**TABLE OF CONTENTS**

**TOPICS. Page no.**

1. Introduction 3
2. Case Study 3
3. ER Diagram 4
4. Normalization 5
5. Finalization 16
6. Table Description & Data Insertion 18
7. Query 34
8. Conclusion 36

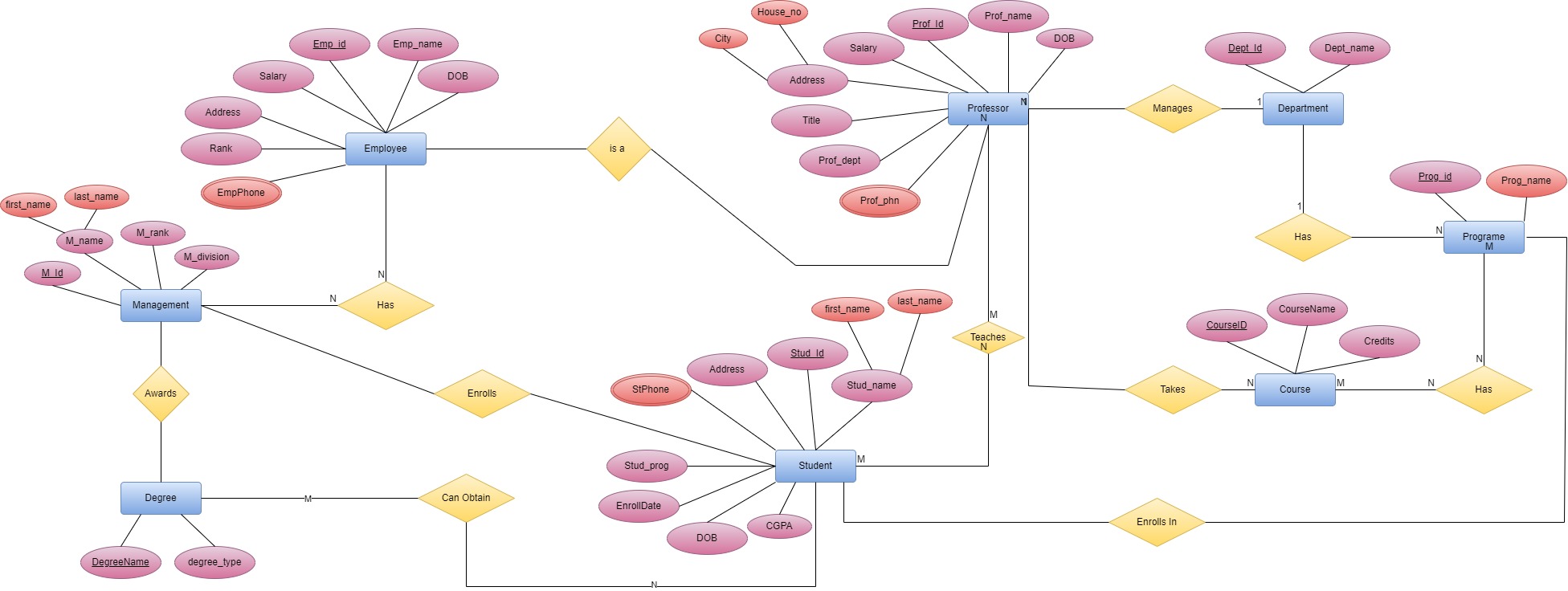
**Introduction:**

The purpose of this project is to design and implement a university database management system that can store and manage information about employee, student, professor and other relevant data. the system is designed to support a small-scale university with the potential for scalability in the future.

**Case study:**

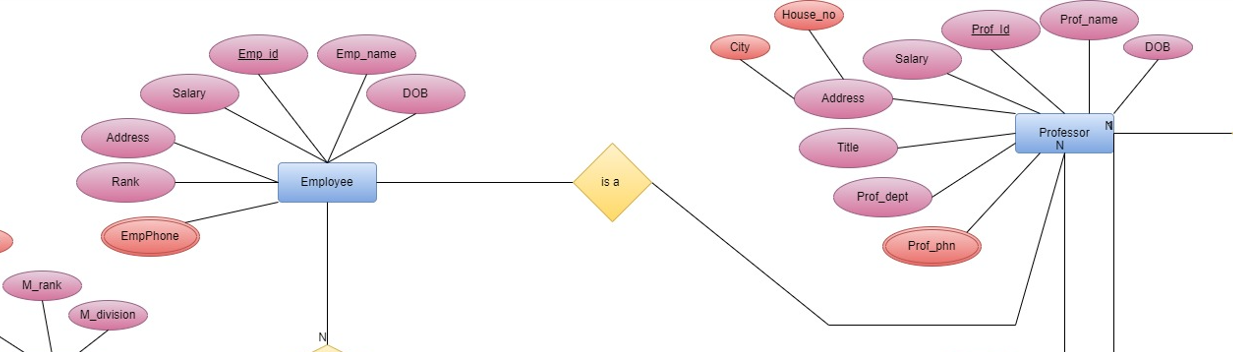
In a university management system, the management has many employees. Employees have a unique employee id. Employee name, DOB, salary, address, rank and phone number are also stored. Management is identified by ID, name, rank and division. Employee name is composed of first name and last name. Professor is an employee. A professor is identified by a professor id. Each professor also have their name, dob, salary, address, title, department and phone number stored. Address consists of city and house no. Many professors might manage one department. Each department has its name and a unique id stored. Under one department there might be many programs. Program id and name is stored. In a program there are many courses. Courses are identified by a course id. Also name and credits of each course are stored. One course may be included in many programs. Many professors may take many courses. Management enrolls many students. A student is identified by an id number. Also, student name, address, phone number, program, enroll date, DOB and CGPA are stored in database. Student names are composed of first name and last name. A student is taught by many professors. A professor may teach many students. A student can enroll in only one program. A program may have many students. A student can obtain a degree which is awarded by the management. Degree has a unique name. degree type is also stored in the database.

**ER Diagram:**

****

**NORMALIZATION**

1. **Relation: One to one**



**UNF:** Emp\_ID, Emp\_Name, Emp\_DOB, Salary, Address, Rank, Emp, Phone, prof\_phone, prof\_dept, prof\_title, prof \_address, prof\_salary, prof \_ID, Prof\_Name, prof\_DOB, city, house\_no

