NEW SUMMIT COLLEGE

(Affiliated to Tribhuvan University)

Lab Report of

Database Management System

CSC 265

Bachelors of Computer Science and Information Technology
Institute of Science and Technology

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NEW SUMMIT COLLEGE

Subject: Database Management System

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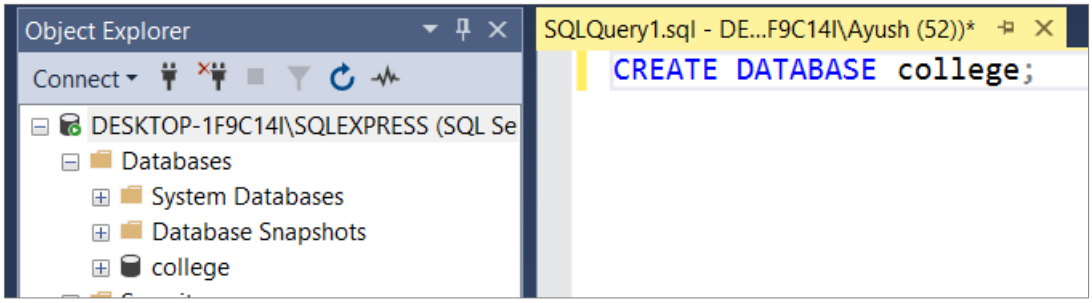
Submitted By: Bhakta suji

SNO	Unit Name	Title	Practical Date and Sign	Submission Date and Sign

Lab 1 - Single table DBMS.

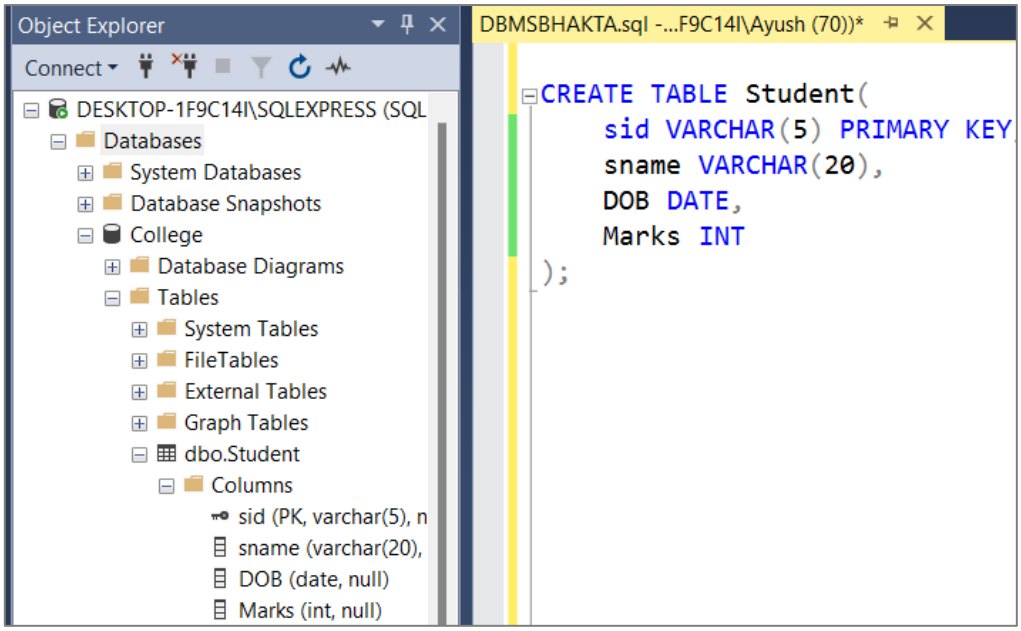
1. Create Database :

Query: CREATE DATABASE college;



2. Creating Table:

Query:
```
CREATE TABLE Student(
sid VARCHAR(5) PRIMARY KEY,
sname VARCHAR(20),
DOB DATE,
Marks INT
);
```



3. Inserting into Table:

Query:
```
INSERT INTO Student
VALUES ('s01','Pragyan Shrestha','2059-09-11', 99),
('s02', 'Bhakta Suji','2060-09-08', 85),
('s03','Ashish Gautam','2059-03-01',77);
```

4. Inserting Data Through GUI:

DBMSBHAKTA.sql -...F9C14I\Ayush (70))* | DESKTOP-1F9C14I\S...ege - dbo.Student

sid	sname	DOB	Marks
s01	Pragyan Shrestha	2059-09-11	99
s02	Bhakta Suji	2060-09-08	85
s03	Ashish Gautam	2059-03-01	77
s04	Aliza Shrestha	2060-04-16	99
s05	Aayush Chettri	2060-01-18	78
NULL	*NULL*	*NULL*	*NULL*

5. Displaying all Data from Table:

Query:

```
SELECT *
FROM Student;
```

100 % | Results | Messages

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s02	Bhakta Suji	2060-09-08	85
3	s03	Ashish Gautam	2059-03-01	77
4	s04	Aliza Shrestha	2060-04-16	99
5	s05	Aayush Chettri	2060-01-18	78

6. Displaying Selected Data from Table:

Query:

```
SELECT sname,Marks
From Student
WHERE Marks < 95;
```

Results | Messages

	sname	Marks
1	Bhakta Suji	85
2	Ashish Gautam	77
3	Aayush Chettri	78

7. Display name of all students of marks not equal to 200 or of dob less than ‘2070-01-01’.

Query:

```
SELECT sname
FROM student
WHERE marks < > 200 OR dob < '2070-01-01'
```

Results | Messages

	sname
1	Pragyan Shrestha
2	Bhakta Suji
3	Ashish Gautam
4	Aliza Shrestha
5	Aayush Chettri

8. Display all students of marks equal to 120 or 200 or 150 or 220 or 199.

Query:

```
SELECT *
FROM student
WHERE marks IN(120,200,150,220,199);
```

Results | Messages

	sid	sname	DOB	Marks
1	s06	Rodrik Das	2058-01-12	120
2	s07	Jivan Rai	2059-06-14	200

9. Display all students of marks not equal to 120 or 200 or 150 or 220 or 199.

Query:

```
SELECT *
FROM student
WHERE marks NOT IN(120,200,150,220,199);
```

Results | Messages

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s02	Bhakta Suji	2060-09-08	85
3	s03	Ashish Gautam	2059-03-01	77
4	s04	Aliza Shrestha	2060-04-16	99
5	s05	Aayush Chettri	2060-01-18	78

10. Display all students of dob between ‘2050-01-01’ and ‘2060-01-01’.

Query:

```
SELECT *
FROM student
WHERE dob BETWEEN '2050-01-01' AND '2060-01-01';
```

Results | Messages

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s03	Ashish Gautam	2059-03-01	77
3	s06	Rodrik Das	2058-01-12	120
4	s07	Jivan Rai	2059-06-14	200

11. Display all students of dob not between ‘2050-01-01’ and ‘2060-01-01’.

Query:

```
SELECT *
FROM student
WHERE dob NOT BETWEEN '2050-01-01' AND '2060-01-01';
```

Results | Messages

	sid	sname	DOB	Marks
1	s02	Bhakta Suji	2060-09-08	85
2	s04	Aliza Shrestha	2060-04-16	99
3	s05	Aayush Chettri	2060-01-18	78

12. Display name of all students whose marks is Null and Not Null.

Query:

For marks is Null:

```
SELECT sname
FROM student
WHERE marks IS NULL ;
```

Results | Messages

	sname
1	Samuel khadka
2	Kritan Basnet

For marks is Not Null:

```
SELECT sname
FROM student
WHERE marks IS NOT NULL ;
```

