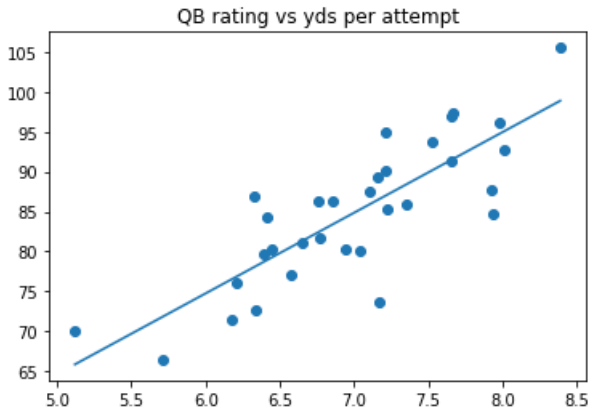
```
Python 3.6.5 |Anaconda, Inc.| (default, Mar 29 2018, 13:32:41) [MSC v.1900 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 6.4.0 -- An enhanced Interactive Python.

In [1]: runfile('C:/Users/hoops/OneDrive/Documents/School/ME EN 2550 Statistics and
Probability/HW7/HW7.py', wdir='C:/Users/hoops/OneDrive/Documents/School/ME EN 2550
Statistics and Probability/HW7')
```

B1:



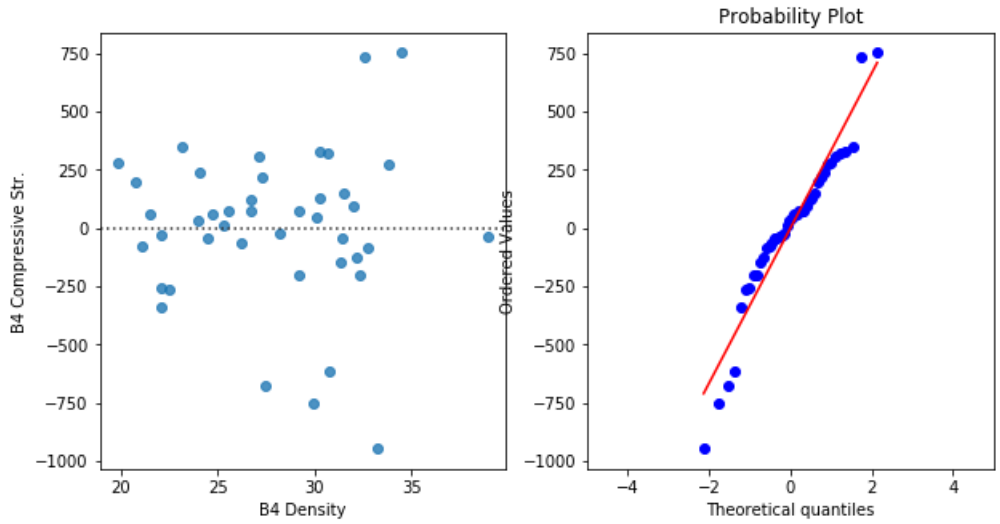
a) Slope = 10.09174 Intercept = 14.19549
b) There is a predicted 10.1 increase in QB rating given a unit increase in yards per attempt. When yards per attempt is 0 there is a predicted QB rating of 14.2
c) To increase the mean rating by 10 points yards per pass attempt should be increased by 0.99091
d) With x = 7.21 yds/attempt a QB rating of 86.95697 is predicted

B2:
a) Slope = 3.32437 Intercept = 13.32018
b) The predicted selling price given that the taxes paid are x = 7.50 is predicted to be 38.25296
c) When taxes paid is x = 5.898 the actual value is 30.90000 and the predicted value is 32.92732 and the residual is -2.02732

d) Yes the plot indicates that taxes paid is a relatively effective regressor variable in predicting selling price since we see an approximately linear relationship between sale price and annual taxes, we could determine the effectiveness more by getting more data.

B3:
a) The two-sided p-value for for a hypothesis test with a null hypothesis of slope esitimate for B1 data of 0 is 9.58903e-09. Since this is less than alpha = 0.01 we reject the null hypothesis thus there is some relationship between the quarterback rating and yards per attempt.
b) The estimated standard error of the slope is 1.28781 and the estimated standard error of the intercept is 9.05898

B4:
a) Slope = 184.55281 Intercept = -2149.64861
b) The two-sided p-value for for a hypothesis test with a null hypothesis of slope esitimate for B4 data of 0 is 1.17207e-18. Since this is less than alpha = 0.05 we reject the null hypothesis thus there is some relationship between density and compressive strength
c) R^2 = 0.85972 and thus 85.972% of the variance of compressive strength is explained by the model
d) From the plots we can see that our data is approximately normal(residual plot data is approximately flat) has nearly normal residuals(from probability plot of residuals) with constant variability based on the plots and thus conditions for doing least squares regression are met.



In [2]: