RDBMS Assignment-2

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CCE-B

1.Answer

Two schedules are conflict equivalent when the precedence graphs are isomorphic.

For S1, edges in precedence graph are: 2->3, 3->1, 2->1.

For S2, edges in precedence graph are: 2->1, 3->1, 2->3.

For S3, edges in precedence graph are: 3->1, 3->2, 2->1.

Hence, S1 is conflict equivalent to S2, but not to S3.

2.Answer

Schedules in which transactions commit only after all transactions whose changes they read commit are called recoverable schedules. In other words, if some transaction Tj is reading value updated or written by some other transaction Ti, then the commit of Tj must occur after the commit of Ti.

To recover and also to sustain the transaction atomicity, there are two types of methodology,

Sustaining each transaction logs and before actually improving the database put them down onto some storage which is substantial.

Sustaining shadow paging, in which on a volatile memory the improvements are completed and afterward, the real database is reformed.

3.Answer

T1 and T2 have conflicting operations between them forming a cycle in the precedence graph.

R(D2) of T2, and W(D2) of T1 (Read-Write Conflict) R(D1) of T1, and W(D1) of T2 (Read-Write Conflict)

Hence in the precedence graph of the schedule there would be a cycle between T1 and T2 vertices. Therefore, not a serializable schedule.

4.Answer

Dense index

In dense index, there is an index record for every search key value in the database. This makes searching faster but requires more space to store index records itself. Index records contain search key value and a pointer to the actual record on the disk.

Multi-Level Index

Index records comprise search-key values and data pointers. Multilevel index is stored on the disk along with the actual database files. As the size of the database grows, so does the size of the indices. There is an immense need to keep the index records in the main memory so as to speed up the search operations. If single-level index is used, then a large size index cannot be kept in memory which leads to multiple disk accesses.

Free Lists Index

Store the address of the first deleted record in the file header. Use this first record to store the address of the second deleted record, and so one can think of these stored addresses as pointers since they “point” to the location of a record. More space efficient representation: Reuse space for normal attributes of free records to store pointers. No pointers stored in inuse records Use items in the free list when inserting records

Fixed/Varying length record related index

Variable-length records are rare and can arise in database systems in several ways: Storage of multiple record types in a file Record types that

allow variable lengths for one or more fields Variable-length records are rare and can arise in database systems in several ways: Storage of multiple record types in a file Record types that allow variable lengths for one or more fields

Variable-Length Records: Slotted Page Structure File is a set of pages Slotted page header contains: number of record entries end of free space in the block location and size of each record Records can be moved around within a page to keep them contiguous with no empty space between them; entry in the header must be updated. Pointers should not point directly to record instead they should point to the entry for the record in header.

5.Answer