

Implementation of Linear Regression Using Gradient Descent

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
data = pd.read_csv("/content/student_scores .csv")
```

```
data.head()
```

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

```
data.isnull().sum()    #returns the no of missing values in the dataset
```

```
Hours      0
Scores     0
dtype: int64
```

```
x = data.Hours
```

```
x.head()
```

```
0    2.5
1    5.1
2    3.2
3    8.5
4    3.5
Name: Hours, dtype: float64
```

```
y = data.Scores
```

```
y.head()
```

```
0    21
1    47
2    27
3    75
```

```
4      30
Name: Scores, dtype: int64
```

```
n = len(x)
m = 0
c = 0
L = 0.01
```

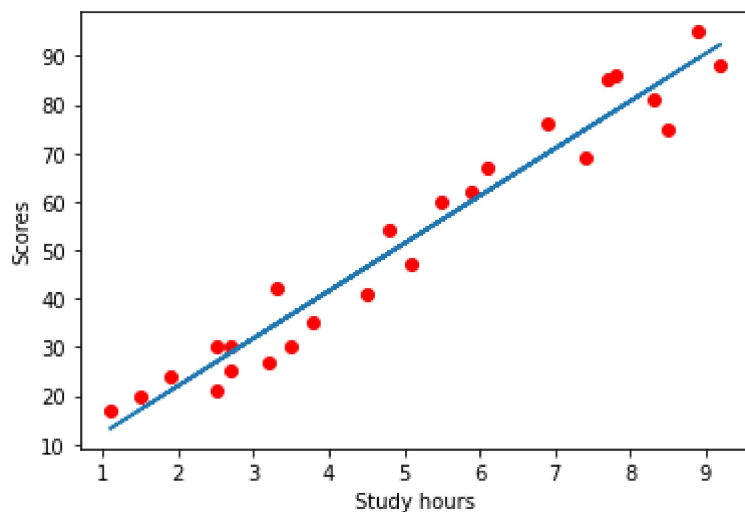
```
loss = []
for i in range(10000):
    ypred = m*x+c
    MSE = (1/n)*sum((ypred-y)*2)
    dm = (2/n)*sum(x*(ypred-y))
    dc = (2/n)*sum(ypred-y)
    c = c-L*dc
    m = m-L*dm
    loss.append(MSE)
```

```
print(m,c)
```

```
9.775803390787488 2.4836734053731018
```

```
y_pred = m*x+c
plt.scatter(x,y,color='red')
plt.plot(x,y_pred)
plt.xlabel("Study hours")
plt.ylabel("Scores")
```

```
Text(0, 0.5, 'Scores')
```



```
plt.title("Study hours vs Scores")
plt.plot(loss)
plt.xlabel("iterations")
plt.ylabel("loss")
```

```
Text(0, 0.5, 'loss')
```

