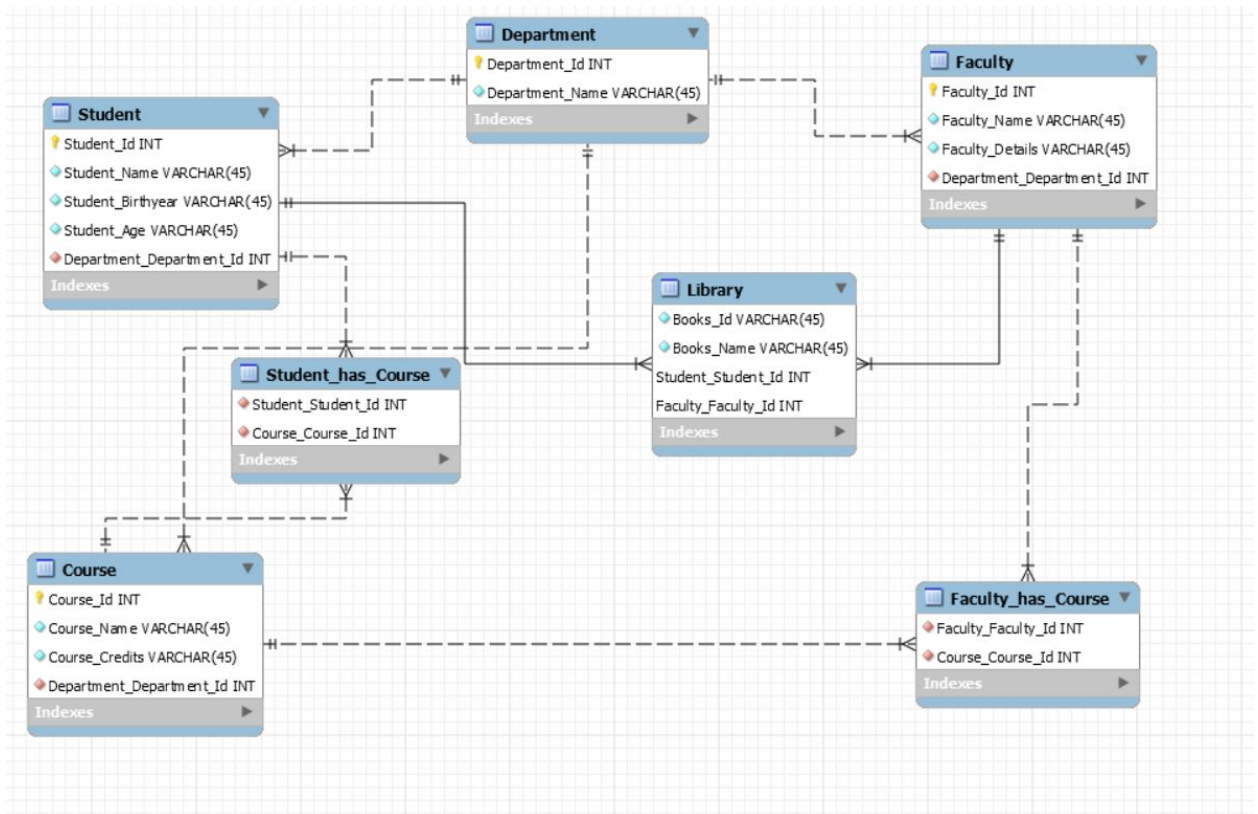


DBMS ASSIGNMENT 2

1. Showcase one Many-Many relation.

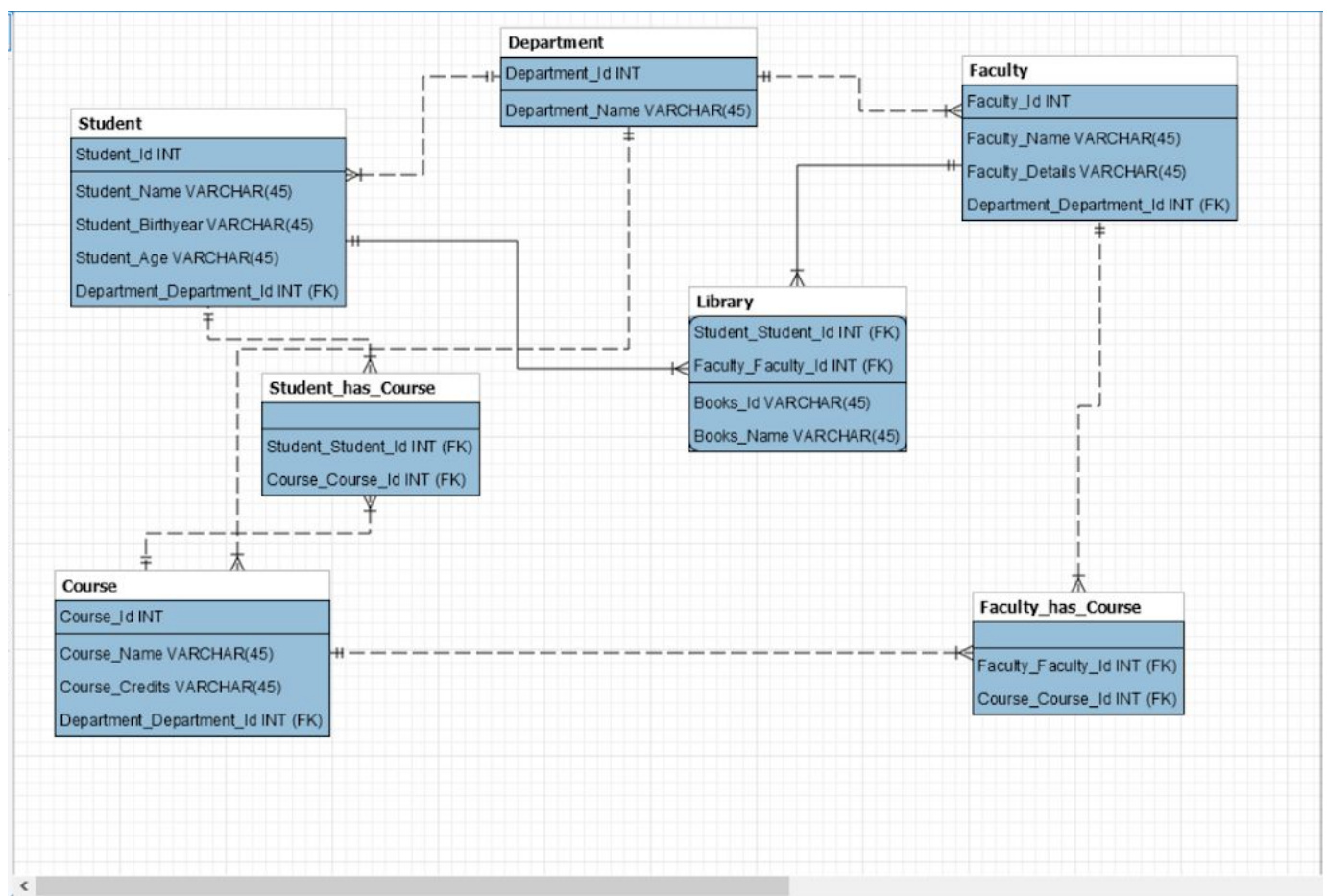
Many- Many relationship : Student to course ;



2. Represent Composite key and Weak Entity in your Database .

Here we are going to show our weak entity in the database of ER Model. We change Object Notation into IDEF1X which changes shown fig.

And Sharpen edges are Strong Entity and Rounded Edges are Weak Entity. In the given figure the identifying relation was in straight line and the remaining all are in dotted lines.



3. Show Violation of Primary Key, Unique Not Null and default key constraints through insertion.

a. Checking Primary Key and Unique Constraint.

Inserting Data into Tables :

```
5      student_birthyear INT NOT NULL,  
6      student_age INT AS (2020-student_birthyear)  
7  ) ENGINE=INNODB;  
8  • INSERT INTO student(student_id,student_name,student_birthyear)  
9  VALUES  
10     (1,'lokesh',2001),  
11     (2,'avinash',2000),  
12     (3,'aditya',1999),  
13     (4,'geetha',1998),  
14     (5,'pranav',1997);  
15  • INSERT INTO student(student_id,student_name,student_birthyear)  
16  VALUES  
17     (1,'mahesh',2000);  
18  
19  
20
```

When trying to insert duplicate value for attribute Student_id of student table which is Primary key :

