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.

```
\documentclass[12pt,a4paper]{article}
\usepackage[left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}
\usepackage{fancyhdr}
\begin{document}
% Set the page style to "fancy"...
\pagestyle{fancy}
\title{GMIT Project}
\fancyhf{} % clear existing header/footer entries
% We don't need to specify the O coordinate
\fancyhead{} % clear all header fields
\fancyhead[R]{GMIT Project}
\fancyfoot{}  % clear all footer fields
\fancyfoot[LO,CE]{GM Institute of Technology}
\fancyfoot[R]{\thepage}
\maketitle
\section{What is GMIT?}
GMIT - GM Institute of Technology offers courses in Electronics and Communication Engineering, Mechanical Engineering, Robotics Engineering, Electrical Engineering, Computer Science Engineering, Information Technology, Civil Engineering, and Biotechnology Engineering.
\section{More about GMIT}
GM Institute of Technology is a well-established Hi-Tech Engineering Institute established in the Academic year 2001-02, National Highway No 4, 265 Km away from Bangalore. The campus is spread over 54 acres of lush green land with well planned monolithic buildings and state-of-the-art infrastructure. \\

The Institution is approved by AICTE – New Delhi and affiliated to Visvesvaraya Technological University (VTU), Belagavi with the Karnataka State Government
```

approval. Institution also has ISO 9001:2015 certification from TUV Nord. To meet the expectations of the Society, 04 programs, Computer Science and Engineering, Electronics and Communication Engineering, Civil Engineering and Mechanical Engineering have been accredited by NBA for the period of three Years. In addition to the above the Institute also has NAAC Certificate for the period of 5 years. The institution is also having 2(f) and 12(B) certificate for research purpose.\\
To bridge the gap between Industry and Institution, we at GMIT are participating every year in the AICTE – CII survey to establish the industry interaction and proud to inform you that the institution is receiving Gold rating every year.
\section{Program Offered}
It is offering 9 UG Engineering Programs namely; \\
• Computer Science and Engineering\\
• Information Science and Engineering\\
• Artificial Intelligence and Machine Learning\\
• Electronics and Communication Engineering\\
• Electrical and Electronics Engineering\\
• Robotics and Automation Engineering\\
• Mechanical Engineering\\
• Civil Engineering\\
• Bio-Technology \\
\section{Vision}
\textbf{Free software means the users have the freedom to run, copy, distribute, study, change and improve the software.}
To develop technologically competent, humane and socially responsible engineers and managers to meet the ever growing challenges of the Global Environment
\begin{itemize}
\item The freedom to run the program as you wish, for any purpose (freedom 0).
\item The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
\item The freedom to redistribute copies so you can help others (freedom 2).

\item The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this. Developments in technology and network use have made these freedoms even more important now than they were in 1983. Nowadays the free software movement goes far beyond developing the GNU system.
\end{itemize}
\end{document}

Explanation

The statement **\documentclass[12pt,a4paper]{article}** is the first line of a LaTeX document. It defines the type of document you're creating and sets some basic formatting options. Let's break it down:

- **\documentclass**: This command specifies the type of document you're creating. In this case, it's an article. Other common document classes include **report**, **book**, **letter**, etc.
- **[12pt]**: This option sets the base font size to 12 points. You can adjust this number to change the font size of the entire document.
- **[a4paper]**: This option sets the paper size to A4. Other common paper sizes include **letter**, **legal**, **a5**, etc.

This line **\usepackage[left=2cm, right=2cm, top=2cm, bottom=2cm]{geometry}** is another command in LaTeX that's used to customize the page layout using the **geometry** package. Here's what each part means:

- **\usepackage**: This command is used to include external packages in your LaTeX document. In this case, you're including the **geometry** package, which allows you to customize the page layout.
- **[left=2cm,right=2cm,top=2cm,bottom=2cm]**: These options specify the margins of the document. The values **2cm** indicate that the left, right, top, and bottom margins are all set to 2 centimeters. You can adjust these values to change the margin sizes as needed.

