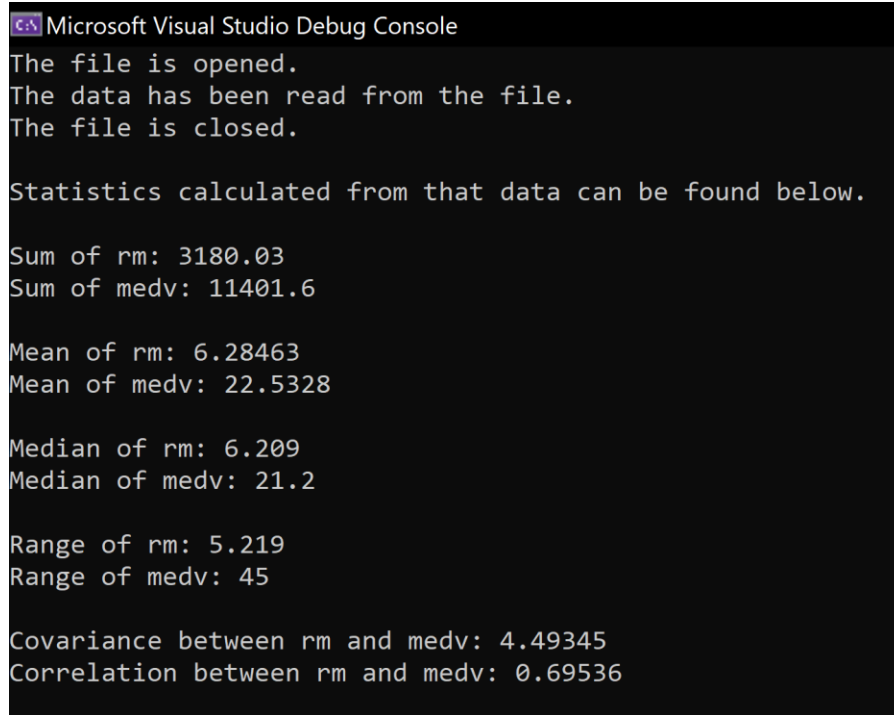


2a) Below is a screenshot and the copy/paste of the output for my code.

Screenshot:



```
Microsoft Visual Studio Debug Console
The file is opened.
The data has been read from the file.
The file is closed.

Statistics calculated from that data can be found below.

Sum of rm: 3180.03
Sum of medv: 11401.6

Mean of rm: 6.28463
Mean of medv: 22.5328

Median of rm: 6.209
Median of medv: 21.2

Range of rm: 5.219
Range of medv: 45

Covariance between rm and medv: 4.49345
Correlation between rm and medv: 0.69536
```

Copy/Paste:

The file is opened.
The data has been read from the file.
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Range of medv: 45

Covariance between rm and medv: 4.49345

Correlation between rm and medv: 0.69536

2b) After using the built-in functions in R and coding my own functions in C++, I have realized that even though it is a lot easier to use the built-in functions, sometimes it is better for you to write your own functions because it not only helps you understand the concept better, but it also helps you figure out how each component is calculated.

2c) Mean is the average of all the values in a data set, median is the middle value of the data set, and range is the difference between the max and the min value of the data set. These values give statisticians an idea of the sample size and also help them make significant conclusions about the data set.

2d) Covariance describes the direction of the linear relationships between two variables. It shows how much impact changing one variable would have on the other variable. Correlation measures the strength of the linear relationships between two variables. It gives us the scaled version of the covariance so we can figure out if that covariance is large or small. In machine learning, both of these values can help us predict our target variable based on our input variable, by helping us generate a model for a data set.