Results | Messages

	sname
1	Pragyan Shrestha
2	Bhakta Suji
3	Ashish Gautam
4	Aliza Shrestha
5	Aayush Chettri
6	Rodrik Das
7	Jivan Rai

13. Display records of all students whose name contains ‘m’ as substring and dob is less than ‘2065-01-05’.

Query:

```
SELECT *
FROM Student
WHERE sname LIKE '%m%' AND dob < '2065-01-05'
```

Results | Messages

	sid	sname	DOB	Marks
1	s03	Ashish Gautam	2059-03-01	77
2	s08	Samuel khadka	2060-12-09	NULL

14. Display records of all students whose name length is not equal to 5.

Query:

```
SELECT *
FROM Student
WHERE sname NOT LIKE '_____';
```

Results | Messages

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s02	Bhakta Suji	2060-09-08	85
3	s03	Ashish Gautam	2059-03-01	77
4	s04	Aliza Shrestha	2060-04-16	99
5	s05	Aayush Chettri	2060-01-18	78
6	s06	Rodrik Das	2058-01-12	120
7	s07	Jivan Rai	2059-06-14	200
8	s08	Samuel khadka	2060-12-09	NULL
9	s09	Kritan Basnet	2058-04-08	NULL

15. Display records of all students in ascending order of their dob.

Query:

```
SELECT *
FROM student ORDER by dob ASC;
```

Results | Messages

	sid	sname	DOB	Marks
1	s06	Rodrik Das	2058-01-12	120
2	s09	Kritan Basnet	2058-04-08	NULL
3	s03	Ashish Gautam	2059-03-01	77
4	s07	Jivan Rai	2059-06-14	200
5	s01	Pragyan Shrestha	2059-09-11	99
6	s05	Aayush Chettri	2060-01-18	78
7	s04	Aliza Shrestha	2060-04-16	99
8	s02	Bhakta Suji	2060-09-08	85
9	s08	Samuel khadka	2060-12-09	NULL

16. Display records of all students of marks less than than 200 and arrange the data in descending order of their marks.

Query:

```
SELECT *
FROM STUDENT
WHERE marks < 200 ORDER by marks DESC;
```

	sid	sname	DOB	Marks
1	s06	Rodrik Das	2058-01-12	120
2	s01	Pragyan Shrestha	2059-09-11	99
3	s04	Aliza Shrestha	2060-04-16	99
4	s02	Bhakta Suji	2060-09-08	85
5	s05	Aayush Chettri	2060-01-18	78
6	s03	Ashish Gautam	2059-03-01	77

17. Display records of all students by displaying unique names.

Query:
```
SELECT DISTINCT (sname)
FROM student;
```

Results Messages

	sname
1	Aayush Chettri
2	Aliza Shrestha
3	Ashish Gautam
4	Bhakta Suji
5	Jivan Rai
6	Kritan Basnet
7	Pragyan Shrestha
8	Rodrik Das
9	Samuel khadka

18. Display top 3 records of student.

Query:
```
Select TOP(3) *
From student ;
```

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s02	Bhakta Suji	2060-09-08	85
3	s03	Ashish Gautam	2059-03-01	77

19. Find total no of students.

Query:
```
SELECT COUNT(*) AS 'Total Student'
FROM student ;
```

Results Messages

	Total Student
1	9

20. Find maximum and minimum marks of students.

Query:
```
SELECT MIN(marks) AS 'MIN Mark', MAX(marks) AS 'MAX
Mark'

FROM student ;
```

Results Messages

	MIN Mark	MAX Mark
1	77	200

21. Find name and dob of those student who get maximum marks.

Query:

```
SELECT sname, dob, marks
FROM student
WHERE marks IN (SELECT MAX(marks) FROM student ) ;
```

Results | Messages

	sname	dob	marks
1	Jivan Rai	2059-06-14	200

22. Display no of student with same Marks.

Query:

```
SELECT COUNT(Marks) as 'NOS' ,Marks
FROM student GROUP BY (Marks);
```

Results | Messages

	NOS	Marks
1	0	NULL
2	1	77
3	1	78
4	1	85
5	2	99
6	1	120
7	1	200

23. Increase marks of all student by 40% of name start with 'A'

Query:

```
UPDATE student
SET marks = marks + marks *0.4
WHERE sname LIKE 'R%' ;
```

Before:

Results | Messages

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s02	Bhakta Suji	2060-09-08	85
3	s03	Ashish Gautam	2059-03-01	77
4	s04	Aliza Shrestha	2060-04-16	99
5	s05	Aayush Chettri	2060-01-18	78
6	s06	Rodrik Das	2058-01-12	120
7	s07	Jivan Rai	2059-06-14	200
8	s08	Samuel khadka	2060-12-09	NULL
9	s09	Kritan Basnet	2058-04-08	NULL

After:

Results | Messages

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s02	Bhakta Suji	2060-09-08	85
3	s03	Ashish Gautam	2059-03-01	107
4	s04	Aliza Shrestha	2060-04-16	138
5	s05	Aayush Chettri	2060-01-18	109
6	s06	Rodrik Das	2058-01-12	120
7	s07	Jivan Rai	2059-06-14	200
8	s08	Samuel khadka	2060-12-09	NULL
9	s09	Kritan Basnet	2058-04-08	NULL
10	s10	Simran bhattrai	NULL	NULL

24. Delete record of all student with marks less than 150.

Query:

```
DELETE FROM student
WHERE (marks) < 150 ;
```

Before:

Results | Messages

	sid	sname	DOB	Marks
1	s01	Pragyan Shrestha	2059-09-11	99
2	s02	Bhakta Suji	2060-09-08	85
3	s03	Ashish Gautam	2059-03-01	107
4	s04	Aliza Shrestha	2060-04-16	138
5	s05	Aayush Chettri	2060-01-18	109
6	s06	Rodrik Das	2058-01-12	120
7	s07	Jivan Rai	2059-06-14	200
8	s08	Samuel khadka	2060-12-09	NULL
9	s09	Kritan Basnet	2058-04-08	NULL
10	s10	Simran bhattrai	NULL	NULL

After:

Results | Messages

	sid	sname	DOB	Marks
1	s07	Jivan Rai	2059-06-14	200
2	s08	Samuel khadka	2060-12-09	NULL
3	s09	Kritan Basnet	2058-04-08	NULL
4	s10	Simran bhattrai	NULL	NULL

25. Insert new attribute address to the student table.

Query:
```
ALTER TABLE student
ADD Address VARCHAR(20);
```

Before:

Results | Messages

	sid	sname	DOB	Marks
1	s07	Jivan Rai	2059-06-14	200
2	s08	Samuel khadka	2060-12-09	NULL
3	s09	Kritan Basnet	2058-04-08	NULL
4	s10	Simran bhattrai	NULL	NULL

After:

Results | Messages

	sid	sname	DOB	Marks	Address
1	s07	Jivan Rai	2059-06-14	200	NULL
2	s08	Samuel khadka	2060-12-09	NULL	NULL
3	s09	Kritan Basnet	2058-04-08	NULL	NULL
4	s10	Simran bhattrai	NULL	NULL	NULL

26. Remove address attribute from student table.

Query:
```
ALTER TABLE student
DROP COLUMN Address;
```

Before:

Results | Messages

	sid	sname	DOB	Marks	Address
1	s07	Jivan Rai	2059-06-14	200	NULL
2	s08	Samuel khadka	2060-12-09	NULL	NULL
3	s09	Kritan Basnet	2058-04-08	NULL	NULL
4	s10	Simran bhattrai	NULL	NULL	NULL

