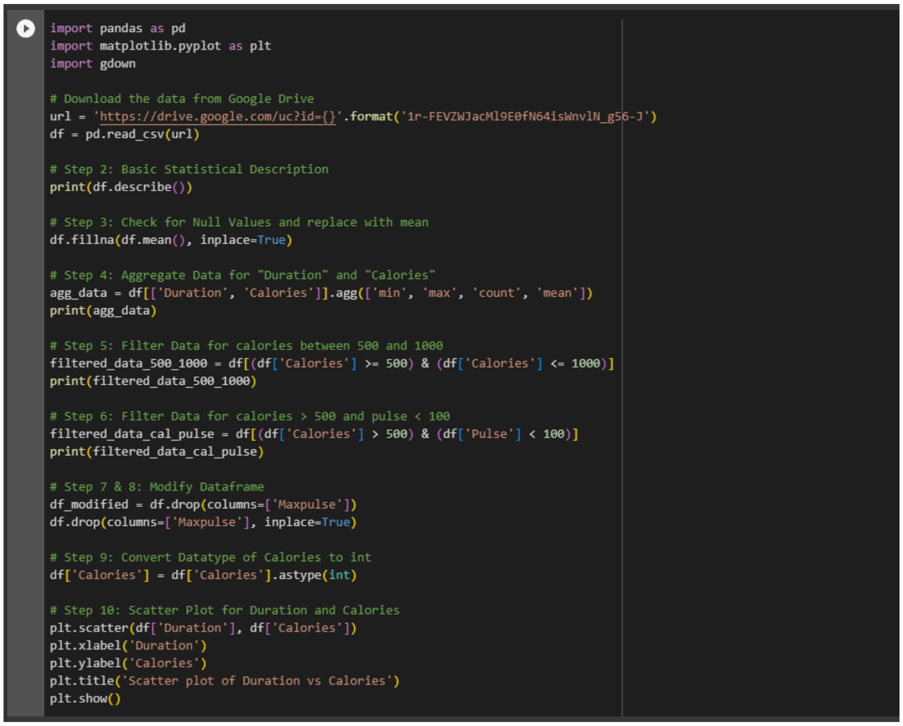
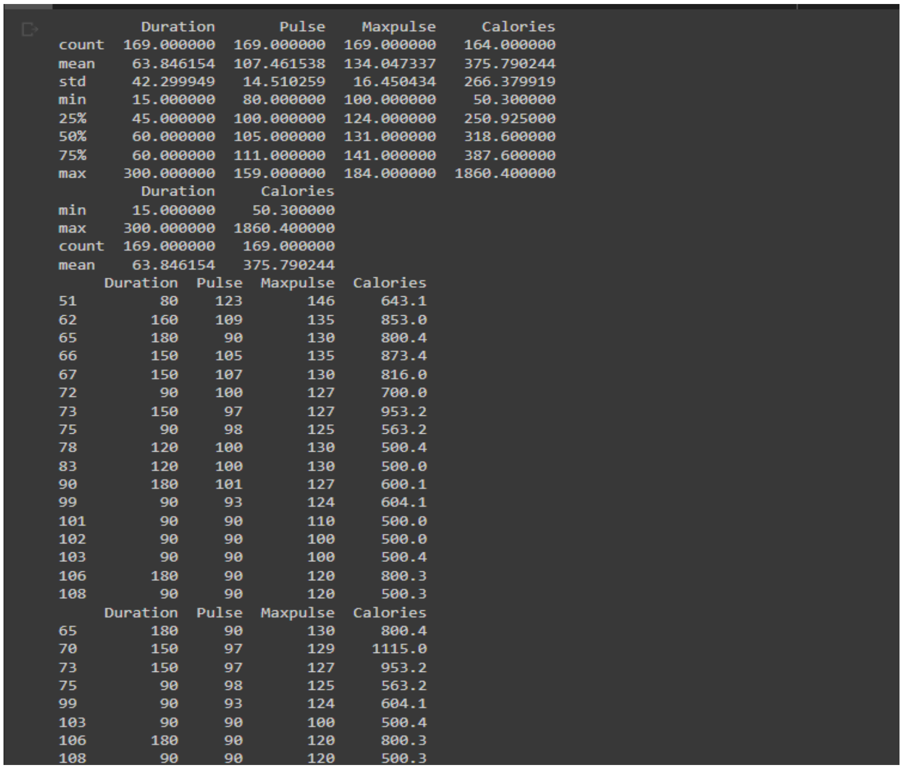
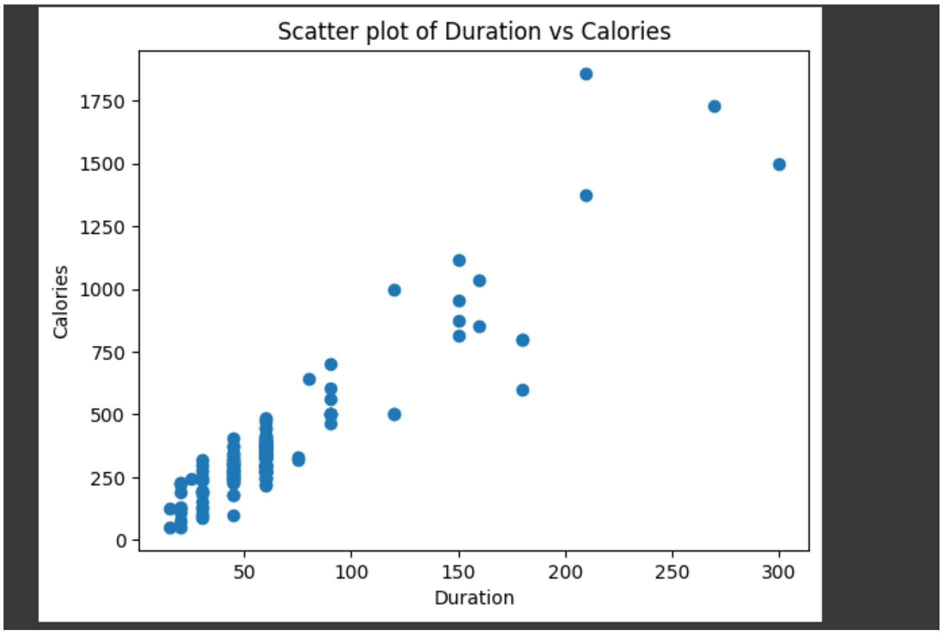
Q1



