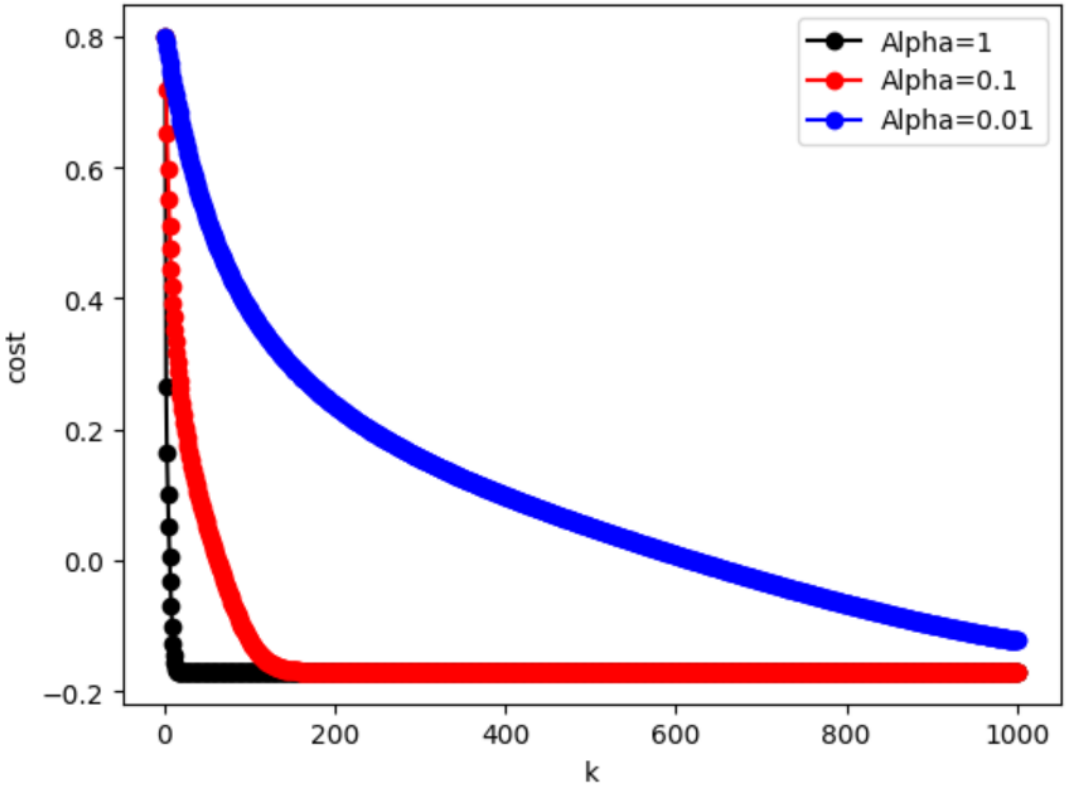
# COMPSCI 589 Machine Learning
# Assignment 2 Report

Task 1

- Value of the cost function (g(w)) at $w^0 = 2$.
- Value of the derivative of the cost function at $w^0 = 2$.

```
run task 1 ...
Value at w=2 = 0.8, Derivative at w=2 = 0.92
task 1 finished
```

- Single figure containing the cost function history of three runs using different step length values ($\alpha = 1, \alpha = 10^{-1}, and\, \alpha = 10^{-2}$).




- Report which step length works best for this particular function and initial point.

  By seeing the graph and printing some debug statements, we can say that step length = 1 works best out of the three for this particular function and initial point since it results in the lowest minimum value of g(w) faster.

```
Final cost using steplength = 1 is -0.16996928446309353
Final cost using steplength = 0.1 is -0.16996928446309353
Final cost using steplength = 0.01 is -0.12249665467157385
```

Task 2

- Single figure containing the cost function history of two runs using a fixed step length and a diminishing step length.