

CS505 Assignment 3

Assigned: 10/01/08

Due: 10/15/08

Reading:

Chapter 13.1, 13.2, 14.1, 14.2, 14.3.

Exercise:

1. (20 points) Exercise 13.2.1 (page 567)
2. (10 points) Exercise 13.2.3 (page 567)
3. (20 points) Exercise 14.1.1 (page 631) & 14.1.3 (page 632)
4. (20 points) Exercise 14.2.1 (page 646)
5. (30 points) A parts database with Parts # as the key field starts as an empty table. Parts# is the search field value and a B+ index will be built on it. Suppose Parts# values are inserted in the given order in a B+ tree with fan out size 5. Answer the following questions.
 - 1) What are the minimum and maximum numbers of keys allowed in the root node, internal nodes and leaf nodes respectively in the B+ tree?
 - 2) Explain the data structure in each node.
 - 3) Construct the B+ tree after the following values: 2, 3, 5, 7, 12, 14, 16, 17, 22, 27, 29, 30, 33, 34, 38, 43 are inserted.

- 4) Grow the B+ tree after the following value: 18 and 8 are inserted
- 5) Update the B+ tree after the following value: 17 and 22 are deleted.
- 6) Update the B+ tree after the following values: 27 and 29 are deleted.
- 7) Write down the nodes needed to be visited to find key 34.
- 8) Write down the nodes needed to be visited to find values in the range [5, 29].
- 9) In case no indexing (B or B+ tree, ISAM) is constructed (available), what's an alternative method that might offer minimum time to find key in question 6) ? Explain why indexing is important in database applications.