In [1]:
```
#importing all the libraries.
import numpy as np
from matplotlib import pyplot as plt
import pandas as pd
```

In [2]:
```
#importing and reaading the dataset
dataset = pd.read_csv("http://bit.ly/w-data")
```

In [3]:
```
#the first five values in the dataset
dataset.head()
```

Out[3]:

	Hours	Scores
0	2.5	21
1	5.1	47
2	3.2	27
3	8.5	75
4	3.5	30

In [4]:
```
#number of rows and columns
dataset.shape
```

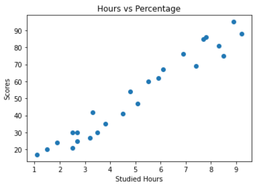
Out[4]:
```
(25, 2)
```

In [5]:
```
dataset.describe()
```

Out[5]:

	Hours	Scores
count	25.000000	25.000000
mean	5.012000	51.480000
std	2.525094	25.286887
min	1.100000	17.000000
25%	2.700000	30.000000
50%	4.800000	47.000000
75%	7.400000	75.000000
max	9.200000	95.000000

In [6]:
```
#Hours Vs Percentage of Scores
plt.scatter(dataset['Hours'], dataset['Scores'])
plt.title('Hours vs Percentage')
plt.xlabel('Studied Hours')
plt.ylabel('Scores')
plt.show()
```



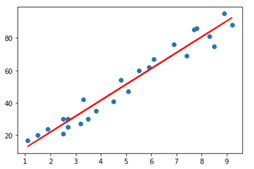
In [7]:
```
#X will take all the values except for the last column which is our dependent variable (target variable)
X = dataset.iloc[:, :-1].values
y = dataset.iloc[:, -1].values
```

In [8]:
```
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.3, random_state = 0)
```

In [9]:
```
from sklearn.linear_model import LinearRegression
regressor = LinearRegression()
regressor.fit(X_train, y_train)
```

Out[9]:
```
LinearRegression()
```

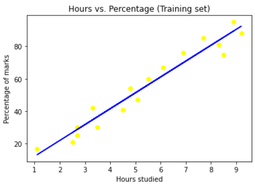
In [10]:
```
# Plotting the regression line
line = regressor.coef_*X+regressor.intercept_

# Plotting for the test data
plt.scatter(X, y)
plt.plot(X, line,color = 'red');
plt.show()
```



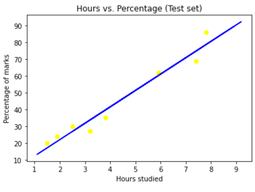
In [11]:
```
#Predicting the Test set results
y_pred = regressor.predict(X_test)
print(y_pred)
```

```
[17.05366541 33.69422878 74.80620886 26.8422321  60.12335883 39.56736879
 20.96909209 78.72163554]
```

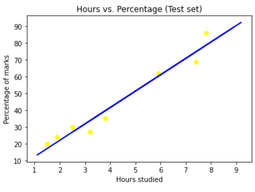
In [12]:
```
#Visualising the Training set results
plt.scatter(X_train, y_train, color = 'yellow')
plt.plot(X_train, regressor.predict(X_train), color = 'blue')
plt.title('Hours vs. Percentage (Training set)')
plt.xlabel('Hours studied')
plt.ylabel('Percentage of marks')
plt.show()
```



In [13]:
```
#Visualising the Test set result
plt.scatter(X_test, y_test, color = 'yellow')
plt.plot(X_train, regressor.predict(X_train), color = 'blue')
plt.title('Hours vs. Percentage (Test set)')
plt.xlabel('Hours studied')
plt.ylabel('Percentage of marks')
plt.show()
```



In [14]:
```
#Visualising the Test set result
plt.scatter(X_test, y_test, color = 'yellow')
plt.plot(X_train, regressor.predict(X_train), color = 'blue')
plt.title('Hours vs. Percentage (Test set)')
plt.xlabel('Hours studied')
plt.ylabel('Percentage of marks')
plt.show()
```



In [15]:
```
#Comparing the actual values with the predicted ones.
dataset = pd.DataFrame({'Actual': y_test, 'Predicted': y_pred})
dataset
```

Out[15]:

	Actual	Predicted
0	20	17.053665
1	27	33.694229
2	69	74.806209
3	30	26.842232
4	62	60.123359
5	35	39.567369
6	24	20.969092
7	86	78.721636

In [16]:
```
#predicting the score
dataset = np.array(9.25)
dataset = dataset.reshape(-1, 1)
pred = regressor.predict(dataset)
print("If the student studies for 9.25 hours/day, the score is {}.".format(pred))
```

```
If the student studies for 9.25 hours/day, the score is [92.91505723].
```

In [17]:
```
from sklearn import metrics
print('Mean Absolute Error:', metrics.mean_absolute_error(y_test, y_pred))
```

```
Mean Absolute Error: 4.419727808027654
```

In [18]:
```
from sklearn.metrics import r2_score
print("The R-Square of the model is: ",r2_score(y_test,y_pred))
```

```
The R-Square of the model is:  0.9568211104435257
```

In [ ]:
```
```