**1NF:**

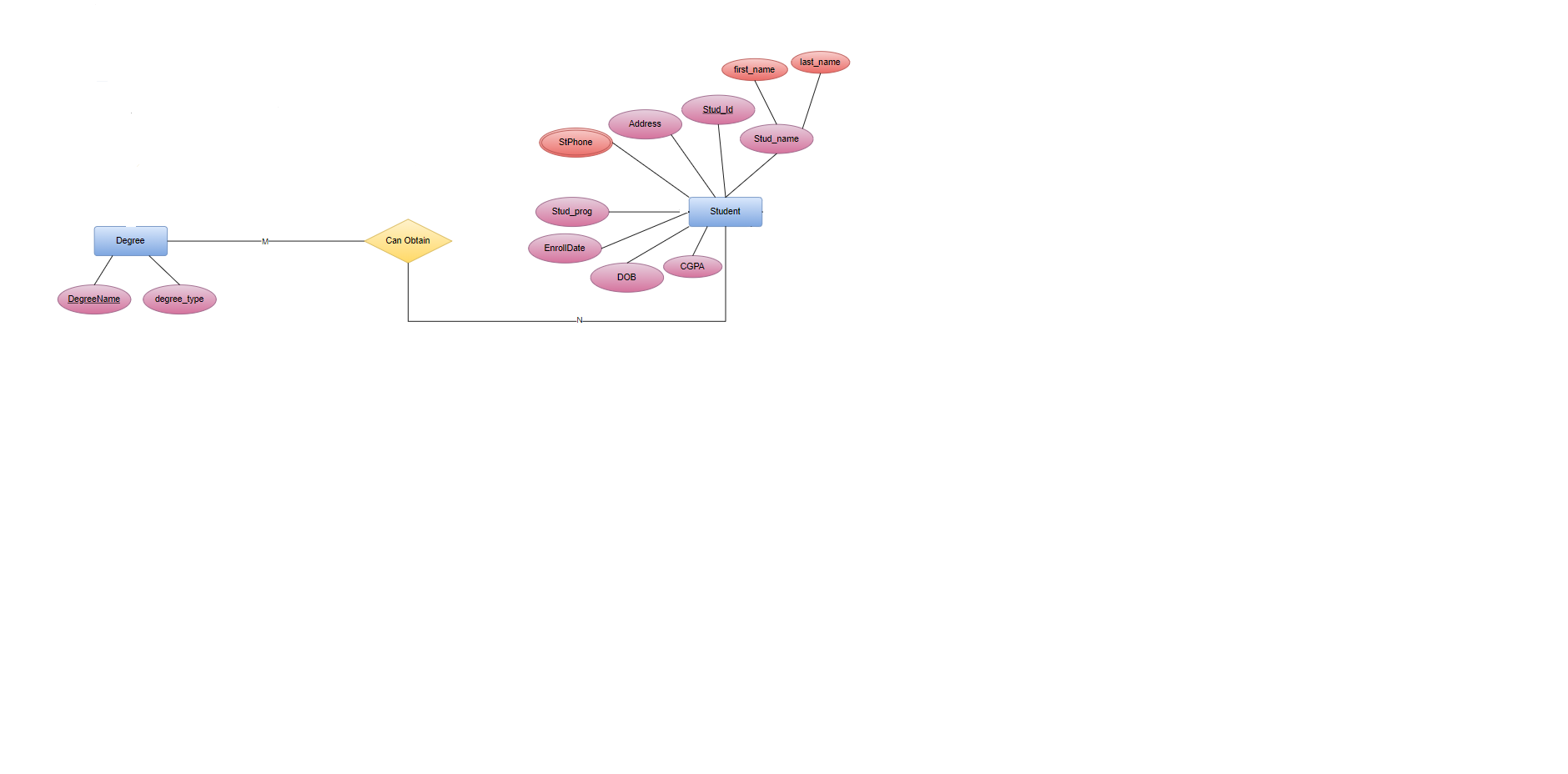
Multivalued Attribute: Emp\_Phone, Prof\_Phone

**2NF:**

1. Emp\_ID, Emp\_Name, Emp\_DOB, EMP\_Salary, Rank, Emp\_Dept
2. Emp\_Phone, Emp\_ID
3. Prof\_Phone, Prof \_ID
4. Prof \_ID, city, house\_no
5. Prof \_dept, Prof\_title, prof\_address, pf\_salary, prof \_ID, Prof\_Name, prof\_DOB

**3NF:**

1. Emp\_Phone, Emp\_ID
2. Prof\_Phone, Prof \_ID.
3. Prof\_ID, city, house\_no
4. Emp\_ID, Emp\_Name, Emp\_DOB, EMP\_Address, Emp\_Dept.
5. Emp\_ID, Emp\_salary, Rank.
6. prof \_ID, prof\_dept, Prof\_Name, DOB.
7. Prof\_ID, Prof\_salary, prof\_title.

**2)Relation: One to one**

**UNF:** type, DegreeName, CGPA, stud\_prog, EnrollDate, DOB, StPhone, Address, Stud\_id, first\_name, last\_name

**1NF:**

Multivalued Attribute: St\_phone

**2NF:**

1. Stud\_id, first\_name, last\_name, DOB, CGPA, Enrolldate, Stud\_prog, Address

2. StuPhone, Stud\_id

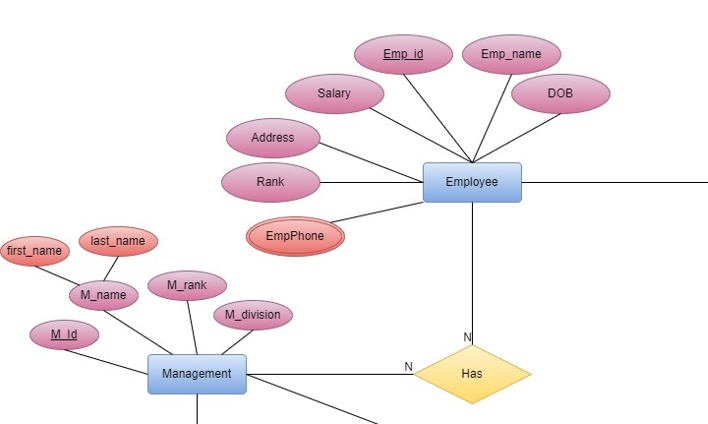
3. Degree\_type, DegreeName

4. Stud\_id, DegreeName

**3NF:**

No transitive dependency is available in these tables.

**3)Relation: Many to Many**





**UNF:** Emp\_id, emp\_name, DOB, Salary, Address, Rank, Department, EmpPhone, M\_id, first\_name, last\_name, M\_rank, M\_division.

**1NF:**

Multivalued Attribute: EmpPhone

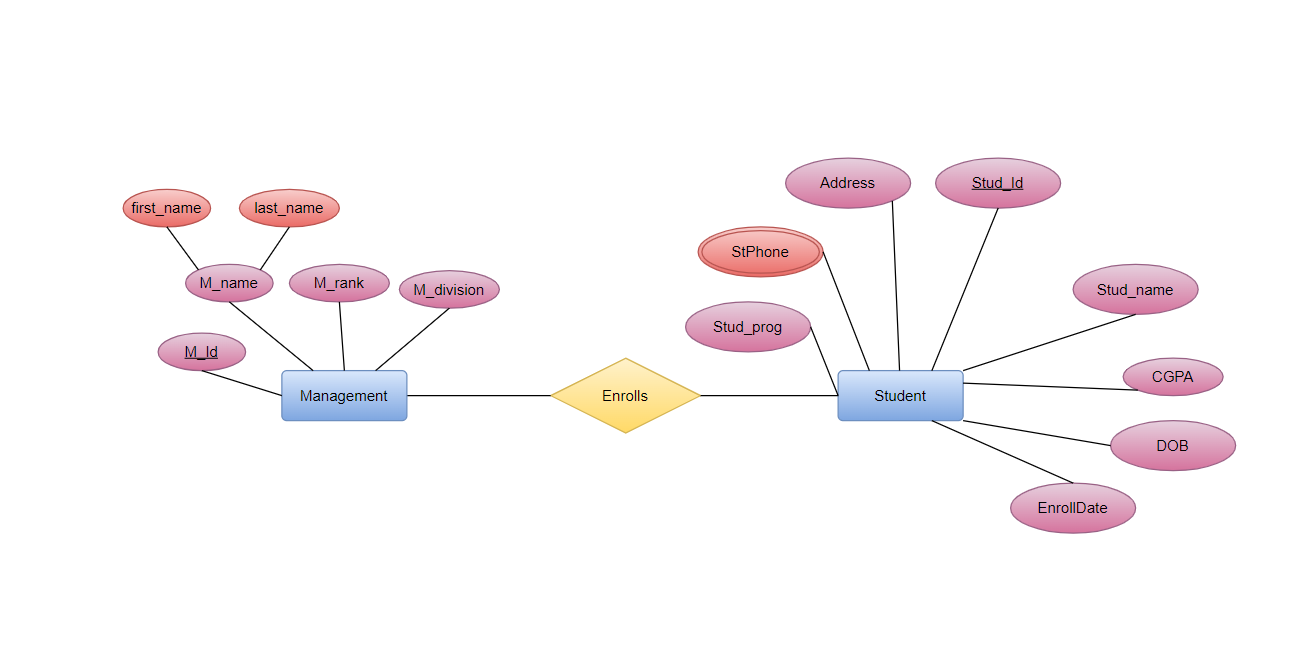
**2NF:**

1. EmpPhone, Emp\_id
2. Emp\_id, emp\_name, DOB, Salary, Address, Rank, Department.
3. M\_id, first\_name, last\_name, M\_rank, M\_division.
4. M\_id, Emp\_id

