DBMS ASSIGNMENT

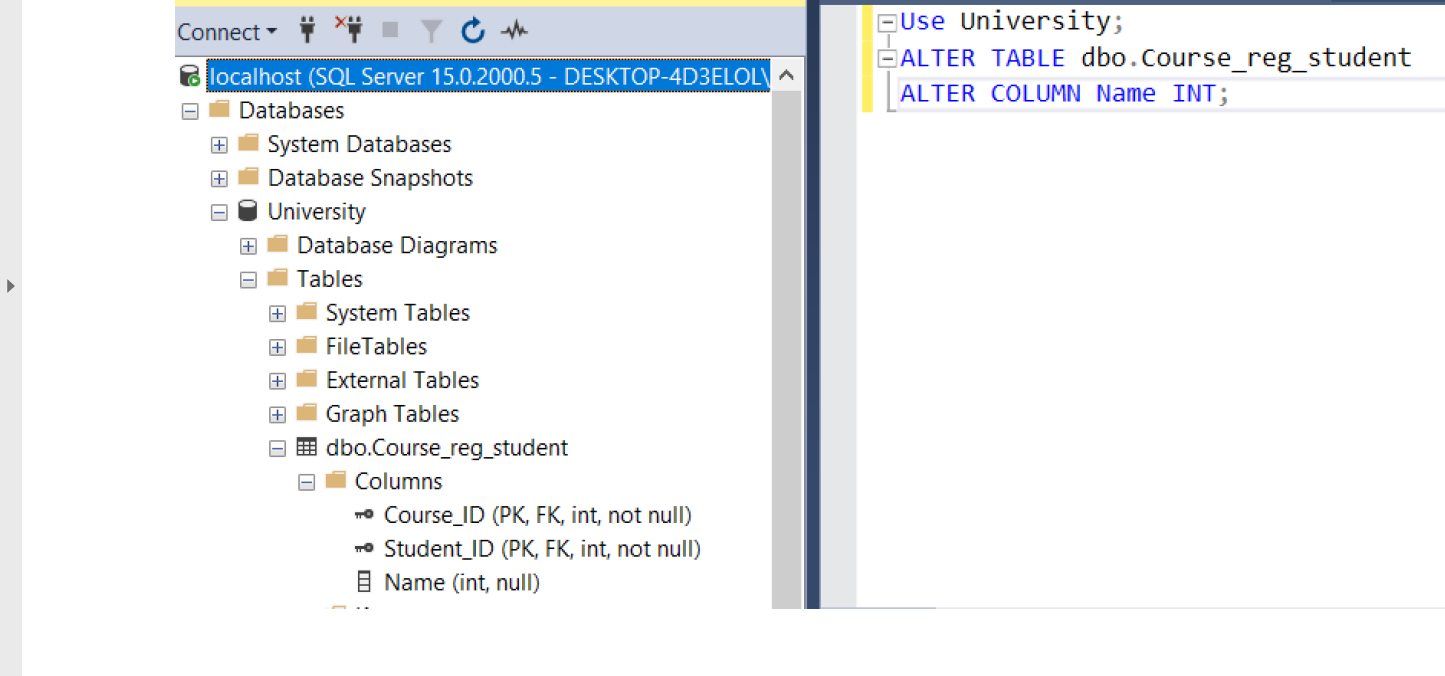
TEAM-11

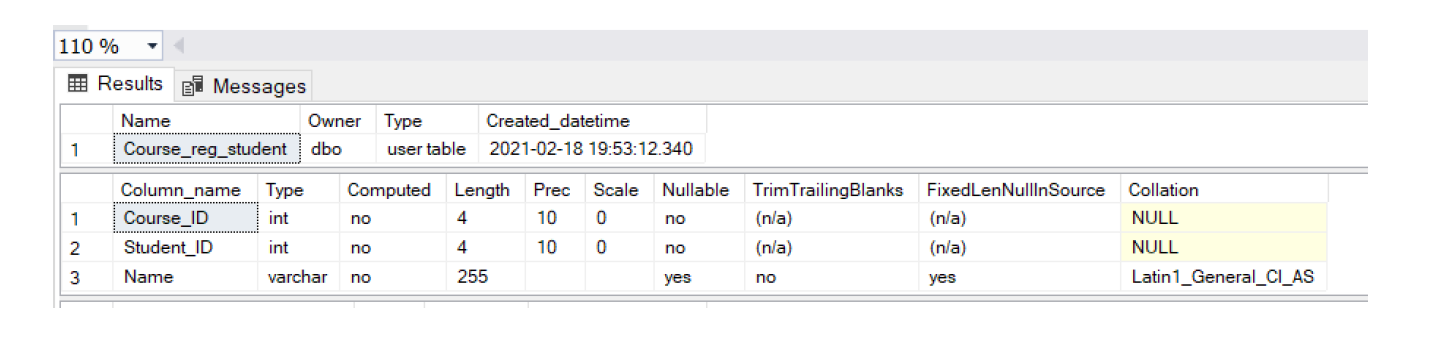
1). Add, Modify and Delete Column using Alter Command

Use University;

