EXP9 - Implementation of Univariate Linear Regression

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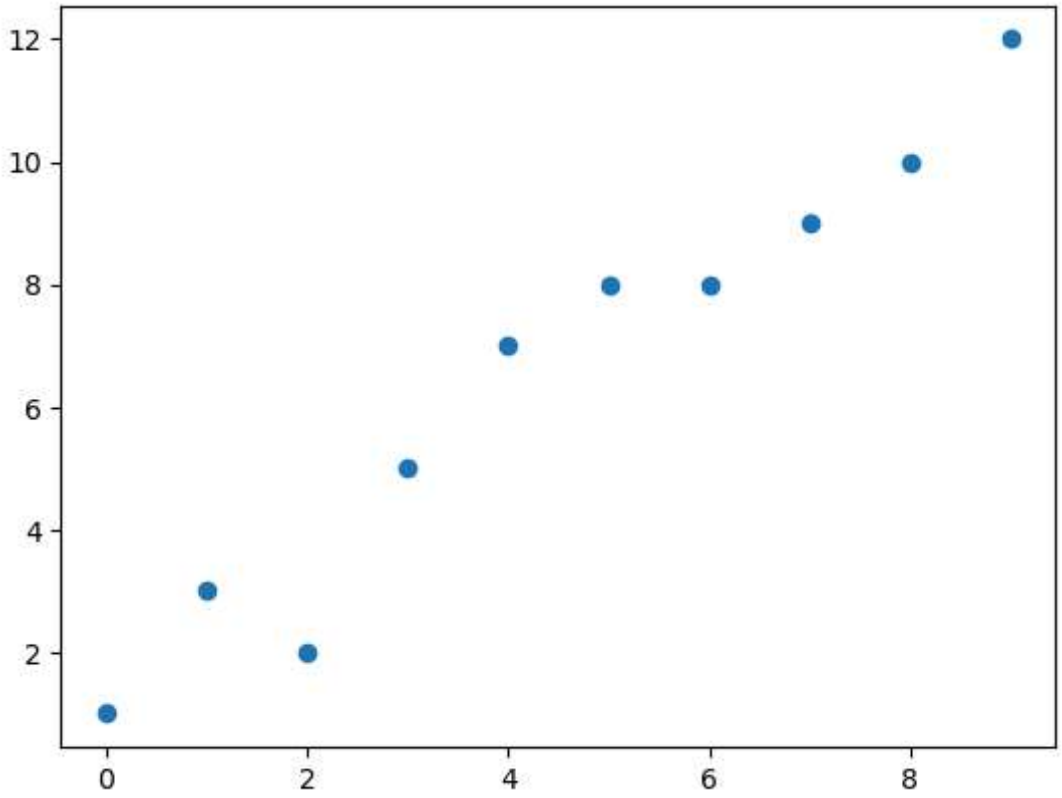
In [4]:
```
import numpy as np
import matplotlib.pyplot as plt
```

In [5]:
```
X= np.array([0,1,2,3,4,5,6,7,8,9])
Y= np.array([1,3,2,5,7,8,8,9,10,12])
plt.scatter(X,Y)
plt.show()
```



In [6]:
```
X_Mean=np.mean(X)
Y_Mean=np.mean(Y)
num=0
den=0
```

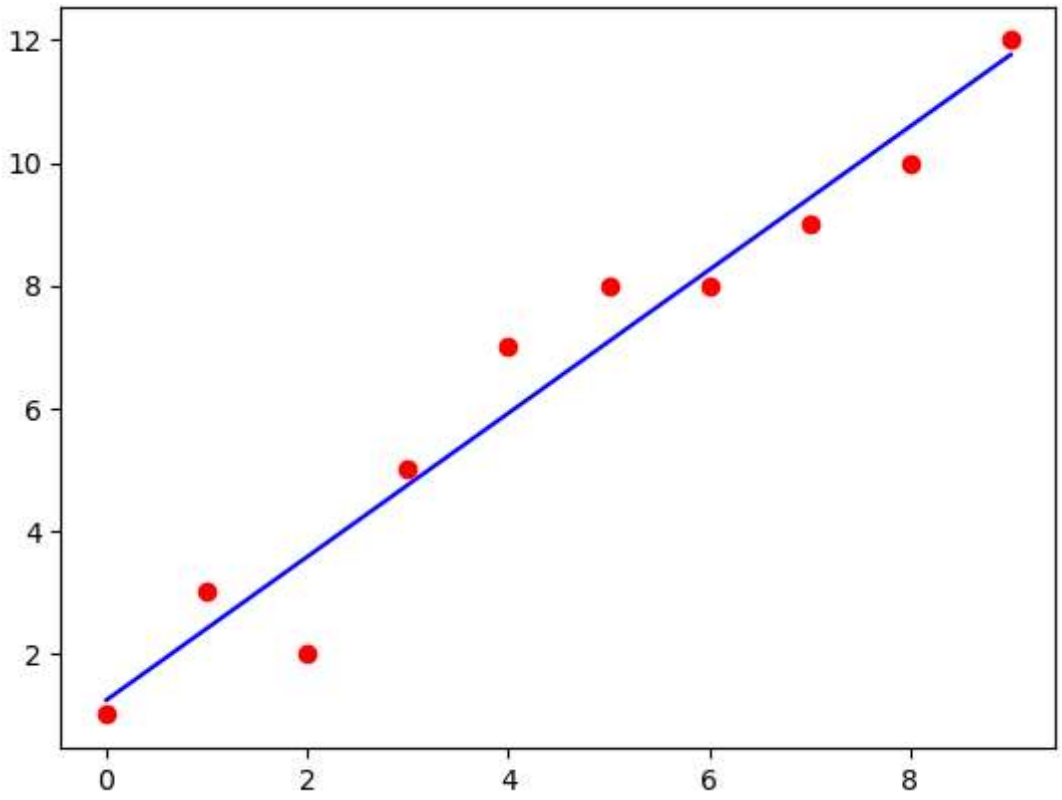
In [11]:
```
for i in range(len(X)):
    num+=(X[i]-X_Mean)*(Y[i]-Y_Mean)
    den+=(X[i]-X_Mean)**2

m=num/den
b=Y_Mean-(m*X_Mean)
print(f"Slope : {m}\nIntercept : {b}")
```

```
Slope : 1.1696969696969697
Intercept : 1.2363636363636363
```

In [13]:
```
Y_Pred=(m*X)+b
print(f"Predicted values are : \n{Y_Pred}")
```

```
Predicted values are :
[ 1.23636364  2.40606061  3.57575758  4.74545455  5.91515152  7.08484848
  8.25454545  9.42424242 10.59393939 11.76363636]
```

In [14]:
```
plt.scatter(X,Y,color='Red')
plt.plot(X,Y_Pred,color='Blue')
plt.show()
```



In [15]:
```
from sklearn.metrics import mean_squared_error
print(mean_squared_error(Y,Y_Pred))
```

```
0.5624242424242423
```

In [ ]: