Quiz 2 Information

Quiz 2 will be held on **Thursday, April 13$^{\text{th}}$ from 7:30 P.M. to 9:30 P.M**. Students with last names in range **Agrawal - Sun, please go to 26-100** and **everyone else please go to room 1-190** for the exam.

- You are allowed to bring *two handwritten* double-sided $8\frac{1}{2}$" by 11" crib sheets of your own notes to help you with the quiz. You may not use calculators, text books, notes, or any other materials except for your crib sheet during the quiz.

- If you need special accommodations for the quiz, please email Prof. Debayan Gupta at *debayan@mit.edu* with your SDS letter.

- The quiz will cover all materials presented in psets up to and including **Problem Set 6** and all lectures and recitation materials up to and including **Lecture 14** and **Recitation 8**. The quiz will focus on material covered since quiz 1, but may also include material from earlier topics. As a reminder, the topics we covered during the relevant lectures for Quiz 2 are included at the end of this handout.

Practice Quiz 2

- Following the results from our quiz 1 survey, we will be releasing two practice quizzes. The first is a standard practice quiz and will be available on the course website on Saturday, April 8$^{\text{th}}$. This is meant to help you practice your problem solving skills in a simulated exam environment. The second practice quiz (or practice problems) will contain additional problems and will be released on the course website by Monday, April 10$^{\text{th}}$.

- Note that the practice quizzes should not be taken as a strict gauge of the difficulty level of the actual exam.

Review Session

- Following the results from our quiz 1 survey, we will **not** be having review sessions for quiz 2. Neither the *meta*-review session nor the standard review session will be held for quiz 2.

- There will be office hours next week as usual where you can ask our TAs any questions you may have about the quiz material.

Exam Taking Instructions

- Please arrive on time so we can start the exam promptly. When you arrive, please sit at least one seat away from others, both on your left and your right side. Do not open the quiz booklet until directed to do so, and make sure you read all the instructions before you begin.

- You will have 120 minutes to earn a maximum of 120 points. Do not spend too much time on any single problem. Read them all first, and attack them in the order that allows you to make the most progress.

- When the quiz begins, write your name on the top of *every* page of the quiz booklet. Write your solutions in the space provided. If you need more space, continue on the back page and leave a reference that you have done so in the original solution space. If you still need more space, write on the scratch pages and attach them at the end of the exam, and refer to the scratch pages in the solution space provided. Pages will be separated and scanned double-sided for grading.

- Please do not remove any pages from the quiz booklet. All pages must be available for proper scanning purposes.

- When writing an algorithm, a clear description in English will suffice. Using pseudo-code is not required.

- Unless the question specifically asks for it, do not waste time re-deriving facts that we have studied. Simply cite them.

Material Covered

The following is a list of the topics covered during the relevant lectures for Quiz 2, in reverse chronological order.

1. Topics since quiz 1:

   - L14 - Streaming Algorithms I: Reservoir Sampling, Distinct Elements Problem
   - L13 - Randomization: Universal and Perfect Hashing
   - L12 - Random Walks and Markov Chain Monte Carlo (MCMC) Methods
   - L11 - Randomized Algorithms: QuickSelect and QuickSort, Matrix Product Verification, Tail Inequalities
   - L10 - Game Theory and the Min-Max Theorem

2. Topics before quiz 1:

   - L09 - Linear Programming, LP Duality

- L08 - Network Flows II: Ford-Fulkerson Algorithm, Scaling Algorithm, Bipartite Matchings
- L07 - Network Flows I: Residual Graph, Augmenting Paths, Max-Flow Min-Cut Theorem
- L06 - Greedy Algorithms: Minimum Spanning Tree
- L05 - Amortized Analysis II: Self-organizing Lists and Competitive Analysis
- L04 - Amortized Analysis I: Union-Find
- L03 - Divide and Conquer II: Fast Fourier Transform, Polynomial Multiplication
- L02 - Divide and Conquer I: Median Finding, Integer Multiplication
- L01 - Intro + Interval Scheduling