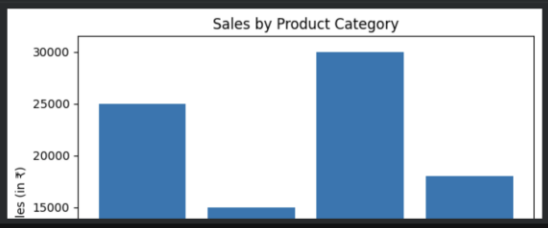
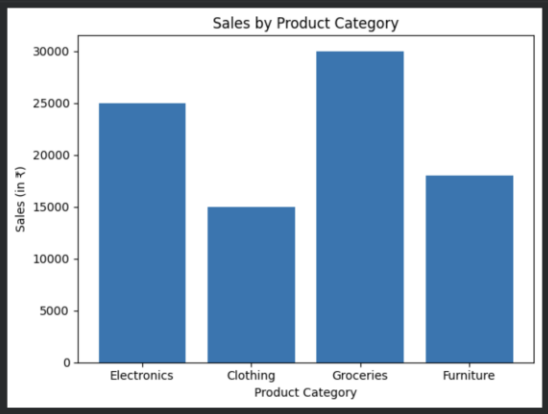
```
import pandas as pd
import matplotlib.pyplot as plt

%matplotlib inline
```

```
products = ["Electronics", "Clothing", "Groceries", "Furniture"]
sales = [25000, 15000, 30000, 18000]

plt.figure()
plt.bar(products, sales)

plt.title("Sales by Product Category")
plt.xlabel("Product Category")
plt.ylabel("Sales (in ₹)")
plt.tight_layout()
plt.show()
```




```
plt.bar(products, sales)

plt.title("Sales by Product Category")
plt.xlabel("Product Category")
plt.ylabel("Sales (in ₹)")
plt.tight_layout()
plt.show()
```



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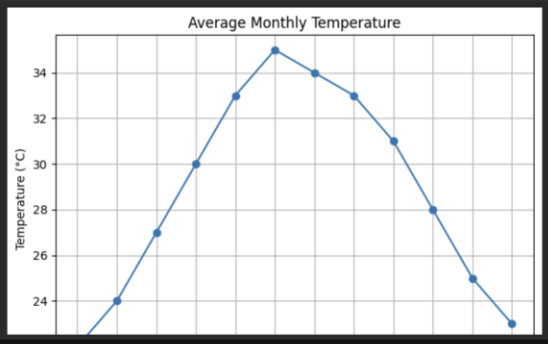
```
months = ["Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Aug", "Sep", "Oct", "Nov", "Dec"]
temperatures = [22, 24, 27, 30, 33, 35, 34, 33, 31, 28, 25, 23]

plt.figure()
plt.plot(months, temperatures, marker="o")

plt.title("Average Monthly Temperature")
