TD – Enhanced Entity-Relationship Model

Exercise 1.

Propose a conceptual schema for a bank :

The bank is organised in several branches, each identified by a unique code and characterised by address and number of employees. Each branch manages a certain amount of accounts and loans of the customers of the bank. Each account is characterised by its number, type savings, checking and current amount. Savings accounts are further specified by their interest rates, while checking accounts have a monthly limit and a set of associated cards (card number, issue date, expiration date, monthly limit, type debit, credit). Each loan is characterised by unique number, size (principal), interest per annum, length and start date. The bank caters to both people and institutions. A person is characterised by his name, SSN, date of birth, address, email and telephone, while company is characterised by name, address and company registration number. All account types are available to every type of customers, just as conventional loans, however, the bank also offers mortgages (address) only to physical persons, and development loans (purpose of the investment) only to companies. Finally, all transactions (withdrawals, deposits, checks, card payments) for each account should be recorded with date, amount and recipient/sender, and associated card for card payments. Similarly, all loan repayments should be recorded (date, amount).

Exercise 2.

Propose a conceptual schema for a museum keeping track of art on display :

Assume the following requirements were collected from the museum.
— The museum has a collection of pieces of art, each given a unique id. Each art piece has an artist (if known), year (if known), title, description and style.
— Pieces of art are categorised based on their type into paintings, sculptures and other.
— A painting is characterised by technique and material (which it is drawn on).
— Sculpture by material, height and weight.
— Art in the "other" category by type.
— All pieces of art are further classified as either being on permanent collection of the museum, or borrowed from a different collection. Art in permanent collection includes date acquired, status (on display, stored, loaned) and cost. Borrowed items have collection from which they were borrowed, date borrowed and date returned.
— Information on culture/country of origin and epoch is kept for each piece of art.
— The museum also keeps information about each artist, if known, name, date of birth, date died (unless alive), country of origin, epoch, main style, description.
— The museum also organises seasonal exhibitions, each having a name, start date, end date and all art displayed during the exhibition is recorded.
— Finally, the museum keeps tabs on other collections of art, with which the museum interacts, including name (assumed unique), type (museum, personal, etc.), description, address, phone and contact person.