Minnesota State University Moorhead.
Department of Computer Science & Information Systems.
CSIS 446 Assignment 3.
Prof. Mohammed Mahmoud.

Student Name:

1. This program will create DNA/RNA sequences.

2. Create a function called CreateDNASequence() that will create a random DNA sequence.

3. Create a function called CreateRNASequence() that will create a random RNA sequence.

4. Create a function called WriteSequences() that will write the sequences to a text file.

5. The WriteSequences() function should have the capability to locate the index of a sub-sequence inside each sequence, and then store the indices in a text file. For example, the index of the sub-sequence ACGT in the sequence TTACGTAA is 2.

6. Create a main() function that starts the program.

The following variables control the execution of the program:

- SEQUENCETYPE (string): This variable will determine the type of the sequence that will be created. If the value of the SEQUENCETYPE variable is "DNA", then the WriteSequences() function will call the CreateDNASequence() function, and if the value of the SEQUENCETYPE variable is "RNA", then the WriteSequences() function will call the CreateRNASequence() function.

- NUMBEROFSEQUENCES (integer): This variable will determine number of sequences that will be created.

- SEQUENCELENGTH (integer): This variable will determine the length of the DNA or RNA sequence that will be created.

- SUBSEQUENCE (string): The sub-sequence that the program will try to locate its index inside each sequence.

Notes:

- DNA has four nucleotides:
  1. Adenine (A).
  2. Cytosine (C).
  3. Guanine (G).
  4. Thymine (T).

- RNA has four nucleotides:
  1. Adenine (A).
  2. Cytosine (C).
  3. Guanine (G).
  4. Uracil (U).

- An example of a DNA sequence:

GGGCTTGCTGGCAGGATCCCCTTAACGAGCTTAACCACTTTAGCAGCCATCCGGAGA
CCGTGTGGTACGTGTGTGCCGTAGAGCTCTCTACACCATTAGC

- An example of an RNA sequence:

UGAGUAAUUUGCGGGUACUCCAACUGUAUGUUGACGGGGUAUUUGUCAGCCCGA
AAUGUUGUACUCCGGCCGUCAGCUGUGAGAGGAACCUAAUUUGACU