CSCI 451/551 Fall 2019 Homework 5
Due: Tue, Dec 3, 11:59pm

Submission instructions:

- Step 1: Combine your answers into a single PDF and submit that using **gradescope** (**Group submissions: create a group and just submit once**)
- Step 2 (only for programming assignments): One person from each group should also upload all source code files to **ecat**. (Group submissions: please make sure all group members are listed)

Problem 1 (10 pts) Exercise 7.6.1 (pg 193)

Problem 2 (5 pts) Exercise 7.6.3 (pg 193)

Problem 3 (5 pts) Exercise 7.6.4 (pg 194)

Problem 4 (10 pts) Exercise 4.8.1 (pg 105) Use suffix-tree based method and draw suffix tree; indicate MUMs in the tree and suffix links.

Problem 5 (5 pts) Exercise 4.8.2 (pg 105)

Problem 6 (20 pts) Programming project: Implement a *range minimum query* (*RMQ)* algorithm, based on 551 lecture from Anna, Caleb and Mark.

Implement either the “block/square-root” approach or the “sparse table” approach for solving the RMK problem (your choice).

Demonstrate your program works on some examples, including a sorted array and array of random values, with up to a million entries. (Sample output must be uploaded to gradescope.)

Bonus (5 pts) Using your RMK implementation, implement an LCA algorithm. Demonstrate it works. (Sample output must be uploaded to gradescope.)