Database Systems

CS 353

Project Proposal

Section 1/2

Group 18

Muhammad Ramish Saeed 21503436
F. Serdar Atalay 21300738
Sine Mete 21302158
Hilal Öztürk 21000633

Contents

1. Introduction

This report is the proposal for our project: A Course Information and Enrollment System similar to STARS system that is used by Bilkent University. This report will contain a short description of the program we will create, discuss the need for a database system for this project, present an entity-relationship diagram for the system, and discuss the advantages and disadvantages of the system used. It will end with a short list of our planned future actions according to the requirements specified.

2. Description

The proposed program is a course information and enrollment system that will allow instructors, teaching assistants(TA) and students to handle course related queries. It will provide a platform for the instructors to offers courses, determine course requirements and grading, and grade exams. TAs will grade labs, projects, homeworks. Students will be able to track their course performances and attendances, enroll and withdraw courses and also submit their assignments.

Users will first sign up for an account to register themselves There will be three separate accounts for the users of the system i.e instructors, TAs and students. The accounts made by users will be registered using email addresses and passwords, and each will be given a unique ID.

Instructors will select a list of courses they will be offering in a single semester and put a check mark on them. They maximum limit for this number would be 3. They will then decide the minimum requirements for the course for a student to be eligible in registering that course and further set the grading threshold for each letter grade to be given to a student. Throughout the semester, instructors will update the grades of the exams and enter it in the record of a particular student.

The teaching assistants will have the job of grading a students' project, lab work and homeworks. Similarly to an instructor, they will also enter these grades in the system throughout the semester. The TAs will further display their office hours of a week on

their profile for students to visit them and ask queries in person or the students can also ask questions through the e-mail address provided.

Finally, the students will use this system to view their course performance which includes the grades they receive for each component of the course grading and their attendance performance will also be recorded. Students will be allowed to enroll for courses at the start of the semester and withdraw from a particular course before the deadline which will be decided later. The maximum number of enrolled courses would be 6 and minimum would be 5 and students can only be allowed to withdraw 1 course per semester. Students can also submit their assignments for it to be graded by the TAs. Students can apply for an exchange program to another university.

Our system mixes aspects of many pre-existing services, and one can check them to get an idea of what our features mean. Although our system will not exactly depict the the university systems, but it will largely provide a reminiscence of how a university database system look like.

3. The Need for a Database and How It Is Going To Be Used

The course information and enrollment system must contain vast amount of data because it contains all information about courses, students, instructors and TA's. Additionally, system must keep in track grading of exams, labs, assignments and homeworks. Students will be able to observe their performances through each semester; so the data must be updated properly. Our database will also help us in reducing data redundancy by removing duplicate data. Also, database is a more secure way to store data. Due to system failure or crash, data can be easily lost so a database management system provides a backup and recovery method to preserve data until the user himself removes it from the system. Therefore, it could be very difficult to manage all of the above problems without an automated database system. Hence, we use database in our project to acquire a more neat, quick and easily managed program.

We will mainly use database to manage all data related to Course Information and Enrollment System. Then by queries, we will screen the information according to user action. We will also update the database when a new course is added, new student is enrolled or a course is cancelled by creating new data entries or updating the current ones.

4. Requirements

4.1. Functional Requirements

Our DBMS has to support the following user types: University employee, Instructor, Teaching Assistant, and Students. These users have different set of functions. The following presents the functional requirements that their roles will have in the course information and enrollment system.

4.1.1 University Employee

- Management will deal with the non-academic issues of university for example dormitory management.
- Academic Dept will determine the course requirements and grading for each program.

4.1.2 Instructor

- Instructors can log in with set username and password.
- Instructors will set grading scale for each course.
- Instructors teaches in different sections.
- Instructors grades tests.

4.1.3 Teaching Assistants

- TA's can log in with set username and password.
- TA's grade assignments which include labs and homeworks.
- TA's assist to different sections by giving recitation classes.

4.1.4 Students

- Students can log in with set username and password.
- Students obtain Tests
- Students can submit assignments.
- Students can apply for exchange programs
- Students are registered in sections after they enroll in a course
- Students can withdraw a course.
- Students can view their assignment and exam grades
- Students can view their attendance record.

4.2. Non-Functional Requirements

4.2.1 Performance

Since sections have limited quotas, response time when enrolling in a course should be fast as possible. Otherwise students may apply for a course that is already full.

4.2.2 Usability

Both instructors and teaching assistants will use the grading operation, for examinations and for assignments. The user-interface should be easy to use in order to avoid any confusion and prevent graders from making any mistake. Another important factor is to make the students understand how to apply for a course or change section.

4.2.3 Security

Security is a major concern when storing the grades, gpa and the transcript of a student. Besides grades, it is important to keep students safe from others who may try to withdraw them from a course or change their section. For a more secure registration, we must check and approve the complexity of a password.

4.2.4 Data Integrity

The database should be updated after the operations such as enrolling in a course and grading an assignment in order to maintain the organization and reliability of the system.

4.2.5 Maintainability

The system should be designed in a fashion that it is easy to handle repairs and maintain. We will consider the concepts of high coherence and low coupling while designing the system.

