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University XYZ Database

GROUP A

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Requirements Analysis and Definition

Revision History

Date	Version	Description	Author
9/15/2020	1.0	First Draft	Whole Group
9/29/2020	2.9	Fixing according to comments from submission	Henry Depew

1) Description of Domain and Requirements

The University Database System is a MySQL database to be used by XYZ University. Requirements include searching and manipulating database entries for campuses, clubs, sports, faculty, schools, programs, courses, prerequisites, sections, students, supervisors, lecturers, grades, and committees. The database system should have varying levels of access depending on the permissions of the person accessing it in order to enforce authorization.

2) Example Queries

- List all the schools are located in 'Toronto Campus', and sort them by school name.
- List all the programs provided by 'science faculty'.
- Give all the names of the lecturers who are the members of the committee and sort by their name.
- List all supervisor's name and the name of the lecturer they manage. Please sort by supervisor name and lecturer name.
- Give all the lecturers who are not the member of the committee.
- Give the total number of courses for each program.
- Give all the lecturers with the courses they are teaching. Sort by lecturer name.
- Give all the course titles and their corresponding prerequisite course titles.
- Give the top 5 courses which have more students involved.
- Give any of the prerequisite courses was not taken by any of the students who enrolled into the university in 2010, and were taking the courses in 2011.
- Add student.
- Add lecturer.
- Delete student.
- Delete lecturer

3) Business Rules

- Each campus has a different name, address, distance to the city center and the only bus running to the campus.
- Each campus has a club.
- Clubs offer one to many sports.
- Each faculty has a name, dean and building.
- Each school belongs to one faculty only and is located on just one campus.
- Every school has a name and a building assigned to it.
- Each program can be offered by only one school.
- Programs exist within a single school.
- Each program has a unique code, title, level and duration.
- Each course belongs to a program.
- Each course has a unique code and course title.
- Courses may have required prerequisites which are also courses.
- Each of the students is enrolled in a single program of study.
- Students receive a grade for each course they take.
- Every student has a unique ID.
- A lecturer is only allowed to work for one school only.
- Each lecturer is assigned an ID which is unique across the whole university.
- A lecturer reports to only one supervisor.
- Supervisors may supervise one or many lecturers.
- A lecturer can teach many courses.
- A course can be taught by one or multiple lecturers.
- Committees are made up of one to many Lecturers.
- The frequency is determined by the faculty involved.

4) Entities, Attributes and Relationships

Entity	Attributes	Relationship (translation of the bus. rules)
CAMPUS	name, address, distance, bus	Contains a CLUB, Contains one or more SCHOOLs
CLUB	name, campus, building, phone number	Offers SPORTs
SPORT	name	Offered by CLUB
FACULTY	name, dean, building	Has: SCHOOLs
SCHOOL	name, faculty, campus, building	Offers: PROGRAMs Belongs to: FACULTY Located on: CAMPUS
PROGRAM	code, title, level, duration, school	Comprised of: COURSEs Enrolls: STUDENTs
COURSE	title, id, program, prerequisite	Instructed by: LECTURERs Taken by: STUDENTs
STUDENT	id, name, program, gpa, birthday, supervisor, year_enrolled_in_course	Enrolled in a: PROGRAM Takes: COURSEs (in a year)
LECTURER	id, name, school, lecturer title, office room, supervisor	Teaches: COURSEs Works for a: SCHOOL Has a: SUPERVISOR
COMMITTEE	name, title, frequency, members	Has members that are: LECTURERs

Conceptual Design Model

Revision History

Date	Version	Description	Author
9/29/2020	1.0	First Draft	Whole Group
10/2/2020	1.1	Add figures to the document	Henry Depew
10/4/2020	1.2	Added description for figure 1.1	Franklin Overton
10/5/2020	1.3	Added description for figure 1.2	Bret Riedel
10/5/2020	1.4	Added description for figure 1.3	Sami Jenedi
10/5/2020	1.5	Added description for figure 1.4	Austin Switzer
10/5/2020	1.6	Final tuning of diagrams and uniformity	Whole Group

