

**Domain Chosen:** Education

**Topic:** College Management System

### **DOMAIN DESCRIPTION**

The education industry is expanding rapidly and its many businesses are eager for new talent, including experienced professionals and enthusiastic individuals just entering the workforce. The education industry can be described as the collection of organizations and businesses that provide products and services aimed at enhancing the quality of education in society.

The education industry consists of schools, colleges, universities, and various private institutions. The education industry provides its students with the knowledge and skills to adapt to a continually changing working world. The industry consists of an expanding array of organizations that strive to provide lifelong learning to its customers. The education sector can be broadly classified as primary education, secondary education, higher education, and vocational education. As a whole, the industry is responsible for training individuals of all ages to learn new skills, obtain meaningful employment, and help accelerate the economic growth, by delivering education in traditional classroom settings or via online training over the Internet.

The two biggest economies India and China present huge opportunities for the Education Industry. For example: India alone the education market constitutes of people with a median age of 25 years, has a target base of over 550 million people below the age of 25 years. With the emergence of India as a knowledge-based economy, human capital has now become its major strength. This has put the spotlight on the severe inadequacies of India's infrastructure for the delivery of education, particularly higher and vocational education.

The education industry must adapt to the challenges of containing costs, differing views on standardized learning, competing for students, and adapting to changing economic needs. Industry players adopt unique strategies to overcome these challenges by forming education partnerships, adapting to new technologies, and developing customized and personalized learning programs. India has one of the largest networks of higher education institutions in the world. However, there is still a lot of potential for further development and improvement in the education system. With almost 27% of India's population, India's education sector provides numerous opportunities for growth.

## **PROBLEM STATEMENT**

In order to provide necessary information for various entities involved in a college management system, the proposed system handles various academic and non-academic activities involved in a college. Though the system allows access to everyone there is a significant security risk, to tackle this only the users related to that particular entity can access the information.

## **ADVANTAGES OF COLLEGE MANAGEMENT SYSTEM**

The college management system helps Educational Institutions especially colleges in various ways, such as storing data, maintain student profiles, analyzing administrative and academic data, improving communication, and engaging students.