The line **\usepackage{fancyhdr}** is another LaTeX command that includes the **fancyhdr** package in your document. The **fancyhdr** package allows you to customize the headers and

footers of your document.

Once you include this package, you can use commands provided by **fancyhdr** to set headers and footers with custom content, such as page numbers, section titles, or other text.

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

```
\documentclass[12pt,a4paper]{article}
\usepackage[left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}
\usepackage{blindtext} % For generating placeholder text
\title{Sample Document with Abstract}
\author{Dr. Neelambnike S}
\date{\today}
\begin{document}
\maketitle
\begin{abstract}
\blindtext % Generate a paragraph of placeholder text for the abstract
\end{abstract}
\section{Introduction}
\blindtext % Generate some placeholder text for the introduction
\section{Methodology}
\blindtext % Generate some placeholder text for the methodology section
\section{Results}
\blindtext % Generate some placeholder text for the results section
\section{Conclusion}
\blindtext % Generate some placeholder text for the conclusion section
\end{document}
```

Explanation

- `\documentclass`: Specifies the type of document. Here, `article` is chosen, which is suitable for short to medium-length documents.
- `[12pt]`: Sets the base font size to 12 points.

- `[a4paper]`: Sets the paper size to A4.
- `\usepackage`: Loads the `geometry` package, which allows customizing page margins.
- `left=2cm,right=2cm,top=2cm,bottom=2cm`: Sets all margins to 2 cm.
- `\usepackage`: Loads the `blindtext` package, which provides commands for generating placeholder text.
- `\title`: Sets the title of the document.
- `\author`: Sets the author(s) of the document.
- `\date`: Sets the date. Here, `\today` inserts the current date automatically.
- `\begin{document}` and `\end{document}`: These commands enclose the main content of the document.
- `\maketitle`: Generates the title, author, and date based on the information provided earlier.
- `\begin{abstract}` and `\end{abstract}`: These commands define the abstract environment.
- `\blindtext`: Generates a paragraph of placeholder text. This is useful for drafting the abstract.
- `\section`: Starts a new section with the heading "Introduction".
- `\blindtext`: Generates placeholder text for the introduction section.
- Similarly, `\section` starts new sections for "Methodology", "Results", and "Conclusion", each followed by `\blindtext` to generate placeholder content.

1. Title, Author, and Date: Set at the beginning using `\title`, `\author`, and `\date`.
2. Abstract: Summarizes the main points of the paper using the `abstract` environment.
3. Sections: Divides the paper into structured sections (`\section`) such as Introduction, Methodology, Results, and Conclusion.
4. Placeholder Text: Utilizes `\blindtext` from the `blindtext` package to fill in temporary content, which can be replaced with actual text when writing the document.

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

```
\documentclass[12pt,a4paper]{article}
\usepackage[left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}
\usepackage{graphicx}
\usepackage{setspace}
\begin{document}
\begin{titlepage}
   \centering
   \includegraphics[width=0.5\textwidth]{vtu_logo.jpeg}\par\vspace{1cm}
   {\scshape\Large Visvesvaraya Technological University \par}
   \vspace{1cm}
   {\scshape\Large Project Report\par}
   \vspace{1.5cm}
   {\huge\bfseries Title of the Project\par}
   \vspace{2cm}
   {\Large\itshape Your Name\par}
   \vfill
   Guide: \par
   Dr.~Guide's \textsc{Name}
      \vfill
% Bottom of the page
   {\large \today\par}
\end{titlepage}
\end{document}
```

Explanation

- `\documentclass`: Specifies the type of document. Here, `article` is chosen, suitable

for shorter documents.

- `[12pt]`: Sets the base font size to 12 points.
- `[a4paper]`: Sets the paper size to A4.
- `\usepackage`: Loads the `geometry` package for customizing page layout.
- `left=2cm,right=2cm,top=2cm,bottom=2cm`: Sets margins to 2 cm on all sides.
- `\usepackage`: Loads the `graphicx` package, which allows including graphics.
- This will be used to insert an image of the VTU logo.
- `\usepackage`: Loads the `setspace` package, which provides commands for changing the line spacing.
- Useful for adjusting spacing in the title page.

