

Birla Institute of Technology & Science, Pilani, K. K. BIRLA Goa campus
Database Systems and Applications (IS F243)

Second Semester 2012-2013

Lab-3 Exercise Total Marks- 08 Duration: 120 mins

To study integrity constraints

Instructions

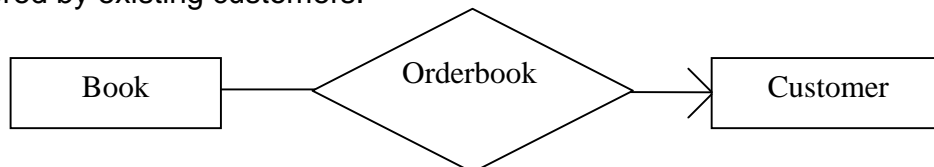
1. Some questions carry marks and some do not. Those which carry marks are given Question numbers and others as Q.
2. Write and execute the SQL queries for following questions. Use the table names and column names same as in the question else the answers will be treated incorrect.
3. Write the correct answer (SQL query/short answer) on moodle under the title "Questions for Lab 3" (for evaluatory questions only).
4. Do not copy & paste the warnings/errors. In case of error as your answer write that in your own words.

Problem Statement

Convert the following E-R diagram of Internet book store database system to relational schema and apply DML, DQL commands to learn the concept of referential integrity constraint.

Constraints

One customer can order many books but same book cannot be ordered by many customers on same date. Orderbook relation keeps records of the existing books ordered by existing customers.



Q. Create table Book with following columns.

Column name	Datatype	Constraint	Description
isbn	Varchar(12)	Primary key	Unique identifier
title	Varchar(10)	Not null	Title of the book
author	Varchar(10)	Not null	Author of the book
qty_in_stock	Integer(10)	Not null	Total no of copies
price	Decimal (6,2)	Not null	Price in rupees
pubyear	Integer(4)	-----	Publication year

Q. Insert following records in the table and Commit.

ISBN	title	author	QTY_in_stock	price	year_published
A1234	Data Structures and Algorithms	Cormen	5	350.00	2007
A1235	Computer Networks	Stallings	7	500.00	2003
A1236	Operating Systems	Stallings	3	800.00	2000
A1237	C	Koffman	10	255.00	2009
A1238	Applied Mathematics	Chandler	20	300.00	1995

Q. Create table Customer with following columns.

Column name	Datatype	Constraint	Description
cid	Varchar(6)	Primary key	Unique identifier
cname	Varchar(20)	Not null	Customer name
address	Varchar(50)	----	Residential address
age	Integer(2)	----	Age of the customer.

Q. Insert following records in the table and Commit.

cid	cname	address	age
c1	Amar	23, M.G. road, Ahmadabad	20
c2	Akbar	D-20, Sainivas, Mumbai	19
c3	Pooja	sector no. 23, Vashi, Mumbai	24
c4	Saloni	Hyderabad	22
c5	John	Pune, Shivajinagar	18

1. Create table Orderbook for Internet book store database system with following columns. Take care of mapping constraints. **[2M]**

Column name	Datatype	Constraint	Description
oisbn	Varchar(12)	Foreign key	Referring book table
ocid	Varchar(6)	Foreign key	Referring customer table
qty	Integer(10)	Not null	No of books ordered
order_date	Date	-----	Date on which book was ordered

Q. Describe the Orderbook table and observe that there is no 'NOT NULL' constraint on foreign key columns. This means unlike primary key, foreign key constraint allows null values if not mentioned.

2. Define the Primary key of table Orderbook. [0.5M]

Q. Insert following records in the table and Commit.

```
+-----+-----+-----+
| oisbn | ocid | qty | orderdate |
+-----+-----+-----+
| A1234 | c2   | 2   | 2013-10-01 |
| A1234 | c1   | 1   | 2012-07-02 |
| A1236 | c3   | 2   | 2013-12-12 |
| A1236 | c5   | 4   | 2012-30-12 |
| A1236 | c1   | 5   | 2012-14-05 |
| A1238 | c4   | 10  | 2012-15-06 |
+-----+-----+-----+
```

Q. Try inserting some records in Orderbook with oisbn different than isbn of book or ocid different than cid of customer table and study the error.

3. Execute the following insert query and justify the output. [0.5M]
insert into Orderbook values('A1236','c5',6,'2012-30-04');

4. Execute the following insert query and justify the output. [0.5M]
insert into Orderbook values('A1234','c1',4,'2013-10-01');

5. Alter table Orderbook to include not null constraint to the Order_date column. Describe and verify. [0.5M]

6. Assume that customer 'c5' has cancelled the order. Delete the corresponding record from Orderbook table. Does this also delete the corresponding entry from Customer table? **Answer YES or NO.** [0.5M]

7. Delete a record from Book table having isbn='A1234'. Does this also delete the corresponding entry from Orderbook table? **Answer YES or NO.** [1M]

Group by and Having clause

Group by and having clauses facilitate selective retrieval of rows. They act on record sets and not on individual records.

Syntax:

Select <column name>

Syntax:

Select <column name>

From <table name>
Where<condion>
Group by<column name>

From <table name>
Where<condion>
Group by<column name>
Having<condition>

Examples:

//to find out how many students each hostel has in year 2008.

```
mysql> SELECT hostelno, COUNT(*) FROM students where year = 2008 GROUP BY  
hostelno;
```

//to find hostel numbers having more than 100 students in year 2008.

```
mysql> SELECT hostelno, COUNT(*) FROM students where year = 2008 GROUP BY hostelno  
HAVING COUNT(*)>100;
```

- Observe which condition has put in where clause and which in having clause.
- The GROUP BY clause creates a data set, containing several sets of records grouped together based on condition.
- The HAVING clause can be used in conjunction with the GROUP BY. It imposes a condition on the GROUP BY clause, which further filters the groups created by the GROUP BY clause.
- The columns in group by and having clause must appear in select clause.

8. List the books (isbn) ordered by more than 2 customers. **[0.5M]**

9. List the customers (cids) who has ordered more than 4 copies. **[1M]**

10. List the customers (cids) who has ordered 3 months before. **[1M]**