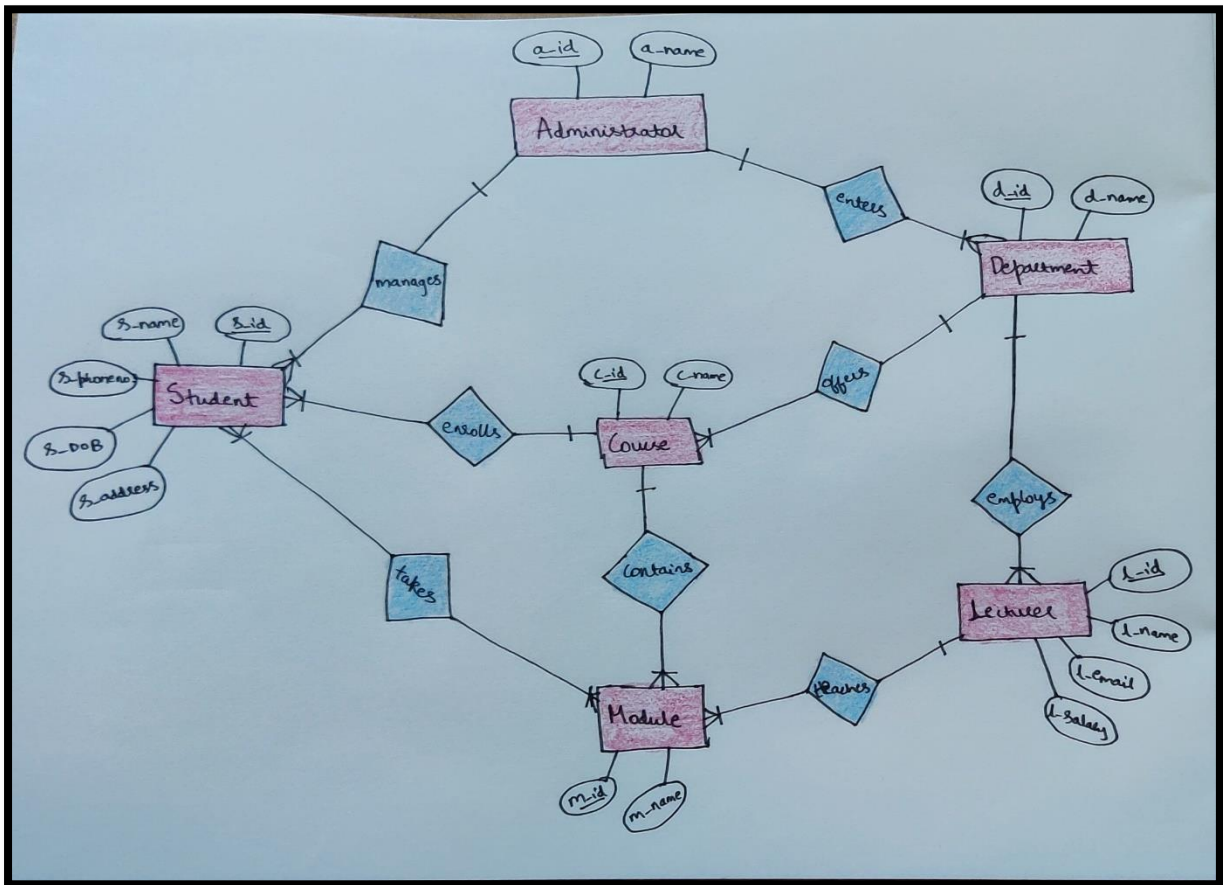
## **ENTITIES AND ATTRIBUTES INVOLVED**

| <b>Entities</b> | <b>Attributes</b>                       |
|-----------------|---|
| Administrator   | a_id , a_name                           |
| Department      | d_id, d_name                            |
| Lecturer        | l_id, l_name, l_email, l_salary         |
| Course          | c_id, c_name                            |
| Module          | m_id, m_name                            |
| Student         | S_id, s_name, s_DOB, s_phone, s_address |

## **ASSUMPTION OF CARDINALITIES**

- Administrator manages many students in the college but student is being managed by only a single administrator.
- Administrator enters many departments in the college but department is being entered by only a single administrator.
- Department offers many courses but a course belongs to a single department.
- Student enrolls a single course but courses are enrolled by many students.
- Student takes many modules and modules are taken up by many students.
- Department employs many lecturers but lecturer is employed in a single department.
- Lecturer teaches many modules but module is being taught by a single lecturer.
- A course contains many modules but a module belongs to a single course.

## ENTITY-RELATIONSHIP DIAGRAM



## RELATIONAL SCHEMA

Administrator – {a\_id, a\_name}

Department – {d\_id, d\_name, a\_id}

Lecturer – {l\_id, l\_name, l\_email, l\_salary, d\_id}

Course – {c\_id, c\_name, d\_id}

Module – {m\_id, m\_name, c\_id, l\_id}

Student – {s\_id, s\_name, s\_phoneno, s\_DOB, s\_address, a\_id, c\_id}

Module\_Student – {m\_id, s\_id} (both are primary keys as well as foreign keys)

**SQL QUERIES**

```

create schema `college` ;
create table admin(aid varchar(7) primary key not null, aname varchar(14));
create table dept(did varchar(7) primary key not null, dname varchar(40), aid varchar(7),
foreign key(aid) references admin(aid));
create table lect(lid varchar(7) primary key not null, lname varchar(15), lemail varchar(30),
lsalary numeric(10), did varchar(7), foreign key(did) references dept(did));
create table course(cid varchar(7) primary key not null, cname varchar(20), did varchar(7),
foreign key(did) references dept(did));
create table module(mid varchar(7) primary key not null, mname varchar(20), cid varchar(7),
lid varchar(7), foreign key(cid) references course(cid), foreign key(lid) references lect(lid));
create table student(sid varchar(10) primary key not null, sname varchar(20), sphone
numeric(10), sdob date not null, sadd varchar(20), aid varchar(7), cid varchar(7),foreign
key(aid) references admin(aid),foreign key(cid) references course(cid));
create table module_student(mid varchar(7),sid varchar(7), primary key(mid,sid),foreign
key(mid) references module(mid),foreign key(sid) references student(sid) );
alter table module
modify mname varchar(40);

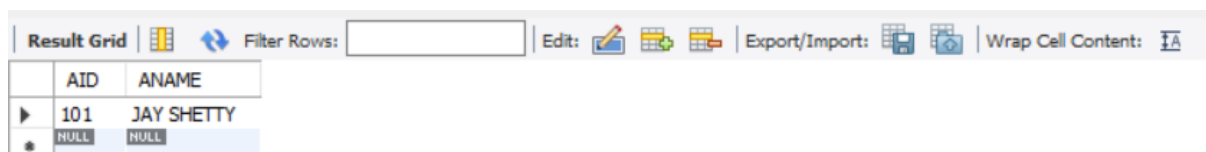
```

