Data Structures and Algorithms

CS141, Fall 2017

Instructor

- Stefano Lonardi
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- Office hours: Fridays 10-11am or by appointment
• Course homepage
  – http://www.cs.ucr.edu/~stelo/cs141fall17/
  – Syllabus, slides, homework & solutions
• iLearn for grades
  – https://ilearn.ucr.edu/
• Piazza discussion board
  – https://piazza.com/ucr/fall2017/cs141/
    (link from the course homepage)
• Gradescope to submit homework
  – https://gradescope.com/
  – Entry Code: MZR34G

Textbook (required)

Reference


Discussion Sessions and TA

- Wednesday  8-9am, Olmstead 1136  Dipankar
- Wednesday  10-11am, MSE 113  Dipankar
- Monday     9-10am, LifeSci 2418  Dipankar

- Attendance of discussion sessions is not mandatory but strongly **recommended**
- Office hours held in WCH room 110, Tuesday 3-5pm
- Discussions start next week
Course Format

- Three 50-minute lectures/week
- One hour discussion/week
- Nine written assignments (homework); homework with the lowest score (out of 9) will be dropped from the average
- Three exams (in class, closed book/notes)
  - Two quizzes (week 6 and week 9)
  - One final (during finals’ week)

Grading

- Best 8 homework \((h)\) – 20%
- Quiz 1 \((q_1)\) – 20%
- Quiz 2 \((q_2)\) – 20%
- Final \((f)\) – 40%

Given the scores \(h,q_1,q_2,f \in [0,100]\)

\[
G = \frac{20h + 20q_1 + 20q_2 + 40f}{100}
\]

Map \(G\) to the final grade using the following table.
Overview

- Week 1: Course overview
- Week 2: Discrete math for algorithm analysis
- Week 3: Analysis of recurrence relations
- Week 4: Divide and conquer
- Week 5: Greedy approach
- **QUIZ 1** (in class, closed book, closed notes)
- Week 6: Dynamic programming
- Week 7: Graphs, directed graphs and weighted graphs
- Week 8: Graph traversal (DFS/BFS), connectivity
- **QUIZ 2** (in class, closed book, closed notes)
- Week 9: Minimum cost spanning tree, single-source shortest path
- Week 10: All-pairs shortest path
- **FINAL** (closed book, closed notes)

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### Fall 2017 Calendar

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CS 141

CS 14 Background

- **Data Structures**: Arrays, Lists, Stacks, Queues, Dictionaries, Hash Tables, Search Trees, Priority Queues (heaps), Graphs

- **Algorithms**: Sorting, Searching

CS 111 Background

- Asymptotic notation (upper, lower, tight bounds)
- Proofs (direct, contradiction, induction)
- Solving recurrence relations
- Trees, graphs and directed graphs