EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering

Jnanaprabha, Virgo Nagar Post, Bengaluru-560049

Academic Year: 2023-24

LABORATORY MANUAL

SEMESTER : IV

SUBJECT : Technical Writing using LaTeX

SUBCODE : BCSL456D

NAME : _____

USN : _____

SECTION: _____

PROGRAM OUTCOMES

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activitieswith an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams, and in multi – disciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the Engineering and management principles and apply these to one's own work, as a member andleader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life -long learning in the broadest context of technological change.

EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering

INSTITUTE VISION AND MISSION

VISION

The East Point College of Engineering and Technology aspires to be a globally acclaimed institution, recognized for excellence in engineering education, applied research and nurturing students for holistic development.

MISSION

M1: To create engineering graduates through quality education and to nurtureinnovation, creativity and excellence in teaching, learning and research

M2: To serve the technical, scientific, economic and societal developmental needsof our communities

M3: To induce integrity, teamwork, critical thinking, personality development andethics in students and to lay the foundation for lifelong learning

EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering

DEPARTMENT VISION AND MISSION

VISION

The department aspires to be a Centre of excellence in Computer Science & Engineering to develop competent professionals through holistic development.

MISSION

M1: To create successful Computer Science Engineering graduates through effective pedagogies, the latest tools and technologies, and excellence in teaching and learning.

M2: To augment experiential learning skills to serve technical, scientific, economic, and social developmental needs.

M3: To instil integrity, critical thinking, personality development, and ethics in students for a successful career in Industries, Research, and Entrepreneurship.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: To produce graduates who can perform technical roles to contribute effectively in software industries and R&D Centre

PEO 2: To produce graduates having the ability to adapt and contribute in key domains of computer science and engineering to develop competent solutions.

PEO 3: To produce graduates who can provide socially and ethically responsible solutions while adapting to new trends in the domain to carve a successful career in the industry

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: To conceptualize, model, design, simulate, analyse, develop, test, and validate computing systems and solve technical problems arising in the field of computer science & engineering.

PSO2: To specialize in the sub-areas of computer science & engineering systems such as cloud computing, Robotic Process Automation, cyber security, big data analytics, user interface design, and IOT to meet industry requirements.

PSO3: To build innovative solutions to meet the demands of the industry using appropriate tools and techniques.

COURSE LEARNING OBJECTIVES

CLO 1: To introduce the basic syntax and semantics of the LaTex scripting language.

CLO 2: To understand the presentation of tables and figures in the document.

CLO 3: To illustrate the LaTex syntax to represent the theorems and mathematical equations.

CLO 4: To make use of the libraries (Tikz, algorithm) to design the diagram and algorithms in the document.

COURSE OUTCOMES

At the end of the course the student will be able to:

CO1: Apply basic LaTeX command to develop simple document.

CO2: Develop LaTeX script to present the tables and figures in the document.

CO3: Illustrate LaTeX script to present theorems and mathematical equations in the document.

CO4: Develop programs to generate the complete report with citations and a bibliography.

CO5: Illustrate the use of Tikz and algorithm libraries to design graphics and algorithms in the document.

TECHNICAL WRITING USING LATEX

(Effective from the academic year 2023 -2024)

SEMESTER - IV

Credits – 1

Course Learning Objectives: This course (BCSL456D) will enable students to:

- To introduce the basic syntax and semantics of the LaTeX scripting language
- To understand the presentation of tables and figures in the document
- To illustrate the LaTeX syntax to represent the theorems and mathematical equations
- To make use of the libraries (Tikz, algorithm) to design the diagram and algorithms in the document

Programs List:

1	Develop a LaTeX script to create a simple document that consists of 2 sections [Section1, Section2], and a paragraph with dummy text in each section. And also include header [title of document] and footer [institute name, page number] in the document.
2	Develop a LaTeX script to create a document that displays the sample Abstract/Summary
3	Develop a LaTeX script to create a simple title page of the VTU project Report [Use suitable Logos and text formatting]
4	Develop a LaTeX script to create the Certificate Page of the Report [Use suitable commands to leave the blank spaces for user entry]
5	Develop a LaTeX script to create a document that contains the following table with proper labels.
6	Develop a LaTeX script to include the side-by-side graphics/pictures/figures in the document by using the subgraph concept
7	Develop a LaTeX script to create a document that consists of the following two mathematical equations.
8	Develop a LaTeX script to demonstrate the presentation of Numbered theorems, definitions, corollaries, and lemmas in the document
9	Develop a LaTeX script to create a document that consists of two paragraphs with a minimum of 10 citations in it and display the reference in the section.
10	Develop a LaTeX script to design a simple tree diagram or hierarchical structure in the document with appropriate labels using the Tikz library.
11	Develop a LaTeX script to present an algorithm in the document using algorithm/algorithmic/algorithm2e Library.
12	Develop a LaTeX script to create a simple report and article by using suitable commands and formats of user choice.

S.No	USN	Student Name	Marks		
			Subject1	Subject2	Subject3
1	4XX22XX001	Name 1	89	60	90
2	4XX22XX002	Name 2	78	45	98
3	4XX22XX003	Name 3	67	55	59

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$= \frac{-2 \pm \sqrt{2^2-4*(1)*(-8)}}{2*1}$$

$$= \frac{-2 \pm \sqrt{4+32}}{2}$$

$$\varphi_\sigma^\lambda A_t = \sum_{\pi \in C_t} \operatorname{sgn}(\pi) \varphi_\sigma^\lambda \varphi_\pi^\lambda$$

$$= \sum_{\tau \in C_{\sigma t}} \operatorname{sgn}(\sigma^{-1}\tau\sigma) \varphi_\sigma^\lambda \varphi_{\sigma^{-1}\tau\sigma}^\lambda$$

$$= A_{\sigma t} \varphi_\sigma^\lambda$$

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE)is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation (CIE):

CIE marks for the practical course are **50 Marks**.

The split-up of CIE marks for record/ journal and test are in the ratio **60:40**.

- Each experiment is to be evaluated for conduction with an observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments are designed by the faculty who is handling the laboratory session and are made known to students at the beginning of the practical session.
- Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- Total marks scored by the students are scaled down to **30 marks** (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct a test of 100 marks after the completion of all the experiments listed in
- the syllabus.
- In a test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will
- carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable rubrics can be designed to evaluate each student's performance and learning ability.
- The marks scored shall be scaled down to **20 marks** (40% of the maximum marks).

The Sum of scaled-down marks scored in the report write-up/journal and marks of a test is the total CIE marks scored by the student.

Semester End Evaluation (SEE):

- SEE marks for the practical course are 50 Marks.
- SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the Head of the Institute.
- The examination schedule and names of examiners are informed to the university before the conduction of the examination. These practical examinations are to be conducted between the schedule mentioned in the academic calendar of the University.
- All laboratory experiments are to be included for practical examination.
- (Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be decided jointly by examiners.
- Students can pick one question (experiment) from the questions lot prepared by the examiners jointly.
- Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.
- General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in - 60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)
- Change of experiment is allowed only once and 15% of Marks allotted to the procedure part are to be made zero.

