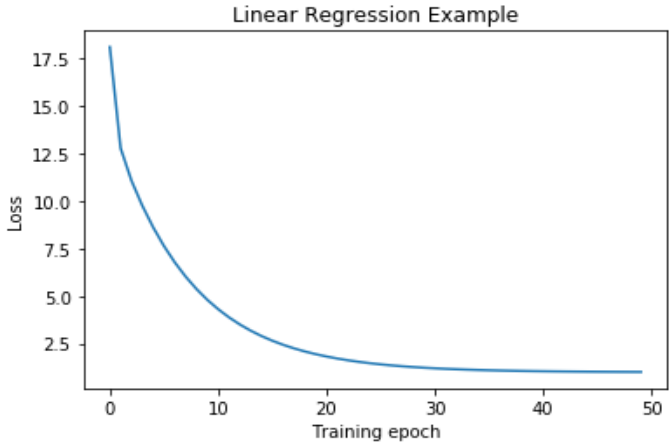
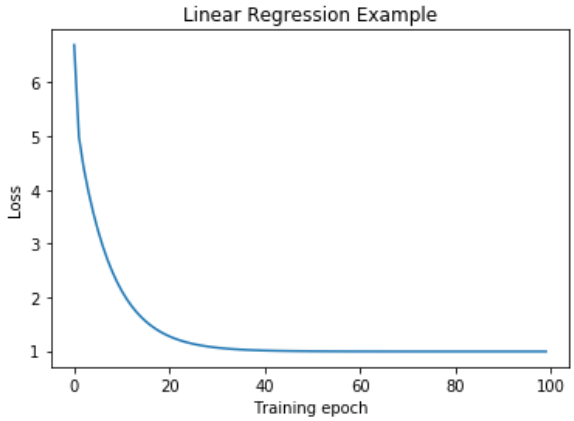
1. By adapting the given script, we determined the most suitable number of training cycles for the fit to converge to a stable value of the cost. At first, we examined the effect of smaller values i.e. 10 and noticed that the loss function did not reach a stable-final value. The minimum value of training cycles, that seem to provide the necessary results for minimising the loss function and that approaches the values of m and c parameters close enough, is 50 cycles.

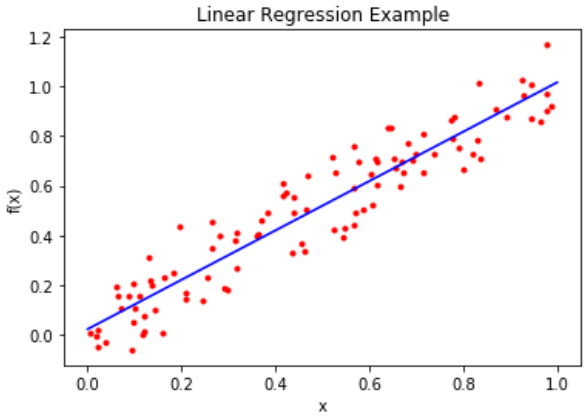



```
Optimisation process has finished.  The optimal values
of parameters are:
  m =  [1.9549574]  [input value =  2.0 ]
  c =  [0.54184556]  [input value =  0.5 ]
  loss function for the optimal parameters =  1.0050838
```

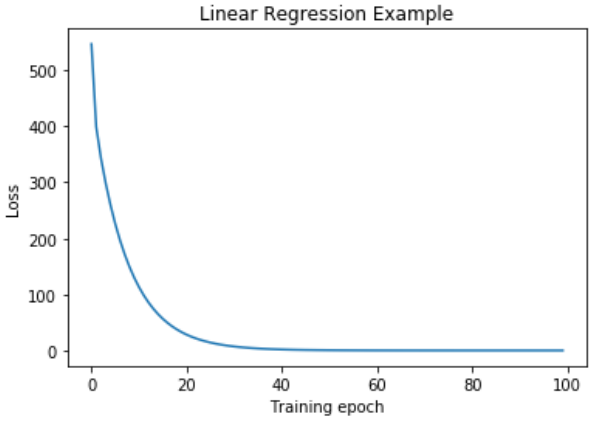
2. In this part of the assignment, we change the values of gradient and intercept on the given script, in order to evaluate each scenario. We zero the intercept parameter and adapt different values to the gradient.

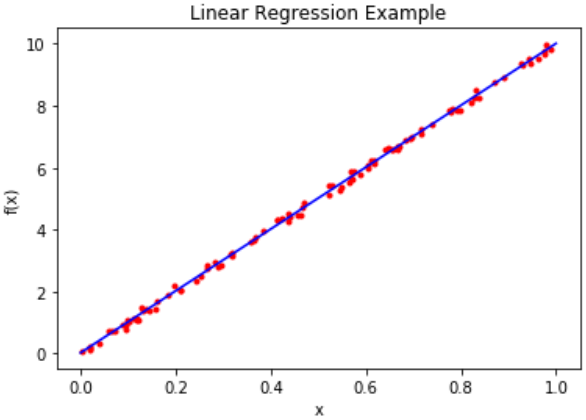
m=1



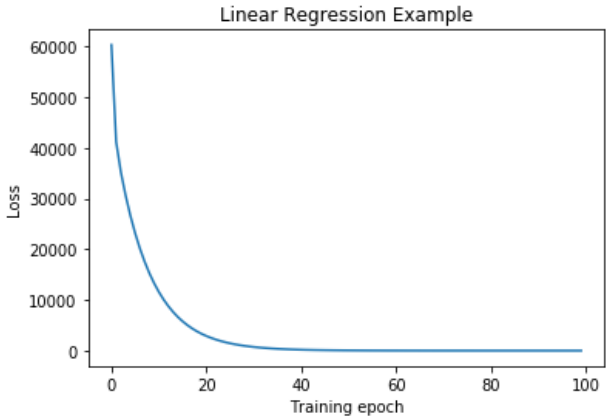


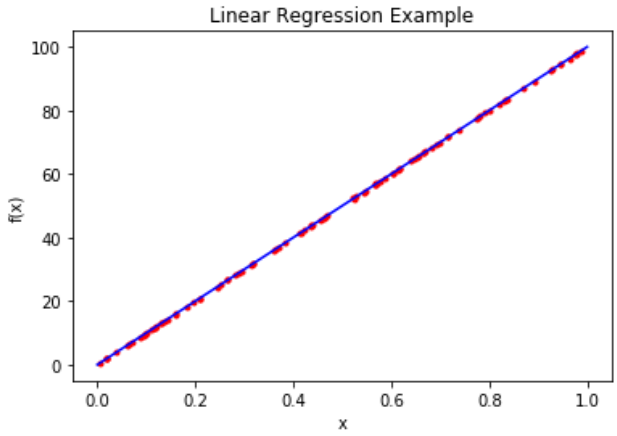
m =10





m=100





By observing the graphs and the numerical results that derived from running the script with three different values for the gradient parameter, we conclude that, while the value increases by 10 each time, the cost escalates by 100. This means that the higher the m value is, the more steep the loss' function graph is for fewer training epochs. However, the final value of the loss, in each case, reaches the stable value of 1.0 .

Moreover, as the number of gradient parameter increases, we see that the linear regression line approaches more and more the data points on the square function graph.