

WK4: DATABASE DESIGN DOCUMENT

Part 3

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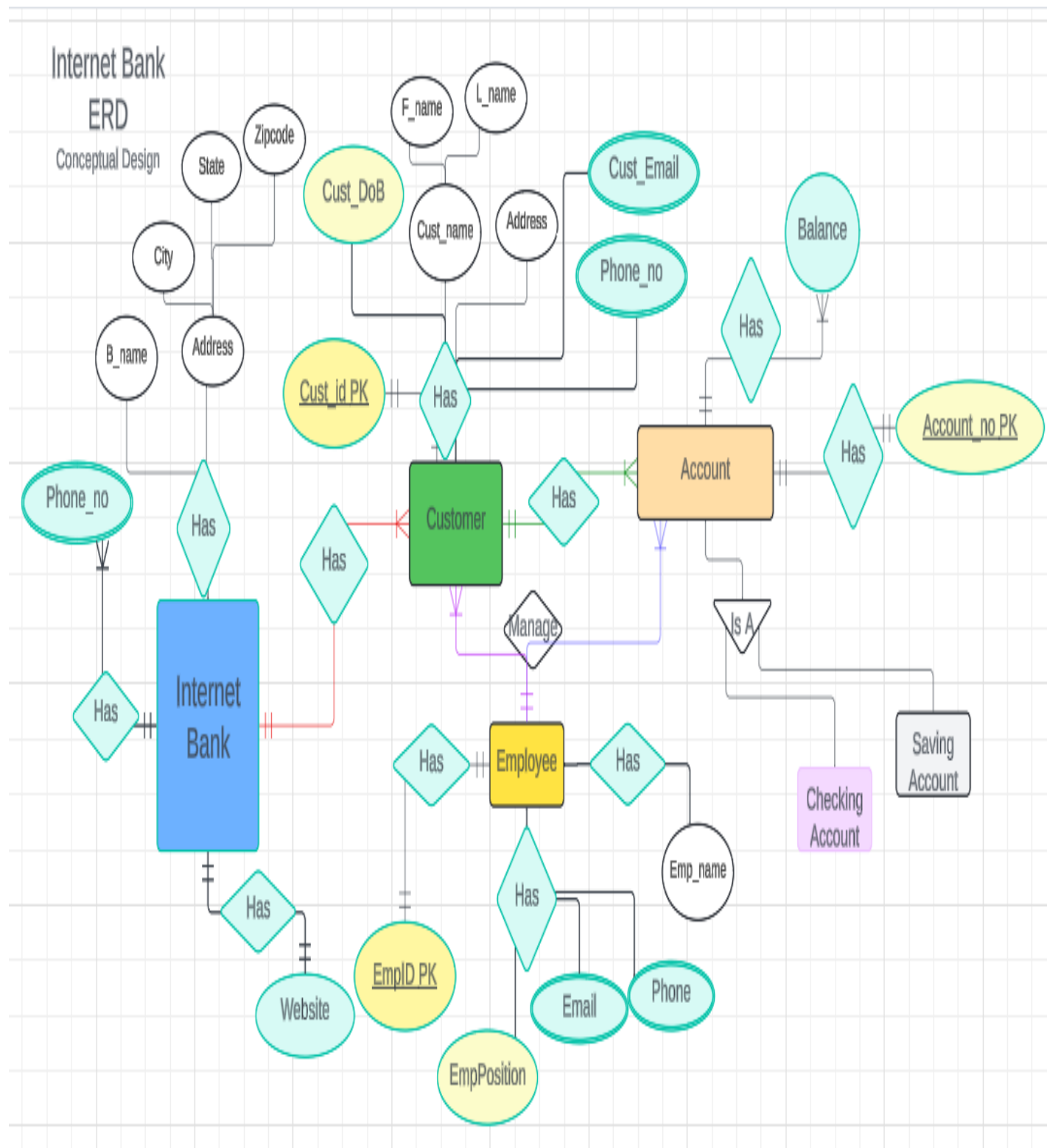
BSA-425: BSIT Capstone

