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# STUDENTS GRADING SYSTEM

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FACULTY OF ENGINEERING  
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CSE227: Database Systems (1)



## Students Grading System

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Submitted to:

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A REPORT FOR DATABASE SYSTEMS (1) COURSE CODDED CSE227 WITH THE REQUIREMENTS OF AIN  
SHAMS UNIVERSITY

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## 1.0 INTRODUCTION

### 1.1 Brief Description

Develop a system to include university departments, instructors, offered courses and students' information.

Each department offers many courses, and contains instructors, students and others, where each student of the department is identified by a unique id, first, middle and last name, and an email address.

Each department must be managed by only one instructor, where each instructor is identified by a unique id, first, middle and last name, and an email address.

The system should consider the courses taken by a student and their grades.

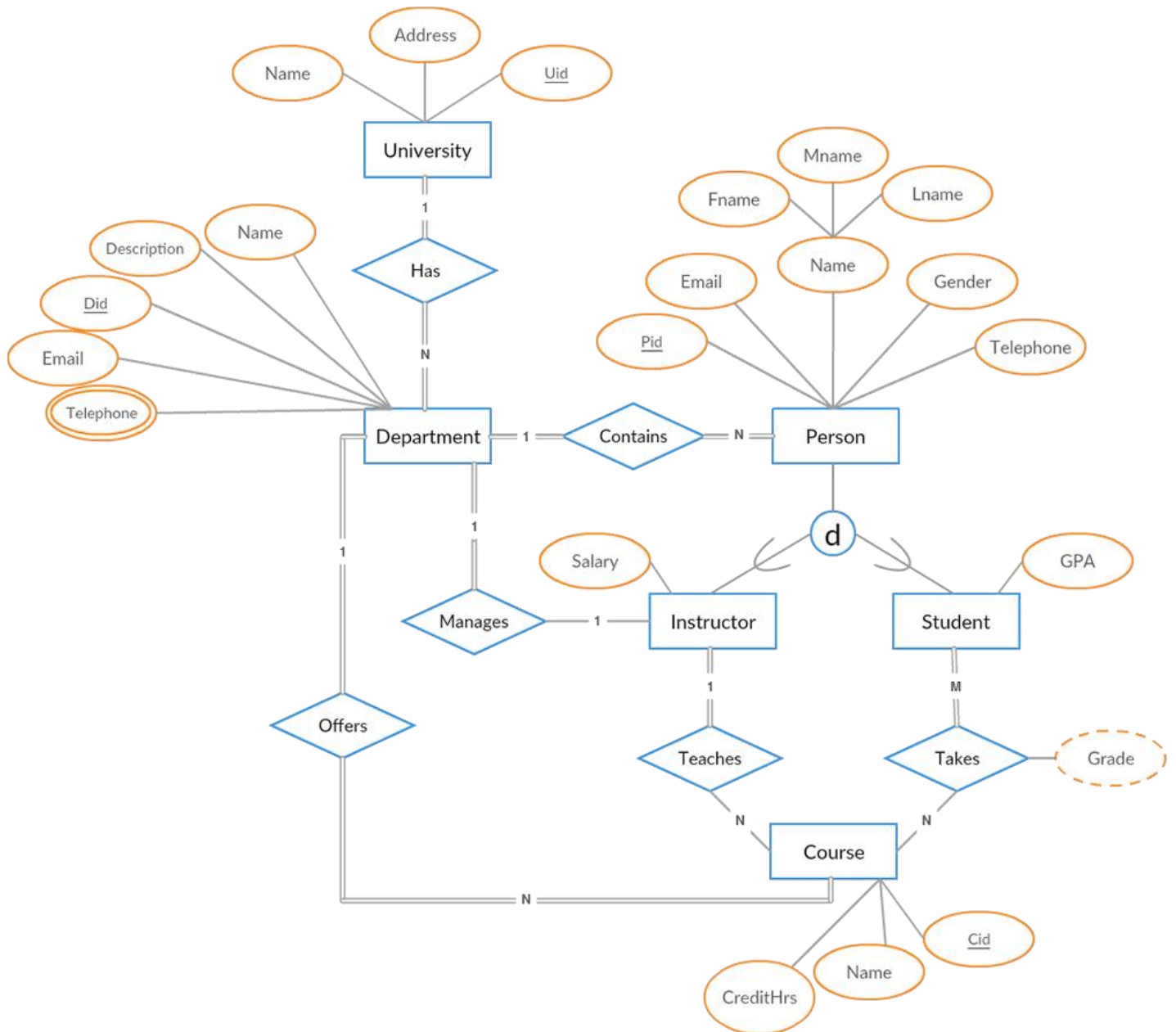
Each instructor teaches many courses and part of the courses is only taught by one instructor.