plt.xlabel("Month")
plt.ylabel("Temperature (°C)")
plt.grid(True)
plt.tight_layout()
plt.show()
```



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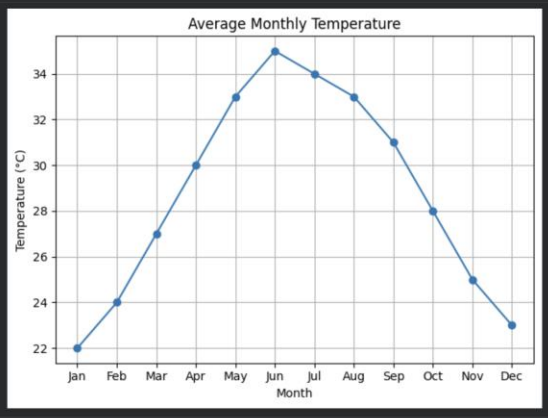
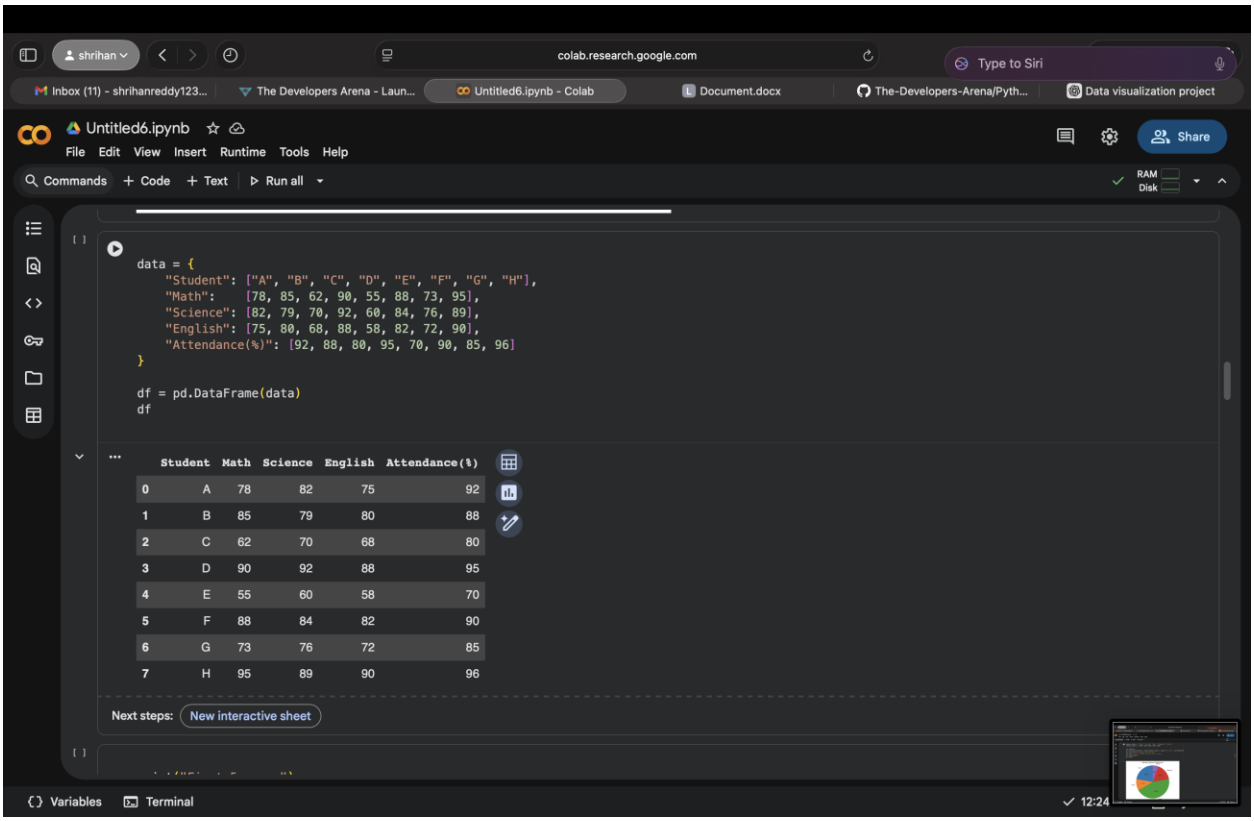



```
expense_labels = ["Food", "Travel", "Rent", "Shopping", "Others"]
expense_amounts = [4000, 2000, 8000, 3000, 1000]

plt.figure()
plt.pie(expense_amounts, labels=expense_labels, autopct="%1.1f%%", startangle=90)
plt.title("Monthly Expense Distribution")
plt.axis("equal")  # Makes the pie chart a circle
```

Variables Terminal 12:24 PM Python 3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data = {
"Student": ["A", "B", "C", "D", "E", "F", "G", "H"],
"Math": [78, 85, 62, 90, 55, 88, 73, 95],
"Science": [82, 79, 70, 92, 60, 84, 76, 89],
"English": [75, 80, 68, 88, 58, 82, 72, 90],
"Attendance(%)": [92, 88, 80, 95, 70, 90, 85, 96]
}
df = pd.DataFrame(data)
df
Student Math Science English Attendance(%)
