Midterm

- **When:** Lecture 24 - Wed. March 6, 2019
- **Where:** SSCC 9001 - Shrum Science Centre Chemistry
- **How long:** 45 minutes (+ 5 minutes to organize ourselves)
Midterm

What: (i.e., what to study)

Everything we covered up until (and including) our Lecture 22 on Friday March 1 is subject to examination

- all material from Lecture 1 to (and including) Lecture 22
  - Partial lecture notes + your own lecture notes
  - All code, examples and readings posted on our course web site
  - Labs 0 to 6
  - 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, information hiding and abstract data type (ADT)
- Know how to achieve data abstraction (walls)
  - 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

Here are some of the topics we have covered so far:
Mid term review - 2

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

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

And compare and contrast various implementations

Stack ADT class

List ADT class

Binary Search Tree ADT class

Queue ADT class

Priority Queue ADT class

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

Characteristics

Public interface

Implementation

Time efficiency of operations
Mid term review - 3

- Sorting algorithms
  - Selection sort
  - Insertion sort
  - Merge sort
  - Quick 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
- Self-balancing binary search trees (AVL)
- Linux commands
- C++ code
- etc ...
More tools to utilize when studying

- **Textbook**
  - Checkpoint Questions throughout sections of our textbook assigned as reading
    - See link to *Answers to Checkpoint Questions* from our textbook on our *Resources* web page
  - Exercises and Programming Problems
    - See link to *Solutions for Selected Exercises* from the 6th edition of our textbook on our *Resources* web page
    - There is also a link to the 6th edition of our textbook on our *Resources* web page

- **Practice midterm + solution**
  - See links at the Lecture 24 – Midterm on our *Schedule* (home 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
Questions?