

IT Workshop Internal Exam - Set 1

RGUKT Basar

July 2024

Abstract

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

1 Question 1

Reproduce the following sections in LaTeX:

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.

1.1 Coloured Text

Introduction

This is the introduction section, highlighted in blue.

Methodology

This section discusses the methodology, highlighted in red.

Results

This section presents the results, highlighted in green.

1.2 Special Characters

LaTeX allows you to include special characters such as:

Dollar sign: $\$$

Ampersand: $\&$

Percent: $\%$

Hash: $\#$

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.

1.4 Creating Tables

Use the `table` and `tabular` environments for basic tables. Here's an example:



Figure 1: This is a sample image.

Item	Quantity	Price
Apples	10	\$1.50
Oranges	5	\$2.00

Table 1: An example table with 3 columns.

1.5 Mathematical Expressions

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

Displayed version:

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

Sine and Cosine Addition Formulas

$$\sin(a + b) = \sin a \cos b + \cos a \sin b \quad (1)$$

$$\cos(a + b) = \cos a \cos b - \sin a \sin b \quad (2)$$

Displayed version:

$$\int_a^b f(x) dx$$

Binomial Theorem

$$(a + b)^n = \sum_{k=0}^n \binom{n}{k} a^{n-k} b^k$$

1.6 Lists

You can make lists with automatic numbering:

1. First item,
2. Second item,
3. Third item.

You can also use bullet points with colored text:

- This text is magenta.
- This text is yellow.
- This text is black.
- This text is gray.
-

1.7 Hyperlinks

For more information, visit the [LaTeX project website](#).

1.8 Bibliography

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

References

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


2 Question 2

Create a web application that includes an HTML form to collect book details, processes the form data using PHP, and stores the data in a MySQL database. The application GUI should look like the following:

Student Information Form

Name:

Email:

Date of Birth: 

Major:

Figure 2: Book Details Web form

3 Question 3

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

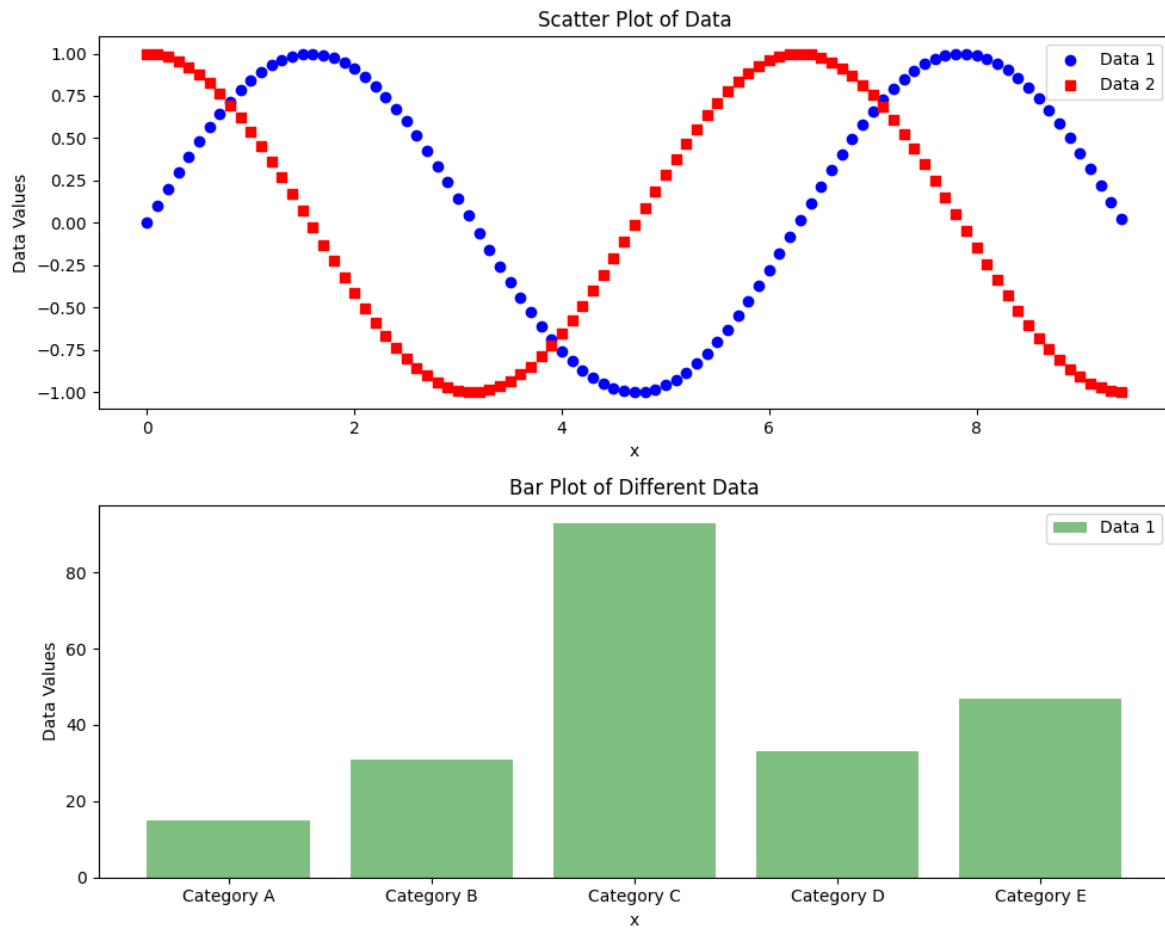


Figure 3: Data Plotting