REVIEW 4: NORMALISATION AND DEPENDENCIES

TABLE TRANSACTION DETAILS:

CREATE TABLE Account\_Transactions (

transaction\_id INT PRIMARY KEY,

account\_no INT,

amount DECIMAL(10, 2) NOT NULL,

transaction\_date DATE NOT NULL,

FOREIGN KEY (account\_no) REFERENCES Account\_Details(account\_no)

);

**Functional Dependencies:**

transaction\_id -> amount, transaction\_date, account\_no

**NF Forms:**

Appears to be in 3NF.

**Decomposed Table (SQL\*Plus):**

CREATE TABLE Transaction\_Details (

transaction\_id INT PRIMARY KEY,

amount DECIMAL(10, 2) NOT NULL,

transaction\_date DATE NOT NULL,

account\_no INT,

FOREIGN KEY (account\_no) REFERENCES Account\_Details(account\_no)

);

A screen shot of a computer

Description automatically generated

**Pitfalls:**

By decomposing the table, we avoid redundancy and ensure that each table serves a specific purpose, improving data integrity and reducing anomalies.

TABLE GOVERNMENT SERVICES :

CREATE TABLE GovernmentServices (

ServiceID int PRIMARY KEY,

ServiceName VARCHAR(50) NOT NULL,

ServiceDescription VARCHAR(255) NOT NULL,

CustomerID varchar(15) unique,

FOREIGN KEY (CustomerID) REFERENCES Customer(user\_id)

);

**Functional Dependencies:**

ServiceID -> ServiceName, ServiceDescription, CustomerID, account\_no

**NF Forms:**

Appears to be in 3NF.

**Decomposed Table (SQL\*Plus):**

CREATE TABLE ServiceCustomers (

ServiceID INT,

user\_id VARCHAR(25),

PRIMARY KEY (ServiceID, user\_id),

FOREIGN KEY (ServiceID) REFERENCES Services(ServiceID),

FOREIGN KEY (user\_id) REFERENCES Customer\_Account(user\_id)

);

A screenshot of a computer screen

Description automatically generated

**Pitfalls:**

However, querying customer information now requires joining the Customer\_Profile and Customer\_Account\_Mapping tables, which can increase complexity and potentially impact performance. Proper indexing and optimization strategies should be implemented to mitigate this issue.

TABLE BANKSECURITY

CREATE TABLE UserSecurity (

SecurityID INT PRIMARY KEY,

user\_id VARCHAR(25) UNIQUE NOT NULL,

Username VARCHAR(50) NOT NULL,

Password VARCHAR(255) NOT NULL,

LastLoginTimestamp TIMESTAMP NOT NULL,

PasswordResetToken VARCHAR(255),

AccountLockStatus VARCHAR(50) NOT NULL,

FOREIGN KEY (user\_id) REFERENCES Customer\_Account(user\_id)

);

**Functional Dependencies:**

SecurityID -> user\_id, Username, Password, LastLoginTimestamp, PasswordResetToken, AccountLockStatus, account\_no

**NF Forms:**

Appears to be in 3NF.

**Decomposed Table (SQL\*Plus):**

CREATE TABLE Services (

ServiceID INT PRIMARY KEY,

ServiceName VARCHAR(50) NOT NULL,

ServiceDescription VARCHAR(255) NOT NULL

);

A screen shot of a computer

Description automatically generated

**Pitfalls:**

However, querying customer information now requires joining the Customer\_Profile and Customer\_Account\_Mapping tables, which can increase complexity and potentially impact performance. Proper indexing and optimization strategies should be implemented to mitigate this issue.