

CS 351 DATA ORGANIZATION AND MANAGEMENT

HW 4

Date Given : November 18,2009

Date Due : December 4, 2009

Important Notes: 1. Please submit the Homework to Room EA 231 on the due date by 5:00 pm (no late submission will be accepted). 2. Answer the following 5 question in the order they are given using a standard size paper. 3. Handwritten submissions are accepted, a word document is preferred. 4. Staple all papers and write your name on them.

1.
 - a. Insert the records with the keys 6, 8, 30, 40, 50, 61, and 70 into a B-tree of order (degree) one.
 - b. Insert the records with the keys 12, 29, 30, 31, 32, 33, and 56 into a B-tree of order one.
 - c. From the results of a and b, what conclusion can you draw about the effect of key distribution on retrieval performance in a B-tree?
 - d. Give a B-tree containing the above keys (submitted in a different sequence, of course) that has the minimum number of nodes.
2.
 - a. For a file of 100 records, what is the minimum depth for a B-tree of order three?
 - b. for a B-tree of order ten?
3.
 - a. For a file of 100 records, what is the maximum depth for a B-tree of order three?
 - b. for a B-tree of order ten?
4. What is the minimum depth of a B-tree of order 100 used to store 45,000 records?
5. Insert the numbers individually into a B+-tree of index order one with two records per leaf node: 50, 85, 90, 35, 55, 20, 25, 80 (The SEQUENCE SET). Identify the INDEX SET.
6.
 - a. What is the minimum depth for a B+-tree containing 100 records with an index of order seven and data nodes holding up to six records?
 - b. What is the maximum depth?
7.
 - a. What is the minimum depth of a B+-tree to store 400 records with an index of order seven and data nodes holding up to six records?
 - b. What is the maximum depth?