5. Limitations

- TAs can not grade exams.
- A course can be added by and after an instructor specifies it.
- A course can not be deleted after it starts.
- Grades depends on assignments; assignments depends on students.
- Students can not enroll courses more than a specific amount.
- Students can not access grades, they only can view them.

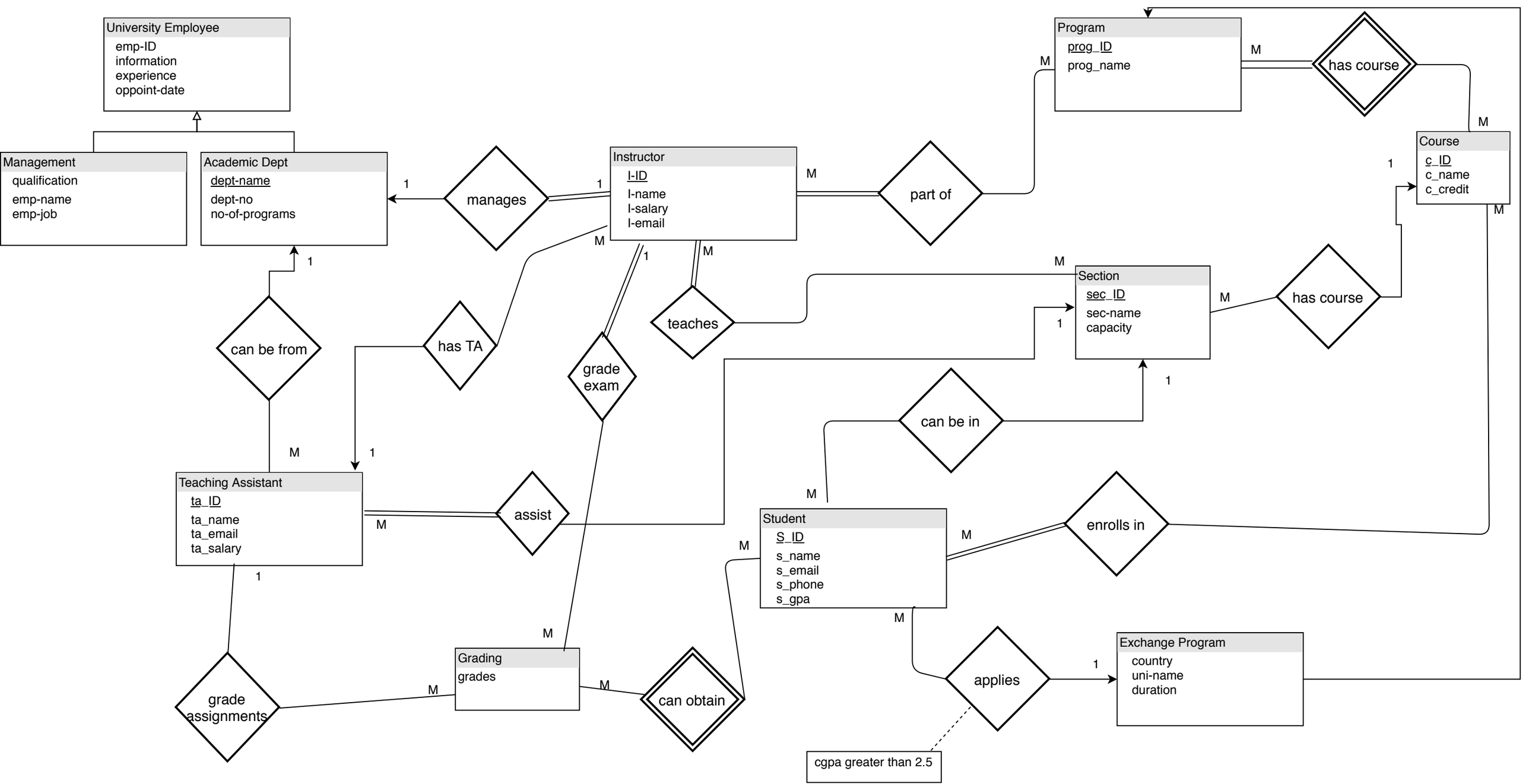
- TAs can not intervene in submissions, they only can view them.
- Students with less than 2.5 cgpa cannot apply for exchange programs.

6. Web Page

Our project website link:
https://github.com/Ramish7/CS-353-Project

7. E/R Diagram

See attached.


University Employee
emp-ID
information
experience
oppoint-date
Management
qualification
emp-name
emp-job
Academic Dept
dept-name
dept-no
no-of-programs
manages
Instructor
I-ID
I-name
I-salary
I-email
part of
Program
prog_ID
prog_name
has course
Course
c_ID
c_name
c_credit
Section
sec_ID
sec-name
capacity
has course
teaches
can be from
has TA
grade exam
can be in
Teaching Assistant
ta_ID
ta_name
ta_email
ta_salary
assist
Student
S_ID
s_name
s_email
s_phone
s_gpa
enrolls in
Grading
grades
grade assignments
can obtain
applies
Exchange Program
country
uni-name
duration
cgpa greater than 2.5
1
M