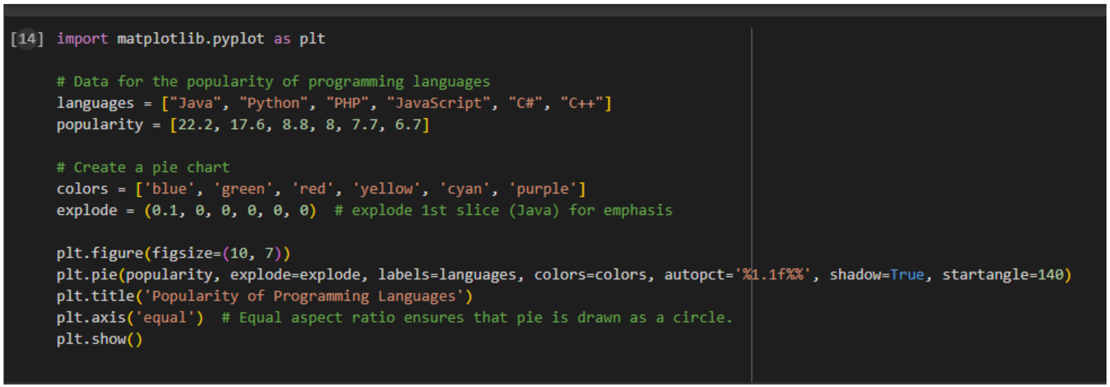
```python
import pandas as pd
import matplotlib.pyplot as plt
import gdown

# Download the data from Google Drive
url = 'https://drive.google.com/uc?id={}'.format('1r-FEVZWJacMl9E0fN64isWnvlN_g56-J')
df = pd.read_csv(url)

# Step 2: Basic Statistical Description
print(df.describe())

# Step 3: Check for Null Values and replace with mean
df.fillna(df.mean(), inplace=True)

# Step 4: Aggregate Data for "Duration" and "Calories"
agg_data = df[['Duration', 'Calories']].agg(['min', 'max', 'count', 'mean'])
print(agg_data)

# Step 5: Filter Data for calories between 500 and 1000
filtered_data_500_1000 = df[(df['Calories'] >= 500) & (df['Calories'] <= 1000)]
print(filtered_data_500_1000)

# Step 6: Filter Data for calories > 500 and pulse < 100
filtered_data_cal_pulse = df[(df['Calories'] > 500) & (df['Pulse'] < 100)]
print(filtered_data_cal_pulse)

# Step 7 & 8: Modify Dataframe
df_modified = df.drop(columns=['Maxpulse'])
df.drop(columns=['Maxpulse'], inplace=True)

# Step 9: Convert Datatype of Calories to int
df['Calories'] = df['Calories'].astype(int)

# Step 10: Scatter Plot for Duration and Calories
plt.scatter(df['Duration'], df['Calories'])
plt.xlabel('Duration')
plt.ylabel('Calories')
plt.title('Scatter plot of Duration vs Calories')
plt.show()
```

