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Problem 4:

```
import numpy as np
import matplotlib.pyplot as plt

# Data for problem 4 (weekly hours spent studying by a group of students)
data = [4, 6, 8, 3, 5, 7, 9, 10, 2, 6, 8, 5, 6, 11, 7]

# Calculate the quartiles and median
q1 = np.percentile(data, 25)
median = np.median(data)
q3 = np.percentile(data, 75)

# Identify potential outliers using the 1.5 * IQR rule
iqr = q3 - q1
lower_bound = q1 - 1.5 * iqr
upper_bound = q3 + 1.5 * iqr

# Create the boxplot
plt.figure(figsize=(8,6))
plt.boxplot(data, vert=False)
plt.title("Box Plot of Weekly Hours Spent Studying")
plt.xlabel("Hours")

# Display the plot
plt.show()

# Interpretation of the data
q1, median, q3, iqr, lower_bound, upper_bound
```

The box plot for the weekly hours spent studying reveals the following statistics:

- Q1 (25th percentile): 5.0 hours
- Median (50th percentile): 6.0 hours
- Q3 (75th percentile): 8.0 hours
- Interquartile Range (IQR): 3.0 hours
- Lower Bound of Outliers: 0.5 hours
- Upper Bound for Outliers: 12.5 hours

There are no outliers in the dataset, as all values fall between the lower and upper bounds. The data distribution is slightly skewed to the right, as indicated by the longer tail on the higher end of the box plot, meaning a few students spend more time studying than the median.

This distribution shows that 50% of the students study between 5 and 8 hours weekly, with a median study time of 6 hours.

Box Plot of Weekly Hours Spent Studying