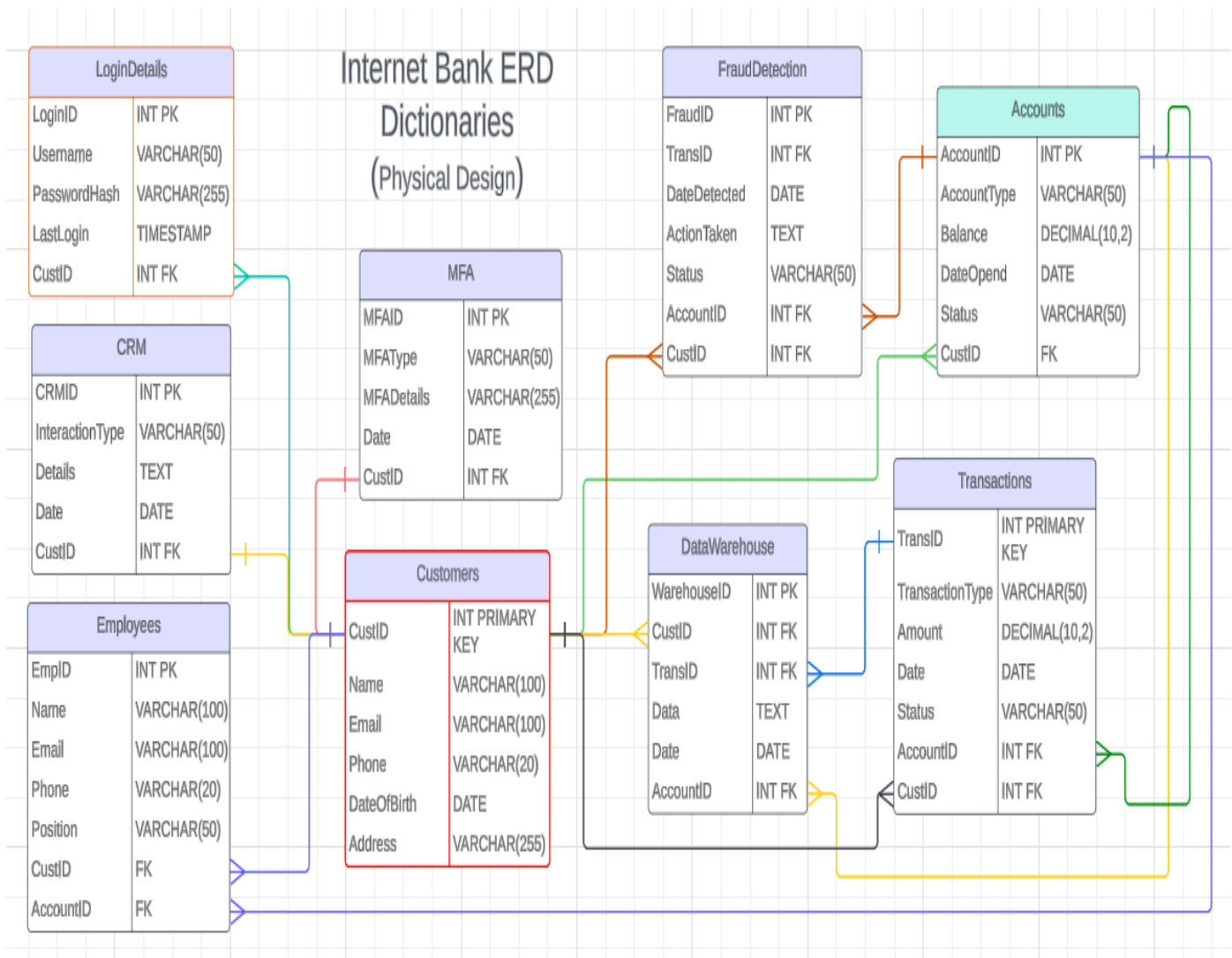
Professor: Dr. Reid

17th. July 2024

Internet Bank System Database Design:

1. Entity-Relationship Diagram (ERD):





2. Data Dictionaries:

Data Dictionaries:

Customers:

- CustID: Unique identifier for each customer – Primary Key
- Name: Full name
- Email:
- Phone: Phone number
- Address: Physical Address

- DateOfBirth: Date of birth of the customer.

Customers Table:

Column Name	Data Type	Constraints	Description
CustID	INT	PRIMARY KEY	Unique identifier for each customer
Name	VARCHAR(100)	NOT NULL	Full name of the customer
Email	VARCHAR(100)	UNIQUE	Email address of the customer
Address	VARCHAR(255)	NOT NULL	Primary address of the customer
DateOfBirth	DATE	NOT NULL	Date of birth of the customer

Accounts:

- AccountID: Unique identifier for each account – Primary Key
- CustID: Identifier linking the account to a customer – Foreign Key
- AccountType: Type of account e.g., Savings/Checking
- Balance: Current balance of the account.
- DateOpen: Date when the account was opened.
- Status: Current state of the account e.g., active/closed.