The minimum duration of SEE is 02 hours

<table>
<tr><th colspan="6">Index</th></tr>
<tr><th>Sl. No.</th><th>Program List</th><th>CO</th><th>PO, PSO</th><th>RBT</th><th>Pg. No</th></tr>
<tr><td>1</td><td>Develop a LaTeX script to create a simple document that consists of 2 sections [Section1, Section2], and a paragraph with dummy text in each section. And also include header [title of document] and footer [institute name, page number] in the document.</td><td>CO1</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>10</td></tr>
<tr><td>2</td><td>Develop a LaTeX script to create a document that displays the sample Abstract/Summary</td><td>CO1</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>13</td></tr>
<tr><td>3</td><td>Develop a LaTeX script to create a simple title page of the VTU project Report [Use suitable Logos and text formatting]</td><td>CO1</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>16</td></tr>
<tr><td>4</td><td>Develop a LaTeX script to create the Certificate Page of the Report [Use suitable commands to leave the blank spaces for user entry]</td><td>CO1</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>20</td></tr>
<tr><td>5</td><td>Develop a LaTeX script to create a document that contains the following table with proper labels.
<table>
<tr><th rowspan="2">S.No</th><th rowspan="2">USN</th><th rowspan="2">Student Name</th><th colspan="3">Marks</th></tr>
<tr><th>Subject1</th><th>Subject2</th><th>Subject3</th></tr>
<tr><td>1</td><td>4XX22XX001</td><td>Name 1</td><td>89</td><td>60</td><td>90</td></tr>
<tr><td>2</td><td>4XX22XX002</td><td>Name 2</td><td>78</td><td>45</td><td>98</td></tr>
<tr><td>3</td><td>4XX22XX003</td><td>Name 3</td><td>67</td><td>55</td><td>59</td></tr>
</table></td><td>CO2</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>24</td></tr>
<tr><td>6</td><td>Develop a LaTeX script to include the side-by-side graphics/pictures/figures in the document by using the subgraph concept.</td><td>CO2</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>26</td></tr>
<tr><td>7</td><td>Develop a LaTeX script to create a document that consists of the following two mathematical equations.</td><td>CO3</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>29</td></tr>
<tr><td>8</td><td>Develop a LaTeX script to demonstrate the presentation of umbered theorems, definitions, corollaries, and lemmas in the document</td><td>CO3</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>32</td></tr>
<tr><td>9</td><td>Develop a LaTeX script to create a document that consists of two paragraphs with a minimum of 10 citations in it and display the reference in the section.</td><td>CO4</td><td>PO1, PO2, PO3, PO5, PO12, PSO1,2,3</td><td>L3</td><td>35</td></tr>
</table>

10	Develop a LaTeX script to design a simple tree diagram or hierarchical structure in the document with appropriate labels using the Tikz library.	CO5	PO1, PO2, PO3, PO5, PO12, PSO1,2,3	L3	40
11	Develop a LaTeX script to present an algorithm in the document using algorithm/algorithmic/algorithm2e Library.	CO**5**	PO1, PO2, PO3, PO5, PO12, PSO1,2,3	L3	44
12	Develop a LaTeX script to create a simple report and article by using suitable commands and formats of user choice.	CO5	PO1, PO2, PO3, PO5, PO12, PSO1,2,3	L3	47
13	Develop a LaTeX script to create a simple resume using simple commands.	CO5	PO1, PO2, PO3, PO5, PO12, PSO1,2,3	L3	51
14	Develop a LaTeX script that demonstrates the usage of primitive types and automatic type promotion in expressions.	CO1	PO1, PO2, PO3, PO5, PO12, PSO1,2,3	L3	55
Viva Question & Answers					59

Course Articulation Matrix

COs	**POs**												**PSOs**		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	2	-	3	-	-	-	-	-	-	2	3	1	1
CO2	3	3	3	-	3	-	-	-	-	-	-	2	3	1	1
CO3	3	3	3	-	3	-	-	-	-	-	-	2	3	1	1
CO4	3	3	3	-	3	-	-	-	-	-	-	2	3	1	1
CO5	3	3	3	-	3	-	-	-	-	-	-	2	3	1	1

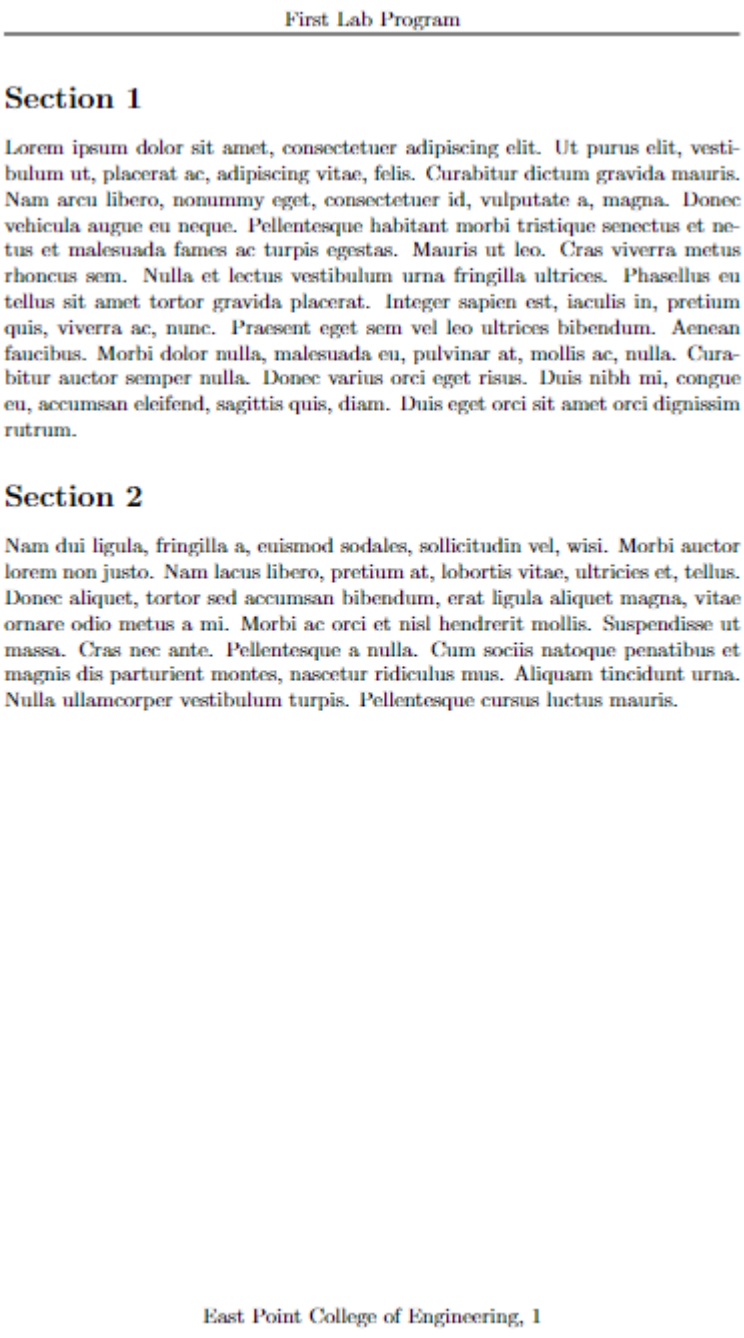
3 - High Correlation **2 - Medium Correlation** **1 – Low Correlation**

Program 1: Develop a LaTeX script to create a simple document that consists of 2 sections [Section1, Section2], and a paragraph with dummy text in each section. And also include header [title of document] and footer [institute name, page number] in the document.

Program:

```
\documentclass{article}
\usepackage{lipsum} % for dummy text
\usepackage{fancyhdr}

% Define header and footer
\pagestyle{fancy}
\fancyhf{} % Clear header and footer
\fancyhead[C]{First Lab Program} % Header
\fancyfoot[C]{East Point College of Engineering, \thepage} % Footer

\begin{document}

\section*{Section 1}
\lipsum[1] % Dummy text

\section*{Section 2}
\lipsum[2] % Dummy text

\end{document}
```

Output:


First Lab Program
Section 1
Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.
Section 2
Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.
East Point College of Engineering, 1

Program 2: Develop a LaTeX script to create a document that displays the sample Abstract/Summary.

