CMPT 225 Midterm 2
Review and Instructions
Midterm

- **When:** Week 10 - Wed. Nov. 6, 2019 at 5:30pm
- **Where:** in our class room
- **How long:** 50 minutes
Midterm

- **What**: (i.e., what to study)
  - **Everything** we covered up until (and including) our Lecture on Wed. Oct. 31 is subject to examination
    - Partial lecture notes + your own lecture notes
    - All code, examples and readings posted on our course web site
    - Participation activities
    - Labs 0 to 5
    - Assignments 1, 2 and 3
    - Good Programming Style (GPS) on our course web site
Midterm review - 1

See **Learning Outcomes** at the beginning of each set of lecture notes
-> Use them to check your understanding and to determine what you need to study

- Define and use the four steps of software development process
  - In terms of the Testing step: know and use test cases, test drivers, expected and actual results
- Define (data) abstraction and abstract data type (ADT)
- Know how to achieve data abstraction
  - Design a data collection ADT class (in general)
- Differentiate between a class that has been designed as an ADT and a class that has not
  - Compare and contrast them
Mid term review - 2

Underlying data structures: 1. Stack ADT class 2. Queue ADT class
3. Using another data collection ADT class, e.g., List, as underlying data structure.

Characteristics:
- Public Interface
- Implementation of operations
- Time efficiency
- Space efficiency
- Comparison and contrast various implementations.

When to use each of these data collections i.e., the kinds of problems each of them can solve.

Binary Heap ADT class
Priority Queue ADT class
Tree ADT class
Stack ADT class
Queue ADT class
Binary Search Tree ADT class
Mid term review - 3

- Sorting algorithms
  - Selection sort
  - Insertion sort
  - Merge sort
  - Quick sort
  - Heap sort
  - Tree sort

- How the algorithm functions
- Time efficiency of best/average/worst case scenarios
- What data looks like for best/average/worst case scenarios in terms of time efficiency
- Space efficiency
- How to improve time/space efficiency (if needed/possible)
Mid term review - 4

- Big O notation to express time/space efficiency analysis
- Linux commands
- C++ code
- etc ...
More tools to utilize when studying

- Resources web page on course web site
  - Exercises and Programming Problems
    - See link to Solutions for Selected Exercises from the 6th edition of Textbook 1 on our Resources web page
Midterm format

- **First section**: questions requiring short answers
  - For example:
    - “Yes/no” or
    - “fill in the blank” or
    - a few words
    - etc...

- **Second section**: questions requiring written answers
  - For example:
    - Drawing a data structure
    - Writing an algorithm or code
    - Writing an answer (in English)
    - etc...
Seating arrangement during midterm

Each intersection represents a seat in the classroom

Represents a student seated at a seat

Represents a vacant seat

Everything at front of classroom including cell phones, calculators and student card!
Only keep pens, pencils and eraser with you!
Before the midterm starts …

- We distribute the midterm examination papers
- Once you have received yours, leave it face up on your table and read the instructions printed on its first page
- Please, do not touch, leaf through, or write your name on the midterm examination paper
  - Why? Because it is unfair to all other students who have not yet received a midterm examination paper
- When all students have received a midterm examination paper, you will be instructed to start the midterm
  - That is when you start touching the midterm like writing your name etc... 😊
During the midterm ...

- If you have a question
  1. Have a look at the instructions on page 1 for an answer
  2. If the answer to your question is not on page 1, raise your hand and the instructor will attend to your question
- The instructor is the only one that will be answering questions during the midterm
When time is up …

- You will be instructed to stop writing!
- Please, do stop writing and hand in your midterm examination paper as instructed
  - Why? Because, if you continue writing, it is unfair to all other students who have stopped writing