

Central Dogma task

Central Dogma consists of two steps:

Transcription

(Convert your DNA sequence to mRNA sequence)

Translation

(Convert each 3 characters in mRNA sequence (codon) to amino acid character using Amino Acid Translation Table)

Example

DNA sequence: TGACTGCAGATG

Transcription step 1 mRNA sequence: ACUGACGUCUAC

Translation step 2 protein sequence is: ADVY

This task consists of two parts:

First part :(Transcription)

You will get dna sequence for first strand of DNA (3' _ 5') , then find dna sequence for second strand of DNA (5' _ 3') and then find mRNA sequence

Example

strand DNA 3' TACTGACTGCAGATGACT '5

Complementary strand DNA 5' ATGACTGACGTCTACTGA '3

mRNA sequence 5' AUGACUGACGUCUACUGA '3

Second part:(Translation)

Conclude protein sequence from mRNA sequence using Amino Acid Translation Table. Hint (using c++ dictionary).

Example

Codons	AUG	ACU	GAC	GUC	UAC	UGA
Protein sequence	M	A	D	V	Y	stop

NOTE

Sequence always start with start codon and finish with one of stop codons

EXAMPLE

Input

strand DNA 3'TACATGTGTGAAAACCGCGTCACT'5

Output

complementary strand DNA 5'ATGTACACACTTTTGGCGCAGTGA'3

mRNA sequence 5'AUGUACACACUUUUGGCGCAGUGA'3

Codons AUG Uac aca cuu uug gcg cag UGA

Protein sequence M Y T L L A Q stop

Bonus

Make your take using windows form (GUI)

Rules:

- ❖ Each team must consist of two students.
- ❖ You must use **map** or **dictionary** in your task (Translation part).
- ❖ **Note that any cheating cases will result in both groups getting zero marks on the Task.**
- ❖ Programming language C++.

Support time:

TA: Mohamed Ramadan

Tuesday from 11 pm to 1 pm (TA Room)

Tuesday from 4 pm to 6 pm (TA Room)

Wednesday from 5 pm to 7 pm (TA Room)

Saturday from 11 pm to 1 pm (TA Room)

Monday from 2 pm to 4 pm (TA Room)

TA: Farida Alaaeldin

Tuesday from 11 pm to 1 pm (TA Room)

Tuesday from 4 pm to 6 pm (TA Room)

Saturday from 11 pm to 1 pm (TA Room)

And you can ask on email

TA: Mohamed Ramadan

Email : ramadanm976@gmail.com

TA: Farida Alaaeldin

Email : farida_alaaeldin@gmail.com

Delivery time: On Week 13