181058_DSLab_Quiz

Question 1

Do data(mtcars) from the datasets package and fit the regression model with mpg as the outcome and weight as the predictor. Give the slope coefficient.

Importing Data mtcars

```
data(mtcars)
head(mtcars)
```

```
##                    mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4         21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag     21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
## Valiant           18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
```

Now we need mpg as y_outcome, and weight as x_predict

```
y_outcome <- mtcars$mpg
x_pred <- mtcars$wt

#Linear Model
model <-  lm(y_outcome ~ x_pred, data = mtcars)
summary(model)
```

```
##
## Call:
## lm(formula = y_outcome ~ x_pred, data = mtcars)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5432 -2.3647 -0.1252  1.4096  6.8727
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  37.2851     1.8776  19.858  < 2e-16 ***
## x_pred       -5.3445     0.5591  -9.559 1.29e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.046 on 30 degrees of freedom
## Multiple R-squared:  0.7528, Adjusted R-squared:  0.7446
## F-statistic: 91.38 on 1 and 30 DF,  p-value: 1.294e-10
```

```
coef(model)
```

```
## (Intercept)      x_pred
```

```
##    37.285126    -5.344472
```

Question 02

Consider the following data set (used above as well). What is the intercept for fitting the model with x as the predictor and y as the outcome?

Inputing values

```r
x <- c(0.8, 0.47, 0.51, 0.73, 0.36, 0.58, 0.57, 0.85, 0.44, 0.42)
y <- c(1.39, 0.72, 1.55, 0.48, 1.19, -1.59, 1.23, -0.65, 1.49, 0.05)

# Creating a linear model
r_model <- lm(y ~ x)
r_model
```

```
##
## Call:
## lm(formula = y ~ x)
##
## Coefficients:
## (Intercept)            x
##       1.567       -1.713
```