Accounts Table:

Column Name	Data Type	Constraints	Description
AccountID	INT	PRIMARY KEY	Unique identifier for each account
CustID	INT	FOREIGN KEY	Identifier link account to a customer
AccountType	VARCHAR(50)	NOT NULL	Type of account: checking or saving
Balance	DECIMAL(10,2)	NOT NULL	Current balance of the account.

DateOpened	DATE	NOT NULL	Date when the account was opened.
Status	VARCHAR(50)	NOT NULL	Status of the account: active or closed

Transactions:

- TransID: Unique identifier for each transaction – Primary Key.
- AccountID: Identifier linking the transaction to an account – Foreign Key.
- TransactionType: Type of transaction e.g., deposit/withdrawal.
- Amount: Amount involved in the transaction.
- Date: Date when the transaction occurred.
- Status: Current state of the transaction e.g., pending/completed.

Transaction Table:

Column Name	Data Type	Constraints	Description
TransID	INT	PRIMARY KEY	Unique identifier for each transaction
AccountID	INT	FOREIGN KEY	Identifier links transaction to an account
Amount	DECIMAL(10,2)	NOT NULL	Amount involved in the transaction
Date	DATE	NOT NULL	Date when transaction occurred.
Status	VARCHAR(50)	NOT NULL	Status of transaction: pending, completed.

Employees:

- EmpID: Unique identifier for each employee – Primary Key
- Name: Full name of the employee.
- Email: Email address of the employee.

- Phone: Phone number of the employee.
- Position: Job position of the employee

Employees Table:

Column Name	Data Type	Constraints	Description
EmpID	INT	PRIMARY KEY	Unique identifier for each employee
Name	VARCHAR(100)	NOT NULL	Full name of the employee.
Email	VARCHAR(100)	UNIQUE	Email address of the employee
Phone	VARCHAR(20)	NOT NULL	Phone number of the employee.
Position	VARCHAR(50)	NOT NULL	Job position of the employee

LoginDetails:

- LoginID: Unique identifier for each login record – Primary Key
- CustID: Identifier linking the login record to a customer – Foreign Key.
- Username: Username used to login.
- PasswordHas: Hashed password for security
- LastLogin: Timestamp of the last login attempt.

LoginDetails Table:

Column Name	Data Type	Constraints	Description
LoginID	INT	PRIMARY KEY	Unique identifier for each login
CustID	INT	FOREIGN KEY	Identifier linking customer login
Username	VARCHAR(50)	UNIQUE	Username used for login
PasswordHash	VARCHAR(255)	NOT NULL	Hashed password for login
LastLogin	TIMESTAMP	NOT NULL	Timestamp of the last login attempt.

MFA:

- MFAID: Unique identifier for each MFA record – Primary key
- CustID: Identifier linking the MFA record to a customer – Foreign Key
- MFAType: Type of MFA e.g., SMS/ App
- MFADetails: Details required for MFA e.g., Phone number/App ID
- Date: Date when the MFA was set up.

MFA Table:

Column Name	Data Type	Constraints	Description
MFAID	INT	PRIMARY KEY	Unique identifier for each MFA record.
CustID	INT	FOREIGN KEY	Identifier link MFA record to customer
MFAType	VARCHAR(50)	NOT NULL	Type of MFA: SMS, app
MFADetails	VARCHAR(255)	NOT NULL	MFA required detail: phone, app ID
Date	DATE	NOT NULL	Date when the MFA was set up.

CRM:

- CRMID: Unique identifier for each CRM record – Primary Key
- CustID: Identifier linking the CRM record to a customer – Foreign Key.
- InteractionType: Type of interaction e.g., call/email.
- Date: Date of the interaction.
- Details: Details of the interaction.

CRM Table:

Column Name	Data Type	Constraints	Description
CRMID	INT	PRIMARY KEY	Unique identifier for each record
CustID	INT	FOREIGN KEY	Identifier link CRM record to cust
InteractionType	VARCHAR(50)	NOT NULL	Type of interaction: call, email, SMS
Date	DATE	NOT NULL	Date of the interaction.
Details	TEXT	NOT NULL	Details of the interaction.

