

T5D1 Discussion

Correlation between IQ and Shoe size

```
# Import data
import numpy as np
import matplotlib.pyplot as plt

# Sample data for IQ and Shoe Size
iq_data = [85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150]
shoe_size_data = [7, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13, 13.5, 14]

# Calculate the correlation coefficient
correlation_coefficient = np.corrcoef(iq_data, shoe_size_data)[0, 1]

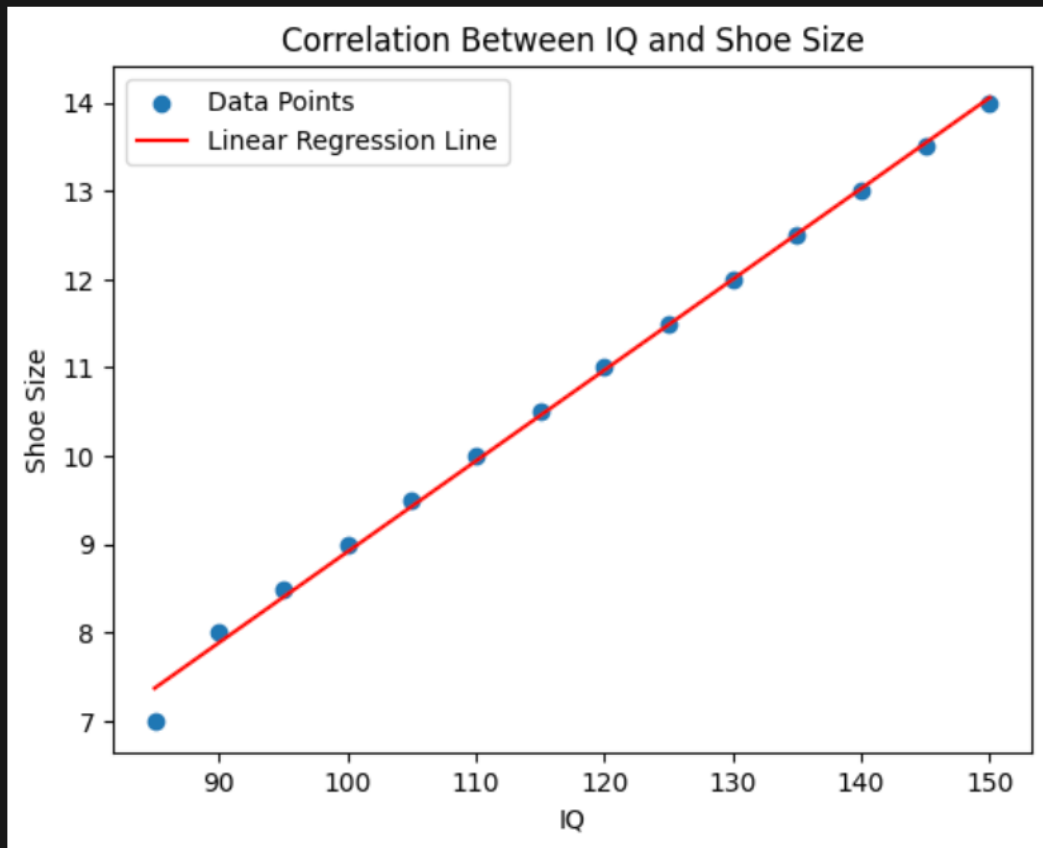
print("Correlation coefficient between IQ and Shoe Size:", correlation_coefficient)

# Perform linear regression
slope, intercept = np.polyfit(iq_data, shoe_size_data, 1)
regression_line = slope * np.array(iq_data) + intercept

# Create a scatter plot with the regression line
plt.scatter(iq_data, shoe_size_data, label="Data Points")
plt.plot(iq_data, regression_line, color='red', label="Linear Regression Line")
plt.title("Correlation Between IQ and Shoe Size")
plt.xlabel("IQ")
plt.ylabel("Shoe Size")
plt.legend()

# Show the plot
plt.show()
```

Correlation coefficient between IQ and Shoe Size: 0.9984603532054123



Correlation between Police Presence and Crime Rates

```
# Import libraries
import numpy as np
import matplotlib.pyplot as plt

# Generate a random dataset for Crime Rates and Police Presence
np.random.seed(0)
# Random crime rates between 50 and 500
crime_rates = np.random.uniform(50, 500, 100)
# Randomized police presence
police_presence = 1000 - 2 * crime_rates + np.random.normal(0, 100, 100)

# Calculate the correlation coefficient
correlation_coefficient = np.corrcoef(crime_rates, police_presence)[0, 1]

# Print the correlation coefficient
print("Correlation coefficient between Crime Rates and Police Presence:", correlation_coefficient)

# Perform linear regression
slope, intercept = np.polyfit(crime_rates, police_presence, 1)
regression_line = slope * np.array(crime_rates) + intercept

# Create a scatter plot with the regression line
plt.scatter(crime_rates, police_presence, label="Data Points")
plt.plot(crime_rates, regression_line, color='red', label="Linear Regression Line")
plt.title("Correlation Between Crime Rates and Police Presence")
plt.xlabel("Crime Rates")
plt.ylabel("Police Presence")
plt.legend()

# Show the plot
plt.show()
```

Correlation coefficient between Crime Rates and Police Presence: -0.9343897749175862