**3NF:**

1. EmpPhone, Emp\_id
2. Emp\_id, emp\_name, DOB, Address, EmpPhone
3. Salary, Rank, Department, Emp\_id
4. M\_id, first\_name, last\_name, M\_rank, M\_division

**4)Relation: Many to Many**



**UNF:** M\_id, first\_name, last\_name,M\_rank, M\_division, CGPA, Stud\_prog, EnrollDate, DOB, StPhone, Address, Stud\_id, first\_name, last\_name.

**1NF:**

Multivalued Attribute: St\_phone

**2NF:**

1. Stud\_id, first\_name, last\_name, DOB, CGPA, Enrolldate, Address

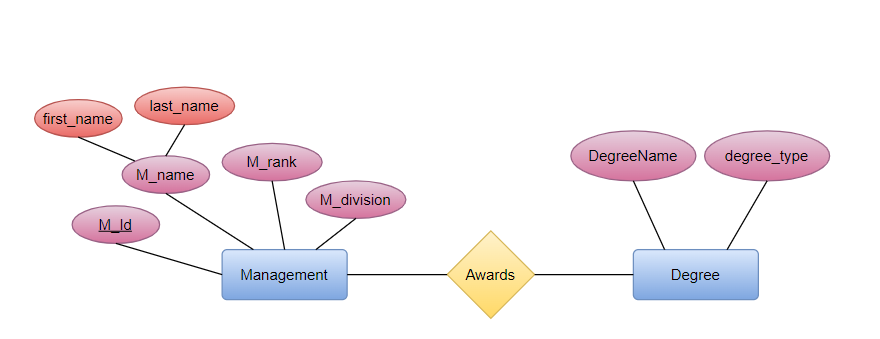
2. stPhone, Stud\_id

3. M\_id, first\_name, last\_name, M\_rank, M\_division.

4. M\_id, Stud\_id

**3NF:**

No transitive dependency is available in these tables.

**5)Relation: Many to Many**

**UNF:** first\_name, last\_name, M\_id, M\_rank, M\_division, DgreeName, degree\_type

**1NF:**

The tables are already in 1NF.

**2NF:**

1. M\_id, first\_name, last\_name, M\_rank, M\_division.

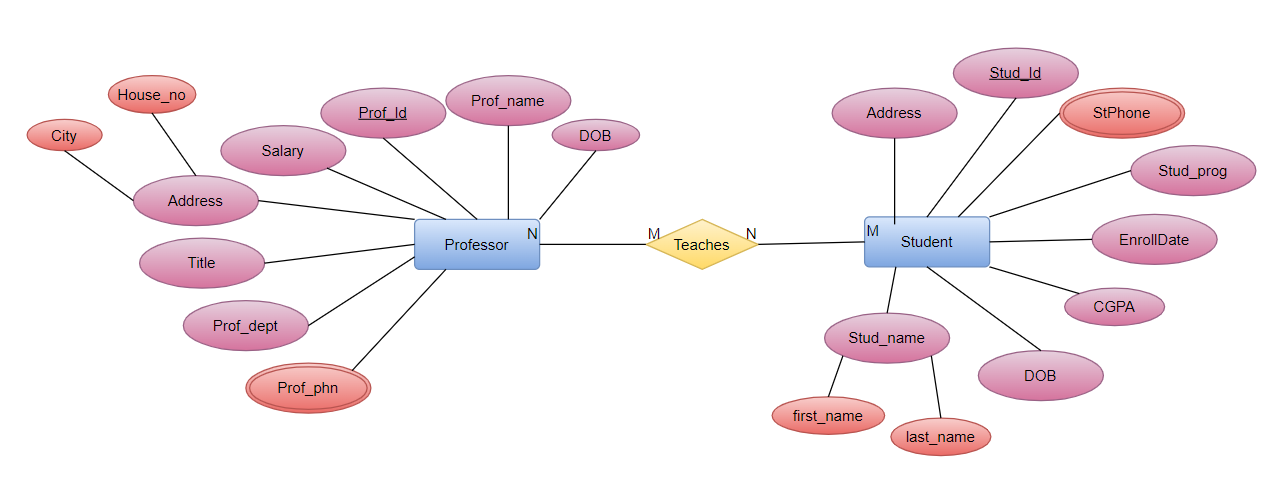
2. M\_id, DegreeName

3. DegreeName, degree\_type

**3NF:**

No transitive dependency is available in these tables.

**6)Relation: Many to Many**



**UNF:** CGPA, EnrollDate, DOB, StPhone, Address, Stud\_id, first\_name, last\_name, pf\_phone, prof\_dept, pf\_title, pf\_address, pf\_salary, prof\_id, Prof\_name, DOB, city,

