

# assignment2.R

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*#Q.1 Using the inbuilt mtcars data set in R, import it and consider the variables mpg (dependent), disp  
#Write code to fit multiple linear reg model, display summary and visualize*

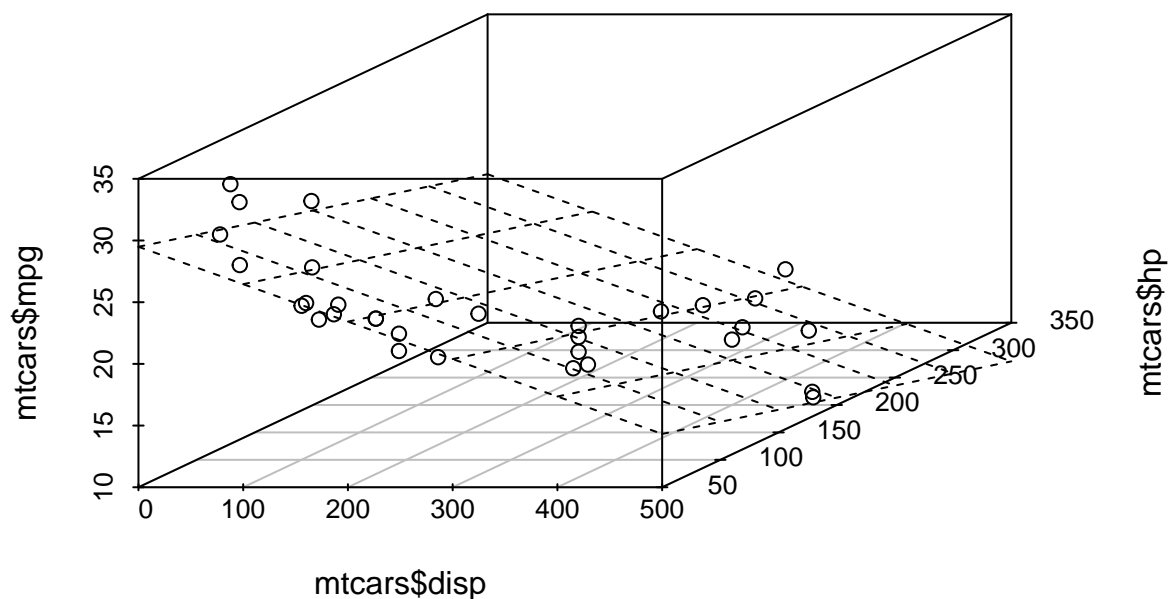
```
data(mtcars)
Regmodel2 = lm(mtcars$mpg ~ (mtcars$disp + mtcars$hp))
print(Regmodel2)
```

```
##
## Call:
## lm(formula = mtcars$mpg ~ (mtcars$disp + mtcars$hp))
##
## Coefficients:
## (Intercept)  mtcars$disp      mtcars$hp
##      30.73590      -0.03035      -0.02484
```

```
summary(Regmodel2)
```

```
##
## Call:
## lm(formula = mtcars$mpg ~ (mtcars$disp + mtcars$hp))
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -4.7945 -2.3036 -0.8246  1.8582  6.9363
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  30.735904   1.331566  23.083  < 2e-16 ***
## mtcars$disp  -0.030346   0.007405  -4.098  0.000306 ***
## mtcars$hp    -0.024840   0.013385  -1.856  0.073679 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.127 on 29 degrees of freedom
## Multiple R-squared:  0.7482, Adjusted R-squared:  0.7309
## F-statistic: 43.09 on 2 and 29 DF,  p-value: 2.062e-09
```

```
library(scatterplot3d)
graph = scatterplot3d(mtcars$disp, mtcars$hp, mtcars$mpg)
graph $ plane3d(Regmodel2)
```



*#Q.2 Create a data frame with sales (dependent), advertising and price (independent) for 8 products  
# Fit a multiple linear reg model and interpret the regression coefficients*

```
sales_data = data.frame(sales = c(110, 80, 70, 120, 150, 90, 70, 120), advertising = c(30, 40, 20, 50, 60, 70, 80, 90), price = c(10, 15, 20, 25, 30, 35, 40, 45))
Regmodel3 = lm(sales_data$sales ~ (sales_data$advertising + sales_data$price))
print(Regmodel3)
```

```
##
## Call:
## lm(formula = sales_data$sales ~ (sales_data$advertising + sales_data$price))
##
## Coefficients:
##           (Intercept)  sales_data$advertising    sales_data$price
##           16.8314         -0.2442             7.8488
```

```
summary(Regmodel3)
```

```
##
## Call:
## lm(formula = sales_data$sales ~ (sales_data$advertising + sales_data$price))
##
## Residuals:
##      1      2      3      4      5      6      7      8
## 14.157 -5.552  3.110 -2.355 -1.308 -11.250 -4.738  7.936
```

```
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      16.8314    11.8290   1.423  0.2140
## sales_data$advertising -0.2442     0.5375  -0.454  0.6687
## sales_data$price      7.8488     2.1945   3.577  0.0159 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.593 on 5 degrees of freedom
## Multiple R-squared:  0.9191, Adjusted R-squared:  0.8867
## F-statistic: 28.4 on 2 and 5 DF, p-value: 0.001862
```

```
library(scatterplot3d)
graph = scatterplot3d(sales_data$advertising, sales_data$price, sales_data$sales)
graph $ plane3d(Regmodel3)
```

