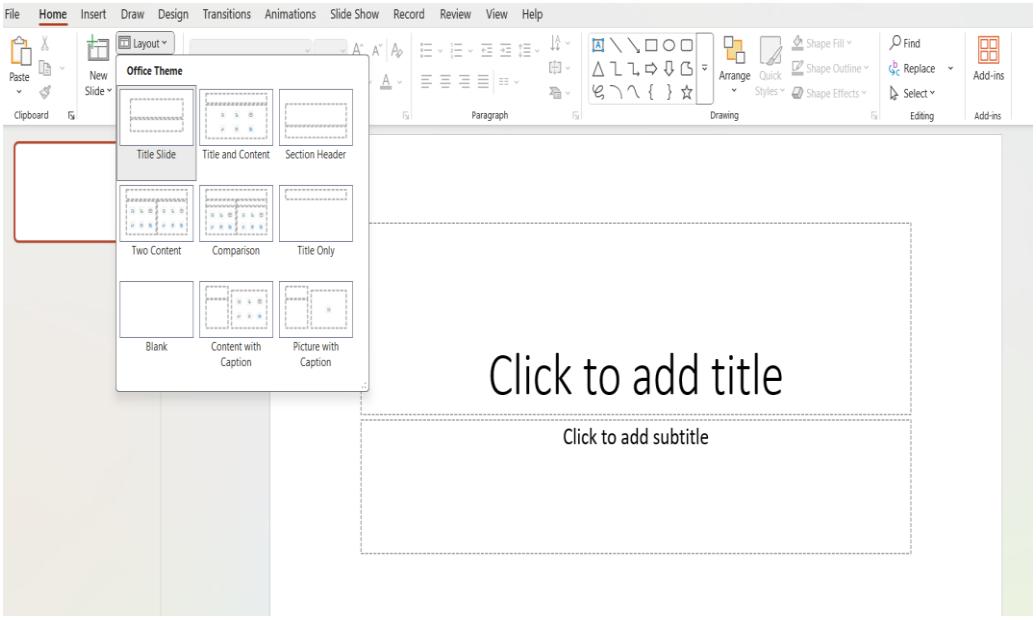
* Title Slide

* Title and Content

* Two Content

* Comparison

* Picture with Caption



B. Insert Date, Time & Slide Numbers

Step 1:Go to the Insert tab

Click Insert on the top menu.

Step 2:Click Header & Footer

A box will open.

Step 3:Tick the checkboxes

✓ Date and time

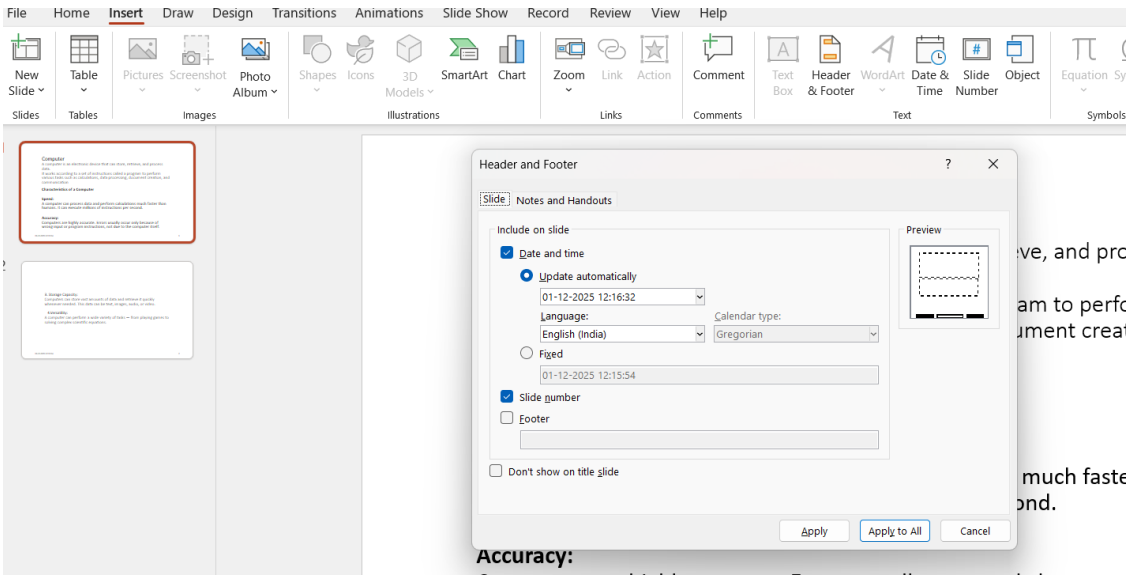
✓ Slide number

Choose whether you want:

- Fixed date
- Automatically update date

Step 4:Click Apply to All

Date, time and slide numbers will appear on every slide.



Computer

A computer is an electronic device that can store, retrieve, and process data.

It works according to a set of instructions called a program to perform various tasks such as calculations, data processing, document creation, and communication

Characteristics of a Computer

Speed:

A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.

Accuracy:

Computers are highly accurate. Errors usually occur only because of wrong input or program instructions, not due to the computer itself.

01-12-2025 12:15:54 1

C. Insert Symbols

Step 1: Go to Insert tab

Click Insert from the top menu.

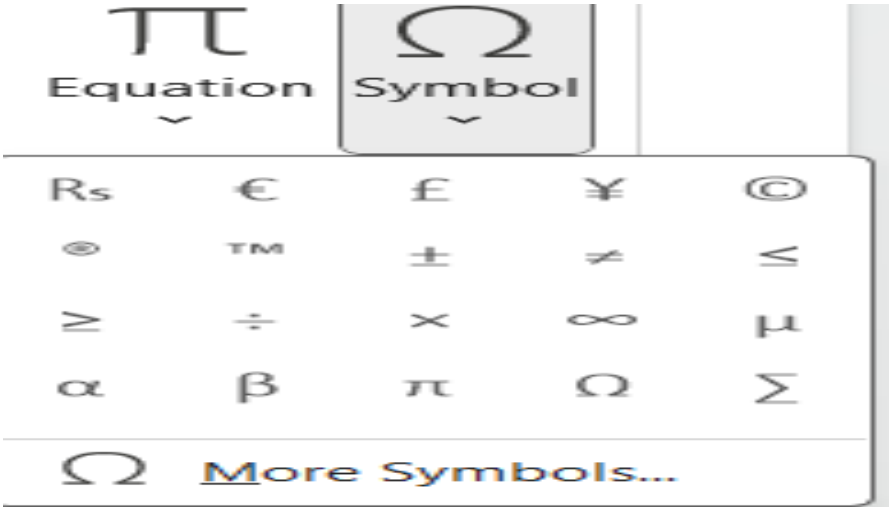
Step 2:Click Symbol

A small window will open showing many symbols.

Step 3:Choose the symbol you want

Step 4:Click Insert

The symbol will be added to your slide.



