**Name: Abdul Maroof**

**Roll #: 16030010**

**Assignment # 4**

**Question 1:**

Accuracy

n = 30

K = 3

100.0

Accuracy

n = 90

K = 3

100.0

Accuracy

n = 105

K = 3

97.78

Accuracy

n = 30

K = 7

95.56

Accuracy

n = 90

K = 7

97.78

Accuracy

n = 105

K = 7

97.78

Accuracy

n = 30

K = 9

100.0

Accuracy

n = 90

K = 9

100.0

Accuracy n = 105

K = 9

100.0

We can see clearly from above that accuracy is decreasing by increasing the value of k

**Question 3:**

**a)**

**Boston dataset**

Mean Square Error

5.881925072430095

variance

0.590190680164

Confidence

0.200137867354 1.19729665869

**Red Wine**

Mean Square Error

0.6596604608882048

Confidence

0.235547096943 0.395059212174

Variance

0.332349008428

**b)**

**Red Wine**

[[ -9.16264862e-02 4.86790725e-02 -3.85018747e-03 2.85527507e+00

-2.86628542e+00 5.92440643e+00 -7.23540515e-03 -9.67872189e-01

1.70451971e-01 -9.39219868e-03 -3.92398904e-01 1.49825519e-02

-4.17051214e-01]]

Mean Square Error

5.783069168678615

Confidence

0.408009908526 0.815822257968

Variance

0.333517918099

**Boston dataset**

[[ -9.16264862e-02 4.86790725e-02 -3.85018747e-03 2.85527507e+00

-2.86628542e+00 5.92440643e+00 -7.23540515e-03 -9.67872189e-01

1.70451971e-01 -9.39219868e-03 -3.92398904e-01 1.49825519e-02

-4.17051214e-01]]

Root Mean squared error

0.6590856900739072

Confidence

0.291069920487 0.169680712622

Variance

0.333517918099

Ridge Regularized linear models is better compared to standard linear model based on SSE