Database systems

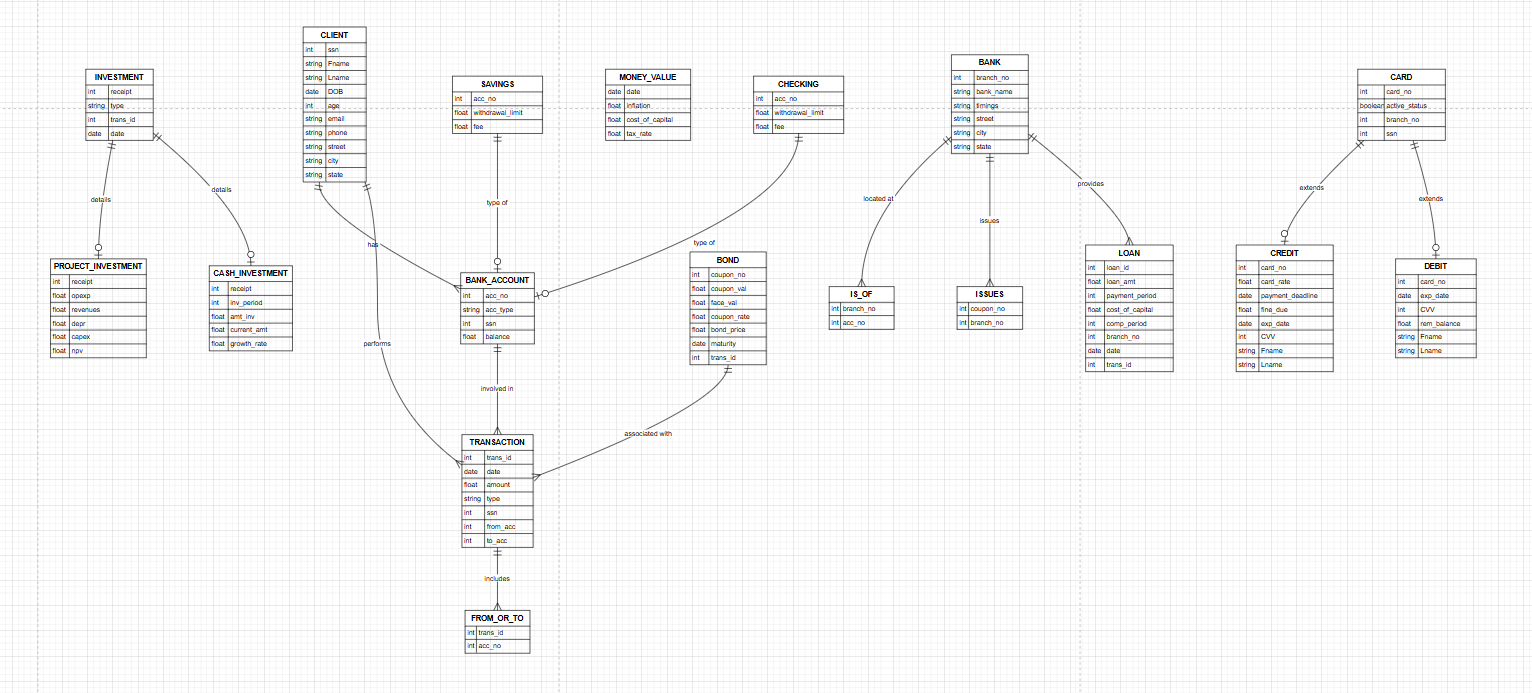
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**Date**- 15/11/2024

# **DBMS PROJECT Part 2**

Total in points-

Professor’s Comments-



The ER model has been converted into a relational schema following standard conventions:

* The CLIENT-to-TRANSACTION (1:N) relationship is represented by adding the **SSN** as a foreign key in the TRANSACTION table.
* The CLIENT-to-BANK\_ACCOUNT (1:N) relationship is handled similarly, with the **SSN** added as a foreign key in the BANK\_ACCOUNT table.
* For the TRANSACTION-to-BANK\_ACCOUNT (M:N) relationship, a new table called FROM\_OR\_TO is created, using **trans\_id** and **acc\_no** as primary keys.
* The TRANSACTION-to-INVESTMENT (1:1) relationship is mapped by adding **trans\_id** as a foreign key in the INVESTMENT table.
* The TRANSACTION-to-LOAN (1:1) relationship is implemented with **trans\_id** as a foreign key in the LOAN table.
* The TRANSACTION-to-BOND (1:1) relationship uses **trans\_id** as a foreign key in the BOND table.
* The USES relationship between MONEY\_VALUE and INVESTMENT, LOAN, and BOND tables is established by adding the **date** attribute as a foreign key in these tables.
* The BANK\_ACCOUNT-to-BANK (M:N) relationship is mapped through a new table called IS\_OF, with **acc\_no** and **branch\_no** as its primary keys.
* The BANK-to-CARD (1:N) relationship is represented by including **branch\_no** as a foreign key in the CARD table.
* The CARD-to-CLIENT (1:N) relationship is defined by adding **SSN** as a foreign key in the CARD table.
* BANK\_ACCOUNT types (SAVINGS and CHECKING) are linked to the BANK\_ACCOUNT table using **acc\_no** as a foreign key in each type-specific table.
* INVESTMENT types (PROJECT\_INVESTMENT and CASH\_INVESTMENT) are connected to the INVESTMENT table through the **receipt** foreign key.
* The BANK-to-BOND (M:N) relationship is managed through an ISSUES table, which uses **acc\_no** and **coupon\_no** as primary keys.
* The BANK-to-LOAN (1:N) relationship is handled by adding **branch\_no** as a foreign key in the LOAN table.
* The CARD types (CREDIT and DEBIT) are linked back to the CARD table using **card\_no** as a foreign key in both tables.

This structure ensures the relationships between entities are preserved in the relational model while maintaining referential integrity.