Lab Manual

Technical Writing using LaTeX

Semester IV

Course Code BCSL456D

Teaching Hours/Week - 2

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.

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	65	55	59

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/algorithm library

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

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.

Problem Description : The aim of this LaTeX script is to create a basic document structure consisting of two sections, each containing a paragraph of dummy text. Additionally, the script includes a custom header displaying the title of the document and a footer displaying the institute name along with the page number.

Code with comments *

```
\documentclass{article}
\usepackage{graphicx} % Required for inserting images
\usepackage{fancyhdr} % For custom headers and footers

% Define header and footer
\pagestyle{fancy}
\fancyhf{}
\lhead{Basic Program}
\rfoot{CMRIT \thepage}

\title{Technical Writing using LaTeX}
\author{Ms Lynsha Helena\\ Pratheeba HP\\ Ms Attar Sheetal\\ Ms Smitha N\\
Dr. Debasmita}
\date{April 2024}

\begin{document}
```

·   \maketitle

\section{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

\section{Program 2}
Develop a LaTeX script to create a document that displays the sample Abstract/Summary

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

\section{Course outcomes (Course Skill Set):}
Apply basic LaTeX command to develop simple document\\
Develop LaTeX script to present the tables and figures in the document\\
Illustrate LaTeX script to present theorems and mathematical equations in the document\\
Develop programs to generate the complete report with citations and a bibliography\\
Illustrate the use of Tikz and algorithm libraries to design graphics and algorithms in the document

\end{document}

Output: Is a pdf doc
https://drive.google.com/file/d/15Ql3dZi7GITwMlpvRTfEz44n07h_P0fM/view?usp=sharing

Learning Outcome: In this Program \pagestyle{fancy} ,\usepackage{fancyhdr} ,\lhead,\rfoot usage is learnt .Using which a simple document is generated with multiple sections.

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

Problem Description In this script a document is created with sample Abstract/Summary using documentclass[10pt,a4paper]{article} \usepackage[left=3cm,right=3cm,top=2cm,bottom=2cm]{geometry}

What is abstract?

An **abstract** is a brief summary of a research paper that provides an overview of its key points, including the **problem statement, methodology, results, and conclusion**. It helps readers quickly determine the relevance of the paper to their interests.

Code

```
\documentclass[10pt,a4paper]{article}
\usepackage[left=3cm,right=3cm,top=2cm,bottom=2cm]{geometry}

\begin{document}
\thispagestyle{plain}

\begin{center}
        \Large
        \textbf{Thesis Title}

        \vspace{0.4cm}
        \large
        Thesis Subtitle

        \vspace{0.4cm}
        \textbf{Author Name}

        \vspace{0.9cm}
```

```
                    \textbf{Abstract}
            \end{center}
%\lipsum[1]
```

News has become an important medium for everyone to stay aware and updated with the latest happenings in the world. It is important to note that in recent times with the rise in social media the amount of fake news has surged to dangerous levels. Fake news causes a lot of economic and social problems. It also gets difficult to trace back the source of fake news and hold someone accountable in order to curb it down. It is important to have a mechanism which evicts fake news and contains only authentic news.

Fake news causes a lot of economic and social problems. It also gets difficult to trace back the source of fake news and hold someone accountable in order to curb it down. It is important to have a mechanism whichevicts out fake news and contains only authentic news. With digitization, there has been a drastic increase in the usage of some of the popular social media sites such as Twitter, Facebook, Yahoo, YouTube as a medium of spreading news. There is very little check on the spreading of fake news. Accountability, in terms of how authentic the news is, is very less.

Our project aims to create a platform that runs on a blockchain network. News based media will be shared across this network. The origin of data and every user interaction will be recorded and get updated in the decentralized ledger and since it is in the blockchain, it remains immutable and nearly immune to any cyber threat.

