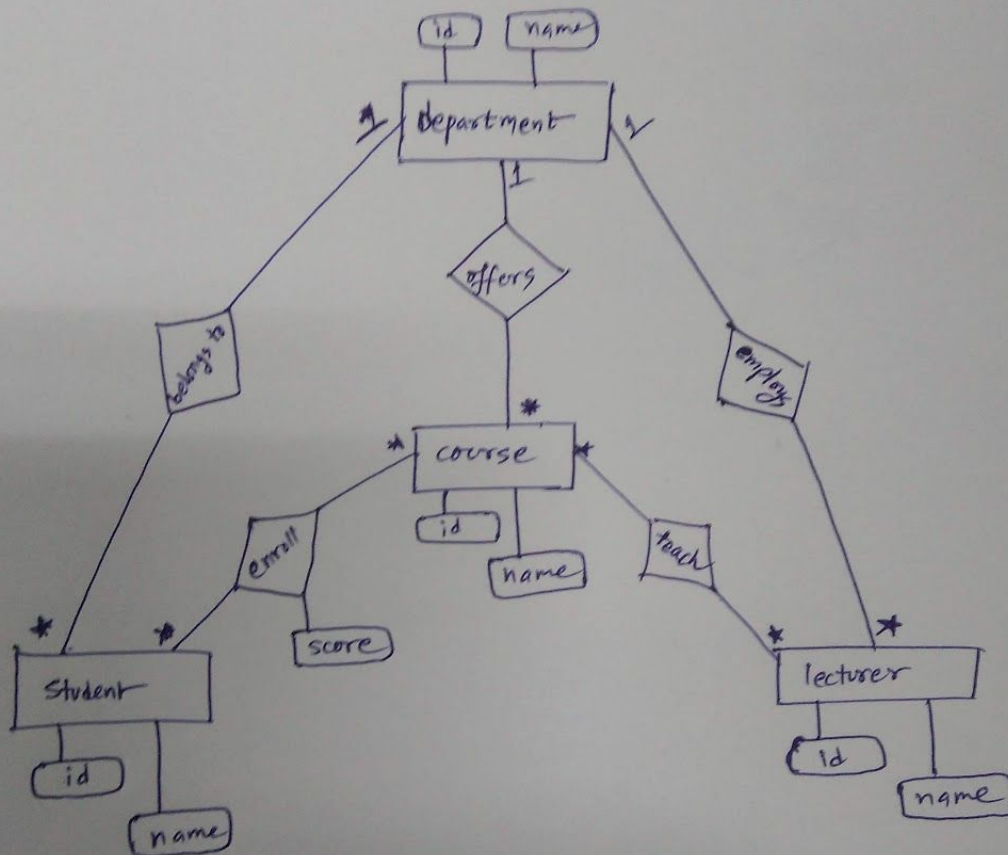Name: Nitin Kedia, Roll No.- 160101048
CS345: Database Lab Stage 2 ER Diagram and Schema.

ER Diagram

```
Schema:
mysql> DESCRIBE department;
+--------+--------------+------+-----+---------+----------------+
| Field  | Type         | Null | Key | Default | Extra          |
+--------+--------------+------+-----+---------+----------------+
| id     | int(11)      | NO   | PRI | NULL    | auto_increment |
| name   | varchar(128) | NO   |     | NULL    |                |
+--------+--------------+------+-----+---------+----------------+
2 rows in set (0.00 sec)

mysql> DESCRIBE course;
+---------+--------------+------+-----+---------+-------+
| Field   | Type         | Null | Key | Default | Extra |
+---------+--------------+------+-----+---------+-------+
| id      | char(5)      | NO   | PRI | NULL    |       |
| name    | varchar(128) | NO   |     | NULL    |       |
| dept_id | int(11)      | NO   | MUL | NULL    |       |
+---------+--------------+------+-----+---------+-------+
3 rows in set (0.00 sec)

mysql> DESCRIBE student;
+---------+--------------+------+-----+---------+----------------+
| Field   | Type         | Null | Key | Default | Extra          |
+---------+--------------+------+-----+---------+----------------+
| id      | int(11)      | NO   | PRI | NULL    | auto_increment |
| name    | varchar(128) | NO   |     | NULL    |                |
| dept_id | int(11)      | NO   | MUL | NULL    |                |
+---------+--------------+------+-----+---------+----------------+
3 rows in set (0.00 sec)

mysql> DESCRIBE lecturer;
+---------+--------------+------+-----+---------+----------------+
| Field   | Type         | Null | Key | Default | Extra          |
+---------+--------------+------+-----+---------+----------------+
| id      | int(11)      | NO   | PRI | NULL    | auto_increment |
| name    | varchar(128) | NO   |     | NULL    |                |
| dept_id | int(11)      | NO   | MUL | NULL    |                |
+---------+--------------+------+-----+---------+----------------+
3 rows in set (0.00 sec)
```

```
mysql> DESCRIBE enroll;
+------------+---------+------+-----+---------+-------+
| Field      | Type    | Null | Key | Default | Extra |
+------------+---------+------+-----+---------+-------+
| student_id | int(11) | NO   | PRI | NULL    |       |
| course_id  | char(5) | NO   | PRI | NULL    |       |
| score      | int(11) | NO   |     | NULL    |       |
+------------+---------+------+-----+---------+-------+
3 rows in set (0.00 sec)

mysql> DESCRIBE teach;
+-------------+---------+------+-----+---------+-------+
| Field       | Type    | Null | Key | Default | Extra |
+-------------+---------+------+-----+---------+-------+
| lecturer_id | int(11) | NO   | PRI | NULL    |       |
| course_id   | char(5) | NO   | PRI | NULL    |       |
| dept_id     | int(11) | NO   | MUL | NULL    |       |
+-------------+---------+------+-----+---------+-------+
3 rows in set (0.01 sec)
```

To ensure that a lecturer teaches a course only from his/her department, attribute dept_id
has been added in teach table. Pair (dept_id, lecturer_id) i.e. lecturer with that
department must be present in lecturer table and similarly for course_id.

```
CREATE TABLE teach (
    lecturer_id INT NOT NULL,
    course_id CHAR(5) NOT NULL,
    dept_id INT NOT NULL,
    FOREIGN KEY (dept_id, lecturer_id) REFERENCES lecturer (dept_id, id),
    FOREIGN KEY (dept_id, course_id) REFERENCES course (dept_id, id),
    PRIMARY KEY (lecturer_id, course_id)
);
```