9. Create a power-point presentation to demonstrate the following:

   a. Themes

   b. Transitions

   c. Animation

Solution: step 1: Create a slide with content

a.Themes

- Themes change the overall look
- Includes fonts, colors, and effects

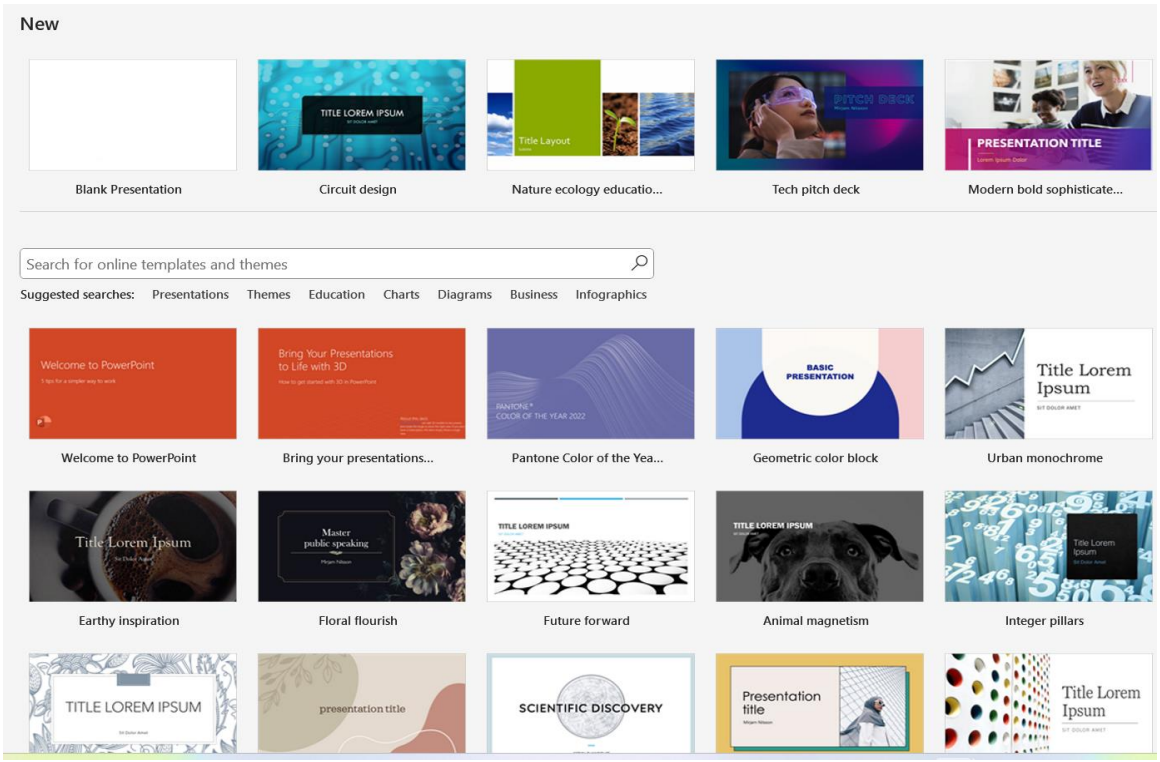
Theme – Steps

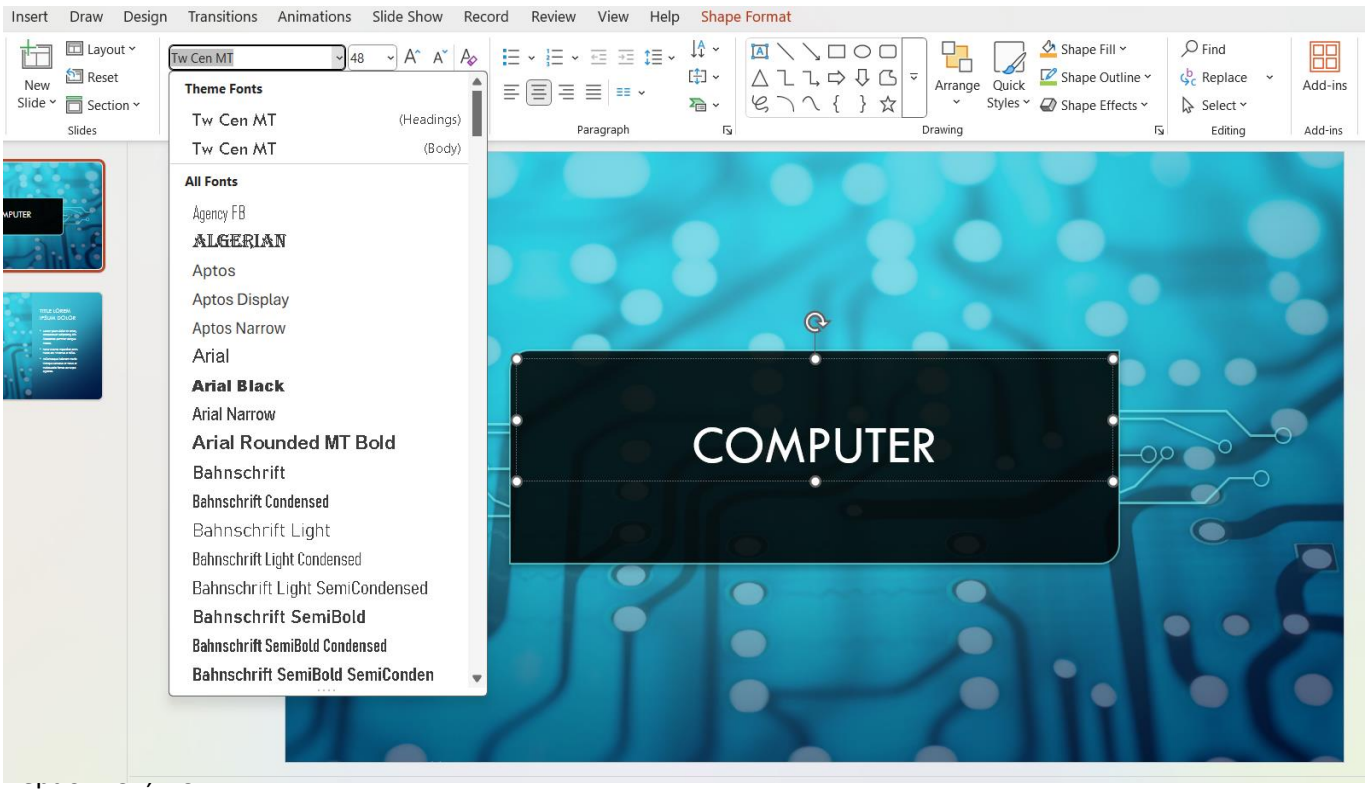
- Open your PowerPoint presentation.
- Go to the **Design** tab.
- In the **Themes** group, choose any theme.

To customize:

- Click **Variants** to change colors or fonts.
- The theme will automatically apply to all slide

Themes



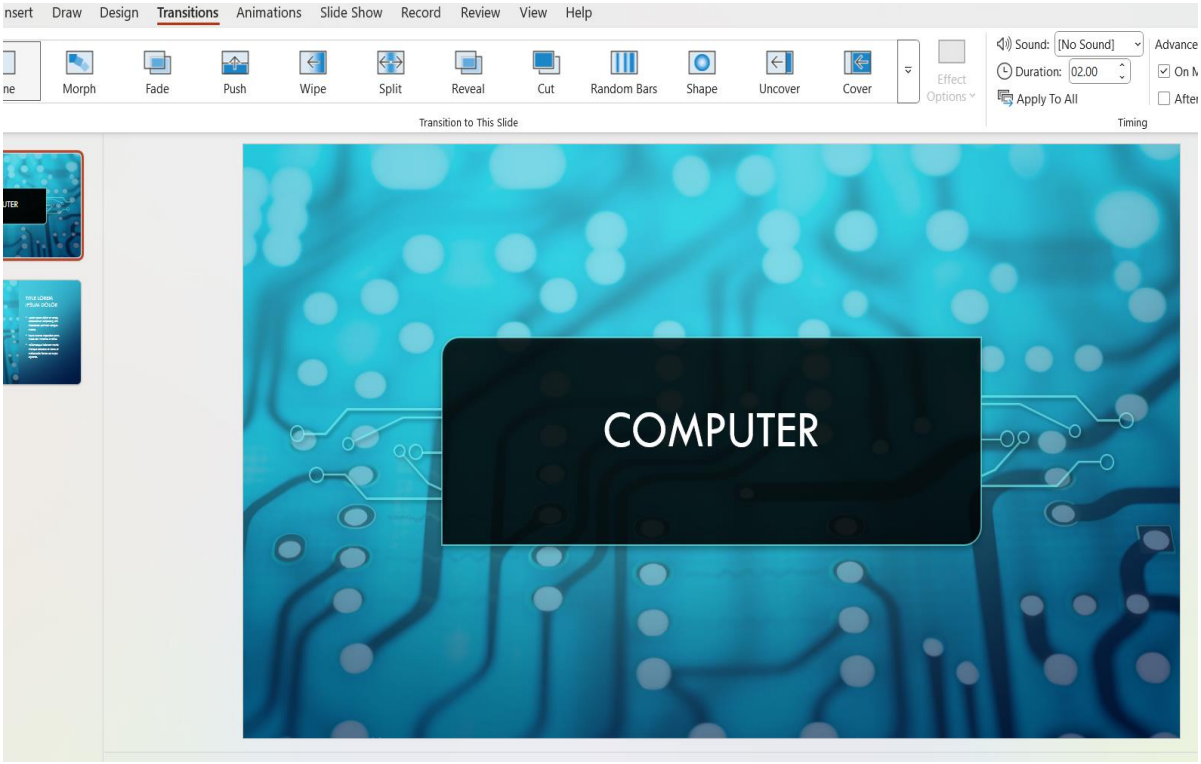


b. Transitions

- Transitions control slide entry
- Examples: Fade, Wipe, Push

Transitions – Steps

1. Select the slide where you want to add a transition.
2. Go to the **Transitions** tab.
3. Choose a transition effect (e.g., Fade, Wipe, Push).
4. Adjust settings:
    - **Duration**: change speed.
    - **Sound** (optional).
5. Click **Apply to All** if you want the same transition on every slide.
6. Preview using the **Play from Start** button.



