

```
C:\Users\Petro\PycharmProjects\linear_regression\venv\
Scripts\python.exe C:/Users/Petro/PycharmProjects/
linear_regression/linear_regression.py
```

```
X_train.shape= (379, 1)
```

```
y_train.shape= (379,)
```

```
[[6.009]
```

```
 [5.648]
```

```
 [5.885]
```

```
 [8.297]
```

```
 [6.471]
```

```
 [4.97 ]
```

```
 [6.63 ]
```

```
 [6.678]
```

```
 [5.454]
```

```
 [8.78 ]]
```

```
b= -0.276767596147759,
```

```
w= [[0.581851]],
```

```
X=
```

```
[[ 2.14839926]
```

```
 [-1.279487 ]
```

```
 [ 0.50227689]
```

```
 [ 0.8560293 ]
```

```
 [-0.14279008]
```

```
 [ 0.11007867]
```

```
 [-0.68806479]
```

```
 [ 0.43356408]
```

```
 [ 0.510221 ]
```

```
 [-0.16513097]]
```

```
[[ 0.97328067]
```

```
 [-1.02123839]
```

```
 [ 0.01548272]
```

```
 [ 0.22131391]
```

```
 [-0.35985014]
```

```
 [-0.21271821]
```

```
 [-0.67711878]
```

```
 [-0.0244979 ]
```

```
 [ 0.02010501]
```

```
 [-0.37284922]]
```

```
y= [[-0.21767896]
```

```
 [ 0.82145535]
```

```
 [ 1.48127781]
```

```
[ 1.33186404]
[-0.36186537]
[ 0.68560883]
[ 0.57376143]
[ 0.28772767]
[-0.23563426]
[ 0.95349024]],
h= [[-1.6896253 ]
[-0.34494271]
[ 0.0169049 ]
[-0.51498352]
[ 0.24450929]
[-0.18931261]
[ 2.67217242]
[ 0.46480249]
[ 0.84593044]
[-0.50354158]]
0.897146515186598
X= [[-1.76884571]
[ 0.07555227]
[-1.1306297 ]
[-0.65143017]
[-0.89311563]
[-1.27410098]
[-0.06115443]
[ 0.06451384]
[ 0.41011295]
[-0.57288249]],
y= [[-0.80133362]
[ 1.31203519]
[ 1.27469887]
[-1.2143576 ]
[ 0.31371941]
[-1.44482142]
[-0.3689613 ]
[-0.76922658]
[ 0.3926161 ]
[ 0.05729383]],
b= 2.0899788404287745
w= [[0.04197131]]
(2.1904608819958713, -1.4328426209410612)
```

```
X= [[ 1.48860905]
     [ 0.67601087]
     [-0.41845137]
     [-0.80652081]
     [ 0.55587583]
     [-0.70550429]
     [ 1.13085826]
     [ 0.64500184]
     [ 0.10641374]
     [ 0.42215483]],
y= [[ 0.12420684]
     [-0.83795346]
     [ 0.4090157 ]
     [ 0.10275122]
     [-1.90772239]
     [ 1.1002243 ]
     [-1.40232506]
     [-0.22508127]
     [-1.33620597]
     [ 0.30372151]]
```

Running gradient descent with alpha = 1, eps= 1e-10,
max_iter= 5

```
b = -0.36693685587288444, w= [[-0.4217246]], J= 0.
33976525493056825
b = -0.23643637277401236, w= [[-0.46886908]], J= 0.
3278115023016167
b = -0.22184776004990137, w= [[-0.52721539]], J= 0.
3250909705515032
b = -0.20379279582278398, w= [[-0.55396166]], J= 0.
32428457786538833
b = -0.19551630227029396, w= [[-0.5697399]], J= 0.
32403801171263197
b = -0.19063380881762437, w= [[-0.57831305]], J= 0.
3239623872203208
b = -0.18798089094052142, w= [[-0.58309057]], J= 0.
3239391853771439
```

R2 Score = 0.5692788750550576

```
b: 22.199414775914708, w= [[6.29725257]]
0.5692801665656613
```