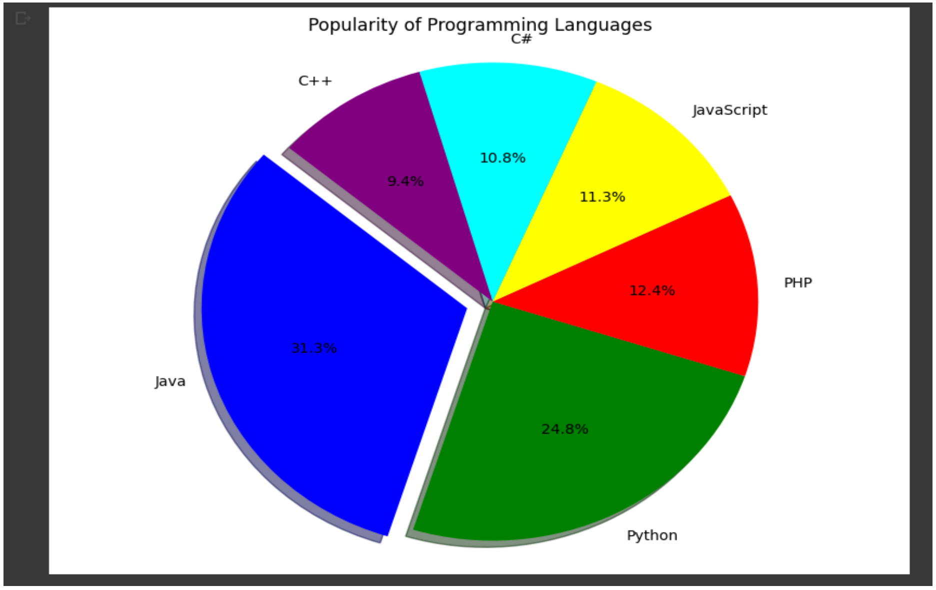


```
         Duration       Pulse    Maxpulse     Calories
count  169.000000  169.000000  169.000000   164.000000
mean    63.846154  107.461538  134.047337   375.790244
std     42.299949   14.510259   16.450434   266.379919
min     15.000000   80.000000  100.000000    50.300000
25%     45.000000  100.000000  124.000000   250.925000
50%     60.000000  105.000000  131.000000   318.600000
75%     60.000000  111.000000  141.000000   387.600000
max    300.000000  159.000000  184.000000  1860.400000
         Duration     Calories
min     15.000000    50.300000
max    300.000000  1860.400000
count  169.000000   169.000000
mean    63.846154   375.790244
     Duration  Pulse  Maxpulse  Calories
51         80    123       146     643.1
62        160    109       135     853.0
65        180     90       130     800.4
66        150    105       135     873.4
67        150    107       130     816.0
72         90    100       127     700.0
73        150     97       127     953.2
75         90     98       125     563.2
78        120    100       130     500.4
83        120    100       130     500.0
90        180    101       127     600.1
99         90     93       124     604.1
101        90     90       110     500.0
102        90     90       100     500.0
103        90     90       100     500.4
106       180     90       120     800.3
108        90     90       120     500.3
     Duration  Pulse  Maxpulse  Calories
65        180     90       130     800.4
70        150     97       129    1115.0
73        150     97       127     953.2
75         90     98       125     563.2
99         90     93       124     604.1
103        90     90       100     500.4
106       180     90       120     800.3
108        90     90       120     500.3
```