The platform will be highly intuitive and interactive for users to browse through different sections of news. Users can view articles, blogs, headlines and other news-based content. Users can also push their own content on the network. The platform also allows the users to manually rate a piece of news based on its authenticity.
```
\end{document}
```

Output : Is a pdf
https://drive.google.com/file/d/1bMYfmq1e2CafzWCPK4RN-VnMQhQ5ZMrA/view?usp=sharing

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

Code :

```
\documentclass{article}
\usepackage{titling} % Load the titling package for the titlingpage environment
\usepackage{graphicx}
\usepackage{xcolor}

\newlength{\toptafiddle}
\setlength{\toptafiddle}{1in} % Adjust the value as needed
\newlength{\bottafiddle}
\setlength{\bottafiddle}{1in} % Adjust the value as needed

\begin{document}

\begin{titlingpage}

\thispagestyle{empty}
\centering

\setlength{\toptafiddle}{1in}
\setlength{\bottafiddle}{1in}

\vspace*{-0.75in}
\enlargethispage{\toptafiddle}

\begin{LARGE}
\textbf{CMR Institute of Technology, Bengaluru}\\
\end{LARGE}

\begin{small}
(An Autonomous institution affiliated to Visvesvaraya Technological University,
Belagavi,\\ Approved by AICTE, New Delhi, Accredited by NAAC++ )
\end{small}
```

```
    \begin{figure}[h]
   \centering
   \includegraphics[height=4cm]{
vtu.jpeg}
\end{figure}

\vfill
\Large{\textbf{\textcolor{blue}{Title: ABCD }}}\\
\vfill

\begin{small}
A project report submitted to \\Visvesvaraya Technological University. Belgaum,
Karnataka \\
\textit{in the partial fulfillment of the requirements for the award of degree of} \\
\end{small}
\begin{normalsize}
\textbf{\textit{Bachelor of Engineering }} \\
in \\
\textbf{\textit{Computer Science and Engineering}} \\
by \\
\end{normalsize}
\vfill
\begin{tabular}{ccc}
\textbf{Student-1 }&  & \textbf{1CR12CS001}\\
\textbf{Student-2 }&  & \textbf{1CR12CS002}\\
\textbf{Student-3 }&  & \textbf{1CR12CS003}\\
\textbf{Student-4 }&  & \textbf{1CR12CS004}\\
\end{tabular}
\vfill

{\normalsize Under the guidance of}\\
\Large{\textbf{Prof. ABC}}\\
Assistant Professor\\
\vfill
\begin{figure}[h]
   \centering
   \includegraphics[height=3cm]{CMRIT.png}
\end{figure}
```

```
        \textbf{Department of Computer Science \&
        Engineering}\\
{\normalsize (Program Accredited by NBA)} \\
\textbf{CMR Institute of Technology}\\

\begin{normalsize}
Sri Nivasa Reddy Layout, AECS Layout, Marathahalli, Bengaluru, Karnataka
560037\\
Web : www.cmrit.ac.in \\
\end{normalsize}

\textbf{May, 2024}

\end{titlingpage}

\end{document}
```

Output :-
https://drive.google.com/file/d/15RN9oTBvfsM4igP-AWPI3lY3qdBQChwx/view?usp=sharing

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

Code :

```
\documentclass{article}
\usepackage{titling}
\usepackage{graphicx}
\newlength{\toptafiddle}
\setlength{\toptafiddle}{1in}
\newlength{\bottafiddle}
\setlength{\bottafiddle}{1in}
\begin{document}
\begin{titlingpage}
\thispagestyle{empty}
\setlength{\toptafiddle}{1in}
\setlength{\bottafiddle}{1in}
\vspace*{-0.75in}
\enlargethispage{\toptafiddle}
\begin{center}
\begin{Large}
\textbf{Department of Computer Science and Engineering} \\
\end{Large}
\begin{Large}
\textbf{CMR Institute of Technology, Bengaluru}\\
\end{Large}
%\hspace{0.1cm}\\
\begin{small}
(An Autonomous institution affiliated to Visvesvaraya Technological University,
Belagavi,\\ Approved by AICTE, New Delhi, Accredited by NAAC A++)
\end{small}
\vspace{0.2cm}
\begin{figure}[h]
        \centering
        \includegraphics[height=3cm]{vtu.jpeg}
        \hspace{0.1\textwidth}
        \includegraphics[height=3.7cm]{CMRIT.png}
\end{figure}
```

