Database Systems Lab

SESSION 3

Building single-level persistent primary index for a data file

In this lab session, you will build a PERSISTENT single-level primary index as part of the Personal Data Store (PDS) implementation. You are expected to build on the PDS implementation you created from SESSION 2.

Complete the following tasks:

Modify the PDS function as per the following:

```
// pds_open
// Open the data file and index file in rb+ mode
// Update the fields of PDS_RepoInfo appropriately
// Build BST and store in pds_bst by reading index entries from the index file
// Close only the index file
int pds_open( char *repo_name, int rec_size );

// pds_load_ndx
// Internal function used by pds_open to read index entries into BST
int pds_load_ndx();

// put_rec_by_key
// Seek to the end of the data file
// Create an index entry with the current data file location using ftell
// Add index entry to BST using offset returned by ftell
// Write the key at the current data file location
// Write the record after writing the key
int put_rec_by_key( int key, void *rec );

// get_rec_by_key
// Search for index entry in BST
// Seek to the file location based on offset in index entry
// Read the key at the current file location
// Read the record after reading the key
int get_rec_by_key( int key, void *rec );

// pds_close
// Open the index file in wb mode (write mode, not append mode)
// Unload the BST into the index file by traversing it in PRE-ORDER (overwrite the entire index file)
// Free the BST by call bst_destroy()
// Close the index file and data file
int pds_close();
```

Testing

1. Test your program with various combinations of STORE, SEARCH, OPEN, CLOSE with the help of pds_tester.c and testcase.in test case file.

Submission

a. Upload only pds.c file

Note: you are not expected to change any of the header files). Your submission will compiled with standard header files given to you as part of the lab along with my own testcase.in test cases.