After:

Results | Messages

	sid	sname	DOB	Marks
1	s07	Jivan Rai	2059-06-14	200
2	s08	Samuel khadka	2060-12-09	NULL
3	s09	Kritan Basnet	2058-04-08	NULL
4	s10	Simran bhattrai	NULL	NULL

27. Rename the sname attribute to FullName'.

Query:
```
EXEC sp_rename 'Student.sname' ,'FullName'
```

Before:

Results | Messages

	sid	sname	DOB	Marks
1	s07	Jivan Rai	2059-06-14	200
2	s08	Samuel khadka	2060-12-09	NULL
3	s09	Kritan Basnet	2058-04-08	NULL
4	s10	Simran bhattrai	NULL	NULL

After:

Results | Messages

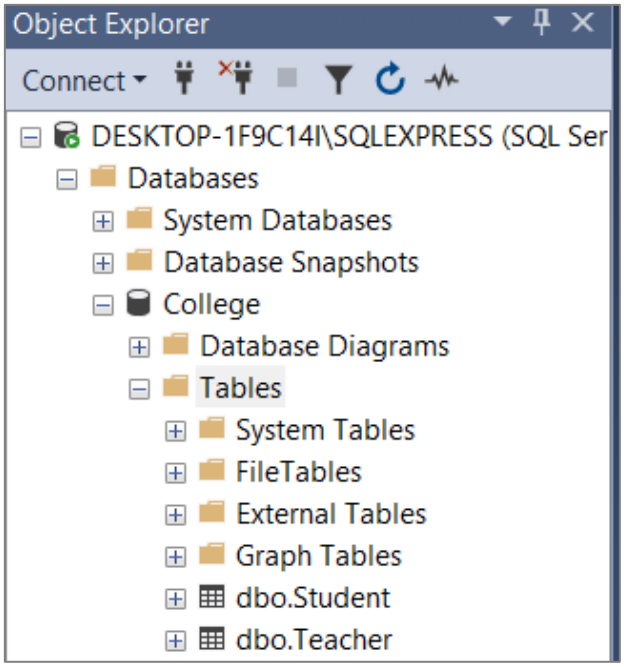
	sid	FullName	DOB	Marks
1	s07	Jivan Rai	2059-06-14	200
2	s08	Samuel khadka	2060-12-09	NULL
3	s09	Kritan Basnet	2058-04-08	NULL
4	s10	Simran bhattrai	NULL	NULL

28. Delete table 'Teacher' from database:

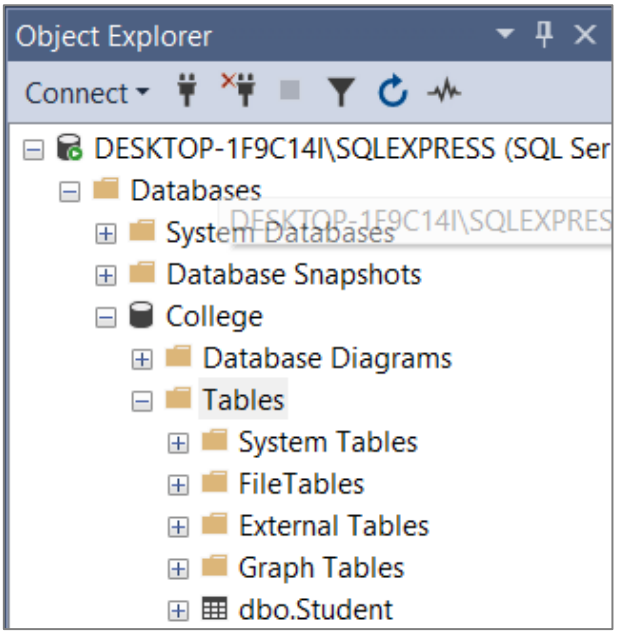
Query:
```
DROP TABLE Teacher;
```

Lab 1 - Single table DBMS.

Before:



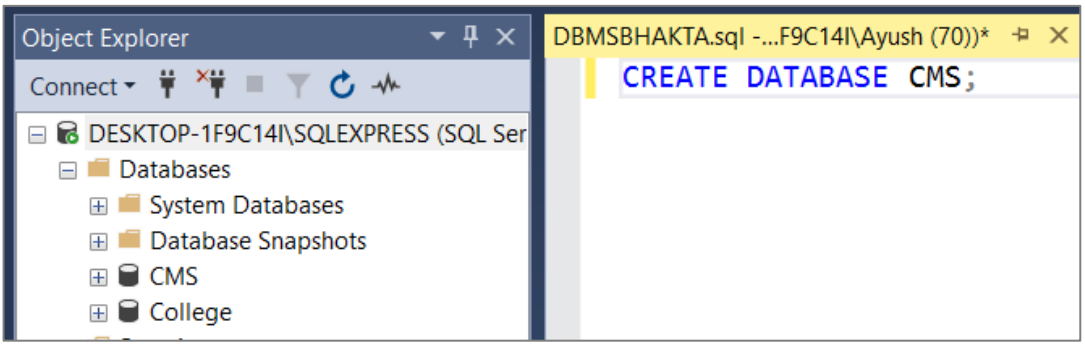
After:



Lab 2- Multiple Table DBMS

1. Create Database CMS:

Query: CREATE DATABASE CMS;

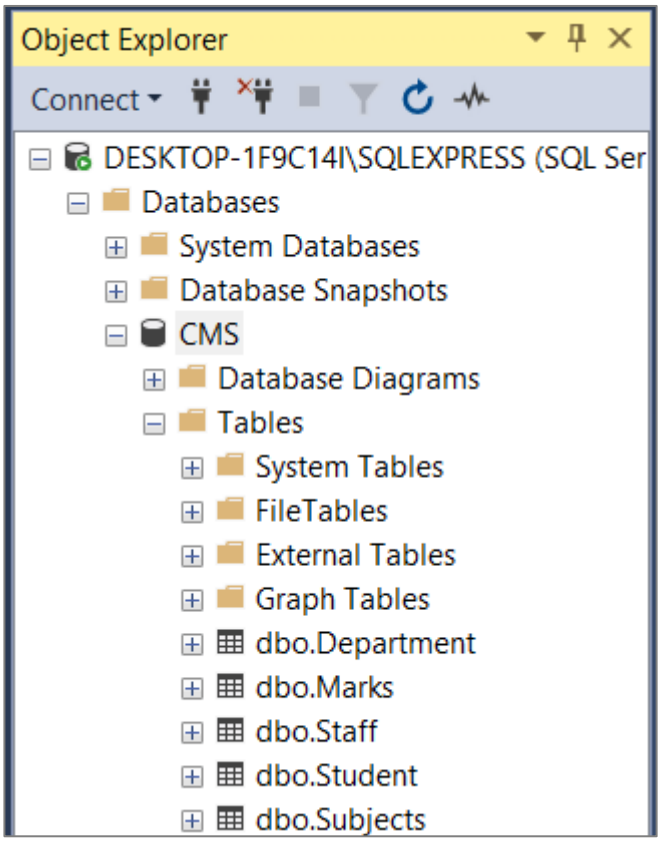


2. Create Multiple Tables : Department, Student, Staff, Subjects and Marks.

Query:

```
CREATE TABLE Department(
Did INT NOT NULL identity (1,1) PRIMARY KEY ,
Dname VARCHAR(20),
Db_no INT
);

CREATE TABLE Student(
Sid INT NOT NULL identity (20,1) PRIMARY KEY ,
Sname VARCHAR(20),
Address VARCHAR(20),
Dob DATE ,
Did INT,
FOREIGN KEY (Did) references Department(Did)
      );

CREATE TABLE Staff(
Staff_id INT NOT NULL identity (40,1) PRIMARY KEY ,
Staff_name VARCHAR(20),
Did INT,
FOREIGN KEY (Did) references Department(Did)
      );

CREATE TABLE Subjects (Sub_id VARCHAR(10) PRIMARY
KEY,

Sub_name VARCHAR(20),
Credit_hr INT,
Staff_id INT
FOREIGN KEY (Staff_id) references Staff(Staff_id)
);

CREATE TABLE Marks(
Obatained_marks INT,
```

```
Sub_id VARCHAR(10),
Sid INT,
FOREIGN KEY (Sub_id) references Subjects(Sub_id),
FOREIGN KEY (Sid) references Student(Sid)
);
```



