Aman Agrawal TASK1: PREDICTION USING SUPERVISED LEARNING PREDICTING THE PERCENTAGE OF THE STUDENT BASED ON THE STUDY HOURS

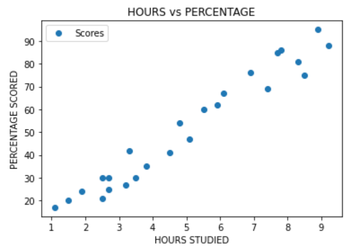
In [2]:
```
#importing all the libraries required
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

In [9]:
```
#reading data from remote link
url= 'https://raw.githubusercontent.com/AdiPersonalWorks/Random/master/student_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

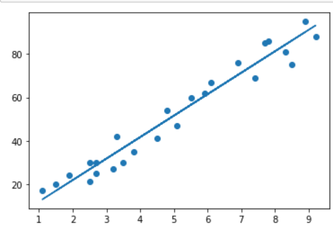
In [6]:
```
from sklearn.model_selection import train_test_split
X_train,X_test,y_train,y_test= train_test_split(X,y,test_size=0.2,random_state=0)
```

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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