ALTER TABLE dbo.Course\_reg\_student

ALTER COLUMN Name INT

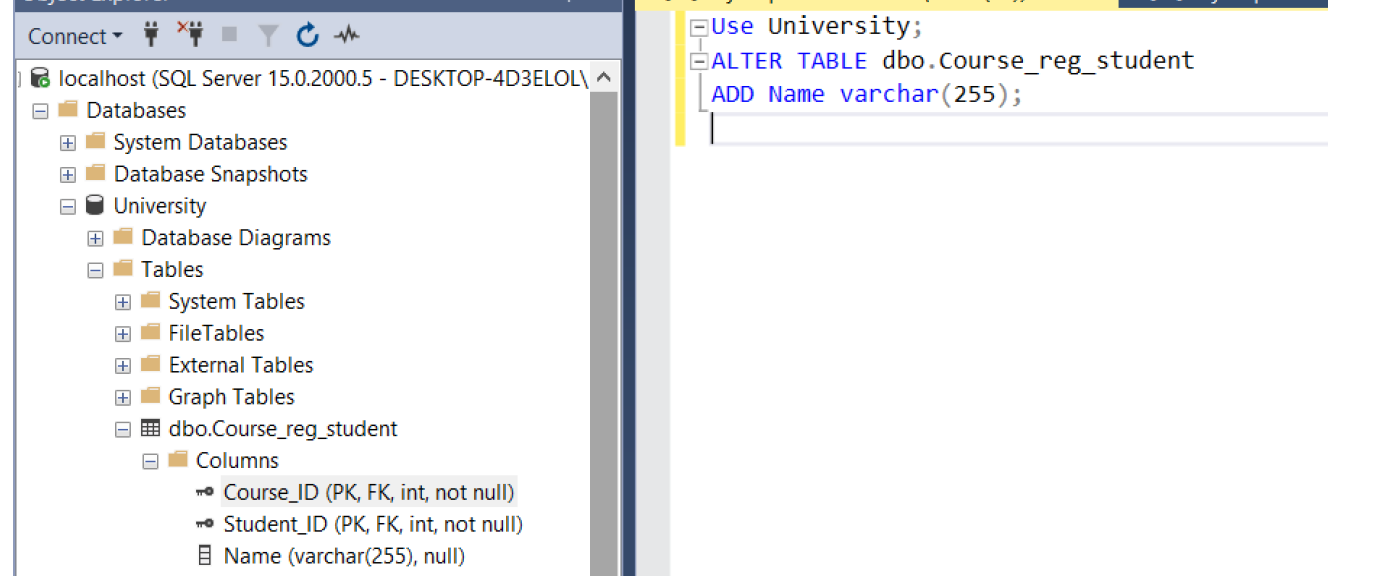


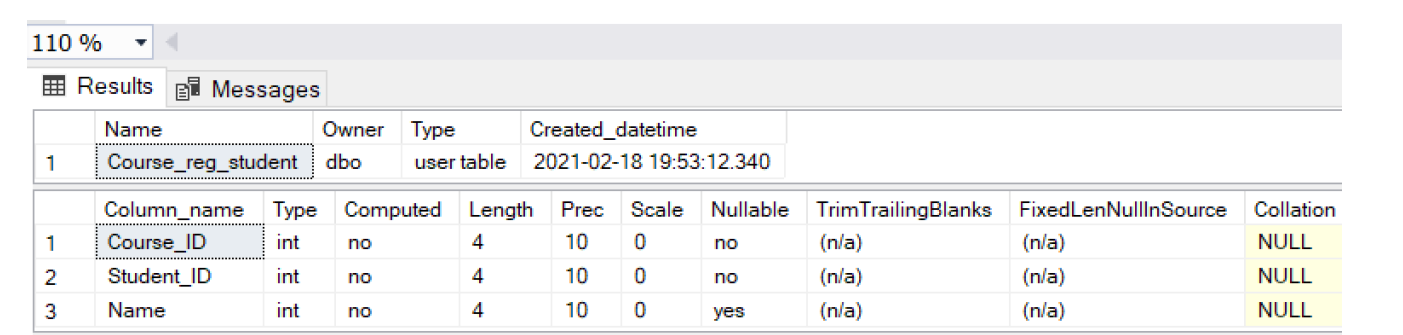


Use University;

ALTER TABLE dbo.Course\_reg\_student

ADD Name varchar(255);

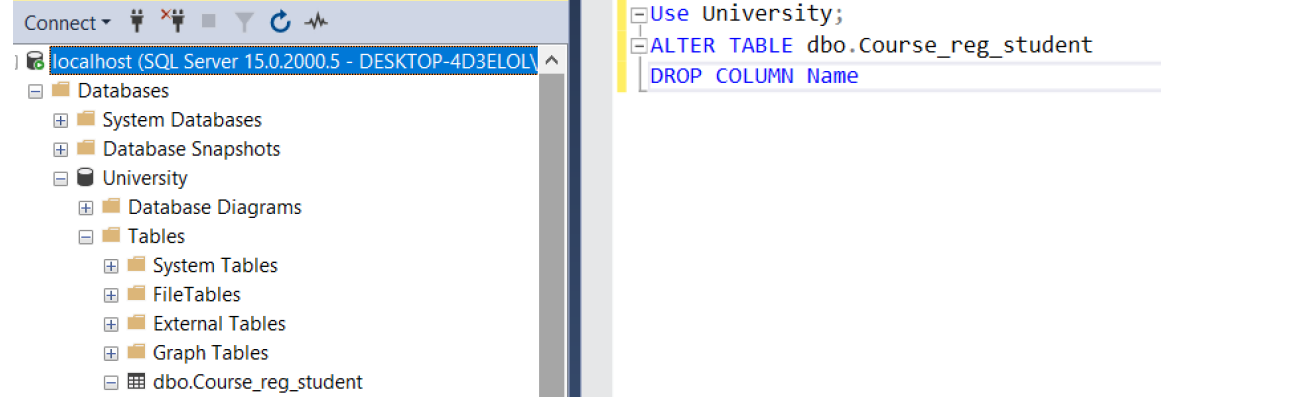


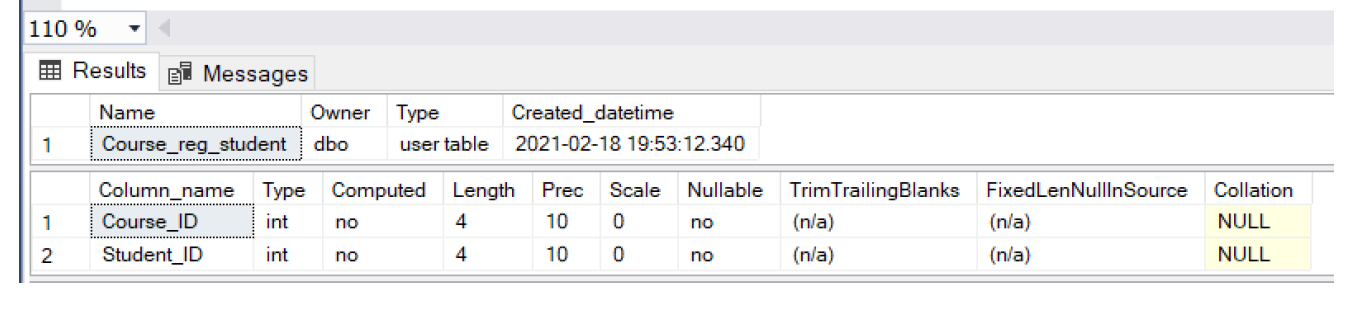


Use University;

ALTER TABLE dbo.Course\_reg\_student

DROP COLUMN Name





2) Insert 20 Employees Data into all the tables. Use all the 3 methods that I have

Showcased.

INSERT INTO T11\_Department

VALUES ('AI', 'A-01');

INSERT INTO T11\_Department

VALUES ('CSE', 'C-02');

INSERT INTO T11\_Department

VALUES ('ECE', 'E-03');

INSERT INTO T11\_Department

VALUES ('BT', 'B-04');

INSERT INTO T11\_Department

VALUES ('ME', 'M-05');

INSERT INTO T11\_Department

VALUES ('CVE', 'CV-06');

INSERT INTO T11\_Department

VALUES ('PHY', 'PH-07');

INSERT INTO T11\_Department

VALUES ('MATH', 'MAT-08');

INSERT INTO T11\_Department

VALUES ('IT', 'IT-09');

INSERT INTO T11\_Department

VALUES ('EEE', 'EE-10');

