In [1]:

```
# import libraries
import pandas as pd
import matplotlib.pyplot as plt
from math import sqrt
```

In [3]:

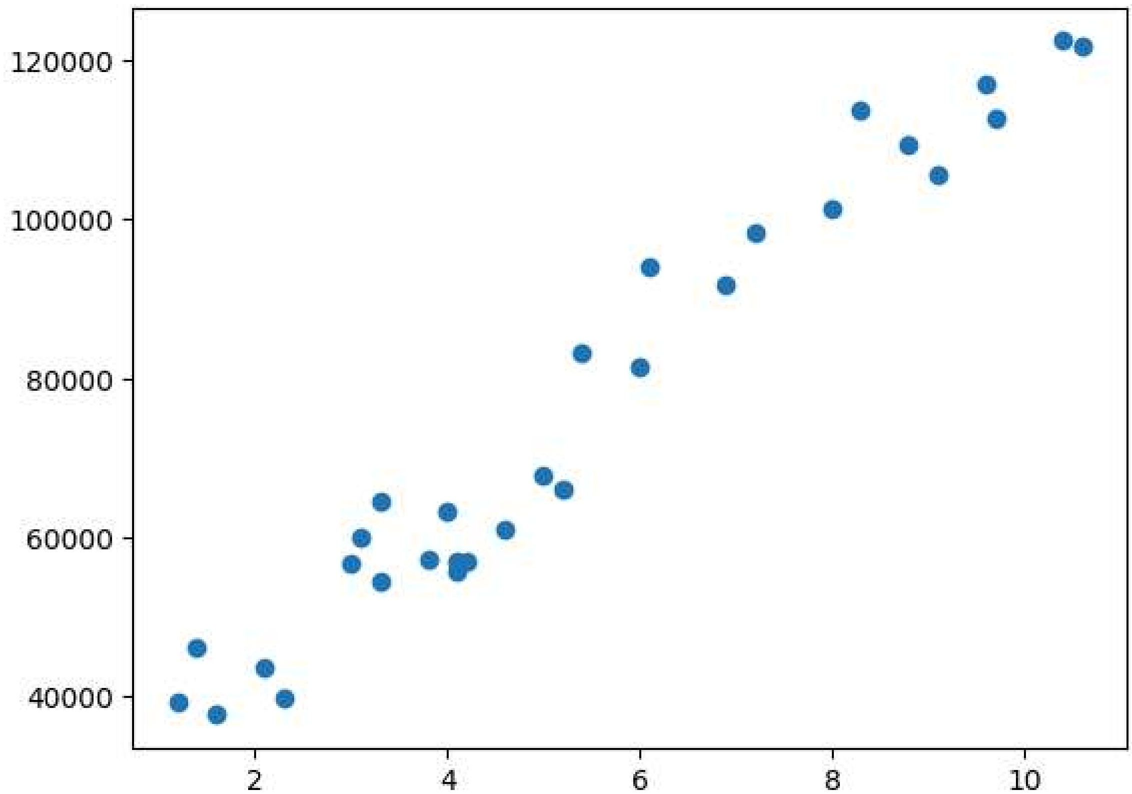
```
# read data into a DataFrame
data = pd.read_csv('Salary_dataset.csv', index_col=0)
# Renaming the Columns
data.columns = ['Experience','Salary']
data
```

Out[3]:

	Experience	Salary
0	1.2	39344.0
1	1.4	46206.0
2	1.6	37732.0
3	2.1	43526.0
4	2.3	39892.0
5	3.0	56643.0
6	3.1	60151.0
7	3.3	54446.0
8	3.3	64446.0
9	3.8	57190.0
10	4.0	63219.0
11	4.1	55795.0
12	4.1	56958.0
13	4.2	57082.0
14	4.6	61112.0
15	5.0	67939.0
16	5.2	66030.0
17	5.4	83089.0
18	6.0	81364.0
19	6.1	93941.0
20	6.9	91739.0
21	7.2	98274.0
22	8.0	101303.0
23	8.3	113813.0
24	8.8	109432.0
25	9.1	105583.0
26	9.6	116970.0
27	9.7	112636.0
28	10.4	122392.0
29	10.6	121873.0

In [4]:
```
# visualize the relationship between the features and the response using scatterplo
plt.scatter(data['Experience'], data['Salary'])
```

Out[4]: <matplotlib.collections.PathCollection at 0x1a673536710>



In [5]:
```
# create X and y
X = data[['Experience']]    #DataFrame
y = data.Salary      #Series (data['Sales']) / NP Array
print(X)
print(y)
```

```
    Experience
0          1.2
1          1.4
2          1.6
3          2.1
4          2.3
5          3.0
6          3.1
7          3.3
8          3.3
9          3.8
10         4.0
11         4.1
12         4.1
13         4.2
14         4.6
15         5.0
16         5.2
17         5.4
18         6.0
19         6.1
20         6.9
21         7.2
22         8.0
23         8.3
24         8.8
25         9.1
26         9.6
27         9.7
28        10.4
29        10.6
0      39344.0
1      46206.0
2      37732.0
3      43526.0
4      39892.0
5      56643.0
6      60151.0
7      54446.0
8      64446.0
9      57190.0
10     63219.0
11     55795.0
12     56958.0
13     57082.0
14     61112.0
15     67939.0
16     66030.0
17     83089.0
18     81364.0
19     93941.0
20     91739.0
21     98274.0
22    101303.0
23    113813.0
24    109432.0
```

```
25    105583.0
26    116970.0
27    112636.0
28    122392.0
29    121873.0
Name: Salary, dtype: float64
```