Campus, Club, Sport

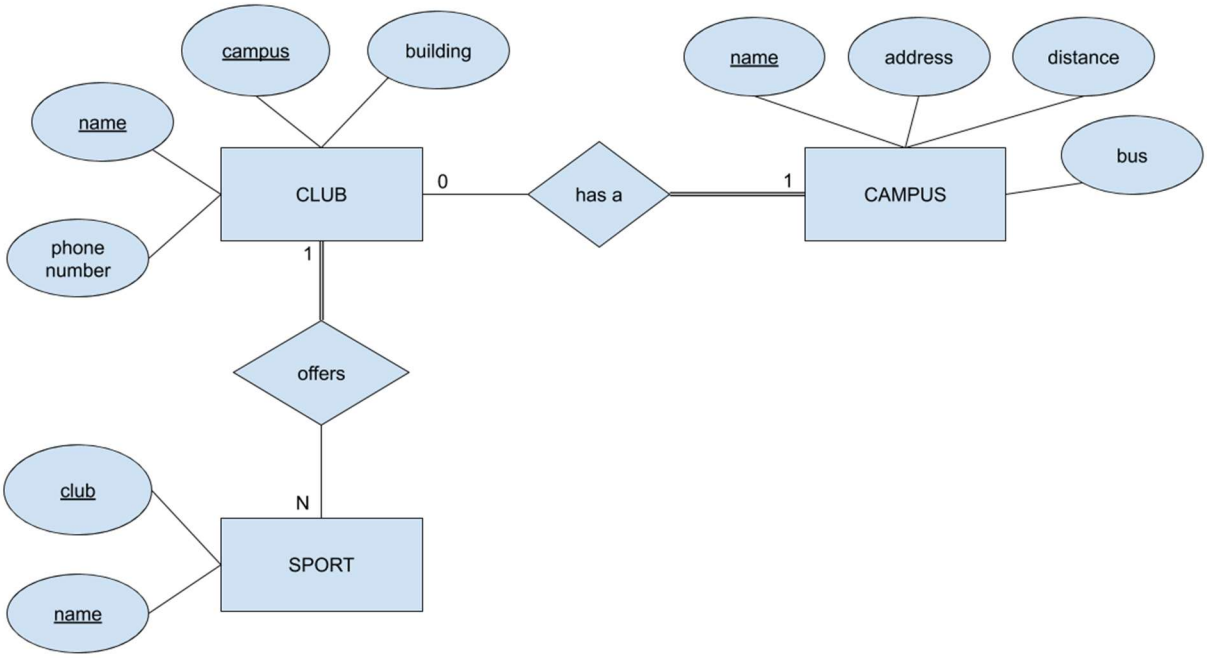

Figure 1.1

The campus has attributes that are the name of the campuses. The name is the primary key to campus. The campus has an address, a distance from the main campus, and it has a bus that goes from one campus to the other. Each campus has a club. There are many clubs. Each club has a building, it is attached to a campus, the club has a name, and each club has a phone number. Its primary keys are a combination of campus and name. Each club offers a sport. There are many sports. Each sport belongs to a club and has a name. Both club and name are a combination of primary keys.