**VALUES INTO TABLES**

```

insert into `college`.`admin` (`aid`, `aname`) values ('101', 'jay shetty');

```



|   | AID  | ANAME      |
|---|------|------------|
| ▶ | 101  | JAY SHETTY |
| • | NULL | NULL       |

```

insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D001', 'Basic Science and
Humanities', '101');
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D002', 'Management Studies', '101');
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D003', 'Computer Science and
Engineering', '101');

```

```
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D004', 'Mechanical Engineering', '101');
```

```
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D005', 'Electronics and Communication', '101');
```

```
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D006', 'Information Technology', '101');
```

```
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D007', 'Arts', '101');
```

```
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D008', 'Chemistry', '101');
```

```
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D009', 'Physics', '101');
```

```
insert into `college`.`dept` (`did`, `dname`, `aid`) values ('D010', 'Psychology', '101');
```

| Result Grid                                   |      |                               |      |
|---|------|-------------------------------|------|
| Filter Rows: <input type="text"/>             |      |                               |      |
| Edit:     Export/Import:   Wrap Cell Content: |      |                               |      |
|   | DID  | DNAME                         | AID  |
| ▶   | D001 | Music                         | 101  |
|   | D002 | Management Studies            | 101  |
|   | D003 | Computer Science              | 101  |
|   | D004 | Mechanical Engineering        | 101  |
|   | D005 | Electronics and Communication | 101  |
|   | D006 | Information Technology        | 101  |
|   | D007 | Arts                          | 101  |
|   | D008 | Chemistry                     | 101  |
|   | D009 | Physics                       | 101  |
|   | D010 | Psychology                    | 101  |
| *   | NULL | NULL                          | NULL |

```
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L001', 'Alana', 'alana1@gmail.com', '70000', 'D002');
```

```
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L002', 'Jewell', 'jwe2@gmail.com', '65000', 'D001');
```

```
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L003', 'Joan', 'joan3@gmail.com', '85000', 'D003');
```

```
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L004', 'Karina', 'karin4@gmail.com', '90000', 'D010');
```

```
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L005', 'Nitya', 'nitz5@gmail.com', '75000', 'D006');
```

```
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L006', 'John L', 'john6@gmail.com', '60000', 'D007');
```

```
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L007', 'Marcos', 'mar7@gmail.com', '55000', 'D008');
```

```

insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L008', 'Raj',
'raj8@gmail.com', '70000', 'D004');
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L009', 'Hari',
'hari9@gmail.com', '90000', 'D005');
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L010', 'Sam Jose',
'sam10@gmail.com', '80000', 'D009');
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L011', 'Nikhil',
'nik11@gmail.com', '65000', 'D004');
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L012', 'Sachin G',
'sachin12@gmail.com', '75000', 'D002');
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L013', 'Tripti',
'trip13@gmail.com', '70000', 'D002');
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L014', 'Geetha',
'geetha14@gmail.com', '55000', 'D003');
insert into `college`.`lect` (`lid`, `lname`, `lemail`, `lsalary`, `did`) values ('L015', 'Akhila',
'ak10@gmail.com', '65000', 'D004');

```

| Result Grid | Filter Rows: | Edit:               | Export/Import: | Wrap Cell Content: |
|-------------|--------------|---------------------|----------------|--------------------|
| LID         | LNAME        | LEMAIL              | LSALARY        | DID                |
| L001        | Alana        | alana1@gmail.com    | 70000          | D002               |
| L002        | Jewell       | jwe2@gmail.com      | 65000          | D001               |
| L003        | Joan         | joan3@gmail.com     | 85000          | D003               |
| L004        | Karina       | karin4@gmail.com    | 90000          | D010               |
| L005        | Nitya        | nitz5@gmail.com     | 75000          | D006               |
| L006        | John L       | john6@gmail.com     | 60000          | D007               |
| L007        | Marcos       | mar7@gmail.com      | 55000          | D008               |
| L008        | Raj          | raj8@gmail.com      | 70000          | D004               |
| L009        | Hari         | hari9@gmail.com     | 90000          | D005               |
| L010        | Sam Jose     | sam10@gmail.com     | 80000          | D009               |
| L011        | Nikhil       | nik11@gmail.com     | 65000          | D004               |
| L012        | Sachin G     | sachin12@gmail.c... | 75000          | D002               |
| L013        | Tripti       | trip13@gmail.com    | 70000          | D002               |
| L014        | Geetha       | geetha14@gmail....  | 55000          | D003               |
| L015        | Akhila       | ak10@gmail.com      | 65000          | D004               |
| NULL        | NULL         | NULL                | NULL           | NULL               |

```

insert into `college`.`course` (`cid`, `cname`, `did`) values ('C001', 'Diploma', 'D001');
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C002', 'MBA', 'D002');
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C003', 'BSC', 'D003');
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C004', 'BE/BTECH', 'D003');
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C005', 'MTECH', 'D003');
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C006', 'BE/BTECH', 'D004');
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C007', 'BE/BTECH', 'D005');
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C008', 'BE/BTECH', 'D006');

