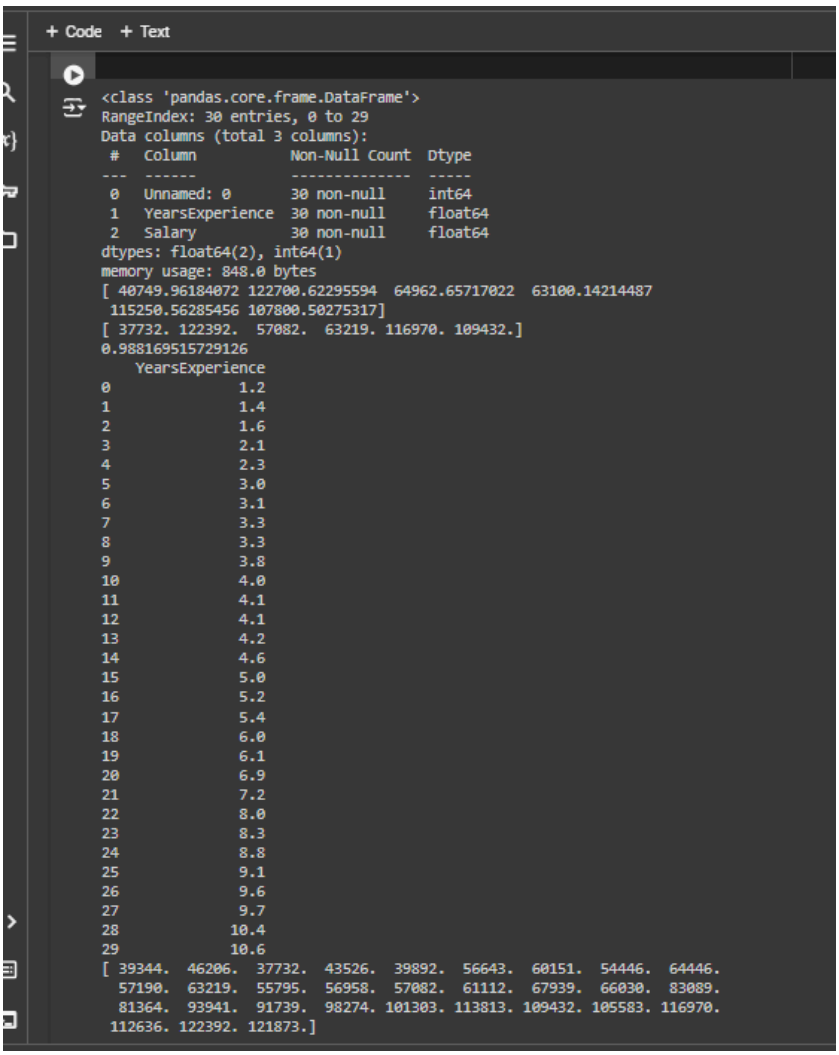
linearReg in py:

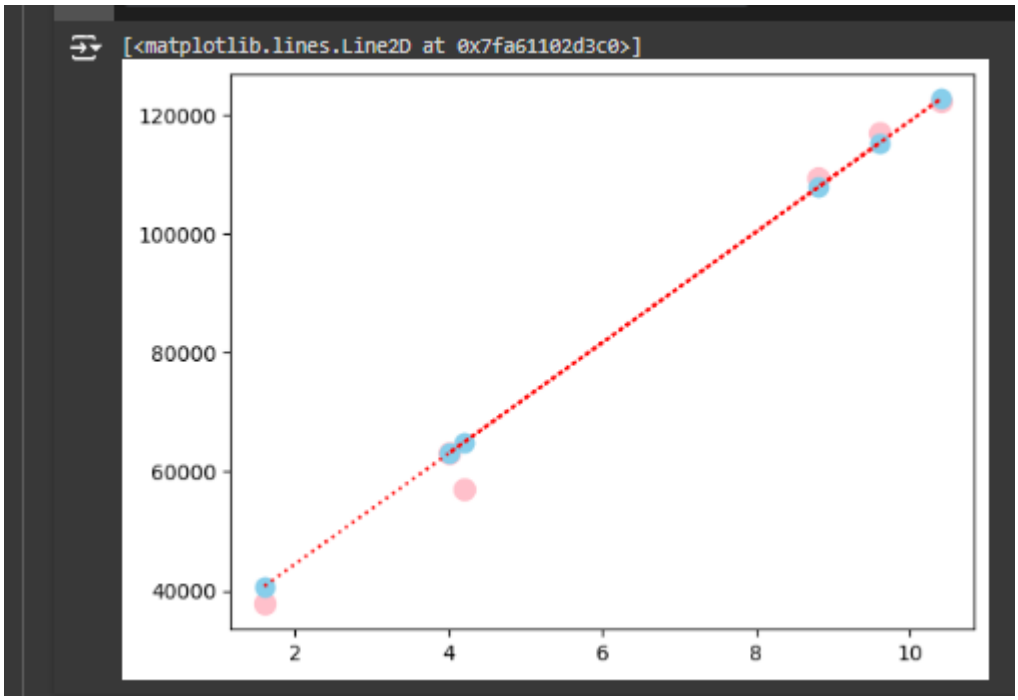
```
python code linear reg:- import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
data = pd.read_csv("/content/Salary_dataset.csv")
data.head()
data.info()
x = data["YearsExperience"]
y = data["Salary"]
#step 3
x = data[["YearsExperience"]]
y = data["Salary"].values
#step 4 - sk learn function
from sklearn.model_selection import train_test_split
x_train , x_test , y_train , y_test = train_test_split (x,y,train_size=0.8,random_state=0)
#step 5 - training model using linear reg & fit-function
from sklearn.linear_model import LinearRegression
model = LinearRegression()
model.fit(x_train , y_train)
y_pred= model.predict(x_test)
print(y_pred)
print(y_test)
from sklearn.metrics import r2_score
score = r2_score (y_test , y_pred)
print(score)
```