School, Faculty, Program

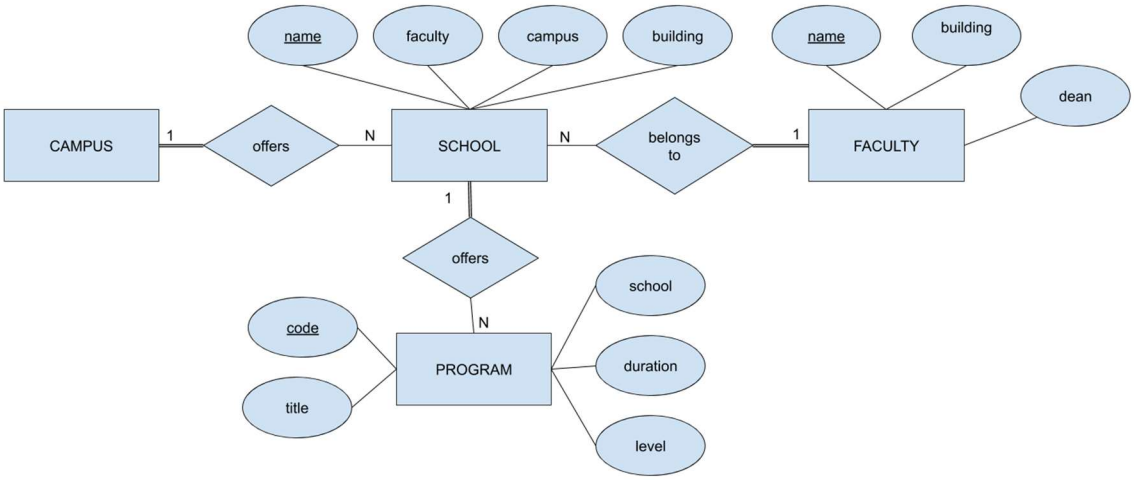

Figure 1.2

Each school can have many programs, but each program can belong to only one school. Each program will have the following attributes: title, school, duration, level, and a unique code that is its primary key. Each faculty can have many schools, but each school can belong to only one faculty. Each faculty will have the following attributes: building, dean, and a unique name that is its primary key. Each school will have the following attributes: faculty, campus, building, and a unique name that is its primary key.

