

MACHINE LEARNING --LINEAR REGRESSION

```
import pandas as pd
```

```
df = pd.read_csv('/content/Salary_Data.csv')
df
```

```
df.head()
```

	YearsExperience	Salary
0	1.1	39343.0
1	1.3	46205.0
2	1.5	37731.0
3	2.0	43525.0
4	2.2	39891.0

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 30 entries, 0 to 29
Data columns (total 2 columns):
#   Column          Non-Null Count  Dtype
---  -
0   YearsExperience  30 non-null    float64
1   Salary          30 non-null    float64
dtypes: float64(2)
memory usage: 608.0 bytes
```

```
#divide the data into input and output
x = df.iloc[:,0].values    #two dimensional input
y = df.iloc[:,1].values    #one dimensional output
```

```
x.ndim
```

```
2
```

```
x
```

```
#import the algorithm
from sklearn.linear_model import LinearRegression
#all models are in sklearn (package name)
#family library name (linear_model)
#LinearRegression (model name)
```

```
# linear          - lowercase
```

```
# Linear          - Sentence case
# LINEAR          - UPPERCASE

# lINEAR          - tOGGLE case
# LinearRegression - Sentence case
# linearRegression - camel case
# LinearRegression - Pascal case
```

```
model = LinearRegression()
model.fit(x,y)    #fitting the model , or , creating the model
```

```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

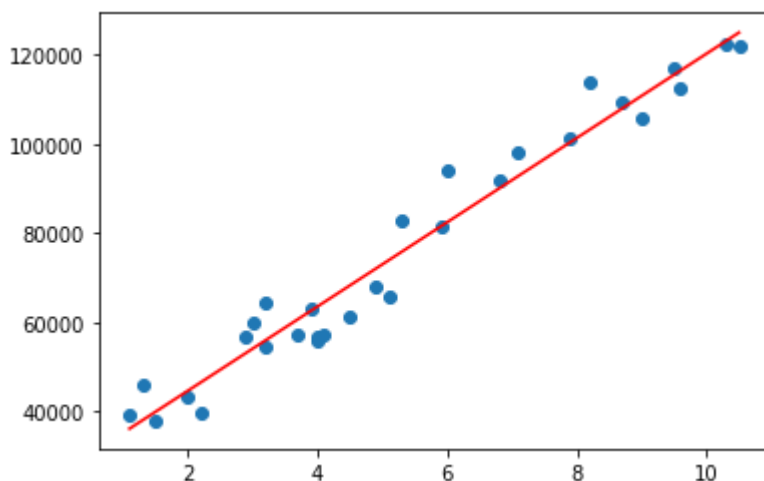
```
y_pred = model.predict(x)    #predicted output
y_pred
```

```
y    #actual output
```

```
from sklearn.metrics import r2_score
r2_score(y,y_pred)    #regression score / model accuracy
```

```
0.9569566641435086
```

```
import matplotlib.pyplot as plt
plt.scatter(x,y)    #original points
plt.plot(x,y_pred, c = 'r') #predicted line / best fit line
plt.show()
```



```
model.coef_    #slope value - m
```

```
array([9449.96232146])
```

```
model.intercept_    # c value
```

```
25792.200198668696
```

```
model.predict([[5.0]]) # testing data
```

```
array([73042.01180594])
```

```
#mx+c
```

```
9449.96232146*5.0 + 25792.200198668696
```

```
73042.0118059687
```

