Hedge Fund Management System

Lab6 : Functional Dependencies and Normal Forms

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- **Functional Dependencies**
- **User (UserID, User Name, Email , Password , Role)**

  - **UserID → UserName**
  - **UserID → Email**
  - **UserID → Password**
  - **UserID → Role**

From the upper Dependancies we can say that User_id is the Primary Key or Super Key .

Hence, from this we can say that the given Normal From is BCNF.

- **Portfolio(PortfolioID, UserID, Portfolio_name, CreationDate)**

  - **PortfolioID → UserID (BCNF)**
  - **PortfolioID → Portfolo_name(BCNF)**
  - **PortfolioID → Creation Date (BCNF)**
  - **UserID → portfolio_id(3NF)**

From the upper functional dependancies we have the potfolioID as the super key or Primary key .

And , UserID as the Foreign key . On Deletetion or Updating we have facing the problems.

- **Position (UserID , Role , Access)**

    - **UserID → Role**
    - **UserId → Access**
    - **Role → Access (2NF)**

So, from the upper Functional Dependencies we have UserId as the super key Or Primary Key.

On Delete and update role or UserID we can face the anomalies on Access.

CONCLUSION ➔ The Normal From is BCNF as all they are depends on UserId.

- **Asset(Asset_id,Asset_name,Unit,Current Value , Proposition)**

    - **Asset_id → Asset_Name (BCNF)**
    - **Asset_id → Unit**
    - **Asset_id → Current Value**
    - **Asset_id → Proposition**
    - **Asset_Name → Asset_id (3NF)**

From the upper Dependencies we can get Asset_id as the Primary key or the Super Key .

CONCLUSION ➔ So Normal form is BCNF for the Primary key Asset _ id And 3NF for the Asset_Name .

- **Support Ticket (Ticket_id , UserID , Issue , Creation Date, Status)**

    - **Ticket_id → UserID**
    - **Ticket_id → Creation Date**
    - **Ticket_id → Status**
    - **Ticket_id → Issue**

From the Upper Dependencies we can get Ticket _id as the Primary Key or Super Key .

Here , UserID is used as the Foreign Key.

CONCLUSION ➔ The Nomal Form is BCNF.

- **Transection (Transection_ID ,Amount , PortfolioID, Asset_id , Transection Type , Time)**

    - **Transection Id → Amount (BCNF)**
    - **Transection Id → PortfolioID**
    - **Transection Id → Asset_id**
    - **Transection id → Transection Type**
    - **Transection id → Time**

    - **{Asset_id ,Transection Type ,Time} → Transection_ID (3NF)**

From the upper Dependencies we can get Transection id as the Primary key and the {Asset_id, PortfolioID} as the foreign key.

On the Update or delete AssetID or Portfolio Id it can Affect the Other Attributes of Table .

CONCLUSION → Normal from is the BCNF For the Transection Id

And 3NF for the {Asset_id, Transection Type , Time}.

- **Performance Report (ReportID, PortfolioID, Report Date, Performance Matrices , UserID)**
    - **Report ID → PortfolioID (BCNF)**
    - **Report ID → ReportDate**
    - **Report ID → Performance_Matrices**
    - **Report ID → User_id**
    - **Portfolio_id → Performance_ Matrices (2NF)**
    - **{UserID,ReportDate}→ Report_id (BCNF)**
    - **{UserID,ReportDate}→ Portfolio_id**
    - **{UserID,ReportDate}→ Performance_matrice**

From the upper Dependencies we can get two BCNF and one 2NF from so ,

We can get Report id as the primary Key and the Super Key and the also we have the option to use the {UserID, ReportDate} as the super key .

CONCLUSION ➔ we can use the Report ID as the primary key.

And UserID and PortfolioID as the Foreign Key.

- **Performance Matrrices (Report ID , User ID , Invested , P & L Current Value)**

    - **Report_ID → UserID (BCNF)**
    - **Report_ID → Invested**
    - **Report_ID → P&L**
    - **Report_ID → Current Value**

From the upper Dependencies we can get the Normal Form as the BCNF and Report_ID as the primary Key and UserID as the Foreign Key.

On Delete the User id we can get the anmolies on other Attributes . So we have to use the Cascade .

- **Admin Log (UserID, Action-Date, Action-Type)**

    - **UserID → Action-Type (BCNF)**
    - **UserID → Action-Date**

We Can use the UserId as the Primary key . UserID of the Admin Can only use or Access the Admin Log .

=➔The Normal from the Admin Log is BCNF for PK or super Key (UserID).