The system calculates the cumulative GPA for each student and can provide a transcript that contains all courses taken by the student.

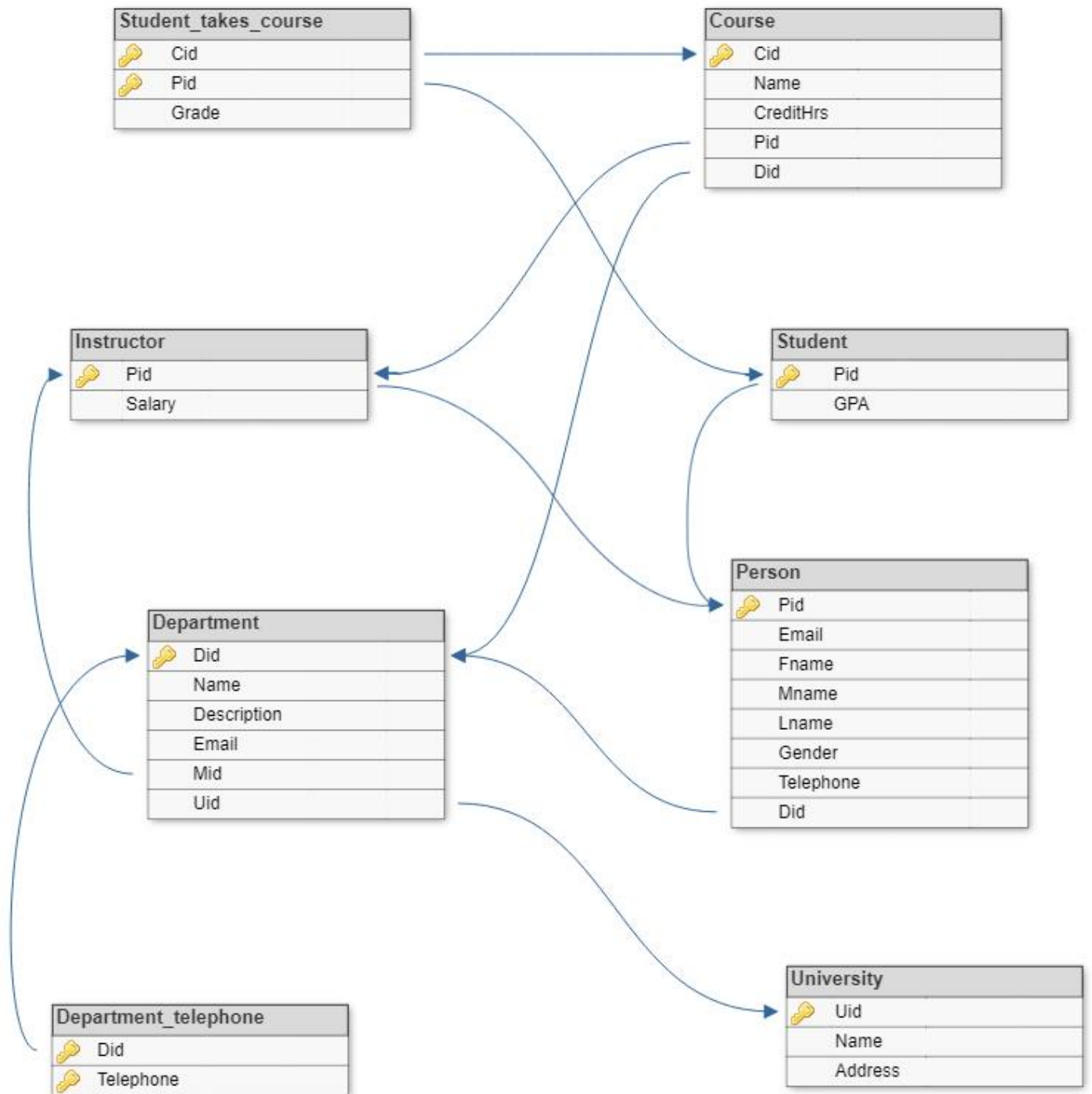
### 1.2 List of Assumptions

1. Each university has a unique id, name and address.
2. Each department has a unique id, name, description, email address, many telephone numbers, and it can only be in one university.
3. Both students and instructors have a specific telephone number and gender.
4. Each student has a derived cumulative GPA.
5. Each instructor has a salary and may only manage one department at a time.
6. Each course has a unique id, name, number of credit hours, and it must be offered by one and only one department.

