EXPT NO:1	Implementation of data charts
DATE: 06.01.2026	

PRE-LAB QUESTIONS (PROVIDE BRIEF ANSWERS TO THE FOLLOWING QUESTIONS)

1. How can visualization help an academic institution improve student outcomes? Ans: Visualization helps identify weak subjects and performance trends, enabling timely academic support and improved teaching strategies.

2. Which chart types are suitable for comparing subject-wise performance?
   Ans: Bar charts and column charts are suitable for comparing subject-wise performance.

3. What type of data scale is used for student marks?
   Ans: Student marks use a **ratio scale** because they have a true zero and equal intervals.

4. Why should raw academic data be cleaned before visualization?
   Ans: Data cleaning removes errors and missing values, ensuring accurate and meaningful visual analysis.

5. How does visualization support evidence-based decision making?
   Ans: Visualization presents data clearly, helping administrators make decisions based on actual performance patterns.

IN-LAB EXERCISE:

OBJECTIVE:

To design appropriate data charts to analyze and compare academic performance indicators.

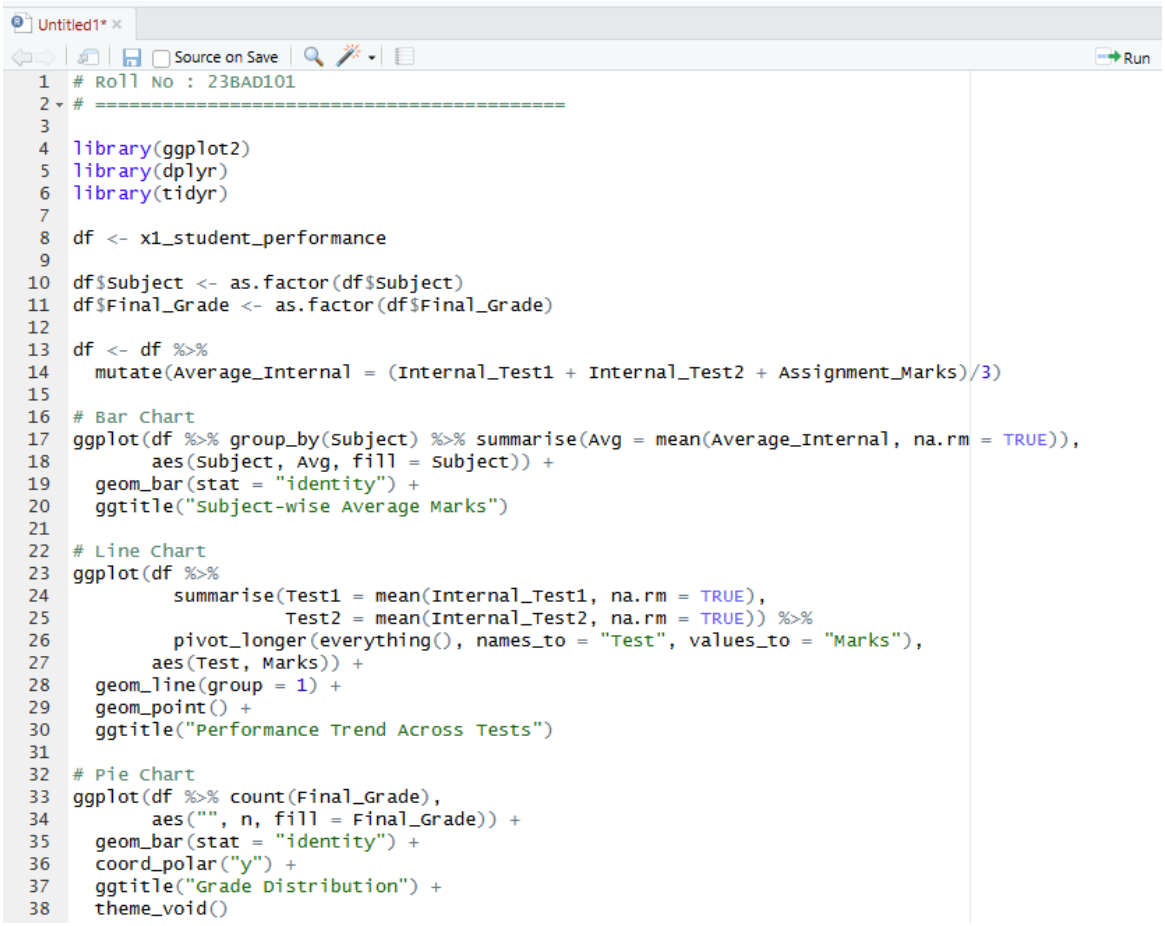
SCENARIO:

An autonomous engineering college wants to analyze internal assessment performance of firstyear students across five subjects to identify difficult courses and improve teaching strategies.

