CS 457 – Data modeling and Implementation Techniques

Homework 2B: (Due: Oct. 02, 2021 before 9 am)

1. Briefly describe what is Oracle PFILE (or initSID.ora file).

* Oracle PFILE is text to store to store parameters . The oracle instance reads the parameter file. Parameters in pfile can be edited using any text editor.

Defalt location of pfile is $ORACLE\_HOME/dbs/init[SID].ora  where [SID]- is the nama of the instance. RMAN utility can not take backup of a file.

1. Briefly describe what is Oracle SPFILE (or spfileSID.ora).

* Oracle SPFILE is a newer way and recommended by oracle. a) Oracle spfile is a binary file.
* b) Spfile can not be edited using text editor. Instead it can only be altered using “Alter System” command.
* c) Default location of spfile – $ORACLE\_HOME/dbs/spfile[SID].ora where [SID] – is the name of the instance.
* d)The RMAN utility can take backup of a spfile.

1. Briefly describe how does Oracle database startup and shutdown.

* A) start up the database => start from shut down =>instance started=> control file opened for this instance=>open=> all files opened as described by the control file for this instance=>log in to Oracle database XE host computer as user=>
* B) shut down the database=>

While Oracle database is not in use, you can shut down a database instance with SQL\*plus by connecting as SYSOPER or SYSDBA and issuing the SHUTDOWN command. If database is managed by oracle Restart, the recommended way to shut down the database is with srvctl stop database command. There are several modes for shutting down a database

1. with Normal mode
2. with immediate mode
3. with Transactional mode
4. with Abort mode
5. Briefly describe what are Oracle user trace files.

* Oracle database creates a different trace file for each foreground and background thread. The name of the trace file contains the name of thread, have extension “.trc”. These files record occurrences and exception of database operations and errors. Trace files are also created for user threads and stored in the ADR directory specified by the parameter DIAGNOSTIC\_DEST in the initialization parameter file.

1. Briefly describe about Oracle Managed Files (OMF).

* OMF simplifies the creation of databases as Oracle does all OS operations and file naming

It has several advantages

1. Automatic cleanup of the filesystem when database objects are droped
2. Standardised naming of database files.
3. Increased portability since file specifications are not needed.
4. Simplified creation of test systems on differing operating systems.
5. No unused file wasting disk space

Elmasri book (7th edition)

1. Exercise 6.9 (Page 203)

How can the key and foreign key constraints be enforced by the DBMS? Is the enforcement technique you suggest difficult to implement? Can the constraint checks be executed efficiently when updates are applied to the database ?

* a) the primary key (PK) of the table is column, or columns and enforces the entity integrity of the table

These key constraints guarantee unique data.

The Database Engine enforces data uniqueness by automatically creating a unique index for the primary key columns.

b) A foreign key (FK) is a column or combination of columns that is used to establish and enforce a link between the data in two tables to control the data that can be stored in the foreign key table. the primary key value for one table is referenced by the column or columns in another table

c) enforcement technique is not difficult to implement

d) Whenever a new record is

inserted in a referencing relation , its foreign key value is used to search the index for the primary key of the referenced relation, and if the referenced record exists, then the new record can be successfully inserted in the referencing relation.

For deletion of a referenced record, it is useful to have an index on the foreign key of each referencing relation so as to be able to determine efficiently whether any records

reference the record being deleted.

If the indexes described above do not exist, and no alternative access structure (for example, hashing) is used in their place, then it is necessary to do linear searches to check for any of the above constraints, making the checks quite inefficient.

1. Exercise 6.11 (Page 204)

Specify the updates of Exercise 3.11 using the SQL update commands.

=> In some cases the same entity type participates more than once in a relationship type in different roles. In such cases the role name becomes essential for distinguishing the meaning of the role that each participating entity plays. Such relationship types are called recursive relationships or self-referencing relationships.

e.g. The SUPERVISION relationship type relates an employee to a supervisor, where both employee and supervisor entities are members of the same EMPLOYEE entity set. Hence, the EMPLOYEE entity type participates twice in SUPERVISION: once in the role of supervisor (or boss), and once in the role of supervisee (or subordinate)

Update superviser

Set supervisee=2

Where Name =’smith’

1. Exercise 6.12 (Page 204)

Specify the following queries in SQL on the database schema of Figure 1.2.

1. Retrieve the names of all senior students majoring in ‘cs’ (computer science).

SELECT Name

FROM STUDENT

WHERE Major='CS'

1. Retrieve the names of all courses taught by Professor King in 2007 and 2008.

SELECT CourseName

FROM COURSE, SECTION

WHERE COURSE.CourseNumber=SECTION.CourseNumber AND Instructor='King'

AND (Year='2007' OR Year='2008')

Another possible SQL query uses nesting as follows:

SELECT CourseName

FROM COURSE

WHERE CourseNumber IN ( SELECT CourseNumber

FROM SECTION

WHERE Instructor='King' AND (Year='2007' OR Year='2008') )

1. For each section taught by Professor King, retrieve the course number, semester, year, and number of students who took the section.

SELECT CourseNumber, Semester, Year, COUNT(\*)

FROM SECTION, GRADE\_REPORT

WHERE Instructor='King' AND SECTION.SectionIdentifier=GRADE\_REPORT.SectionIdentifier

GROUP BY CourseNumber, Semester, Year

d. Retrieve the name and transcript of each senior student (Class = 4) majoring in CS. A transcript includes course name, course number, credit hours, semester, year, and grade for each course completed by the student.

SELECT Name, CourseName, C.CourseNumber, CreditHours, Semester, Year, Grade

FROM STUDENT ST, COURSE C, SECTION S, GRADE\_REPORT G

WHERE Class=4 AND Major='CS' AND ST.StudentNumber=G.StudentNumber AND

G.SectionIdentifier=S.SectionIdentifier AND S.CourseNumber=C.CourseNumber