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

Front.tex

```
% Memoir is more versatile than other document classes like article, report, book etc,
\documentclass[11pt,a4paper,oneside]{memoir}
% To handle image, like scaling
\usepackage{graphicx}
\usepackage[english]{babel}
% Used for modifying page layout
\usepackage[a4paper,right=1in]{geometry}
% For referencing contents,figure,table...
\usepackage[hidelinks]{hyperref}
% For including source code
\usepackage{listings}
% For using text colors
\usepackage{color}
% To attach pdf files
\usepackage{pdfpages}
% Document starts here
\begin{document}
```

```
\newlength{\toptafiddle}
\newlength{\bottafiddle}
\definecolor{therablue}{RGB}{41, 134, 230}
%\include{Title} % Include Title Page, (i.e. title.tex)
% Page layout according to VTU specification
% Right: 1.25in, Left: 1in, Top & Bottom: 0.75in in each page
\setlength{\oddsidemargin}{0.25in} % Left side margin {1in by default + 0.25in}
% Header specification
\setlength{\headheight}{\onelineskip}
\setlength{\headsep}{6pt}
\setlength{\topmargin}{-0.25in}
% Footer specification
\setlength{\footskip}{\onelineskip}
\setlength{\footnotesep}{\onelineskip}
% A4 paper height = 11.69in
% thus 11.69in - 9.67in - 1in (top + header) is approx 0.75in left for bottom
\setlength{\textheight}{9.67in}
\brokenpenalty=10000 % Disallow page breaks at hyphens
\OnehalfSpacing % Line Spacing set to 1.5
%\pagenumbering{roman}
\include{Certificate}
\pagestyle{plain}
\end{document}
```

Certificate.tex

```
\thispagestyle{empty}
\setlength{\toptafiddle}{1in}
\setlength{\bottafiddle}{1in}
\vspace*{-0.75in}
\enlargethispage{\toptafiddle}
\begin{center}
```

```
\begin{Large}
\textbf{Department of Information Science and Engineering} \\
\end{Large}
\begin{Large}
\textbf{GM Institute of Technology, Davanagere}\\
\end{Large}
%\hspace{0.1cm}\\
\begin{small}
(Affiliated to VTU Belagavi, Approved by AICTE, New Delhi & Govt. of Karnataka) Phone:
08192-252560,233377, 252777, Tel/Fax: 08192 233344)
\end{small}
\vspace{0.2cm}
\begin{figure}[h]
   \centering
   \includegraphics[height=4cm]{images/vtu.png}
   \hspace{0.1\textwidth}
   \includegraphics[height=3.7cm]{P04/images/gmit.png}
\end{figure}
\Huge{Certificate}
\end{center}
\begin{large}
This is to certify that the Project Report entitled
\textbf{"My Wonderful Project"}
is a bonafide work carried out by
\textbf{Student-1(4GM22IS027)},
\textbf{Student-2(4GM22IS028)},
\textbf{Student-3(4GM22IS029)}
and
\textbf{Student-4(4GM22IS030)}
in the partial fulfillment of the requirement for the award of
the degree of Bachelor of Engineering in Information Science and Engineering,
```

