Assignment 3_Q1

Take a population of N=10,000 individuals all of which consist of type 0 initially. ***For simplicity, assume that the sequence length of all individuals is L=1.***
Assume the mutation rate **from type 1 to type 0** is **0**.
Let u=0.01 be the mutation rate of type 0 to type 1 and f0=1.001 is the fitness of type 0 and f1=1 is the fitness of type 1

(i) Write a program to obtain the time-evolution of the frequencies of the two types in the population subject to both mutation and selection. **Run the simulation for as long as it takes for frequencies to equilibrate.**

(ii) Repeat the above simulation for u=0.01 and f0=1.1. Assume that half of the ***initial*** population are type 0 and the remaining half are type 1.

(iii) Repeat the simulation (ii) with N = 100

In all cases, plot the evolution of frequency of type 0 and type 1 with time.

Compare your results for the equilibrium frequency in either case with the theoretical predictions obtained from analysing the quasi-species equation!

Submission Deadline: February 22, 2018