ÖDEV 2: (Ödevi elektronik posta ile gönderebilirsiniz)

Son teslim tarihi: 08 Nisan 2014 (24:00)

Önemli not: Yukarıdaki tarihten sonra verilen/gönderilen ödevler kabul edilmeyecektir

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- Derste bir örnekle anlatılan (slayt Examples 1, Example 1) DNA dizilerinden Protein sentezlenmesini (Amino Asit dizilerine geçişi) gerçekleştiren (modelleyen) perl programını yazınız.

Hatırlatma:

Example 1.

Transcribe the following DNA to RNA, then use the genetic code to translate it to a sequence of amino acids.

TCATAATACGTTTTGTATTCGCCAGCGCTTCGGTGT

Answer 1.

To transcribe the DNA, first substitute each DNA for it's counterpart (i.e., G for C, C for G, T for A and A for T):

TCATAATACGTTTTGTATTCGCCAGCGCTTCGGTGT
AGTATTATGCAAAACATAAGCGGTCGCGAAGCCACA

Next, remember that the Thymine (T) bases become a Uracil (U). Hence our sequence becomes:

AGUAUUAUGCAAAACAUAAGCGGUCGCGAAGCCACA

Using the genetic code is also easy – just split the RNA sequence into triplets: :

AGU AUU AUG CAA AAC AUA AGC GGU CGC GAA GCC ACA

then look each triplet (codon) up in the genetic code table. So AGU becomes Serine, which we can write as Ser, or just S. AUU becomes Isoleucine (Ile), which we write as I. Carrying on in this way, we get:

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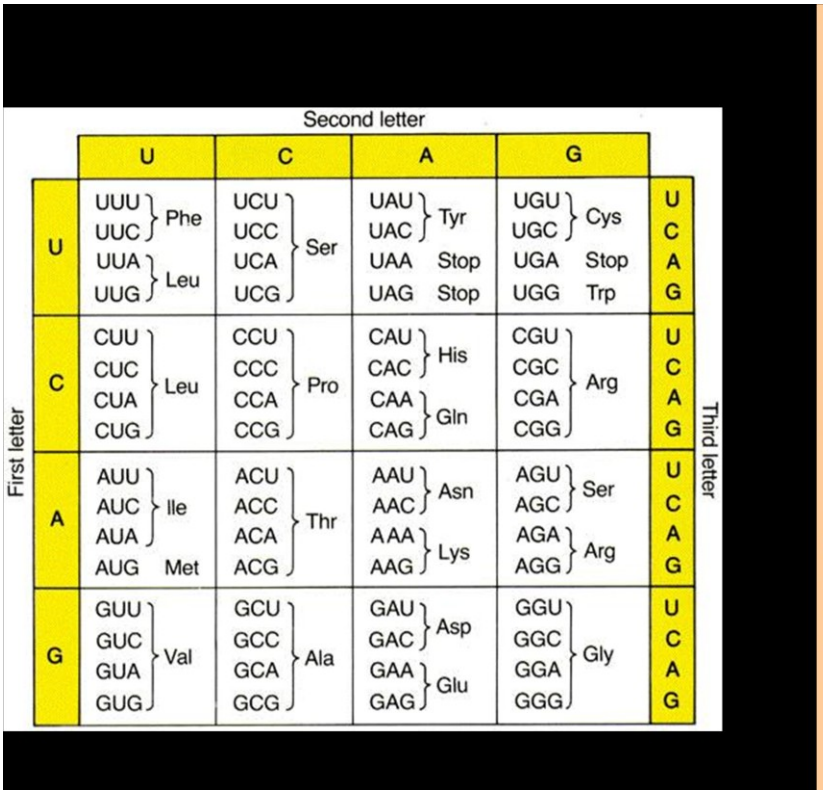
Homework: Write a Perl program that implements DNA translation to amino acit sequence



Second letter

First letter	U	C	A	G	Third letter
U	UUU, UUC: Phe UUA, UUG: Leu	UCU, UCC, UCA, UCG: Ser	UAU, UAC: Tyr UAA Stop UAG Stop	UGU, UGC: Cys UGA Stop UGG Trp	U C A G
C	CUU, CUC, CUA, CUG: Leu	CCU, CCC, CCA, CCG: Pro	CAU, CAC: His CAA, CAG: Gln	CGU, CGC, CGA, CGG: Arg	U C A G
A	AUU, AUC, AUA: Ile AUG Met	ACU, ACC, ACA, ACG: Thr	AAU, AAC: Asn AAA, AAG: Lys	AGU, AGC: Ser AGA, AGG: Arg	U C A G
G	GUU, GUC, GUA, GUG: Val	GCU, GCC, GCA, GCG: Ala	GAU, GAC: Asp GAA, GAG: Glu	GGU, GGC, GGA, GGG: Gly	U C A G

A=Ala=Alanine
C=Cys=Cysteine
D=Asp=Aspartic acid
E=Glu=Glutamic acid
F=Phe=Phenylalanine
G=Gly=Glycine
H=His=Histidine
I=Ile=Isoleucine
K=Lys=Lysine
L=Leu=Leucine
M=Met=Methionine
N=Asn=Asparagine
P=Pro=Proline
Q=Gln=Glutamine
R=Arg=Arginine
S=Ser=Serine
T=Thr=Threonine
V=Val=Valine
W=Trp=Tryptophan
Y=Tyr=Tyrosine