House\_no

**1NF:**

Multivalued Attribute: St\_phone, prof\_phn

**2NF:**

1. Stud\_id, first\_name, last\_name, DOB, CGPA, Enrolldate, Stud\_prog

2. StPhone, Stud\_id

3. Pf\_Phone, prof\_id

4. prof\_dept, pf\_title, salary, prof\_id, Prof\_name, DOB

5. Stud\_id, prof\_id

6. prof\_id, city, house\_no

**3NF:**

1. Stud\_id, first\_name, last\_name, DOB, CGPA, Enrolldate, stud\_prog, Address

2. stPhone, Stud\_id

3. prof\_id, prof\_phn

4. prof\_id, ProfessorName, DOB, prof\_dept, address

5. prof\_id, pf\_title

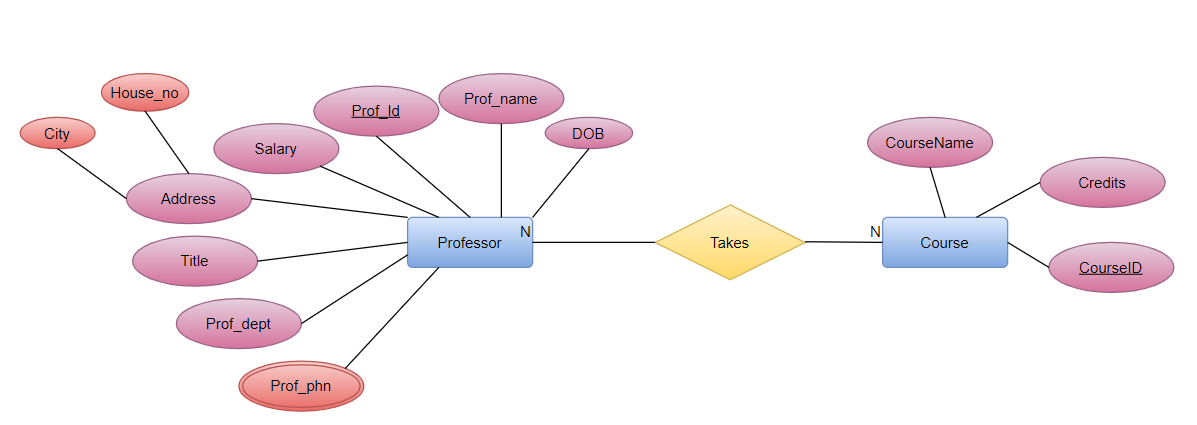
6. pf\_title, salary

7. Stud\_id, prof\_id

8. prof\_id, city, house\_no

**7)Relation: Many to many**



**UNF:** prof\_phn, prof\_dept, title, address, salary, prof\_id, Prof\_name, DOB, CourseID, CoursesName, Credits



**1NF:**

Multivalued Attribute: prof\_phn

**2NF:**

1. Pf\_Phone, professorID.

2. pf\_department, pf\_title,pf\_address,pf\_salary, professorID, ProfessorName, DOB

3. CourseID, CourseName, Credits

**3NF:**

1. Prof\_id, pf\_Phone

2. prof\_id, Prof\_name, DOB, pf\_dept, address

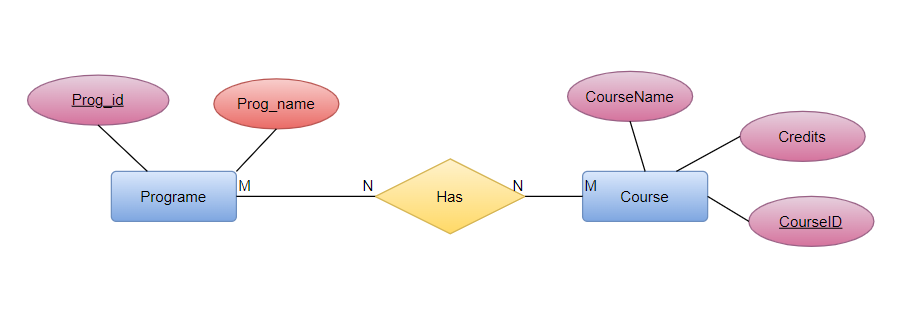
3. Prof\_id, title, salary

4. CourseID, CourseName

5. CourseName, Credits

**8)Relation: Many to Many**



****



**UNF:** CourseID, CourseName, Credits, Prog\_id, Prog\_name

**1NF:**

The tables are already in 1NF.

**2NF:**

1. CourseID, CourseName, Credits

2. Prog\_id, Prog\_name

3. CourseID, Prog\_id

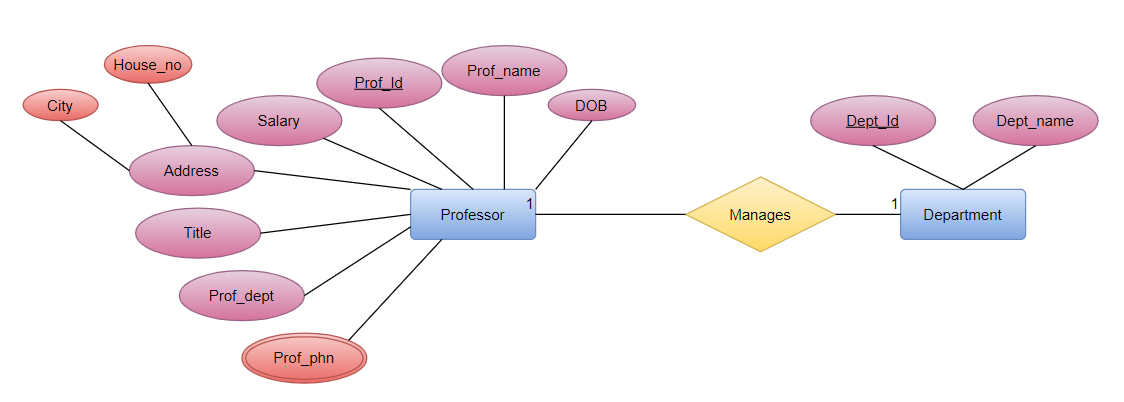
**3NF:**

1. CourseID, CourseName

2. CourseName, Credits

3. Prog\_id, Prog\_name

**9)Relation: One to one**



**UNF:** Prof\_id, Prof\_name, DOB, Salary, Address, Title, prof\_dept, prof\_phn,City, House\_no, Dept\_id, Dept\_name

**1NF:**

Multivalued attribute: PfPhone

**2NF:**

1. Prof\_id, Prof\_name, DOB, Salary, Title, prof\_dept

2. Prof\_id, prof\_phn

3. Dept\_id, Dept\_name

4. Prof\_id, Dept\_id

5.prof\_id, City, House\_no

**3NF:**

1. Prof\_id, Prof\_name, DOB, prof\_dept

2. Prof\_id, prof\_phn

3. Dept\_id, Dept\_name

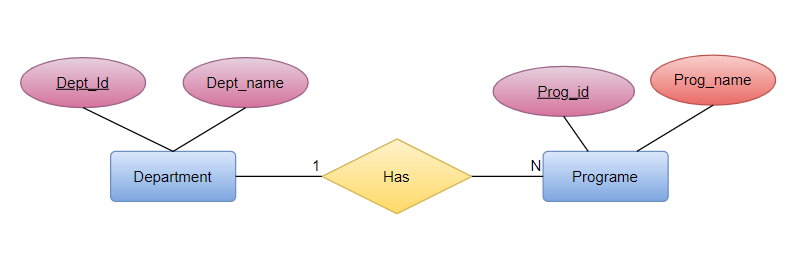
4. Prof\_id, Dept\_id

5. Prof\_id, City, House\_no

6. Prof\_id, Title, Salary



**10)Relation: One to many**



**UNF:** Dept\_id, Dept\_name, Prog\_id, Prog\_name

**1NF:**

The tables are already in 1NF.