C. Animations

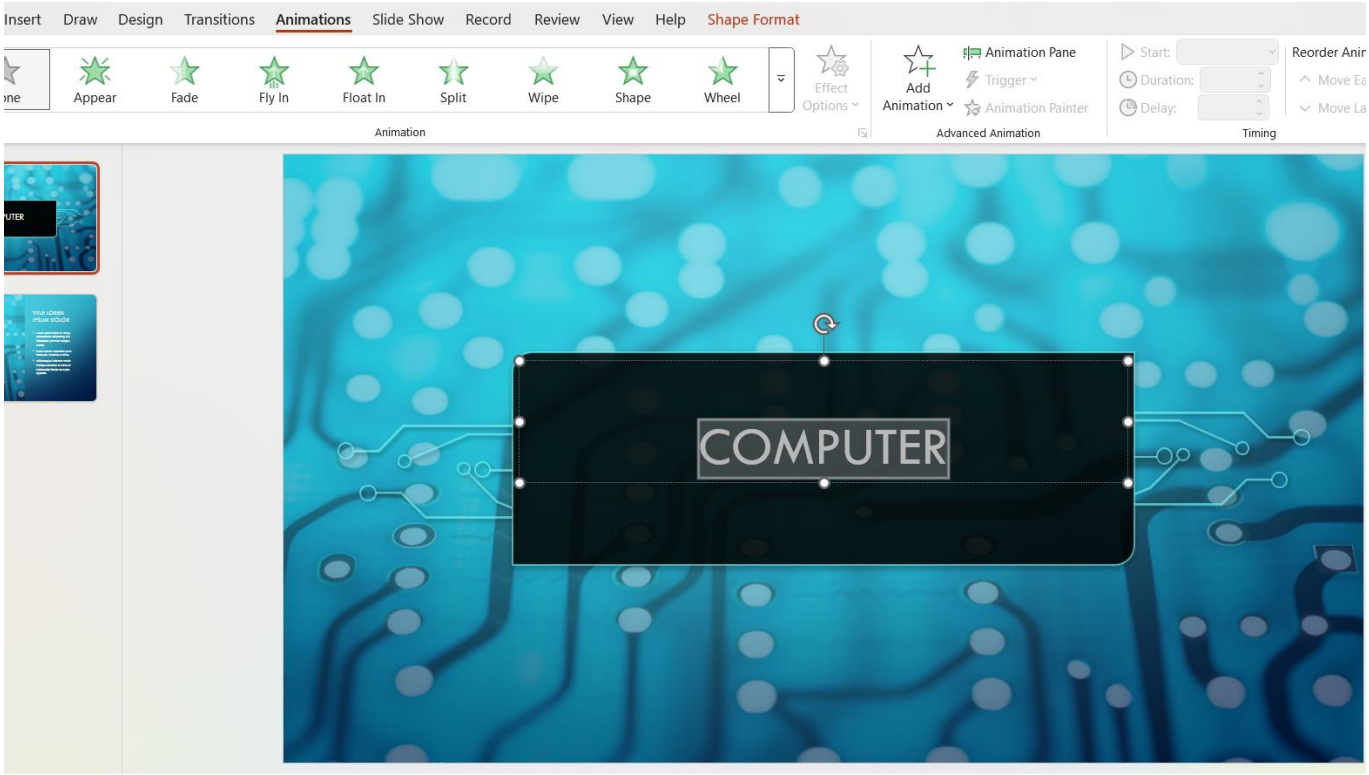
- Animations apply to objects
- Types: Entrance, Emphasis, Exit

Animations – Steps

1. Select the object you want to animate (text, picture, shape, etc.).
2. Go to the **Animations** tab.p
3. Choose an animation type:
    - **Entrance** (appear, fly-in, fade-in)
    - **Emphasis** (spin, pulse, grow)
    - **Exit** (fade-out, fly-out)
    - **Motion paths**
4. Click **Animation Pane** (optional) to adjust order.
5. Set **Start options**:
    - **On Click**

- **With Previous**
- **After Previous**

6. Adjust the **timing**, **delay**, and **duration** as needed.
7. Preview the result using the **Preview** button.



10. Create a power-point presentation to demonstrate the following:

a. Rehearse Timings

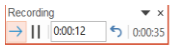
b. Narrations

c. Slide Sorter

Solution:

A. Rehearse Timings – Steps

1. Open your PowerPoint presentation.
2. Go to the **Slide Show** tab.
3. Click **Rehearse Timings**.
4. PowerPoint will start slide show mode with a timer.
5. Practice presenting each slide — timing will be recorded.
6. Click **Next** (→ key) to go to the next slide.



Computer

A computer is an electronic device that can store, retrieve, and process data.
It works according to a set of instructions called a program to perform various tasks such as calculations, data processing, document creation, and communication

Characteristics of a Computer

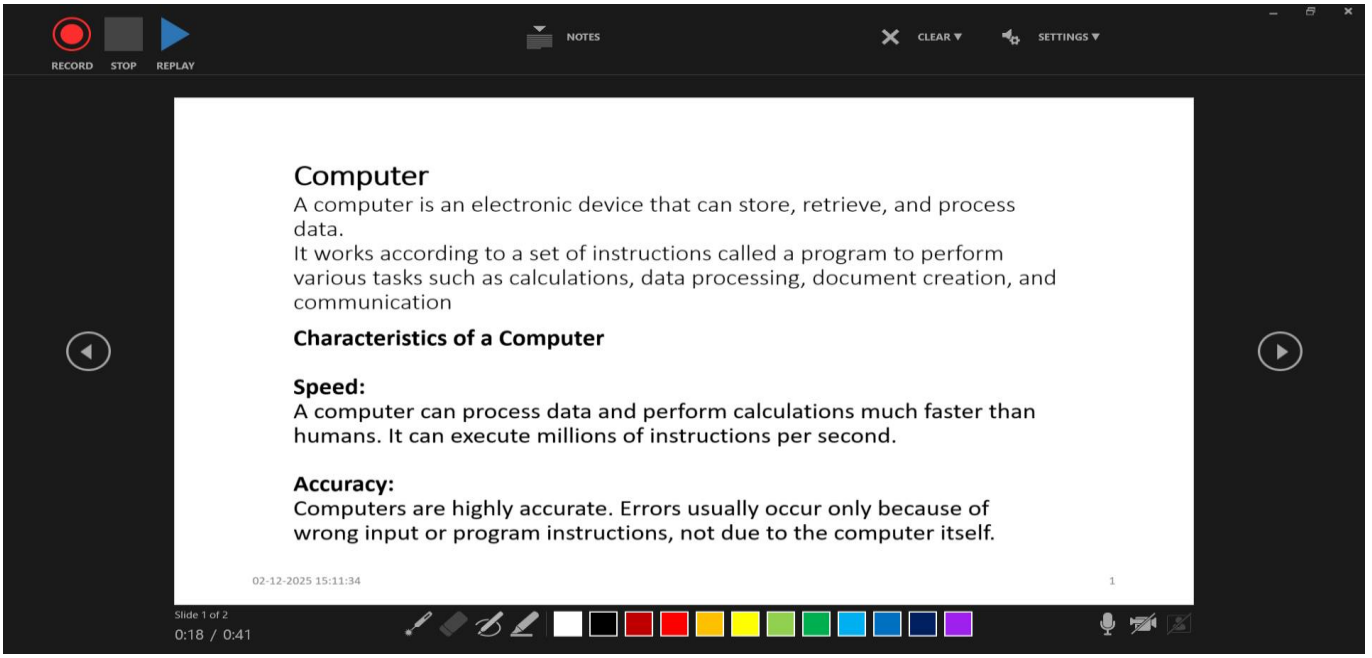
Speed:
A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.

