Quiz 04
Submitted by - Sagar Kukreja

1) Compute the optimization solution of the following objective function:

$$f(x1, x2) = 100 * (x_2 - x_1{}^2)^2 + (1 - x_1)^2$$

Implement gradient descent and Newton's method on the function

Ans. Gradient Descent:

Initialization :

theta1 = 2 # initial x1
theta2 = 5 # initial x2
alpha = 0.001 # learning rate
iterations = 0
precision = 1/1000000
maxIterations = 1000

Result :

Gradient descent:
x1 1.38698703880784
x2 1.92496778743453

Newton's Method

Initialization :

theta1 = 2 # initial x1
theta2 = 3 # initial x2
alpha = 0.001 # learning rate
iterations = 0
precision = 1/1000000
maxIterations = 10

Result :

Newton's Method :
x1 1.99779106646359
x2 3.00990612731023

Newton's method takes less number of iterations to converge than Gradient Descent.