CSci 4707
Homework 3 Solution
Spring 2015

Chapter 8 and 12
Due Thursday, 04/09/2015 14:30

B1a.

A	F	G	D	H

B1b.

A	G	F	D	H

B1c.

A	G	H	D	F

B1d.

A	H	F	D	G

B2. (1) DB may need to force a page before writing another page. **(2)** DB has more context and can do smarter page replacement for its own need.

B3a. MRU to avoid sequential flooding and better hit rate than FIFO for sequential scan.

B3b. LRU or Clock (trivial)

B4a. When the resulting records in within the same page or in a small number of pages.

B4b. No, this is a contradiction. Alternative 1 will always be a clustered B+Tree.

B4c. One of the difference is: B+Tree has all its Data Entries on the leaf node while B-Tree can be in any node. **(this problem is omitted since we don't learn about B-Tree in class)**

C1a. Scan or Unclustered B+Tree since we don't know the nature of the data.

C1b. Clustered B+Tree / Hash depending on the # of records.

C1c. Scan or Unclustered B+Tree + check the retrieved tuples' category.

C1d. Clustered B+Tree on <state, age>

C2. We can use the Clustered B+Tree and use an **index only scan** to get the average age for each states. **(This problem is omitted)**

C3a. Assume: 2 I/Os for probing the index: 100 + 1000 * (2 + 1) = 3100 I/Os

C3b. Assume: 1.2 I/Os for probing the index: 10 + 5000 * (1.2 + 1) = 11010 I/Os

C3c. 100 + 1000 * ((5000/1000) + 2) = 7100 I/Os

C3d. 10 + 5000 * 100 = 500010 I/Os