Requirements Analysis and Definition

University xyz

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**Revision History**

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| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 9/15/2020 | 1.0 | First Draft | Whole Group |
| 9/29/2020 | 2.9 | Fixing according to suggestions |  |
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# 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

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| **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 |