FraudID:

- FraudID: Unique identifier for each fraud detection record – Primary Key.
- TransID: Identifier linking the fraud detection record to a transaction – Foreign Key.
- Status: Current state of the fraud investigation e.g., under review, confirmed.
- DateDetected: Date when the fraud was detected.
- ActionTaken: Action taken in response to fraud detection.

FraudDetection Table:

Column Name	Data Type	Constraints	Description
FraudID	INT	PRIMARY KEY	Unique identifier for each fraud detection record.
TransID	INT	FOREIGN KEY	Identifier link fraud detection record to a transaction.
Status	VARCHAR(50)	NOT NULL	Status of fraud investigation: under review, confirmed, etc
DateDetected	DATE	NOT NULL	Date when the fraud was detected.

ActionTaken	TEXT	NOT NULL	Action taken in response to fraud detection.
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DataWarehouse:

- WarehouseID: Unique identifier for each data warehouse record – Primary Key.
- CustID: Identifier linking the data warehouse record to a customer – Foreign Key.
- TransID: Identifier linking the data warehouse record to a transaction – Foreign Key.
- Data: Historical data stored for analysis.
- Date: Date when the data was recorded.

DataWarehouse Table:

Column Name	Data Type	Constraints	Description
WarehouseID	INT	PRIMARY KEY	Unique identifier for each warehouse record.
CustID	INT	FOREIGN KEY	Identifier link data warehouse record to a customer.
TransID	INT	FOREIGN KEY	Identifier link data warehouse record to transaction
Data	TEXT	NOT NULL	Historical data stored for analysis.
Date	DATE	NOT NULL	Date when the data was recorded.

3. Table Definitions:

CREATE TABLE Customers (

```
CustID INT PRIMARY KEY,  
Name VARCHAR(100),  
Email VARCHAR(100),  
Phone VARCHAR(20),  
Address VARCHAR(255),  
DateOfBirth DATE  
);
```

```
CREATE TABLE Accounts (  
    AccountID INT PRIMARY KEY,  
    CustID INT,  
    AccountType VARCHAR(50),  
    Balance DECIMAL(10, 2),  
    DateOpened DATE,  
    Status VARCHAR(50),  
    FOREIGN KEY (CustID) REFERENCES Customers(CustID)  
);
```

```
CREATE TABLE Transactions (  
    TransID INT PRIMARY KEY,  
    AccountID INT,  
    TransactionType VARCHAR(50),  
    Amount DECIMAL(10, 2),
```

```
Date DATE,  
Status VARCHAR(50),  
FOREIGN KEY (AccountID) REFERENCES Accounts(AccountID)  
);
```

```
CREATE TABLE Employees (  
    EmpID INT PRIMARY KEY,  
    Name VARCHAR(100),  
    Email VARCHAR(100),  
    Phone VARCHAR(20),  
    Position VARCHAR(50)  
);
```

```
CREATE TABLE LoginDetails (  
    LoginID INT PRIMARY KEY,  
    CustID INT,  
    Username VARCHAR(50),  
    PasswordHash VARCHAR(255),  
    LastLogin TIMESTAMP,  
    FOREIGN KEY (CustID) REFERENCES Customers(CustID)  
);
```

```
CREATE TABLE MFA (  

```

```
MFAID INT PRIMARY KEY,  
CustID INT,  
MFAType VARCHAR(50),  
MFADetails VARCHAR(255),  
Date DATE,  
FOREIGN KEY (CustID) REFERENCES Customers(CustID)  
);
```

```
CREATE TABLE CRM (  
    CRMID INT PRIMARY KEY,  
    CustID INT,  
    InteractionType VARCHAR(50),  
    Date DATE,  
    Details TEXT,  
    FOREIGN KEY (CustID) REFERENCES Customers(CustID)  
);
```

```
CREATE TABLE FraudDetection (  
    FraudID INT PRIMARY KEY,  
    TransID INT,  
    Status VARCHAR(50),  
    DateDetected DATE,  
    ActionTaken TEXT,
```

```
FOREIGN KEY (TransID) REFERENCES Transactions(TransID)  
);
```

```
CREATE TABLE DataWarehouse (  
    WarehouseID INT PRIMARY KEY,  
    CustID INT,  
    TransID INT,  
    Data TEXT,  
    Date DATE,  
    FOREIGN KEY (CustID) REFERENCES Customers(CustID),  
    FOREIGN KEY (TransID) REFERENCES Transactions(TransID)  
);
```