ITE315 Assignment 6: More Fun With Python

Adam Lewis

July 9, 2019

Contents

1 Problems

1. (Medium) We can model the mutation of genes in Python by changing a randomly selecting a position in a string representing a DNA molecule. Starting from the code in Lab 17, change the `mutate()` function in the lab code to actually mutate the genes in the DNA string. Reuse your code from Assignment 5 to perform the mutation, adjusting as needed to reflect that you're only mutating a single and much-smaller DNA string.

2. (Easy) You are given a text file that contains the timetable for buses that travel a college campus. The first line of the file contains the name for each stop on the bus system separated by colons. Each following line contains the times using a 24-hour clock at which each bus in the system will arrive at a bus stop, also separated by colons.

   The timetable will have the following format:

   ```
   BUS : Athens : Ardmore : Harvest: Huntsville: Athens
   48  : 0800 : 0830: 0845 : 0915 : 1015
   49  : 0830 : 0900: 0915 : 0945 : 1045
   50  : 0900 : 0930: 0945 : 1015 : 1115
   ```

   Write a program in Python that reads this file and outputs a row for each bus stop, showing the times when a bus arrives at that stop.

3. (Medium) Continuing our theme of waiting on the bus, consider again the bus timetable from the previous question. The first line of the file contains the name for each stop on the bus system separated by colons. Each following line contains the times using a 24-hour clock at which each bus in the system will arrive at a bus stop, also separated by colons. A sample file is attached to this problem.

   Write a Python program that for enumerates each of the bus stops and departure times from that station with each value separated by a colon

   The output from your program should be in the following format:

```
Athens: 0800:0830:0900
Ardmore: 0830:0900:0930
Harvest: 0845:0915:0945
Huntsville: 0915:0945:1015
Athens: 1015:1045:1115
```

2 Submission instructions

Combine your responses to each question in this assignment into a single PDF document. Attach your submission to the assignment in Blackboard.