Assignment 1

Course: STAT 2604.
Total marks: 100
Due date: **15/10/2021 (midnight)**
You need to submit your readable and runnable R code and example outputs.

Question 1: Write an R program to compute the Fibonacci sequence F_0, F_1, …, F_n using for loop, starting from F_0=0 and F_1=1. Apply your R program to n=20 (30 marks).

Question 2: Write an R program to compute the root of a function using Newton's method. Apply your R program to find the root for $f(x) = x^3-3x-3$ with starting point x_0=2 (40 marks).

Question 3: Personalized homework (30 marks).

- Identify and design a problem from your life, research, or course work.
- The problem is both interesting and challenging to you at your current R skill level.
- Break the problem into successive smaller tasks using a flowchart (on paper or mentally), until each smaller task is easy to solve using R code or functions.
- Consider using R data structures (vector, matrix, list, data frame) and flow controls (if (), for (), while ()).
- Use R to solve it if you can. Include your thought process during problem-solving as R code comments or in the analysis result file.