a.

```
$ ./a.out
Opening file Boston.csv
Reading line 1
heading: rm,medv
new length 506

Stats for rm
sum:    3180.03
mean:   6.28463
median: 7.608
range:  5.219

Stats for medv
sum:    11401.6
mean:   22.5328
median: 36.2
range:  45

 Covariance = 4.49345

 Correlation = 0.69536

Program terminated
```

b. Although using R's built-in statistics functions is much easier and more efficient than writing my own functions in C++, I still somewhat prefer the latter. It feels more satisfying to write my own functions. R's focus on having many built-in functions for various tasks makes the language feel a little bloated, and I feel I have to memorize more things to use the language effectively.

c. Mean is the average value of a dataset. One would expect a new observation to be close to this value. Median is the middle value or the average of the two middle values in a dataset. The median and mean together can tell us information about how the data is distributed. We would also expect new observations to be close to the median. The range is the difference between the smallest and largest values of a dataset. The range gives us information about how the data is spread.

d. Covariance is a measure of the relationship between two datasets. A positive covariance indicates a direct relationship while a negative covariance indicates an indirect relationship. The magnitude of the covariance carries little meaning because it depends on the magnitude of the data points. Correlation is the covariance but normalized such that it ranges from -1 to 1. The magnitude of the correlation describes how strong the relationship is. A high correlation indicates a strong relationship and vice versa. This gives us information on how accurate a machine learning model is likely to be when applied to those datasets.