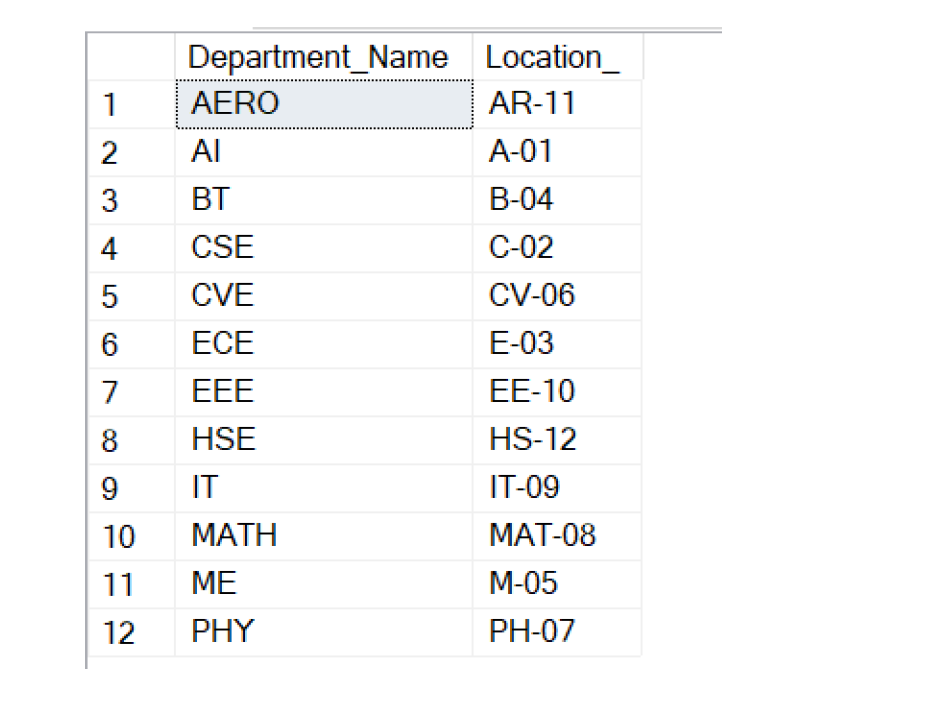
INSERT INTO T11\_Department

VALUES ('AERO', 'AR-11');

INSERT INTO T11\_Department

VALUES ('HSE', 'HS-12');

**Output:**



For inserting data into T11\_Faculty:

All four methods of inserting shown here-

1) Implicitly inserting data (without providing column names)

2) Specifying column names for insertion explicitly

3) Importing data from another table

4) Using SELECT INTO (creates new table**)**

/\* Method 1 of insertion: Implicitly inserting data\*/

INSERT INTO T11\_Faculty

VALUES (100, 'AI', 1, 'Virat', 'Kohli', 51188);

/\* Method 2 of insertion: Specifying column names for insertion\*/

INSERT INTO T11\_Faculty (Faculty\_ID ,Department\_Name, HOD, FirstName, LastName, Phone)

VALUES (101, 'CSE', 0, 'Rohit', 'Sharma', 30487);

/\* Temporary table for importing data into T11\_Faculty\*/

CREATE TABLE Faculty\_Record

(

Faculty\_ID int PRIMARY KEY NOT NULL,

Department\_Name varchar(255) FOREIGN KEY REFERENCES

T11\_Department(Department\_Name) NOT NULL,

HOD bit NOT NULL,

FirstName VARCHAR(255) NOT NULL,

LastName VARCHAR(255),

Phone INT NOT NULL

)

INSERT INTO Faculty\_Record

VALUES (102, 'CSE', 1, 'Mahendra Singh', 'Dhoni', 70781);

/\* Method 3 of insertion: Importing data from another table\*/

INSERT INTO T11\_Faculty(Faculty\_ID ,Department\_Name, HOD, FirstName, LastName, Phone)

SELECT \*

FROM Faculty\_Record

WHERE Faculty\_ID = 102

/\* Method 4 of insertion: Using SELECT INTO (creates new table)\*/

SELECT

103 AS Faculty\_ID,

'AI' AS Department\_Name,

0 AS HOD,

'Ajinkya' AS FirstName,

'Rahane' AS LastName,

60688 AS Phone

INTO Test\_Table;

INSERT INTO T11\_Faculty

VALUES

(103, 'CSE', 0, 'Mithali', 'Raj', 05059),

(104, 'AI', 0, 'Ajinkya', 'Rahane', 60688),

(105, 'ECE', 1, 'Shubhman', 'Gill', 70895),

(106, 'ECE', 0, 'Harleen', 'Deol', 66666),

(107, 'BT', 1, 'Jasprit', 'Bumrah', 99999),

(108, 'BT', 0, 'Ekta', 'Bisht', 54545),

(109, 'AERO', 0, 'Hardik', 'Pandya', 23232),

(110, 'AERO', 1, 'Ravi', 'Ashwin', 11116),

(111, 'ME', 1, 'Ravindra', 'Jadeja', 33890),

(112, 'MATH', 1, 'Che', 'Pujara', 80806),

(113, 'ME', 0, 'Kuldeep', 'Yadav', 93947),

(114, 'CVE', 1, 'Smriti', 'Mandhana', 11112),

(115, 'CVE', 0, 'Md', 'Siraj', 99998),

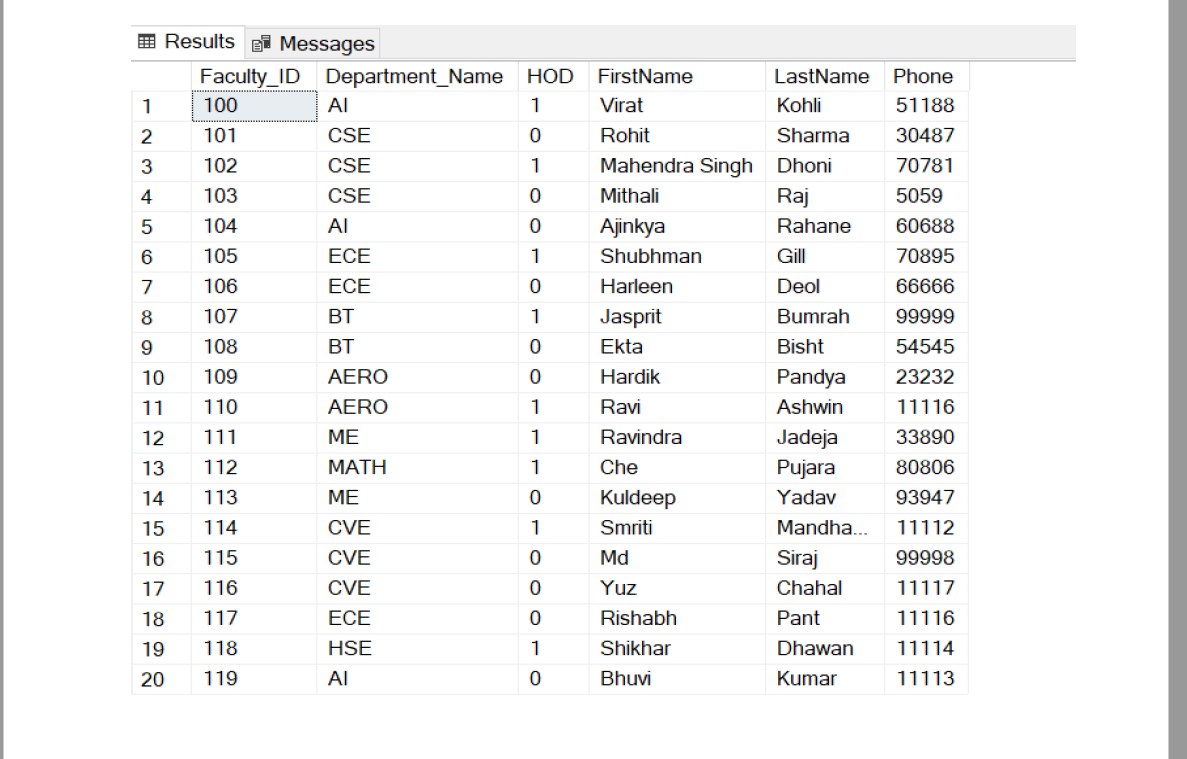
(116, 'CVE', 0, 'Yuz', 'Chahal', 11117),

