IT Workshop Internal Exam - Set 2

Question 1: Answer any 2 of the following 3 questions. Time: 2 hours. Full marks 30.

July 2024

Contents

0.1 Document Structure

LaTeX is a high-quality typesetting system; it includes features designed for the production of technical and scientific documentation. LaTeX is widely used in academia for the communication and publication of scientific documents in many fields, including mathematics, computer science, engineering, physics, chemistry, economics, and political science.

0.1.1 Font Styles

Here are some examples of different font styles in LaTeX:

Bold text
Italic text
Underlined text
~- Tilde
^- Caret
\- Backslash

0.1.2 Special Characters

LaTeX allows you to include special characters such as: Hash: #
$ - Dollar sign
% - Percent sign
& - Ampersand
_ - Underscore
{ - Left curly brace
} - Right curly brace

0.1.3 Including Figures

To include figures, you first need to upload the image file named `sample-image.jpg` from your computer using the upload link in the file-tree menu. Then use the `includegraphics` command to include it in your document.

0.1.4 Creating Tables

`table` `tabular` Basic Education System Comparison

Country	Primary Education	Secondary Education	Higher Education
USA	Grades 1-5	Grades 6-12	College/University
UK	Years 1-6	Years 7-13	College/University
India	Grades 1-5	Grades 6-12	College/University

Table 1: Comparison of Basic Education Systems

0.1.5 Mathematical Expressions

LaTeX excels at typesetting mathematics. Here is the quadratic formula inline: $ax^2 + bx + c = 0$.

Displayed version: MATRIX FORMATION

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} e & f \\ g & h \end{pmatrix} = \begin{pmatrix} ae + bg & af + bh \\ ce + dg & cf + dh \end{pmatrix}$$

Definite Integral:

$$\int_0^1 x^2 \, dx = \left[\frac{x^3}{3} \right]_0^1 = \frac{1}{3}$$

Figure 1: This is a sample image.

0.1.6 Lists

You can make lists with automatic bullet point:

- First item (apple)
- Second item (banana)
- Third item (cherry)

You can also use numbered with colored text:

1. Blue
2. More blue
3. And red!
4. This is green color

0.1.7 Hyperlinks

For more information, visit the LaTeX project website.

0.1.8 Bibliography

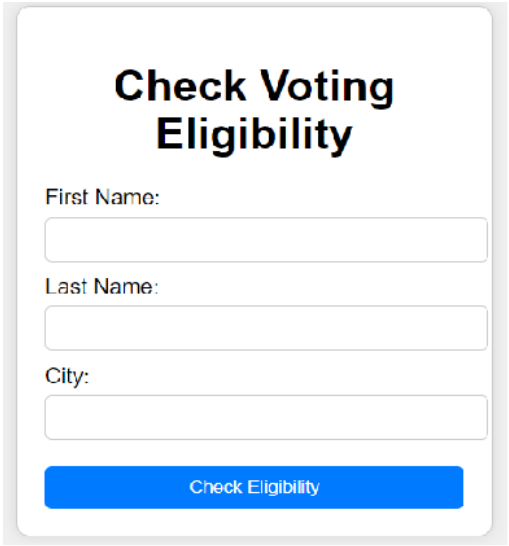
To include references, you can use BibTeX. Here is an example citation [Doe24].

Bibliography

[Doe24] John Doe. An example article. *Journal of Examples*, 1(1):1–2, 2024.

0.2 Question 2

Create an HTML and PHP application to check a person's voting eligibility based on their first name, last name, and city. First, set up a MySQL database with a table named voters containing columns for first_name, last_name, city, and age, and manually insert sample data. Create an HTML form in checkhtml to collect the first name, last name, and city. Use checkphp to process this form, retrieve the age from the database, and determine if the person is eligible to vote (age 18 or older). Display the eligibility result on message.php.