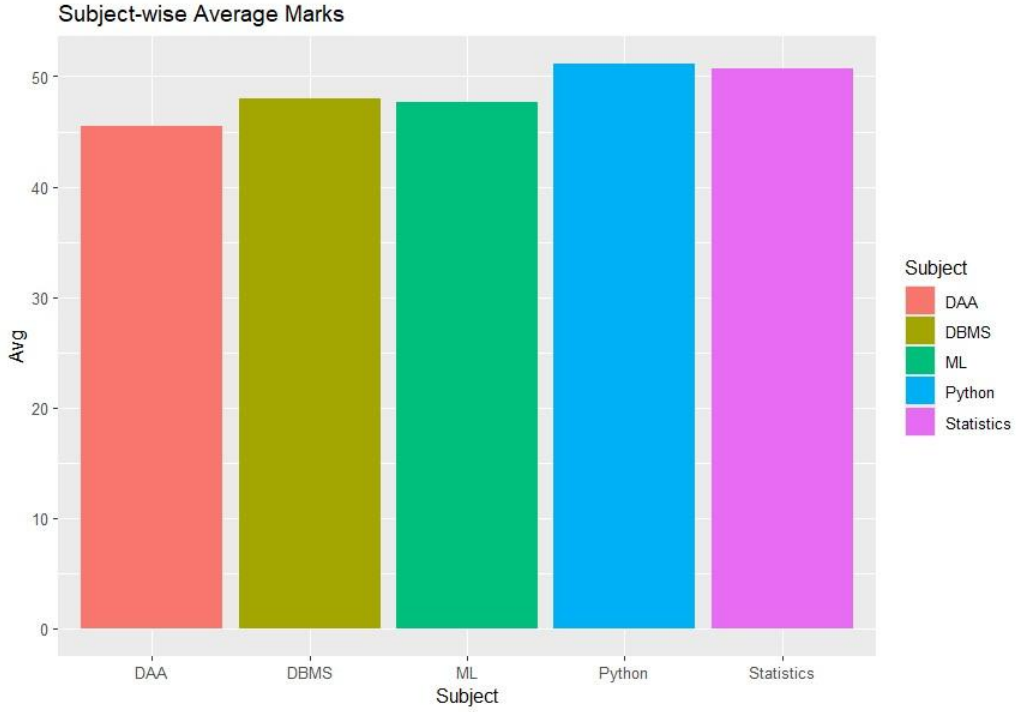
IN-LAB TASKS (Using R Language)

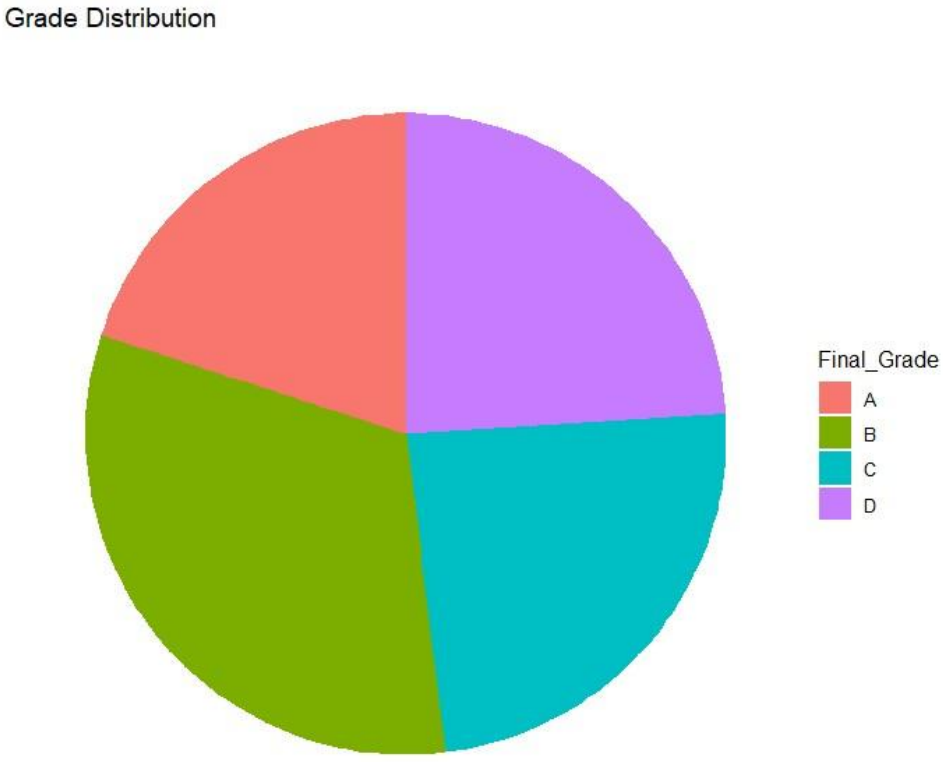
- Load required R libraries (ggplot2, dplyr)
- Import dataset using read.csv()
- Perform basic data preprocessing
- Create bar chart for subject-wise average marks
- Generate line chart for performance trend across tests
- Plot pie chart for grade distribution