(117, 'ECE', 0, 'Rishabh', 'Pant', 11116),

(118, 'HSE', 1, 'Shikhar', 'Dhawan', 11114),

(119, 'AI', 0, 'Bhuvi', 'Kumar', 11113)

;



INSERT INTO T11\_Student

VALUES

('0001', 'Steve', 'Smith', 490, '1989-06-02', 'M'),

('0002', 'Pat', 'Cummins', 300, '1993-05-08', 'M'),

('0003', 'David', 'Warner', 250, '1986-10-27', 'M'),

('0004', 'Mitchell', 'Starc', 185, '1990-01-30', 'M'),

('0005', 'Josh', 'Philippe', 101, '1997-06-01', 'M'),

('0006', 'Alyssa', 'Healy', 166, '1990-03-24', 'F'),

('0007', 'Meg', 'Lanning', 165, '1992-03-25', 'F'),

('0008', 'Ellyse', 'Perry', 168, '1990-11-03', 'F'),

('0009', 'Rachel', 'Haynes', 170, '1986-12-26', 'F'),

('0010', 'Ashleigh', 'Gardner', 166, '1997-04-15', 'F'),

('0011', 'Joe', 'Root', 200, '1990-12-30', 'M'),

('0012', 'Eoin', 'Morgan', 201, '1986-09-10', 'M'),

('0013', 'Sam', 'Curran', 202, '1998-06-03', 'M'),

('0014', 'Jos', 'Buttler', 203, '1990-09-08', 'M'),

('0015', 'Stuart', 'Broad', 204, '1986-06-24', 'M'),

('0016', 'Heather', 'Knight', 205, '1990-12-26', 'F'),

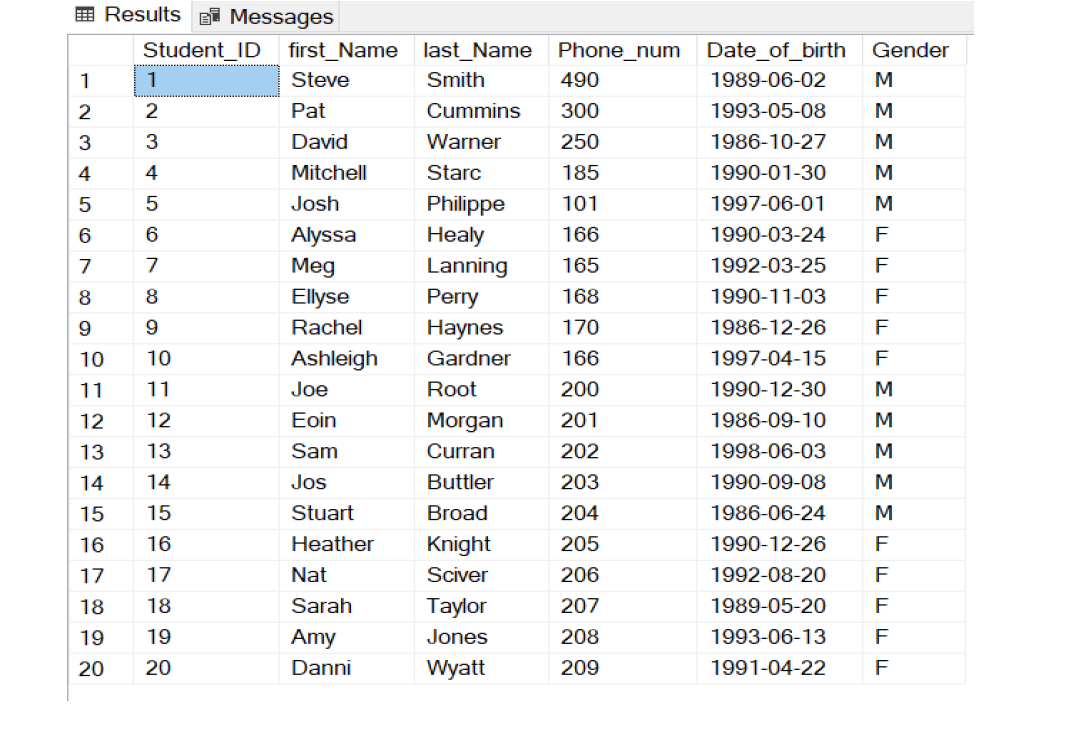
('0017', 'Nat', 'Sciver', 206, '1992-08-20', 'F'),

('0018', 'Sarah', 'Taylor', 207, '1989-05-20', 'F'),

('0019', 'Amy', 'Jones', 208, '1993-06-13', 'F'),

('0020', 'Danni', 'Wyatt', 209, '1991-04-22', 'F')

;



