

*SchoolNova*

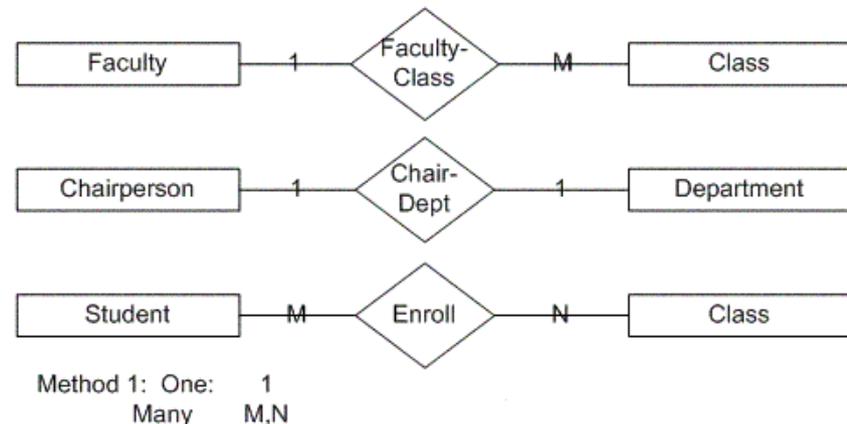


# IT102

Entity Relationship Model

# Entity Relationship Basics

- **Entity** is a real world object distinguishable from other objects. An entity in DB has a set of attributes.
- Example: STUDENT entity has name, age, grade etc.
- **Relationship** is an association between two (or more) entities.
- Example: STUDENT <attends> CLASS



# Conceptual Design Using ER Model

- Design Choices

- Should a concept be modeled as an entity or an attribute?

- Example: should ADDRESS be an entity or attribute of STUDENT?

- ◆ It depends upon the intended use of address information. If we collect multiple addresses per student, or want to find students in a given city, ADDRESS should be an entity.

- Should a concept be modeled as an entity or a relationship?

- ◆ Example: is STUDENT who paid for CLASS a relationship, or is PAYMENT an entity?
- ◆ It depends upon the intended use of the information. For an accounting system, PAYMENT should be an entity. For attendance recording system, payment can be a relationship.

# Exercise

Design a Club database system based on the following information.

- Each student has a unique student id, a name, and an email;
- Each club has a unique club id, a name, a contact telephone number, and has exactly one student as its president.
- Each student can serve as a president in at most one of the clubs, although he/she can be the members of several clubs.
- Clubs organize activities and students can participate in any of them.
- Each activity is described by a unique activity id, a place, a date, a time and those clubs that organize it.
- If an activity is organized by more than one club, different clubs might contribute different activity fees

Draw an E-R diagram for the system, in particular, use arrows or thick lines to represent relationships appropriately. Write down your assumptions if necessary..

# Basic DDL and SQL

```
USE test;

-- Data Definition

DROP TABLE IF EXISTS STUDENT;

CREATE TABLE STUDENT (
    student_id BIGINT auto_increment,
    email VARCHAR(50),
    first_name VARCHAR(50) NOT NULL,
    last_name VARCHAR(50) NOT NULL,
    create_ts TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    PRIMARY KEY ( student_id )
);

-- Queries

INSERT INTO STUDENT (email, first_name, last_name) VALUES ('mlu@gmail.com', 'Michael', 'Lu');

SELECT * FROM STUDENT;
```

# Homework

- Consider the following scenario: as part of “going green” your local Starbucks decided to track the number of newspapers taken by customers every day, and order the optimal number of newspapers, so that there is almost no newspapers left at the end of each day.
  - ◆ Starbucks gets delivery of three daily newspapers: New York Times, Wall Street Journal and USA Today. Right now they order 100 copies of each newspaper, but there is plenty left at the end of most days. Starbucks wants to order only as many as necessary.
  - ◆ Starbucks customers can take a newspaper when they buy something else at the store. They can take one newspaper and always take it home with them.
  - ◆ The number of taken newspapers varies by day of week: on Saturdays, for example, the number of taken newspapers is much higher than on Mondays.
- Create an Entity Relationship diagram that will be used as a basis for Starbucks Newspaper Tracking system.
- Create the tables based on your diagram using DDL CREATE TABLE statements.
- Populate the tables with sample data using SQL INSERT statements.