Program:

```
\documentclass{article}
\usepackage{graphicx} % Required for inserting images
\title{A Study Of Cyber Security Challenges And Its Emerging Trends On Latest Technologies}
\author{Prof. Shammi L}
\date{21 April 2024}

\begin {document}

\maketitle

\section*{Abstract}
Cyber Security plays an important role in the field of information technology. Securing the information have become one of the biggest challenges in the present day. Whenever we think about the cyber security the first thing that comes to our mind is cybercrimes which are increasing immensely day by day. Various Governments and companies are taking many measures in order to prevent these cybercrimes. Besides various measures cyber security is still a very big concern to many. This paper mainly focuses on challenges faced by cyber security on the latest technologies. It also focuses on latest about the cyber security techniques, ethics and the trends changing the face of cyber security. \\

Privacy and security of the data will always be top security measures that any organization takes care. We are presently living in a world where all the information is maintained in a digital or a cyber form. Social networking sites provide a space where users feel safe as they interact with friends and family. In the case of home users, cyber-criminals would continue to target social media sites to steal personal data. Not only social networking but also during bank transactions a person must take all the required security measures.
\end{document}
```

Output:

A Study Of Cyber Security Challenges And Its Emerging Trends On Latest Technologies

Prof. Shammi L

21 April 2024

Abstract

Cyber Security plays an important role in the field of information technology .Securing the information have become one of the biggest challenges in the present day. When ever we think about the cyber security the first thing that comes to our mind is cyber crimes which are increasing immensely day by day. Various Governments and companies are taking many measures in order to prevent these cyber crimes. Besides various measures cyber security is still a very big concern to many. This paper mainly focuses on challenges faced by cyber security on the latest technologies .It also focuses on latest about the cyber security techniques, ethics and the trends changing the face of cyber security.

Privacy and security of the data will always be top security measures that any organization takes care. We are presently living in a world where all the information is maintained in a digital or a cyber form. Social networking sites provide a space where users feel safe as they interact with friends and family. In the case of home users, cyber-criminals would continue to target social media sites to steal personal data. Not only social networking but also during bank transactions a person must take all the required security measures.

Program 3: Develop a LaTeX script to create a simple title page of the VTU project Report [Use suitable Logos and text formatting]

Program:

```
\documentclass[12pt, a4paper]{report} % Document class with font size 12pt and paper size A4
\usepackage{graphicx} % Package to include images
\usepackage{geometry} % Package to customize page layout
\geometry{a4paper, total={190mm, 257mm}, left=20mm, right=20mm, top=30mm, bottom=30mm} %
Customizing page margins
\thispagestyle{empty} % Suppressing page numbers for the title page

\begin{document}

    \begin{titlepage} % Starting the title page environment
        \begin{center} % Centering content

            % University Details
            \textbf{{\large VISVESVARAYA TECHNOLOGICAL UNIVERSITY}}\\
            {\normalsize Jnana Sangama, Belgaum-590018}\\
            \vspace{0.3in}
            \includegraphics[scale=0.6]{vtulogo.png}\\
            \vspace{0.3in}

            % Title and Project Details
            \textbf{A PROJECT REPORT} \\
            ON \\
            \vspace{0.2in}
            \textbf{{\large "CREATE REPORT FORMAT USING LaTeX"}}\\
            \vspace{0.1in}
            {\small Submitted in partial fulfillment of the requirements for the award of degree}\\
            \vspace{0.1in}
            \textbf{BACHELOR OF ENGINEERING\\IN\\COMPUTER SCIENCE AND
ENGINEERING}\\
            \vspace{0.2in}

            % Student Details
            Submitted by\\
            \vspace{0.08in}
            \begin{tabular}{ll}
                \textbf{1EP21CS001} & \textbf{ABHINAV N}\\
                \textbf{1EP21CS002} & \textbf{ADARSH R}\\
                \textbf{1EP21CS003} & \textbf{ADITHI HEBBAR}\\
                \textbf{1EP21CS004} & \textbf{ADITHYA KUMAR}\\
            \end{tabular}

            \vspace{0.2in}
```

```
                % Guide Details
                \textbf{Under the Guidance of}\\
                Mrs. Shammi L\\
                Asst. Professor, Department of CSE\\

                \vspace{0.2in}

                % College Details
                \includegraphics[scale=0.4]{EPCETLOGO.jpeg}\\
                \vspace{0.01in}
                {\small DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING}\\
                \vspace{0.1in}
                \textbf{EAST POINT COLLEGE OF ENGINEERING AND TECHNOLOGY}\\
                {\small NBA accredited, Approved by AICTE, New Delhi, Affiliated to VTU, Belagavi,
Jnana Prabha, Bidarahalli, Virgonagar Post, Bengaluru -560049}\\
                \vspace{0.1in}
                {\small 2023 - 2024}\\

        \end{center} % Ending the center environment
    \end{titlepage} % Ending the title page environment

\end{document}
```

Output:

VISVESVARAYA TECHNOLOGICAL UNIVERSITY
Jnana Sangama, Belgaum-590018

A PROJECT REPORT
ON

"CREATE REPORT FORMAT USING LaTeX"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE AND ENGINEERING

Submitted by

1EP21CS001 ABHINAV N
1EP21CS002 ADARSH R
1EP21CS003 ADITHI HEBBAR
1EP21CS004 ADITHYA KUMAR

Under the Guidance of
Mrs. Shammi L
Asst. Professor, Department of CSE

EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

EAST POINT COLLEGE OF ENGINEERING AND TECHNOLOGY
NBA accredited, Approved by AICTE, New Delhi, Affiliated to VTU, Belagavi, Jnana Prabha, Bidarahalli, Virgonagar Post, Bengaluru -560049

2023 - 2024

Program 4: Develop a LaTeX script to create the Certificate Page of the Report [Use suitable commands to leave the blank spaces for user entry]

Program:

```
\documentclass[12pt, a4paper]{report}
\usepackage{graphicx}
\usepackage{geometry}
\geometry{a4paper, total={170mm, 257mm}, left=20mm, right=20mm, top=20mm, bottom=20mm}
\thispagestyle{empty}
\usepackage{ragged2e}
\begin{document}

    \begin{titlepage}
        \begin{center}

                \includegraphics[scale=1.0]{EPCET logo_new.png}\\
            \vspace{0.5in}
            \textbf{CERTIFICATE}\\
            \vspace{0.3in}

 \begin{justify}
 This is to certify that the Project work entitled "ANALYSIS AND PREDICTION OF GROUND WATER LEVEL USING MACHINE LEARNING MODELS" is a Bonafide work carried out by \textbf{PAVAN KUMAR R [1EP18CS072], MANOJ R [1EP19CS053], NARREDDY BHARATH KUMAR REDDY [1EP19CS058], NIRANJAN N [1EP19CS060],} in the partial fulfillment for the award of \textbf{Bachelor of Engineering} in \textbf{Computer Science and Engineering} of \textbf{Visvesvaraya Technological University, Belagavi} during the year \textbf{2022-2023}.
 \end{justify}\\


            \vspace{0.5in}

            \vspace{0.3in}
            \underline{\hspace{6cm}} \hspace{1.5in} \underline{\hspace{6cm}}\\
            \vspace{0.1in}
            \textbf{Guide's Name} \hspace{2.7in} \textbf{HOD's Name}\\
            \vspace{0.1in}
            \textbf{Guide's Designation} \hspace{2in} \textbf{HOD's Designation}\\
            \vspace{0.1in}
            \textbf{Department of CSE} \hspace{2.1in} \textbf{Department of CSE}\\
                    \end{center}
\vspace{0.2in}
\hspace{0.3in}\textbf{External Viva:}\\
\vspace{0.1in}

                \begin{tabular}{ll}
                    \textbf{Name of the Examiners} &  \hspace{2.0in}
```

```
    \textbf{Signature with date}\\
        \vspace{0.2in}\\
                \textbf{1. .....}     & \hspace{2.1in}\textbf{.....}\\
        \vspace{0.2in}\\
                \textbf{2. .....}     &  \hspace{2.1in}\textbf{.....}\\
            \end{tabular}

 \end{titlepage}
\end{document}
```

Output:

EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering

Approved by AICTE New Delhi | Affiliated to VTU, Belagavi,
Virgo Nagar, Bengaluru-560049

CERTIFICATE

This is to certify that the Project work entitled "ANALYSIS AND PREDICTION OF GROUND WATER LEVEL USING MACHINE LEARNING MODELS" is a Bonafide work carried out by **PAVAN KUMAR R [1EP18CS072], MANOJ R [1EP19CS053], NARREDDY BHARATH KUMAR REDDY [1EP19CS058], NIRANJAN N [1EP19CS060]**, in the partial fulfillment for the award of **Bachelor of Engineering** in **Computer Science and Engineering** of **Visvesvaraya Technological University, Belagavi** during the year **2022-2023**.

