https://github.com/spuritha0613/Code10.git

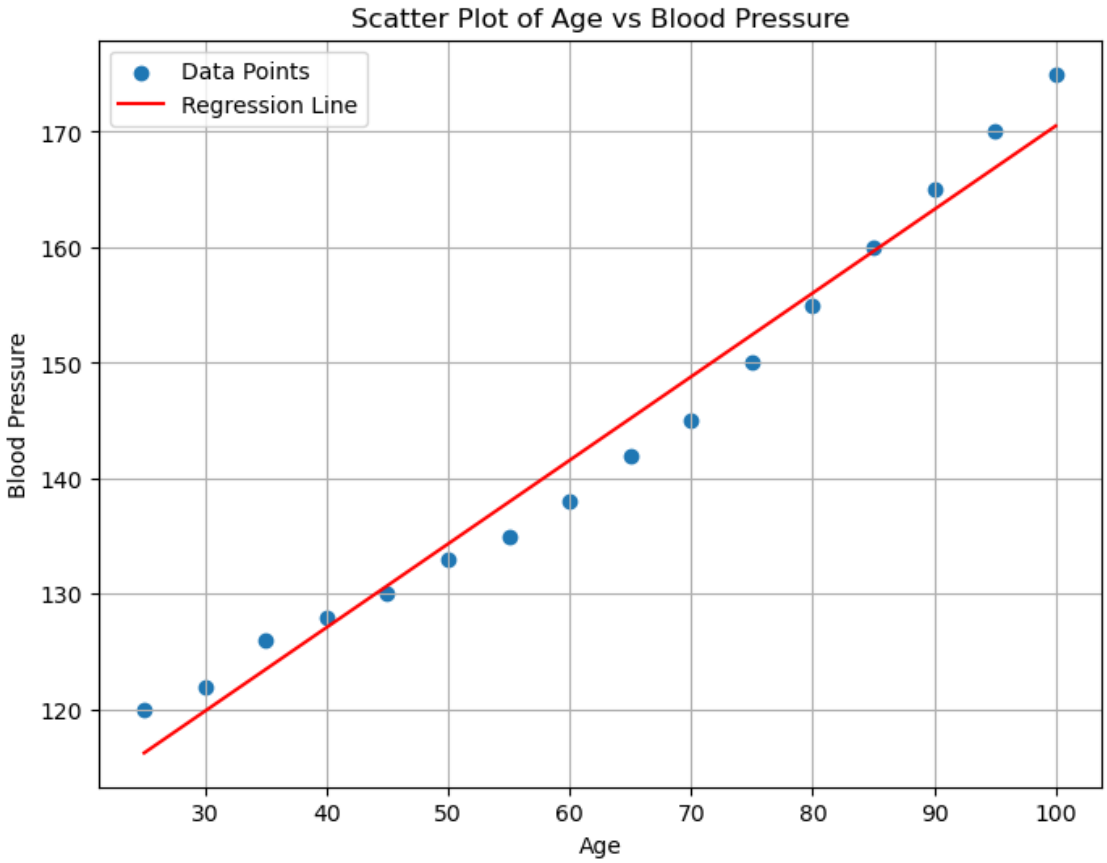
Code10

November 12, 2023

[3]:
```
# Import panda packages
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression

# Enter dataset
data = {
    'Age': [25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100],
    'BloodPressure': [120, 122, 126, 128, 130, 133, 135, 138, 142, 145, 150,␣
 ↪155, 160, 165, 170, 175]
}

# Creating a DataFrame
df = pd.DataFrame(data)

# Data exploration
print("Summary Statistics:\n", df.describe())
print("\nMissing Values:\n", df.isnull().sum())

# Scatter plot for Age and Blood Pressure
plt.figure(figsize=(8, 6))
plt.scatter(df['Age'], df['BloodPressure'], label='Data Points')
plt.xlabel('Age')
plt.ylabel('Blood Pressure')
plt.title('Scatter Plot of Age vs Blood Pressure')
plt.grid(True)

# Linear Regression Modelfor age and blood pressure
X = df[['Age']]
y = df['BloodPressure']
model = LinearRegression()
model.fit(X, y)

# Regression line for prediction
regression_line = model.predict(X)
plt.plot(df['Age'], regression_line, color='red', label='Regression Line')
```

```python
# Display the regression coefficients for slope intercepts
slope = model.coef_[0]
intercept = model.intercept_
print(f"\nRegression Coefficients:\nSlope: {slope}\nIntercept: {intercept}")

# Make predictions for ages
example_ages = [30, 40, 50, 60]
predicted_blood_pressure = model.predict(pd.DataFrame({'Age': example_ages}))
predictions = pd.DataFrame({'Age': example_ages, 'PredictedBloodPressure':␣
↪predicted_blood_pressure})
print("\nPredictions for Example Ages:\n", predictions)

# Show plot with legend
plt.legend()
plt.show()
```

```
Summary Statistics:
                Age  BloodPressure
count    16.000000      16.000000
mean     62.500000     143.375000
std      23.804761      17.442764
min      25.000000     120.000000
25%      43.750000     129.500000
50%      62.500000     140.000000
75%      81.250000     156.250000
max     100.000000     175.000000

Missing Values:
 Age              0
BloodPressure    0
dtype: int64

Regression Coefficients:
Slope: 0.7235294117647058
Intercept: 98.15441176470588

Predictions for Example Ages:
    Age  PredictedBloodPressure
0   30              119.860294
1   40              127.095588
2   50              134.330882
3   60              141.566176
```


Scatter Plot of Age vs Blood Pressure
Data Points
Regression Line
Blood Pressure
120
130
140
150
160
170
30
40
50
60
70
80
90
100
Age

[ ]: