IE 310 – Programming Assignment5
Due on June 8, 2020, 23:59

In this assignment, you are going to write a program which minimizes a given single variable, nonlinear function using four methods listed below.

i.)   Bisection Method
ii.)   Golden Section Method
iii.) Newton's Method
iv.)   Secant Method

You should write a computer program in C, C++ or Python which correctly implements these methods. The function to be used in this assignment is as follows:

$$f(x) = 100 + 0.01x - 0.1x^2 + 0.5\cos(3x), \qquad where - 4 \le x \le 4$$

Since the methods mentioned above gives a local minimum, you should choose a subinterval of [-4, 4] in which f is locally convex. Also, be careful about the initial point(s) chosen. (Please does not choose directly the local optimum points so that your program stops before less than 5-10 iterations.) You can choose your ε as 0.0001 for stopping conditions if required.

You need to report your initial point(s) and value(s), point(s) and value(s) at each iteration, and final local optimum point and value in a spreadsheet table preferably. Summarize your answers in a brief report which includes your tables for each method. Please name your folder as "Name-Surname-ID-Assignement5". Submit your folders via Moodle page until due time.