

Assignment-2

Due Date-23nd Sep., 2007, 11.59 PM

Assignment can be done in groups of 2.

Statement:

Write the following functions in C/C++:

The attribute values in each record are separated by space. This also implies, no attribute can have two words separated by space.

Declare the types Iterator and Record, used below as appropriate. You can assume that a record has at most 10 fields, and each field is a string of 10 characters. The structure Record should have an attribute numFields, containing the number of fields in the record, in addition to the actual fields.

1) Implement a file-scan iterator, with the functions:

```
Iterator *openScan(char *filename, Record *rec)
    /* rec is a Record structure where returned tuple is
to be stored.
        Returns null on error */
Record *next()
    /* returns null on end of file, else stores data in
record passed
        earlier to openScan, and returns its address */
void close()
```

Write a program that uses the above iterator to print out all records in a file.

2) Implement a merge-join iterator and a nested-join iterator, with the functions:

```
Iterator *openMergeJoin(Iterator *R, Iterator *S, Record
*rec);
    /* rec is a Record structure where returned tuple is
to be stored.
        Returns null on error */
Iterator *openNestedJoin(Iterator *R, Iterator *S, Record
```

```

*rec);
        /* rec is a Record structure where returned tuple is
to be stored.
        Returns null on error */
    Record *next()
        /* returns null on end of file, else stores data in
record passed
        earlier to openScan, and returns its address */
    void close()

```

(i) Assume that the join attribute is the first attribute of each join input, and the output of the two iterators passed to openMergeJoin are sorted already.

Write a program to open two iterators (on two files, assumed to be sorted already) open a merge-join iterator on these two iterators, and print out the merge-join output.

(ii) Assume that the join attribute is the first attribute of each join input, and the output of the two iterators passed to openNestedJoin are not sorted.

Write a program to open two iterators (on two files) open a Nested-join iterator on these two iterators, and print out output.