Accuracy:

B. Narrations – Steps

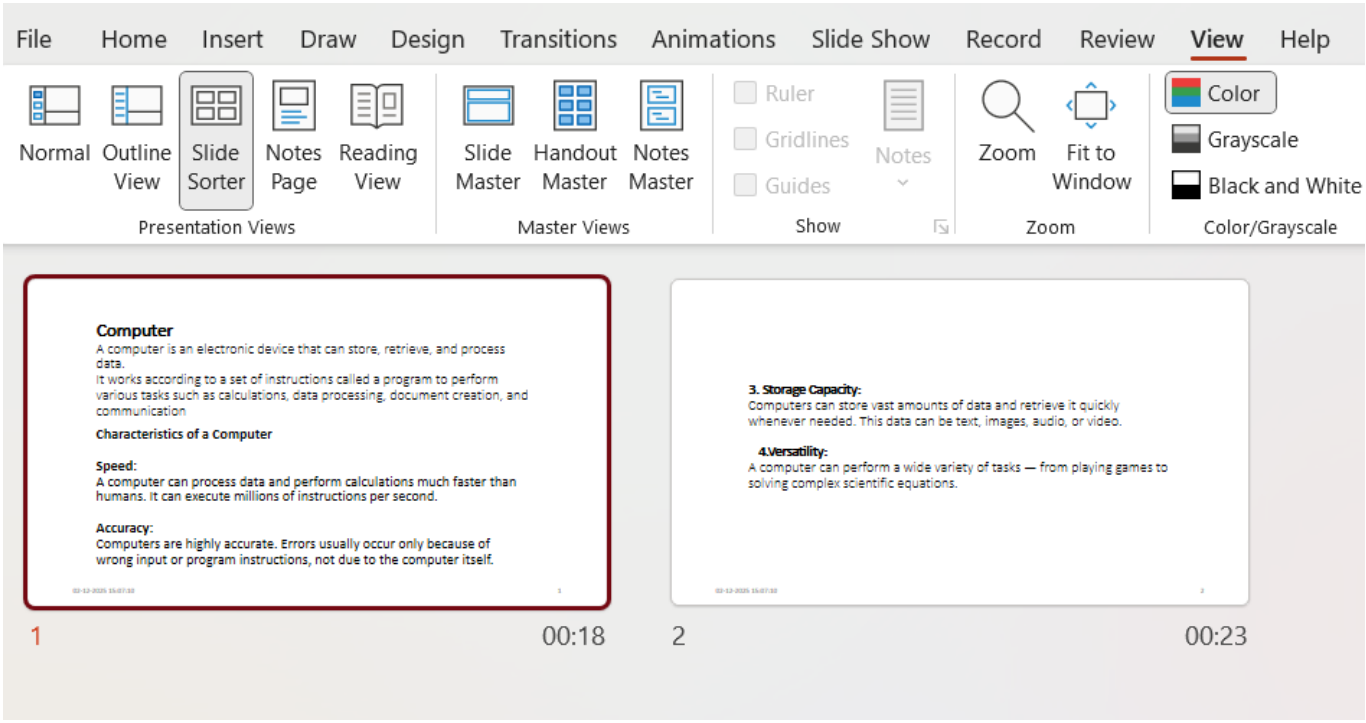
1. Go to the **Slide Show** tab.
2. Click **Record Narration** or **Record Slide Show**.
3. Choose whether you want to record:
    - **Narration only**
    - **Narration with slide timings**
4. Click **Start Recording**.
5. Speak clearly as the slides progress.
6. Stop recording when done.

7. Save the narration.



C. Slide Sorter – Steps

1. Go to the **View** tab.
2. Click **Slide Sorter**.
3. All slides will appear as thumbnails.
4. Drag and drop slides to rearrange them.
5. You can delete, duplicate, or apply transitions to multiple slides from here.


File
Home
Insert
Draw
Design
Transitions
Animations
Slide Show
Record
Review
View
Help
Normal
Outline View
Slide Sorter
Notes Page
Reading View
Presentation Views
Slide Master
Handout Master
Notes Master
Master Views
Ruler
Gridlines
Guides
Notes
Show
Zoom
Fit to Window
Zoom
Color
Grayscale
Black and White
Color/Grayscale
Computer
A computer is an electronic device that can store, retrieve, and process data.
It works according to a set of instructions called a program to perform various tasks such as calculations, data processing, document creation, and communication
Characteristics of a Computer
Speed:
A computer can process data and perform calculations much faster than humans. It can execute millions of instructions per second.
Accuracy:
Computers are highly accurate. Errors usually occur only because of wrong input or program instructions, not due to the computer itself.
1
00:18
3. Storage Capacity:
Computers can store vast amounts of data and retrieve it quickly whenever needed. This data can be text, images, audio, or video.
4.Versatility:
A computer can perform a wide variety of tasks — from playing games to solving complex scientific equations.
2
00:23

Part B

1. Introduction to LaTeX Software

a. Install LaTeX software on your system.

b. Create a simple LaTeX document.

c. Compile the document to generate a PDF output.

d. Explore and explain the structure of a basic LaTeX document (preamble, document body, etc.)

a. Install LaTeX software

Solution:
You can install any LaTeX distribution. Most commonly:

OS	Software
Windows	MiKTeX
macOS	MacTeX
Linux	TeX Live

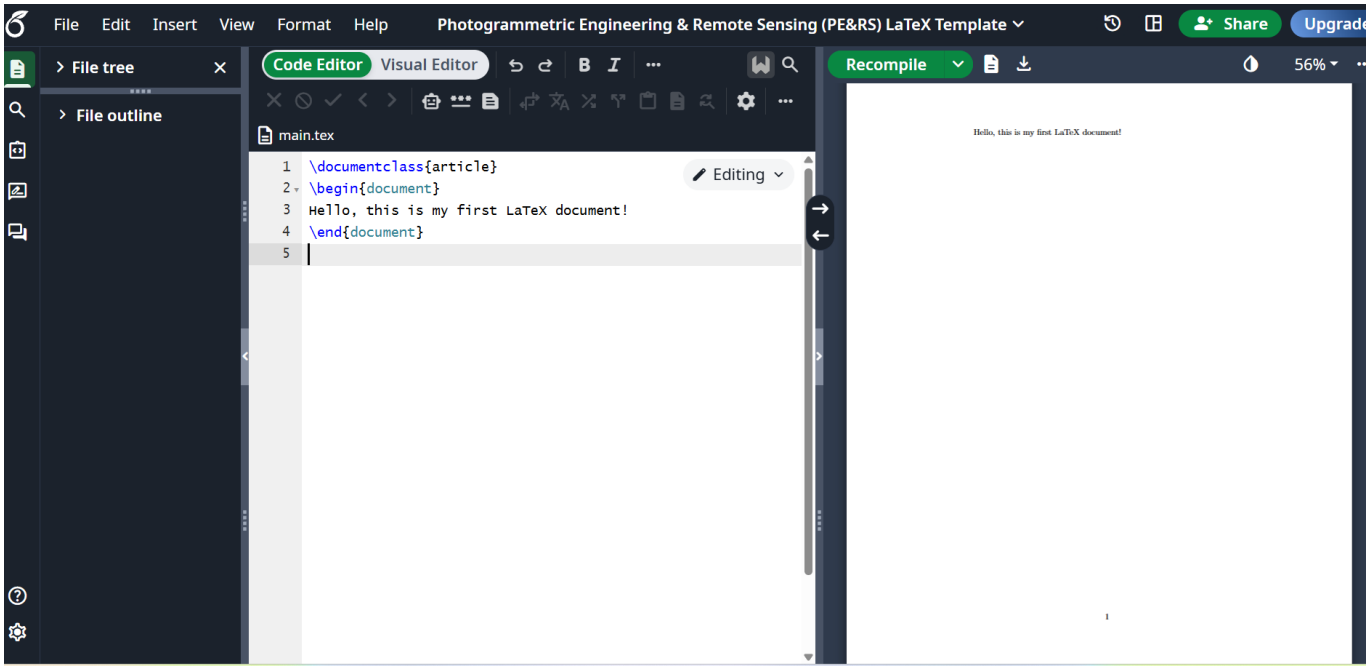
After installing, install an editor like **TeXstudio, Overleaf (online), or VS Code with LaTeX extension.**

---

b. Create a simple LaTeX document

Solution (Code):

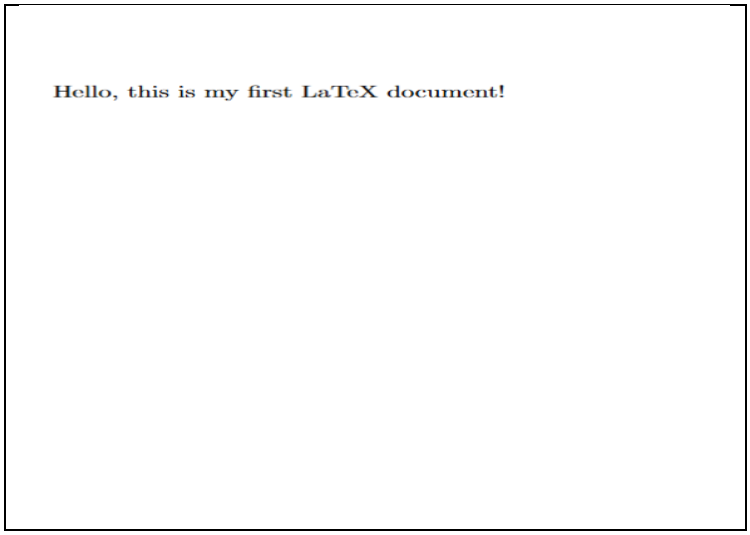
```
\documentclass{article}
\begin{document}
Hello, this is my first LaTeX document!
\end{document}
```



c. Compile the document to generate PDF

Solution:

Click **Compile / Run (PDFLaTeX)** in TeXstudio or Overleaf → PDF is generated.