Output				
Action Output				
#	Time	Action	Message	Duration / Fetch
✓ 6	18:37:16	SELECT * FROM student LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
✗ 7	18:41:27	INSERT INTO course(course_id,course_name,department_id) VALUES (6,'oracle',6)	Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails ('university_model1','course', ...	0.031 sec
✗ 8	18:45:55	INSERT INTO student(student_id,student_name,student_birthyear) VALUES (1,'mahesh',2000)	Error Code: 1054. Unknown column 'student_birthyear' in 'field list'	0.000 sec
✗ 9	18:46:18	INSERT INTO student(student_id,student_name,student_birthyear) VALUES (1,'mahesh',2000)	Error Code: 1062. Duplicate entry '1' for key 'student.PRIMARY'	0.016 sec

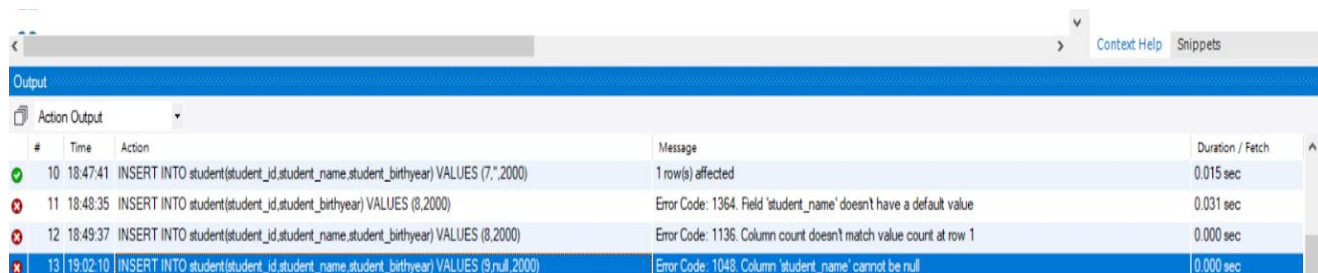
b. Checking Not Null and Default Constraint.

1. When trying to insert null value for attribute student_name of student table which is not null :

Inserting the value :

```
18 • INSERT INTO student(student_id,student_name,student_birthyear)
19 VALUES
20 (9,null,2000);
21
22
23
```

Output :



#	Time	Action	Message	Duration / Fetch
✓ 10	18:47:41	INSERT INTO student(student_id,student_name,student_birthyear) VALUES (7,'',2000)	1 row(s) affected	0.015 sec
✗ 11	18:48:35	INSERT INTO student(student_id,student_birthyear) VALUES (8,2000)	Error Code: 1364. Field 'student_name' doesn't have a default value	0.031 sec
✗ 12	18:49:37	INSERT INTO student(student_id,student_name,student_birthyear) VALUES (8,2000)	Error Code: 1136. Column count doesn't match value count at row 1	0.000 sec
✗ 13	19:02:10	INSERT INTO student(student_id,student_name,student_birthyear) VALUES (9,null,2000)	Error Code: 1048. Column 'student_name' cannot be null	0.000 sec

2. When trying to insert values into student table in which attribute student_name doesn't have a default value
Inserting the Value :

```
17 • (1, manesh ,2000);
18 • INSERT INTO student(student_id,student_birthyear)
19 VALUES
20 (8,2000);
21
```

Output :

#	Time	Action	Message	Duration / Fetch
8	18:45:55	INSERT INTO student(student_id,student_name,student_birthday) VALUES (1,'maheeh',2000)	Error Code: 1054. Unknown column 'studnt_birthday' in 'field list'	0.000 sec
9	18:46:18	INSERT INTO student(student_id,student_name,student_birthday) VALUES (1,'maheeh',2000)	Error Code: 1062. Duplicate entry '1' for key 'student.PRIMARY'	0.016 sec
10	18:47:41	INSERT INTO student(student_id,student_name,student_birthday) VALUES (7,'',2000)	1 row(s) affected	0.015 sec
11	18:48:35	INSERT INTO student(student_id,student_birthday) VALUES (8,2000)	Error Code: 1364. Field 'student_name' doesn't have a default value	0.031 sec

4. One Derived attribute should be added to the Database design

In our database student age is a derived attribute in the student table. We derived it from the birth year attribute as follows :

$$\text{student_age} = 2020 - \text{student_birth year}$$

Query :

```
CREATE TABLE IF NOT EXISTS student(  
    student_id INT NOT NULL PRIMARY KEY,  
    student_name VARCHAR(255) NOT NULL,  
    student_birthday INT NOT NULL,  
    student_age INT AS (2020-student_birthday)  
) ENGINE=INNODB;
```

Insertion :

```
8 • INSERT INTO student(student_id,student_name,student_birthday)
9 VALUES
10 (1,'lokes',2001),
11 (2,'avinash',2000),
12 (3,'aditya',1999),
13 (4,'geetha',1998),
14 (5,'pranav',1997);
15
```

Result :

We have not inserted the student_age column but automatically get derived from birth year.

