CS246: Database Management Systems Lab

Lab # 06 (1 Questions, 153 Marks)
Lab session: AL1
Held on: 12-Feb-2024 (Mon)
Lab Timings: 14:00 to 17:00 Hours Pages: 5
Submission time: 16:45 Hrs, 12-Feb-2024
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1. Some of the tasks are so designed to emit errors when SQL statements are invoked. You should make an informed effort to find the cause of the errors. **You do not need to resolve the errors.**
2. You must perform insertion, deletion and updation as individual statements. That is write several insert statements, several delete statements and several update statements. **Any attempt to import all the data into tables leads to ZERO marks.**
3. Write all the SQL statements in a file named with `your_roll_number`.sql file name & extension and upload. Note replace the text `your_roll_number` with appropriate roll number. If you have several files, appropriately name them by prepending your roll number.
4. You must submit every file that is used to implement the following lab problem.
5. Refer to table creation document
6. Refer to table modification document
7. Refer to insert document
8. Refer to update document
9. Refer to delete document
10. Refer to foreign key document
11. Refer to drop table document

Question 1: (153 points)

Write `MySQL` statements for the following tasks:

Task 01 (1 mark) create a database named `week06`. Within this database, create the following tables.

Task 02 (8 marks) Create a table `T01` with the following columns named `a, b, c, d` and `e` of integer data type. Place the following constraints on the columns

1. (2 marks) Columns `a` and `b` **together** as primary key

2. (1 mark) Column `c` is unique and not null
3. (1 mark) Column `d` is unique and not null

(4 marks) Insert the data given in file `t01.csv` into table `T01`. Note you should write several individual insert statements. Develop a C program to generate them. Save the output in a say `task02.sql` file. At the SQL prompt execute `source task02.sql`.

Task 03 (8 marks) Create a table `T02` with the following columns named `f, a, b` of integer data type. Place the following constraints on the columns

1. (2 marks) Column `f` is primary key
2. (2 marks) Columns `a` and `b` together as foreign key pointing to `T01`.

(4 marks) Insert the data given in file `t02.csv` into table `T02`. Note you should write several individual insert statements. Develop a C program to generate them. Save the output in a say `task03.sql` file. At the SQL prompt execute `source task03.sql`.

Task 04 (8 marks) Create a table `T03` with the following columns named `h, i, f` of integer data type. Place the following constraints on the columns

1. (2 marks) Column `h` is primary key
2. (2 marks) Columns `f` is a foreign key pointing to `T02`.

(4 marks) Insert the data given in file `t03.csv` into table `T03`. Note you should write several individual insert statements. Develop a C program to generate them. Save the output in a say `task04.sql` file. At the SQL prompt execute `source task04.sql`.

Task 05 (8 marks) Create a table `T04` with the following columns named `k, h` of integer data type. Place the following constraints on the columns

1. (2 marks) Column `k` is primary key
2. (2 marks) Columns `h` is a foreign key pointing to `T03`.

(4 marks) Insert the data given in file `t04.csv` into table `T03`. Note you should write several individual insert statements. Develop a C program to generate them. Save the output in a say `task05.sql` file. At the SQL prompt execute `source task05.sql`.

Task 06 (8 marks) Perform the following

1. (1 mark) Delete all the records in table `T01`. You must demonstrate successful deletion of all records.
2. (1 mark) Delete all the records in table `T02`. You must demonstrate successful deletion of all records.
3. (1 mark) Delete all the records in table `T03`. You must demonstrate successful deletion of all records.
4. (1 mark) Delete all the records in table `T04`. You must demonstrate successful deletion of all records.

5. (1 mark) Delete the table `T01`. You must demonstrate successful deletion of the table.
6. (1 mark) Delete the table `T02`. You must demonstrate successful deletion of the table.
7. (1 mark) Delete the table `T03`. You must demonstrate successful deletion of the table.
8. (1 mark) Delete the table `T04`. You must demonstrate successful deletion of the table.

