CMSC 341 Data Structures

Skiplist Review

These questions will help test your understanding of the Graph material discussed in class and in the text. These questions are only a study guide. Questions found here may be on your exam, although perhaps in a different format. Questions NOT found here may also be on your exam.

1. The expected asymptotic time for Skiplist operations is $O(lg\ n)$. There is a non-zero probability that the performance could be as bad as $O(n)$. Draw a 7-element Skiplist with max node size of 4 that would have such poor performance.

2. What maximum node size is appropriate for a Skiplist suitable for storing 65,535 elements and with associate probability ¼?

3. Given the drawing of a Skiplist, indicate all comparisons done in searching for a particular element.

4. Given a Skiplist with probability p and maximum node size M that contains N nodes, show the expected distribution of node sizes (how many nodes of each size).

5. The following perfect Skiplist is valid for $p = ½$. Draw an equivalent figure for $p = ¼$. What distribution of nodes (how many nodes of each size) do you expect in a long list of this type?

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