Guide's Name	**HOD's Name**
Guide's Designation	**HOD's Designation**
Department of CSE	**Department of CSE**

External Viva:

Name of the Examiners	**Signature with date**
1.	.....
2.	.....

Program 5 Develop a LaTeX script to create a document that contains the following table with proper labels.

SNo	USN	Student Name	Marks		
			Subject1	Subject2	Subject3
1	4XX22XX001	Name 1	89	60	90
2	4XX22XX002	Name 2	78	45	98
3	4XX22XX003	Name 3	67	55	59

Program:

```
\documentclass{article}
\usepackage{multirow}
\begin{document}
\centering\textbf{\Large{Student Details and Marks}}
\vspace{0.1in}
\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|}
\hline
\multirow{2}{*}{\textbf{S.No.}} &
\multirow{2}{*}{\textbf{USN}} &
\multirow{2}{*}{\textbf{Student Name}}
  & \multicolumn{3}{|c|}{Marks} \\ \cline{4-6}
        &&& \textbf{Subject 1}  & \textbf{Subject 2}  & \textbf{Subject 3} \\ \hline
1 & 4XX22XX01 & Name 1  & 89 &60 &90\\ \hline
2 & 4XX22XX02 & Name 2  &78  &45 &98\\ \hline
3 & 4XX22XX03 & Name 3  &67 &55 &59\\
\hline
\end{tabular}
\end{table}
\end{document}
```

Output:

Student Details and Marks

S.No.	USN	Student Name	Marks		
			Subject 1	Subject 2	Subject 3
1	4XX22XX01	Name 1	89	60	90
2	4XX22XX02	Name 2	78	45	98
3	4XX22XX03	Name 3	67	55	59

Program 6: Develop a LaTeX script to include the side-by-side graphics/pictures/figures in the document by using the subgraph concept.

Program:

```
\documentclass{article}
\usepackage{graphicx}  % Required for including images
\usepackage{subcaption}  % Required for subfigures
\begin{document}
\begin{figure}
\centering
\begin{subfigure}{0.46\linewidth}  % Subfigure environment for the first image
\includegraphics[width=\linewidth]{Image1.jpeg}  % Include image1.jpg
\caption{Caption for image 1}  % Caption for the first image
\label{fig:subfig1}  % Label for referencing the first image
\end{subfigure}
\hfill  % Add horizontal space between subfigures
\begin{subfigure}{0.44\linewidth}  % Subfigure environment for the second image
\includegraphics[width=\linewidth]{Image2.jpeg}  % Include image2.png
\caption{Caption for image 2}  % Caption for the second image
\label{fig:subfig2}  % Label for referencing the second image
\end{subfigure}
\caption{Cybersecurity images}  % Overall caption for the figure
\label{fig:subfigures}  % Label for referencing the entire figure
\end{figure}
\end{document}
```

Output:

(a) Caption for image 1 (b) Caption for image 2

Figure 1: Cybersecurity images

Program 7: Develop a LaTeX script to create a document that consists of the following two mathematical equations.

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$= \frac{-2 \pm \sqrt{2^2-4*(1)*(-8)}}{2*1}$$

$$= \frac{-2 \pm \sqrt{4+32}}{2}$$

$$\begin{aligned}\varphi_\sigma^\lambda A_t &= \sum_{\pi \in C_t} \operatorname{sgn}(\pi)\varphi_\sigma^\lambda \varphi_\pi^\lambda \\ &= \sum_{\tau \in C_{\sigma t}} \operatorname{sgn}(\sigma^{-1}\tau\sigma)\varphi_\sigma^\lambda \varphi_{\sigma^{-1}\tau\sigma}^\lambda \\ &= A_{\sigma t}\varphi_\sigma^\lambda\end{aligned}$$

Program:

```
\documentclass{article}
\usepackage{amsmath} % Required for mathematical environments and commands
\begin{document}
    \section*{Equations Set 1} % Section header for the first set of equations
    \begin{align}
% Begin the align environment for multiple equations

x &= -b \pm \sqrt{\sqrt[4]{b^2 - 4ac}} \notag \\

% First equation with \notag to suppress numbering

x &= \frac{-b \pm \sqrt{22 - 4 \cdot 1 \cdot (-8)}}{2 \cdot 1} = \frac{-b \pm \sqrt{\sqrt{4 + 32}}}{2} = \frac{-b \pm \sqrt{2}}{2} \notag % Second equation with \notag to suppress numbering

    \end{align} % End the align environment

    \section*{Equations Set 2} % Section header for the second set of equations

    \begin{align} % Begin the align environment for multiple equations
        \varphi_{\sigma}^{\lambda} \cdot A_{t} &= \sum_{\pi \in C_{t}} \text{sgn}(\pi) \cdot \varphi_{\sigma}^{\lambda} \cdot \varphi_{\pi}^{\lambda} \notag \\ % First equation with \notag to suppress numbering
        &= \sum_{\tau \in C_{\sigma}^{t}} \text{sgn}(\sigma^{-1} \tau \sigma) \varphi_{\sigma}^{\lambda} \varphi_{\sigma^{-1} \tau \sigma}^{\lambda} \notag \\ % Second equation with \notag to suppress numbering
        &= A_{\sigma}^{t} \varphi_{\sigma}^{\lambda} \notag % Third equation with \notag to suppress numbering

\end{align} % End the align environment

\end{document}
```

Output:

Equations Set 1

$$x = -b \pm \sqrt{\sqrt[4]{b^2 - 4ac}}$$

$$x = \frac{-b \pm \sqrt{22 - 4 \cdot 1 \cdot (-8)}}{2 \cdot 1} = \frac{-b \pm \sqrt{\sqrt{4 + 32}}}{2} = \frac{-b \pm \sqrt{2}}{2}$$

Equations Set 2

$$\begin{aligned} \varphi_\sigma^\lambda \cdot A_t &= \sum_{\pi \in C_t} \operatorname{sgn}(\pi) \cdot \varphi_\sigma^\lambda \cdot \varphi_\pi^\lambda \\ &= \sum_{\tau \in C_\sigma^t} \operatorname{sgn}(\sigma^{-1}\tau\sigma) \varphi_\sigma^\lambda \varphi_{\sigma^{-1}\tau\sigma}^\lambda \\ &= A_\sigma^t \varphi_\sigma^\lambda \end{aligned}$$

Program 8: Develop a java program to create an outer class with a function display. Create another class inside the outer class named inner with a function called display and call the two functions in the main class.

Program:

```
\documentclass{article}
\usepackage{amsmath}
\usepackage{amssymb}
\usepackage{amsthm}

% Define theorem-like environments
\newtheorem{theorem}{Theorem}[section]
\newtheorem{definition}[theorem]{Definition}
\newtheorem{corollary}[theorem]{Corollary}
\newtheorem{lemma}[theorem]{Lemma}

\begin{document}

\section{Introduction}

In this document, we demonstrate the use of numbered theorems, definitions, corollaries, and lemmas.

\begin{theorem}[Pythagorean Theorem]
    In a right-angled triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides.
\end{theorem}

\begin{definition}
    A function $f: X \rightarrow Y$ is a bijection if it is both one-to-one and onto.
\end{definition}

\begin{corollary}
    If $f: X \rightarrow Y$ is a bijection, then there exists an inverse function $f^{-1}: Y \rightarrow X$ such that $f^{-1}(f(x)) = x$ for all $x \in X$, and $f(f^{-1}(y)) = y$ for all $y \in Y$.
\end{corollary}

\begin{lemma}[Fermat's Little Theorem]
    If $p$ is a prime number and $a$ is any integer not divisible by $p$, then $a^{p-1} \equiv 1 \pmod{p}$.
\end{lemma}

\end{document}
```

Output:

1 Introduction

In this document, we demonstrate the use of numbered theorems, definitions, corollaries, and lemmas.

