

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
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- Problem solving – mainstream codebase
Development in Java/C++
- 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 Required Readings) 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: $5 \times 15\% = 75\%$
- 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*
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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 C++