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Sec: B2

Course: DBMS-L

PRACTICAL_2: BANKING DATABASE

TASK 1: TABLES & CONSTRAINTS & KEYS

```
SQL> CREATE TABLE Customers (
  2      CustomerID INT PRIMARY KEY,
  3      Name VARCHAR(100) NOT NULL,
  4      ContactDetails VARCHAR(15) UNIQUE,
  5      Email VARCHAR(100) UNIQUE,
  6      DOB DATE
  7  );

Table created.

SQL> describe Customers
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMERID                                NOT NULL NUMBER(38)
 NAME                                      NOT NULL VARCHAR2(100)
 CONTACTDETAILS                                     VARCHAR2(15)
 EMAIL                                              VARCHAR2(100)
 DOB                                                DATE
```

```
SQL> CREATE TABLE Branches (
  2      BranchID INT PRIMARY KEY,
  3      BranchName VARCHAR(100) NOT NULL,
  4      Address VARCHAR(255)
  5  );

Table created.

SQL> describe Branches
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 BRANCHID                                  NOT NULL NUMBER(38)
 BRANCHNAME                                NOT NULL VARCHAR2(100)
 ADDRESS                                            VARCHAR2(255)
```

```
SQL> CREATE TABLE Employees (
  2      EmployeeID INT PRIMARY KEY,
  3      Name VARCHAR(100) NOT NULL,
  4      Position VARCHAR(50),
  5      Email VARCHAR(100) UNIQUE,
  6      BranchID INT,
  7      FOREIGN KEY (BranchID) REFERENCES Branches(BranchID)
  8  );

Table created.

SQL>
SQL> CREATE TABLE Accounts (
  2      AccountNumber INT PRIMARY KEY,
  3      AccountType VARCHAR(50) NOT NULL,
  4      Balance DECIMAL(10, 2) NOT NULL,
  5      InterestRate DECIMAL(4, 2),
  6      CustomerID INT,
  7      FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
  8  );

Table created.

SQL> describe Employees
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
 EMPLOYEEID                                NOT NULL NUMBER(38)
 NAME                                      NOT NULL VARCHAR2(100)
 POSITION                                           VARCHAR2(50)
 EMAIL                                              VARCHAR2(100)
 BRANCHID                                           NUMBER(38)

SQL> describe Accounts
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
 ACCOUNTNUMBER                             NOT NULL NUMBER(38)
 ACCOUNTTYPE                               NOT NULL VARCHAR2(50)
 BALANCE                                   NOT NULL NUMBER(10,2)
 INTERESTRATE                                       NUMBER(4,2)
 CUSTOMERID                                         NUMBER(38)
```

```
SQL> CREATE TABLE Transactions (
  2      TransactionID INT,
  3      AccountNumber INT,
  4      Amount DECIMAL(10, 2) NOT NULL,
  5      TransactionDate DATE NOT NULL,
  6      TransactionType VARCHAR(50),
  7      PRIMARY KEY (TransactionID, AccountNumber),
  8      FOREIGN KEY (AccountNumber) REFERENCES Accounts(AccountNumber)
  9  );

Table created.

SQL> describe Transactions
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------
 TRANSACTIONID                             NOT NULL NUMBER(38)
 ACCOUNTNUMBER                             NOT NULL NUMBER(38)
 AMOUNT                                    NOT NULL NUMBER(10,2)
 TRANSACTIONDATE                           NOT NULL DATE
 TRANSACTIONTYPE                                    VARCHAR2(50)
```

