Youssef Abdelhady

Database management

Er Diagram Description

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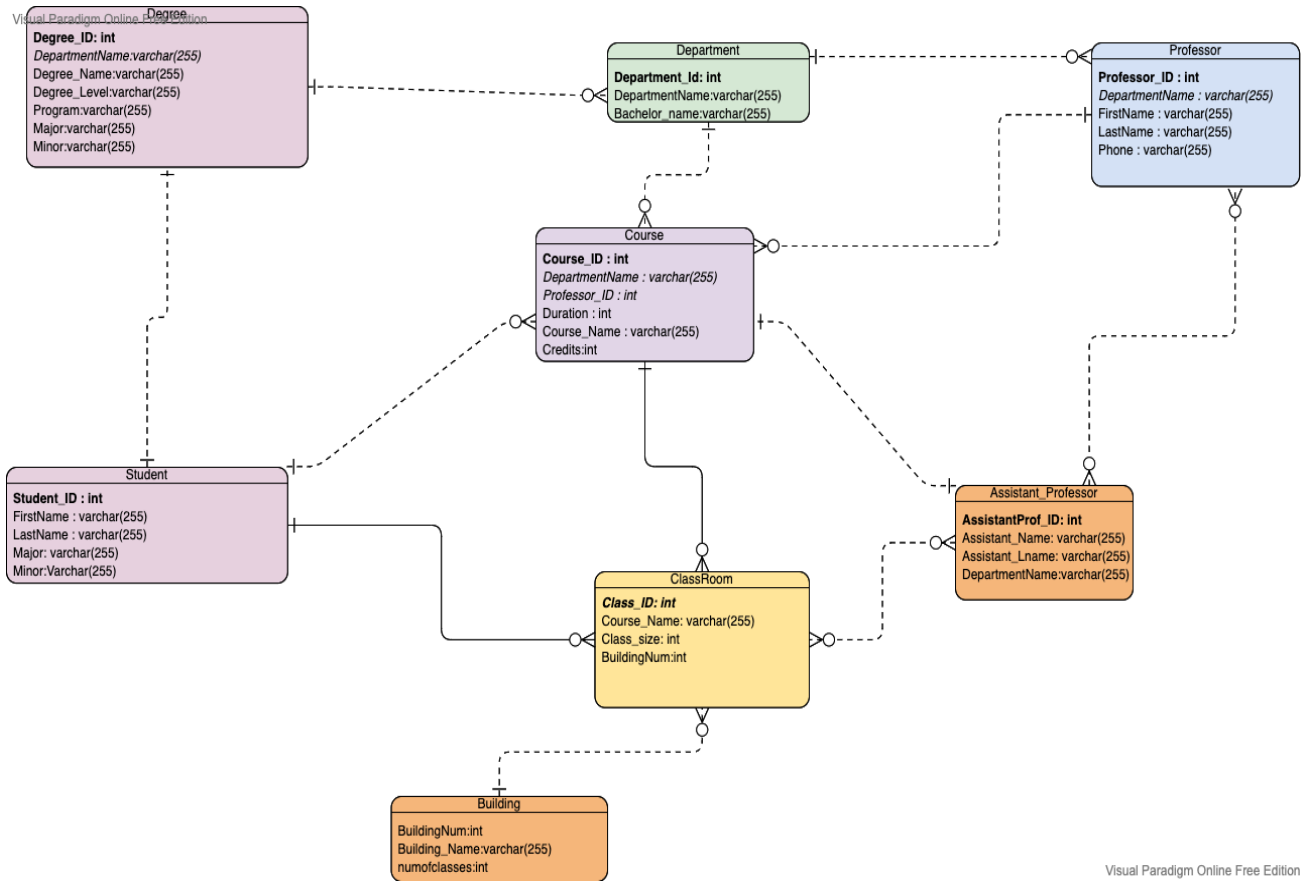
# Description



Er Diagram Description: The Er diagram below represents a college management system database. The ER diagram shows all of the tables and the relationships between them. The entities are student, degree, department, professor, course, classroom, building,  assistant professor, and advisor. We have the relations between them shown above as well. Each entity previously described has their own primary key and foreign key. In this case, the bold text is the primary key and the foreign key is italic. There is also one to one relationships, one to many, and many to many. Student's for this diagram only get one degree so the relationship is one to one. Student has one degree, and a degree can have many students. For a one-to-many relationship. One Professor can teach many courses. For many-to-many relationships. Many students have many professors.

