Hi everyone,

Next week is the last week of lectures for this spring. I would like to pass along some gentle heads-ups on our plan for the week. On Tuesday, April 28, I will quickly summarize the B-tree related formulas that we derived Thursday: a) Number of nodes in a b-tree that is maximal with respect to size b) Number of entries in a b-tree that is maximal with respect to size and c) the height of a b-tree that is maximal with respect to size - same as the shortest possible b-tree (i.e. optimal height).

We will then derive the converse of each formula: a) Number of nodes in a b-tree that is **minimal** with respect to size b) Number of entries in a b-tree that is **minimal** with respect to size and c) the height of a b-tree that is **minimal** with respect to size - same as the tallest possible b-tree (i.e. worst-case).

We will show that the height of a b-tree in the worst-case is log_m(n); therefore, insertion, deletion and searching in a b-tree are all O(log_m(n)) ~ O(log n), where m is a constant.

We will then tie some loose ends from a previous lecture we did hashing: a) the birthday paradox and how it relates to finding the probability of no collisions, or at least one collision, in a hash table; b) the coupon collector's problem and how it relates to determining the expected number of random keys that must be inserted into a hash table that uses closed addressing (i.e. open hashing/separate chaining) in order to fill the table - so that there is at least one entry at each address.

On Thursday, April 30, we will do a postmortem (a brief retrospective) of what we studied in the course this semester. I will also recommend topics, for students who are interested in computer science theory, that you could explore beyond this course. I will also discuss the scope of the final exam and give you some guidance on the format of the exam.

I have a mock final exam on the course moodle page. I suggest that you take the mock exam so that you can familiarize yourself with the moodle Quiz user interface before the actual exam. This will be especially useful for students who have not taken a moodle exam. You probably don't want to be learning how to navigate your way through a moodle exam for the first time when you are taking the actual final exam. Knowing how to do so before the final exam, may prove helpful.

Regards,

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