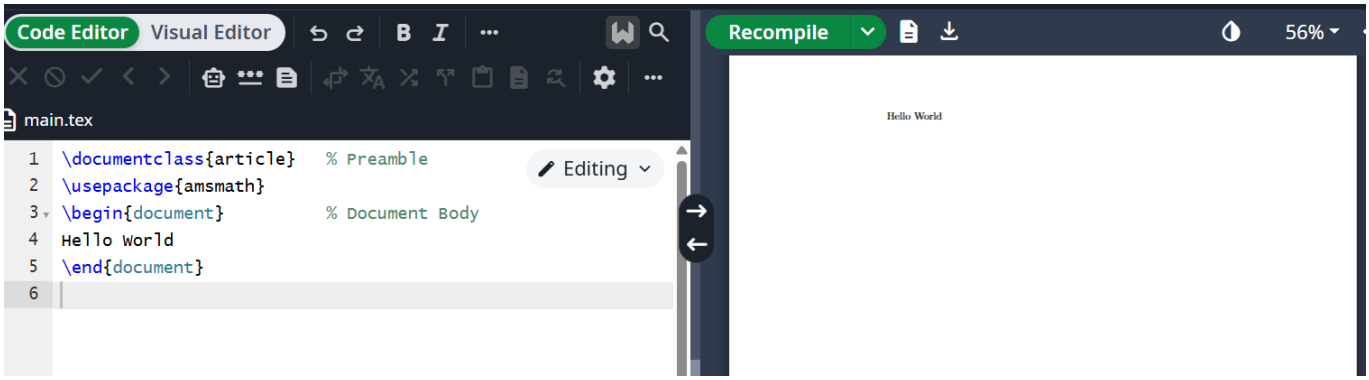
---

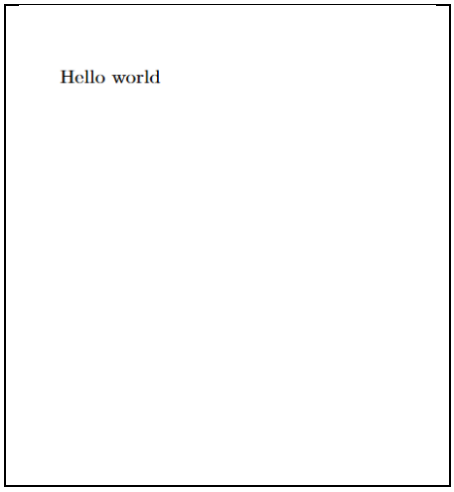
d. Structure of a basic LaTeX document

Solution:

Part	Meaning
Preamble	Declares document class and packages
Document Body	Contains visible content

```
\documentclass{article}   % Preamble
\usepackage{amsmath}
\begin{document}        % Document Body
Hello World
\end{document}
```





2. Working with LaTeX Templates

a. Download a predefined LaTeX template (e.g., article, report).

b. Customize the template by adding your name, title, and date.

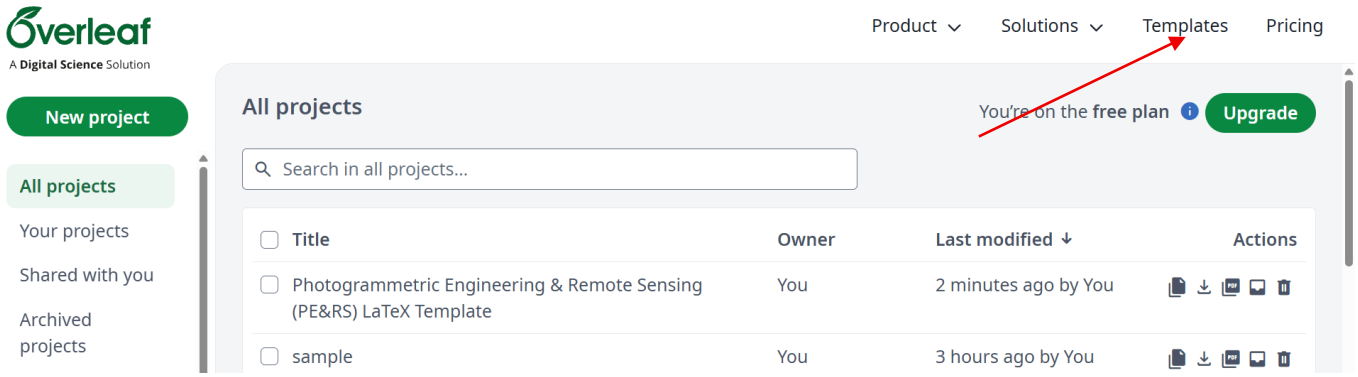
c. Add different sections and subsections to organize the content.

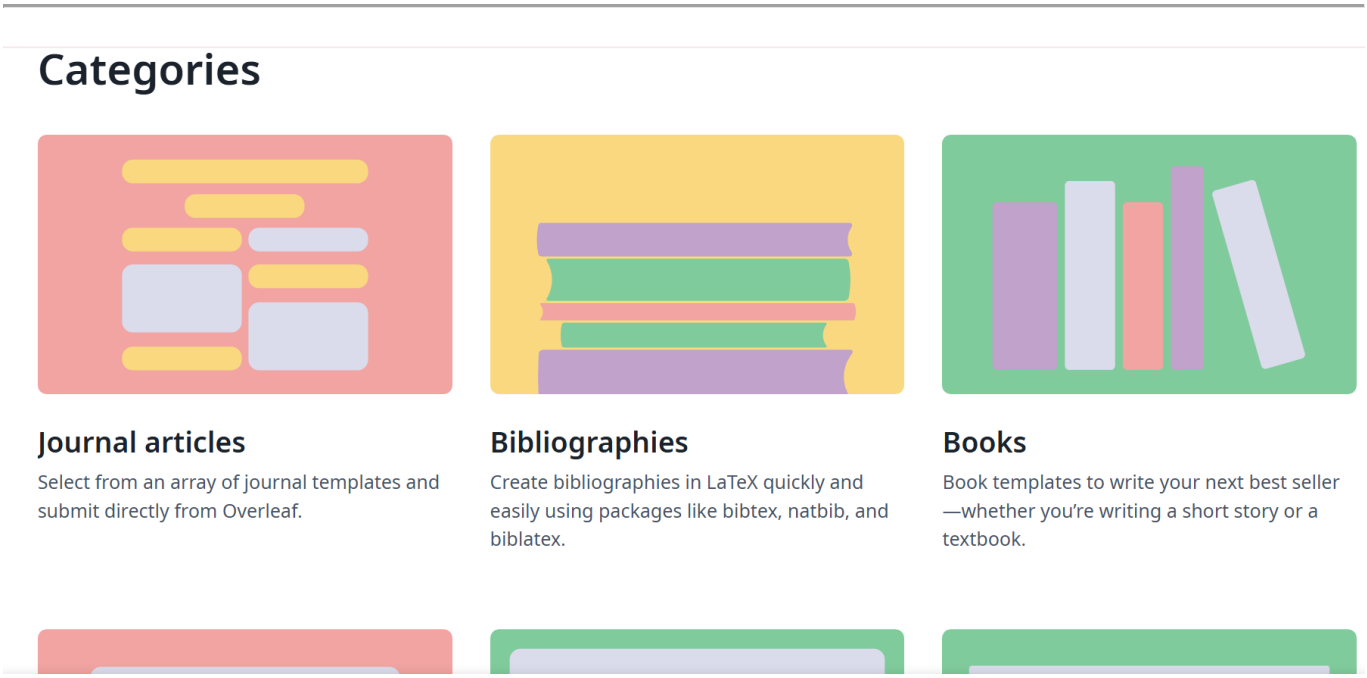
d. Compile and review the document structure.

a. Download a predefined template

Solution:

Use an **article**, **report**, or **book** class template from Overleaf or LaTeX project.





