Task 2 – Functional Dependencies (A)

(Individual work)

CONESTOGA COLLAGE

COURSE CODE: 1372

PROGRAM CODE- PROG8651

SECTION – 10

STUDENT NAME: KAUSHAL PARMAR

DATE: 17-02- 2024

Section A

1. **For the Customer Order table, identify and list out each of the functional dependencies that exist.**

Answer:

- **Combination of SubTotal and Tax determines:**

- (SubTotal, Tax) → (OrderID, TotalPaid, ActualDateShipped, DateModified, DatePaid, EstDateShipped)

- **DateModified can be determined by**:

- OrderID → DateModified
- SubTotal → DateModified
- Tax → DateModified
- EstDateShipped → DateModified
- ActualDateShipped → DateModified
- TotalPaid → DateModified
- DatePaid → DateModified

- **OrderID can be determined by:**

- OrderID → SubTotal
- OrderID → Tax
- OrderID → TotalPaid
- OrderID → ActualDateShipped
- OrderID → DatePaid
- OrderID → DateModified
- OrderID → EstDateShipped

2. **List out the primary key(s), foreign key(s) and candidate key(s) for the CustomerOrder table.**

Answer:

- **Primary Key**: OrderID
- **Foreign Keys**:CustomerID OrderStatusID, ShipmentMethodID , PaymentID , ShippingAdressID
- **Candidate Key(s):** OrderID

3. **List all multivalued dependencies within the CustomerOrder table utilizing the following format:**

Attribute ->-> Attribute

- PaymentID ->-> SubTotal, Tax, TotalPaid, DatePaid
- OrderID ->-> ShipmentMethod, OrderStatus
- CustomerID ->-> {ShipmentMethodID, ShippingAdressID}
- CustomerID ->-> {OrderStatus, DateModified}
- CustomerID ->-> (OrderStatus, TotalPaid}
- ShipmentTime ->-> EstDateShipped, ActualDateShipped, DateModified
- OrderID **->->** {DatePaid, EastDateshipped}
- OrderID **->->** {ActualDateShipped, DateModified}

4. **Transform the CustomerOrder entity [table] into the 4th Normal Form:**

- **Entity (PrimaryKey, *ForeignKey*, Attribute)**
- **Underline the Primary Key(s)**
- **Italicize the Foreign Key(s)**

Answer:

- CustomerOrder (OrderID, *CustomerID*, *PaymentID*, *OrderStatusID*, *ShipmentMethodID*, *ShippingAddressID*, EstDateShipped, ActualDateShipped, DateModified)

- CustomerOrderPayment (PaymentID, SubTotal, Tax, TotalPaid, DatePaid)

- OrderStatus (OrderStatusID, DatePaid, ActualDatePaid)

- ShipmentMethodID (ShipmentMethodID, EstDateShipped, DateModified)

Section B

- If you were to take on the task of updating the organization database, and enforcing the entity [table] structure changes you indicated in the previous question (s), what questions would you want to ask the resident Database Administrator, or Business Manager, for clarification?

1. Could you summarize the current database framework and its constraints?
2. Do the existing database architecture and design pose any concerns regarding performance or scalability?
3. Anticipated structural modifications for the entity?
4. What are the requisite standards for compliance with the enhanced database?
5. What data components or attributes are indispensable for inclusion and upkeep in the upgraded database?

- Identify at least two (2) potential issues found within any of the 4 tables of the Orders schema (CustomerOrder, ShipmentMethod, OrderStatus, ProductSelection). Be sure to clearly state what the issue is and how you would address these issues.

potential issue 1.

1. I discovered a problem with the ProductSelection table—it lacks essential product information. Incorporating details like ProductName, ProductType, and Price is necessary to address this deficiency Depending on UnitPriceSold and DateModified won't be enough.

potential issue 2.

2. I've identified an issue within the CustomerOrder table, specifically with the excessive number of columns present in the database. It would be more effective to streamline it by reducing the attributes from 13 to 4 or 5. One example of simplification would be to retain ActualDateShipped and eliminate EstDateShipped, as it is deemed unnecessary.