0 A 78 82 75 92
1 B 85 79 80 88
2 C 62 70 68 80
3 D 90 92 88 95
4 E 55 60 58 70
5 F 88 84 82 90
6 G 73 76 72 85
7 H 95 89 90 96
Next steps: New interactive sheet
Variables Terminal
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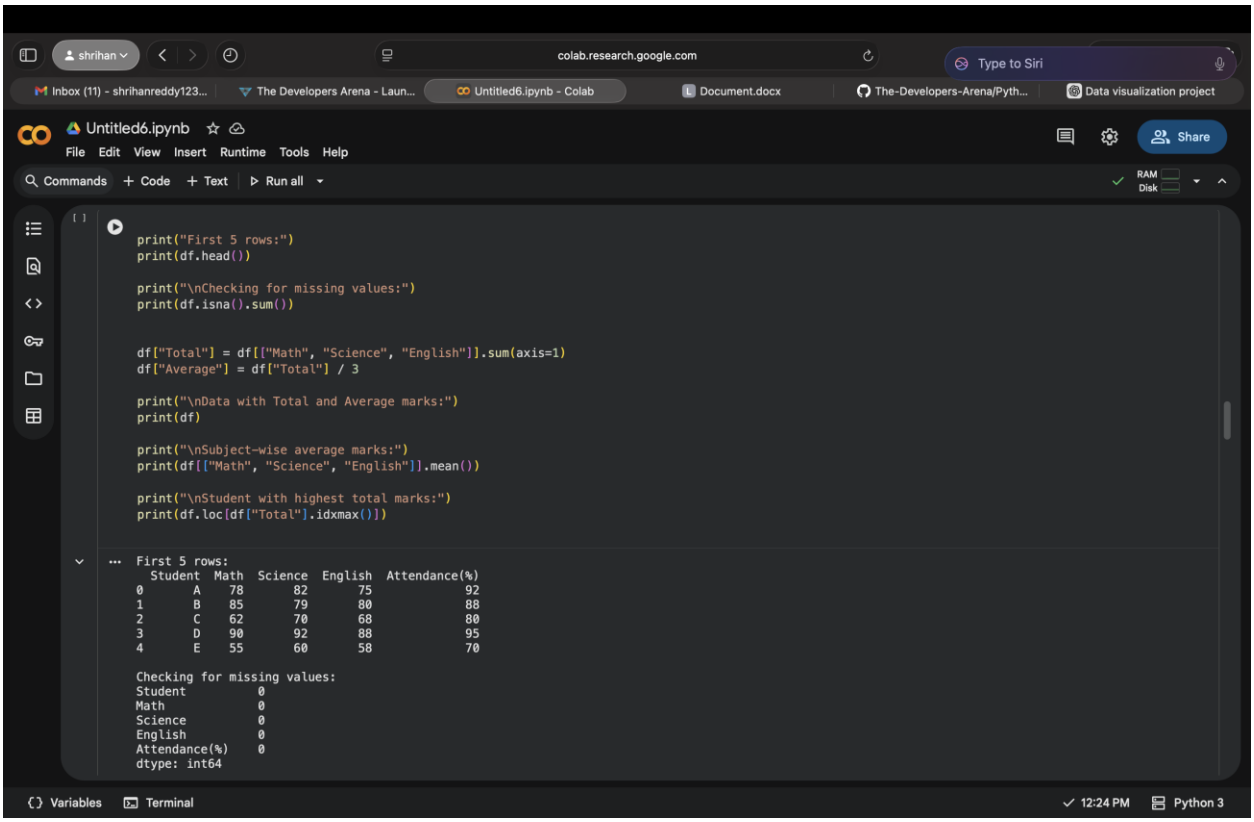
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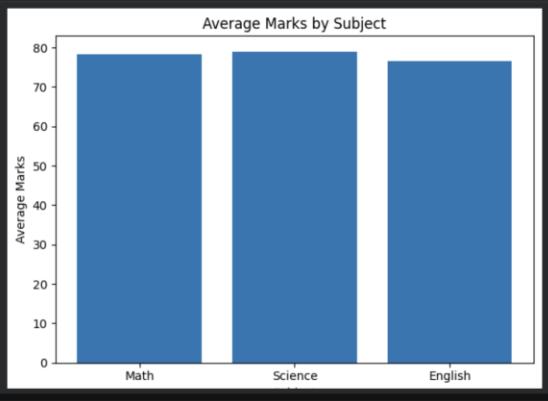
RAM Disk
print("First 5 rows:")
print(df.head())
print("\nChecking for missing values:")
print(df.isna().sum())
df["Total"] = df[["Math", "Science", "English"]].sum(axis=1)
df["Average"] = df["Total"] / 3
print("\nData with Total and Average marks:")
print(df)
print("\nSubject-wise average marks:")
print(df[["Math", "Science", "English"]].mean())
print("\nStudent with highest total marks:")
print(df.loc[df["Total"].idxmax()])
First 5 rows:
Student Math Science English Attendance(%)
0 A 78 82 75 92
1 B 85 79 80 88
2 C 62 70 68 80
3 D 90 92 88 95
4 E 55 60 58 70
