BI-GY 7453: Prof. Manpreet S Katari
March 22, 2022

ASSIGNMENT 3 : Due Date : 05-April-2022

Question 1. You are given two strings String1 and String2. In a single shift, you can rotate one string (String1) by 1 element such that its 1st element becomes the last and the second one becomes the first like "abcd" will change to "bcda" after the one-shift operation. You have to find the minimum shift operation required to get the common prefix of maximum length from String1 and String2.Do consider edge cases.

Test Case :

Input :
String1,String2 are input to function String_Match which take two arguments : (String1,String2)

Output : Shift, Prefix

Example :

Input :
String1 = 'Bioinformatics'
String2 = 'This_is_Bioinformatics'

Output :
Shift = 8
Prefix = Bioinformatics

Question 2. This question has two parts

Part 1:

Align the following nucleotide sequences with the following general rules:
Mismatch=0, Match=1, Gap=-1. Remember to pick the highest value calculated based upon the two potential gaps (horizontal and vertical) and the match/mismatch (diagonal).

Global alignment: The first and last bases of the two sequences should be aligned.
This is like the example done in class. Negative numbers are allowed. The traceback always begins with the very bottom-right corner.

		A	G	C	T	C	A	G
G								
C								
A								
G								
G								

Part 2: Write a script that will take two strings and perform dynamic programming.