St. Anthony's College
San Angel, San Jose, Antique 5700

INFORMATION TECHNOLOGY DEPARTMENT
Bachelor of Science in Information Technology

Integrative Programming and Technologies 2 (IPT 102)

Lesson 5 Practical Test (100 pts.)

Name: John Paul Labanon	**Date Submitted:**
Year and Section: BSIT 3B	**Due Date:** October 17, 2024

Practical Test: Plotting Data from a CSV File using Python Programming

Objectives: The goal of this practical test is to learn how to read data from a CSV file, manipulate the data using Pandas, and visualize it using Matplotlib. You will work with a CSV file containing students' grades and create various plots to analyze the data.

Task 1. Create a CSV file named students_grades.csv with the following content:

```
Name,Math,Science,English,History,Physical_Education
Alice,85,92,88,76,95
Bob,78,80,85,90,88
Charlie,90,85,92,88,84
David,95,89,78,85,91
Eve,70,75,80,72,76
Frank,88,92,85,90,93
```

Task 2. Calculate the average grade for each student across all subjects. Add a new column to the DataFrame called Average that contains these average grades. Display the updated DataFrame to verify the new column.

Preview of Sample Output:

```
Data with Average Grades:
      Name  Math  Science  English  History  Physical_Education  Average
```

Screenshot of your Output/ DataFrame (20pts):

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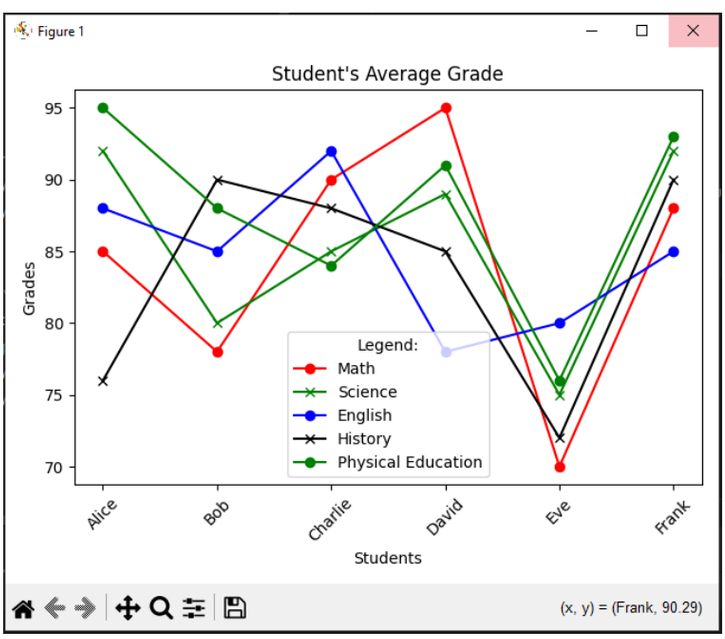
Task 3. Plotting

1. **Bar Chart:**
   - Create a bar chart showing each student's average grade.
   - Label the x-axis with student names and the y-axis with "Average Grade".
   - Add a title: "Students' Average Grades".

Attach Image of Output Here (20pts):

2. **Line Plot:**
   - Plot each subject's grades as a separate line to compare the performance of students in different subjects.
   - The x-axis should represent the students, and the y-axis should represent the grades.
   - Use different colors and line styles for each subject.
   - Add a legend to differentiate the subjects.

Attach Image of Output Here (20pts):



3. **Histogram:**
   - Plot a histogram of the grades for a Math subject to show the distribution of grades.
   - Use 5 as the value of bins.
   - Label the x-axis as "Grades" and the y-axis as "Frequency".
   - Add a title: "Distribution of Math Grades".

Attach Image of Output Here (20pts):

4. **Scatter Plot:**
   - Create a scatter plot comparing grades in Science and Math.
   - Label the x-axis as "Math Grades" and the y-axis as "Science Grades".
   - Add a title: "Correlation between Math and Science Grades".

Attach Image of Output Here (20pts):