Checking for missing values:
Student 0
Math 0
Science 0
English 0
Attendance(%) 0
dtype: int64
Variables Terminal
12:24 PM Python 3

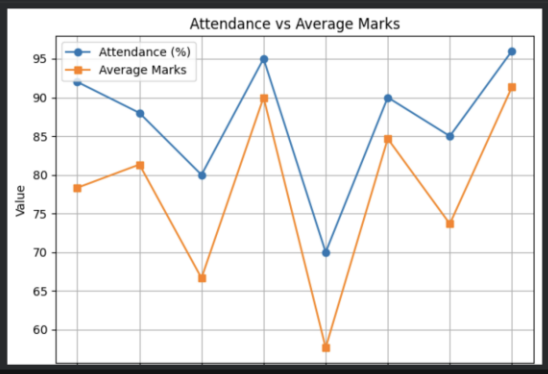
```
Data with Total and Average marks:
  Student  Math  Science  English  Attendance(%)  Total    Average
0       A    78       82       75             92    235  78.333333
1       B    85       79       80             88    244  81.333333
2       C    62       70       68             80    200  66.666667
3       D    90       92       88             95    270  90.000000
4       E    55       60       58             70    173  57.666667
5       F    88       84       82             90    254  84.666667
6       G    73       76       72             85    221  73.666667
7       H    95       89       90             96    274  91.333333

Subject-wise average marks:
Math       78.250
Science    79.000
English    76.625
dtype: float64

Student with highest total marks:
Student                 H