b. Customize with name, title, and date

c. Add sections and subsections

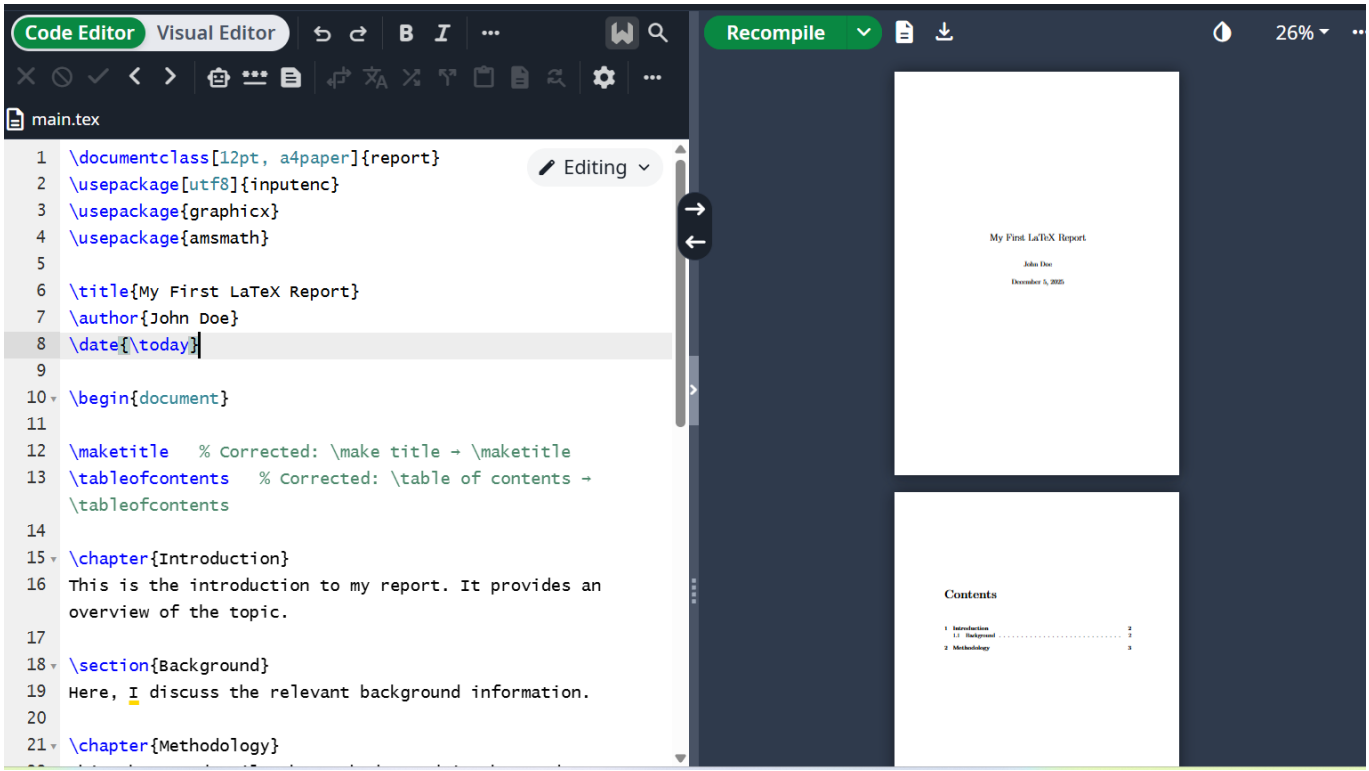

```
\documentclass[12pt, a4paper]{report}

\usepackage[utf8]{inputenc}
```

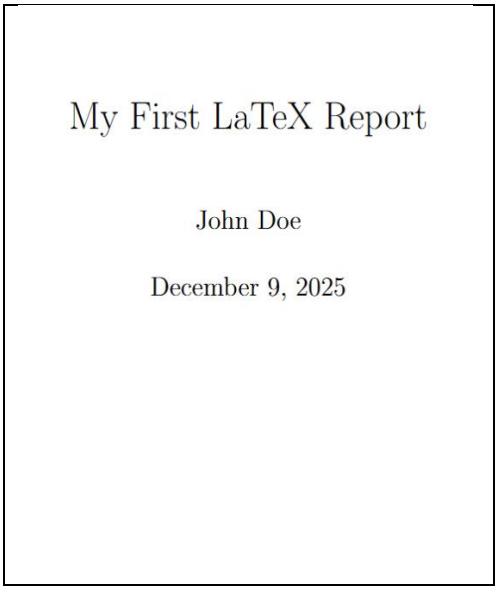
```
\usepackage{graphicx}
\usepackage{amsmath}

\title{My First LaTeX Report}
\author{John Doe}
\date{\today}

\begin{document}

\maketitle   % Corrected: \make title → \maketitle
\tableofcontents   % Corrected: \table of contents → \tableofcontents

\chapter{Introduction}
This is the introduction to my report. It provides an overview of the topic.

\section{Background}
Here, I discuss the relevant background information.

\chapter{Methodology}
This chapter details the methods used in the study.

\end{document}
```

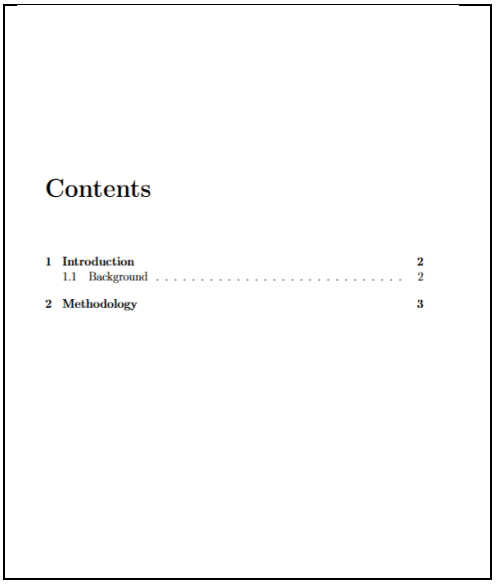
---

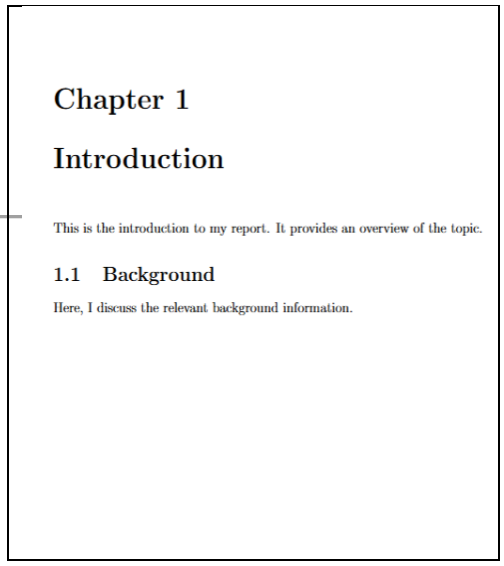
d. Compile and review output

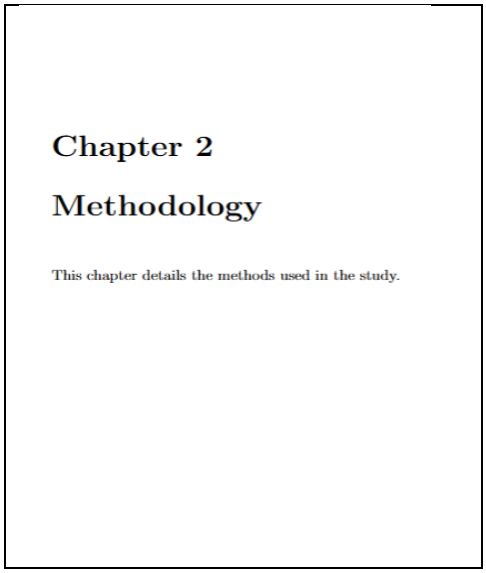
Click **Compile** → check formatting and structure.











3. Including Text in LaTeX

a. Create a new LaTeX document using the article template.

b. Add paragraphs of text, including bold, italic, and underlined text.

c. Implement lists (ordered, unordered, and description lists).

d. Use special characters and symbols in the text.