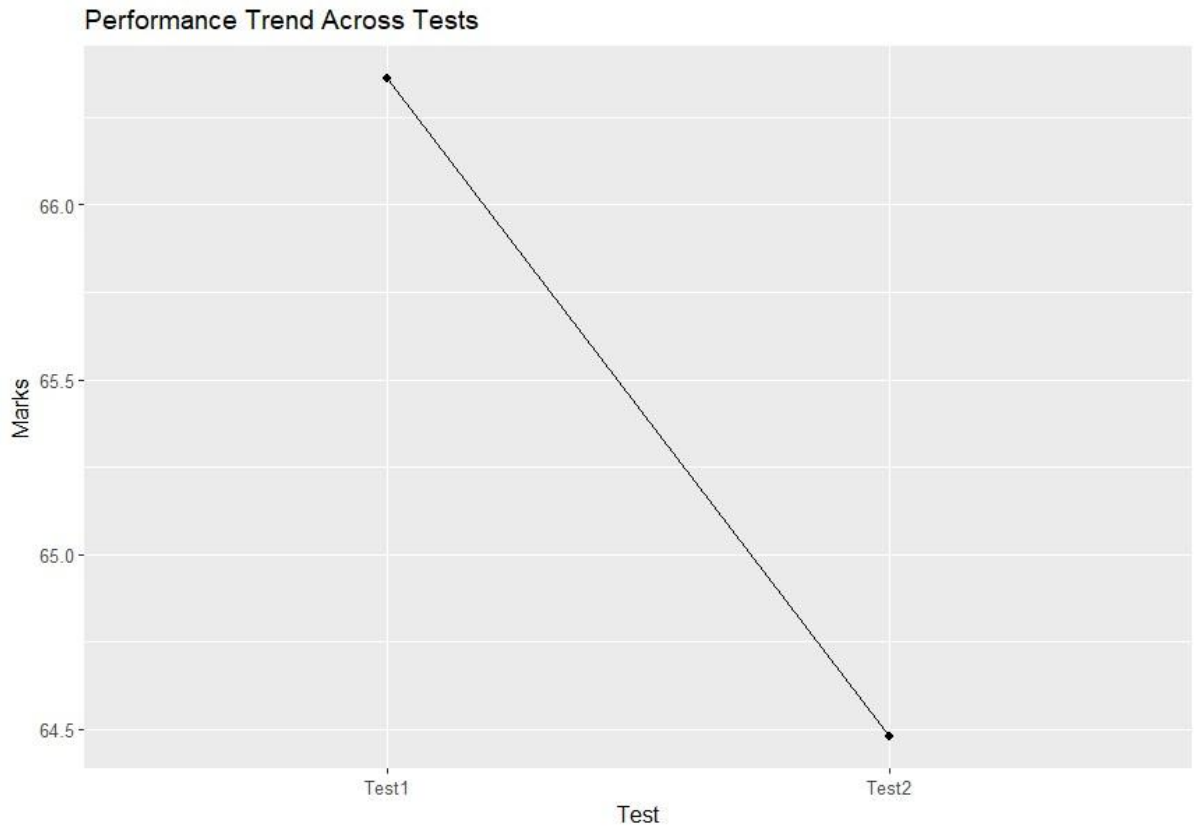
SCREENSHOT OF CODE



SCREENSHOT OF OUTPUT







POST-LAB QUESTIONS (PROVIDE BRIEF ANSWERS TO THE FOLLOWING QUESTIONS)

1. Which subject shows consistently low performance and why?
   Ans: Subjects like DAA show comparatively lower performance due to higher conceptual difficulty.

2. Why is a line chart suitable for trend analysis?
   Ans: A line chart clearly shows changes in performance over time or across tests.

3. What limitations does a pie chart have in analytics?
   Ans: Pie charts are not suitable for precise comparison when many categories are present.

4. How can this analysis help curriculum planning?
   Ans: It helps identify difficult subjects and supports syllabus revision and improved teaching methods.

5. How can such visualizations be integrated into AI-driven academic analytics
   Ans: They can be used to train AI models for performance prediction and personalized learning recommendations.

ASSESSMENT

Description	Max Marks	Marks Awarded
Pre Lab Exercise	**5**	
In Lab Exercise	**10**	
Post Lab Exercise	**5**	
Viva	**10**	
Total	**30**	
Faculty Signature		