Course Syllabus Fall 2014

CSC 212 Data Structures

King Saud University

Contact

- Name:
- Office:
- Office hours are displayed on the office door.
- Information and announcements will be communicated to you by email (**university email**).
  - Make sure you have access to your university email account.
  - You have to check your email periodically.
- All course materials and assignments will be uploaded on **LMS**.
  - Make sure you have access to LMS.
  - If you have not used LMS before, login to the system and get familiar with it.

Overview

Fundamental concepts of data structures. Performance measurement of algorithms. Implementation and use of lists, stacks, queues, priority queues, trees, heap, hash tables and graphs. Students will do programming assignments and a project.

- This course is delivered in three lectures and one tutorial every week.
- Attendance to lectures and **tutorial** is **mandatory**.

Course Objectives

To be able to:

1. Describe and use fundamental data structures such as lists, stacks, queues and trees.

2. Determine time and space complexity of data structures and associated algorithms.

3. Design appropriate data structures for a problem i.e. be able to analyze a given problem, identify and specify data elements, structure and operations appropriate to it.

4. Implement a specified data structure i.e. be able to choose a storage structure for the data elements and algorithms for the operations.

5. Compare alternative data structures for a problem (e.g. based on their time and space complexity) and be able to choose the most appropriate one for the given problem.

6. Understand recursion and be able to write recursive algorithms for problems.

Schedule

Week	Lecture 1	Lecture 2	Lecture 3
#01 (31 Aug)	Orientation & Introduction		
#02 (07 Sep)	Java Review	Java Generics	Introduction to Data Structures
#03 (14 Sep)	List (Specification)	List (Linked List)	List (Array List)
#04 (21 Sep)	Performance Analysis	National Day	Performance Analysis
Eid Al-Adha Holiday (Fri, 26 Sep – Sat, 11 Oct)			
#05(12 Oct)	Performance Analysis	Performance Analysis	Double Linked List
#06(19 Oct)	Queue	Queue	Priority Queue
#07 (26 Oct)	Stack	Stack	Recursion
#08 (02 Nov)	Recursion	Recursion	Recursion
#09 (09 Nov)	Trees & Binary Tree	Binary Tree	Binary Tree
#10 (16 Nov)	BST	BST	BST
#11 (23 Nov)	AVL	AVL	AVL
#12 (30 Nov)	B+ Trees	B+ Trees	B+ Trees
#13 (07 Dec)	Heap	Heap	Heap
#14 (14 Dec)	Hash	Hash	Hash
#15 (21 Dec)	Graphs	Graphs	Graphs

Textbook

Data Structures and Algorithms in Java, 4th edition, by M.T. Goodrich and R. Tamassia. John Wiley and Sons, Inc., ISBN: 0-471-73884-0

Evaluation

- Tutorials 15% (Homework + quizzes).
- Midterm I 15%.
- Midterm II 15%.
- Project 15%.
- Final 40%.

Exams

Tentative schedule (subject to change):

- MT I: Thursday, November 6th.
- MT II: Thursday, December 4th.
- Makeup for midterms: Wednesday, December 24th.
    - The makeup is for student who miss a midterm with a valid excuse.
    - To attend the makeup, the student must submit his excuse **within one week** after the midterm, otherwise he may be refused to enter the makeup.
- Final (comprehensive): date decided by the college.
- No calculators or any other electronic devices are allowed in the exams.

Homework and Quizzes

- Homework will be assigned periodically and posted on LMS.
- Follow the submission instructions specified in the assignment.
- Quizzes are conducted periodically during the tutorial session.

Project

- The project has as goal to allow the student to put into practice the knowledge acquired in class, and as such it constitutes an important part of the course.
- The project is a group assignment.
- The project is divided into several phases.
- Every group must conduct a demo at the end of the semester.
- **Plagiarism** in the project is **prohibited** and will be dealt with very harshly.

Attendance and Plagiarism

- More than **25% absence** automatically results in **denial** of final exam.
- Plagiarism will not be tolerated and is grounds for **failing the course**. Any student (or group of students) submitting work which is not his/their own, or if the submitted work was found to be copied, he/they will all face failing the course. No excuses will be accepted whatsoever.