Task 07 (25 marks) **cascade on deletion** Perform the following

1. (4 marks) Create a table `T01a` with identical description given in task 02. Insert the data given in `t01.csv` into table `T01a`.
2. (6 marks) Create a table `T02a` with with the following columns named `f, a, b` of integer data type. Place the following constraints on the columns
   (a) (2 marks) Column `f` is primary key
   (b) (4 marks) Columns `a` and `b` together as foreign key pointing to `T01a` and cascade on deletion.

   Perform the following:
   (a) (5 marks) Insert the data from the file `t02-10.csv` into table `T02a`
   (b) (5 marks) Delete the records from `T01a` with the following search criteria:

a	b
297	77408
606	48191
1071	47061
1080	48533
2268	21577
3130	79583
3613	84692
3713	19837
3720	49661
4036	38648

   (c) (5 marks) Search for the values `a` and `b` given in the above table in `T02a`.

Task 08 (25 marks) **cascade on updation** Perform the following

1. (4 marks) Create a table `T01b` with identical description given in task 02. Insert the data given in `t01.csv` into table `T01b`.
2. (6 marks) Create a table `T02b` with with the following columns named `f, a, b` of integer data type. Place the following constraints on the columns
   (a) (2 marks) Column `f` is primary key
   (b) (4 marks) Columns `a` and `b` together as foreign key pointing to `T01b` and cascade on updation.

   Perform the following:
   (a) (5 marks) Insert the data from the file `t02-10.csv` into table `T02b`

(b) (5 marks) update the records of `T01b` with the following modification criteria:

a	updated a
297	298
607	607
2269	21577
3131	79583
3721	49661
4037	38648

b	updated b
1071	47062
1080	48534
3613	84693
3713	19838

(c) (5 marks) Search for the values `a` and `b` given in the above tables in `T02b`.

Task 09 (25 marks) **cascade on deletion, updation** Perform the following

1. (4 marks) Create a table `T01c` with identical description given in task 02. Insert the data given in `t01.csv` into table `T01c`.
2. (8 marks) Create a table `T02c` with with the following columns named `f, a, b` of integer data type. Place the following constraints on the columns
   (a) (2 marks) Column `f` is primary key
   (b) (6 marks) Columns `a` and `b` together as foreign key pointing to `T01c` and cascade on updation and cascade on deletion.

   Perform the following:
   (a) (5 marks) Insert the data from the file `t02-20.csv` into table `T02c`
   (b) (5 marks) delete the records of `T01c` with the following search criteria:

a	b
297	77408
606	48191
1071	47061
1080	48533
2268	21577
3130	79583
3613	84692
3713	19837
3720	49661
4036	38648

   (c) (5 marks) Search for the values `a` and `b` given in the above tables in `T02c`.
   (d) (5 marks) update the records of `T01c` with the following modification criteria:

a	updated a
4128	4129
4182	4189
4675	4676
4849	4850
6195	6196

b	updated b
32142	32143
98680	98681
27250	27251
33911	33912
53094	53095

(e) (5 marks) Search for the values `a` and `b` given in the above tables in `T02c`.

Task 10 (12 marks) Perform the following. Demonstrate successful deletion of records and table.

1. (1 mark) Delete all records from `T01a`
2. (1 mark) Delete all records from `T01b`
3. (1 mark) Delete all records from `T01c`
4. (1 mark) Delete all records from `T02a`
5. (1 mark) Delete all records from `T02b`
6. (1 mark) Delete all records from `T02c`
7. (1 mark) Delete the table `T01a`
8. (1 mark) Delete the table `T01b`
9. (1 mark) Delete the table `T01c`
10. (1 mark) Delete the table `T02a`
11. (1 mark) Delete the table `T02b`
12. (1 mark) Delete the table `T02c`

Task 11 (25 marks) **Circular foreign key constraints** Perform the following

1. (10 marks) Create a table `T01d` with three columns `a, b, c` of data type integers. Place the constraint column `a` to be primary key. Column `b` to be foreign key pointing to `T02d` column `e`.
2. (5 marks) Create a table `T02d` with two columns `d, e` of data type integers. Place the constraint that column `e` to be primary key. Column `d` to be foreign key pointing to `T01d` column `a`
3. (10 marks) After successfully creating the two tables and the associated constraints, delete the table `T01d` and `T02d`.