```

```
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C009', 'BBA', 'D007');
```

```
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C010', 'MSC', 'D008');
```

```
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C111', 'MSC', 'D009');
```

```
insert into `college`.`course` (`cid`, `cname`, `did`) values ('C112', 'BA', 'D010');
```

| Result Grid |      |          |      |
|-------------|------|----------|------|
|             | CID  | CNAME    | DID  |
| ▶           | C001 | Diploma  | D001 |
|             | C002 | MBA      | D002 |
|             | C003 | BSC      | D003 |
|             | C004 | BE/BTECH | D003 |
|             | C005 | MTECH    | D003 |
|             | C006 | BE/BTECH | D004 |
|             | C007 | BE/BTECH | D005 |
|             | C008 | BE/BTECH | D006 |
|             | C009 | BBA      | D007 |
|             | C010 | MSC      | D008 |
|             | C111 | MSC      | D009 |
|             | C112 | BA       | D010 |
| *           | NULL | NULL     | NULL |

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M001', 'Classification Of Music', 'C001', 'L002');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M002', 'Financial Management', 'C002', 'L001');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M003', 'Programming with Python', 'C003', 'L003');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M004', 'Programming with R', 'C004', 'L003');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M005', 'AI and ML', 'C005', 'L003');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M006', 'Engineering Mechanics', 'C006', 'L008');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M007', 'VLSI Design', 'C007', 'L009');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M008', 'Computer Networks', 'C008', 'L005');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M009', 'Home Science', 'C009', 'L006');
```



```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M010', 'Electrochemistry', 'C010', 'L007');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M011', 'Classical Mechanics', 'C111', 'L010');
```

```
insert into `college`.`module` (`mid`, `mname`, `cid`, `lid`) values ('M012', 'Organizational Behaviour', 'C112', 'L004');
```

| Result Grid                       |      |                          |      |      |
|-----------------------------------|------|--------------------------|------|------|
| Filter Rows: <input type="text"/> |      |                          |      |      |
| Edit:                             |      |                          |      |      |
| Export/Import:                    |      |                          |      |      |
| Wrap Cell Content:                |      |                          |      |      |
|                                   | MID  | MNAME                    | CID  | LID  |
| ▶                                 | M001 | Classification Of Music  | C001 | L002 |
|                                   | M002 | Financial Management     | C002 | L001 |
|                                   | M003 | Programming with Python  | C003 | L003 |
|                                   | M004 | Programming with R       | C004 | L003 |
|                                   | M005 | AI and ML                | C005 | L003 |
|                                   | M006 | Engineering Mechanics    | C006 | L008 |
|                                   | M007 | VLSI Design              | C007 | L009 |
|                                   | M008 | Computer Networks        | C008 | L005 |
|                                   | M009 | Home Science             | C009 | L006 |
|                                   | M010 | Electrochemistry         | C010 | L007 |
|                                   | M011 | Classical Mechanics      | C111 | L010 |
|                                   | M012 | Organizational Behaviour | C112 | L004 |
| *                                 | NULL | NULL                     | NULL | NULL |

Similarly for student table the queries are written and the following is the output:

| Result Grid                       |      |               |            |            |            |      |      |
|-----------------------------------|------|---------------|------------|------------|------------|------|------|
| Filter Rows: <input type="text"/> |      |               |            |            |            |      |      |
| Edit:                             |      |               |            |            |            |      |      |
| Export/Import:                    |      |               |            |            |            |      |      |
| Wrap Cell Content:                |      |               |            |            |            |      |      |
|                                   | SID  | SNAME         | SPHONE     | SDOB       | SADD       | AID  | CID  |
| ▶                                 | S001 | Nikitha Reddy | 8095866166 | 2000-06-15 | Bangalore  | 101  | C001 |
|                                   | S002 | Gautam S      | 7859641524 | 1997-05-02 | Mumbai     | 101  | C002 |
|                                   | S003 | Sidharth      | 7451236495 | 1998-04-06 | Hyderabad  | 101  | C003 |
|                                   | S004 | Kavya         | 8512364567 | 2000-08-16 | Ranchi     | 101  | C004 |
|                                   | S005 | Srihan        | 8123456785 | 2000-07-21 | Kochi      | 101  | C005 |
|                                   | S006 | Harshitha     | 7512461324 | 2000-03-27 | Puducherry | 101  | C006 |
|                                   | S007 | Jashwanth     | 7224561352 | 2000-01-12 | Lucknow    | 101  | C007 |
|                                   | S008 | Yeshwanth     | 7156423415 | 1999-03-16 | Coimbatore | 101  | C008 |
|                                   | S009 | Jake          | 7512342214 | 2000-05-26 | Bangalore  | 101  | C009 |
|                                   | S010 | Miheeka       | 8045127456 | 1999-10-06 | Delhi      | 101  | C010 |
|                                   | S011 | Shahana       | 7662334118 | 1999-12-12 | Bangalore  | 101  | C111 |
|                                   | S012 | Vihar Reddy   | 8095766166 | 2000-06-26 | Hyderabad  | 101  | C112 |
| *                                 | NULL | NULL          | NULL       | NULL       | NULL       | NULL | NULL |