3. Insert records to each of the tables

Query:

```
INSERT INTO Department (Dname, Db_no) VALUES
('Computer Graphics', 101),
('Computer Network', 102),
('Physics', 103),
('Economics', 104),
('Mathematics', 105);
```

DESKTOP-1F9C14I\S...- dbo.Department

	Did	Dname	Db_no
	1	Computer G...	101
	2	Computer N...	102
	3	Physics	103
	4	Economics	104
	5	Mathematics	105
▶*	NULL	NULL	NULL

```
INSERT INTO Student (Sname, Address, Dob, Did)
VALUES

('Samuel Rai', 'Lalitpur', '2003-07-09', 3),
('Devi Pathak', 'Palpa', '1999-06-15', 2),
('Rita Sharma', 'Kavre', '2000-04-10', 1),
('David Khadka', 'Pokhara', '2002-08-25', 1),
('Suman Dongol', 'Bhaktapur', '1997-11-30', 2),
('Puspa Tamang', 'Nuwakot', '2005-01-12', 4),
('Girish Koirala', 'Dang', '2003-12-07', 3),
('Sabin Shrestha', 'Ilam', '2001-10-03', 5),
('Maya Gurung', 'Dhading', '1998-06-09', 2),
('Adrian Pariyar', 'Kathmandu', '2006-06-22', 5);
```

DESKTOP-1F9C14I\...CMS - dbo.Student

Sid	Sname	Address	Dob	Did
20	Samuel Rai	Lalitpur	2003-07-09	3
21	Devi Pathak	Palpa	1999-06-15	2
22	Rita Sharma	Kavre	2000-04-10	1
23	David Khad...	Pokhara	2002-08-25	1
24	Suman Don...	Bhaktapur	1997-11-30	2
25	Puspa Tama...	Nuwakot	2005-01-12	4
26	Girish Koirala	Dang	2003-12-07	3
27	Sabin Shrest...	Ilam	2001-10-03	5
28	Maya Gurung	Dhading	1998-06-09	2
29	Adrian Pariy...	Kathmandu	2006-06-22	5
NULL	NULL	NULL	NULL	NULL

```
INSERT INTO Staff (Staff_name, Did) VALUES
('Suman Tamang', 1),
('Priya Gurung', 2),
('Amit Shrestha', 1),
('Manisha Thapa', 2),
('Ravi Shahi', 3),
('Sita Dhakal', 5),
('Kiran Basnet', 4),
('Gita Adhikari', 3),
('Sunil Magar', 5),
('Anjana Maharjan', 4);
```

DESKTOP-1F9C14I\S...S.CMS - dbo.Staff

Staff_id	Staff_name	Did
40	Suman Tam...	1
41	Priya Gurung	2
42	Amit Shrest...	1
43	Manisha Th...	2
44	Ravi Shahi	3
45	Sita Dhakal	5
46	Kiran Basnet	4
47	Gita Adhikari	3
48	Sunil Magar	5
49	Anjana Mah...	4

```
INSERT INTO Subjects (Sub_id, Sub_name, Credit_hr,
Staff_id) VALUES

('CG101', 'ComputerGraphics 1', 3, 40),
('CN101', 'ComputerNetworks 1', 3, 42),
('PHY101', 'General Physics', 4, 45),
('ECO101', 'Intro to Economics', 3, 44),
('MAT101', 'Linear Algerba', 3, 46);
```

DESKTOP-1F9C14I\S...MS - dbo.Subjects

	Sub_id	Sub_name	Credit_hr	Staff_id
	CG101	ComputerGr...	3	40
	CN101	ComputerN...	3	42
	ECO101	Intro to Eco...	3	44
	MAT101	Linear Alger...	3	46
	PHY101	General Phy...	4	45

```
INSERT INTO Marks (Obatained_marks, Sub_id, Sid)
VALUES

(85, 'CG101', 20),
(78, 'CN101', 22),
(92, 'ECO101', 24),
(88, 'MAT101', 25),
(75, 'PHY101', 22),
(90, 'CG101', 27),
(82, 'CN101', 24),
(94, 'CG101', 27),
(89, 'ECO101', 29),
(80, 'PHY101', 26);
```

DESKTOP-1F9C14I\...S.CMS - dbo.Marks

	Obatained_...	Sub_id	Sid
	85	CG101	20
	78	CN101	22
	92	ECO101	24
	88	MAT101	25
	75	PHY101	22
	90	CG101	27
	82	CN101	24
	94	CG101	27
	89	ECO101	29
	80	PHY101	26

4. Display records of those student who get maximum marks.

Query:

```
SELECT * FROM Student AS s WHERE s.sid IN
(SELECT m.sid FROM Marks AS m
WHERE Obatained_marks In
(SELECT MAX(Obatained_marks) FROM Marks ));
```

Results | Messages

	Sid	Sname	Address	Dob	Did
1	27	Sabin Shrestha	Ilam	2001-10-03	5

5. Find name and marks of all students who get minimum marks.

Query:

```
SELECT s.sname , m.Obatained_marks FROM Student AS s
INNER JOIN Marks AS m ON s.sid=m.sid
WHERE Obatained_marks IN
(SELECT MIN(Obatained_marks) FROM Marks);
```

Results | Messages

	sname	Obatained_marks
1	Rita Sharma	75

6. Display list of subjects learned by student of dob less than 2045-10-10.

Query:

```
SELECT sub.Sub_id,sub.Sub_name ,sub.credit_hr
,sub.Staff_id , s.sname

FROM Subjects AS sub INNER JOIN Marks AS m
 ON sub.sub_id=m.sub_id INNER JOIN Student AS s
 ON s.sid =m.sid WHERE s.Dob < '1999-10-10' ;
```

Results | Messages

	Sub_id	Sub_name	credit_hr	Staff_id	sname
1	ECO101	Intro to Economics	3	44	Suman Dongol
2	CN101	ComputerNetworks 1	3	42	Suman Dongol

7. Display name of all students of department 'Computer Graphics' or of address start with 'k'.

Query:

```
SELECT s.sname, s.Address
FROM Department AS d
INNER JOIN Student AS s
ON d.Did = s.Did
WHERE s.Address LIKE 'K%' OR d.Dname =
'Computer Graphics';
```

Results | Messages

	sname	Address
1	Rita Sharma	Kavre
2	David Khadka	Pokhara
3	Adrian Pariyar	Kathmandu

8. Increase marks of all students of address 'Kathmandu' by 20%.

Query:

```
UPDATE Marks SET

Obatained_marks =Obatained_marks + 0.2 *
Obatained_marks

WHERE Sid IN

(SELECT sid FROM student WHERE Address
='Kathmandu');
```

Before:

