Database systems

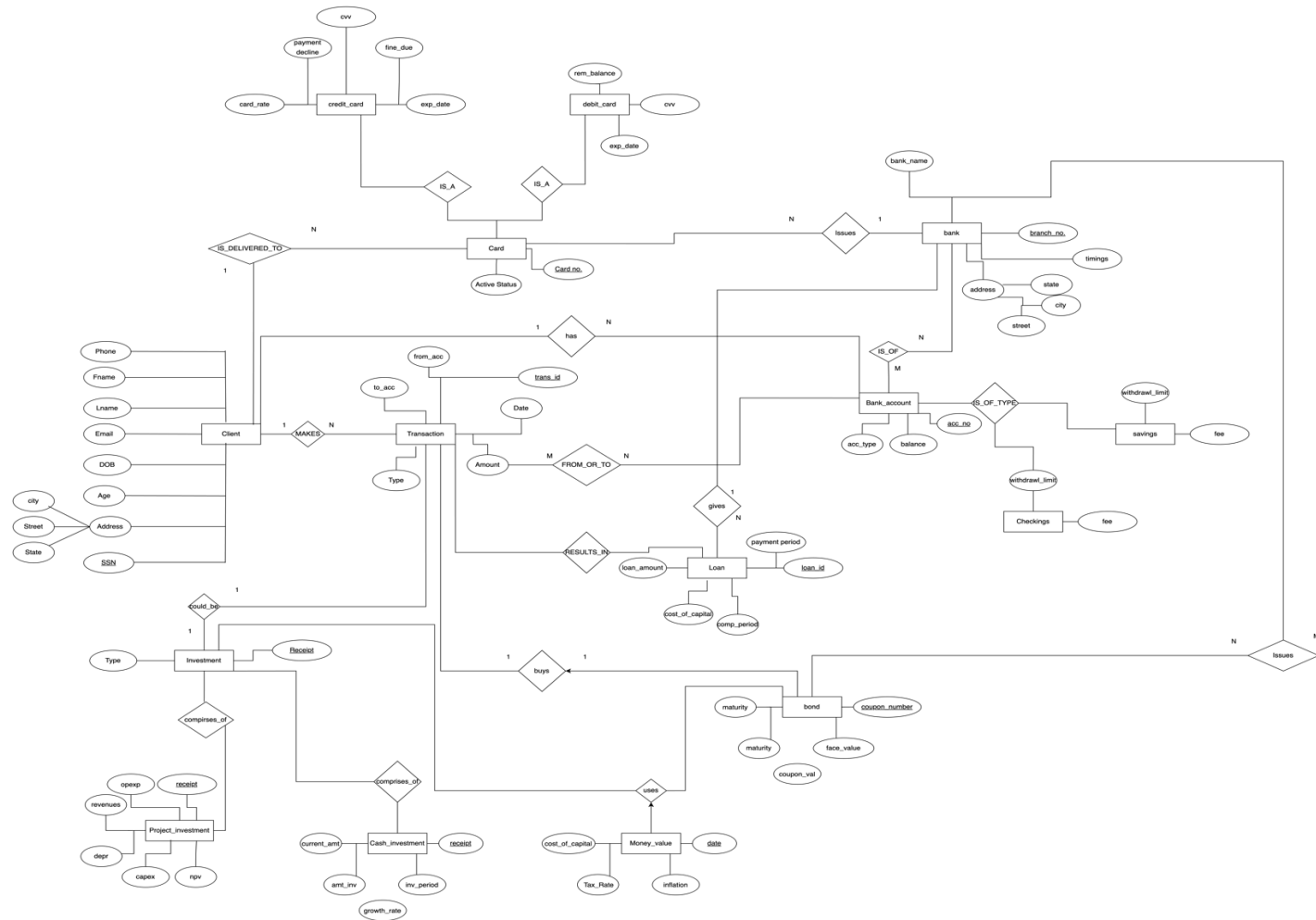**Name**- Arya Goyal & Gitesh Chinawalkar
Date- 15/11/2024

DBMS PROJECT PART 1

Total in points-
Professor's Comments-

cvv

payment
decline

fine_due

rem_balance

card_rate   credit_card   exp_date   debit_card   cvv

exp_date

bank_name

IS_A   IS_A

branch_no.