```
insert into `college`.`module_student` (`mid`, `sid`) values ('M001', 'S001');
```

```
insert into `college`.`module_student` (`mid`, `sid`) values ('M002', 'S002');
```

```
insert into `college`.`module_student` (`mid`, `sid`) values ('M003', 'S003');
```

```
insert into `college`.`module_student` (`mid`, `sid`) values ('M004', 'S004');
```

```
insert into `college`.`module_student` (`mid`, `sid`) values ('M005', 'S005');
```

```
insert into `college`.`module_student` (`mid`, `sid`) values ('M006', 'S006');
```

```
insert into `college`.`module_student` (`mid`, `sid`) values ('M007', 'S007');
```



```
insert into `college`.`module_student` (`mid`, `sid`) values ('M008', 'S008');
insert into `college`.`module_student` (`mid`, `sid`) values ('M009', 'S009');
insert into `college`.`module_student` (`mid`, `sid`) values ('M010', 'S010');
insert into `college`.`module_student` (`mid`, `sid`) values ('M011', 'S011');
insert into `college`.`module_student` (`mid`, `sid`) values ('M012', 'S012');
```

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

|  | MID  | SID  |
|--|------|------|
|  | M001 | S001 |
|  | M002 | S002 |
|  | M003 | S003 |
|  | M004 | S004 |
|  | M005 | S005 |
|  | M006 | S006 |
|  | M007 | S007 |
|  | M008 | S008 |
|  | M009 | S009 |
|  | M010 | S010 |
|  | M011 | S011 |
|  | M012 | S012 |
|  | NULL | NULL |

## SQL QUERIES FOR THE FOLLOWING:

### 1. A query using a where clause

select \* from student where sname='Nikitha Reddy' and sdob='2000-06-15';

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

|   | SID  | SNAME         | SPHONE     | SDOB       | SADD      | AID  | CID  |
|---|------|---------------|------------|------------|-----------|------|------|
|   | S001 | Nikitha Reddy | 8095866166 | 2000-06-15 | Bangalore | 101  | C001 |
| * | NULL | NULL          | NULL       | NULL       | NULL      | NULL | NULL |

select \* from lect where lsalary>=80000;

Result Grid

Filter Rows:

Edit

Export/Import

Wrap Cell Content

|   | LID  | LNAME    | LEMAIL           | LSALARY | DID  |
|---|------|----------|------------------|---------|------|
|   | L003 | Joan     | joan3@gmail.com  | 85000   | D003 |
|   | L004 | Karina   | karin4@gmail.com | 90000   | D010 |
|   | L009 | Hari     | hari9@gmail.com  | 90000   | D005 |
|   | L010 | Sam Jose | sam10@gmail.com  | 80000   | D009 |
| * | NULL | NULL     | NULL             | NULL    | NULL |

## 2. A query using a mathematical function - Count/Avg/Sum etc

select sadd, count(\*) from student group by sadd;

| Result Grid |              |                                       |
|-------------|--------------|---------------------------------------|
|             | Filter Rows: |                                       |
|             | Export:      | Wrap Cell Content: <a href="#">IA</a> |
| SADD        | COUNT(*)     |                                       |
| Bangalore   | 3            |                                       |
| Mumbai      | 1            |                                       |
| Hyderabad   | 2            |                                       |
| Ranchi      | 1            |                                       |
| Kochi       | 1            |                                       |
| Puducherry  | 1            |                                       |
| Lucknow     | 1            |                                       |
| Coimbatore  | 1            |                                       |
| Delhi       | 1            |                                       |

**Note:** Here sadd is considered as the location i.e.(from which location student belongs to)

select did, sum(lsalary), max(lsalary), min(lsalary), avg(lsalary) from lect group by did;

| Result Grid |              |              |              |              |                                       |
|-------------|--------------|--------------|--------------|--------------|---------------------------------------|
|             | Filter Rows: |              | Export:      |              | Wrap Cell Content: <a href="#">IA</a> |
| DID         | SUM(LSALARY) | MAX(LSALARY) | MIN(LSALARY) | AVG(LSALARY) |                                       |
| D001        | 65000        | 65000        | 65000        | 65000.0000   |                                       |
| D002        | 215000       | 75000        | 70000        | 71666.6667   |                                       |