## 2.0 EER DIAGRAM



### 3.0 RELATIONAL SCHEMA



## 4.0 SQL CODE

### 4.1 Tables Creation

```
CREATE TABLE University (  
    Uid INTEGER NOT NULL,  
    Name VARCHAR (30) NOT NULL,  
    Address TEXT NOT NULL,  
    PRIMARY KEY (Uid) );  
  
CREATE TABLE Department (  
    Did INTEGER NOT NULL,  
    Name TEXT NOT NULL,  
    Description MEDIUM TEXT NOT NULL,  
    Email TEXT NOT NULL,  
    Mid INTEGER NOT NULL,  
    Uid INTEGER NOT NULL,  
    PRIMARY KEY (Did),  
    FOREIGN KEY (Mid) REFERENCES Instructor (Pid)  
    ON DELETE SET NULL  
    ON UPDATE CASCADE,  
    FOREIGN KEY (Uid) REFERENCES University (Uid)  
    ON DELETE RESTRICT  
    ON UPDATE CASCADE );  
  
CREATE TABLE Instructor (  
    Pid INTEGER NOT NULL,  
    Salary INTEGER NOT NULL,  
    PRIMARY KEY (Pid),  
    FOREIGN KEY (Pid) REFERENCES Person (Pid)  
    ON DELETE CASCADE  
    ON UPDATE CASCADE );
```

```
CREATE TABLE Person (  
    Pid INTEGER NOT NULL,  
    Email TEXT NOT NULL,  
    Fname VARCHAR (15) NOT NULL,  
    Mname VARCHAR (15) NOT NULL,  
    Lname VARCHAR (15) NOT NULL,  
    Gender VARCHAR (6) NOT NULL,  
    Telephone VARCHAR (11) NOT NULL,  
    Did INTEGER NOT NULL,  
    PRIMARY KEY (Pid),  
    FOREIGN KEY (Did) REFERENCES Department (Did)  
    ON DELETE CASCADE  
    ON UPDATE CASCADE );
```

```
CREATE TABLE Department_telephone (  
    Did INTEGER NOT NULL,  
    Telephone VARCHAR (11) NOT NULL,  
    PRIMARY KEY (Did, Telephone),  
    FOREIGN KEY (Did) REFERENCES Department (Did)  
    ON DELETE CASCADE  
    ON UPDATE CASCADE );
```

```
CREATE TABLE Student (  
    Pid INTEGER NOT NULL,  
    GPA FLOAT NOT NULL,  
    PRIMARY KEY (Pid),  
    FOREIGN KEY (Pid) REFERENCES Person (Pid)  
    ON DELETE CASCADE  
    ON UPDATE CASCADE );
```



```
CREATE TABLE Course (  
    Cid INTEGER NOT NULL,  
    Name TEXT NOT NULL,  
    CreditHrs SMALLINT NOT NULL,  
    Pid INTEGER NOT NULL,  
    Did INTEGER NOT NULL,  
    PRIMARY KEY (Cid),  
    FOREIGN KEY (Pid) REFERENCES Instructor (Pid)  
    ON DELETE SET NULL  
    ON UPDATE CASCADE,  
    FOREIGN KEY (Did) REFERENCES Department (Did)  
    ON DELETE CASCADE  
    ON UPDATE CASCADE  
);
```

```
CREATE TABLE Student_takes_course (  
    Pid INTEGER NOT NULL,  
    Cid INTEGER NOT NULL,  
    Grade FLOAT NOT NULL,  
    PRIMARY KEY (Pid, Cid),  
    FOREIGN KEY (Pid) REFERENCES Student (Pid)  
    ON DELETE CASCADE  
    ON UPDATE CASCADE,  
    FOREIGN KEY (Cid) REFERENCES Course (Cid)  
    ON DELETE RESTRICT  
    ON UPDATE CASCADE );
```

## 4.2 Sample of Operations

```
SELECT * FROM Department
```

```
SELECT Person.Pid, Person.Fname, Person.Mname, Person.Lname, Person.Email,  
       Person.Gender, Person.Telephone, Person.Did, Student.GPA  
FROM Student, Person  
WHERE Person.Pid = Student.Pid
```

```
SELECT Person.Fname, Person.Mname, Person.Lname  
FROM Person, Student, Course, Student_takes_course  
WHERE Person.Pid = Student.Pid          AND  
       Student_takes_course.Cid = Course.Cid  AND  
       Student_takes_course.Pid = Student.Pid AND  
       Student_takes_course.Grade > 3.3
```

```
SELECT Course.Name, COUNT(*)  
FROM Department, Course  
WHERE Course.Did = Department.Did AND  
       Course.CreditHrs > 3  
GROUPBY Department.Did  
HAVING COUNT(*) > 3
```

```
INSERT INTO department (`Did`, `Name`, `Email`, `Mid`, `Description`, `Uid`)  
VALUES (`1`, `Computer Engineering`, `computer_program@eng.asu.edu.eg`, `2`,  
`Computer and Software Systems Engineers are concerned with software  
engineering with a strong emphasis on computer engineering.`, `1`)
```

```
DELETE FROM Person WHERE Person.Pid = 7
```

