CS310 - Advanced Data Structures and Algorithms

Midterm review

April 4, 2022
The midterm exam will take place on April 6 in class.

Weight – 30% of your final grade.

If you can’t make it for a really good (documented) reason – contact me ASAP for a make-up exam.

Four questions, answer on paper, even if code is required.

If you use the back side of the paper and want me to read it, please state it clearly.

Write clearly or you will have to read it to me in person during my office hour (I mean it and I have done it!).

No cursive please.
You can bring the book, class notes, hw’s, pa’s, solutions and anything written or printed you think may help you.

Do not bring computers, cell phones, iPads, smart watch, friends or any other electronic or human means of communications.

You can bring a simple calculator and a simple wrist watch or alarm clock. I will project the time on the screen for your convenience.

Work should be strictly individual.

Bags should be placed at the front of the class. Turn off or silence your cell phone beforehand (!!!).
Anything we learned and was covered in hw1-3 and pa1 including but not limited to:

- Pre-requisites – as background material. I will assume knowledge but will not ask questions per-se.
- Runtime analysis – big-O notation, recursive runtime analysis ($T(n)$), logarithms, rules of sum and product of operations.
- Collections – Linked/Array lists, Tree/Hash sets, Tree/Hash maps.
- Hash tables – hash functions, collision resolution, performance.
- Graphs – Directed/undirected graphs, search algorithms, DAGs: everything that was covered in HW3 except MSTs – up to and including S&W chapter 4.2.
• RTFQ, then ATFQ (read the fabulous question, then answer the fabulous question).

• Explain your answers but do so briefly – rarely should you need more than one short paragraph. Remember that excessive writing usually covers for lack of knowledge.

• If you have to write code – I will care more about the algorithm than the Java syntax (but make it look like legit Java).

• Remember – I care mostly about you understanding the material. There’s nothing in the exam that you haven’t seen before in one form or another.