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 calling bst_destroy()
// Close the index file and data file
int pds_close();

Testing

a. The following driver program is given to you:

- pds_tester.c (generic testing with input data file like testcase.in)

b. Test your program thoroughly with the above driver program by creating your own test input files

Commands

- Use the following command for creating pds_tester executable:

```
gcc -o pds_tester bst.c contact.c pds.c pds_tester.c
```

For testing using pds_tester, use the following command:

```
pds_tester testcase.in
```

Submission

Upload ONLY the following file to LMS:

- pds.c

Make sure you only use with the bst.c provided to you.

YOU ARE NOT EXPECTED CHANGE ANY OF THE FILES GIVEN TO YOU