| D003        | 140000       | 85000        | 55000        | 70000.0000   |                                       |
| D004        | 200000       | 70000        | 65000        | 66666.6667   |                                       |
| D005        | 90000        | 90000        | 90000        | 90000.0000   |                                       |
| D006        | 75000        | 75000        | 75000        | 75000.0000   |                                       |
| D007        | 60000        | 60000        | 60000        | 60000.0000   |                                       |
| D008        | 55000        | 55000        | 55000        | 55000.0000   |                                       |
| D009        | 80000        | 80000        | 80000        | 80000.0000   |                                       |
| D010        | 90000        | 90000        | 90000        | 90000.0000   |                                       |

Since, 15 values are entered for lecturer and department has 10 values the values are changed in 2,3 and 4<sup>th</sup> row respectively and rest salary remains same across all operations i.e. sum, max, min and avg.

## 3. An inner join

select lid, lname, lect.did, dname from lect inner join dept on lect.did=dept.did;

| Result Grid |              |      |                               |                                       |
|-------------|--------------|------|-------------------------------|---------------------------------------|
|             | Filter Rows: |      | Export:                       | Wrap Cell Content: <a href="#">IA</a> |
| LID         | LNAME        | DID  | DNAME                         |                                       |
| L002        | Jewell       | D001 | Music                         |                                       |
| L001        | Alana        | D002 | Management Studies            |                                       |
| L012        | Sachin G     | D002 | Management Studies            |                                       |
| L013        | Tripti       | D002 | Management Studies            |                                       |
| L003        | Joan         | D003 | Computer Science              |                                       |
| L014        | Geetha       | D003 | Computer Science              |                                       |
| L008        | Raj          | D004 | Mechanical Engineering        |                                       |
| L011        | Nikhil       | D004 | Mechanical Engineering        |                                       |
| L015        | Akhila       | D004 | Mechanical Engineering        |                                       |
| L009        | Hari         | D005 | Electronics and Communication |                                       |
| L005        | Nitya        | D006 | Information Technology        |                                       |
| L006        | John L       | D007 | Arts                          |                                       |
| L007        | Marcos       | D008 | Chemistry                     |                                       |
| L010        | Sam Jose     | D009 | Physics                       |                                       |
| L004        | Karina       | D010 | Psychology                    |                                       |

select cid, cname, course.did, dname from course inner join dept on course.did=dept.did;

| Result Grid | Filter Rows: | Export: | Wrap Cell Content:            |
|-------------|--------------|---------|-------------------------------|
| CID         | CNAME        | DID     | DNAME                         |
| C001        | Diploma      | D001    | Music                         |
| C002        | MBA          | D002    | Management Studies            |
| C003        | BSC          | D003    | Computer Science              |
| C004        | BE/BTECH     | D003    | Computer Science              |
| C005        | MTECH        | D003    | Computer Science              |
| C006        | BE/BTECH     | D004    | Mechanical Engineering        |
| C007        | BE/BTECH     | D005    | Electronics and Communication |
| C008        | BE/BTECH     | D006    | Information Technology        |
| C009        | BBA          | D007    | Arts                          |
| C010        | MSC          | D008    | Chemistry                     |
| C111        | MSC          | D009    | Physics                       |