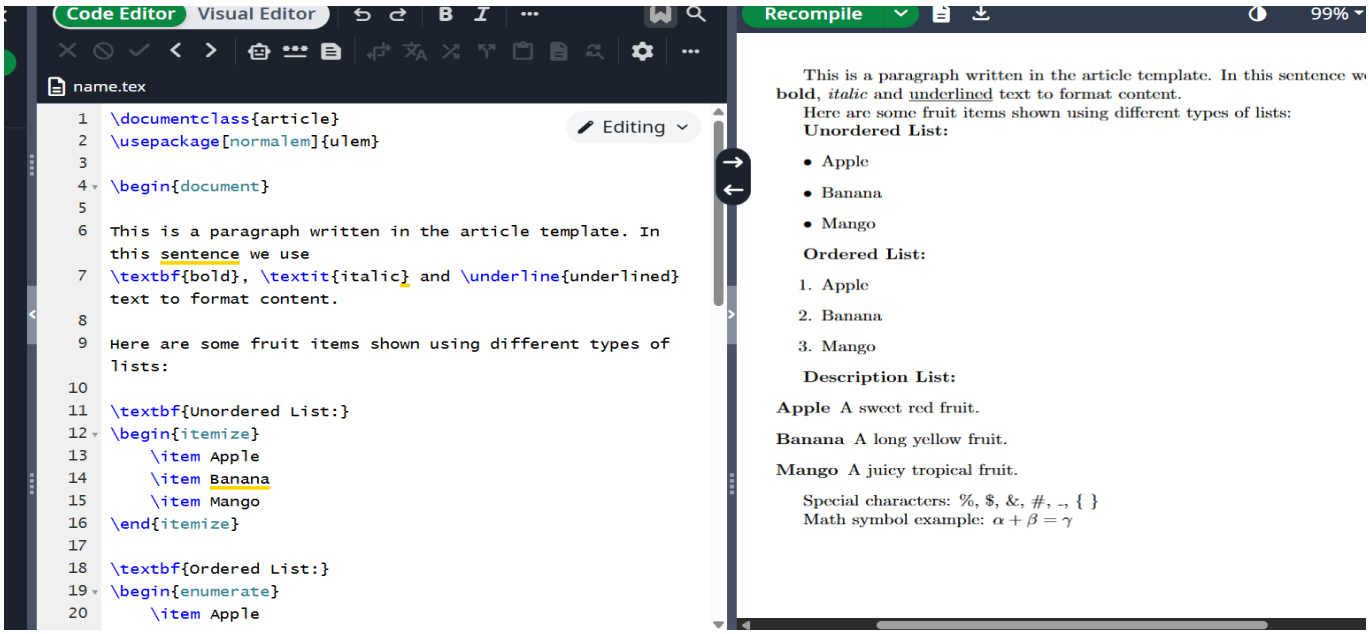
```
\documentclass{article}
\usepackage[normalem]{ulem}
\begin{document}

This is a paragraph written in the article template. In this sentence we use
\textbf{bold}, \textit{italic} and \underline{underlined} text to format content.

Here are some fruit items shown using different types of lists:
\textbf{Unordered List:}
\begin{itemize}
   \item Apple
   \item Banana
   \item Mango
\end{itemize}
\textbf{Ordered List:}
\begin{enumerate}
   \item Apple
   \item Banana
   \item Mango
\end{enumerate}
\textbf{Description List:}
\begin{description}
   \item[Apple] A sweet red fruit.
   \item[Banana] A long yellow fruit.
   \item[Mango] A juicy tropical fruit.
\end{description}
```

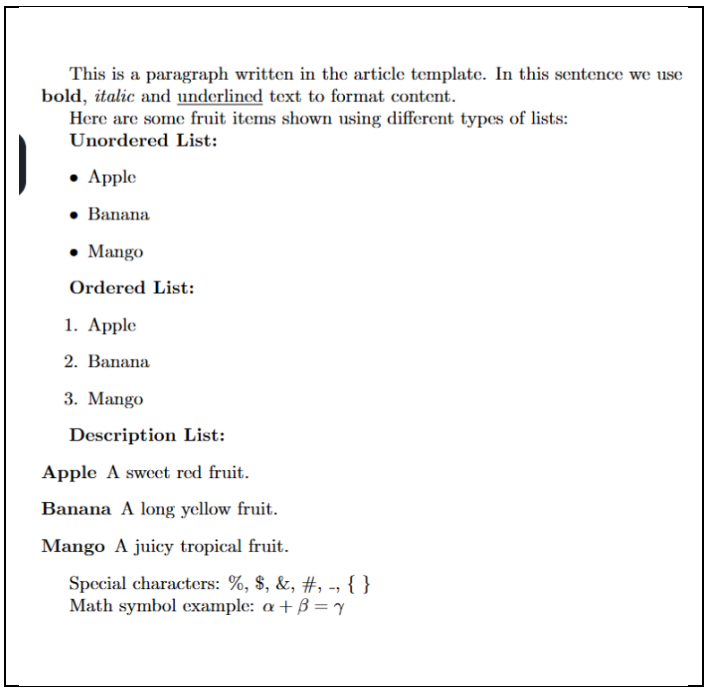
Special characters: \%, \$, \&, \#, _, \{ \}

Math symbol example: \(\alpha + \beta = \gamma \)

\end{document}

output





4. Creating Tables in LaTeX

a. Create a LaTeX document and include a table using the tabular environment.

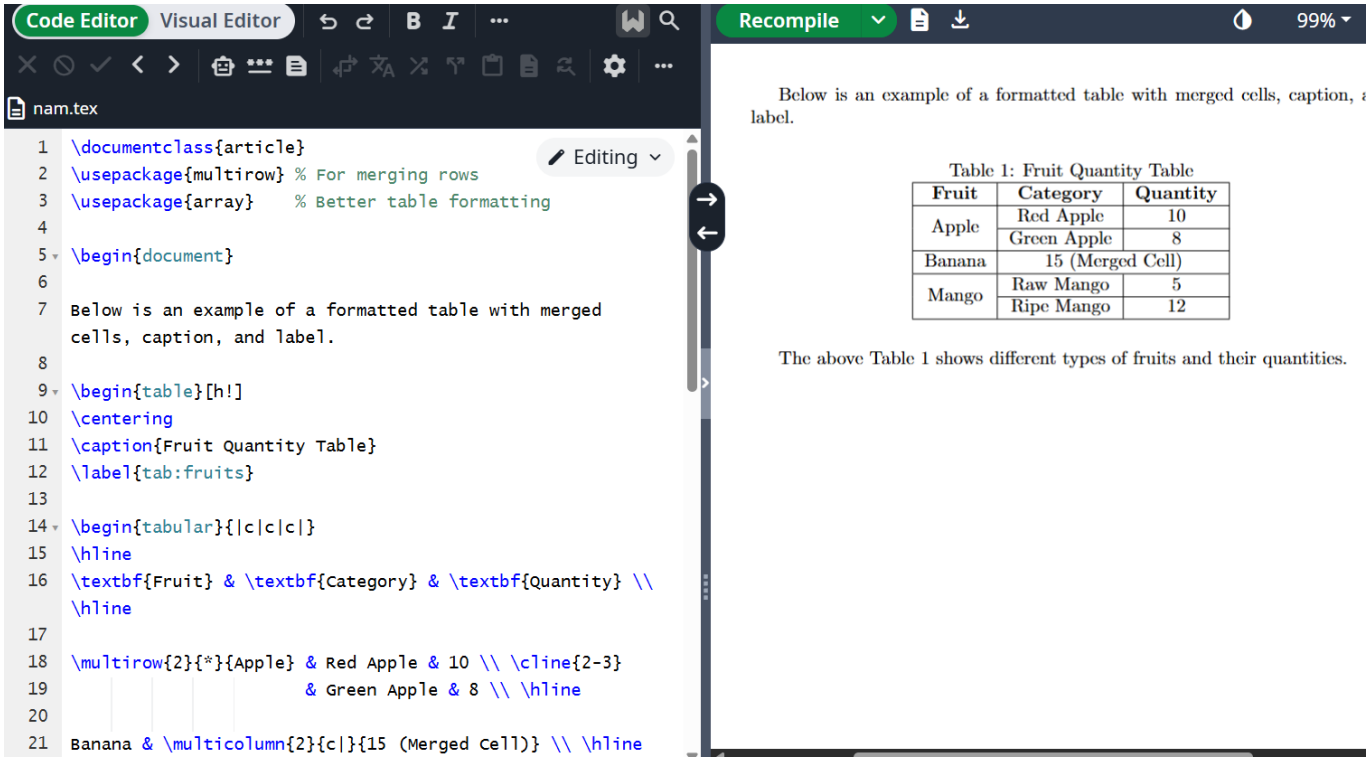
b. Add rows, columns, and format the table with borders.

c. Merge cells horizontally and vertically.

d. Include a caption and label for the table for referencing.

```
\documentclass{article}
\usepackage{multirow} % For merging rows
\usepackage{array}    % Better table formatting

\begin{document}
Below is an example of a formatted table with merged cells, caption, and label.
\begin{table}[h!]
\centering
\caption{Fruit Quantity Table}
\label{tab:fruits}

\begin{tabular}{|c|c|c|}
\hline
\textbf{Fruit} & \textbf{Category} & \textbf{Quantity} \\ \hline
\multirow{2}{*}{Apple} & Red Apple & 10 \\ \cline{2-3}
                & Green Apple & 8 \\ \hline
Banana & \multicolumn{2}{c|}{15 (Merged Cell)} \\ \hline
\multirow{2}{*}{Mango} & Raw Mango & 5 \\ \cline{2-3}
                & Ripe Mango & 12 \\ \hline
\end{tabular}
\end{table}
The above Table~\ref{tab:fruits} shows different types of fruits and their quantities.
```

