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Overview of Module 4

Module 4 is all about hash functions. Now that we know how to build hash functions and we are going to look at some surprising applications of hash functions to real algorithm and data-structure challenges.

- We will look at different ways of building hash tables in topics such as perfect hashing, open address hashing and cuckoo hashing.
- We will look at some surprising and modern applications: Count-Min Sketches, Bloom Filter and Rabin-Karp String Matching.

Note that some of these topics are not covered in the CLRS book. However, we have posted our slides to help you study these topics.

We do not insist on an in-depth knowledge of all these topics at this stage but instead hope that this material will expose you to interesting ways we build up new algorithms and data-structures from existing ideas.

Assignments

For the topic of open-address hashing we will have a quiz at the end. For the other topics, the basic ideas are important and we do not emphasize the detailed analysis. As a result, we will not have a quiz. The programming assignment is going to be based on these topics: it will be somewhat more complicated than previous weeks. Assignment will explore count-min sketches, counting number of common elements and Bloom filter with a study of some works by the Russian novelist Leo Tolstoy :-)

✓ Completed

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