Data Structures

Arjun Mukherjee[†]

Course webpage:
http://www.cs.uh.edu/~arjun/courses/ds

Administrivia

General Information

- Instructor: Arjun Mukherjee
  - Email: arjun@cs.uh.edu
  - Office: PGH 582

- Administrative details (e.g., lecture times, venue, office hours, assignment due dates) available in course webpage

- http://www.cs.uh.edu/~arjun/courses/ds

- Lecture slides, notes, syllabus, other resources are also available via the course page above.

Classwork/Lab Information

- **Weekly Meetings conducted by TAs**
  - M 4-5.30 PM GAR 205

- **Problem solving – mainstream codebase Development in Java**

- **Classwork and Lab performance count towards total grade**

- Refer to TAs for lab specific lecture slides, notes, syllabus, problems, solutions and leverage TAs' office hours for help.

Resources

Course materials (lecture notes/slides, online resources/offline copies, sample midterm and final questions, etc.):

- Download from this location: http://www2.cs.uh.edu/~arjun/courses/ds/course_materials.zip
- **Please do not re-post on the web or distribute without prior permission**
- **IMP:** These resources, along with sections in books (under <u>Required Readings</u>) should be used for preparing for this course.

Books are available online (e.g., used copies @ Amazon, online pdfs). An online copy is also included (to help you get started until your book comes!)

Grading

- 5 HomeWorks: 5 x 15% = 75%
- Exam 1: 30%
- Classwork/Lab: 10%
- Lecture Attendance: 5%
- Max Points: 120%
  - But graded on 100%
  - Grading will be curved – relative to class performance

Prerequisites

- **Knowledge of**
  - basic probability theory, functions, high school Math
  - Basic control flow and algorithms
  - Familiarity with C/C++, Java, Python, etc. for programming
  - Homeworks will be done in Java - If you don't have prior Java background, a Java primer walkthrough will be done
  - TAs will help with Java support as and where needed.

Reading materials

- **Required Text**
  - Goodrich, M. T., Tamassia, R., Goldwasser, M. H. Data Structures and Algorithms in Java. Wiley, 6th edition, 2016. .
- References:
  - The Algorithm Design Manual, 2nd Edition by *Steven S Skiena*
  - Introduction to Algorithms, 3rd Edition by *Thomas H.* Cormen ,*Charles E. Leiserson, Ronald L. Rivest, Clifford Stein*
  - Elements of Programming Interviews in Java: The Insiders' Guide, by *Adnan Aziz, Tsung-Hsien Lee, Amit Prakash*

Topics

- Introduction and Java Primer
- Fundamental Data Structures
- Algorithm Analysis
- Recursion
- Stacks and Queues
- Trees
- Priority Queues
- Maps and Hash Tables
- Sorting and Selection
- Graph Algorithms

Feedback and suggestions

- **Your feedback and suggestions are most welcome!**
    - It will help me adapt the course to your needs.
- Share your questions and concerns with the class – very likely others may have the same.
- No pain no gain…☺
    - The more you put in, the more you get
    - Your grades are proportional to your efforts

To be successful

- **Work hard and Work step by step (each step counts)**

  - Attend labs and lectures
  - Write your own code
  - Visit course web for due dates
  - Submit HWs on time

- NO - NO

  - **No direct copies of others' code or code on internet (We know how to catch you!)**
  - You can however use online references for ideas but **all your code and submitted work must be 100% of your own writing**

Introduction to Java