Math                   95
Science                89
English                90
Attendance(%)          96
Total                 274
Average         91.333333
Name: 7, dtype: object
```

```
subject_means = df[["Math", "Science", "English"]].mean()

plt.figure()
plt.bar(subject_means.index, subject_means.values)

plt.title("Average Marks by Subject")
plt.xlabel("Subject")
plt.ylabel("Average Marks")
plt.tight_layout()
```

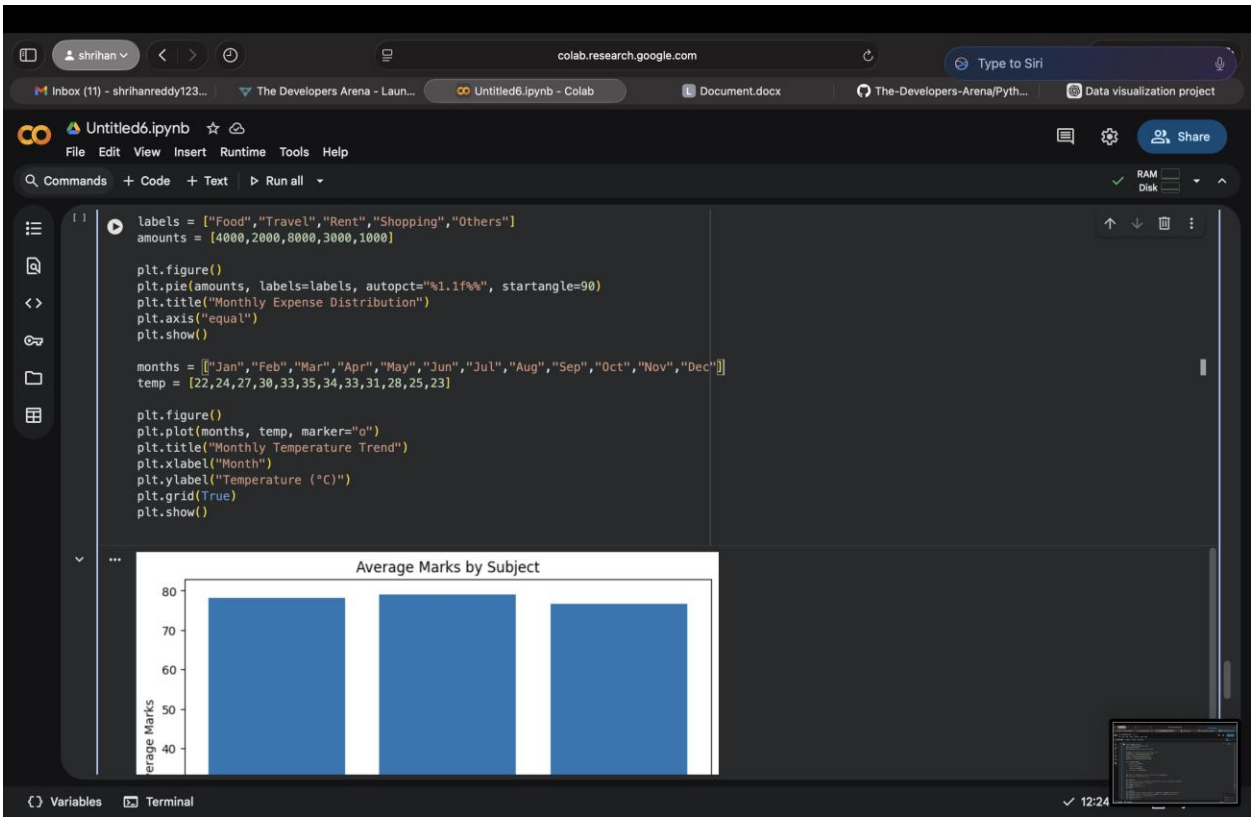
```
plt.figure()
plt.bar(subject_means.index, subject_means.values)

plt.title("Average Marks by Subject")
plt.xlabel("Subject")
plt.ylabel("Average Marks")
plt.tight_layout()
plt.show()
```



```
plt.figure()
plt.plot(df["Student"], df["Attendance(%)"], marker="o", label="Attendance (%)")
plt.plot(df["Student"], df["Average"], marker="s", label="Average Marks")

plt.title("Attendance vs Average Marks")
plt.xlabel("Student")
plt.ylabel("Value")
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.show()