INSERT INTO T11\_Student

VALUES

('0001', 'Steve', 'Smith', 490, '1989-06-02', 'M'),

('0002', 'Pat', 'Cummins', 300, '1993-05-08', 'M'),

('0003', 'David', 'Warner', 250, '1986-10-27', 'M'),

('0004', 'Mitchell', 'Starc', 185, '1990-01-30', 'M'),

('0005', 'Josh', 'Philippe', 101, '1997-06-01', 'M'),

('0006', 'Alyssa', 'Healy', 166, '1990-03-24', 'F'),

('0007', 'Meg', 'Lanning', 165, '1992-03-25', 'F'),

('0008', 'Ellyse', 'Perry', 168, '1990-11-03', 'F'),

('0009', 'Rachel', 'Haynes', 170, '1986-12-26', 'F'),

('0010', 'Ashleigh', 'Gardner', 166, '1997-04-15', 'F'),

('0011', 'Joe', 'Root', 200, '1990-12-30', 'M'),

('0012', 'Eoin', 'Morgan', 201, '1986-09-10', 'M'),

('0013', 'Sam', 'Curran', 202, '1998-06-03', 'M'),

('0014', 'Jos', 'Buttler', 203, '1990-09-08', 'M'),

('0015', 'Stuart', 'Broad', 204, '1986-06-24', 'M'),

('0016', 'Heather', 'Knight', 205, '1990-12-26', 'F'),

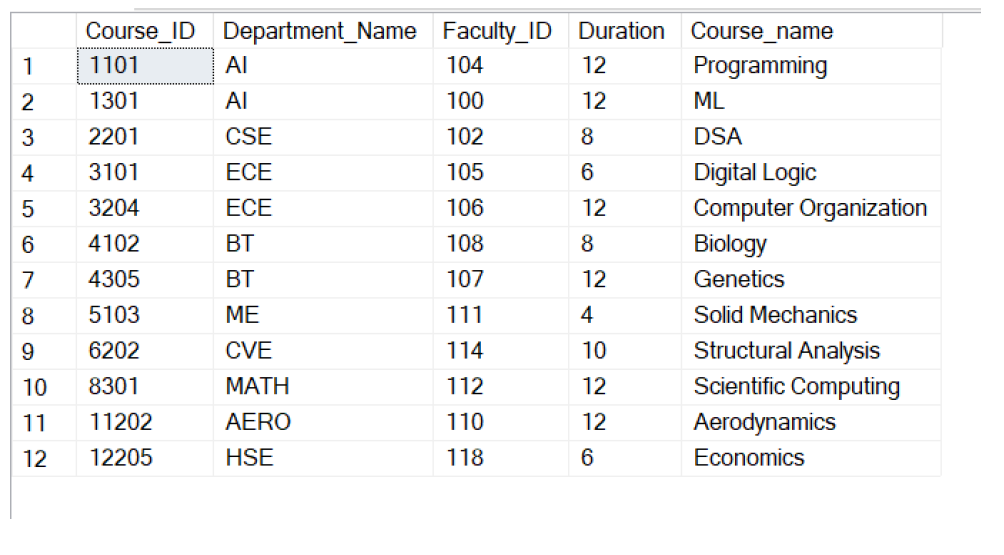
('0017', 'Nat', 'Sciver', 206, '1992-08-20', 'F'),

('0018', 'Sarah', 'Taylor', 207, '1989-05-20', 'F'),

('0019', 'Amy', 'Jones', 208, '1993-06-13', 'F'),

('0020', 'Danni', 'Wyatt', 209, '1991-04-22', 'F')

;



INSERT INTO T4\_Course\_reg\_student

VALUES

(1301, 7),

(8301, 19),

(1301, 12),

(3204, 2),

(4305, 5),

(5103, 16),

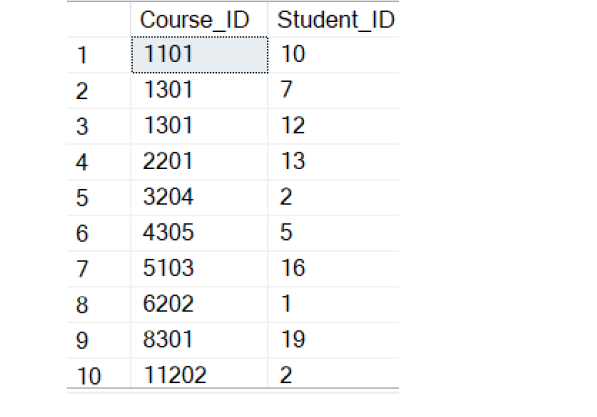
(2201, 13),

(6202, 1),

(1101, 10),

(11202, 2)

;



INSERT INTO T11\_Research\_Projects

VALUES

('P-AI-18', 'NLP', 'Sentiment analysis'),

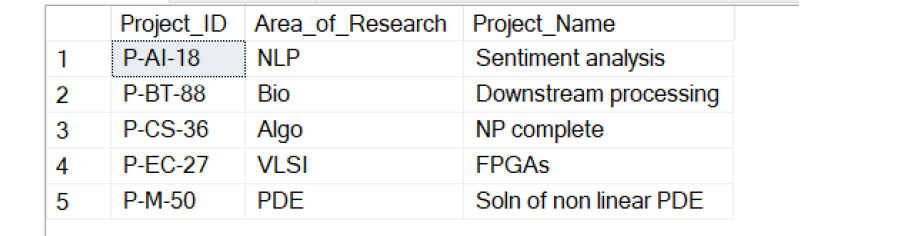
('P-EC-27', 'VLSI', 'FPGAs'),

('P-M-50', 'PDE', 'Soln of non linear PDE'),

('P-CS-36', 'Algo', 'NP complete'),

('P-BT-88', 'Bio', 'Downstream processing')

;



INSERT INTO Instructor\_on\_Research

VALUES

('P-AI-18', 119, '2019-08-18', NULL),

('P-EC-27', 117, '2020-02-03', NULL),

('P-CS-36', 103, '2020-07-08', NULL)

;

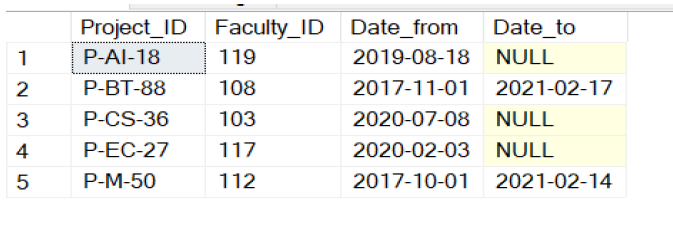
INSERT INTO Instructor\_on\_Research

VALUES

('P-M-50', 112, '2017-10-01', '2021-02-14'),

('P-BT-88', 108, '2017-11-01', '2021-02-17')

;



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

Insertion.

Violation of primary key:

USE University;