| C112        | BA           | D010    | Psychology                    |

#### 4. An outer join

select \* from student left join course on student.cid=course.cid order by course.cname;

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

|   | SID  | SNAME         | SPHONE     | SDOB       | SADD       | AID | CID  | CID  | CNAME    | DID  |
|---|------|---------------|------------|------------|------------|-----|------|------|----------|------|
| ▶ | S012 | Vihar Reddy   | 8095766166 | 2000-06-26 | Hyderabad  | 101 | C112 | C112 | BA       | D010 |
|   | S009 | Jake          | 7512342214 | 2000-05-26 | Bangalore  | 101 | C009 | C009 | BBA      | D007 |
|   | S004 | Kavya         | 8512364567 | 2000-08-16 | Ranchi     | 101 | C004 | C004 | BE/BTECH | D003 |
|   | S006 | Harshitha     | 7512461324 | 2000-03-27 | Puducherry | 101 | C006 | C006 | BE/BTECH | D004 |
|   | S007 | Jashwanth     | 7224561352 | 2000-01-12 | Lucknow    | 101 | C007 | C007 | BE/BTECH | D005 |
|   | S008 | Yeshwanth     | 7156423415 | 1999-03-16 | Coimbatore | 101 | C008 | C008 | BE/BTECH | D006 |
|   | S003 | Sidharth      | 7451236495 | 1998-04-06 | Hyderabad  | 101 | C003 | C003 | BSC      | D003 |
|   | S001 | Nikitha Reddy | 8095866166 | 2000-06-15 | Bangalore  | 101 | C001 | C001 | Diploma  | D001 |
|   | S002 | Gautam S      | 7859641524 | 1997-05-02 | Mumbai     | 101 | C002 | C002 | MBA      | D002 |
|   | S010 | Miheeka       | 8045127456 | 1999-10-06 | Delhi      | 101 | C010 | C010 | MSC      | D008 |
|   | S011 | Shahana       | 7662334118 | 1999-12-12 | Bangalore  | 101 | C111 | C111 | MSC      | D009 |
|   | S005 | Srihan        | 8123456785 | 2000-07-21 | Kochi      | 101 | C005 | C005 | MTECH    | D003 |

select \* from module left join lect on module.lid=lect.lid order by lect.lname;

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

|  | MID  | MNAME                    | CID  | LID  | LID  | LNAME    | LEMAIL           | LSALARY | DID  |
|--|------|--------------------------|------|------|------|----------|------------------|---------|------|
|  | M002 | Financial Management     | C002 | L001 | L001 | Alana    | alana1@gmail.com | 70000   | D002 |
|  | M007 | VLSI Design              | C007 | L009 | L009 | Hari     | hari9@gmail.com  | 90000   | D005 |
|  | M001 | Classification Of Music  | C001 | L002 | L002 | Jewell   | jwe2@gmail.com   | 65000   | D001 |
|  | M003 | Programming with Python  | C003 | L003 | L003 | Joan     | joan3@gmail.com  | 85000   | D003 |
|  | M004 | Programming with R       | C004 | L003 | L003 | Joan     | joan3@gmail.com  | 85000   | D003 |
|  | M005 | AI and ML                | C005 | L003 | L003 | Joan     | joan3@gmail.com  | 85000   | D003 |
|  | M009 | Home Science             | C009 | L006 | L006 | John L   | john6@gmail.com  | 60000   | D007 |
|  | M012 | Organizational Behaviour | C112 | L004 | L004 | Karina   | karin4@gmail.com | 90000   | D010 |
|  | M010 | Electrochemistry         | C010 | L007 | L007 | Marcos   | mar7@gmail.com   | 55000   | D008 |
|  | M008 | Computer Networks        | C008 | L005 | L005 | Nitya    | nitz5@gmail.com  | 75000   | D006 |
|  | M006 | Engineering Mechanics    | C006 | L008 | L008 | Raj      | raj8@gmail.com   | 70000   | D004 |
|  | M011 | Classical Mechanics      | C111 | L010 | L010 | Sam J... | sam10@gmail.com  | 80000   | D009 |

select \* from course right join dept on course.did=dept.did order by dept.dname;

| Result Grid     Filter Rows: <input type="text"/>   Export:    Wrap Cell Content: |      |          |      |      |                               |     |
|---|------|----------|------|------|-------------------------------|-----|
|   | CID  | CNAME    | DID  | DID  | DNAME                         | AID |
| ▶   | C009 | BBA      | D007 | D007 | Arts                          | 101 |
|   | C010 | MSC      | D008 | D008 | Chemistry                     | 101 |
|   | C003 | BSC      | D003 | D003 | Computer Science              | 101 |
|   | C004 | BE/BTECH | D003 | D003 | Computer Science              | 101 |
|   | C005 | MTECH    | D003 | D003 | Computer Science              | 101 |
|   | C007 | BE/BTECH | D005 | D005 | Electronics and Communication | 101 |
|   | C008 | BE/BTECH | D006 | D006 | Information Technology        | 101 |
|   | C002 | MBA      | D002 | D002 | Management Studies            | 101 |
|   | C006 | BE/BTECH | D004 | D004 | Mechanical Engineering        | 101 |