**2NF:**

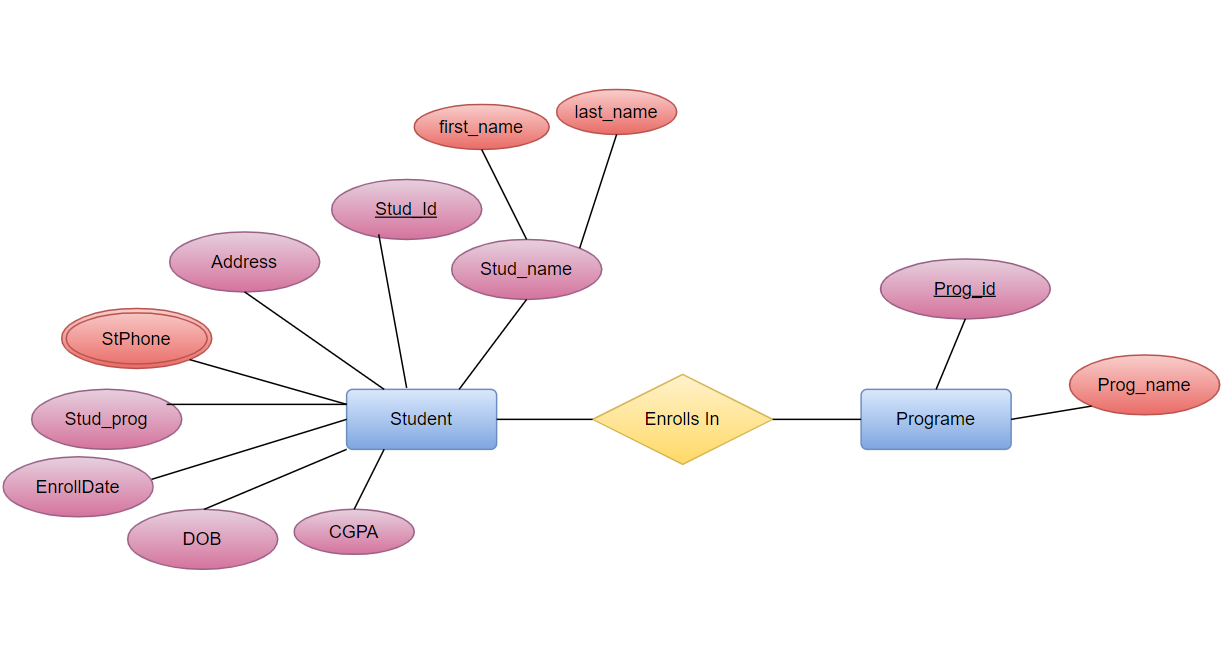
1. Dept\_id, Dept\_name

2. Prog\_id, Prog\_name, Dept\_id.­

**3NF:**

No transitive dependency is available in these tables.

**11)Relation: Many to one**

****

UNF: Stud\_id, first\_name, last\_name, address, cgpa, dob, stud\_prog, enrolldate, stPhone

Prog\_id, prog\_name

**1NF:**

Multivalued attribute: stPhone

**2NF:**

1.stud\_id, first\_name, last\_name, address, cgpa, dob, stud\_prog, enrolldate

2.stud\_id, stPhone

3.stud\_id, prog\_id, prog\_name

**3NF:**

There is no transitive dependency.

**FINALIZATION:**

1. Emp\_Phone, Emp\_ID
2. Prof\_Phone, Prof \_ID.
3. Prof\_ID , city , house\_no
4. Emp\_ID, Emp\_Name, Emp\_DOB, EMP\_Address, Emp\_Dept
5. ~~Emp\_ID,Emp\_salary, Rank.~~
6. prof \_ID, prof\_dept, Prof\_Name, DOB.
7. ~~Prof\_ID,Prof\_salary, prof\_title.~~
8. ~~Prof\_ID,Prof\_salary, prof\_title.~~
9. Stud\_id, first\_name, last\_name , DOB, CGPA, Enrolldate, Stud\_prog, Address
10. Stu\_Phone, Stud\_id
11. Degree\_type, DegreeName
12. Stud\_id, DegreeName
13. ~~EmpPhone, Emp\_id~~
14. Emp\_id, emp\_name, DOB, Address, EmpPhone
15. Salary, Rank, Department, Emp\_id
16. M\_id, first\_name, last\_name, M\_rank, M\_division
17. ~~Stud\_id, first\_name, last\_name, DOB, CGPA, Enrolldate, Programe, Address~~
18. St\_Phone, Stud\_id
19. ~~M\_id, first\_name, last\_name , M\_rank, M\_division.~~
20. M\_id, Stud\_id
21. ~~M\_id, first\_name, last\_name, M\_rank,M\_division.~~
22. M\_id, DegreeName
23. ~~DegreeName, degree\_type~~
24. ~~Stud\_id, first\_name, last\_name, DOB, CGPA, Enrolldate, stud\_prog, Address~~
25. ~~St\_Phone, Stud\_id~~
26. ~~prof\_id, prof\_phn~~
27. ~~prof\_id, Prof\_Name, DOB, prof\_dept~~
28. ~~prof\_id, pf\_title~~
29. ~~pf\_title, salary~~
30. Stud\_id, prof\_id
31. prof\_id, city, house\_no
32. ~~Prof\_ID, pf\_Phone~~
33. ~~prof\_id, Prof\_name, DOB, prof\_dept, address~~
34. prof\_id, title, salary
35. CourseID, CourseName
36. CourseName, Credits
37. ~~CourseID, CourseName~~
38. ~~CourseName, Credits~~
39. ~~Prog\_id, Prog\_name~~
40. ~~Prof\_id, Prof\_name, DOB, Salary, Prof\_Title, prof\_dept~~
41. ~~Prof\_id, prof\_phn~~
42. Dept\_id, Dept\_name
43. Prof\_id, Dept\_id
44. ~~Prof\_id, City, House\_no~~
45. ~~Prof\_id, Prof\_name, DOB, prof\_dept~~
46. ~~Prof\_id, Title, Salary~~
47. ~~Dept\_id, Dept\_name~~
48. Prog\_id, Prog\_name, Dept\_id
49. ~~stud\_id, first\_name, last\_name, address, cgpa, dob, stud\_prog, enrolldate~~
50. ~~stud\_id, stPhone~~
51. stud\_id, prog\_id, prog\_name

**TABLE CREATION AND DATA INSERTION:**

**EMP Contact info Table:**

|  |  |  |
| --- | --- | --- |
| EDIT | EMP\_PHONE | EMP\_ID |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%64%41%41%45%41%41%41%41%47%41%41%41%41) | 1425060478 | 22-9999-3 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%64%41%41%45%41%41%41%41%47%41%41%41%42) | 1305060478 | 22-9888-3 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%64%41%41%45%41%41%41%41%47%41%41%41%43) | 1307862378 | 22-9896-3 |
|  |  |  |

CREATE TABLE Emp\_Contacts (Emp\_Phone number, Emp\_ID varchar(20));

INSERT INTO Emp\_Contacts VALUES (01425060478,'22-9999-3');

INSERT INTO Emp\_Contacts VALUES (01305060478,'22-9888-3');

INSERT INTO Emp\_Contacts VALUES (01307862378,'22-9896-3');

INSERT INTO Emp\_Contacts VALUES (016078621473,'22-9896-3');

**Professor Contact Table:**

|  |  |  |
| --- | --- | --- |
| EDIT | PROF\_PHONE | PROF\_ID |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%65%41%41%45%41%41%41%41%47%47%41%41%41) | 145665896 | 22-8599-3 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%65%41%41%45%41%41%41%41%47%47%41%41%42) | 152506458 | 22-9965-3 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%65%41%41%45%41%41%41%41%47%47%41%41%43) | 1325060478 | 22-9259-3 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%65%41%41%45%41%41%41%41%47%47%41%41%44) | 1925060236 | 22-9753-3 |

CREATE TABLE Prof\_Contacts (Prof\_Phone number, Prof\_ID varchar(20));

INSERT INTO Prof\_Contacts VALUES (0145665896,'22-8599-3');

INSERT INTO Prof\_Contacts VALUES (0152506458,'22-9965-3');

INSERT INTO Prof\_Contacts VALUES (01325060478,'22-9259-3');

INSERT INTO Prof\_Contacts VALUES (01925060236,'22-9753-3');

**Professor Address Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| EDIT | PROF\_ID | CITY | HOUSE\_NO |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%67%41%41%45%41%41%41%41%47%55%41%41%41) | 22-8599-3 | Dhaka | 39/H Kuril |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%67%41%41%45%41%41%41%41%47%55%41%41%42) | 22-9965-3 | Dhaka | 39/H Uttora |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%67%41%41%45%41%41%41%41%47%55%41%41%43) | 22-9259-3 | Dhaka | 39/H Banasree |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%67%41%41%45%41%41%41%41%47%55%41%41%44) | 22-9753-3 | Dhaka | 39/H Dhanmond |