2. INSERT DATA

```
SQL> INSERT INTO Customers (CustomerID, Name, ContactDetails, Email, DOB) VALUES
  2  (2, 'Jane Smith', '9876543210', 'jane@example.com', TO_DATE('1990-07-20', 'YYYY-MM-DD'));

1 row created.

SQL> INSERT INTO Customers (CustomerID, Name, ContactDetails, Email, DOB) VALUES
  2  (3, 'Sam Wilson', '4561237890', 'sam@example.com', TO_DATE('1985-03-30', 'YYYY-MM-DD'));

1 row created.

SQL> describe customers
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMERID                                NOT NULL NUMBER(38)
 NAME                                      NOT NULL VARCHAR2(100)
 CONTACTDETAILS                                     VARCHAR2(15)
 EMAIL                                              VARCHAR2(100)
 DOB                                                DATE
```

```
SQL> INSERT INTO Branches (BranchID, BranchName, Address) VALUES
  2  (1, 'Main Branch', '123 Main St');

1 row created.

SQL> INSERT INTO Branches (BranchID, BranchName, Address) VALUES
  2  (2, 'East Branch', '456 East Ave');

1 row created.

SQL> describe Branches
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------
 BRANCHID                                  NOT NULL NUMBER(38)
 BRANCHNAME                                NOT NULL VARCHAR2(100)
 ADDRESS                                            VARCHAR2(255)
```

```
SQL> INSERT INTO Employees (EmployeeID, Name, Position, Email, BranchID) VALUES
  2  (1, 'Alice Brown', 'Manager', 'alice@example.com', 1);

1 row created.

SQL> INSERT INTO Employees (EmployeeID, Name, Position, Email, BranchID) VALUES
  2  (2, 'Bob White', 'Teller', 'bob@example.com', 2);

1 row created.

SQL> INSERT INTO Accounts (AccountNumber, AccountType, Balance, InterestRate, CustomerID) VALUES
  2  (1001, 'Savings', 5000.00, 1.5, 1);

1 row created.

SQL> INSERT INTO Accounts (AccountNumber, AccountType, Balance, InterestRate, CustomerID) VALUES
  2  (1002, 'Checking', 1500.00, NULL, 2);

1 row created.

SQL> INSERT INTO Accounts (AccountNumber, AccountType, Balance, InterestRate, CustomerID) VALUES
  2  (1003, 'Savings', 2000.00, 1.5, 3);

1 row created.

SQL> INSERT INTO Transactions (TransactionID, AccountNumber, Amount, TransactionDate, TransactionType) VALUES
  2  (1, 1001, 200.00, TO_DATE('2025-01-15', 'YYYY-MM-DD'), 'Deposit');

1 row created.

SQL> INSERT INTO Transactions (TransactionID, AccountNumber, Amount, TransactionDate, TransactionType) VALUES
  2  (2, 1001, 100.00, TO_DATE('2025-01-16', 'YYYY-MM-DD'), 'Withdrawal');

1 row created.

SQL> INSERT INTO Transactions (TransactionID, AccountNumber, Amount, TransactionDate, TransactionType) VALUES
  2  (3, 1002, 300.00, TO_DATE('2025-01-17', 'YYYY-MM-DD'), 'Deposit');

1 row created.
```