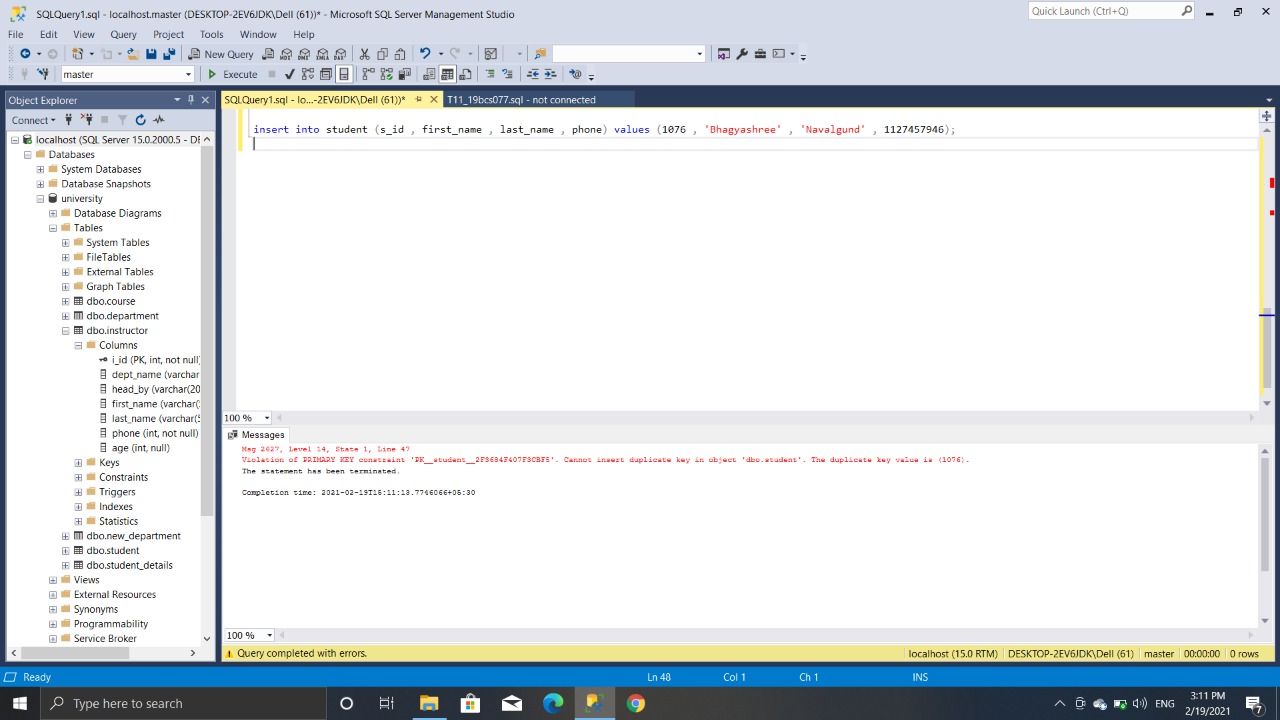
INSERT INTO T11\_Department

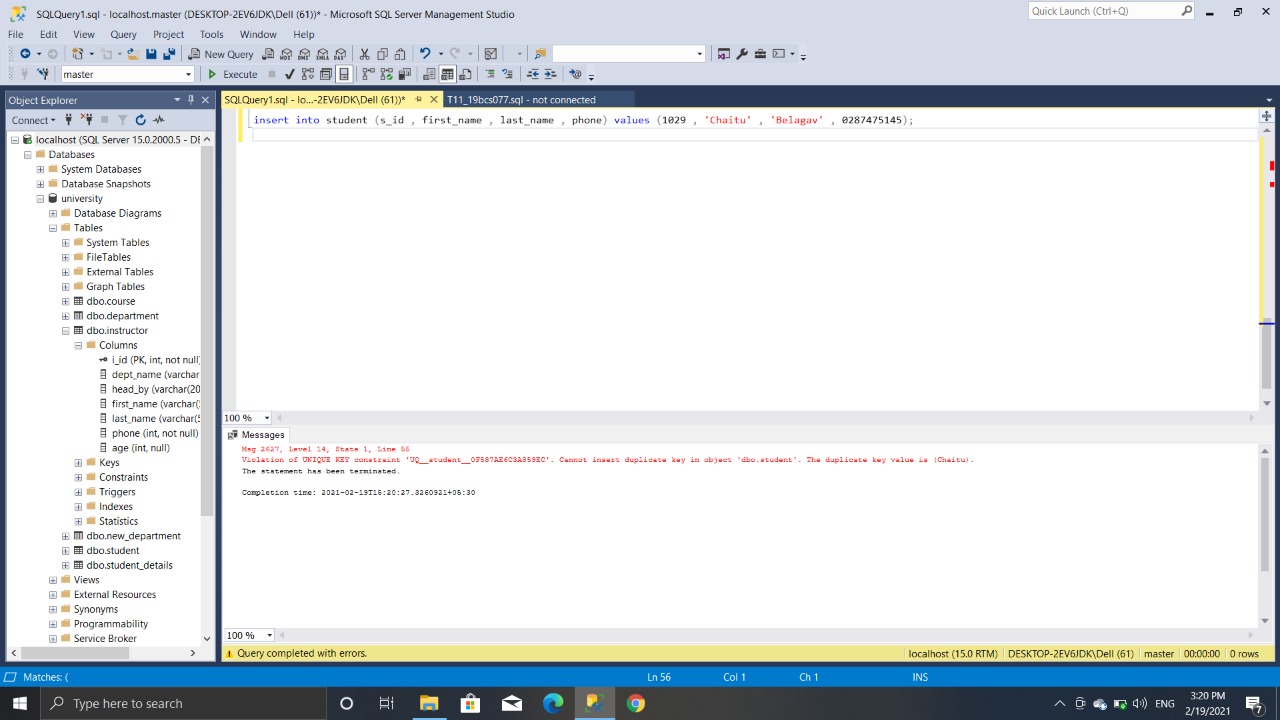
VALUES (null, 'A-01');

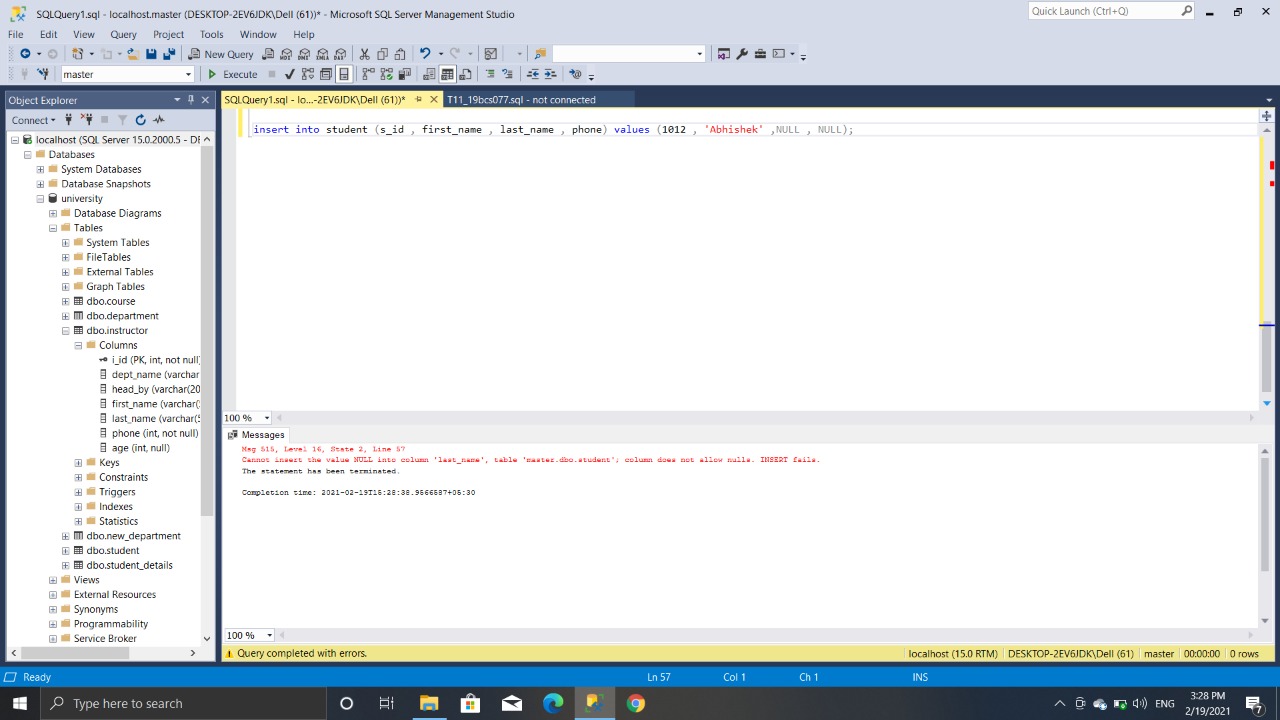
USE University;

INSERT INTO T11\_Department

VALUES ('AI', 'A-108');







