National University of Computer and Emerging Sciences, Lahore Campus

	Course:	Database Systems		
	Program:	BS(Computer Science)		
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	Practice Problem:	Relational Model (2) - SOLUTION		

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

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

```
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 ○