Database systems

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# **DBMS PROJECT PART 1**

Total in points-

Professor’s Comments-

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Description automatically generated

**Entities and Relationships**

1. **Clients**
   * **Attributes**: SSN (PK), First Name, Last Name, DOB, Age (derived), Email, Phone, Address (composite).
   * **Relationships**:
     + **Owns** (1

) **Bank Accounts**

* + - **Initiates** (1

) **Transactions**

1. **Bank Accounts**
   * **Attributes**: Account Number (PK), Account Type, Balance.
   * **Relationships**:
     + **Belongs To** (N:1) **Clients**
     + **Associated With** (M

) **Banks**

* + - **Involved In** (M

) **Transactions**

* + - **Type**: Savings or Checking Account

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

) **Bank Accounts**

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

)

* + - * **Bonds** (M

)

* + - **Provides** (1

) **Loans**

1. **Savings Accounts**
   * **Attributes**: Withdrawal Limit, Fee.
   * **Subtype of** **Bank Accounts**
2. **Checking Accounts**
   * **Attributes**: Withdrawal Limit, Fee.
   * **Subtype of** **Bank Accounts**
3. **Loans**
   * **Attributes**: Loan ID, Amount, Date, Payment Period, Compounding Period.
   * **Relationships**:
     + **Results In** (1:1) **Transaction**
     + **Offered By** (N:1) **Bank**
     + **Utilizes** **Monetary Values**
4. **Bonds**
   * **Attributes**: Coupon Number (PK), Price, Maturity, Coupon Value, Face Value.
   * **Relationships**:
     + **Purchased Through** (1:1) **Transaction**
     + **Issued By** (M

) **Banks**

* + - **Utilizes** **Monetary Values**

1. **Investments**
   * **Attributes**: Receipt Number (PK), Type.
   * **Relationships**:
     + **Includes**: **Project Investment** or **Cash Investment**
     + **Associated With** (1:1) **Transaction**
2. **Project Investment**
   * **Attributes**: Receipt Number (PK), Operating Expenses, Revenues, Depreciation, Capital Expenditure, NPV.
   * **Subtype of** **Investments**
3. **Cash Investment**
   * **Attributes**: Receipt Number (PK), Investment Period, Current Amount, Invested Amount, Growth Rate.
   * **Subtype of** **Investments**
4. **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**

1. **Monetary Values**
   * **Attributes**: Date (PK), Inflation, Tax Rate, Cost of Capital.
   * **Used By** **Investments**, **Loans**, **Bonds**
2. **Cards**
   * **Attributes**: Card Number (PK), Active Status.
   * **Relationships**:
     + **Issued By** (N:1) **Bank**
     + **Assigned To** (N:1) **Client**
     + **Subtype**: **Credit Card** or **Debit Card**
3. **Credit Card**
   * **Attributes**: Interest Rate, Payment Deadline, Fine Due, Expiration Date, CVV.
   * **Subtype of** **Cards**
4. **Debit Card**
   * **Attributes**: Expiration Date, CVV, Remaining Balance.
   * **Subtype of** **Cards**