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| **National University of Computer and Emerging Sciences, Lahore Campus** | | | | |
| C:\Users\saif\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\final design.jpg | **Course:** | **Database Systems** | **Course Code:** | **CS219** |
| **Program:** | **BS(Computer Science)** |  |  |
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|  |  |  |  |
| **Practice Problem:** | **Relational Model (1) - SOLUTION** |  |  |

**Consider the following State and Schema of a Retailer Store database. It keeps track of the orders placed by the customers**.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  | | --- | --- | --- | | **CUSTOMER** | |  | | **cid** | **cname** | **city** | | 100 | Ismail | Karachi | | 200 | Isbah | Lahore | | 300 | Tahreem | Islamabad | | 600 | Izaan | Lahore | | 700 | Khadija | Karachi | | 800 | Alia | Lahore | | |  |  |  | | --- | --- | --- | | **ORDER** |  |  | | **oid** | **odate** | **cid** | | 1 | 2018-01-20 | 200 | | 3 | 2018-01-20 | 600 | | 5 | 2018-02-15 | 300 | | 7 | 2018-02-20 | 800 | |
| |  |  |  |  | | --- | --- | --- | --- | | **PRODUCT** | |  |  | | **Pid** | **pname** | **price** | **company** | | 10 | Nutella | 250 | Ferrero | | 20 | Kinder Joy | 60 | Ferrero | | 40 | Milo | 30 | Nestle | | 50 | Maggi Noodle | 25 | Nestle | | 70 | Donuts | 50 | Dunkin Brands | | 80 | Horlicks | 400 | GSK | | |  |  |  |  | | --- | --- | --- | --- | | **ORDER\_DETAIL** | |  |  | | **oid** | **pid** | **quantity** | **discountPercent** | | 1 | 10 | 2 | 15 | | 1 | 70 | 6 | 25 | | 3 | 10 | 1 | 15 | | 5 | 10 | 3 | 15 | | 5 | 40 | 4 | 15 | | 5 | 50 | 5 | 25 | | 7 | 10 | 2 | 15 | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  |  | | --- | --- | --- | --- | | CREATE TABLE customer ( | | | | | cid INT NOT NULL, | | | |  | | cname VARCHAR(30), | | | | | | city VARCHAR(30), | | | |  | | PRIMARY KEY (cid) | | | |  | | ); | |  |  | | |  |  |  |  | | --- | --- | --- | --- | | CREATE TABLE product ( | | | | | pid INT NOT NULL, | | | | | | pname VARCHAR(30) UNIQUE, | | | | | | price DECIMAL(9,2), | | | |  | | company VARCHAR(30), | | | | | | PRIMARY KEY (pid) | | | |  | | ); | |  |  | |
| |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | CREATE TABLE order ( | | | |  | | | |  | | | oid INT NOT NULL, | | | |  | | | |  | | | odate DATE, | | |  |  | | | |  | | | cid INT, | | | |  |  |  | |  | | | PRIMARY KEY (oid), | | | | |  |  | |  | | | FOREIGN KEY (cid) REFERENCES customer(cid) ON DELETE SET NULL ON UPDATE CASCADE | | | | | | | | | | | ); | |  |  |  | | | |  | | | |  |  |  | | --- | --- | --- | | CREATE TABLE order\_detail ( | | | | oid INT NOT NULL, | | | | | pid INT NOT NULL, | | | | | quantity INT, | | |  | | discountPercent INT, | | | | | PRIMARY KEY (oid, pid), | | | | | CHECK (quantity>0), | | | | | FOREIGN KEY (oid) REFERENCES order(oid) ON DELETE CASCADE ON UPDATE CASCADE, | | | | | FOREIGN KEY (pid) REFERENCES product(pid) ON DELETE CASCADE ON UPDATE CASCADE | | | | | ); | |  | |

**Q.** Apply following operations on the above database. State if the operation would be carried out successfully or not. **Explain your answer briefly.** In case of successful operation indicate the changes that will be made to the above database and in case of Reject state the error that occurred. Please note that all operations are independent.

**a) INSERT INTO ORDER\_DETAIL (oid, pid, quantity, discountPercent) VALUES (1, 70, NULL, NULL);**

Accept ⭘ **Explain:** PK-Unique constraint violation. Tuple# 2 with PK value (1, 70) already exist.

**Reject ⭘**

**b) UPDATE ORDER\_DETAIL SET discountPercent = ‘20’;**

**Accept ⭘** **Explain:** Modify discountpercent attribute value of all tuples of order\_detail relation to 20.

Reject ⭘

**c) UPDATE ORDER SET oid = 4 WHERE oid=5;**

**Accept ⭘** **Explain:** Modify oid attribute value of the matching tuple (i.e. t# 3) of parent relation order and also all matching tuples (i.e. t# 4,5,6) of child relation order\_detail to 4.

Reject ⭘

**d)** **DELETE FROM customer WHERE cname = ‘Izaan’;**

**Accept ⭘** **Explain:** Remove all matching tuples (i.e. t# 4 with cid=600) of parent relation customer and also modify cid attribute value of all matching tuples (i.e. t# 2 with oid=3) of child relation order to NULL.

Reject ⭘

**e) DELETE FROM order;**

**Accept ⭘** **Explain:** Remove all tuples of parent relation order and child relation order\_detail.

Reject ⭘