        \Large\textbf{CERTIFICATE}
        \end{center}

\begin{normalsize}
This is to certify that the Project Report entitled \textbf{"My Final year Project title"} is a bonafide work carried out by \textbf{Student-1(1SI23CS001)}, \textbf{Student-2(1SI23CS002)}, \textbf{Student-3(1SI23CS003)} and \textbf{Student-4(1SI23CS004)} in the partial fulfillment of the requirement for the award of the degree of Bachelor of Engineering in Computer Science and Engineering, Visvesvaraya Technological University, Belagavi during the year 20XX-XX. It is certified that all corrections/suggestions indicated for the internal assessments have been incorporated in the report.The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelor of Engineering Degree.
\end{normalsize}
\vfill
\vfill
\vfill

\begin{table}[h!]
\centering
\begin{tabular} {cccccccccc}
...................................&&&&&&&&& ....\\
\textbf{{\footnotesize Guide}} &&&&&&&&&\textbf{{\footnotesize Head of the Department}}\\
\textbf{Prof. Smitha}&&&&&&&&& \textbf{Dr. Kavitha P} \\
\textbf{{\footnotesize Assistant Professor}} &&&&&&&&&
\textbf{{\footnotesize Associate Professor}}\\
\textbf{{\footnotesize Dept of CSE, CMRIT}} &&&&&&&&&
\textbf{{\footnotesize Dept of CSE, CMRIT}}\\
\\
\\

\end{tabular}

\end{table}
Name of the Examiners   \hfill   Signature with Date
\begin{small}
\begin{enumerate}

```
        \item Prof.
        \item Prof.
\end{enumerate}
\end{small}
\end{titlingpage}
\end{document}
```

Output :-

https://drive.google.com/file/d/1LcqyJCifUN6dYwSaE1qC2QwkKXW6h-h-/view?usp=sharing

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	65	55	59

Code:

```
\documentclass{article}

\usepackage{tabularx}

\begin{document}

\section*{Student Marks}

\begin{table}[htbp]

    \centering

    \caption{Student Marks Table}

    \label{tab:student-marks}
```

```
\begin{tabularx} {\textwidth} {|c|c|X|c|c|c|}

\hline

Sno & USN & Student Name & \multicolumn{3}{c|}{Marks} \\

\cline{4-6}

&&& Subject1 & Subject2 & Subject3 \\

\hline

    1 & 4XX22XX001 & Name 1 & 89 & 60 & 90 \\

\hline

2 & 4XX22XX002 & Name 2 & 78 & 45 & 98 \\

\hline

3 & 4XX22XX003 & Name 3 & 65 & 55 & 59 \\

\hline

\end{tabularx}
\end{table}
\end{document}
```

Output :-
https://drive.google.com/file/d/1IzVDxejYraukkON8zj9HpTiK0SoTRJxQ/view?usp=sharing

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

```
CODE:
\documentclass{article}
\usepackage{caption}
\usepackage{subcaption}
\usepackage{tikz}
\begin{document}
\begin{center}
        \Large
        \textbf{LATEX LAB}

        \vspace{0.4cm}
        \large
        Information about college

        \vspace{0.4cm}
        \textbf{SHEETAL \\ SMITHA}

        \vspace{0.9cm}
        \textbf{Figures using subgraph concept}
\end{center}

\begin{figure}[h]

\begin{subfigure}{0.6\textwidth}
\includegraphics[width=0.8\linewidth, height=6cm]{p3.jpeg}
\caption{Caption1}
\label{fig:subim1}
\end{subfigure}
\begin{subfigure}{0.6\textwidth}
\includegraphics[width=0.8\linewidth, height=6cm]{cmrit.png}
\caption{Caption 2}
\label{fig:subim2}

\end{subfigure}
\caption{Caption for this figure with two images}
\label{fig:image2}
\end{figure}
\end {document}
```
Output: https://drive.google.com/file/d/1gtpD8qyIS5iVfc_Ibe22RQVQuxU7XZKc/view

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

\documentclass{article}

\usepackage{amsmath} % for mathematical symbols and equations

\title{Sample Article}

\author{Debasmita}

\date{\today}

\begin{document}

\maketitle

\section{First Equation}

This is the introduction to write the equations using latex.The quadratic formula is given by

\begin{equation}

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

\end{equation}

\begin{equation}

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

\end{equation}

\begin{equation}

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

\end{equation}

where \(a \), \(b \), and \(c \) are coefficients of the quadratic equation \(ax^2 + bx + c =

0 \).