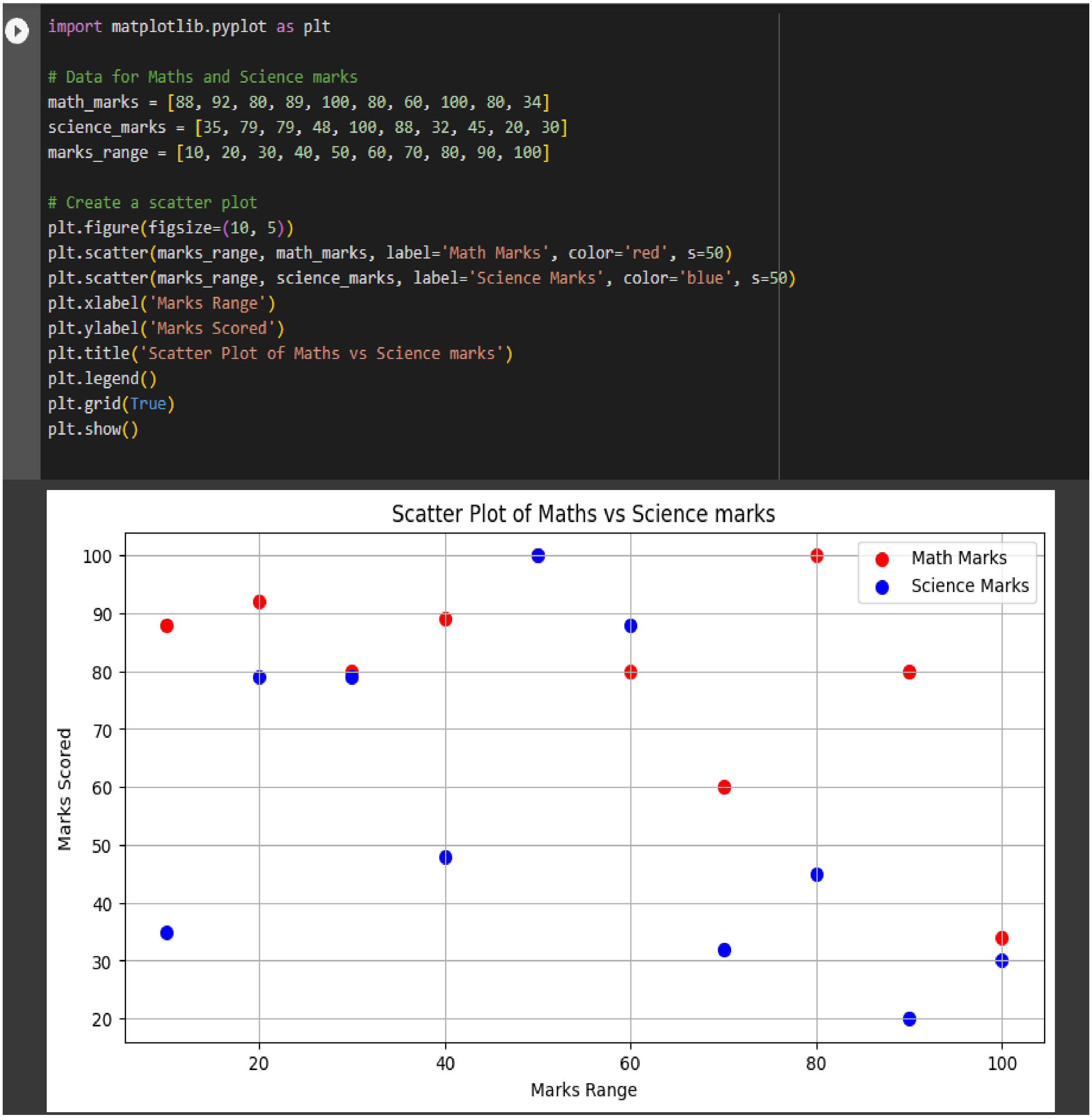


Q2 Part 1


```
[14] import matplotlib.pyplot as plt

     # Data for the popularity of programming languages
     languages = ["Java", "Python", "PHP", "JavaScript", "C#", "C++"]
     popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]

     # Create a pie chart
     colors = ['blue', 'green', 'red', 'yellow', 'cyan', 'purple']
     explode = (0.1, 0, 0, 0, 0, 0)  # explode 1st slice (Java) for emphasis

     plt.figure(figsize=(10, 7))
     plt.pie(popularity, explode=explode, labels=languages, colors=colors, autopct='%1.1f%%', shadow=True, startangle=140)
     plt.title('Popularity of Programming Languages')
     plt.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle.
     plt.show()
```



Q2 Part 2



```
import matplotlib.pyplot as plt

# Data for Maths and Science marks
math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]
science_marks = [35, 79, 79, 48, 100, 88, 32, 45, 20, 30]
marks_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

# Create a scatter plot
plt.figure(figsize=(10, 5))
plt.scatter(marks_range, math_marks, label='Math Marks', color='red', s=50)
plt.scatter(marks_range, science_marks, label='Science Marks', color='blue', s=50)
plt.xlabel('Marks Range')
plt.ylabel('Marks Scored')
plt.title('Scatter Plot of Maths vs Science marks')
plt.legend()
plt.grid(True)
plt.show()
```

Github: https://github.com/SXP36810/BigData

Youtube: https://youtu.be/38ts9mmRbfE