|   | C001 | Diploma  | D001 | D001 | Music                         | 101 |
|   | C111 | MSC      | D009 | D009 | Physics                       | 101 |
|   | C112 | BA       | D010 | D010 | Psychology                    | 101 |

## 5. A query of your choice

select sname,cname from student,course where student.cid=course.cid;

| Result Grid     Filter Rows: <input type="text"/>   Export:    Wrap Cell Content: |               |          |
|---|---------------|----------|
|   | SNAME         | CNAME    |
| ▶   | Nikitha Reddy | Diploma  |
|   | Gautam S      | MBA      |
|   | Sidharth      | BSC      |
|   | Kavya         | BE/BTECH |
|   | Srihan        | MTECH    |
|   | Harshitha     | BE/BTECH |
|   | Jashwanth     | BE/BTECH |
|   | Yeshwanth     | BE/BTECH |
|   | Jake          | BBA      |
|   | Miheeka       | MSC      |
|   | Shahana       | MSC      |
|   | Vihar Reddy   | BA       |

select lname,dname from lect,dept where lect.did=dept.did;

| Result Grid     Filter Rows: <input type="text"/>   Export:    Wrap Cell Content: |          |                               |
|---|----------|-------------------------------|
|   | LNAME    | DNAME                         |
| ▶   | Jewell   | Music                         |
|   | Alana    | Management Studies            |
|   | Sachin G | Management Studies            |
|   | Tripti   | Management Studies            |
|   | Joan     | Computer Science              |
|   | Geetha   | Computer Science              |
|   | Raj      | Mechanical Engineering        |
|   | Nikhil   | Mechanical Engineering        |
|   | Akhila   | Mechanical Engineering        |
|   | Hari     | Electronics and Communication |
|   | Nitya    | Information Technology        |
|   | John L   | Arts                          |
|   | Marcos   | Chemistry                     |
|   | Sam Jose | Physics                       |
|   | Karina   | Psychology                    |

select lname from lect where did='d001' union select lname from lect where did='d002';

| Result Grid |  | Filter Rows: |  | Export: |  | Wrap Cell Content: |  |
|-------------|--|--------------|--|---------|--|--------------------|--|
| LNAME       |  |              |  |         |  |                    |  |
| Jewell      |  |              |  |         |  |                    |  |
| Alana       |  |              |  |         |  |                    |  |
| Sachin G    |  |              |  |         |  |                    |  |
| Tripti      |  |              |  |         |  |                    |  |

select lname,lsalary from lect where did='d005' union select lname,lsalary from lect where did='d010';

| Result Grid |         | Filter Rows: |  | Export: |  | Wrap Cell Content: |  |
|-------------|---------|--------------|--|---------|--|--------------------|--|
| LNAME       | LSALARY |              |  |         |  |                    |  |
| Hari        | 90000   |              |  |         |  |                    |  |
| Karina      | 90000   |              |  |         |  |                    |  |

select dname ,count(lid) from lect,dept where lect.did=dept.did group by dname;

| Result Grid                   |            | Filter Rows: |  | Export: |  | Wrap Cell Content: |  |
|-------------------------------|------------|--------------|--|---------|--|--------------------|--|
| DNAME                         | count(LID) |              |  |         |  |                    |  |
| Music                         | 1          |              |  |         |  |                    |  |
| Management Studies            | 3          |              |  |         |  |                    |  |
| Computer Science              | 2          |              |  |         |  |                    |  |
| Mechanical Engineering        | 3          |              |  |         |  |                    |  |
| Electronics and Communication | 1          |              |  |         |  |                    |  |
| Information Technology        | 1          |              |  |         |  |                    |  |
| Arts                          | 1          |              |  |         |  |                    |  |
| Chemistry                     | 1          |              |  |         |  |                    |  |
| Physics                       | 1          |              |  |         |  |                    |  |
| Psychology                    | 1          |              |  |         |  |                    |  |