Theorem 1.1 (Pythagorean Theorem)**.** *In a right-angled triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides.*

Definition 1.2. *A function $f : X \to Y$ is a bijection if it is both one-to-one and onto.*

Corollary 1.3. *If $f : X \to Y$ is a bijection, then there exists an inverse function $f^{-1} : Y \to X$ such that $f^{-1}(f(x)) = x$ for all $x \in X$, and $f(f^{-1}(y)) = y$ for all $y \in Y$.*

Lemma 1.4 (Fermat's Little Theorem)**.** *If p is a prime number and a is any integer not divisible by p, then $a^{p-1} \equiv 1 \pmod{p}$.*

Program 9: Develop a LaTeX script to create a document that consists of two paragraphs with a minimum of 10 citations in it and display the reference in the section.

Program:

```
\documentclass{article}
\usepackage[style=numeric]{biblatex}
\addbibresource{references.bib}
\begin{document}
\section{Introduction}
\paragraph{}
Phishing attacks are a significant threat to cybersecurity, and various researchers have explored techniques to detect and mitigate these attacks \cite{chen2020review, burgess2018alert, chen2019phishing, akhawe2014alice, egelman2008you}. These studies highlight the importance of user education and effective warning systems to combat phishing attacks.

\paragraph{}
In addition to technical solutions, researchers have also investigated the psychological impacts of phishing attacks \cite{darling2015experimental, pan2017anatomy, pan2018phishing}. Some studies have focused on comparative analysis of phishing detection tools \cite{gastellier2015comparative}, while others have proposed new authentication methods to prevent phishing \cite{chen2018new}.

\printbibliography

\end{document}
```

Reference.bib

```
@inproceedings{chen2020review,
  title={A Review of Human-and Computer-Facing URL Phishing Features},
  author={Chen, Shuaifu and Zhao, Zi and Zhang, Qiyue and Qi, Xian and Choo, Kim-Kwang Raymond and Yuan, Michael},
  booktitle={2020 IEEE Conference on Communications and Network Security (CNS)},
  pages={1--9},
  year={2020},
  organization={IEEE}
}

@article{burgess2018alert,
  title={Alert humanizer: Responsible phishing incident response through user education},
  author={Burgess, Shannon and Awayle, Torrie and Shaikh, Kausar and Patcha, Anushka and Richmond, Matthew and Krishnamurthy, Balachander},
  journal={Journal of Cybersecurity},
  volume={4},
  number={1},
```

```
  pages={tyx022},
  year={2018},
  publisher={Oxford University Press}
}

@inproceedings{chen2019phishing,
  title={Phishing study on two-factor authentication schemes},
  author={Chen, Shuaifu and Choo, Kim-Kwang Raymond and Choo, Kim-Kwang Raymond and
Zhang, Hong},
  booktitle={International Conference on Cloud Computing and Security},
  pages={353--372},
  year={2019},
  organization={Springer}
}

@inproceedings{akhawe2014alice,
  title={Alice in warningland: A large-scale field study of browser security warning effectiveness.},
  author={Akhawe, Devdatta and Felt, Adrienne Porter},
  booktitle={Usenix security},
  pages={257--272},
  year={2014}
}

@inproceedings{egelman2008you,
  title={You've been warned: an empirical study of the effectiveness of web browser phishing
warnings},
  author={Egelman, Serge and Cranor, Lorrie Faith and Hong, Jason},
  booktitle={Proceedings of the SIGCHI Conference on Human Factors in Computing Systems},
  pages={1065--1074},
  year={2008}
}

@inproceedings{darling2015experimental,
  title={An experimental examination of the psychological impacts of real and hypothetical phishing
attacks},
  author={Darling, Michelle Maranione},
  booktitle={2015 International Conference on Cyber Security of Cyber Physical Systems},
  pages={1--4},
  year={2015},
  organization={IEEE}
}

@article{pan2017anatomy,
  title={The anatomy of phishing attack},
  author={Pan, Yuxi and Zambrana, Jorge and Watters, Paul and Balas, Ryan and Conti, Mauro},
  journal={High Technology Letters},
  volume={13},
```

```
 number={1},
 pages={80--92},
 year={2017}
}

@inproceedings{pan2018phishing,
 title={Phishing: A look at the anomalies emerging in the banking industry},
 author={Pan, Yuxi and Hu, Xintao and Conti, Mauro and Zambrana, Jorge},
 booktitle={2018 International Conference on Cyber Security And Protection Of Digital Services (Cyber Security)},
 pages={1--6},
 year={2018},
 organization={IEEE}
}

@inproceedings{gastellier2015comparative,
 title={A comparative analysis of tools and techniques for detecting phishing web sites},
 author={Gastellier-Prevost, Sophie and Capagli{\'o}, Gayo Laurent},
 booktitle={2015 11th International Conference on Signal-Image Technology & Internet-Based Systems (SITIS)},
 pages={691--698},
 year={2015},
 organization={IEEE}
}

@inproceedings{chen2018new,
 title={A new anti-phishing two-factor authentication method},
 author={Chen, Shuaifu and Choo, Kim-Kwang Raymond and Huang, Zhengan and Jin, Yakun},
 booktitle={2018 International Conference on Cyber Security and Protection of Digital Services (Cyber Security)},
 pages={1--5},
 year={2018},
 organization={IEEE}
}
```

Output:

1 Introduction

Phishing attacks are a significant threat to cybersecurity, and various researchers have explored techniques to detect and mitigate these attacks [4, 2, 5, 1, 7]. These studies highlight the importance of user education and effective warning systems to combat phishing attacks.

In addition to technical solutions, researchers have also investigated the psychological impacts of phishing attacks [6, 10, 9]. Some studies have focused on comparative analysis of phishing detection tools [8], while others have proposed new authentication methods to prevent phishing [3].

References

[1] Devdatta Akhawe and Adrienne Porter Felt. "Alice in warningland: A large-scale field study of browser security warning effectiveness." In: *Usenix security*. 2014, pp. 257–272.

[2] Shannon Burgess et al. "Alert humanizer: Responsible phishing incident response through user education". In: *Journal of Cybersecurity* 4.1 (2018), tyx022.

[3] Shuaifu Chen et al. "A new anti-phishing two-factor authentication method". In: *2018 International Conference on Cyber Security and Protection of Digital Services (Cyber Security)*. IEEE. 2018, pp. 1–5.

[4] Shuaifu Chen et al. "A Review of Human-and Computer-Facing URL Phishing Features". In: *2020 IEEE Conference on Communications and Network Security (CNS)*. IEEE. 2020, pp. 1–9.

[5] Shuaifu Chen et al. "Phishing study on two-factor authentication schemes". In: *International Conference on Cloud Computing and Security*. Springer. 2019, pp. 353–372.

[6] Michelle Maranione Darling. "An experimental examination of the psychological impacts of real and hypothetical phishing attacks". In: *2015 International Conference on Cyber Security of Cyber Physical Systems*. IEEE. 2015, pp. 1–4.

[7] Serge Egelman, Lorrie Faith Cranor, and Jason Hong. "You've been warned: an empirical study of the effectiveness of web browser phishing warnings". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 2008, pp. 1065–1074.

[8] Sophie Gastellier-Prevost and Gayo Laurent Capagliό. "A comparative analysis of tools and techniques for detecting phishing web sites". In: *2015 11th International Conference on Signal-Image Technology Internet-Based Systems (SITIS)*. IEEE. 2015, pp. 691–698.

1

[9] Yuxi Pan et al. "Phishing: A look at the anomalies emerging in the banking industry". In: *2018 International Conference on Cyber Security And Protection Of Digital Services (Cyber Security)*. IEEE. 2018, pp. 1–6.

[10] Yuxi Pan et al. "The anatomy of phishing attack". In: *High Technology Letters* 13.1 (2017), pp. 80–92.

2

Program 10: Develop a LaTeX script to design a simple tree diagram or hierarchical structure in the document with appropriate labels using the Tikz library.