Student, Program, Course

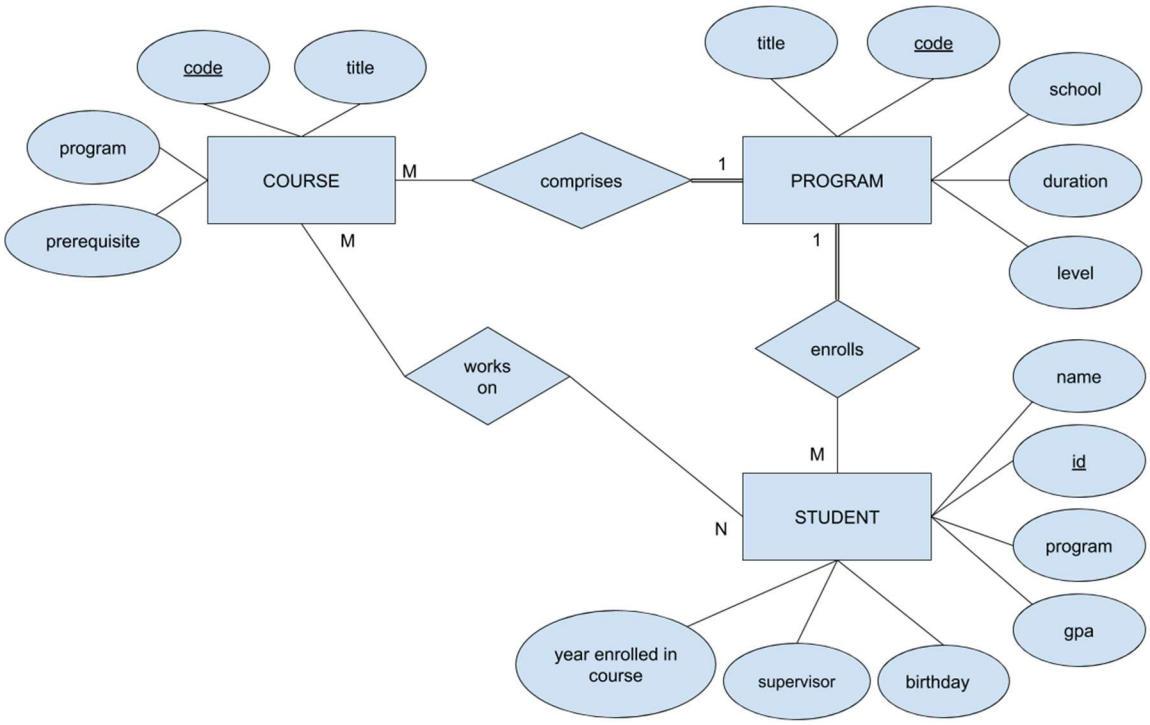

Figure 1.3

Each student will have the following attributes: name, gpa, birthday, supervisor, year enrolled in course, and a unique code that is its primary key. Each student must be enrolled in only one program, but a program can have many students. Each course will have the following attributes: program, prerequisite, title, and a unique code that is its primary key. Each program will have the following attributes: title, school, duration, level, and a unique code as its primary key.

Committee, Lecturer

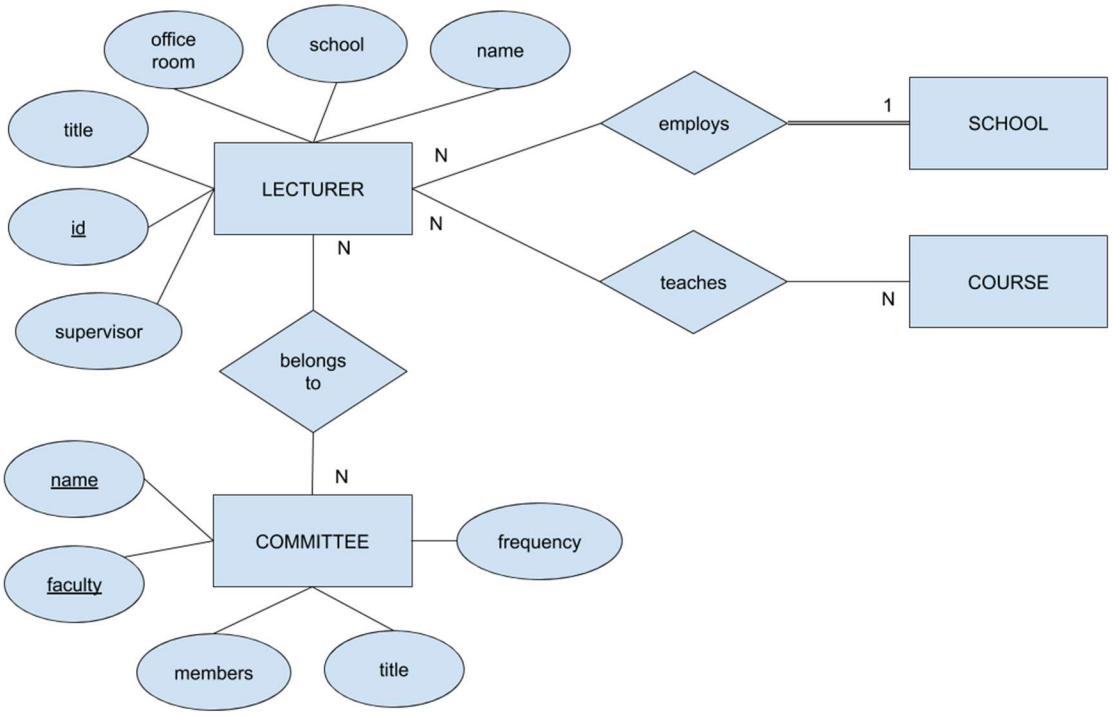

Figure 1.4

Each lecturer has a unique id which acts as its primary key, as well as a name, school, office room, title, and supervisor. A lecturer can only be employed by one school, but a school can employ any number of lecturers. Lecturers belong to any number of committees. Committees have a unique name and faculty, which act in competition as a primary key, in addition to members, a title, and frequency. A committee can be made up of any number of lecturers.