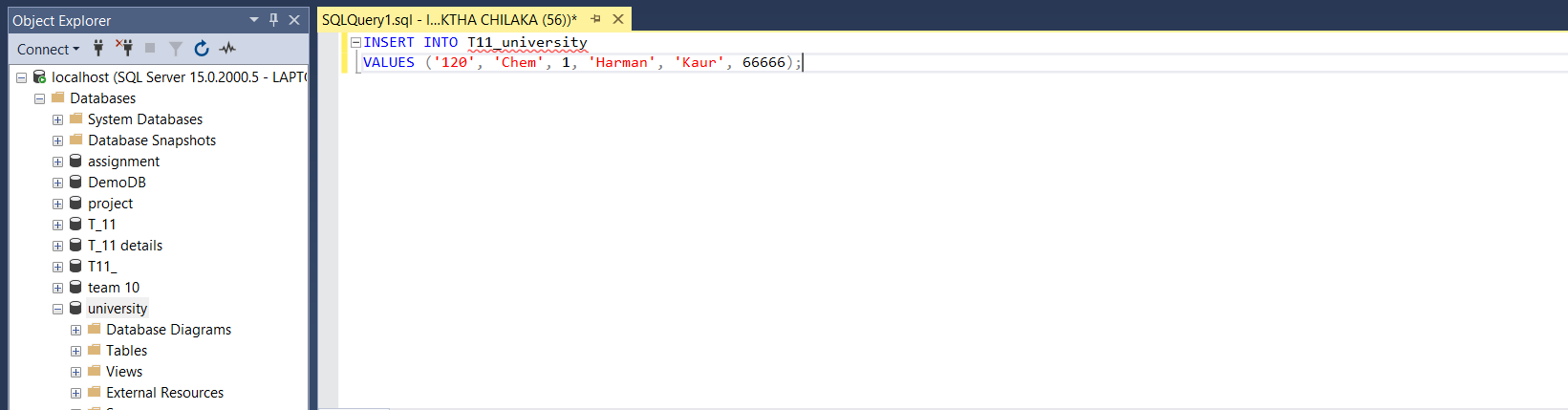
4. Insert tuples into the table and see how foreign key constraint works if you try to insert into dependent table first.

If we insert data into the dependent table first, then it will give a foreign key error, as the referred

table does not have that value. Shown below:

INSERT INTO T11\_Faculty

VALUES ('120', 'Chem', 1, 'Harman', 'Kaur', 66666);



But when we insert into the base table first, and then inserting into the dependent table, it

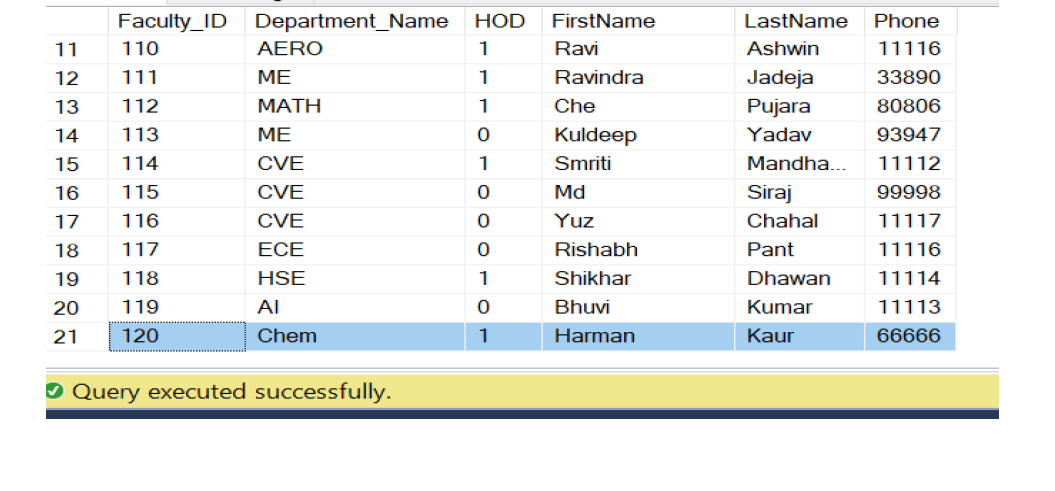
works.

INSERT INTO T4\_Department

VALUES ('Chem', 'Ch-12');

INSERT INTO T4\_Faculty

VALUES ('120', 'Chem', 1, 'Harman', 'Kaur', 66666);



5. Show Violation of Foreign Key Constraint when you try to delete from a base table. If

you get an error explain why deletion gives an error

There is a table name called T11\_Course\_offered with the following columns:

Course\_ID (int), Department\_Name (varchar(255)), Faculty\_ID (int), Duration (int), Course\_name

(varchar(255))

Here, Faculty\_ID is a foreign key that references the T11\_Department table.

DELETE FROM T11\_Department WHERE Faculty\_id = 1

We get the error “update or delete on table "T11\_Department" violates foreign key constraint.

As Faculty\_ID is a foreign key in table T11\_Department; the reason you are unable to delete

employee ID 1 is because Faculty\_ID 1 exists on T11\_Department. The system is trying to maintain

integrity of the database by preventing you from deleting an employee affiliated with

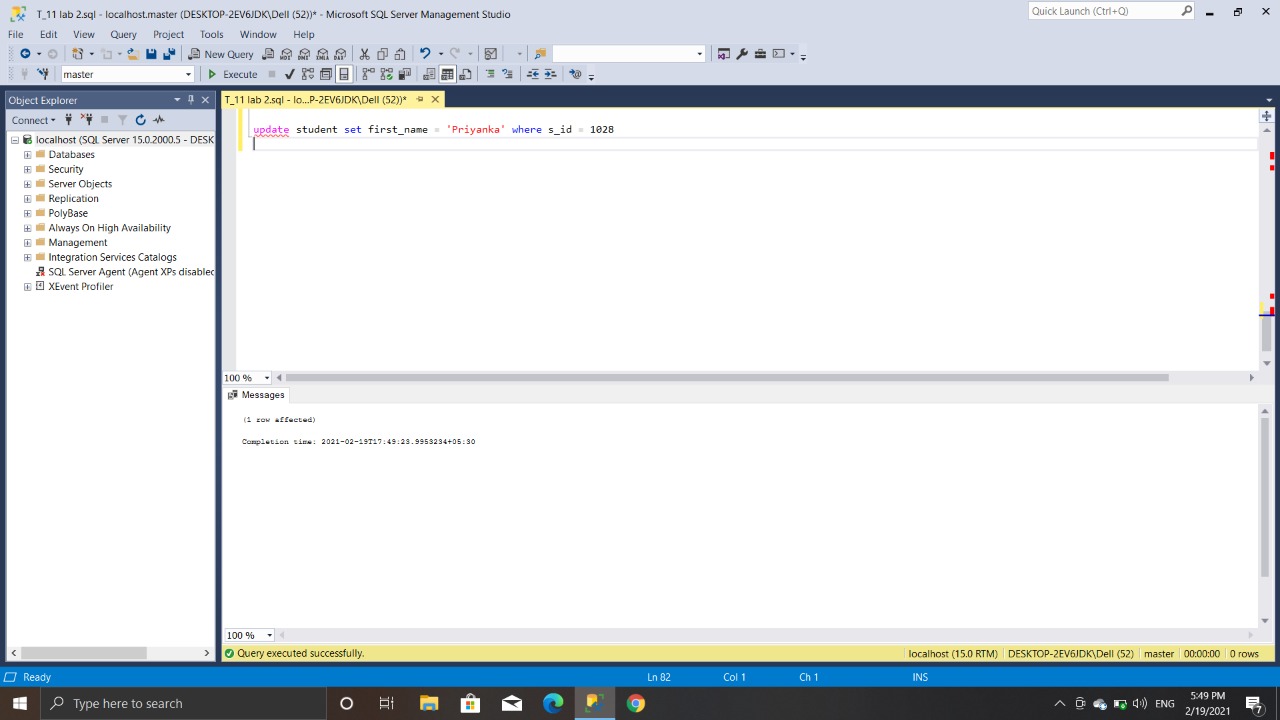
T11\_Department.