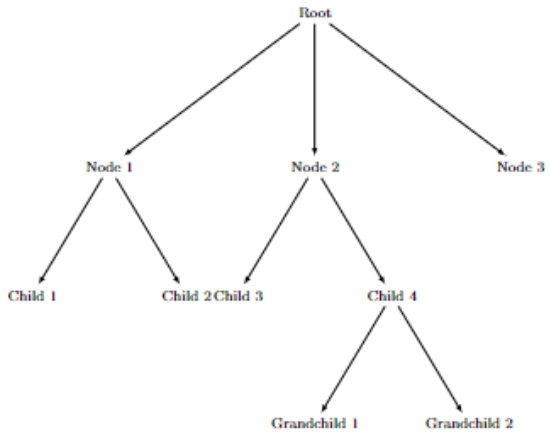
Program:

```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{trees}

\begin{document}

\section{Tree Diagram}

\begin{center}
   \begin{tikzpicture}[
      level 1/.style={sibling distance=40mm,
      level distance=30mm},
      level 2/.style={sibling distance=30mm,
      level distance=25mm},
      edge from parent/.style={draw, -latex},
      every node/.style={font=\footnotesize}
   ]
   \node {Root}
      child {node {Node 1}
         child {node {Child 1}}
         child {node {Child 2}}
      }
      child {node {Node 2}
         child {node {Child 3}}
         child {node {Child 4}
            child {node {Grandchild 1}}
            child {node {Grandchild 2}}
         }
      }
      child {node {Node 3}};
   \end{tikzpicture}
\end{center}

\section{Hierarchical Structure}
\begin{center}
   \begin{tikzpicture}[
      level 1/.style={sibling distance=30mm, level distance=30mm},
      level 2/.style={sibling distance=20mm,
      level distance=35mm},
      edge from parent/.style={draw, -latex},
      every node/.style={font=\footnotesize}
```

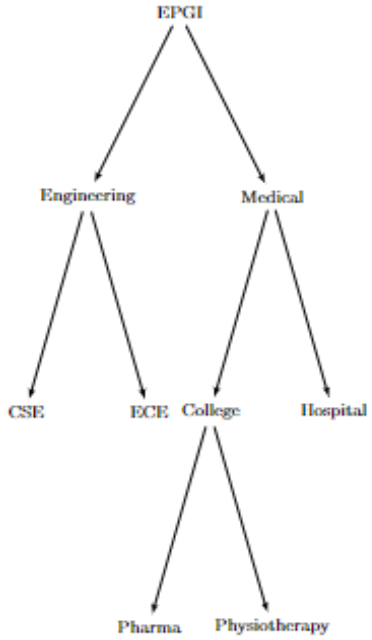
```
  ]

  \node {EPGI}
    child {node {Engineering}
      child {node {CSE}}
      child {node {ECE}}
      }
    child {node {Medical}
      child {node {College}
        child {node {Pharma}}
        child {node {Physiotherapy}}
      }
      child {node {Hospital}}
    };
  \end{tikzpicture}
\end{center}

\end{document}
```

Output:

1 Tree Diagram



2 Hierarchical Structure



Program 11: Develop a LaTeX script to present an algorithm in the document using algorithm/algorithmic/algorithm2e Library.

Program:

```
\documentclass{article}
\usepackage{algorithm2e}
\begin{document}
\begin{algorithm}[H]
   \SetAlgoLined
   \KwData{An unsorted array $A$ of $n$ elements}
   \KwResult{The array $A$ sorted in non-decreasing order}
   \Begin{
      \For{$i \leftarrow 1$ \KwTo $n - 1$}{
         \For{$j \leftarrow n$ \KwDownTo $i + 1$}{
            \If{$A[j] < A[j - 1]$}{
               \textbf{swap} $A[j]$ and $A[j - 1]$\;
            }
         }
      }
   }
   \caption{Bubble Sort Algorithm}
\end{algorithm}
\end{document}
```

Output:

Data: An unsorted array A of n elements
Result: The array A sorted in non-decreasing order
begin
  for $i \leftarrow 1$ **to** $n-1$ **do**
    for $j \leftarrow n\ i+1$ **do**
      if $A[j] < A[j-1]$ **then**
        swap $A[j]$ and $A[j-1]$;
      end
    end
  end
end

Algorithm 1: Bubble Sort Algorithm

Program 12: Develop a LaTeX script to create a simple report and article by using suitable commands and formats of user choice.

Program:

```
\documentclass{report}
\usepackage{lipsum} % Package for generating dummy text

\title{Simple Report}
\author{Your Name}
\date{\today}

\begin{document}

\maketitle

\chapter{Introduction}
\lipsum[1-3]

\section{Objectives}
\lipsum[4]
\begin{enumerate}
    \item Objective 1
    \item Objective 2
    \item Objective 3
\end{enumerate}

\section{Background}
\lipsum[5-7]

\chapter{Methodology}
\lipsum[8-10]

\section{Data Collection}
\lipsum[11]

\section{Analysis}
\lipsum[12-13]

\chapter{Results and Discussion}
\lipsum[14-16]

\chapter{Conclusion}
\lipsum[17]

\end{document}
```

Output:

Simple Report

Prof. Shammi L

April 25, 2024

Chapter 1

Introduction

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

1

1.1 Objectives

Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

1. Objective 1
2. Objective 2
3. Objective 3

1.2 Background

Fusce mauris. Vestibulum luctus nibh at lectus. Sed bibendum, nulla a faucibus semper, leo velit ultricies tellus, ac venenatis arcu wisi vel nisl. Vestibulum diam. Aliquam pellentesque, augue quis sagittis posuere, turpis lacus congue quam, in hendrerit risus eros eget felis. Maecenas eget erat in sapien mattis porttitor. Vestibulum porttitor. Nulla facilisi. Sed a turpis eu lacus commodo facilisis. Morbi fringilla, wisi in dignissim interdum, justo lectus sagittis dui, et vehicula libero dui cursus dui. Mauris tempor ligula sed lacus. Duis cursus enim ut augue. Cras ac magna. Cras nulla. Nulla egestas. Curabitur a leo. Quisque egestas wisi eget nunc. Nam feugiat lacus vel est. Curabitur consectetuer.

Suspendisse vel felis. Ut lorem lorem, interdum eu, tincidunt sit amet, laoreet vitae, arcu. Aenean faucibus pede eu ante. Praesent enim elit, rutrum at, molestie non, nonummy vel, nisl. Ut lectus eros, malesuada sit amet, fermentum eu, sodales cursus, magna. Donec eu purus. Quisque vehicula, urna sed ultricies auctor, pede lorem egestas dui, et convallis elit erat sed nulla. Donec luctus. Curabitur et nunc. Aliquam dolor odio, commodo pretium, ultricies non, pharetra in, velit. Integer arcu est, nonummy in, fermentum faucibus, egestas vel, odio.

Sed commodo posuere pede. Mauris ut est. Ut quis purus. Sed ac odio. Sed vehicula hendrerit sem. Duis non odio. Morbi ut dui. Sed accumsan risus eget odio. In hac habitasse platea dictumst. Pellentesque non elit. Fusce sed justo eu urna porta tincidunt. Mauris felis odio, sollicitudin sed, volutpat a, ornare ac, erat. Morbi quis dolor. Donec pellentesque, erat ac sagittis semper, nunc dui lobortis purus, quis congue purus metus ultricies tellus. Proin et quam. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Praesent sapien turpis, fermentum vel, eleifend faucibus, vehicula eu, lacus.

2

Chapter 2

Methodology

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2.1 Data Collection

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2.2 Analysis

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Chapter 3

Results and Discussion

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Chapter 4

Conclusion

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Program 13: Develop a LaTeX script to create a simple resume.