```




```
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
plt.rcParams["figure.figsize"] = (8,5)

students = ["A","B","C","D","E","F","G","H"]
attendance = [92,88,80,95,70,90,85,96]
math = [78,85,62,90,55,88,73,95]
science = [82,79,70,92,60,84,76,89]
english = [75,80,68,88,58,82,72,90]

df = pd.DataFrame({
    "Student": students,
    "Math": math,
    "Science": science,
    "English": english,
    "Attendance": attendance
})

df["Total"] = df[["Math","Science","English"]].sum(axis=1)
df["Average"] = df["Total"] / 3

plt.figure()
plt.bar(["Math","Science","English"], df[["Math","Science","English"]].mean())
plt.title("Average Marks by Subject")
plt.xlabel("Subject")
plt.ylabel("Average Marks")
plt.show()

plt.figure()
plt.plot(df["Student"], df["Attendance"], marker="o", label="Attendance %")
plt.plot(df["Student"], df["Average"], marker="s", label="Average Marks")
plt.title("Attendance vs Average Marks")
plt.xlabel("Students")
plt.ylabel("Value")
```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labels = ["Food","Travel","Rent","Shopping","Others"]
amounts = [4000,2000,8000,3000,1000]
plt.figure()
plt.pie(amounts, labels=labels, autopct="%1.1f%%", startangle=90)
plt.title("Monthly Expense Distribution")
plt.axis("equal")
plt.show()
months = ["Jan","Feb","Mar","Apr","May","Jun","Jul","Aug","Sep","Oct","Nov","Dec"]
temp = [22,24,27,30,33,35,34,33,31,28,25,23]
plt.figure()
plt.plot(months, temp, marker="o")
plt.title("Monthly Temperature Trend")
plt.xlabel("Month")
plt.ylabel("Temperature (°C)")
plt.grid(True)
plt.show()
Average Marks by Subject
80
70
60
50
40
Variables
Terminal
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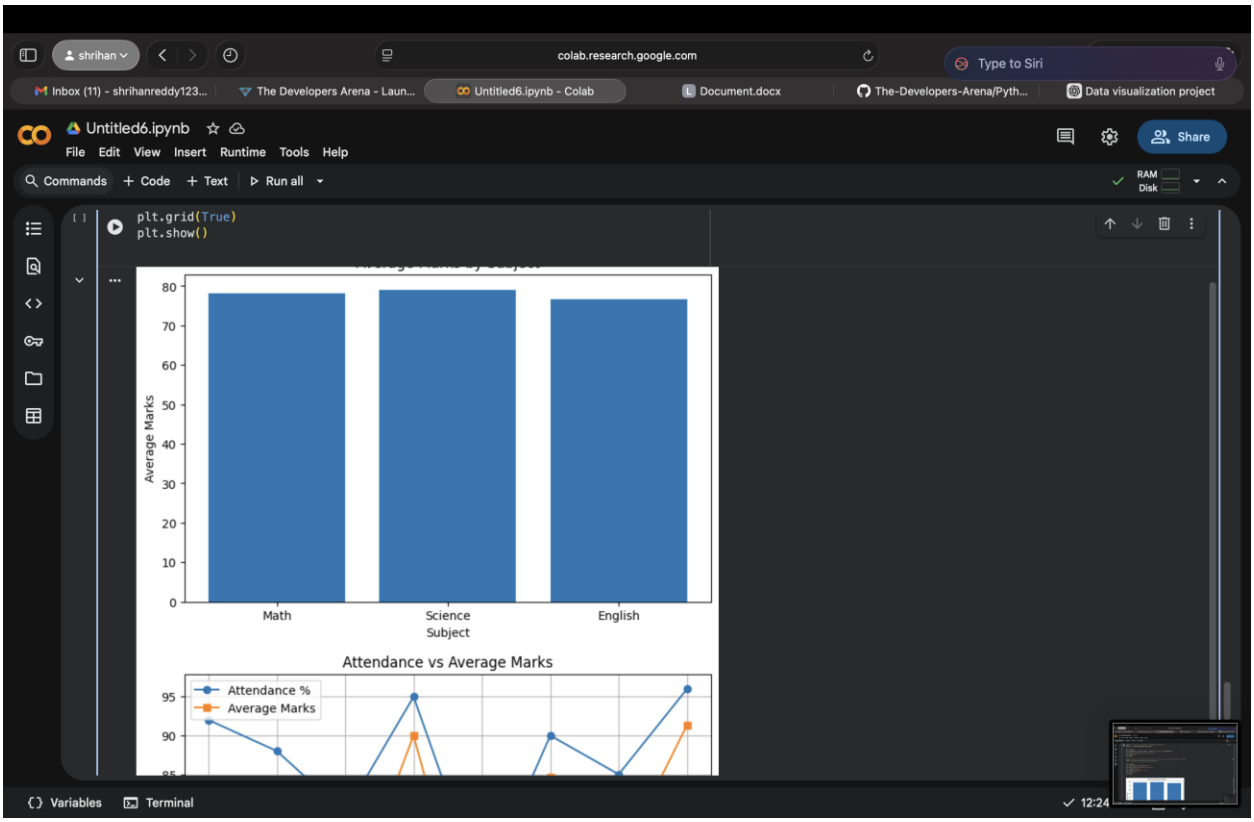
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RAM Disk
plt.grid(True)
plt.show()
Average Marks
80
70
60
50
40
30
20
10
0
Math
Science
English
Subject
