

National University of Computer and Emerging Sciences, Lahore Campus



Course:	Data Science	Course Code:	CS-4048
Program:	BS(Computer Science)	Semester:	Fall 2023
Duration:	-	Total Marks:	15
Paper Date:	23-Oct-23	Weight	5%
Section:	A/B	Page(s):	2
Exam:	Assignment 3	Roll No.	

Instruction/Notes:

- Read the assignment carefully. Make sure you understand the requirements and expectations of the assignment.
- Ensure that you have all the necessary files and documents ready for submission in the CORRECT format.
- Only the group leader should submit the assignment
- The assignment must be submitted before the announced DEADLINE. One mark will be deducted for each day of late submission.

Exploratory Data Analysis and Visualization

Congratulations on completing the first stage of your data science project! You have collected, cleaned, and transformed the dataset and are now ready to explore and visualize it. In this assignment, you will use various statistical techniques and data visualization tools to analyze and understand the data better.

The purpose of this assignment is to:

- Identify patterns, trends, and relationships in the dataset.
- Gain insights into the data and its characteristics.
- Generate visualizations that can communicate your findings effectively.

Instructions:

Understanding the Dataset: Before diving into exploratory data analysis, you need to have a clear understanding of the dataset. Review the data dictionary and the metadata to understand the structure, variables, and their meanings.

Univariate Analysis: Begin by analyzing each variable individually. Use summary statistics and visualizations such as line charts, histograms, box plots, bar/pie charts, word clouds, and density plots to understand the distribution, central tendency, and variability of each variable.

Bivariate Analysis: Next, analyze the relationship between pairs of variables. Use scatter plots, correlation matrices, multiple line charts, and heat maps to identify correlations, dependencies, and interactions between variables.

Descriptive Analysis: Explore the data and provide descriptive analysis of data in form of reports and charts/graph.

Deliverables:

Exploratory Data Analysis Report: Write a report that summarizes your findings from the exploratory data analysis. The report should include:

- Summary statistics and visualizations for each variable.
- Insights and observations from the univariate, bivariate, and multivariate analysis.
- Key findings and insights from the descriptive analysis.

Submission Guidelines:

- Submit a single PDF document that includes your exploratory data analysis report and visualizations.
- Use clear and concise language, and provide detailed explanations of your methods and findings.

Evaluation Criteria:

Univariate and Bivariate Analysis (5)

Descriptive Data Analysis (5)

Clarity and effectiveness of insights and findings of the analysis (5)