

## Assignment 3 Report

For Logistic Regression, these are the accuracy values that we have obtained for train\_data, validation\_data and test\_data.

Training Set Accuracy	92.328%
Validation Set Accuracy	91.46%
Testing Set Accuracy	91.92

Onto SVM, we will break down each part into different charts to make it easier to see.

## Linear Kernel

Training Set Accuracy	97.286%
Validation Set Accuracy	93.64%
Testing Set Accuracy	93.78%

## Radial Basis Function when Gamma equals 1

Training Set Accuracy	100%
Validation Set Accuracy	15.48%
Testing Set Accuracy	17.14%

## Radial Basis Function when Gamma is default

Training Set Accuracy	94.294%
Validation Set Accuracy	94.02%
Testing Set Accuracy	94.42%

Radial Basis Function when Gamma is default and C equals to 1, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

We will separate each accuracy into its own chart for the 100 values

## Training Set Accuracy

C = 1	94.294%
C = 10	97.132%
C = 20	97.952%
C = 30	98.372%
C = 40	98.706%
C = 50	99.002%
C = 60	99.196%
C = 70	99.34%
C = 80	99.438%
C = 90	99.542%
C = 100	99.612%

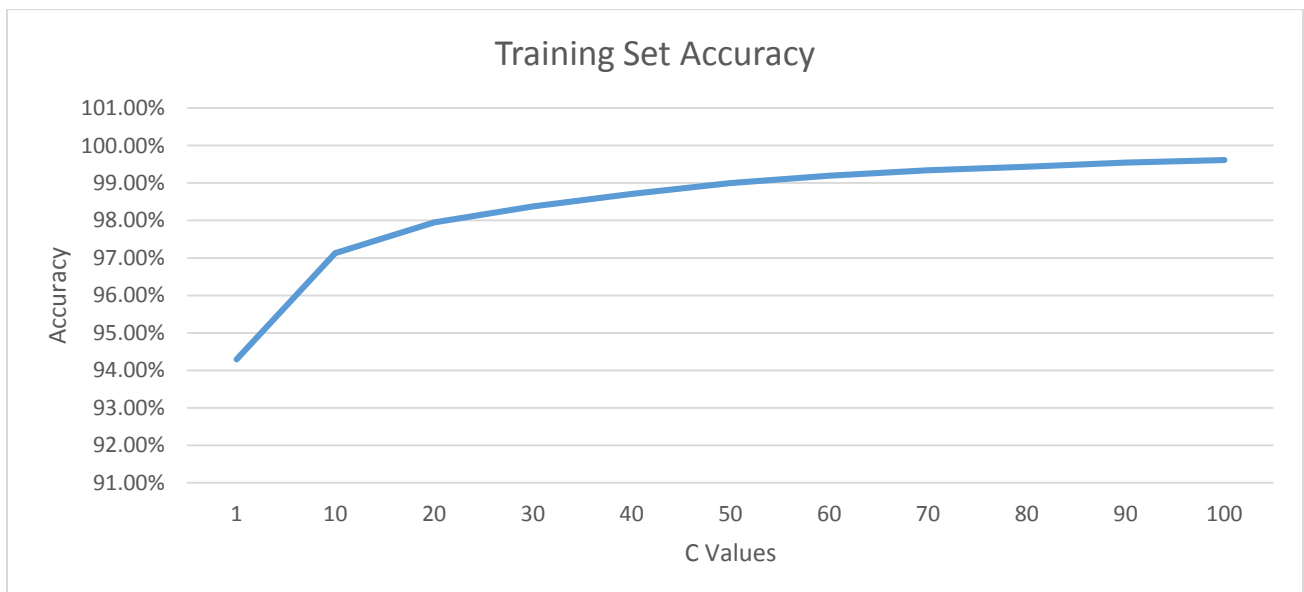
## Validation Set Accuracy

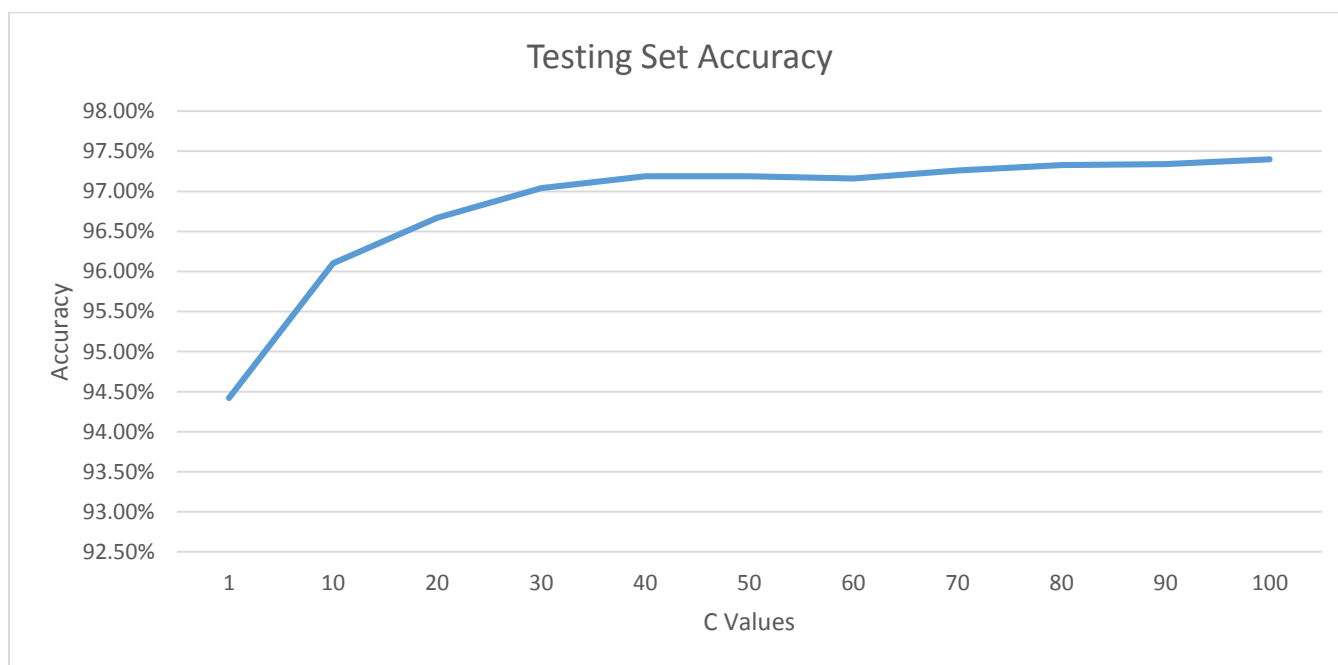
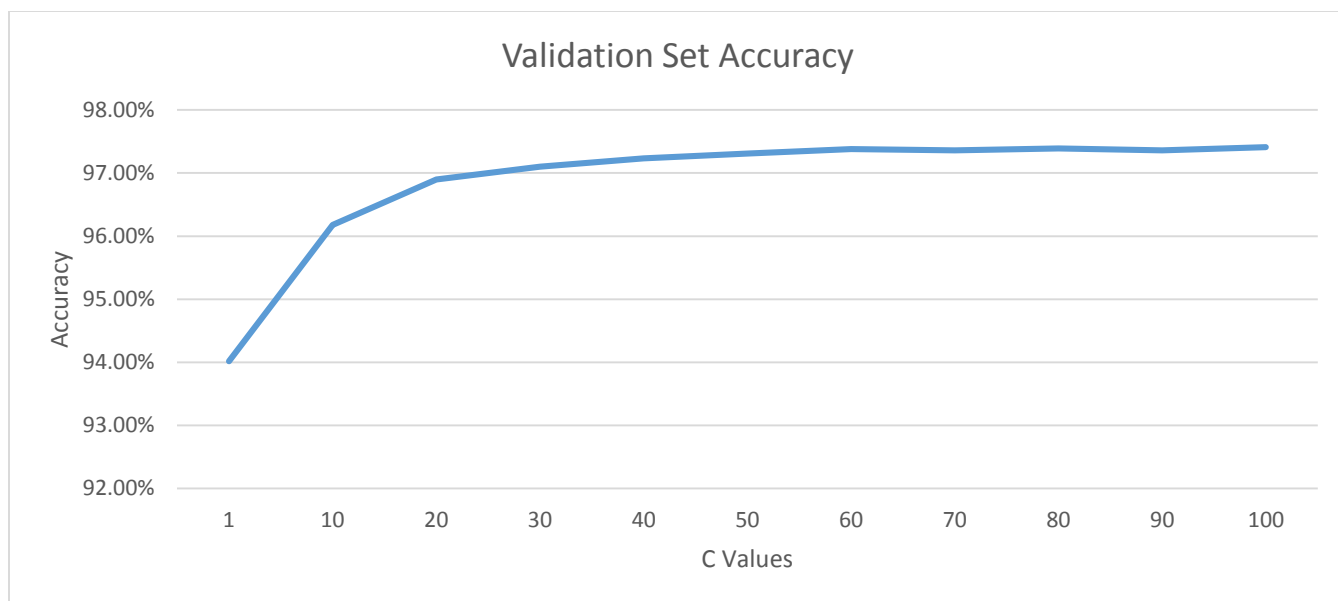
C = 1	94.02%
C = 10	96.18%
C = 20	96.9%
C = 30	97.1%
C = 40	97.23%
C = 50	97.31%
C = 60	97.38%
C = 70	97.36%
C = 80	97.39%
C = 90	97.36%
C = 100	97.41%