In [7]:
```
# follow the usual sklearn pattern: import, instantiate, fit
from sklearn.linear_model import LinearRegression
lm = LinearRegression()
lm.fit(X, y)    # lm.fit(DataFrame, Series/Array)

# print intercept and coefficients
print("Intercept-",lm.intercept_)
print("Coeffcient-",lm.coef_)
```

```
Intercept- 24848.203966523208
Coeffcient- [9449.96232146]
```

In [9]:
```
# you have to create a DataFrame since the predict method expects it
X_new = pd.DataFrame({'Experience': [2.3]})
print("Predicted salary-",lm.predict(X_new))
```

```
Predicted salary- [46583.11730587]
```

In [10]:
```
# create a DataFrame with the minimum and maximum values of Experience
X_new = pd.DataFrame({'Experience': [data['Experience'].min(), data['Experience'].m
X_new.head()
```

Out[10]:

	Experience
0	1.2
1	10.6

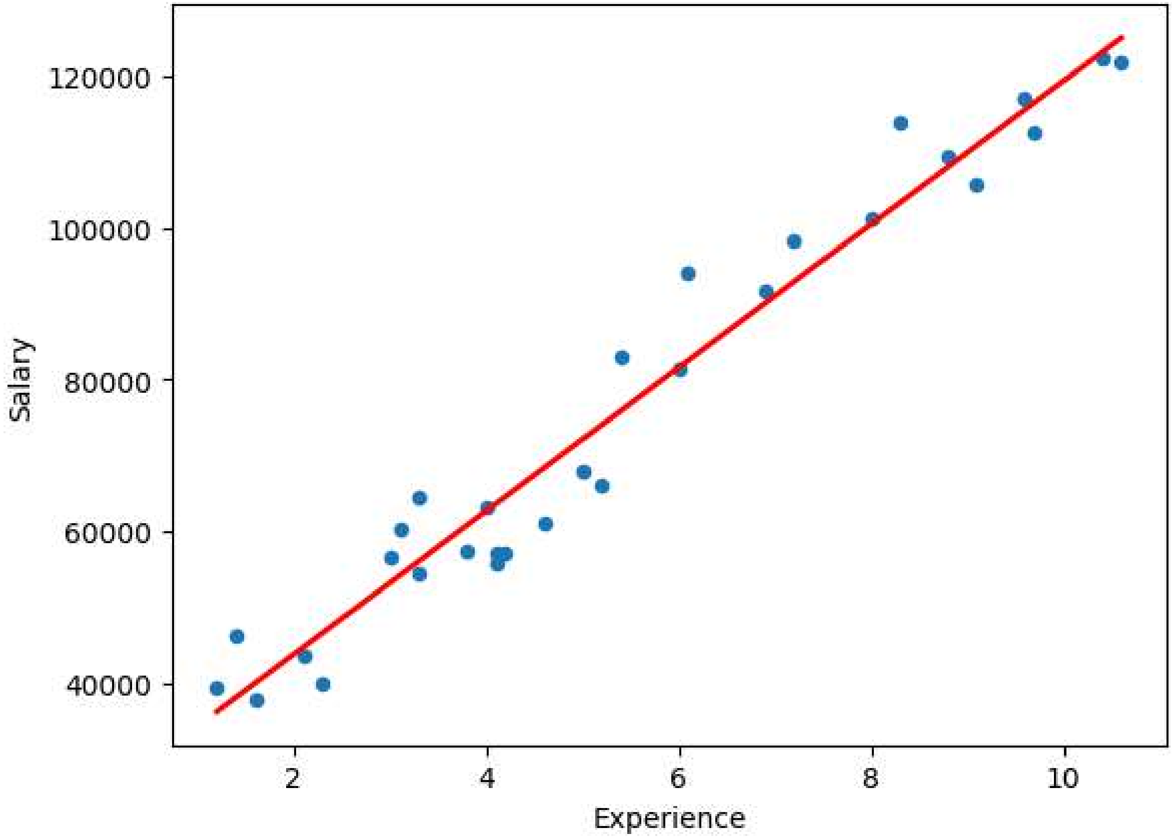
In [12]:
```
# make predictions for those x values and store them
preds = lm.predict(X_new)   # Need a DataFrame
print("predicitions-",preds)
```

```
predicitions- [ 36188.15875227 125017.80457395]
```

In [13]:
```
# first, plot the observed data
data.plot(kind='scatter', x='Experience', y='Salary')

# then, plot the least squares line
plt.plot(X_new, preds, c='red', linewidth=2)
```

Out[13]: `[<matplotlib.lines.Line2D at 0x1a67d663b50>]`



In [16]:
```
from sklearn.metrics import r2_score, mean_squared_error
predictions = lm.predict(X)

# RMSE form training data
print("RMSE-",sqrt(mean_squared_error(y, predictions)))

# R2 Score
print("R-squared value-",r2_score(y, predictions))
```

```
RMSE- 5592.043608760661
R-squared value- 0.9569566641435086
```