Results | Messages

	sname	Address	Obatained_marks
1	Samuel Rai	Lalitpur	85
2	Rita Sharma	Kavre	78
3	Suman Dongol	Bhaktapur	92
4	Puspa Tamang	Nuwakot	88
5	Rita Sharma	Kavre	75
6	Sabin Shrestha	Ilam	90
7	Suman Dongol	Bhaktapur	82
8	Sabin Shrestha	Ilam	94
9	Adrian Pariyar	Kathmandu	73
10	Girish Koirala	Dang	80

After:

Results | Messages

	sname	Address	Obatained_marks
1	Samuel Rai	Lalitpur	85
2	Rita Sharma	Kavre	78
3	Suman Dongol	Bhaktapur	92
4	Puspa Tamang	Nuwakot	88
5	Rita Sharma	Kavre	75
6	Sabin Shrestha	Ilam	90
7	Suman Dongol	Bhaktapur	82
8	Sabin Shrestha	Ilam	94
9	Adrian Pariyar	Kathmandu	82
10	Girish Koirala	Dang	80

9. Display record of all student in descending order of their dob.

Query:

```
SELECT *
FROM Student s
ORDER by s.Dob DESC;
```

Results | Messages

	Sid	Sname	Address	Dob	Did
1	29	Adrian Pariyar	Kathmandu	2006-06-22	5
2	25	Puspa Tamang	Nuwakot	2005-01-12	4
3	26	Girish Koirala	Dang	2003-12-07	3
4	20	Samuel Rai	Lalitpur	2003-07-09	3
5	23	David Khadka	Pokhara	2002-08-25	1
6	27	Sabin Shrestha	Ilam	2001-10-03	5
7	22	Rita Sharma	Kavre	2000-04-10	1
8	21	Devi Pathak	Palpa	1999-06-15	2
9	28	Maya Gurung	Dhading	1998-06-09	2
10	24	Suman Dongol	Bhaktapur	1997-11-30	2

10. Display total no.of student and their address in every address level.

Query:

```
SELECT COUNT (sid) AS NOS ,Address
FROM Student GROUP BY (Address);
```

Results | Messages

	NOS	Address
1	1	Bhaktapur
2	1	Dang
3	1	Dhading
4	1	Ilam
5	1	Kathmandu
6	1	Kavre
7	1	Lalitpur
8	1	Nuwakot
9	1	Palpa
10	1	Pokhara

11. Display all department with no students.

Query:

```
SELECT Dname FROM Student s
FULL OUTER JOIN Department d
ON s.did=d.did WHERE s.did is NULL;
```

Results | Messages

	Dname
1	Crypography

12. Display records of all student of address start with 'B' and get greater or equal than average marks.

Query:

```
SELECT * FROM Student s
INNER JOIN Marks m ON s.sid=m.sid
WHERE s.Address LIKE 'B%' AND
Obatained_marks >= (SELECT AVG(Obatained_marks)
FROM Marks);
```

Results | Messages

	Sid	Sname	Address	Dob	Did	Obatained_marks	Sub_id	Sid
1	24	Suman Dongol	Bhaktapur	1997-11-30	2	92	ECO101	24

13. Display 5 oldest student of address start with 'B’.

Query:

```
SELECT TOP 5*
FROM student s
WHERE s.ADDRESS LIKE 'B%'
ORDER BY Dob ASC ;
```

Results | Messages

	Sid	Sname	Address	Dob	Did
1	24	Suman Dongol	Bhaktapur	1997-11-30	2
2	32	Bishal Sangel	Birgunj	1998-03-19	5
3	31	Angel Das	Bhairawa	2000-01-06	4

14. Increase the credit hr of all subjects of name contains letter 'a' and study by student of address 'Kathmandu' by 2 hr.

Query:

```
UPDATE Subjects SET Credit_hr = Credit_hr +2
FROM Student s INNER JOIN Marks AS m
ON s.sid =m.sid INNER JOIN Subjects AS sub
ON sub.Sub_id =m.Sub_id WHERE sub.Sub_name
LIKE '%A%' AND s.Address ='Kathmandu' ;
```

Before:

Results | Messages

	sname	Address	Credit_hr
1	Samuel Rai	Lalitpur	3
2	Rita Sharma	Kavre	3
3	Suman Dongol	Bhaktapur	3
4	Puspa Tamang	Nuwakot	3
5	Rita Sharma	Kavre	4
6	Sabin Shrestha	Ilam	3
7	Suman Dongol	Bhaktapur	3
8	Sabin Shrestha	Ilam	3
9	Adrian Pariyar	Kathmandu	3
10	Girish Koirala	Dang	4
11	Sanjeev khadka	Kathmandu	3

After:

Results | Messages

	sname	Address	Credit_hr
1	Samuel Rai	Lalitpur	3
2	Rita Sharma	Kavre	3
3	Suman Dongol	Bhaktapur	3
4	Puspa Tamang	Nuwakot	5
5	Rita Sharma	Kavre	4
6	Sabin Shrestha	Ilam	3
7	Suman Dongol	Bhaktapur	3
8	Sabin Shrestha	Ilam	3
9	Adrian Pariyar	Kathmandu	3
10	Girish Koirala	Dang	4
11	Sanjeev khadka	Kathmandu	5

15. Find out current age from dob of all students.

Query:

```
SELECT sname, DOB, DATEDIFF (year,DOB,GETDATE())
AS age FROM Student ;
```

Results | Messages

	sname	DOB	age
1	Samuel Rai	2003-07-09	21
2	Devi Pathak	1999-06-15	25
3	Rita Sharma	2000-04-10	24
4	David Khadka	2002-08-25	22
5	Suman Dongol	1997-11-30	27
6	Puspa Tamang	2005-01-12	19
7	Girish Koirala	2003-12-07	21
8	Sabin Shrestha	2001-10-03	23
9	Maya Gurung	1998-06-09	26
10	Adrian Pariyar	2006-06-22	18
11	Angel Das	2000-01-06	24
12	Bishal Sangel	1998-03-19	26
13	Sanjeev khad...	2003-12-06	21

16. Display only those student whose dob contain 2000 yr.

Query:

```
SELECT sname, year(DOB) as Birth_Year
FROM Student WHERE year(DOB) = '2000'
```

Results | Messages

	sname	Birth_Year
1	Rita Sharma	2000
2	Angel Das	2000

17. Display year,month and day of all students and their names.

Query:

```
SELECT sname, year(DOB) AS Year,MONTH(DOB) AS
Month , DAY(DOB) AS Dob FROM Student ;
```

Results | Messages

	sname	Year	Month	Dob
1	Samuel Rai	2003	7	9
2	Devi Pathak	1999	6	15
3	Rita Sharma	2000	4	10
4	David Khadka	2002	8	25
5	Suman Dongol	1997	11	30
6	Puspa Tamang	2005	1	12
7	Girish Koirala	2003	12	7
8	Sabin Shrestha	2001	10	3
9	Maya Gurung	1998	6	9
10	Adrian Pariyar	2006	6	22
11	Angel Das	2000	1	6
12	Bishal Sangel	1998	3	19
13	Sanjeev khadka	2003	12	6

18. Display all student who associated with ‘Computer Graphics’ department.

Query:

```
SELECT Sname,Address,Dob,Dname
FROM Department AS d INNER JOIN Student AS s
ON d.Did=s.Did WHERE d.Dname = 'Computer Science';
```

Results | Messages

	Sname	Address	Dob	Dname
1	Rita Sharma	Kavre	2000-04-10	Computer Graphics
2	David Khadka	Pokhara	2002-08-25	Computer Graphics