The screenshot shows a database management tool interface. At the top, there's a toolbar with options like 'Filter Rows', 'Edit', 'Export/Import', and 'Wrap Cell Contents'. Below this is a table with the following data:

student_id	student_name	student_birthday	student_age
1	lokes	2001	19
2	avinash	2000	20
3	aditya	1999	21
4	geetha	1998	22
5	pranav	1997	23

Below the table, there's a section for 'student 1' with 'Apply', 'Revert', 'Context Help', and 'Snippets' buttons. At the bottom, there's an 'Output' section showing a log of SQL actions:

#	Time	Action	Message	Duration / Fetch
3	18:35:44	CREATE TABLE IF NOT EXISTS student(student_id INT NOT NULL PRIMARY KEY, student_name VA...	Error Code: 1054. Unknown column 'dummystudent_birthday' in 'generated column function'	0.031 sec
4	18:36:50	CREATE TABLE IF NOT EXISTS student(student_id INT NOT NULL PRIMARY KEY, student_name VA...	0 row(s) affected	0.062 sec
5	18:36:50	INSERT INTO student(student_id,student_name,student_birthday) VALUES (1,lokes',2001), (2,'avinash...	5 row(s) affected Records: 5 Duplicates: 0 Warnings: 0	0.016 sec
6	18:37:16	SELECT * FROM student LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec

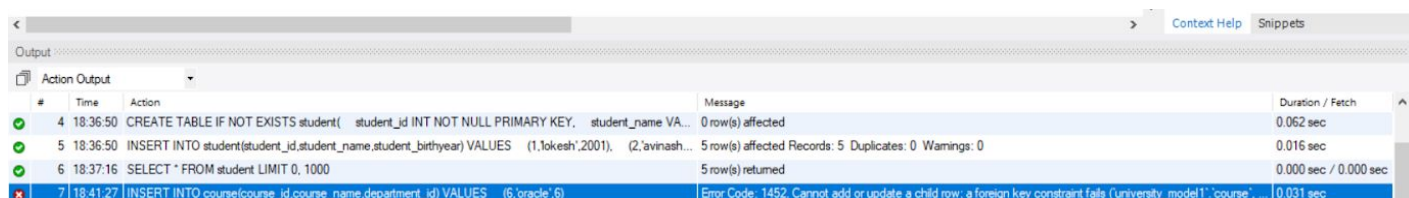
5.Insert tuples into the table and see how foreign key constraint works if you try to insert into the dependent table first.

Course table is dependent on the Department table.If we insert a new Department_id value in the course table without inserting it in the Department table then foreign key constraint will be violated.

Query :

- ```
(5, 'eee');
```
- ```
INSERT INTO course(course_id,course_name,department_id)
VALUES
(6, 'oracle',6);
```
- ```
INSERT INTO student(student_id,student_name)
```

Output :



The screenshot shows a database query execution output window with a table of results. The table has columns for #, Time, Action, Message, and Duration / Fetch. The last row shows an error for an INSERT statement into the course table.

| # | Time     | Action                                                                                                   | Message                                                                                                                | Duration / Fetch      |
|---|----------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 4 | 18:36:50 | CREATE TABLE IF NOT EXISTS student( student_id INT NOT NULL PRIMARY KEY, student_name VA...              | 0 row(s) affected                                                                                                      | 0.062 sec             |
| 5 | 18:36:50 | INSERT INTO student(student_id,student_name,student_birthyear) VALUES (1,'lokesh',2001), (2,'avinash'... | 5 row(s) affected Records: 5 Duplicates: 0 Warnings: 0                                                                 | 0.016 sec             |
| 6 | 18:37:16 | SELECT * FROM student LIMIT 0, 1000                                                                      | 5 row(s) returned                                                                                                      | 0.000 sec / 0.000 sec |
| 7 | 18:41:27 | INSERT INTO course(course_id,course_name,department_id) VALUES (6,'oracle',6)                            | Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails ('university_model1', 'course', ... | 0.031 sec             |