Assignment #4

Due: 11:59pm, Tuesday, Oct 31, 2017

Write two python programs to report “Reverse Complement” of your sequence.

1. Without using Biopython

```
#!/usr/bin/env python

import os, sys, re

def reverse(s):
    """Return the sequence string in reverse order."""
    # make a list of letters from string

    # reverse the list

    # join the letters of the list into string and return


def complement(s):
    """Return the complementary sequence string."""
    # dictionary setup for complement

    # make a list of letters from string

    # for loop of the letters and call the base_complementary dictionary

    # join the letters of the list into string and return


def main():
    # get input sequence
    dna_seq = raw_input('Type your DNA sequence : ')

    # check DNA letter (only ACGTacgt)

    # change it to upper case

    # call reverse function

    # call complement function

    # print output
    print "Reverse complement DNA :", dna_seq

    # exit the program
    sys.exit()

if __name__ == '__main__':
    main()
```

2. Using Biopython

```
#!/usr/bin/env python

import os, sys, re
from Bio.Seq import Seq

def main():
    # get input sequence
    dna_seq = raw_input('Type your DNA sequence : ')

    # Seq object call

    # call reverse_complement function in Bio.Seq

    # print output
    print "Reverse complement DNA :", dna_seq

    # exit the program
    sys.exit()

if __name__ == '__main__':
    main()
```

3. Verify your code as below

```
[ahnt@hopper:~/Courses/BCB5200-Fall2016/homeworks/HW1_4]$ ./hw1_4_a.py
Type your DNA sequence : acccttga
Reverse complement DNA : TCAAGGGT
[ahnt@hopper:~/Courses/BCB5200-Fall2016/homeworks/HW1_4]$ ./hw1_4_a.py
Type your DNA sequence : ACCCTTGA
Reverse complement DNA : TCAAGGGT
[ahnt@hopper:~/Courses/BCB5200-Fall2016/homeworks/HW1_4]$ ./hw1_4_a.py
Type your DNA sequence : ACCCTTGK
** Error: Not a DNA sequence
[ahnt@hopper:~/Courses/BCB5200-Fall2016/homeworks/HW1_4]$ ./hw1_4_b.py
Type your DNA sequence : ACCCTTGA
Reverse complement DNA : TCAAGGGT
[ahnt@hopper:~/Courses/BCB5200-Fall2016/homeworks/HW1_4]$ ./hw1_4_b.py
Type your DNA sequence : acccttga
Reverse complement DNA : tcaagggt
[ahnt@hopper:~/Courses/BCB5200-Fall2016/homeworks/HW1_4]$ ./hw1_4_b.py
Type your DNA sequence : ACCCTTGK
Reverse complement DNA : MCAAGGGT
```

4. Make your own GitHub (Public) or BitBucket (Private) student account, make a project name such as "BioinformaticsPythonScripts" or whatever you want. Then, upload your python codes into the repository. If you make your own Python scripts in Bioinformatics class (or in any research project), just upload them into the project repository. Update your resume to provide the link.

5. Submit your codes, a document including above verification, and a screenshot of the GitHub or BitBucket repository.