- Due at 1:30pm if late then 9.5 points max
- **Task 1:**
  - **Question 1:For the 6th suburb of Boston what is the median house value and the average number of rooms per dwelling?**
    - Median house value: 28.7
    - Average number of rooms: 6.430 rooms
- **Task 2:**
  - **Question 2:According to the plot, what is the relationship between median value of homes and average number of rooms per dwelling?**
    - The relationship is a moderate to strong correlation strength of 0.6953599 between median house value and number of rooms.
- **Task 3:**
  - **Question 3:Which observation has the largest average number of rooms per dwelling? What is the largest average number of rooms per dwelling?**
    - Which.min() has the largest number of rooms per dwelling with 366.
  - **Question 4:Which observation has the smallest average number of rooms per dwelling? What is the smallest average number of rooms per dwelling?**
    - Which.max() has the smallest average number of rooms per dwelling with 365.
- **Task 4:**
  - **Question 5:Give the linear model equation.**
    - $Y = -34.671 + 9.102x + e$
  - **Question 6: What is the percent of variation of medv that can be explained by this model?**
    - The R^2 Value is 0.4835
  - **Question 7:Is rm a good predictor for medv? Justify your answer**
    - No because the r^2 value is weak which shows very little correlation.
- **Task 5:**
  - **Question 8:What is the 95% confidence interval for the slope β1 of this model?**

```
> confint(lm.fit)
                2.5 %     97.5 %
(Intercept) -39.876641 -29.464601
rm            8.278855   9.925363
>
```

- **Task 6:**
  - **Question 9: What is the predicted median value of homes where the average number of rooms per dwelling is 5?**
    - 10.83992

    - **• Notice that the confidence interval for 5 is [9.634, 12.045]. The interpretation is: on average the median value of the homes in all of the suburbs with an average of 5 rooms is between $9,634 and $12,45.**
    - **• Notice that the prediction interval for 5 is [-2.214, 23.894]. The interpretation is: if we look at one suburb, the predicted median home value for that suburb will be between -$2,214 and $23,894.**
- **Task 7:**
    - **Question 10:Do there appear to be extreme values?**
        - Yes
    - **Question 11:Which row has the largest leverage?**
        - 366
    - **Question 12:How many average number of rooms per dwelling and what is the median value of the homes in this suburb?**
        - Average number of rooms per dwelling: 3.561
        - Median value of the homes in the suburbs: 27.5