19. Find join of above 5-tables.

Query:

```
SELECT *
FROM Student s INNER JOIN Marks AS m
ON s.sid =m.sid
INNER JOIN Subjects AS sub
ON sub.Sub_id =m.Sub_id
INNER JOIN Staff AS st
ON st.Staff_id =sub.Staff_idINNER JOIN Department
AS d ON d.Did =s.Did ;
```

Results Messages

	Sid	Sname	Address	Dob	Did	Obatained_marks	Sub_id	Sid	Sub_id	Sub_name	Credit_hr	Staff_id	Staff_id	Staff_name	Did	Did	Dname	Db_no
1	20	Samuel Rai	Lalitpur	2003-07-09	3	85	CG101	20	CG101	ComputerGraphics 1	3	40	40	Suman Tamang	1	3	Physics	103
2	22	Rita Sharma	Kavre	2000-04-10	1	78	CN101	22	CN101	ComputerNetworks 1	3	42	42	Amit Shrestha	1	1	Computer Graphics	101
3	24	Suman Dongol	Bhaktapur	1997-11-30	2	92	ECO101	24	ECO101	Intro to Economics	3	44	44	Ravi Shahi	3	2	Computer Network	102
4	25	Puspa Tamang	Nuwakot	2005-01-12	4	88	MAT101	25	MAT101	Linear Algerba	5	46	46	Kiran Basnet	4	4	Economics	104
5	22	Rita Sharma	Kavre	2000-04-10	1	75	PHY101	22	PHY101	General Physics	4	45	45	Sita Dhakal	5	1	Computer Graphics	101
6	27	Sabin Shrestha	Ilam	2001-10-03	5	90	CG101	27	CG101	ComputerGraphics 1	3	40	40	Suman Tamang	1	5	Mathematics	105
7	24	Suman Dongol	Bhaktapur	1997-11-30	2	82	CN101	24	CN101	ComputerNetworks 1	3	42	42	Amit Shrestha	1	2	Computer Network	102
8	27	Sabin Shrestha	Ilam	2001-10-03	5	94	CG101	27	CG101	ComputerGraphics 1	3	40	40	Suman Tamang	1	5	Mathematics	105
9	29	Adrian Pariyar	Kathmandu	2006-06-22	5	82	ECO101	29	ECO101	Intro to Economics	3	44	44	Ravi Shahi	3	5	Mathematics	105
10	26	Girish Koirala	Dang	2003-12-07	3	80	PHY101	26	PHY101	General Physics	4	45	45	Sita Dhakal	5	3	Physics	103
11	33	Sanjeev khadka	Kathmandu	2003-12-06	5	86	MAT101	33	MAT101	Linear Algerba	5	46	46	Kiran Basnet	4	5	Mathematics	105

Lab3- Use of View DBMS

1. Create a view ‘student_view’ that display all student of age less than 25.

Query:

```
CREATE VIEW Student_view as
SELECT sname ,dob,DATEDIFF (year,DOB,GETDATE()) AS
Age FROM Student WHERE DATEDIFF
(year,DOB,GETDATE()) < 25;
```

Results | Messages

	sname	dob	Age
1	Samuel Rai	2003-07-09	21
2	Rita Sharma	2000-04-10	24
3	David Khadka	2002-08-25	22
4	Puspa Tamang	2005-01-12	19
5	Girish Koirala	2003-12-07	21
6	Sabin Shrestha	2001-10-03	23
7	Adrian Pariyar	2006-06-22	18
8	Angel Das	2000-01-06	24
9	Sanjeev khadka	2003-12-06	21

2. Create a view 'Student_subjects' that display all student who takes ‘Programming’ subject.

Query:

```
CREATE VIEW student_subjects AS

SELECT sub.Sub_id,sub.Sub_name, s.Sname, s.Sid
FROM Student s INNER JOIN Marks AS m

ON s.sid =m.sid INNER JOIN Subjects AS sub ON
sub.Sub_id =m.Sub_id WHERE Sub_name
='Programming' ;
```

Results | Messages

	Sub_id	Sub_name	Sname	Sid
1	PHY101	General Physics	Rita Sharma	22
2	PHY101	General Physics	Girish Koirala	26

3. Create a view 'student details' that contain sid,sname and address of those student of address Kathmandu.

Query:

```
CREATE VIEW student_Details AS
SELECT Sid, sname,Address
FROM Student WHERE address ='Kathmandu';
```

Results | Messages

	Sid	sname	Address
1	29	Adrian Pariyar	Kathmandu
2	33	Sanjeev khadka	Kathmandu

4. Insert any 3 additional records to Student table.

Query:

```
INSERT INTO Student(Sname, Address, DOB , DID)
VALUES
(Aryan Sedhai' , 'Kathmandu' , '2061-03-19', 4),
('Pasang Lama' , 'Taplejung' , '2059-11-04', 5),
(‘Rashmi Dahal' , 'Kathmandu' , '2060-02-23', 3)
```

Results | Messages

	Sid	Sname	Address	Dob	Did
1	20	Samuel Rai	Lalitpur	2003-07-09	3
2	21	Devi Pathak	Palpa	1999-06-15	2
3	22	Rita Sharma	Kavre	2000-04-10	1
4	23	David Khadka	Pokhara	2002-08-25	1
5	24	Suman Dongol	Bhaktapur	1997-11-30	2
6	25	Puspa Tamang	Nuwakot	2005-01-12	4
7	26	Girish Koirala	Dang	2003-12-07	3
8	27	Sabin Shrestha	Ilam	2001-10-03	5
9	28	Maya Gurung	Dhading	1998-06-09	2
10	29	Adrian Pariyar	Kathmandu	2006-06-22	5
11	31	Angel Das	Bhairawa	2000-01-06	4
12	32	Bishal Sangel	Birgunj	1998-03-19	5
13	33	Sanjeev khadka	Kathmandu	2003-12-06	5
14	34	Aryan Sedhai	Kathmandu	2061-03-19	4
15	35	Pasang Lama	Taplejung	2059-11-04	5
16	36	Rashmi Dahal	Kathmandu	2060-02-23	3

5. Display the view ‘ student_details’

Query:

```
SELECT * FROM student_Details ;
```

Results | Messages

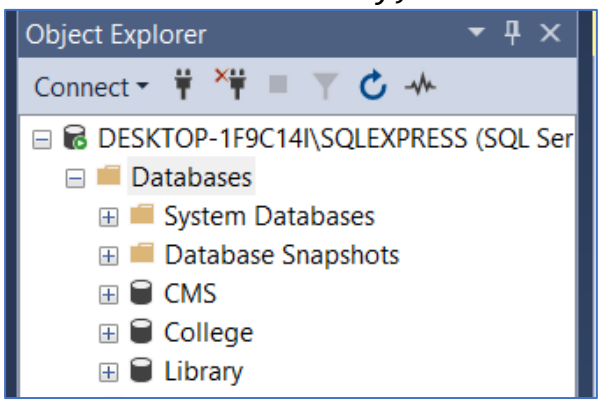
	Sid	sname	Address
1	29	Adrian Pariyar	Kathmandu
2	33	Sanjeev khadka	Kathmandu
3	34	Aryan Sedhai	Kathmandu
4	36	Rashmi Dahal	Kathmandu

Lab 4- Use of Constraints DBMS

1. Create database name ‘ Library ’.

Query:

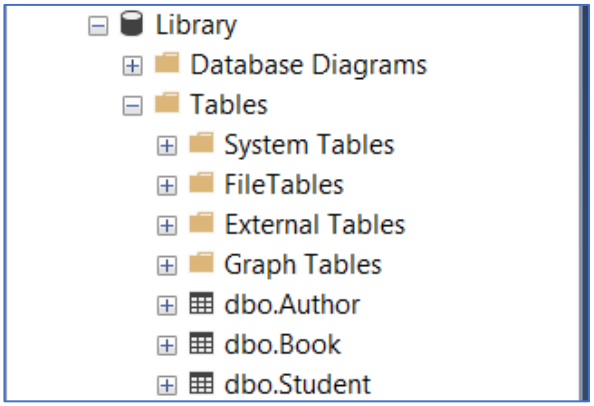
```
CREATE DATABASE Library;
```



2. Create table Books,Student and Author with proper constraints.

Query:

```
CREATE TABLE Student
( sid INT identity (11,1) PRIMARY KEY ,
sname VARCHAR(20),
age INT CHECK(age > 0 and age < 110) ,
address VARCHAR(20) DEFAULT 'Putalisadak'
);

CREATE TABLE Book (
ISBN VARCHAR(10) PRIMARY KEY,
bname VARCHAR (20),
price INT NOT NULL,
noP INT UNIQUE ,
sid INT,
FOREIGN KEY(sid) references Student (sid)
);

CREATE TABLE Author(
aid INT identity (21,1) PRIMARY KEY ,
aname VARCHAR(20) NOT NULL,
Phone_no VARCHAR(10) UNIQUE ,
address VARCHAR(20),
ISBN VARCHAR(10),
FOREIGN KEY (ISBN) references Book(ISBN));
```



3. Insert any 5 data into table Books,Student and Author.

Query:

```
INSERT INTO Student (sname, age, address) VALUES
('Bibesh Sedhai', 21, 'Boudha'),
('Jhuma Basnet', 22, 'Patan')
('Deeya Limbu', 19, 'Koteshwor'),
('Jina Dahal', 23, 'Sankhamul'),
('Simran Shrestha', 24, 'Lalitpur');
```

Results Messages

	sid	sname	age	address
1	11	Bibesh Sedhai	21	Boudha
2	12	Jhuma Basnet	22	Patan
3	13	Deeya Limbu	19	Koteshwor
4	14	Jina Dahal	23	Sankhamul
5	15	Simran Shrestha	24	Lalitpur

```
INSERT INTO Book (ISBN, bname, price, noP, sid)
VALUES

('ISBN001', 'Psycology', 300, 100, 11),
 ('ISBN002', 'Science', 500, 200, 12),
 ('ISBN003', 'Mathematics', 750, 300, 13),
 ('ISBN004', 'History', 650, 400, 14),
 ('ISBN005', 'Geography', 850, 500, 15);
```

Results Messages

	ISBN	bname	price	noP	sid
1	ISBN001	Psycology	300	100	11
2	ISBN002	Science	500	200	12
3	ISBN003	Mathematics	750	300	13
4	ISBN004	History	650	400	14
5	ISBN005	Geography	850	500	15

```
INSERT INTO Author (aname, Phone_no, address, ISBN)
VALUES
('Daya Pathak', '9803424767', 'Lalitpur','ISBN001'),
('Jayedra Kaki', '980234622', 'Bhaktpur','ISBN002'),
('Parsurm Bist', '98086539', 'Lalitpur', 'ISBN003'),
('Jyoti Khdka', '980481254', 'Birtngar', 'ISBN004'),
('Chadni Sedhai','98293121', 'Kathmndu', 'ISBN005');
```

Results Messages

	aid	aname	Phone_no	address	ISBN
1	21	Daya Pathak	9803424767	Lalitpur	ISBN001
2	22	Jayendra Karki	9802234622	Bhaktapur	ISBN002
3	23	Parsuram Bista	9803486539	Lalitpur	ISBN003
4	24	Jyoti Khadka	9801481254	Biratnagar	ISBN004
5	25	Chadani Sedhai	9828931921	Kathmandu	ISBN005

4. Test the 'default' constraints.

Here, Address attribute of Student table has default value as 'Putalisadak' .

Query:
```
INSERT INTO Student(sname, age)
values('Bhakta Suji', 21)
```

Results | Messages

	sid	sname	age	address
1	11	Bibesh Sedhai	21	Boudha
2	12	Jhuma Basnet	22	Patan
3	13	Deeya Limbu	19	Koteshwor
4	14	Jina Dahal	23	Sankhamul
5	15	Simran Shrestha	24	Lalitpur
6	16	Bhakta Suji	21	Putalisadak

5. Test for 'Unique' constraint.

Query:
```
INSERT INTO Book (ISBN, bname, price, noP, sid)
VALUES ('ISBN006', 'Philosophy', 1050, 300, 11);
```

Before:

Results | Messages

	ISBN	bname	price	noP	sid
1	ISBN001	Psycology	300	100	11
2	ISBN002	Science	500	200	12
3	ISBN003	Mathematics	750	300	13
4	ISBN004	History	650	400	14
5	ISBN005	Geography	850	500	15

After:

Messages

```
Msg 2627, Level 14, State 1, Line 263
Violation of UNIQUE KEY constraint 'UQ__Book__DF90DC11837DC8D3'.
The statement has been terminated.

Completion time: 2024-11-14T19:55:52.4139435+05:45
```

6. Test for 'Not Null ' constraint.

Here , price attribute of Book table has NOT NULL Constraint.

Query:
```
INSERT INTO Book (ISBN, bname, price, noP, sid)
VALUES ('ISBN007', 'Literature', NULL, 600, 12);
```

Messages

```
Msg 515, Level 16, State 2, Line 268
Cannot insert the value NULL into column 'price', table 'Library.dbo.Book';
column does not allow nulls.
INSERT fails.
The statement has been terminated.
```

7. Test for 'Primary Key' constraint.

Here, ISBM attribute of Book table is a PRIMARY KEY

Query:
```
INSERT INTO Book (ISBN, bname, price, noP, sid)
VALUES ('ISBN001', 'Economics', 1100, 600, 13);
```

Before:

Results | Messages

	ISBN	bname	price	noP	sid
1	ISBN001	Psycology	300	100	11
2	ISBN002	Science	500	200	12
3	ISBN003	Mathematics	750	300	13
4	ISBN004	History	650	400	14
5	ISBN005	Geography	850	500	15

After:

Messages

```
Msg 2627, Level 14, State 1, Line 271
Violation of PRIMARY KEY constraint 'PK__Book__447D36EB96813225'.
Cannot insert duplicate key in object 'dbo.Book'.
The duplicate key value is (ISBN001).
The statement has been terminated.
```

8. Test for 'Check' constraint.

Here , age attribute of Student table has CHECK Constraint as
age INT CHECK(age > 0 and age < 110)

Query:
```
INSERT INTO Student (sname, age, address) VALUES
('Ravi Pokhrel', 115, 'Santinagar');
```

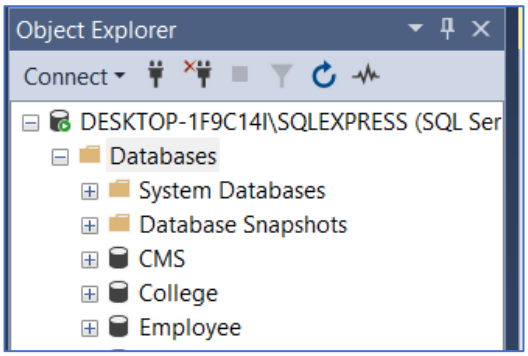
Messages

```
Msg 547, Level 16, State 0, Line 276
The INSERT statement conflicted with the CHECK constraint
"CK__Student__age__49C3F6B7". The conflict occurred in database
"Library", table "dbo.Student", column 'age'.
The statement has been terminated.
```

Lab 5- Use of Triggers DBMS

1. Create database name 'Employee'.

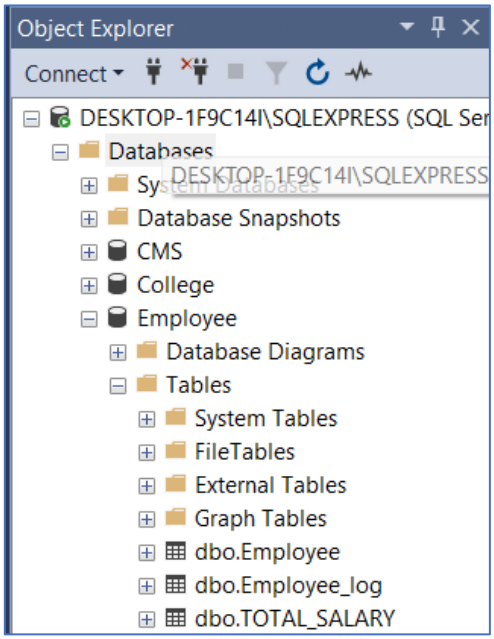
Query: CREATE DATABASE Employee;



2. Create table Employee,Employee_log and Total_salary with proper constraints.

Query:

```
CREATE TABLE Employee(
eid INT NOT NULL PRIMARY KEY ,
ename VARCHAR(20),
salary FLOAT,
Address VARCHAR(20)
);

CREATE TABLE Employee_log(
eid INT,
ename VARCHAR(20),
old_salary FLOAT,
new_salary FLOAT,
date_time DATETIME
);
CREATE TABLE TOTAL_SALARY (
salary_sum FLOAT);
```



3. Insert any 5 data into Employee table through GUI.

DESKTOP-1F9C14I\...ee - dbo.Employee

eid	ename	salary	Address
1	Aayush	34500	jhapa
2	Pragyan	35000	kathmandu
3	Ramesh	24000	Ilam
4	Prijesh	29000	Morang
5	Simran	30000	Pokhara

4. Create a trigger to find total sum of salary and store to total_salary table.

Query:

```
CREATE TRIGGER total_salary_update
ON Employee
AFTER INSERT, UPDATE, DELETE
AS
BEGIN
      DECLARE @total FLOAT;

      SELECT @total = SUM(salary) FROM Employee;

      UPDATE TOTAL_SALARY

      SET salary_sum = @total;

END;
```

5. Display total_salary table after activation of trigger total_salary_update.

Query:

```
UPDATE Employee
SET salary = 20000
WHERE eid = 1;
```

Results | Messages

	salary_sum
1	138000

6. Create trigger Employee_log_update .

Query:

```
CREATE trigger Employee_Log_update
ON Employee
AFTER UPDATE
AS
BEGIN
Insert into Employee_log(eid,ename,old_Salary,
new_salary,date_time)
```

```
SELECT deleted.eid,deleted.ename,deleted.salary AS
old_salary,inserted.salary AS new_salary,GETDATE()

FROM inserted

JOIN deleted
on inserted.eid=deleted.eid
END ;
```

7. Display Employee_log table after activation of trigger Employee_Log_Update.

Query:

```
SELECT* FROM
Employee_log
```

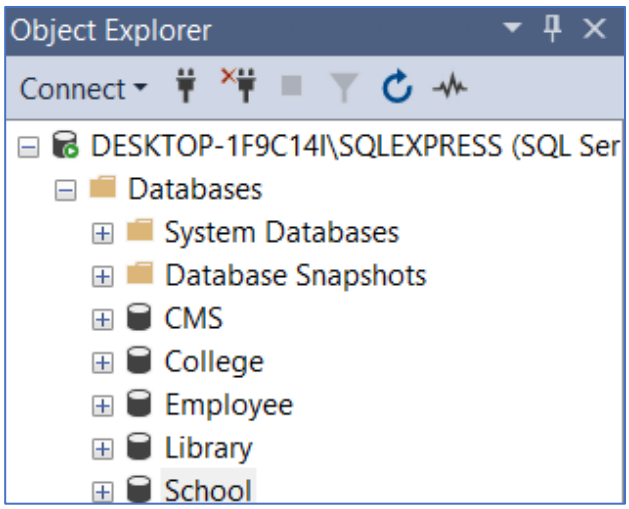
Results | Messages

	eid	ename	old_salary	new_salary	date_time
1	1	Aayush	20000	21000	2024-11-14 22:11:52.243

1. Create database name 'School':

Query:

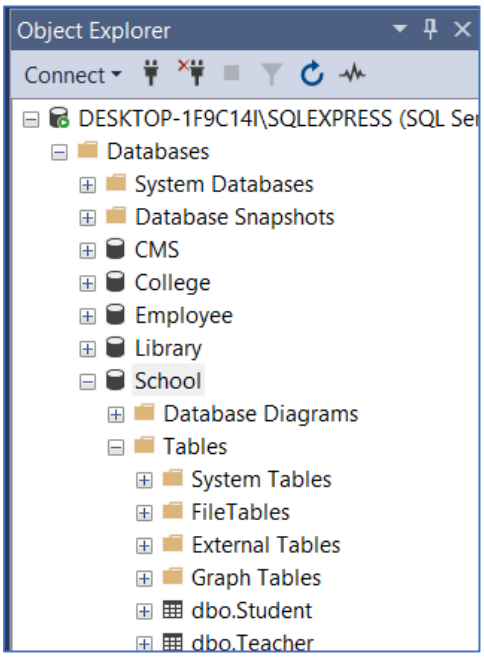
```
CREATE DATABASE School;
```



2. Create table Teacher and Student with proper constraints.

Query:

```
CREATE TABLE Teacher(
tid INT NOT NULL PRIMARY KEY ,
tname VARCHAR(20),
salary FLOAT,
Address VARCHAR(20) );

CREATE TABLE Student(
sid INT,
sname VARCHAR(20),
marks FLOAT,
tid INT, FOREIGN KEY (tid) references Teacher(tid)
);
```



3. Insert any 5 data into Teacher and Student table through GUI.

DESKTOP-1F9C14I\S...ool - dbo.Teacher

	tid	tname	salary	Address
	1	Ramesh	60000	Kathmandu
	2	Gobin	55000	Lalitpur
	3	Reshma	72000	Pokhara
	4	Sharmila	42000	Dharan
	5	Jyoti	69000	BIrtamode
*	NULL	NULL	NULL	NULL

DESKTOP-1F9C14I\S...ool - dbo.Student

	sid	sname	marks	tid
	1	Ganesh	69	1
	2	Shyam	79	2
	3	Kritan	87	3
	4	Jayesh	94	4
	5	Pragyan	100	5

4. Create a Stored Procedure teacher_student that retrieves data by joining the Teacher and Student tables based on their tid (teacher ID).

Query:

```
CREATE procedure teacher_student
AS
BEGIN
SELECT tname,address,sname,marks
FROM Teacher t inner join Student s
on t.tid = s.tid
END
```

5. Display procedure teacher_student.

Query:

```
EXEC teacher_student;
```

Results | Messages

	tname	address	sname	marks
1	Ramesh	Kathmandu	Ganesh	69
2	Gobin	Lalitpur	Shyam	79
3	Reshma	Pokhara	Kritan	87
4	Sharmila	Dharan	Jayesh	94
5	Jyoti	NULL	Pragyan	100