\section{Second Equation}

This is the second equation written using latex.

This is the second equation written using latex.

Sine and Cosine function

\begin{equation}

\sin^2(x)+\cos^2(x) =1

\end{equation}

\end{document}

Output:https://drive.google.com/file/d/1Oa2ZCpwIsp0IxVwGnQAePzEoPTZRdXFw/view

Sample Article

Debasmita

May 7, 2024

1 First Equation

This is the introduction to write the equations using latex. The quadratic formula is given by

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

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

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

where a, b, and c are coefficients of the quadratic equation $ax^2 + bx + c = 0$.

2 Second Equation

This is the second equation written using latex.

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

$$= \sum_{\pi \epsilon C_\sigma t} sgn(\sigma^{-1}\pi\sigma)\varphi_\sigma^\lambda \varphi_{\sigma^{-1}\pi\sigma}^\lambda$$

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

https://drive.google.com/file/d/1zCE9DhOy1SgIw8ll3KqdZciCtRsVKm8-/view?usp=sharing

```
\documentclass[10pt,a4paper]{article}

\usepackage[utf8]{inputenc}

\usepackage{amsmath,nccmath}

\usepackage{amsfonts}

\usepackage{amssymb}

\usepackage[left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}

\begin{document}


\begin{center}

\Large{\textbf{Equations in \LaTeX}}

\end{center}


\section*{Equation 1}


%\begin{eqnarray}

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

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

%\end{eqnarray}


\begin{fleqn}

\[

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}

\]

\end{fleqn}

\section*{Equation 2}

\begin{fleqn}

\[

\varphi^{\lambda}_{\sigma}A_{t} = \sum_{\pi \in C_{t}}
sgn(\pi)\varphi^{\lambda}_{\sigma}\varphi^{\lambda}_{\pi}

\]

\[

= \sum_{\tau \in C_{\sigma t}}
sgn(\sigma^{-1}\tau\sigma)\varphi^{\lambda}_{\sigma}\varphi^{\lambda}_{\sigma^{-1}\tau\sigma}

\]

\[

= A_{\sigma t} \varphi^{\lambda}_{\sigma}

\]

```
            \end{fleqn}

\end{document}
```

Output :-

Equations in LaTeX

Equation 1

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

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

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

Equation 2

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

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

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

8. Develop a LaTeX script to demonstrate the presentation of Numbered theorems, definitions, corollaries, and lemmas in the document.

```
\documentclass{article}

\usepackage[english]{babel}

\newtheorem{theorem}{Theorem}[section]

\newtheorem{corollary}{Corollary}[theorem]

\newtheorem{lemma}[theorem]{Lemma}


\begin{document}

\section{Introduction}

Theorems can easily be defined:


\begin{theorem}

Let \(f\) be a function whose derivative exists in every point, then \(f\) is

a continuous function.

\end{theorem}

\begin{theorem}[pythagorean theorem]

\label{pythagorean}

This is a theorem about right triangles and can be summarized in the next

equation

\[ x^2 + y^2 = z^2 \]