## 5.0 THE RUNNING OF THE APPLICATION

The screenshot shows the 'Grading System' application window. At the top, there are 'Options' for 'Departments' (selected) and 'Students', and an 'Add New Course' button. The main area is divided into three sections: 'Departments List' on the left, 'Department Information' in the center, and 'Available Courses List' on the right. The 'Departments List' contains a scrollable list with 'Communication Systems Engineering', 'Computer Engineering' (highlighted), 'Manufacturing Engineering', 'Building Engineering', and 'Materials Engineering'. The 'Department Information' section displays details for 'Computer Engineering': Name, Manager (Abdelrahman Ibrahim ELGhamry), Email (computer\_program@eng.asu.edu.eg), and a description. The 'Available Courses List' shows 'CSE227', 'CSE215', and 'CSE314'. At the bottom, there are 'Options' and three buttons: 'Add New Department', 'Remove Department', and 'Remove Course'.

Department Form is the first view of the system, the admin may add a department or remove a selected one, also may add a course to the department or remove a selected course from the specified department. Whenever the admin selects a department name, a brief description about the department appears in the “Department Information” space.

Add new department form appears once the admin clicks on “Add Department” button, the admin then in supposed to enter the department name and it’s description.

The 'Add New Department' dialog box contains fields for 'Name' (with placeholder 'Enter Name Here...'), 'Email' (with placeholder 'Enter Email Here...'), 'Manager' (a dropdown menu showing 'Mohamed Ibrahim ELGhamry'), and 'Description' (a text area with placeholder 'Enter Description Here...'). At the bottom are 'Ok' and 'Cancel' buttons.

Add new course form appears once the admin clicks on “Add New Course” button, the admin then in supposed to enter the course name.

The 'Add New Course' dialog box contains fields for 'Name' (with placeholder 'Enter Name Here...'), 'Credit Hours' (with placeholder 'Enter Credit Hours Here...'), and 'Instructor' (a dropdown menu showing 'Mahmoud Mohamed Khalil'). At the bottom are 'Ok' and 'Cancel' buttons.

Admin can switch from the department form to the student form where he can add a student to the system or remove a selected student, assign a graded course to a selected student, remove a selected graded course from the specified student courses, and also the admin can export student's transcript for a selected student. Whenever the admin selects any student the student's data appear in the "Student Information" space, also the student graded courses appears in the "Course List" space.

Add new student appears once the admin clicks on "Add New Student" button, the admin then in supposed to enter the student data and choose the student's department.

Assign new course appears once the admin clicks on "Assign New Course" button, the admin then in supposed to choose a course and enter it's GPA within range [0,4].

```
3-Abdelrahman Ibrahim ELGhamry - Notepad
File Edit Format View Help
Student's Information :
-----
ID: 3
Name: Abdelrahman Ibrahim ELGhamry
Email: ghamry98@hotmail.com
Gender: Male
Phone Number: 01060661580
Department: Computer Engineering
Accumulative GPA: 3.9
-----
Studied Courses :
-----
Grade      Course Name
-----
4.0        Programming (1)
3.7        Software (1)
4.0        Object Oriented Analysis and Design
-----
Windows (CRLF)  Ln 1, Col 1  100%
```

```
5-Abdelrahman Amr Issawi - Notepad
File Edit Format View Help
Student's Information :
-----
ID: 5
Name: Abdelrahman Amr Issawi
Email: hossampen97@gmail.com
Gender: Male
Phone Number: 01093511759
Department: Computer Engineering
Accumulative GPA: 4.0
-----
Studied Courses :
-----
Grade      Course Name
-----
4.0        Programming (1)
4.0        Object Oriented Analysis and Design
4.0        Software (2)
-----
Windows (CRLF)  Ln 1, Col 1  100%
```

Whenever Admin clicks on “Export Transcript” button after selecting a student, a transcript is saved to the disk contains the student information (i.e. Name, email, ...etc.), the student’s accumulative GPA calculated, the student studied courses and each course grade.