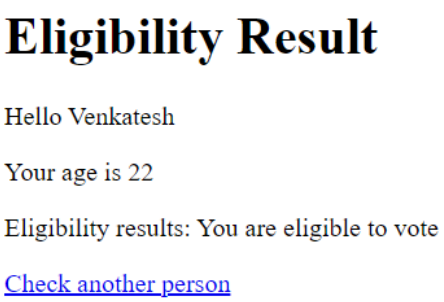


Figure 2: Students Details Web form

0.3 Question 3

Write a Python script using NumPy and Matplotlib to recreate the following plots:

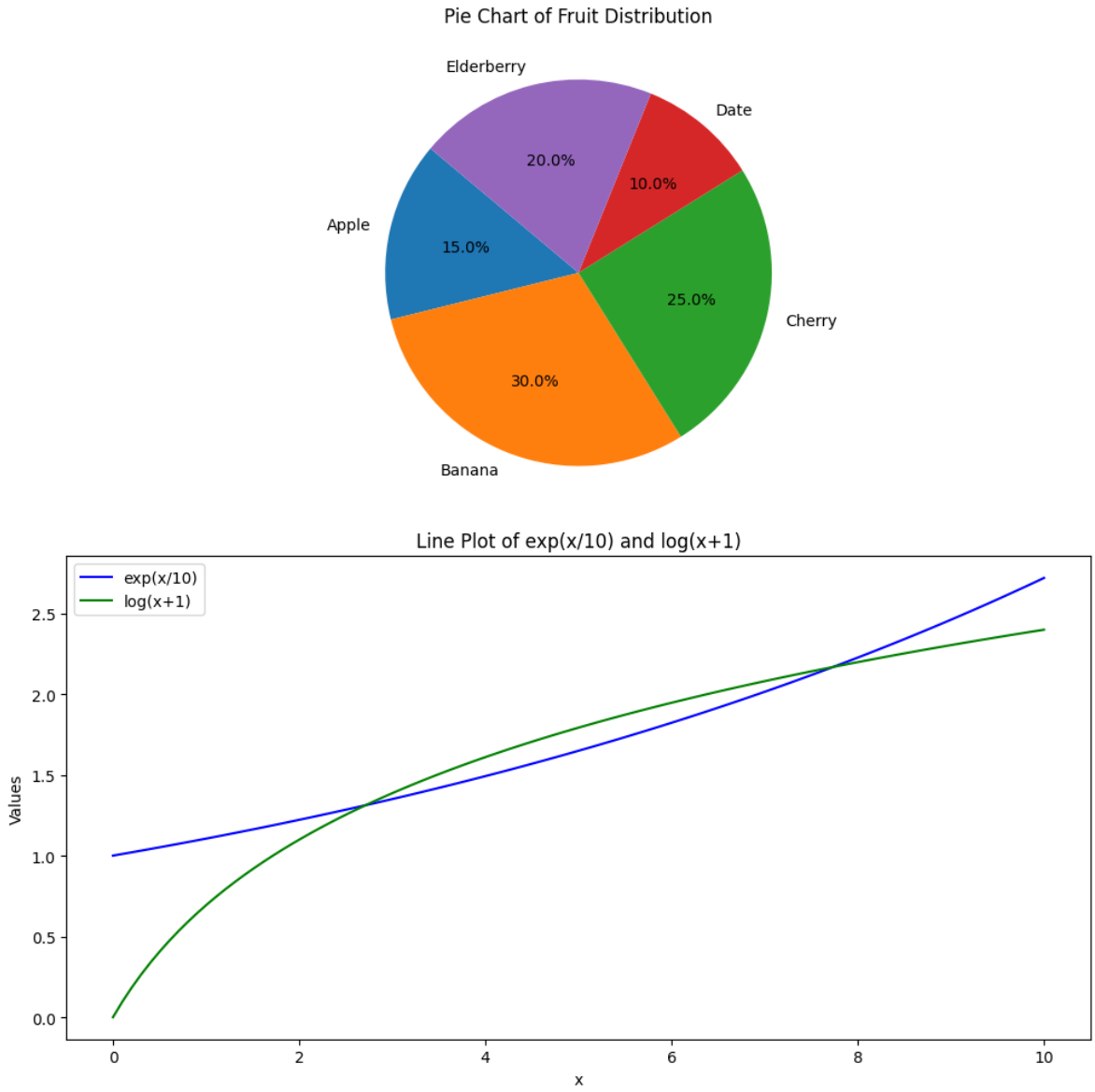


Figure 3: Data Plotting