Visvesvaraya Technological University, Belagavi during the year 20XX-XX.
It is certified that all corrections/suggestions indicated for the internal assessment 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{large}
\vfill
\vfill
\vfill
\begin{table}[h!]
\centering
\begin{tabular}{ccccccccc}
.....&&&&&&&&& .....\\
\textbf{{\footnotesize Guide}} &&&&&&&&&\textbf{{\footnotesize Project Coordinator}}\\
\textbf{Dr. Neelambike S}&&&&&&&&& \textbf{Dr. Neelambike S} \\
\textbf{{\footnotesize Asso. Professor}} &&&&&&&&& \textbf{{\footnotesize Asso. Professor}}\\
\textbf{{\footnotesize Dept of ISE, GMIT}} &&&&&&&&& \textbf{{\footnotesize Dept of ISE, GMIT}}\\
\\
\\
.....&&&&&&&&& .....\\
\textbf{Dr. VGS } &&&&&&&&& \textbf{Dr. Sanjay Pande M B} \\
\textbf{{\footnotesize Professor and Head}} &&&&&&&&& \textbf{{\footnotesize Principal}}
\\
\textbf{{\footnotesize Dept of ISE, GMIT}} &&&&&&&&& \textbf{{\footnotesize GMIT, Davanagere}}\\
\end{tabular}
\end{table}
Name of the Examiners \hfill Signature with Date
\begin{small}

```
\begin{enumerate}
\item Prof.
\item Prof.
\end{enumerate}
\end{small}
```

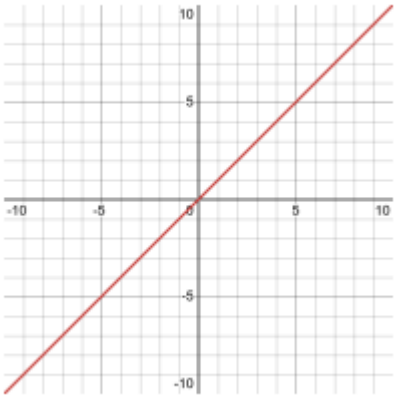
5. Develop a LaTeX script to create a document that contains the following table with proper labels.

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

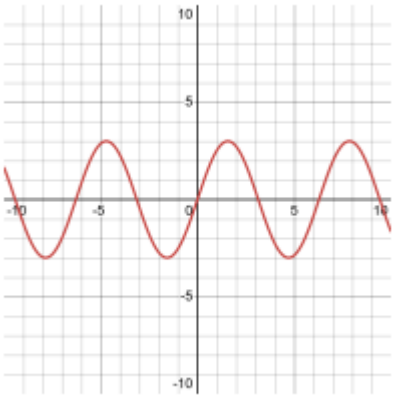
```
\documentclass[10pt,a4paper]{article}
\usepackage[utf8]{inputenc}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage[left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}
\usepackage{multirow}
\begin{document}

\begin{center}
\begin{Large}
\textbf{Table Demo}
\end{Large}
\end{center}

\section*{Marks Table}

\begin{tabular}{|c|c|c|c|c|c|}
\hline
```

```
\multirow{2}{*}{S.No} & \multirow{2}{*}{USN} & \multirow{2}{*}{Student Name} &
\multicolumn{3}{c|}{Marks} \\
\cline{4-6}
 &  &  & Subject1 & Subject2 & Subject3 \\
\hline
1 & 4XX22XX001 & Name 1 & 88 & 77 & 97 \\
\hline
2 & 4XX22XX002 & Name 2 & 74 & 78 & 66 \\
\hline
3 & 4XX22XX003 & Name 3 & 88 & 82 & 79 \\
\hline
\end{tabular}
\end{document}
```

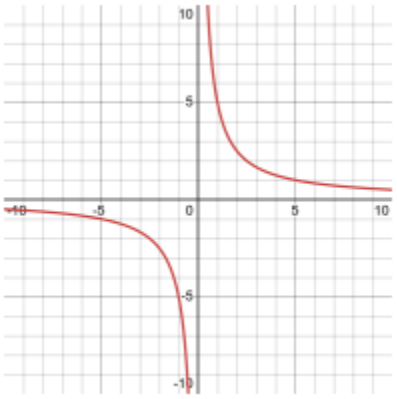
6. Develop a LaTeX script to include the side-by-side graphics/pictures/figures in the document by using the subgraph concept.