IS_DELIVERED_TO   N   Card   N   Issues   1   bank   timings

1   Card no.

address   state

Active Status   city

street

Phone   1   has   N   N

Fname   from_acc   trans_id   IS_OF

Lname   to_acc   Date   M

Email   Client   1   MAKES   N   Transaction   Bank_account   IS_OF_TYPE   withdrawl_limit

DOB   M   FROM_OR_TO   N   acc_type   balance   acc_no   savings   fee

city   Age   Amount

Street   Address   Type   gives   1   withdrawl_limit

State   N

SSN   RESULTS_IN   payment period   Checkings   fee

loan_amount   Loan   loan_id

could_be   1   cost_of_capital   comp_period

1   Receipt   N   M

Type   Investment   1   buys   1   Issues

maturity   bond   coupon_number

comprises_of   maturity   face_value

coupon_val

opexp   receipt   comprises_of   uses

revenues   Project_investment   current_amt   Cash_investment   receipt   cost_of_capital   Money_value   date

depr   aml_inv   inv_period   Tax_Rate   inflation

capex   npv   growth_rate

Entities and Relationships

1. **Clients**

   o **Attributes**: SSN (PK), First Name, Last Name, DOB, Age (derived), Email, Phone, Address (composite).

   o **Relationships**:

      ▪ **Owns** (1

) **Bank Accounts**

      ▪ **Initiates** (1

) **Transactions**

2. **Bank Accounts**

   o **Attributes**: Account Number (PK), Account Type, Balance.

   o **Relationships**:

- **Belongs To** (N:1) **Clients**
- **Associated With** (M

) **Banks**

- **Involved In** (M

) **Transactions**

- **Type**: Savings or Checking Account

3. **Banks**
   - **Attributes**: Branch Number (PK), Bank Name, Address (composite), Operating Hours.
   - **Relationships**:
     - **Holds** (M

) **Bank Accounts**

     - **Issues**:
       - **Cards** (1

)

       - **Bonds** (M

)

     - **Provides** (1

) **Loans**

4. **Savings Accounts**
   - **Attributes**: Withdrawal Limit, Fee.
   - **Subtype of Bank Accounts**

5. **Checking Accounts**
   - **Attributes**: Withdrawal Limit, Fee.
   - **Subtype of Bank Accounts**

6. **Loans**
   - **Attributes**: Loan ID, Amount, Date, Payment Period, Compounding Period.
   - **Relationships**:
     - **Results In** (1:1) **Transaction**
     - **Offered By** (N:1) **Bank**
     - **Utilizes Monetary Values**

7. **Bonds**
   - **Attributes**: Coupon Number (PK), Price, Maturity, Coupon Value, Face Value.
   - **Relationships**:
     - **Purchased Through** (1:1) **Transaction**
     - **Issued By** (M

) **Banks**

     - **Utilizes Monetary Values**

8. **Investments**
   - **Attributes**: Receipt Number (PK), Type.
   - **Relationships**:
     - **Includes**: **Project Investment** or **Cash Investment**
     - **Associated With** (1:1) **Transaction**

9. **Project Investment**
   - **Attributes**: Receipt Number (PK), Operating Expenses, Revenues, Depreciation, Capital Expenditure, NPV.
   - **Subtype of Investments**

10. **Cash Investment**
    - **Attributes**: Receipt Number (PK), Investment Period, Current Amount, Invested Amount, Growth Rate.
    - **Subtype of Investments**

11. **Transactions**
    - **Attributes**: Transaction ID (PK), Date, Amount, Type, From Account, To Account.
    - **Relationships**:
      - **Made By** (N:1) **Client**
      - **Involves** (M

) **Bank Accounts**

      - **Related To** (1:1): **Investment**, **Loan**, or **Bond**

12. **Monetary Values**
    - **Attributes**: Date (PK), Inflation, Tax Rate, Cost of Capital.
    - **Used By Investments**, **Loans**, **Bonds**

13. **Cards**

- o **Attributes**: Card Number (PK), Active Status.
- o **Relationships**:
  - ▪ **Issued By** (N:1) **Bank**
  - ▪ **Assigned To** (N:1) **Client**
  - ▪ **Subtype**: **Credit Card** or **Debit Card**

14. **Credit Card**
- o **Attributes**: Interest Rate, Payment Deadline, Fine Due, Expiration Date, CVV.
- o **Subtype of Cards**

15. **Debit Card**
- o **Attributes**: Expiration Date, CVV, Remaining Balance.
- o **Subtype of Cards**