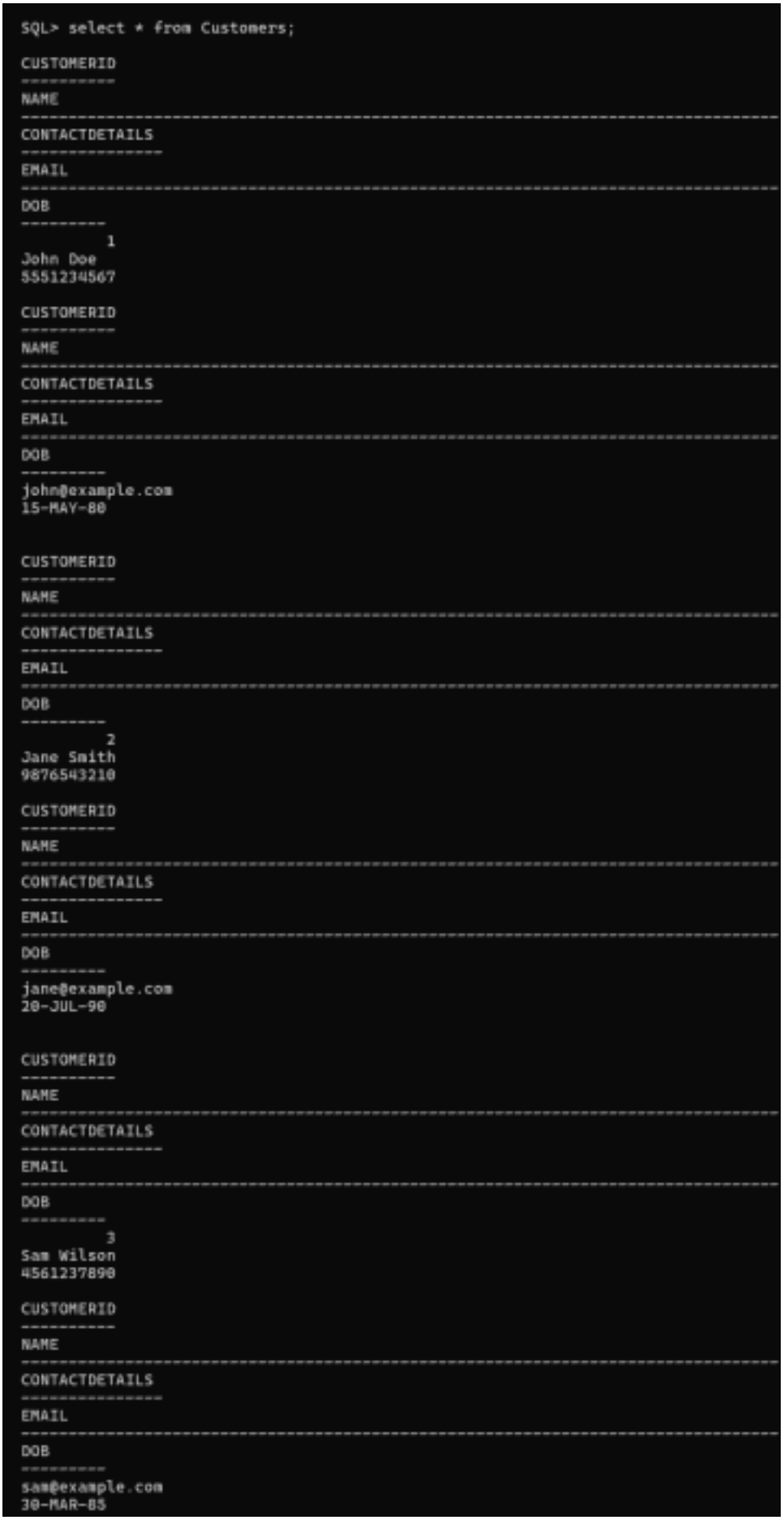
3. UPDATE DATA & ALTER

```
SQL> UPDATE Customers
  2  SET ContactDetails = '5551234567'
  3  WHERE CustomerID = 1;

1 row updated.

SQL> UPDATE Employees
  2  SET Position = 'Senior Manager'
  3  WHERE EmployeeID = 1;

1 row updated.
```



4. DELETE DATA

```
SQL> DELETE FROM Transactions
  2  WHERE TransactionDate < TO_DATE('2025-01-16', 'YYYY-MM-DD');

1 row deleted.
```

7. QUERIES

```
SQL> SELECT * FROM Transactions WHERE AccountNumber = 1001;

TRANSACTIONID ACCOUNTNUMBER     AMOUNT TRANSACTI
------------- ------------- ---------- ---------
TRANSACTIONTYPE
--------------------------------------------------
            2          1001        100 16-JAN-25
Withdrawal
```

```
SQL> SELECT Customers.*
  2  FROM Customers
  3  JOIN Accounts ON Customers.CustomerID = Accounts.CustomerID
  4  JOIN Employees ON Employees.BranchID = Accounts.CustomerID
  5  WHERE Employees.BranchID = 1;

CUSTOMERID
----------
NAME
--------------------------------------------------------------------------------
CONTACTDETAILS
--------------
EMAIL
--------------------------------------------------------------------------------
DOB
---------
         1
John Doe
5551234567

CUSTOMERID
----------
NAME
--------------------------------------------------------------------------------
CONTACTDETAILS
--------------
EMAIL
--------------------------------------------------------------------------------
DOB
---------
john@example.com
15-MAY-80
```

```
SQL> SELECT Employees.Name, COUNT(Accounts.AccountNumber) AS ManagedAccounts
  2  FROM Employees
  3  JOIN Accounts ON Employees.EmployeeID = Accounts.CustomerID
  4  GROUP BY Employees.Name
  5  ORDER BY ManagedAccounts DESC
  6  FETCH FIRST 1 ROWS ONLY;

NAME
--------------------------------------------------------------------------------
MANAGEDACCOUNTS
---------------
Alice Brown
              1


SQL> SELECT SUM(Balance) AS TotalBalance
  2  FROM Accounts
  3  WHERE CustomerID = 2;

TOTALBALANCE
------------
        1500
```