(a) $y = x$



(b) $y = 3\sin x$



(c) $y = 5/x$

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

```
\usepackage[utf8]{inputenc}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{caption}
\usepackage{subcaption}
\usepackage{graphicx}
\usepackage[left=2cm,right=2cm,top=2cm,bottom=2cm]{geometry}
\begin{document}
\section*{Subfigure Demo}
\begin{figure}[h]
    \centering
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{g1.png}
        \caption{$y=x$}
        \label{fig:y equals x}
    \end{subfigure}
    \hfill
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{g2.png}
        \caption{$y=3\sin x$}
        \label{fig:three sin x}
    \end{subfigure}
    \hfill
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{g3.png}
        \caption{$y=5/x$}
        \label{fig:five over x}
```

```
    \end{subfigure}
      \caption{Three simple graphs arranged side-by-side}
      \label{fig:three graphs}
\end{figure}
\end{document}
```

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

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$
$$= \frac{-2 \pm \sqrt{2^2-4*(1)*(-8)}}{2*1}$$
$$= \frac{-2 \pm \sqrt{4+32}}{2}$$

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

```
\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}
```

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

```
\documentclass{article}
\usepackage[english]{babel}
\usepackage{amsthm}

\newtheorem{theorem}{Theorem}[section]
\newtheorem{corollary}{Corollary}[theorem]
\newtheorem{lemma}[theorem]{Lemma}

\theoremstyle{definition}
\newtheorem{definition}{Definition}[section]

\begin{document}
\section{Numbered theorems, definitions, corollaries and lemmas}
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 summarised 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}

\begin{definition}[Absolute value function]
The absolute value function can be specified as a two-part definition as follows: \\
$
|x| =
\left\{
    \begin{array}{ll}
        x & \mbox{if } x \geq 0 \\
        -x & \mbox{if } x < 0
    \end{array}
\right.
$
\end{definition}

\end{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

main.tex

```
% Use Overleaf online editor for accurate results
\documentclass{article}
\usepackage{graphicx} % Required for inserting images
\begin{document}
\begin{center}
   \Large{\textbf{References Demo}}
\end{center}
\section{Introduction}
%\section{Related Work}
For disaster management, uncertainty handling is the main key problem. But, in Joint Service deployment and Requests Allocation~(JSR) domain, research work mainly uses the approaches such as deterministic optimization \cite{hardtoshare, multicell, bandwidth}, Lyapunov optimization \cite{dataintensive}, stochastic optimization, replication of services to achieve high reliability, and forecasting of user requests using machine learning without considering uncertainty. In deterministic optimization \cite{edgeuav}, request demand is known before the run. However, in online optimization, time is divided into slots and performs optimization per slot basis, which does not consider uncertain demand. Even if we used any probability distribution to model demand, it does not provide the correct model/pattern to define the uncertain data \cite{edgeuncertainty}. Using a replication approach to achieve high availability also incurs extra resource cost \cite{robust}. Using the forecasting method also, we can not predict the impact of uncertain events on the requests, which may lead to under-provisioning/over-provisioning resources to process the required tasks \cite{rsome}.

