CS 412/512 - Homework #3

Due To

05 April 2022 Tuesday, by 11.59 pm.

To Do

Write appropriate functions in (Java or Python) language for the following problems:

String Composition Problem (3A):
Generate the k-mer composition of a string

    Input: A string Text and an integer k
    Output: $COMPOSITION_k(Text)$, where the k-mers are arranged in lexicographic order

---

Overlap Graph Problem (3C):
Construct the overlap graph of a collection of k-mers

    Input: A collection Patterns of k-mers
    Output: The overlap graph OVERLAP(Patterns)

De Bruijn Graph from k-mers Problem (3E):
Construct the de Bruijn graph of a collection of k-mers

    Input: A collection of k-mers Patterns
    Output: DEBRUIJN(Patterns)

Eulerian Cycle Problem (3F):
Construct the Eulerian Cycle of a Graph G

    Input: A Graph G
    Output: EulerianCycle(G)

Rules

- You are not allowed to use any external libraries and/or functions. Everything must be implemented by you from scratch.

- Submit ".py" or ".java" file. Any other type of file (such as .ipnyb and etc) will be disregarded.

- It is your responsibility to make sure that you code runs without any type of errors. If your code does not compile or run you will not get any points.

- Any type of plagiarism will not be tolerated. Your submitted codes will be compared with other submissions and also the codes available on internet and violations will have a penalty of -100 points. (In case of copying from another student both parties will get -100)

- Please submit your code using the specified file name as "HW#_YourName_YourSurname.(py/java)" for instance for homework 1, it would be "HW1_Jane_Johnson.py" or "HW1_James_Johnson.java"