

Database Systems Milestone 3 Task A

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1 Task A

1.1 User

In this table, UserID is the Primary key and there is no other Candidate key. It is possible that the phone number and address of a person may have been used by another person before but it is not possible for that of a Email which is used as a UserID. Functional Dependencies:-

- $\text{UserID} \rightarrow \text{Name}$
- $\text{UserID} \rightarrow \text{Phone_num}$
- $\text{UserID} \rightarrow \text{Address}$
- $\text{UserID} \rightarrow \text{Total_Rating}$
- $\text{UserID} \rightarrow \text{Num_Rating}$

As it is a trivial functional dependency and UserID is a superkey this relation is in BCNF normal form.

1.2 Account

In this table, UserID is the Foreign key and there is no other Candidate key.

- $\text{UserID} \rightarrow \text{Password}$
- $\text{UserID} \rightarrow \text{Forgetme}$
- $\text{UserID} \rightarrow \text{Creation_Date}$

As it is a trivial functional dependency and UserID is a superkey this relation is in BCNF normal form.

1.3 Item_Purchased

The combination of ItemID and UserID is the primary key as a single itemID may be purchased by multiple UserIDs and also a UserID may purchase multiple ID and for a combination there can be only 1

- UserID, ItemID \rightarrow Selling_Price
- UserID, ItemID \rightarrow Selling_Date

As it is a trivial functional dependency and {UserID, ItemID} is a superkey this relation is in BCNF normal form.

1.4 Item

In this table, ItemID is the Primary key and there is no other Candidate key. It is possible that the UserID has listed multiple items and also our system is such that even if an same item is posted by multiple users it will have a different ItemID since the items are used. Functional Dependencies:-

- ItemID \rightarrow UserID
- ItemID \rightarrow Availability
- ItemID \rightarrow Listing_Date
- ItemID \rightarrow Listing_Price
- ItemID \rightarrow ItemDescription
- ItemID \rightarrow Quantity

As it is a trivial functional dependency and ItemID is a superkey this relation is in BCNF normal form.