\section{Experiment Setup and Performance Parameters}
To demonstrate the efficiency of the proposed approaches, we will simulate the scenario for an urban site affected by any natural calamity \cite{oilindustry}. To implement optimization models, we will use the IBM Cplex Optimizer tool \cite{cplex}.
```

\bibliographystyle{IEEEtran}
\bibliography{ref}
\end{document}

ref.bib

@ARTICLE{oilindustry,
author={Ngoenriang, Napat and Turner, Stephen John and Niyato, Dusit and Supittayapornpong, Sucha},
journal={IEEE Internet of Things Journal},
title={Joint UAV-Placement and Data Delivery in Aerial Inspection under Uncertainties},
year={2021},
volume={},
number={},
pages={1-1},
doi={10.1109/JIOT.2021.3113713}}

@ARTICLE{uavservice,
author={Qu, Yuben and Dai, Haipeng and Wang, Haichao and Dong, Chao and Wu, Fan and Guo, Song and Wu, Qihui}, journal={IEEE Journal on Selected Areas in Communications},
title={Service Provisioning for UAV-Enabled Mobile Edge Computing},
year={2021},
volume={39},
number={11},
pages={3287-3305},
doi={10.1109/JSAC.2021.3088660}
}

@misc{cplex,
  author = {IBM},

  title = {IBM CPLEX Optimizer},
  howpublished = "\url{https://www.ibm.com/in-en/analytics/cplex-optimizer}",
  year = {2021},
  note = "[Online; accessed 3-Feb-2022]"
}

@misc{rsome,
  author = {NSU},
  title = {RSOME},
  howpublished = "\url{https://xiongpengnus.github.io/rsome/}",
  year = {2021},
  note = "[Online; accessed 3-Feb-2022]"
}

@INPROCEEDINGS{hardtoshare,
  author={He, Ting and Khamfroush, Hana and Wang, Shiqiang and La Porta, Tom and Stein, Sebastian},
  booktitle={IEEE 38th International Conference on Distributed Computing Systems (ICDCS)},
  title={It's Hard to Share: Joint Service Placement and Request Scheduling in Edge Clouds with Sharable and Non-Sharable Resources}, year={2018},
  volume={},
  number={},
  pages={365-375},
  doi={10.1109/ICDCS.2018.00044}
}

@INPROCEEDINGS{multicell,
  author={Poularakis, Konstantinos and Llorca, Jaime and Tulino, Antonia M. and Taylor, Ian and Tassiulas, Leandros},
  booktitle={IEEE Conference on Computer Communications (INFOCOM)},
  title={Joint Service Placement and Request Routing in Multi-cell Mobile Edge Computing

Networks},
  year={2019},
  volume={},
  number={},
  pages={10-18},
  doi={10.1109/INFOCOM.2019.8737385}
}

@ARTICLE{bandwidth,
  author={Poularakis, Konstantinos and Llorca, Jaime and Tulino, Antonia M. and Taylor, Ian},
  journal={IEEE/ACM Transactions on Networking},
  title={Service Placement and Request Routing in MEC Networks With Storage, Computation, and Communication Constraints},
  year={2020},
  volume={28},
  number={3},
  pages={1047-1060},
  doi={10.1109/TNET.2020.2980175}
}

@INPROCEEDINGS{dataintensive,
  author={Farhadi, Vajiheh and Mehmeti, Fidan and He, Ting and Porta, Tom La and Khamfroush, Hana and Wang, Shiqiang and Chan, Kevin S},
   booktitle={IEEE Conference on Computer Communications(INFOCOM)},
   title={Service Placement and Request Scheduling for Data-intensive Applications in Edge Clouds},
   year={2019},
   volume={},
   number={},
   pages={1279-1287},
  doi={10.1109/INFOCOM.2019.8737368}

}

@ARTICLE{resource,
author={Ahmed, Shakil and Chowdhury, Mostafa Zaman and Sabuj, Saifur Rahman and Alam, Md Imtiajul and Jang, Yeong Min}, journal={IEEE Access}, title={Energy-Efficient UAV Relaying Robust Resource Allocation in Uncertain Adversarial Networks}, year={2021}, volume={9}, number={}, pages={59920-59934}, doi={10.1109/ACCESS.2021.3073015}}

@ARTICLE{resource2, author={Yang, Zhaohui and Pan, Cunhua and Wang, Kezhi and Shikh-Bahaei, Mohammad}, journal={IEEE Transactions on Wireless Communications}, title={Energy Efficient Resource Allocation in UAV-Enabled Mobile Edge Computing Networks}, year={2019}, volume={18}, number={9}, pages={4576-4589}, doi={10.1109/TWC.2019.2927313}}

@ARTICLE{offload, author={Apostolopoulos, Pavlos Athanasios and Fragkos, Georgios and Tsiropoulou, Eirini Eleni and Papavassiliou, Symeon}, journal={IEEE Transactions on Mobile Computing}, title={Data Offloading in UAV-assisted Multi-access Edge Computing Systems under Resource Uncertainty}, year={2021}, volume={}, number={}, pages={1-1}, doi={10.1109/TMC.2021.3069911}}

@INPROCEEDINGS{offload2, author={Zhou, Fuhui and Wu, Yongpeng and Sun, Haijian and Chu, Zheng}, booktitle={2018 IEEE International Conference on Communications (ICC)}, title={UAV-Enabled Mobile Edge Computing: Offloading Optimization and Trajectory Design}, year={2018}, volume={}, number={}, pages={1-6}, doi={10.1109/ICC.2018.8422277}}

@ARTICLE{trajectory, author={Wang, Kai and Zhang, Xiao and Duan, Lingjie and Tie, Jun}, journal={IEEE Transactions on Mobile Computing}, title={Multi-UAV Cooperative Trajectory for Servicing Dynamic Demands and Charging Battery}, year={2021}, volume={}, number={}, pages={1-1}, doi={10.1109/TMC.2021.3110299}}

@article{edgeuncertainty,
author = {Xu, Xiaolong and Cao, Hao and Geng, Qingfan and Liu, Xihua and Dai, Fei and Wang, Chuanjian},
title = {Dynamic resource provisioning for workflow scheduling under uncertainty in edge computing environment},
journal = {Concurrency and Computation: Practice and Experience},
volume = {n/a},
number = {n/a},
pages = {e5674},
keywords = {edge computing, SDN, uncertainty, workflow scheduling},
doi = {https://doi.org/10.1002/cpe.5674}
}

@ARTICLE{edgeuav, author={Qu, Yuben and Dai, Haipeng and Wang, Haichao and Dong, Chao and Wu, Fan and Guo, Song and Wu, Qihui}, journal={IEEE Journal on Selected Areas in Communications}, title={Service Provisioning for UAV-Enabled Mobile Edge Computing}, year={2021}, volume={39}, number={11}, pages={3287-3305}, doi={10.1109/JSAC.2021.3088660}}

@inproceedings{mobility,
title={UAV 3D Mobility Model Oriented to Dynamic and Uncertain Environment},
author={Na Wang and Nan Di and Fei Dai and Fangxin Liu},
booktitle={ICA3PP},
year={2018}
}

@ARTICLE{robust, author={Li, Bo and He, Qiang and Cui, Guangming and Xia, Xiaoyu and Chen, Feifei and Jin, Hai and Yang, Yun}, journal={IEEE Transactions on Services Computing}, title={READ: Robustness-oriented Edge Application Deployment in Edge Computing Environment}, year={2020}, volume={}, number={}, pages={1-1}, doi={10.1109/TSC.2020.3015316}}

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