Output 1:



Code:- plt.scatter(x_test,y_test,color='pink',s=100)
plt.scatter(x_test,y_pred,color='skyblue',s=80)
plt.plot(x_test,y_pred,color='red',linestyle='dotted')

Output2:



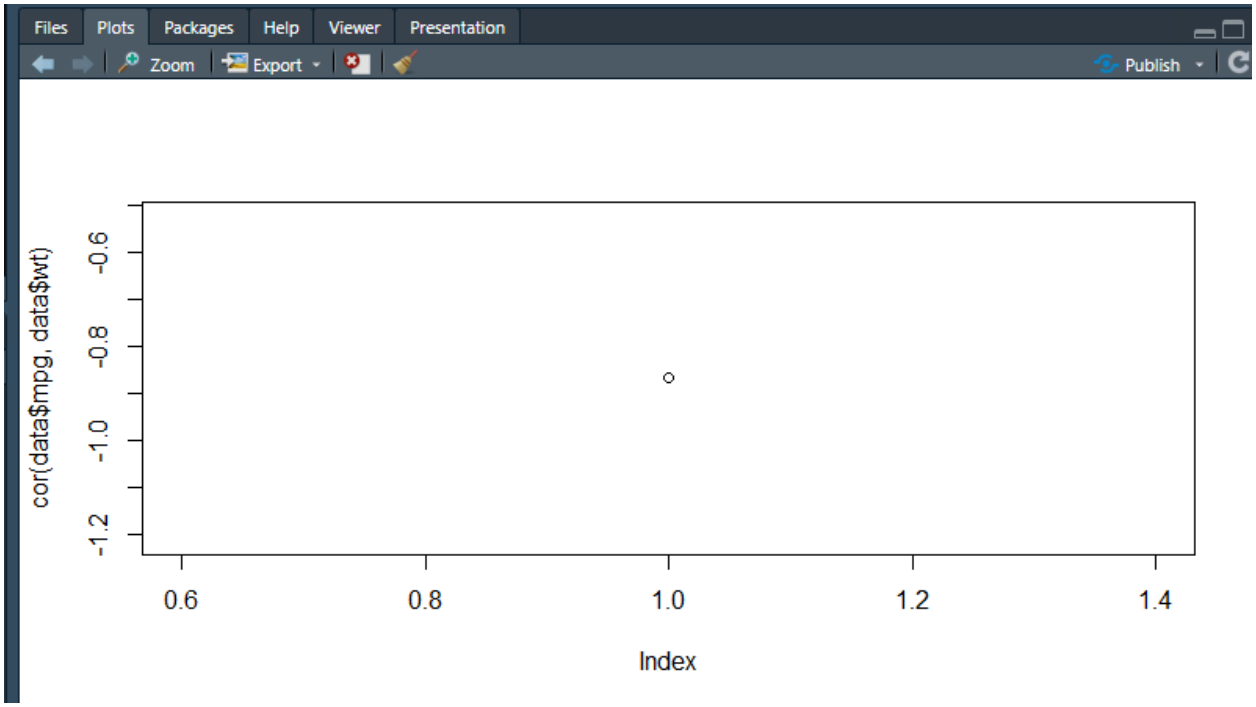
r code-

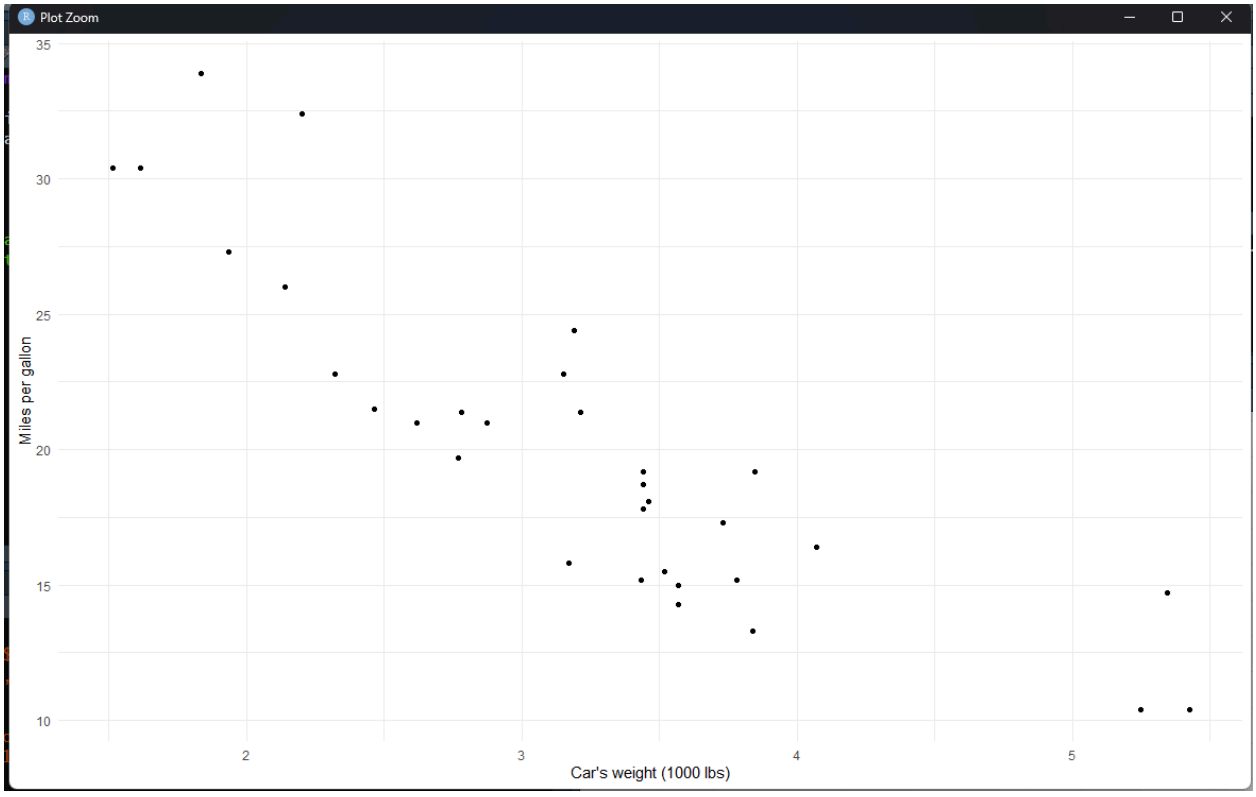
refer statsandr.com website
#for mtcars dataset
data<-mtcars
cor(data$mpg, data$disp)
plot(cor(data$mpg, data$wt))
plot(mtcars)
library(ggplot2)
ggplot(data, aes(x = wt, y = mpg)) +
  geom_point() +
  labs(
    y = "Miles per gallon",
    x = "Car's weight (1000 lbs)"
) +
 theme_minimal()
#simple linear regression
model <- lm(mpg ~ wt, data = data)
summary(model)

# multiple linear regression
model1 <- lm(mpg ~ wt + hp + disp, data = data)
summary(model1)

solution-
mtcars

```
> data<-mtcars
> cor(data$mpg, data$disp)
[1] -0.8475514
> cor(data$mpg, data$wt)
[1] -0.8676594
```





```
+   theme_minimal()
> model <- lm(mpg ~ wt, data = data)
> summary(model)

Call:
lm(formula = mpg ~ wt, data = data)

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 ***
wt           -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
```

```
> model1 <- lm(mpg ~ wt + hp + disp, data = data)
> summary(model1)

Call:
lm(formula = mpg ~ wt + hp + disp, data = data)

Residuals:
   Min     1Q Median     3Q    Max
-3.891 -1.640 -0.172  1.061  5.861

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 37.105505   2.110815  17.579  < 2e-16 ***
wt          -3.800891   1.066191  -3.565  0.00133 **
hp          -0.031157   0.011436  -2.724  0.01097 *
disp        -0.000937   0.010350  -0.091  0.92851
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 2.639 on 28 degrees of freedom
Multiple R-squared:  0.8268,    Adjusted R-squared:  0.8083
F-statistic: 44.57 on 3 and 28 DF,  p-value: 8.65e-11

>
```