## Testing Set Accuracy

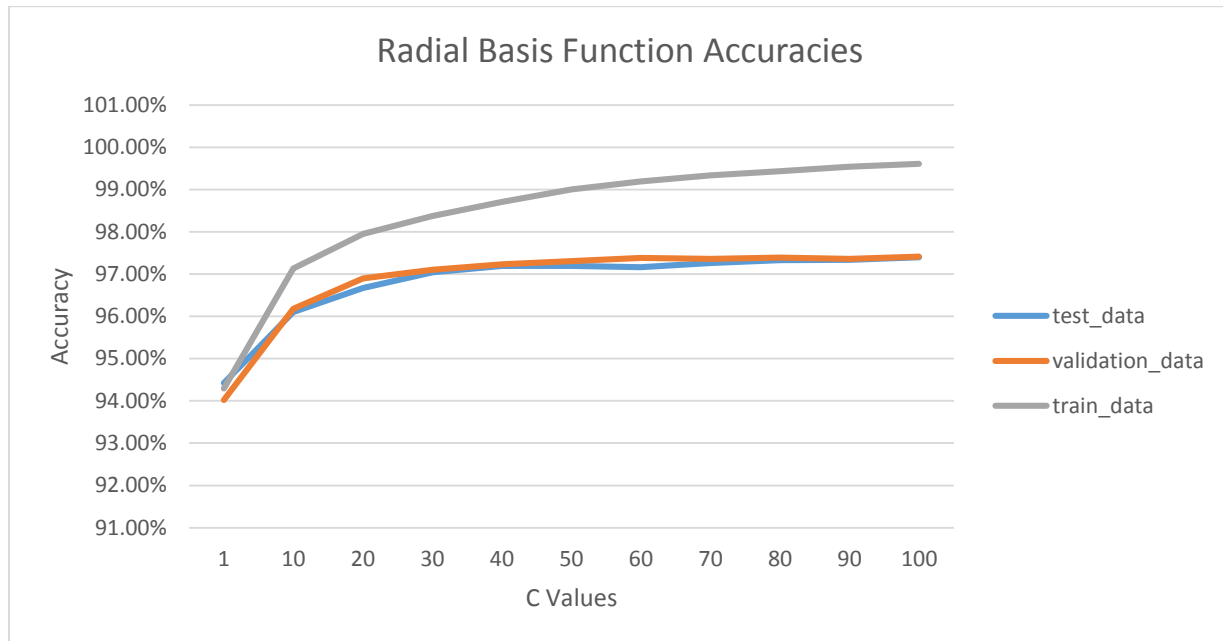
C = 1	94.42%
C = 10	96.1%
C = 20	96.67%
C = 30	97.04%
C = 40	97.19%
C = 50	97.19%
C = 60	97.16%
C = 70	97.26%
C = 80	97.33%
C = 90	97.34%
C = 100	97.4%

Here are the graphs for training, validation and testing accuracy





Here is a graph with all 3 accuracies side by side.



From the chart, you can tell that, as the value of C increases, the accuracies tend to increase as well. The test\_data and validation\_data accuracy slightly decreases at a certain C values, but it jumps right back up when it hits the next C value.