```
\documentclass{article}
\usepackage{tikz}
\begin{document}
\begin{center}
\Large{\textbf{Hierarchy of Linux distributions}}
\end{center}
\begin{figure}[h]
   \centering

\begin{tikzpicture} [every node/.style = {shape=rectangle, rounded corners, draw, align=center}]
  \path [draw,thick,-]
   node (root)[red] {GNU/Linux}
   [sibling distance=45mm, level distance=25mm]
   child {node [cyan] {Debian}
   [sibling distance=25mm, level distance=25mm]
         child { node [cyan] {Ubuntu} }
         child { node [cyan] {Linux Mint} }
%        child { node {Elementary} }
   }
   child {node [magenta] {RedHat}
   [sibling distance=25mm, level distance=25mm]
         child { node [magenta] {Fedora} }
         child { node [magenta] {OpenSuse} }
   }
   child {node [blue] {Arch}
         [sibling distance=25mm, level distance=25mm]
```

```
                child { node [blue]{Manjaro} }
                child { node [blue]{EndeavourOS} }
  };
\end{tikzpicture}
 \caption{GNU/Linux Operating System Family}
\end{figure}
\pagebreak
\begin{center}
\Large{\textbf{SUV Cars}}
\end{center}

\begin{figure}[h]
  \centering
\begin{tikzpicture} [every node/.style = {shape=rectangle, rounded corners, draw,
align=center}]
 \path [draw,thick,-]
       [grow=-45]
  node (root)[red] {SUV}
  [sibling distance=45mm, level distance=25mm]

  child {node [cyan] {Tata}
  [sibling distance=25mm, level distance=25mm]
       child { node [cyan] {Nexon} }
       child { node [cyan] {Punch} }
%      child { node {Elementary} }
  }
  child {node [magenta] {Volkswagen}
  [sibling distance=25mm, level distance=25mm]
       child { node [magenta] {Taigun} }
       child { node [magenta] {Virtus} }
  }
```

