Assignment 3

1. What is the purpose of gradient descent optimization in machine learning?

2. What is the learning rate in gradient descent, and why is it important?

3. What is the role of batch size in gradient descent optimization?

4. Consider a quadratic function $f(x) = x^2 - 4x + 3$. Use gradient descent to find the minimum value of the function. Start with an initial guess for x and update it iteratively using the gradient descent algorithm.

Use the following conditions:

Initial guess: x = 0
Learning rate: 0.25
Number of iterations: 5

Programming assignment:

For problem no. 4

1. write a python code to perform gradient decent to find the value x that gives the minimum value of the function $f(x) = x^2 - 4x + 3$.

2. If you learned that the value of x to give the minimum value is: 2, could you tune your code so it gives a close value. What is the learning rate and number of iterations that you used.