6. Try to update a non-existing entity data and check for error.

Here we are trying to update Student\_Id to ‘9999’ in T11\_Student whose first\_name is ‘HiFi’ but

there does no exist first\_name = ‘HiFi’ in T11\_Student .

But it accepts the query and showing no error.



7. Add a column which has default value.

/\* Temporary table to show insertion of default data \*/

CREATE TABLE Faculty\_Record

(

Faculty\_ID int PRIMARY KEY NOT NULL,

Department\_Name varchar(255) FOREIGN KEY REFERENCES

T11\_Department(Department\_Name) NOT NULL,

HOD bit NOT NULL,

FirstName VARCHAR(255) NOT NULL,

LastName VARCHAR(255),

Phone INT NOT NULL

)

INSERT INTO Faculty\_Record

VALUES

(103, 'CSE', 0, 'Mithali', 'Raj', 05059),

(104, 'AI', 0, 'Ajinkya', 'Rahane', 60688),

(105, 'ECE', 1, 'Shubhman', 'Gill', 70895),

(106, 'ECE', 0, 'Harleen', 'Deol', 66666),

(107, 'BT', 1, 'Jasprit', 'Bumrah', 99999),

(108, 'BT', 0, 'Ekta', 'Bisht', 54545)

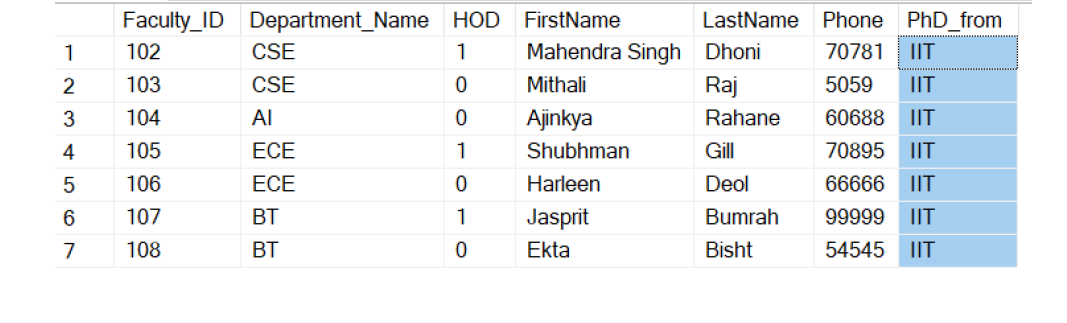
;

ALTER TABLE Faculty\_Record

ADD PhD\_from varchar(255) NULL

CONSTRAINT PhD\_from DEFAULT 'IIT'

WITH VALUES;



8. 5 Simple Select queries to retrieve data from your database.

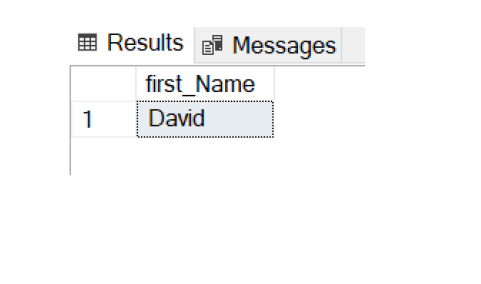
SELECT first\_Name FROM T11\_Student WHERE Student\_ID IN ('003');

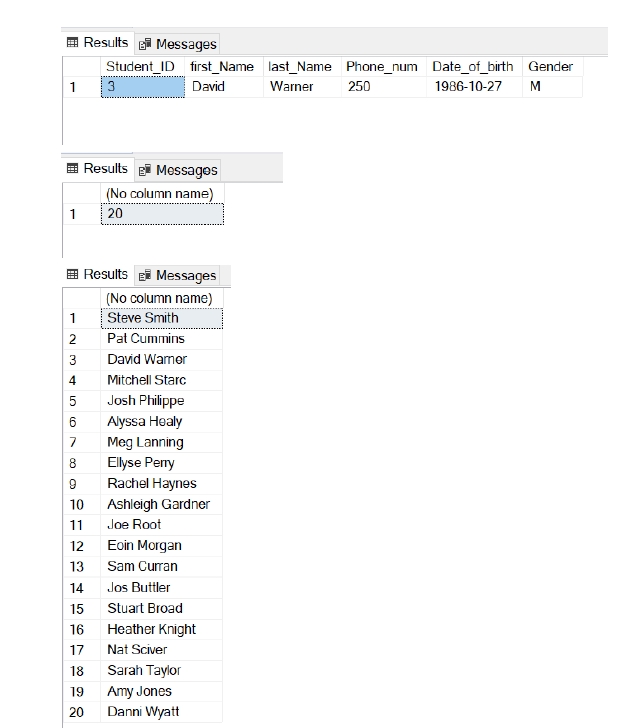
SELECT \* FROM T11\_Student WHERE Student\_ID IN ('003');

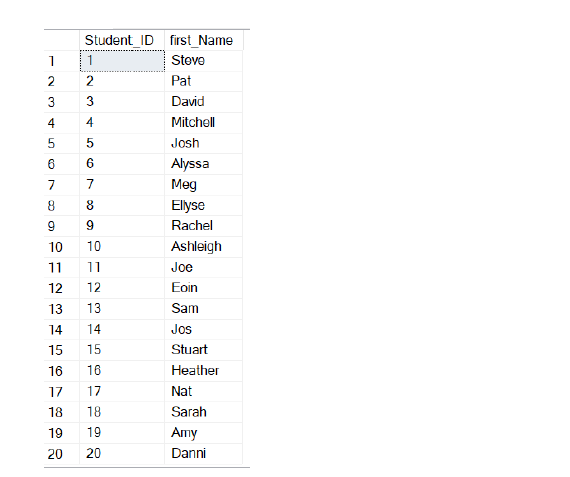
SELECT COUNT(\*) FROM T11\_Faculty;

SELECT Concat(first\_Name, ' ', last\_Name) FROM T11\_Student;

SELECT Student\_ID, first\_Name FROM T11\_Student;







9. Show how Foreign key constraint affects updating a dependent table when value is not existing and in the base table where the value is referred and you want to update it.

We have tables T11\_Department and T11\_Faculty. In T11\_Faculty, the attribute named

Department\_Name is the foreign key which references the T11\_Department table. Thus,

T11\_Faculty is the dependent table and T11\_Department is the base table.

To show how foreign key constraints affect updating a dependent table when value does not

exist:

/\* We are trying to update the Department\_Name (FK) to 'Mining' which does not exist. \*/

UPDATE T11\_Faculty

SET Department\_Name ='Mining'

WHERE Faculty\_ID = 105;