HW 1 (IQB w18)

12/1/18

1. Write a MATLAB / C program that can be utilized to carry out the following:

   (i) (1 pt) Store the base pair bonding information of a DNA molecule in binary format (in 0,1 format) for estimation of DNA energy.
   (ii) (1 pt) Estimate the total bonding energy of a given DNA molecule using the stored information. Assume the energy for one AT pair = $2\varepsilon K_B T$ and one GC pair = $3\varepsilon K_B T$.
   (iii) (1 pt) Two strands of a DNA molecule (double helix structure) can be separated by heating. Show how this code can be utilized to compare the binding free energy of two DNA molecules and find the molecule that would melt at a higher temperature.

In (i) you need to show how to read the information of a given DNA sequence (AT / GC) and then carry out binary (0/1) format storing for energy estimation.