CREATE TABLE Prof\_Address (Prof\_ID varchar(20), City varchar(20), house\_no varchar(20));

INSERT INTO Prof\_Address VALUES ('22-8599-3','Dhaka','39/H Kuril');

INSERT INTO Prof\_Address VALUES ('22-9965-3','Dhaka','39/H Uttora');

INSERT INTO Prof\_Address VALUES ('22-9259-3','Dhaka','39/H Banasree');

INSERT INTO Prof\_Address VALUES ('22-9753-3','Dhaka','39/H Dhanmondi');

**EMP information Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| EDIT | EMP\_ID | EMP\_NAME | EMP\_DOB | EMP\_ADDRESS | EMP\_DEPT |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%69%41%41%45%41%41%41%41%47%6B%41%41%41) | 22-9896-3 | Mehraj | 01-MAY-95 | 39/H Banasree | Registration |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%69%41%41%45%41%41%41%41%47%6C%41%41%41) | 22-9999-3 | Asif | 01-JAN-88 | 39/H Kuril | CSE |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%69%41%41%45%41%41%41%41%47%6F%41%41%41) | 22-9888-3 | Shams | 02-MAY-90 | 39/H Uttora | EEE |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2480312720610616:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%75%69%41%41%45%41%41%41%41%47%6F%41%41%42) | 22-9496-3 | Amina | 01-JAN-80 | 39/H Dhanmondi | Accounting |
|  |  |  |  |  |  |

CREATE TABLE EMP\_info( Emp\_ID varchar(20), Emp\_Name varchar(20), Emp\_DOB date, EMP\_Address varchar(20), Emp\_Dept varchar(20));

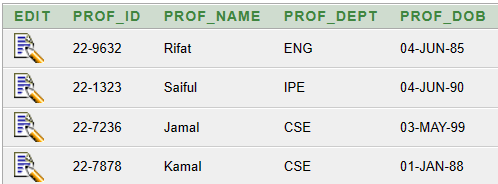
INSERT INTO EMP\_info VALUES ('22-9999-3','Asif',to\_date('01-01-1988','dd-mm-yyyy'),'39/H Kuril', 'CSE');

INSERT INTO EMP\_info VALUES ('22-9888-3','Shams',to\_date('02-05-1990','dd-mm-yyyy'),'39/H Uttora', 'EEE');

INSERT INTO EMP\_info VALUES ('22-9896-3','Mehraj',to\_date('01-05-1995','dd-mm-yyyy'),'39/H Banasree', 'Registration');

INSERT INTO EMP\_info VALUES ('22-9496-3','Amina',to\_date('01-01-1980','dd-mm-yyyy'),'39/H Dhanmondi', 'Accounting');

**Professor Information Table:**

****

CREATE TABLE PROF\_INFO(

PROF\_ID VARCHAR2(20),

PROF\_NAME VARCHAR2(20),

PROF\_DEPT VARCHAR2(20),

PROF\_DOB date

);

INSERT INTO PROF\_INFO VALUES ('22-7878','Kamal','CSE',to\_date('01-01-1988','dd-mm-yyyy'));

INSERT INTO PROF\_INFO VALUES ('22-4578','Jamal','EEE',to\_date('04-06-1987','dd-mm-yyyy'));

INSERT INTO PROF\_INFO VALUES ('22-1323','Saiful','IPE',to\_date('04-06-1990','dd-mm-yyyy'));

INSERT INTO PROF\_INFO VALUES ('22-9632','Rifat','ENG',to\_date('04-06-1985','dd-mm-yyyy'));

**STUD\_INFO**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **EDIT** | **STUD\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **DOB** | **CGPA** | **ENROLLDATE** | **PROGRAM** | **ADDRESS** |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:4397206271526209:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%57%76%41%41%45%41%41%41%41%46%74%41%41%41) | 20-37236-3 | Fardin | Rahman | 12-Sep | 3.8 | 02-Jan | CSE | DOHS |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:4397206271526209:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%57%76%41%41%45%41%41%41%41%46%75%41%41%41) | 22-48895-3 | Rubaiyat | Islam | 10-Aug | 4 | 12-Sep | CSE | Mirpur |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:4397206271526209:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%57%76%41%41%45%41%41%41%41%46%77%41%41%41) | 18-25271-3 | Tahmeed | Islam | 07-Jun | 3.9 | 05-Jun | EEE | Pallabi |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:4397206271526209:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%57%76%41%41%45%41%41%41%41%46%77%41%41%42) | 19-57421-1 | Nafi | Khan | 26-Aug | 2.3 | 3-Sep | BBA | Mirpur |

create table Stud\_info (Stud\_id varchar (10), first\_name varchar (10), last\_name varchar (10), dob varchar (10), cgpa float (5), enrolldate varchar (10), program varchar (10), address varchar (10));

insert into Stud\_info values ('22-48895-3', 'Rubaiyat', 'Islam', '10-Aug', 4.00, '12-Sep', 'CSE', 'Mirpur')

insert into Stud\_info values ('20-37236-3', 'Fardin', 'Rahman', '12-Sep', 3.80, '02-Jan', 'CSE', 'DOHS')

insert into Stud\_info values ('18-25271-3', 'Tahmeed', 'Islam', '07-Jun', 3.90, '05-Jun', 'EEE', 'Pallabi')

**Student – Phone Table:**

|  |  |  |
| --- | --- | --- |
| **EDIT** | **STUD\_ID** | **STUD\_PHONE** |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4A%41%41%45%41%41%41%41%46%4F%41%41%41) | 22-49302 | 01324314139 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4A%41%41%45%41%41%41%41%46%4F%41%41%42) | 22-49303 | 01324314140 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4A%41%41%45%41%41%41%41%46%4F%41%41%43) | 22-49304 | 01324314141 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4A%41%41%45%41%41%41%41%46%50%41%41%41) | 22-49301 | 01324314138 |

create table student\_phone (stud\_id varchar(25), stud\_phone varchar(11) );

insert into student\_phone values ('22-49301','01324314138');

insert into student\_phone values ('22-49302','01324314139');

insert into student\_phone values ('22-49303','01324314140');

insert into student\_phone values ('22-49304','01324314141');

**Degree Table:**

|  |  |  |
| --- | --- | --- |
| **EDIT** | **DEGREE\_TYPE** | **DEGREENAME** |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4B%41%41%45%41%41%41%41%46%55%41%41%41) | undergraduate | bsc |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4B%41%41%45%41%41%41%41%46%55%41%41%42) | undergraduate | bba |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4B%41%41%45%41%41%41%41%46%55%41%41%43) | postgraduate | msc |

create table degree (

degree\_type varchar(15),

degreename varchar(25)

);

insert into degree values ('undergraduate','bsc');

insert into degree values ('undergraduate','bba');

insert into degree values ('postgraduate','msc');

**Student - Degree Table:**

|  |  |  |
| --- | --- | --- |
| **EDIT** | **STUD\_ID** | **DEGREENAME** |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4C%41%41%45%41%41%41%41%46%64%41%41%41) | 22-49301 | bsc |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4C%41%41%45%41%41%41%41%46%64%41%41%42) | 22-49302 | msc |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4C%41%41%45%41%41%41%41%46%64%41%41%43) | 22-49303 | bba |

create table stu\_degree (

stud\_id varchar(25),

degreename varchar(25)

);

insert into stu\_degree values ('22-49301','bsc');

insert into stu\_degree values ('22-49302','msc');

insert into stu\_degree values ('22-49303','bba');

