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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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16