Program:

```
    \documentclass{article}

% Set page margins
\usepackage[margin=1in]{geometry}

% Remove page numbers
\pagestyle{empty}

\begin{document}

% Title
\begin{center}
    \textbf{\LARGE Shammi L}\\
    \vspace{0.5em}
    Your Address | City, State ZIP Code | Your Email | Your Phone Number
\end{center}

% Section: Education
\section*{Education}
\textbf{M.Tech} \hfill \textit{2010} \\
University Name, Location \\
GPA: X.XX/4.XX (if applicable)

% Section: Experience
\section*{Experience}
\textbf{Job Title} \hfill \textit{Start Date - End Date} \\
Company/Organization Name, Location \\
Description of responsibilities and achievements.

% Section: Skills
\section*{Skills}
\begin{itemize}
    \item Skill 1
    \item Skill 2
    \item Skill 3
    % Add more skills as needed
\end{itemize}

% Section: Projects (Optional)
\section*{Projects}
\textbf{Project Title} \hfill \textit{Date} \\
Description of the project and your role.

% Section: Awards/Honors (Optional)
```

```
\section*{Awards/Honors}
\begin{itemize}
    \item Award/Honor 1
    \item Award/Honor 2
    % Add more awards/honors as needed
\end{itemize}

% Section: Interests/Hobbies (Optional)
\section*{Interests/Hobbies}
Your interests and hobbies.

\end{document}
```

Output:

Shammi L

Your Address — City, State ZIP Code — Your Email — Your Phone Number

Education

M.Tech *2010*
University Name, Location
GPA: X.XX/4.XX (if applicable)

Experience

Job Title *Start Date - End Date*
Company/Organization Name, Location
Description of responsibilities and achievements.

Skills

- Skill 1
- Skill 2
- Skill 3

Projects

Project Title *Date*
Description of the project and your role.

Awards/Honors

- Award/Honor 1
- Award/Honor 2

Interests/Hobbies

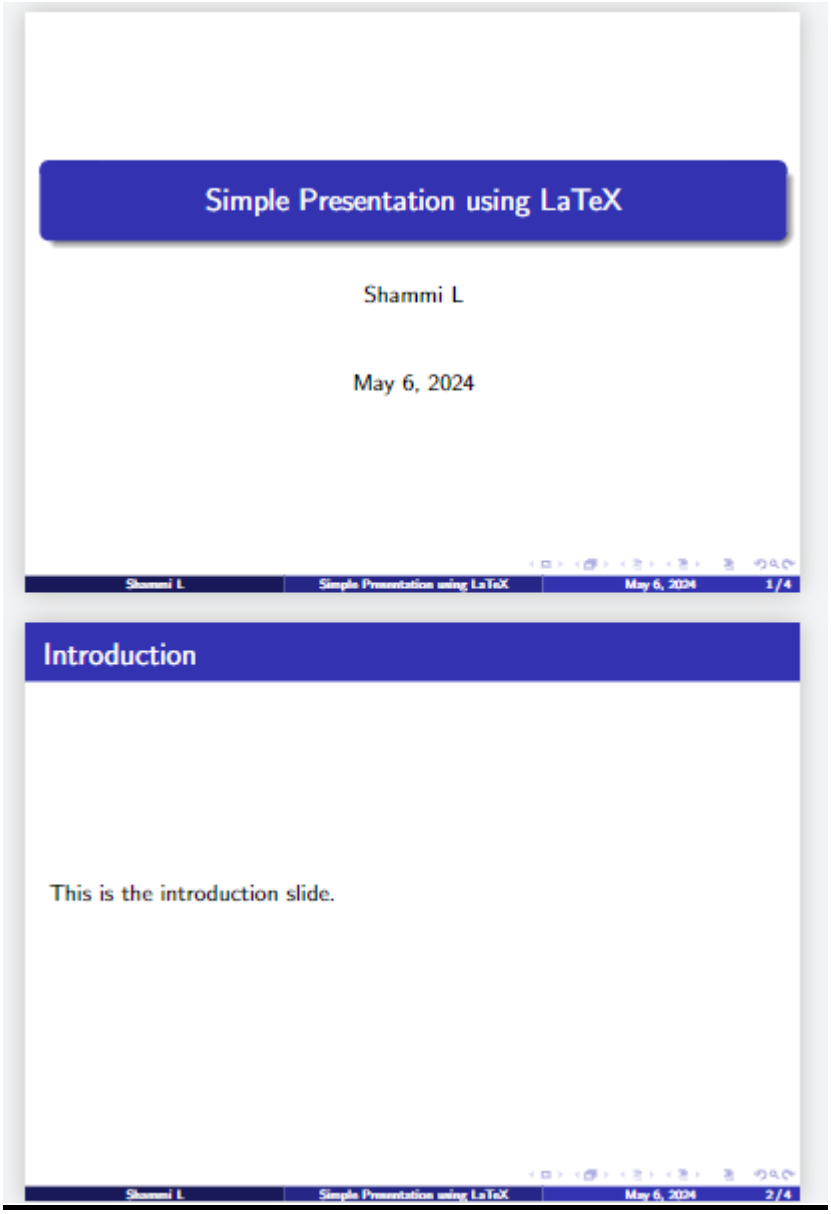
Your interests and hobbies.

Program 14: Develop a LaTeX code to create a presentation using the "beamer" document class.

Program:

```
\documentclass{beamer}

% Theme
\usetheme{Madrid}

% Title
\title{Simple Presentation using LaTeX}
\author{Shammi L}
\date{\today}

% Content
\begin{document}

% Title Slide
\begin{frame}
  \titlepage
\end{frame}

% Slide 1
\begin{frame}{Introduction}
  \frametitle{Introduction}
  This is the introduction slide.
\end{frame}

% Slide 2
\begin{frame}{Main Content}
  \frametitle{Main Content}
  This is the main content slide.
\end{frame}

% Slide 3
\begin{frame}{Conclusion}
  \frametitle{Conclusion}
  This is the conclusion slide.
\end{frame}

\end{document}
```

Output:


Simple Presentation using LaTeX
Shammi L
May 6, 2024
Shammi L
Simple Presentation using LaTeX
May 6, 2024
1 / 4
Introduction
This is the introduction slide.
Shammi L
Simple Presentation using LaTeX
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Main Content
This is the main content slide.
Shanmi L
Simple Presentation using LaTeX
May 6, 2024
3 / 4
Conclusion
This is the conclusion slide.
Shanmi L
Simple Presentation using LaTeX
May 6, 2024
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Viva Question and Answer

1. **What is LaTeX?** LaTeX is a document preparation system for high-quality typesetting. It is based on the TeX typesetting program developed by Donald Knuth.
2. **What is the main advantage of using LaTeX?** The main advantage of using LaTeX is that it separates the content from the formatting, allowing users to focus on writing while LaTeX handles the typesetting and layout.
3. **What is the difference between LaTeX and Word Processors?** Word processors like Microsoft Word are WYSIWYG (What You See Is What You Get) editors, while LaTeX is a markup language where you write code to specify the document structure and formatting.
4. **What is a document class in LaTeX?** A document class in LaTeX defines the overall style and formatting of the document, such as margins, page layout, and sectioning commands. Common document classes include article, report, and book.
5. **What is a package in LaTeX?** A package in LaTeX is a collection of additional commands and functionality that extends the basic LaTeX system. Packages provide features like mathematical typesetting, graphics inclusion, and bibliographies.
6. **How do you include a package in a LaTeX document?** You include a package in a LaTeX document using the \usepackage command, typically in the preamble section before \begin{document}.
7. **What is the preamble in a LaTeX document?** The preamble in a LaTeX document is the section at the beginning of the document before \begin{document}, where you specify document settings, load packages, and define custom commands or environments.
8. **How do you create sections in a LaTeX document?** You create sections in a LaTeX document using sectioning commands like \section, \subsection, \subsubsection, and \chapter (for report and book document classes).
9. **What is the purpose of the \label and \ref commands in LaTeX?** The \label command is used to assign a unique label to an element (section, figure, equation, etc.), while the \ref command is used to reference that labeled element, allowing cross-referencing within the document.
10. **How do you include images in a LaTeX document?** You can include images in a LaTeX document using the \includegraphics command from the graphicx package. Supported image formats include PNG, JPG, PDF, and EPS.