## Data Dictionary

| TABLE NAME | ATTRIBUTE NAME | CONTENTS | TYPE | RANGE | REQUIRED | PK OR FK | FK REFERENCED TABLE |
|---|---|---|---|---|---|---|---|
| Student | Student_ID | Student ID | INT | 0-999 | Y | PK | |
| | FirstName | Student First name | varchar(255) | NA | Y | | |
| | LastName | Student Last name | varchar(255) | NA | Y | | |
| | Degree_ID | Students degree | INT | 0-999 | Y | FK | Degree |
| Degree | Degree_ID | Degree number | INT | 099 | Y | PK | |
| | DepartmentName | Degree Department | Varchar(255) | NA | Y | FK | Department |
| | Degree_name | Degree Name | Varchar(255) | NA | Y | | |
| | Degree_Level | Degree level B or A | varchar(255) | Na | Y | | |
| | Major | Major | varchar(255) | Na | y | | |
| | Minor | Minor | varchar(255) | NA | y | | |
| Department | Department_ID | Department Number | INT | 0-999 | Y | PK | |
| | Department Name | Department Name | Varchar(255) | NA | Y | FK | Department |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Course | Course_ID | Course's Id | INT | 0-999 | Y | PK | |
| | Department_Name | Department Name | VARCHAR(255) | NA | Y | FK | Department |
| | Professor_ID | Professor's ID | INT | 0-999 | Y | PK | Professor |
| | Duration | How long the class is | INT | 0-999 | Y | | |
| | Course_name | Course name | VARCHAR(255) | NA | Y | | |
| | Credits | How many Credits | INT | 0-999 | Y | | |
| Classroom | Class_ID | Class Number | INT | 0-999 | Y | PK | |
| | Course_Name | Course name | VARCHAR(255) | NA | Y | FK | Course |
| | Class_Size | Class size | INT | 0-999 | Y | | |
| | BuildingNum | Building Number | INT | 0-999 | Y | FK | Building |
| Building | BuildingNum | Building Number | INT | 0-999 | Y | PK | |
| | Building_Name | Building Name | VARCHAR(255) | NA | Y | | |
| | numofclasses | Number of classes in Building | INT | NA | Y | | |
| Professor | Professor_ID | Professor ID | INT | NA | Y | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Department_Name | Department Name | VARCHAR(255) | NA | Y | FK | Department |
| | First_Name | Professor First Name | VARCHAR(255) | NA | Y | | |
| | Last_Name | Professor Last name | VARCHAR(255) | NA | Y | | |
| | Phone_Num | Phone number | INT | NA | Y | | |
| | Years_Teaching | Years teaching | INT | NA | Y | | |
| Assistant Professor | AssistantProf_ID | Assistant Prof ID | INT | NA | Y | PK | |
| | Assistant_Name | Assistant name | VARCHAR(255) | NA | Y | | |
| | Department_Name | Department Name | VARCHAR(255) | NA | Y | FK | Department |
| | Assistant_Lname | Assistant Last Name | VARCHAR(255) | NA | Y | | |
| | Phone_Num | Phone number | INT | NA | Y | | |
| Advisor | Advisor_ID | Advisor’s Id | INT | NA | Y | | |
| | Advisor_Name | Advisor’s First Name | VARCHAR(255) | NA | Y | | |
| | Advisor_Lname | Advisor’s Last Name | VARCHAR(255) | NA | Y | | |
| | NumofStudents | Number of students | VARCHAR(255) | NA | Y | | |

## SQL queries to create your DB

/*Create a table for the entity Student*/

/*CREATE TABLE Student (
    Student_ID int primary key,
    Student Degree_ID,
    Student First_Name VARCHAR(255),
    Student Last_Name VARCHAR(255),
):

/*CREATE TABLE Degree (
    Degree_ID int primary key,
    Department_Name,
    Degree_Name VARCHAR(255),
    Degree_Level VARCHAR(255),
    Degree_Major VARCHAR(255),
    Degree_Minor VARCHAR(255),
):

/*CREATE TABLE Department (
    Department_ID INT,
    Department_Name VARCHAR(255),
);

/*CREATE TABLE Course (
    Course_ID int primary key,
    Department_Name VARCHAR(255),
    Professor_ID INT,
    Duration INT,
    Course_name VARCHAR(255),
    Credits VARCHAR(255),
):

