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DXA190032  
CS 4375.004

```
Opening file Boston.csv.  
Reading line  
heading: rm,medv  
new length 506  
-----  
rm sum: 3180.03  
rm avg: 6.28463  
rm median: 6.209  
rm range: 5.219  
-----  
medv sum: 11401.6  
medv avg: 22.5328  
medv median: 21.2  
medv range: 45  
-----  
covariance between rm and medv: 4.49345  
correlation between rm and medv: 0.69536  
-----  
Closing file: Boston.csv
```

The intention of this program was to show how much less work the R programming language requires to do stuff other languages could. Having to code C++ functions that R had built in showed how much capability the R language had. For example, having to code the correlations and covariance functions proved to be quite the task with some debugging involved.

The descriptive statistical measures mean, median, and range are useful in data exploration due to the fact that they can be subbed in when data is missing to help provide a more accurate data reading. They also help show many useful statistics that various fields may use. For example, certain earthquake sensors can use their readings to help warn us of above-average variations in the readings of the earth's movements.

Covariance is a statistic that measures how much one reading is dependent on another reading. Correlation is a statistic that measures how two readings are related and how strong their relationship is. This can be useful in machine learning where certain data can be predicted using previous data correlations.