11. **How do you create tables in LaTeX?** Tables in LaTeX can be created using the tabular environment or the table environment along with the tabular environment. The tabular environment defines the table structure, while the table environment adds caption and label.
12. **What is a bibliography in LaTeX, and how is it generated?** A bibliography in LaTeX is a list of references or citations used in the document. It is typically generated using a bibliographic management system like BibTeX, which allows you to create and maintain a database of references.
13. **What is the difference between \textbf and \bfseries in LaTeX?** Both \textbf and \bfseries are used to make text bold, but \textbf is a command that applies bold formatting to its argument, while \bfseries is a declaration that makes the subsequent text bold until it is turned off.
14. **How do you create mathematical equations in LaTeX?** Mathematical equations in LaTeX can be created using various environments and commands from the amsmath package, such as equation, align, cases, and matrix. Math mode is entered using $ for inline equations or $$ for displayed equations.
15. **What is the purpose of the \begin{document} and \end{document} commands in LaTeX?** The \begin{document} and \end{document} commands in LaTeX define the beginning and end of the main document content, respectively. Everything before \begin{document} is the preamble, and everything after \end{document} is ignored.
16. **What is the difference between \item and \itemize in LaTeX?** \item is a command used within an itemized or enumerated list environment (like \itemize or \enumerate) to create a new list item. \itemize is an environment that creates an unordered (bulleted) list.
17. **How do you create footnotes in a LaTeX document?** Footnotes in LaTeX can be created using the \footnote command. The footnote text is typeset at the bottom of the page where the command is used.
18. **What is the purpose of the \newcommand command in LaTeX?** The \newcommand command in LaTeX allows you to define new commands or abbreviations that can be used throughout the document. This can be useful for creating consistent formatting or for defining complex commands or structures.
19. **How do you create lists of abbreviations or acronyms in LaTeX?** Lists of abbreviations or acronyms in LaTeX can be created using the acronym package. The \ac command is used to define and reference abbreviations, while the \printacronyms command generates the list.
20. **What is the purpose of the \clearpage command in LaTeX?** The \clearpage command in LaTeX starts a new page, forcing any remaining content on the current page to be moved to the next page.

21. **How do you create a table of contents in a LaTeX document?** A table of contents in a LaTeX document can be generated using the \tableofcontents command, typically after the \maketitle command. This command collects and displays the section headings and their page numbers.
22. **What is the difference between \textit and \itshape in LaTeX?** Both \textit and \itshape are used to italicize text, but \textit is a command that applies italic formatting to its argument, while \itshape is a declaration that makes the subsequent text italic until it is turned off.
23. **How do you create hyperlinks in a LaTeX document?** Hyperlinks in a LaTeX document can be created using the hyperref package. The \href command is used to create a hyperlink, while the \url command is used to typeset a URL.
24. **What is the purpose of the \vspace command in LaTeX?** The \vspace command in LaTeX is used to add vertical spacing between elements in a document. It can be used with a length argument (e.g., \vspace{1cm}) or with a special value (e.g., \vspace*{\fill}) to distribute space evenly.
25. **How do you create landscape pages in a LaTeX document?** Landscape pages in a LaTeX document can be created using the pdflscape environment from the pdflscape package. The content within this environment will be rotated 90 degrees and typeset in landscape orientation.
26. **What is the purpose of the \usepackage[options]{package} syntax in LaTeX?** The \usepackage[options]{package} syntax in LaTeX allows you to load a package with specific options or configurations. The options are enclosed in square brackets [] and are passed to the package during its initialization.
27. **How do you create a list of figures or tables in a LaTeX document?** A list of figures or tables in a LaTeX document can be generated using the \listoffigures or \listoftables command, respectively. These commands collect and display the captions and page numbers of all figures or tables in the document.
28. **What is the purpose of the \part command in LaTeX?** The \part command in LaTeX is used for dividing a document into major parts or sections, typically in a book or report document class. It creates a higher-level division than chapters.
29. **How do you create a bibliography style in LaTeX?** Bibliography styles in LaTeX can be created using the \bibliographystyle command, which specifies the bibliography style file to be used. Common bibliography styles include plain, abbrv, unsrt, and alpha.
30. **What is the purpose of the \noindent command in LaTeX?** The \noindent command in LaTeX is used to suppress the indentation at the beginning of a paragraph. It is often used in specific situations, such as after section headings or in list environments.

31. **What is the purpose of the \hspace command in LaTeX?** The \hspace command in LaTeX is used to add horizontal spacing between elements in a document. It can be used with a length argument (e.g., \hspace{1cm}) to specify the amount of space.
32. **How do you create a bibliography database file in LaTeX?** A bibliography database file in LaTeX is typically created using the BibTeX format. It is a plain-text file with the .bib extension that contains entries for each reference, with fields like author, title, year, journal, etc.
33. **What is the purpose of the \newpage command in LaTeX?** The \newpage command in LaTeX starts a new page, forcing any remaining content on the current page to be moved to the next page and leaving the rest of the current page blank.
34. **How do you create a title page in a LaTeX document?** A title page in a LaTeX document can be created using the \maketitle command, which generates a title page based on the values specified using \title, \author, and \date commands in the preamble.
35. **What is the purpose of the \phantom command in LaTeX?** The \phantom command in LaTeX is used to reserve horizontal or vertical space without producing any visible content. It is often used for aligning mathematical expressions or creating spacing around certain elements.
36. **How do you create a table of contents with different depth levels in LaTeX?** To create a table of contents with different depth levels in LaTeX, you can use the \setcounter{tocdepth}{level} command, where level is the desired depth level (e.g., 2 for including sections and subsections).
37. **What is the purpose of the \renewcommand command in LaTeX?** The \renewcommand command in LaTeX is used to redefine an existing command or environment with new behavior or formatting. This can be useful for customizing the appearance or functionality of certain elements in the document.
38. **How do you create a verbatim environment in LaTeX?** A verbatim environment in LaTeX is created using the verbatim environment from the verbatim package. It allows you to include code or text exactly as it appears, preserving spaces, indentation, and special characters.
39. **What is the purpose of the \today command in LaTeX?** The \today command in LaTeX is used to insert the current date into the document. It is commonly used in conjunction with the \date command in the preamble to automatically update the date on each compilation.
40. **How do you create a list of abbreviations in LaTeX?** A list of abbreviations in LaTeX can be created using the glossaries package. The \newacronym command is used to define abbreviations, and the \printglossary command generates the list of abbreviations.

41. **What is the purpose of the \protect command in LaTeX?** The \protect command in LaTeX is used to prevent the expansion or interpretation of a command or character sequence in certain contexts, such as within a moving argument or a macro definition.
42. **How do you create a table of contents with hyperlinks in LaTeX?** To create a table of contents with hyperlinks in LaTeX, you need to use the hyperref package. The \tableofcontents command will automatically generate hyperlinks for each section when the hyperref package is loaded.
43. **What is the purpose of the \InputIfFileExists command in LaTeX?** The \InputIfFileExists command in LaTeX is used to input the contents of a file conditionally based on whether the file exists or not. If the file exists, its contents are included; otherwise, no action is taken.
44. **How do you create a glossary in a LaTeX document?** A glossary in a LaTeX document can be created using the glossaries package. The \newglossaryentry command is used to define glossary entries, and the \printglossary command generates the glossary list.
45. **What is the purpose of the \enlargethispage command in LaTeX?** The \enlargethispage command in LaTeX is used to adjust the length of the current page by a specified amount. It can be useful for preventing page breaks or ensuring that certain content appears on the same page.
46. **How do you create a list of figures or tables with captions in LaTeX?** To create a list of figures or tables with captions in LaTeX, you need to use the \caption command within the figure or table environment. The \listoffigures or \listoftables command will then include the captions in the respective list.
47. **What is the purpose of the \usepackage[utf8]{inputenc} command in LaTeX?** The \usepackage[utf8]{inputenc} command in LaTeX is used to specify the input encoding of the LaTeX source file. The utf8 option allows you to use Unicode characters directly in the source code.
48. **How do you create a landscape environment in LaTeX?** A landscape environment in LaTeX can be created using the pdflscape package. The \begin{landscape} and \end{landscape} commands define the landscape environment, within which the content will be rotated and typeset in landscape orientation.
49. **What is the purpose of the \fbox command in LaTeX?** The \fbox command in LaTeX is used to draw a frame or box around its argument. It can be useful for highlighting or emphasizing certain text or elements in the document.
50. **How do you create a custom environment in LaTeX?** A custom environment in LaTeX can be created using the \newenvironment command. This command allows you to define a new environment with custom behavior, such as formatting or content manipulation.