**A website for k-mers Counting**

**1- The problem:**

we have a sequence and we want to know the kmers and the number of kmers using JavaScript code.

**2- The solution:**

We'll initiate a program that uses "For loop" to print the kmers.

we will receive the sequence and the k-mer size from the user.

For example, we have a sequence: ACTTGATGCACG and the k-mer size=3

To find the first k-mer we will start with the counter value [i : j+1] = [0:3]

**3- The algorithm:**

1) Enter the sequence

2) Enter the k-mer size

3) use the both values in for loop

ACTTGATGCACG

ACT i=0 j=2

Now, we have the first k-mer, then we will increment i, j by 1

To find the second k-mer

ACTTGATGCACG

CTT i=1 j=3

i++, j++

ACTTGATGCACG

TTG i=2 j=4

i++, j++

ACTTGATGCACG

TGA i=3 j=5

i++, j++

ACTTGATGCACG

GAT i=4 j=6

i++, j++

ACTTGATGCACG

ATG i=5 j=7

i++, j++

ACTTGATGCACG

TGC i=6 j=8

i++, j++

ACTTGATGCACG

GCA i=7 j=9

i++, j++

ACTTGATGCACG

CAC i=8 j=10

i++, j++

ACTTGATGCACG

ACG i=9 j=11

i++, j++

4) Put the for loop in if statement

To avoid exceeding the end of the sequence we will write all of the code in if statement:

if i=< (Sequence - kmer) +1 then run the code

if not: break and print the k-mers and the number of k-mers.

5) Use the equation: L-K+1

To calculate the number of k-mers: L-K+1

consider that: L= Length of sequence

K= length of k-mer

In the last example, the number of k-mers is L-K+1 = 12-3+1 = 10

**4- Team members:**

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