/*CREATE TABLE Classroom (
    Class_ID, INT Primary key,

```
        Course_name VARCHAR(255),
        Class_size INT,
        BuildingNum VARCHAR (255), PK

);

/*CREATE TABLE Building (
        BuildingNum VARCHAR (255), PK
        BuildingName VARCHAR(255),
        NumofClasses VARCHAR(255),
);

/*CREATE TABLE Professor (
        Professor_ID INT Primary Key,
        Department_Name,VARCHAR(255),
        Professor First_Name VARCHAR(255),
        Professor Last_Name VARCHAR(255),
        Professor Phone_Num INT,
        Years_Teaching INT,
);

/*CREATE TABLE Assistant_Professor (
        AssistantProf_ID INT Primary Key,
        Assistant_Name VARCHAR(255),
        Assistant_Lname VARCHAR(255),
        Assistant Phone_Num, VARCHAR(255)
);

/*CREATE TABLE Advisor (
        Advisor_ID INT Primary Key,
        Advisor_Name VARCHAR(255),
        Advisor_LName VARCHAR(255),
        NumOfStudents INT,
);
```

ALTER TABLE Degree
ADD foreign key, (Department_name) references Department (Department_name),
ALTER TABLE Course
ADD foreign key, (Department_name) references Department (Department_name),
ALTER TABLE Professor
ADD foreign key, (Department_name) references Department (Department_name),
ALTER TABLE Student
ADD foreign key, (Degree_ID) references Degree (Degree_ID),

Select * from student;
Insert into student values (‘1’, ‘3’, ‘Thomas’, ‘Jefferson’,);
Insert into student values (‘3’, ‘4’, ‘Tamer’, ‘Nasser’,);
Insert into student values (‘1’, ‘2’, ‘Youssef’, ‘Hudson’,);

Select * from Degree;
Insert into Degree values(‘2’, ‘Department of Math’, Bachelors’, ‘Mathematics’, ‘Cybersecurity’);
Insert into Degree values(‘1’, ‘Department of English’, Bachelors’, ‘English’, ‘History’);
Insert into Degree values(‘3’, ‘Department of Philosophy’, Bachelors’, ‘Gender Studies’, ‘NA’);

Select * from Department;
Insert into Department values(‘2’, ‘Department of Math’);
Insert into Department values(‘3’, ‘Department of Philosophy’);
Insert into Department values(‘1’, ‘Department of English’);

Select *from Course;
Insert into Course values(‘2.3’, ‘Department of Math’, ‘10’, ‘50’, ‘Calculus 2’, ‘4’);
Insert into Course values(‘3.2’, ‘Department of Philosophy’, ‘15’, ‘50’, ‘Phil 101’, ‘4’);
Insert into Course values(‘1.5’, ‘Department of English’, ‘5’, ‘50’, ‘eng 101’, ‘3’);

Select * from Classroom;
Insert into Classroom values(‘10’, ‘eng 101’, ‘15’, ‘LT9’);
Insert into Classroom values(‘32’, ‘Gender Studies Intro’, ‘30’, ‘LT3’);

Insert into Classroom values(‘24’, ‘Math 101’, ‘20’, ‘CT9’);
Select * from Building;
Insert into Building values(‘CT9’, ‘Cathy Tuner’, ‘23’);
Insert into Building values(‘LT3’, ‘Lowel Thomas’, ‘50’);
Insert into Building values(‘LT9’, ‘Lance Turner’, ‘12’);

Insert into Professor values(‘100’, ‘Department of English’, ‘Jess’, ‘Caruso’, ‘845-223-1123’, ‘2’);
Insert into Professor values(‘200’, ‘Department of Math’, ‘Tamer’, ‘Nassar’, ‘914-482-1523’, ‘8’);
Insert into Professor values(‘300’, ‘Department of Philosophy’, ‘Gunther’, ‘Hady’, ‘845-337-5479’, ‘1’);

Insert into Assistant_Professor values(‘100.6’, ‘Griffin’, ‘Smith’, ‘Department of English’, ‘914-556,4536’);
Insert into Assistant_Professor values(‘200.5’, ‘Jesse’, ‘Beckham’, ‘Department of Math’, ‘845-264-0824’);
Insert into Assistant_Professor values(‘300.7’, ‘Aly’, ‘Bennett’, ‘Department of Science’, ‘914-551,5596’);

Insert into Advisors values (‘20122323’,’Andrew’, ‘Tokash’, ‘160’);
Insert into Advisors values (‘21162323’,’Riley’, ‘Smith’, ‘156’);
Insert into Advisors values (‘27192123’,’Hailey’, ‘Gay’, ‘78’);