Full Diagram

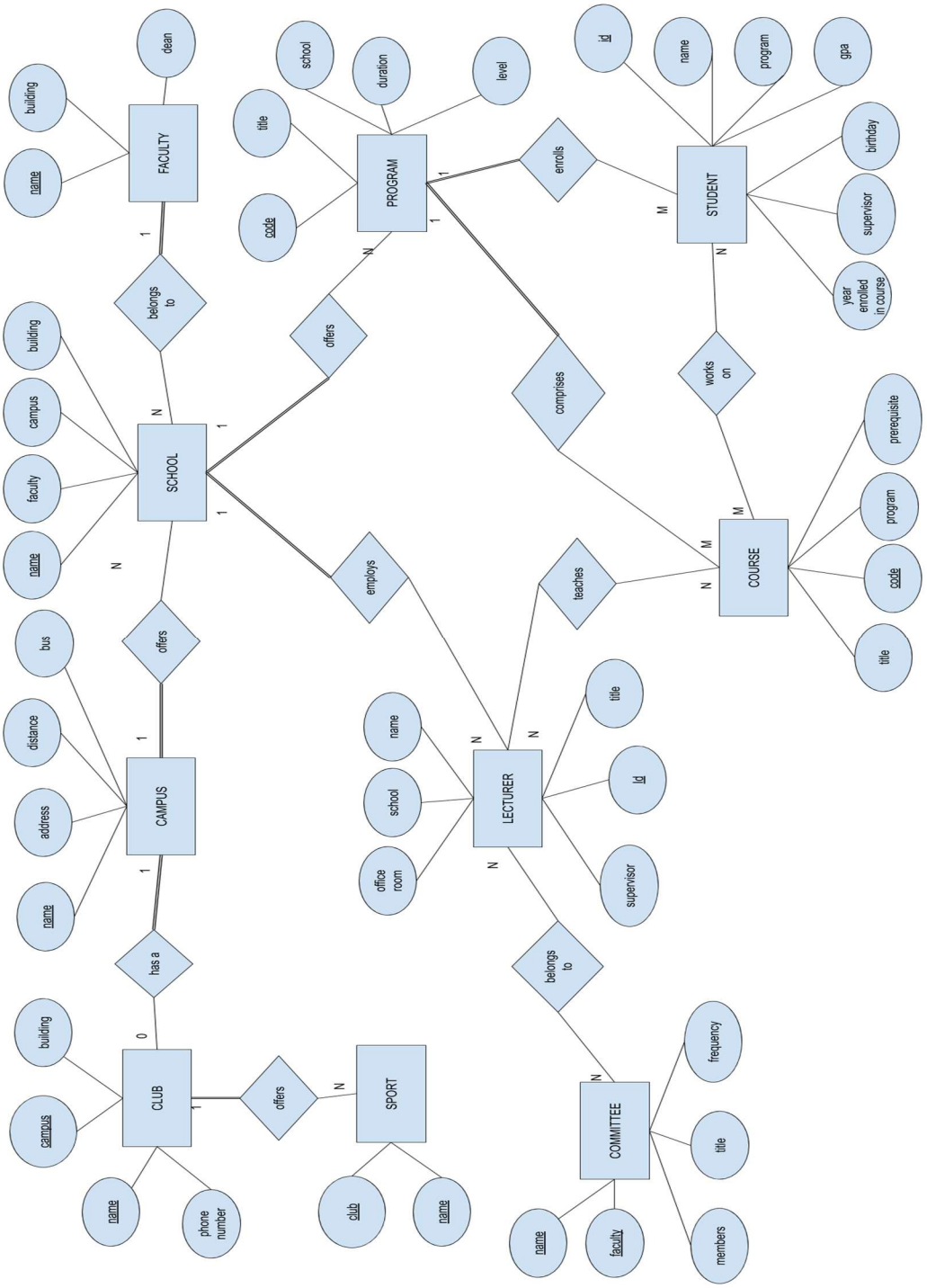

Figure 1.5

This is a composite of figures 1.1 through 1.4.