\end{document}



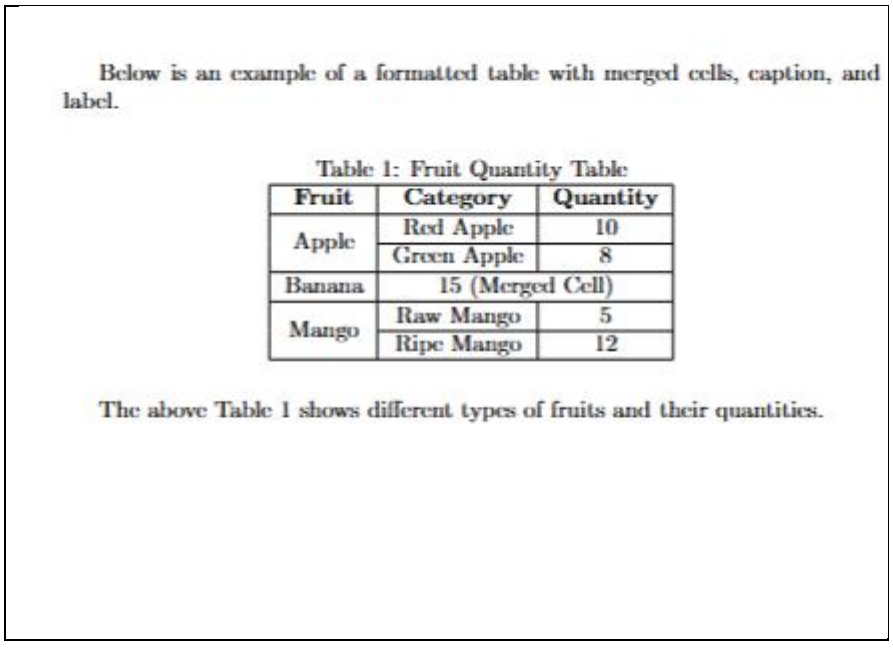

Below is an example of a formatted table with merged cells, caption, and label.

Table 1: Fruit Quantity Table

Fruit	Category	Quantity
Apple	Red Apple	10
	Green Apple	8
Banana	15 (Merged Cell)	
Mango	Raw Mango	5
	Ripe Mango	12

The above Table 1 shows different types of fruits and their quantities.

5. Incorporating Math Formulae and Generating Reports

a. Create a LaTeX document to write mathematical equations using the equation and align environments.

b. Include inline and display-style equations.

c. Add Greek symbols, fractions, and superscripts/subscripts.

d. Compile the document to generate a final report with a title page, table of contents, and numbered sections.

```
\documentclass{report}
\usepackage{amsmath}

\title{Math in LaTeX}
\author{Student Name}
\date{\today}

\begin{document}
\maketitle
\tableofcontents

\chapter{Mathematics in LaTeX}
This document shows how to write mathematical equations in LaTeX.

Inline example: The equation \( a^2 + b^2 = c^2 \) is called the Pythagorean theorem.
\section{Display Equation}
A display equation example:
\[
\frac{x+y}{2} = z
\]
\section{Equation Environment}
\begin{equation}
E = mc^2
\end{equation}
\section{Align Environment}
\begin{align}
x + y &= z \\
a^2 + b^2 &= c^2
\end{align}
\section{Symbols and Expressions}
Greek symbols example: \( \alpha, \beta, \gamma \)
```

Fraction with subscript and superscript example:

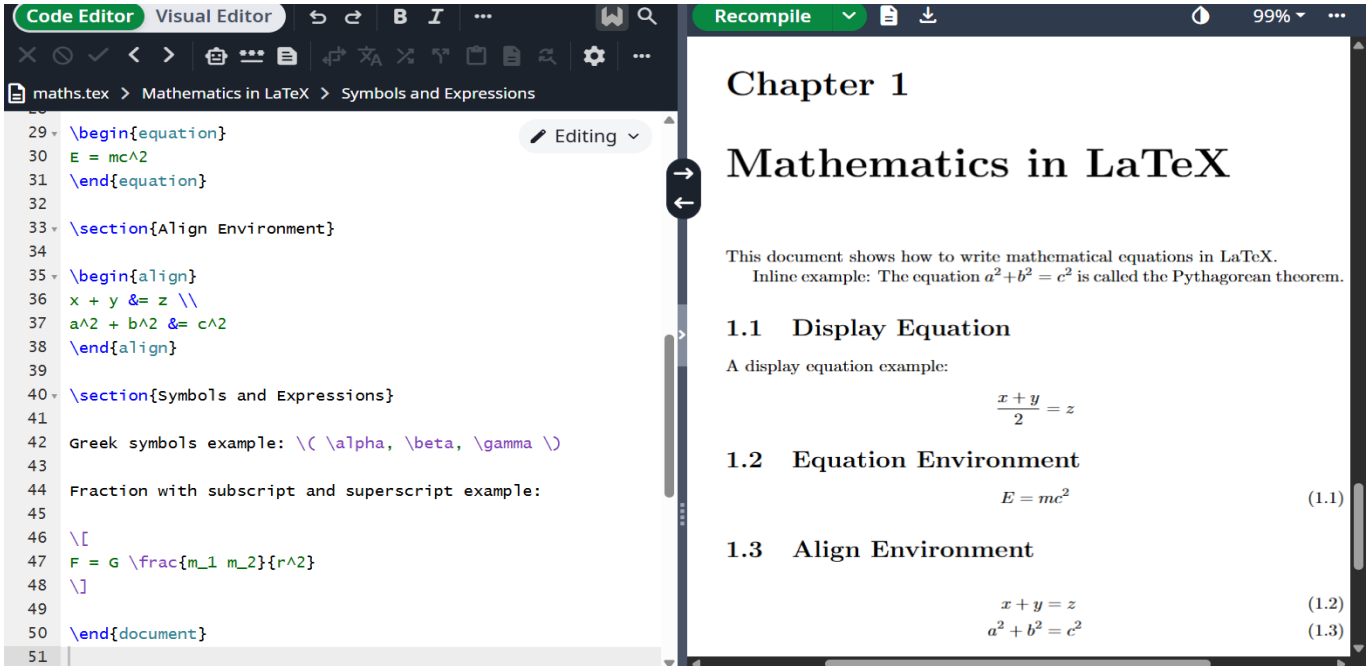
\[

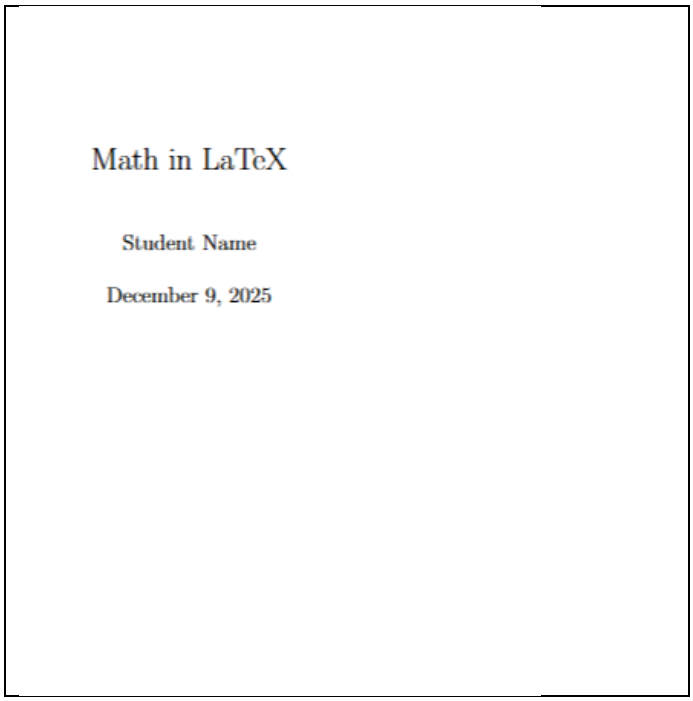
F = G \frac{m_1 m_2}{r^2}

\]

\end{document}

output





Contents

1 Mathematics in LaTeX **2**
1.1 Display Equation 2
1.2 Equation Environment 2
1.3 Align Environment 2
1.4 Symbols and Expressions 2

Chapter 1

Mathematics in LaTeX

This document shows how to write mathematical equations in LaTeX.
Inline example: The equation $a^2 + b^2 = c^2$ is called the Pythagorean theorem.

1.1 Display Equation

A display equation example:

$$\frac{x + y}{2} = z$$

1.2 Equation Environment

$$E = mc^2 \tag{1.1}$$

1.3 Align Environment

$$x + y = z \tag{1.2}$$
$$a^2 + b^2 = c^2 \tag{1.3}$$

1.4 Symbols and Expressions

Greek symbols example: α, β, γ
Fraction with subscript and superscript example:

$$F = G\frac{m_1 m_2}{r^2}$$