```
   child {node [blue] {Maruti}
         [sibling distance=25mm, level distance=25mm]
                child { node [blue]{Brezza} }
                child { node [blue]{Vitara} }
   };
\end{tikzpicture}
 \caption{Car Brands Hierarchy}
\end{figure}
\end{document}
```

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

```
\documentclass[6pt,a4paper]{report}
\usepackage[utf8]{inputenc}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{graphicx}
\usepackage[left=3cm,right=3cm,top=2cm,bottom=2cm]{geometry}
\author{Lekhaka}
\title{Varadhi}
\begin{document}

\maketitle
\chapter{Free Software}
```

\section*{What is Free Software?}
"\textbf{Free software}" means software that respects users' freedom and community. Roughly, it means that \textbf{the users have the freedom to run, copy, distribute, study, change and improve the software}. Thus, "free software" is a matter of liberty, not price. To understand the concept, you should think of "\textit{free}" as in "\textit{free speech},," not as in "\textit{free beer}." We sometimes call it "\textbf{libre software}," borrowing the French or Spanish word for "free" as in freedom, to show we do not mean the software is gratis.

You may have paid money to get copies of a free program, or you may have obtained copies at no charge. But regardless of how you got your copies, you always have the freedom to copy and change the software, even to sell copies.

We campaign for these freedoms because everyone deserves them. With these freedoms, the users (both individually and collectively) control the program and what it does for them. When users don't control the program, we call it a "\textit{nonfree}" or "\textit{proprietary}" program. The nonfree program controls the users, and the developer controls the program; this makes the program an instrument of unjust power.

"\emph{Open source}" is something different: it has a very different philosophy based on different values. Its practical definition is different too, but nearly all open source programs are in fact free.

\section*{The Free Software Definition}
The free software definition presents the criteria for whether a particular software program qualifies as free software. \\
\textbf{The four essential freedoms} \\

A program is free software if the program's users have the four essential freedoms: \\
\begin{itemize}
\item The freedom to run the program as you wish, for any purpose (freedom 0).
\item The freedom to study how the program works, and change it so it does your

computing as you wish (freedom 1). Access to the source code is a precondition for this.
\item The freedom to redistribute copies so you can help others (freedom 2).
\item The freedom to distribute copies of your modified versions to others (freedom 3).

\end{itemize}

By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this. \\

A program is free software if it gives users adequately all of these freedoms. Otherwise, it is nonfree. While we can distinguish various nonfree distribution schemes in terms of how far they fall short of being free, we consider them all equally unethical.

\chapter{Listing Environment}

\begin{small}
\section*{Unordered lists}

\subsection*{Groceries List}
\begin{itemize}
	\item Eggs
	\item Milk
	\item Biscuits
	\item Rice
\end{itemize}

\subsection*{Football Teams}

\begin{itemize}

```
        \item English Premier League
        \begin{itemize}
            \item Manchester United
            \item Liverpool
        \end{itemize}

        \item La Liga
        \begin{itemize}
            \item Barcelona
            \item Real Madrid
        \end{itemize}

        \item Bundesliga
        \begin{itemize}
            \item Bayern Munich
            \item Borussia Dortmund
        \end{itemize}
\end{itemize}

\section*{Ordered lists}
\subsection*{ICC WTC Rankings}
\begin{enumerate}
\item India
\item Australia
\item New Zealand
\end{enumerate}

\subsection*{Countries ranked by Market Cap}
\begin{enumerate}
        \item Asia
        \begin{enumerate}
```

```
            \item China
            \item Japan
            \item India
        \end{enumerate}

        \item Europe
        \begin{enumerate}
            \item United Kingdom
            \item France
            \item Germany
        \end{enumerate}

\end{enumerate}
\end{small}


\end{document}
```