Statistical learning assignment 5- chapter 3

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2.

The concepts of KNN classifier&KNN regression are similar.

The main difference between the two methods is that the output of KNN classifier is qualitative, but the output of another one is quantitative.

7.

$$
\begin{aligned}
R^2 = \frac{SSR}{SST} &= \frac{\sum_{i=1}^{n}(\hat{y}_i - \bar{y})^2}{\sum_{i=1}^{n}(y_i - \bar{y})^2} \\
&= \frac{\sum_{i=1}^{n}(b_0 + b_1 x_i - \bar{y})^2}{\sum_{i=1}^{n}(y_i - \bar{y})^2} \\
&= \frac{\sum_{i=1}^{n}(\bar{y} - b_1\bar{x} + b_1 x_i - \bar{y})^2}{\sum_{i=1}^{n}(y_i - \bar{y})^2} \\
&= \frac{\sum_{i=1}^{n}(b_1 x_i - b_1\bar{x})^2}{\sum_{i=1}^{n}(y_i - \bar{y})^2} \\
&= b_1^2 \frac{S_{xx}}{s_{yy}} = (\frac{S_{xy}}{S_{xx}})^2 \frac{S_{xx}}{s_{yy}} \\
&= \frac{(S_{xy})^2}{S_{xx}S_{yy}} = [cor(x,y)]^2
\end{aligned}
$$