**Employee Table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EDIT** | **EMP\_ID** | **EMP\_NAME** | **DOB** | **ADDRESS** |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4D%41%41%45%41%41%41%41%46%6C%41%41%41) | 100-001 | yeren | 01-JAN-23 | dhaka |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4D%41%41%45%41%41%41%41%46%6C%41%41%42) | 100-002 | yeger | 02-JAN-23 | mymenshingh |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4D%41%41%45%41%41%41%41%46%6C%41%41%43) | 100-003 | ramiraze | 03-JAN-23 | rajshahi |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4D%41%41%45%41%41%41%41%46%6C%41%41%44) | 100-004 | midas | 04-JAN-23 | sylhet |

create table employee (emp\_id varchar(25), emp\_name varchar(25), dob date, address varchar(25));

insert into employee values ('100-001','yeren',to\_date('01-01-2023','dd-mm-yyyy'),'dhaka');

insert into employee values ('100-002','yeger',to\_date('02-01-2023','dd-mm-yyyy'),'mymenshingh');

insert into employee values ('100-003','ramiraze',to\_date('03-01-2023','dd-mm-yyyy'),'rajshahi');

insert into employee values ('100-004','midas',to\_date('04-01-2023','dd-mm-yyyy'),'sylhet');

**Employee Salary Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| **EDIT** | **EMP\_ID** | **RANK** | **SALARY** |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4E%41%41%45%41%41%41%41%46%73%41%41%41) | 100-001 | assistant professor | 450000 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4E%41%41%45%41%41%41%41%46%73%41%41%42) | 100-002 | professor | 650000 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4E%41%41%45%41%41%41%41%46%73%41%41%43) | 100-003 | lecturer | 400000 |
| [Edit](http://127.0.0.1:8080/apex/f?p=4500:47:2792363540991183:::47,SW_QBE_UPDATE:P47_RETURN_TO,F4500_P47_ID:2101,%41%41%41%44%68%4E%41%41%45%41%41%41%41%46%73%41%41%44) | 100-004 | senior professor | 750000 |
|  |  |  |  |

create table emp\_salary(emp\_id varchar(25), rank varchar(25), salary number);

insert into emp\_salary values ('100-001','assistant professor',450000);

insert into emp\_salary values ('100-002','professor',650000);

insert into emp\_salary values ('100-003','lecturer',400000);

insert into emp\_salary values ('100-004','senior professor',750000);

**STUDENTENROLL**

|  |  |  |
| --- | --- | --- |
| **EDIT** | **MANAGEMENT\_ID** | **STUD\_ID** |
|  | 28366-13 | 22-48276-1 |
|  | 28333-10 | 21-45611-2 |
|  | 27836-19 | 22-48899-3 |
|  | 26285-19 | 22-48888-3 |

create table StudentEnroll(management\_id varchar(10), stud\_id varchar(10));

insert into StudentEnroll values('27836-19', '22-48899-3')

insert into StudentEnroll values('26285-19', '22-48888-3')

insert into StudentEnroll values('28366-13', '22-48276-1')

insert into StudentEnroll values('28333-10', '21-45611-2')

**MANAGEMENT\_INFO**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EDIT** | **M\_ID** | **FIRST\_NAME** | **LAST\_NAME** | **M\_RANK** | **M\_DIVISION** |
|  | 26688-21 | Atik | Rahman | Supervisor | Registration |
|  | 22683-11 | Sifat | Ullah | Administrator | Accounting |
|  | 22962-14 | Rahmat | Jamal | Administrator | Operative |
|  | 20027-08 | Shoikot | Ismail | Manager | Operative |

create table management\_info(m\_id varchar(10), first\_name varchar(10), last\_name varchar(10), m\_rank varchar(20), m\_division varchar(20))

insert into management\_info values('26688-21', 'Atik', 'Rahman', 'Supervisor', 'Registration')

insert into management\_info values('22683-11', 'Sifat', 'Ullah', 'Administrator', 'Accounting')

insert into management\_info values('22962-14', 'Rahmat', 'Jamal', 'Administrator', 'Operative')

insert into management\_info values('20027-08', 'Shoikot', 'Ismail', 'Manager', 'Operative')

**DEGREES\_AWARDED**

|  |  |  |
| --- | --- | --- |
| **EDIT** | **M\_ID** | **DEGREE\_NAME** |
|  | 27448-11 | BSc |
|  | 27365-12 | MSc |
|  | 27344-12 | MSc |
|  | 23651-10 | BBA |

create table degrees\_awarded(m\_id varchar(10), degree\_name varchar(10));

insert into degrees\_awarded values('27448-11', 'BSc')

insert into degrees\_awarded values('27365-12', 'MSc')

insert into degrees\_awarded values('27344-12', 'MSc')

insert into degrees\_awarded values('23651-10', 'BBA')

**STUDENT\_CONTACT**

|  |  |  |
| --- | --- | --- |
| **EDIT** | **STUD\_ID** | **STUD\_PHN** |
|  | 19-27433-3 | 01944735398 |
|  | 22-44772-3 | 01583764553 |
|  | 22-44663-1 | 01744863972 |
|  | 22-36283-3 | 01672849566 |

create table student\_contact (stud\_id varchar (10), stud\_phn varchar(20));

insert into student\_contact values ('22-44663-1', '01744863972')

insert into student\_contact values ('22-36283-3', '01672849566')

insert into student\_contact values ('19-27433-3', '01944735398')

insert into student\_contact values ('22-44772-3', '01583764553')

**STUD\_PROF**

|  |  |  |
| --- | --- | --- |
| **EDIT** | **STUD\_ID** | **PROF\_ID** |
|  | 22-46672-1 | 22-4617 |
|  | 21-36619-1 | 19-7727 |
|  | 20-36619-3 | 17-2711 |
|  | 20-17669-3 | 22-1592 |

create table stud\_prof(stud\_id varchar(10), prof\_id varchar(10))

insert into stud\_prof values('22-46672-1', '22-4617')

insert into stud\_prof values('21-36619-1', '19-7727')

insert into stud\_prof values('20-36619-3', '17-2711')

insert into stud\_prof values('20-17669-3', '22-1592')

**PROF\_ADDRESS**

|  |  |  |  |
| --- | --- | --- | --- |
| **EDIT** | **PROF\_ID** | **CITY** | **HOUSENO** |
|  | 22-4628 | Mirpur | 54C |
|  | 22-2868 | ECB | 22A |
|  | 20-2665 | Shamoli | 34L |
|  | 22-3681 | Farmgate | 86A |

create table prof\_address (Prof\_id varchar (10), city varchar(10), houseno varchar(10));

insert into prof\_address values ('22-4628', 'Mirpur', '54C')

insert into prof\_address values ('22-2868', 'ECB', '22A')

insert into prof\_address values ('20-2665', 'Shamoli', '34L')

insert into prof\_address values ('22-3681', 'Farmgate', '86A')

**PROF\_SAL**

|  |  |  |  |
| --- | --- | --- | --- |
| **EDIT** | **PROF\_ID** | **TITLE** | **SALARY** |
|  | 22-1637 | Assistant | 20000 |
|  | 22-2715 | Assistant | 30000 |
|  | 22-2751 | Associate | 20000 |
|  | 22-2671 | Lecturer | 20000 |

create table prof\_sal(prof\_id varchar(10), title varchar(10), salary number (10));

insert into prof\_sal values ('22-1637', 'Assistant', '20000')

insert into prof\_sal values ('22-2715', 'Assistant', '30000')

insert into prof\_sal values ('22-2751', 'Associate', '20000')

insert into prof\_sal values ('22-2671', 'Lecturer', '20000')

