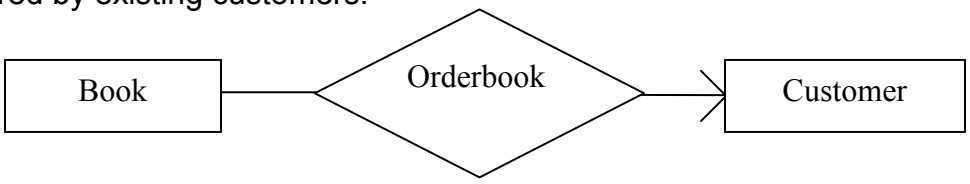
Birla Institute of Technology & Science, Pilani, K. K. BIRLA Goa campus
Database Systems (CS F212)
Second Semester 2020-2021
Lab-3 Exercise: To study integrity constraints

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.



Q1a. Create table Book with following columns.

Column name	Datatype	Constraint	Description
isbn	Varchar(12)	Primary key	Unique identifier
title	Varchar(50)	Not null	Title of the book
author	Varchar(50)	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

Q1b. Insert following records in the BOOK table. You can make use of the text file provided with insert queries.

```
+---------+--------+----------------+-------------------+---------+------------------+
| ISBN   | title    | author           | QTY_in_stock | price    | year_published |
+---------+--------+----------------+-------------------+---------+------------------+
| A1234 | Data Structures and Algorithms    | Cormen    |       5 | 350.00 |          2007 |
| A1235 | Computer N etworks      | 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 |
+---------+-----------+--------------+-------------------+---------+------------------+
```

Q2a. 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.

Q2b. Insert following records in the CUSTOMER table. You can make use of the text file provided with insert queries.

```
+-----+-------  +-------------+------+
| 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 |
+-----+--------+--------------+------+
```

Q3a. Create table Orderbook for Internet book store database system with following columns. **Take care of mapping constraints.** Carefully define the primary key.

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

Q3b. 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 constrained.

Q3c. Insert following records in the Orderbook table. You can make use of the text file provided with insert queries.

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	2012-12-30
A1236	c1	5	2012-05-14
A1238	c4	10	2012-06-15

Q4. Try inserting some records in Orderbook with oisbn different than isbn of Book or ocid different than cid of Customer table and study the output/error.

Q5. Execute the query **SHOW CREATE TABLE ORDERBOOK** and identify the foreign key constraint names (ORDERBOOK_ibfk_1 and ORDERBOOK_ibfk_2). Drop these constraints. Alter the table ORDERBOOK to add on update cascade and on delete cascade constraint. Give proper names to the constraints.

Q6. Update the isbn of book A1238 to A1239 in BOOK table. Observe whether it has updated in ORDERBOOK table as well.

Q7. Display the book title and author of all the books. If the book is ordered by some customer, display its order date else display NULL.

Q8. Display the name of the customer starting with 'A', title of the book and the date on which it was
ordered

a. Using equi join
b. Using innerjoin/natural join

Q9. Display the customer name, address, age, ordered qty and order date irrespective of whether a customer ordered a book or not. Hint: use LEFT JOIN.