Attendance vs Average Marks
Attendance %
Average Marks
95
90
Variables
Terminal
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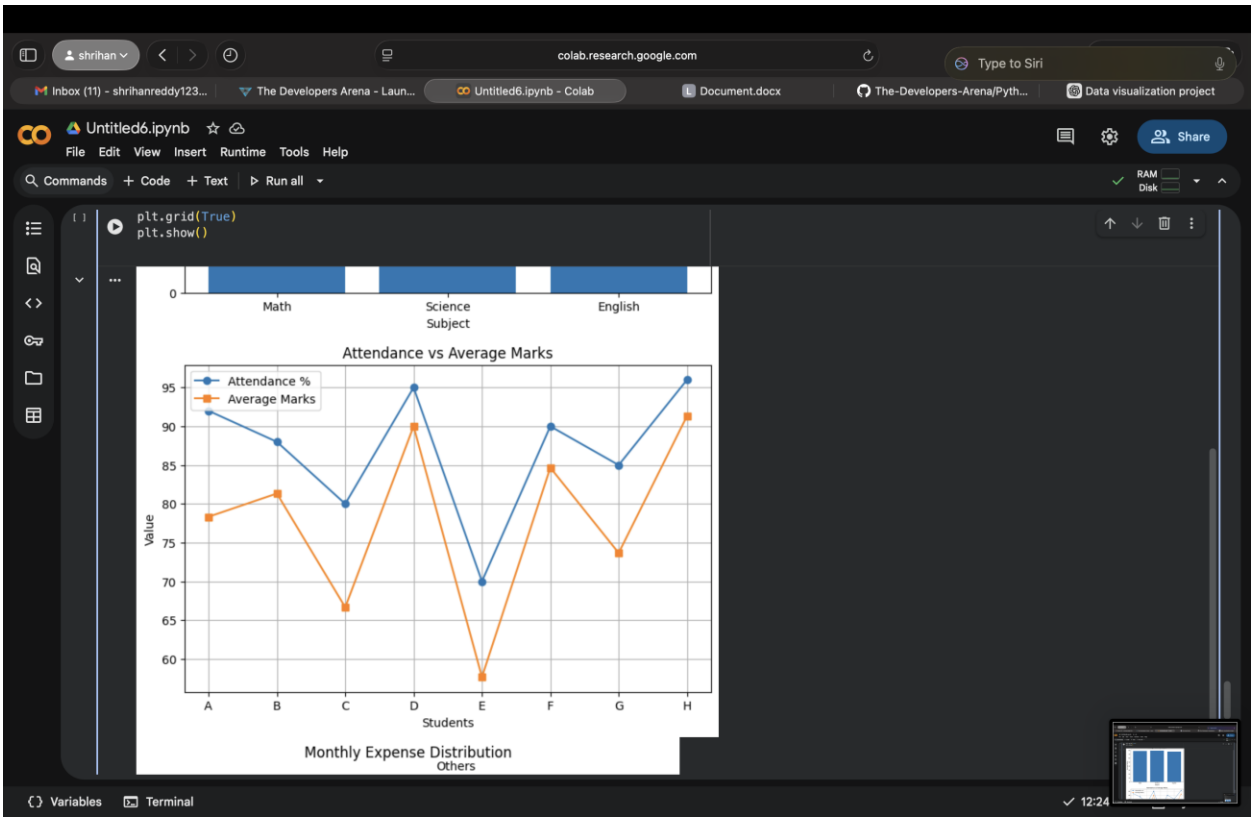
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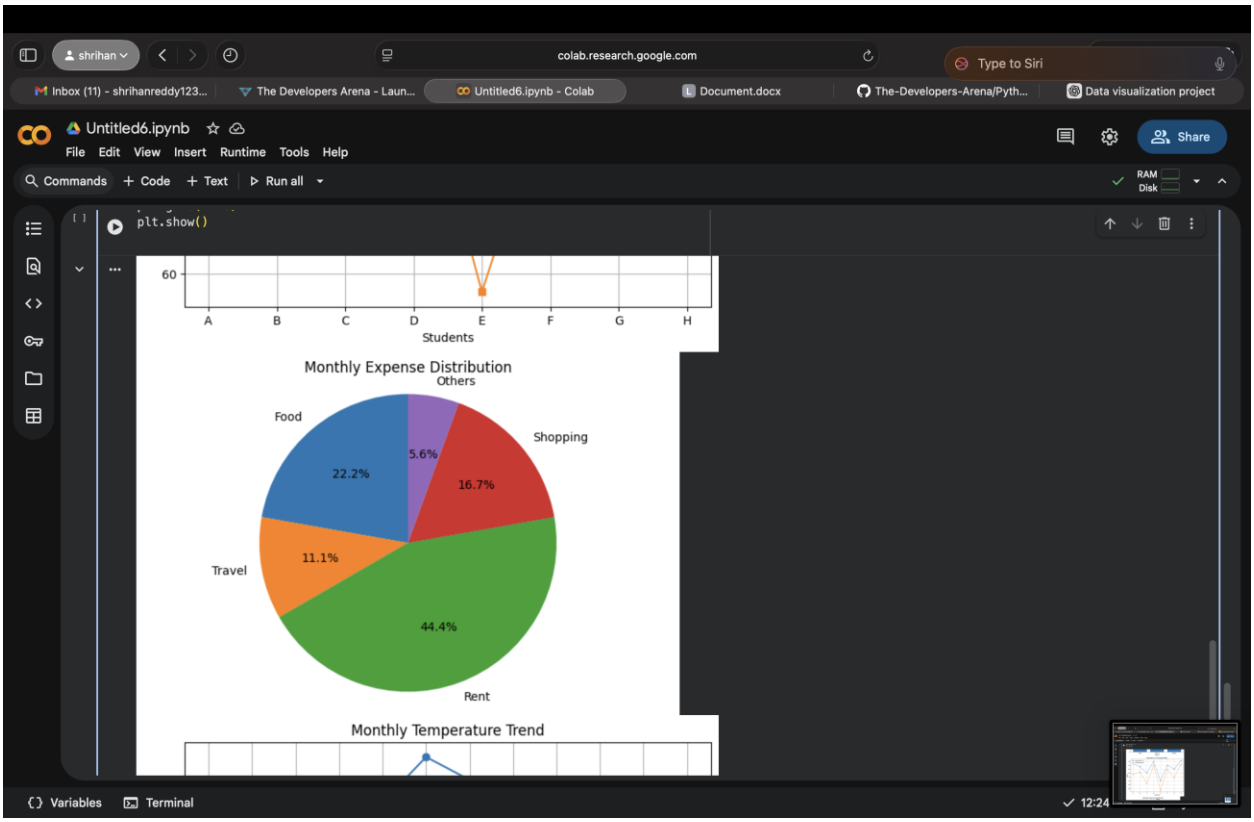
plt.grid(True)
plt.show()
Math
Science
English
Subject
Attendance vs Average Marks
Attendance %
Average Marks
Value
Students
Monthly Expense Distribution
Others
Variables
Terminal
12:24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plt.show()
Students
Monthly Expense Distribution
Others
Food
Shopping
Travel
Rent
22.2%
5.6%
16.7%
11.1%
44.4%
Monthly Temperature Trend
Variables
Terminal
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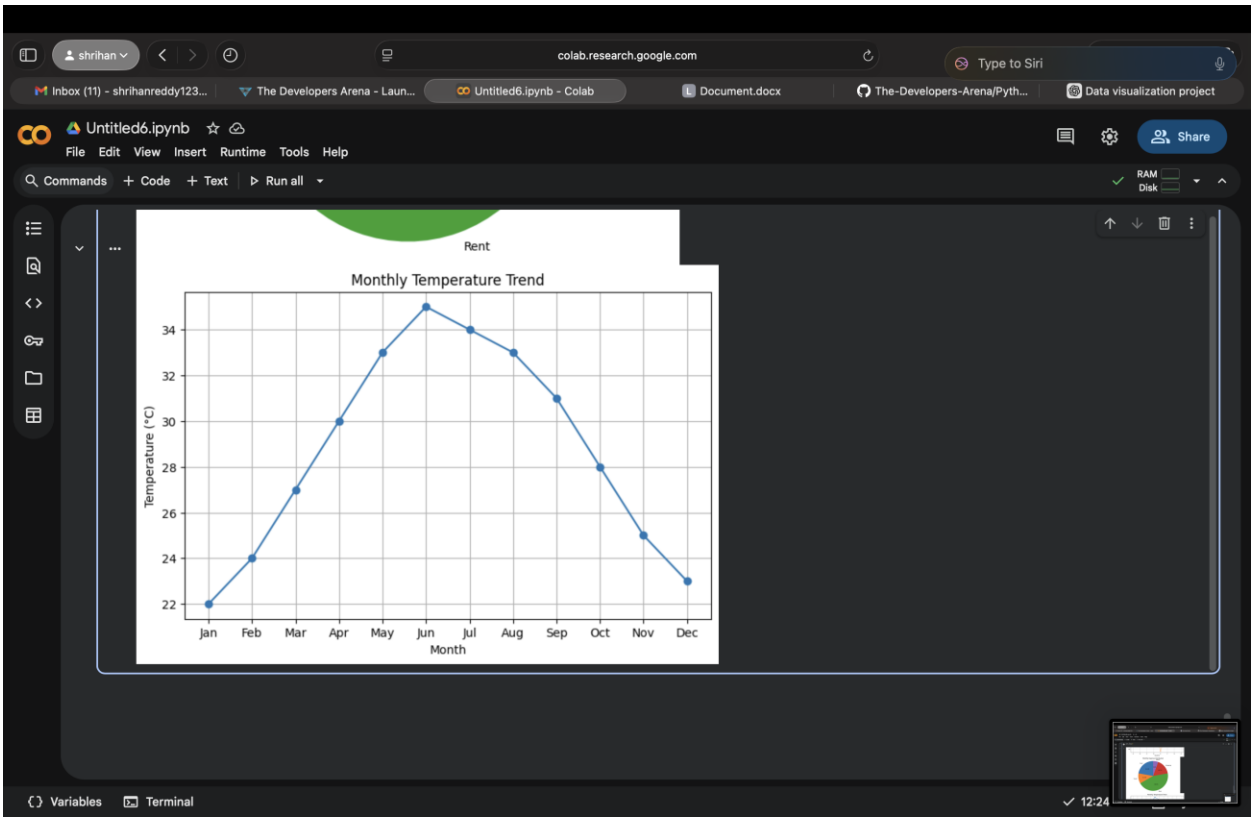
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RAM
Disk
Rent
Monthly Temperature Trend
Temperature (°C)
22
24
26
28
30
32
34
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Month
Variables
Terminal
12:24