**Table Name: Department**

|  |  |
| --- | --- |
| **COURSEID** | **COURSENAME** |
| 22-49363-3 | IDB |
| 22-42421-3 | ICS |
| 22-49221-3 | Algorithms |
| 22-49158-3 | Economics |

CREATE TABLE Course (CourseID varchar(10), CourseName varchar(80));

INSERT INTO Course (CourseID, CourseName) VALUES ('22-49363-3', 'IDB');

INSERT INTO Course (CourseID, CourseName) VALUES ('22-42421-3', 'ICS');

INSERT INTO Course (CourseID, CourseName) VALUES ('22-49221-3', 'Algorithms');

INSERT INTO Course (CourseID, CourseName) VALUES ('22-49158-3', 'Economics');

**Table Name: CourseCredits**

|  |  |
| --- | --- |
| **COURSENAME** | **CREDITS** |
| IDB | 3 |
| DS LAB | 1 |
| Algorithms | 3 |
| Economics | 3 |

CREATE TABLE CourseCredits (CourseName varchar(80), Credits number(1));

INSERT INTO CourseCredits (CourseName, Credits) VALUES ('IDB', 3);

INSERT INTO CourseCredits (CourseName, Credits) VALUES ('DS LAB', 1);

INSERT INTO CourseCredits (CourseName, Credits) VALUES ('Algorithms', 3);

INSERT INTO CourseCredits (CourseName, Credits) VALUES ('Economics', 3);

**Table Name: Department**

|  |  |
| --- | --- |
| **DEPT\_ID** | **DEPT\_NAME** |
| A1 | Department of CSE |
| A2 | Department of EEE |
| A3 | Department of IPE |
| A4 | Department of BBA |

CREATE TABLE Department (

Dept\_id varchar(10),

Dept\_name varchar(80));

INSERT INTO Department (Dept\_id, Dept\_name)

VALUES ('A1', 'Department of CSE');

INSERT INTO Department (Dept\_id, Dept\_name)

VALUES ('A2', 'Department of EEE');

INSERT INTO Department (Dept\_id, Dept\_name)

VALUES ('A3', 'Department of IPE');

INSERT INTO Department (Dept\_id, Dept\_name)

VALUES ('A4', 'Department of BBA');

**Table Name: ProfessorDepartment**

|  |  |
| --- | --- |
| **PROF\_ID** | **DEPT\_ID** |
| 11-2586 | A1 |
| 11-2554 | A2 |
| 11-2547 | A3 |
| 11-2569 | A4 |

CREATE TABLE ProfessorDepartment (

Prof\_id varchar(10),

Dept\_id varchar(10));

INSERT INTO ProfessorDepartment (Prof\_id, Dept\_id)

VALUES ('11-2586', 'A1');

INSERT INTO ProfessorDepartment (Prof\_id, Dept\_id)

VALUES ('11-2554', 'A2');

INSERT INTO ProfessorDepartment (Prof\_id, Dept\_id)

VALUES ('11-2547', 'A3');

INSERT INTO ProfessorDepartment (Prof\_id, Dept\_id)

VALUES ('11-2569', 'A4');

**Table Name: DepartmentProgram**

|  |  |  |
| --- | --- | --- |
| **PROG\_ID** | **PROG\_NAME** | **DEPT\_ID** |
| B1 | IDB | A1 |
| B2 | ICS Lab | A2 |
| B3 | Algorithms | A3 |
| B4 | DS | A4 |

CREATE TABLE DepartmentProgram (

Prog\_id varchar(10),

Prog\_name varchar(80),

Dept\_id varchar(10));

INSERT INTO DepartmentProgram (Prog\_id, Prog\_name, Dept\_id)

VALUES ('B1', 'IDB', 'A1');

INSERT INTO DepartmentProgram (Prog\_id, Prog\_name, Dept\_id)

VALUES ('B2', 'ICS Lab', 'A2');

INSERT INTO DepartmentProgram (Prog\_id, Prog\_name, Dept\_id)

VALUES ('B3', 'Algorithms', 'A3');

INSERT INTO DepartmentProgram (Prog\_id, Prog\_name, Dept\_id)

VALUES ('B4', 'DS', 'A4');

**Table Name: StudentProgram**

|  |  |  |
| --- | --- | --- |
| **STUD\_ID** | **PROG\_ID** | **PROG\_NAME** |
| 22-49363-3 | B1 | IDB |
| 22-49322-3 | B2 | ICS |
| 22-49348-3 | B3 | Algorithms |
| 22-49369-3 | B4 | TOC |

CREATE TABLE StudentProgram (

stud\_id varchar(10),

Prog\_id varchar(10),

Prog\_name varchar(80));

INSERT INTO StudentProgram (stud\_id, Prog\_id, Prog\_name)

VALUES ('22-49363-3', 'B1', 'IDB');

INSERT INTO StudentProgram (stud\_id, Prog\_id, Prog\_name)

VALUES ('22-49322-3', 'B2', 'ICS');

INSERT INTO StudentProgram (stud\_id, Prog\_id, Prog\_name)

VALUES ('22-49348-3', 'B3', 'Algorithms');

INSERT INTO StudentProgram (stud\_id, Prog\_id, Prog\_name)

VALUES ('22-49369-3', 'B4', 'TOC');

**Query Simple:**

**1.** Display all the records in the professor contact table:select \* from PROF\_CONTACTS;

A screenshot of a phone number

Description automatically generated

2. Display prof name from english department.

**select PROF\_NAME from PROF\_INFO where PROF\_DEPT = 'ENG';**

A close up of a text

Description automatically generated

**Query Complex:**

1. Display all records from employee information table where he first letter of EMP\_NAME is ‘M’

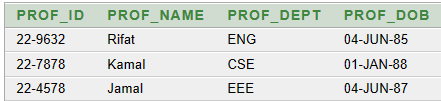
**select \* from EMP\_INFO where EMP\_NAME like 'M%';**

**A close-up of a number

Description automatically generated**

1. Display all PROF\_INFO details who born before 04-JUN-95?

**select \* from PROF\_INFO where PROF\_DOB <= to\_date('04-01-1990','dd-mm-yyyy');**

****

**Sub-Query:**

**1.Find all information from employee who has maximum salary.**

select \* from employee where emp\_id = (select emp\_id from emp\_salary where salary = (select max(salary) from emp\_salary));



**Function:**

**1.which is the maximum salary for an employee?**

select max(salary) from emp\_salary;



**2.which is the avarage salary for an employee?**

select avg(salary) from emp\_salary;

****

**3.which is the minimum salary for an employee?**

select min(salary) from emp\_salary;



**Group By:**

1. **What is the maximum salary of the employees' group by their deparment?**

SELECT MAX (Salary)

FROM Employee

GROUP BY Department;

1. **What is the average salary of professors group by the department?**

SELECT AVG(Salary)

FROM Professor

GROUP BY Department;

**Conclusion:**

In conclusion, the university management system will provide a centralized system for storing and managing information about students, managements, professors, departments, courses, programs, departments, employees and degrees. The system will allow users to generate reports, search and filter information, and create, update, delete records as necessary. All kinds of normalizations were done properly so no data will be lost while working with this management system. This project will be implemented using Oracle 10G.

In summary, by creating a unified repository for storing and managing a wealth of critical information, including details about students, faculty, departments, courses, programs, employees, and degrees, this system addresses the multifaceted needs of modern university management.