SIDDHARTH MODI TASK1: PREDICTION USING SUPERVISED LEARNING PREDICTING THE PERCENTAGE OF THE STUDENT BASED ON THE STUDY HOURS

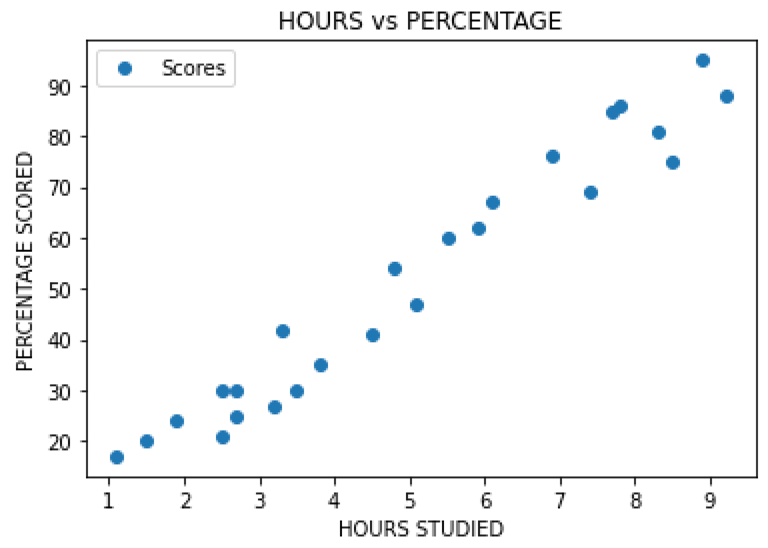
```
In [2]: #importing all the libraries required
        import pandas as pd
        import numpy as np
        import matplotlib.pyplot as plt
        %matplotlib inline
```

```
In [9]: #reading data from remote link
        url= 'https://raw.githubusercontent.com/AdiPersonalWorks/Random/master/s
        tudent_scores%20-%20student_scores.csv'
        dataset= pd.read_csv(url)
        dataset.head(10)
```

Out[9]:

	Hours	Scores
0	2.5	21
1	5.1	47
2	3.2	27
3	8.5	75
4	3.5	30
5	1.5	20
6	9.2	88
7	5.5	60
8	8.3	81
9	2.7	25

```
In [4]: #plotting the distribution of score
        dataset.plot(x='Hours', y='Scores', style='o')
        plt.title('HOURS vs PERCENTAGE')
        plt.xlabel('HOURS STUDIED')
        plt.ylabel('PERCENTAGE SCORED')
        plt.show()
```



FROM THE GRAPH ABOVE WE CAN SEE THAT THERE IS A POSITIVE LINEAR RELATION BETWEEN THE NUMBER OF HOURS STUDIED AND PERCENTAGE SCORED. PREPARING THE DATA the next step is to divide the data into 'attributes (input)' and 'labels (output)'

```
In [5]: X=dataset.iloc[:,:-1].values
        y=dataset.iloc[:,1].values
```

The next step is to split the data into traing set and test set

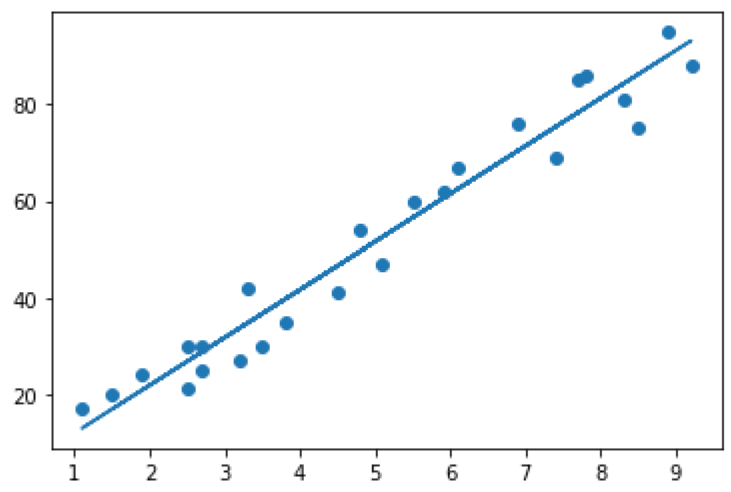
```
In [6]: from sklearn.model_selection import train_test_split
        X_train,X_test,y_train,y_test= train_test_split(X,y,test_size=0.2,random
        _state=0)
```

TRAINING THE ALGORITHM now since we have split our data into training set and test set its time to create our model

```
In [7]: from sklearn.linear_model import LinearRegression
        regressor= LinearRegression()
        regressor.fit(X_train,y_train)
```

```
Out[7]: LinearRegression()
```

```
In [8]: #plotting the regression line
        line= regressor.coef_*X+regressor.intercept_
        #plotting for test data
        plt.scatter(X,y)
        plt.plot(X,line);
        plt.show()
```



MAKING PREDICTION Now we have trained our algorithm its time to make some prediction

```
In [23]: print(X_test) #testing data - in hours
         y_pred= regressor.predict(X_test) #predicting the score
```

```
[[1.5]
 [3.2]
 [7.4]
 [2.5]
 [5.9]]
```

```
In [24]: #comparing actual vs predicted
         df= pd.DataFrame({'Actual':y_test, 'Predicted':y_pred})
         df
```

Out[24]:

	Actual	Predicted
0	20	16.884145
1	27	33.732261
2	69	75.357018
3	30	26.794801
4	62	60.491033

```
In [25]: #you can also test with your own data
         hours= [[9.25]]
         own_pred= regressor.predict(hours)
         print('NO. of hours={}'.format(hours))
         print('Predicted score={}'.format(own_pred[0]))
```

```
NO. of hours=[[9.25]]
Predicted score=93.69173248737538
```

Evaluating the Model The final step is to evaluate the model. Here we have choosen the mean square error. there are many such matrix error.

```
In [26]: from sklearn import metrics
         print('Mean Absolute Error:',
               metrics.mean_absolute_error(y_test,y_pred))
```

```
Mean Absolute Error: 4.183859899002975
```

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In [ ]:
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In [ ]:
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