\end{theorem}

And a consequence of theorem \ref{pythagorean} is the statement in the next

corollary.
```

\begin{corollary}

There's no right rectangle whose sides measure 3cm, 4cm, and 6cm.

\end{corollary}

You can reference theorems such as \ref{pythagorean} when a label is assigned.

\begin{lemma}

Given two line segments whose lengths are \(a\) and \(b\) respectively there is a

real number \(r\) such that \(b=ra\).

\end{lemma}

\end{document}

Output:https://drive.google.com/file/d/17MMpLQqCZrVr9NBOdKzWPqWhZKhdp XWf/view?usp=sharing

1 Introduction

Theorems can easily be defined:

Theorem 1.1 *Let f be a function whose derivative exists in every point, then f is a continuous function.*

Theorem 1.2 (Pythagorean theorem) *This is a theorem about right triangles and can be summarised in the next equation*

$$x^2 + y^2 = z^2$$

And a consequence of theorem 1.2 is the statement in the next corollary.

Corollary 1.2.1 *There's no right rectangle whose sides measure 3cm, 4cm, and 6cm.*

You can reference theorems such as 1.2 when a label is assigned.

Lemma 1.3 *Given two line segments whose lengths are a and b respectively there is a real number r such that b = ra.*

---

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

Code

Step 1: Create a file Prg9.tex

Step 2: Code:

\documentclass{article}

\usepackage{natbib}

\begin{document}

\title{Advancing Parkinson's Detection through Intelligent Algorithms}

\author{Lynsha Helena PratheebaH P, Christoph Benlian Jeshan}

\date{\today}

\maketitle

\section*{Introduction}

Parkinson's disease is a neurological condition thatworsens with time and causes signs that are both motor andnon-motor, making early and accurate detection crucial foreffective management. Recent advancements in artificialintelligence, particularly Conventional Neural Networks(CNN), have paved the way for innovative approaches inParkinson's disease detection. This introduction provides anoverview of how CNN algorithms are being employed toenhance accuracy and efficiency of PD methods. \citep{Kaplanie, Ferate, Doogan}.They used MRI images to classify Parkinson's disease symptoms using a unique approach \citep{Gazdae, Drotear}. CNNs and other deep learning algorithms have demonstrated better accuracy in categorization tasks \citep{turing1936, shannon1948}. Nullam non fermentum nulla \citep{witten1999, hinton2006}.

\section*{}

\bibliographystyle{plainnat}

\bibliography{references}

\end{document}

Step 3: Create another file references.bib in the same directory

Step 4: Code to access:

@article{Kaplanie,

author = {Kaplanie, E. Altunisek,},

title = {``Novel nesteds patch-based features extraction models for

```
        automated Parkinson's diseases symptom classifications
        using MRI image},

        journal = {Compute. Method Programe Biome},

        volume = {225},

        number = {10},

        pages = {891--921},

        year = {2022}

}

@article{Ferate,

        author = {Y. E. Ferate},

        title = {"Ensembles of convolutional

neural networks for Parkinson's diseases diagnoses from offline

handwritings,"},

        journal = {Compu. Method Programe Biome},

        volume = {225},

        number = {10},

        pages = {891--921},

        year = {2022}

}
```

Output:

Advancing Parkinson's Detection through Intelligent Algorithms

Lynsha Helena PratheebaH P, Christoph Benlian Jeshan

May 6, 2024

Introduction

Parkinson's disease is a neurological condition that worsens with time and causes signs that are both motor and non-motor, making early and accurate detection crucial for effective management. Recent advancements in artificial intelligence, particularly Conventional Neural Networks (CNN), have paved the way for innovative approaches in Parkinson's disease detection. This introduction provides an overview of how CNN algorithms are being employed to enhance accuracy and efficiency of PD methods. [Kaplanic, 2022, Ferate, 2022b,a].They used MRI images to classify Parkinson's disease symptoms using a unique approach [?Knuth, 1984]. CNNs and other deep learning algorithms have demonstrated better accuracy in categorization tasks, especially when dealing with photos [??]. Nullam non fermentum nulla [??].

This introduction provides an overview of how CNN algorithms are being employed to enhance accuracy and efficiency of PD methods. [?Ferate, 2022b,a].They used MRI images to classify Parkinson's disease symptoms using a unique approach [?Knuth, 1984]. CNNs and other deep learning algorithms have demonstrated better accuracy in categorization tasks, especially when dealing with photos [??]. Nullam non fermentum nulla [??].

References

Y. E. Ferate. "handwritten of dynamics assessments through convolutional neural networks: An applications to parkinson's diseases identification,". *Compute. Method Programe Biome*, 225(10):891–921, 2022a.

Y. E. Ferate. "ensembles of convolutional neural networks for parkinson's diseases diagnoses from offline handwritings,". *Compu. Method Programe Biome*, 225(10):891–921, 2022b.

---

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

---

CODE:

```
\documentclass{article}

\usepackage{tikz-qtree}

\begin{document}

\tikzset{every tree node/.style={minimum width=2em,draw,circle},

blank/.style={draw=none},

edge from parent/.style=
```

{draw,edge from parent path={(\tikzparentnode) --
(\tikzchildnode)}},

level distance=1.5cm}

\begin{tikzpicture}

\Tree

[.a

[.b]

[.c

\edge[blank]; \node[blank]{};

\edge[]; [.d

\edge[]; {e}

\edge[blank]; \node[blank]{};

]

]

]

\end{tikzpicture}

\end{document}

11.Develop a LaTeX script to present an algorithm in the document using algorithm/algorithmic/algorithm library

\documentclass[10pt,a4paper]{article}

\usepackage[utf8]{inputenc}

\usepackage{amsmath}

\usepackage{amsfonts}

\usepackage{amssymb}

\usepackage{algorithm2e}

\usepackage[left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}

\begin{document}

\section*{Floyd's Algorithm}

Algorithm to find solution to All-Pairs Shortest-Paths Problem

\SetKwComment{Comment}{// }{ }

\vspace{1cm}

\begin{algorithm}[H]

\caption{Floyd(W [1..n, 1..n])}

\SetAlgoLined

\DontPrintSemicolon

\KwIn{The weight matrix W of a graph having vertices [1..n]}

\KwOut{The distance matrix D of the shortest paths' lengths between every pair of vertices [1..n]}

D $\gets$ W \Comment*[r]{initially copy the weight matrix into distance matrix}

\For{$k \gets 1$ to n}{

\For{$i \gets 1$ to n}{

\For{$j \gets 1$ to n}{

$D[i,j]$ $\gets$ min\lbrace D[i,j], D[i,k] + D[k,j]\rbrace$

}

}

}

\Return{D}\;

\end{algorithm}

\end{document}

---

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

Report

```
\documentclass{report}

\usepackage{graphicx}
```

\title{Sample Report}

\author{Your Name}

\date{\today}

\begin{document}

\maketitle

\tableofcontents

\chapter{Introduction}

This is the introduction of the report.

\section{Background}

This is the background section.

\chapter{Methodology}

This is the methodology section.

\section{Data Collection}

This is the data collection subsection.

\subsection{Survey}

This is the survey subsection.

\chapter{Results}

This is the results section.

\begin{figure}[h]

\centering

\caption{Sample Figure}

\label{fig:sample}

\includegraphics[width=0.5\textwidth]{img1.png}

```
        \end{figure}

        \begin{table}[h]

    \centering

    \caption{Sample Table}

    \label{tab:sample}

    \begin{tabular}{|c|c|}

    \hline

    A & B \\

    \hline

    1 & 2 \\

    \hline

    \end{tabular}

\end{table}

\chapter{Conclusion}

This is the conclusion of the report.

\bibliographystyle{plain}

\bibliography{references}

\end{document}
```

Article

```
\documentclass{article}

\title{Sample Article}

\author{Your Name}

\date{\today}

\begin{document}

\maketitle
```

\begin{abstract}

This is the abstract of the article.

\end{abstract}

\section{Introduction}

This is the introduction of the article.

\section{Background}

This is the background section.

\subsection{Related Work}

This is the related work subsection.

\section{Methodology}

This is the methodology section.

\subsection{Data Collection}

This is the data collection subsection.

\section{Results}

This is the results section.

\section{Conclusion}

This is the conclusion of the article.

\begin{thebibliography}{9}

\bibitem{example}

Author, A. (Year). Title of the article. \textit{Journal Name}, \textit{Volume}(Issue), Page numbers.

\end{thebibliography}

\end{document} \documentclass{article}

\title{Sample Article}

\author{Your Name}

\date{\today}

\begin{document}

\maketitle

\begin{abstract}

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\begin{thebibliography}{9}

\bibitem{example}

Author, A. (Year). Title of the article. \textit{Journal Name}, \textit{Volume}(Issue), Page numbers.

\end{thebibliography}

\end{document}

Output:

Article:

Sample Article

Your Name

May 6, 2024

Abstract

This is the abstract of the article.

1 Introduction

This is the introduction of the article.

2 Background

This is the background section.

2.1 Related Work

This is the related work subsection.

3 Methodology

This is the methodology section.

3.1 Data Collection

This is the data collection subsection.

4 Results

Report:

Contents

1

Chapter 1

Introduction

This is the introduction of the report.

1.1 Background

This is the background section.