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HW3 SOLUTIONS

Q1:

a)

(SupplierID , Productcode , ImportDate)->Cost , Quantity
Productcode -> Deptcode , Unit of Measure , Productname
SupplierID -> Suppliername

Assumption:
* SupplierID, Productcode and ImportDate together give quantity purchased and unit price (which may vary with seasons).

b)

It is in 1NF but not in 2NF or 3NF in the given form.
(SupplierID , Productcode , ImportDate) is the primary key.

Assumption:
* For the atomicity of the values two columns(supplier and product) in the given table are split into four columns (supplierid,suppliername ,productcode ,productname)

c)

1NF:

| SupplierID | Productcode | ImportDate | Suppliername | Productname | Quantity | Cost | UnitofMeasure | Deptcode |
|---|---|---|---|---|---|---|---|---|

2NF:

| SupplierID | Suppliername |
|---|---|

| Productcode | Deptcode | Unit of Measure | Productname |
|---|---|---|---|

| SupplierID | Productcode | ImportDate | Cost | Quantity |
|---|---|---|---|---|

3NF:

| SupplierID | Suppliername |
|---|---|

| Productcode | Deptcode | Unit of Measure | Productname |
|---|---|---|---|

| SupplierID | Productcode | ImportDate | Cost | Quantity |
|---|---|---|---|---|

| Productname | Deptcode |
|---|---|

Q2:

a)

Productcode -> Deptcode , Deptname , Unitofmeasure
Productcode , Date -> Listprice , Quantity
Deptcode -> Deptname

Assumptions:

- With Productcode we can get it's dept and measurement details.
- With Productcode and date we can get a product's quantity sold and price on that day.

b)

It is in 1NF but not in 2NF or 3NF and Primarykey is not defined in the given form.

(Productcode , Date) is the primary key.

c)

1NF:

| Productcode | Date | Deptcode | Deptname | UnitofMeasure | Listprice | Quantity |
|---|---|---|---|---|---|---|

2NF:

| Productcode | Deptcode | Deptname | UnitofMeasure |
|---|---|---|---|

| Productcode | Date | Listprice | Quantity |
|---|---|---|---|

3NF:

| Productcode | Deptcode | Deptname | UnitofMeasure |
|---|---|---|---|

| Productcode | Date | Listprice | Quantity |
|---|---|---|---|

| Deptcode | Deptname |
|---|---|

Q3:

a)

custID -> custname , Membershipstatus
Membershipstatus -> Discount
ReceiptID -> custID, Datetime
(ReceiptID , Productcode ) -> Actualprice, Quantity

Assumptions:

- ReceiptID uniquely determines a Datetime and customer(custID), which determines custdetails and also discount(transitively).
- Actualprice is determined from ReceiptID, Productcode.

b)

It is in 1NF but not in 2NF or 3NF and Primarykey is not defined in the given form.

(ReceiptID , Productcode) is the primary key.

c)

1NF:

| ReceiptID | Productcode | Datetime | Quantity | Custname | Membershipstatus | Discount | custID | Actualprice |
|---|---|---|---|---|---|---|---|---|

2NF:

| ReceiptID | custID | Datetime |
|---|---|---|

| ReceiptID | Productcode | Quantity | Custname | Membershipstatus | Discount | Actualprice |
|---|---|---|---|---|---|---|

3NF:

| ReceiptID | custID | Datetime |
|---|---|---|

| custID | Custname | Membershipstatus |
|---|---|---|

| Membershipstatus | Discount |
|---|---|

| ReceiptID | Productcode | Quantity | Actualprice |
|---|---|---|---|