ASSIGNMENT 2

NISHANT PAREKH
J046
DATABASE MANAGEMENT 2

CODE :

```
CREATE TABLE DATA_SCIENCE_STUDENT
(
Student_Name varchar (50),
Roll_No int,
Course varchar (50),
Address varchar(100),
Faculty_Name varchar(50),
Faculty_ID varchar(50),
Grades varchar (50),
primary key(Roll_No)
);

INSERT INTO
DATA_SCIENCE_STUDENT(Student_Name,Roll_No,Course,Address,Faculty_Name,Faculty_ID,
Grades) values('NISHANT',1,'EVS,Math','Dadar','PUNEET,SURESH','F1,F2','E');
INSERT INTO
DATA_SCIENCE_STUDENT(Student_Name,Roll_No,Course,Address,Faculty_Name,Faculty_ID,
Grades) values('ANSHUL',2,'CHEM,BIO','Malad','SIBA,BUNNY','F3,F4','A');
INSERT INTO
DATA_SCIENCE_STUDENT(Student_Name,Roll_No,Course,Address,Faculty_Name,Faculty_ID,
Grades) values('AARYA',3,'ECO,GEO','Andheri','SAGAR,SONU','F5,F6','B');
INSERT INTO
DATA_SCIENCE_STUDENT(Student_Name,Roll_No,Course,Address,Faculty_Name,Faculty_ID,
Grades) values('HEMISH',4,'EVS,BIO','Kalyan','SARADA,BUNNY','F1,F4','C');
INSERT INTO
DATA_SCIENCE_STUDENT(Student_Name,Roll_No,Course,Address,Faculty_Name,Faculty_ID,
Grades) values('AHNAAN',5,'ECO,CHEM','Thane','UMESH,SUNNY','F5,F3','D');


SELECT*FROM DATA_SCIENCE_STUDENT
```

Student_N...	Roll_...	Course	Addr...	Faculty_Name	Faculty_...	Grad...
NISHANT	1	EVS,M...	Dadar	PUNEET,SU...	F1,F2	E
ANSHUL	2	CHEM,...	Malad	SIBA,BUNNY	F3,F4	A
AARYA	3	ECO,G...	Andheri	SAGAR,SO...	F5,F6	B
HEMISH	4	EVS,BIO	Kalyan	SARADA,B...	F1,F4	C
AHNAAN	5	ECO,C...	Thane	UMESH,SU...	F5,F3	D
NULL	NULL	NULL	NULL	NULL	NULL	NULL

DATA_SCIENCE_STUDENT 21

Apply

#1 table

```
CREATE TABLE DATA_SCIENCE_STUDENT_2
(
Student_Name varchar (50),
Roll_No int,
Subject_ID varchar (50),
Subject_Name varchar (50),
Address varchar(100),
Faculty_Name varchar(50),
Faculty_ID varchar(50),
Grades varchar (50),
primary key(Roll_No,Subject_ID)    # It becomes a composite key as "primary key(a,b)"
);

INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Faculty_Name,Faculty_ID,Grades) values('NISHANT',1,101,'EVS','Dadar','PUNEET','F1','E');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Faculty_Name,Faculty_ID,Grades) values('NISHANT',1,102,'Math','Dadar','SURESH','F2','E');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Faculty_Name,Faculty_ID,Grades) values('ANSHUL',2,103,'CHEM','Malad','SIBA','F3','A');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Faculty_Name,Faculty_ID,Grades) values('ANSHUL',2,104,'BIO','Malad','BUNNY','F4','A');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Faculty_Name,Faculty_ID,Grades) values('AARYA',3,105,'ECO','Andheri','SAGAR','F5','B');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Faculty_Name,Faculty_ID,Grades) values('AARYA',3,106,'GEO','Andheri','SONU','F6','B');
```

```
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Facult
y_Name,Faculty_ID,Grades) values('HEMISH',4,101,'EVS','Kalyan','SARADA','F1','C');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Facult
y_Name,Faculty_ID,Grades) values('HEMISH',4,104,'BIO','Kalyan','BUNNY','F4','C');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Facult
y_Name,Faculty_ID,Grades) values('AHNAAN',5,105,'ECO','Thane','UMESH','F5','D');
INSERT INTO
DATA_SCIENCE_STUDENT_2(Student_Name,Roll_No,Subject_ID,Subject_Name,Address,Facult
y_Name,Faculty_ID,Grades) values('AHNAAN',5,103,'CHEM','Thane','SUNNY','F3','D');

SELECT*FROM DATA_SCIENCE_STUDENT_2;
```
OUTPUT TABLE

Student_N...	Roll_...	Subject...	Subject_N...	Addr...	Faculty_Na...	Faculty_...	Grad...
NISHANT	1	101	EVS	Dadar	PUNEET	F1	E
NISHANT	1	102	Math	Dadar	SURESH	F2	E
ANSHUL	2	103	CHEM	Malad	SIBA	F3	A
ANSHUL	2	104	BIO	Malad	BUNNY	F4	A
AARYA	3	105	ECO	Andheri	SAGAR	F5	B
AARYA	3	106	GEO	Andheri	SONU	F6	B
HEMISH	4	101	EVS	Kalyan	SARADA	F1	C
HEMISH	4	104	BIO	Kalyan	BUNNY	F4	C
AHNAAN	5	103	CHEM	Thane	SUNNY	F3	D
AHNAAN	5	105	ECO	Thane	UMESH	F5	D

DATA_SCIENCE_STUDENT_2 22

#2 Table

```
CREATE TABLE STUDENT_DETAILS
(
  Student_Name varchar (50),
  Phone int,
  Roll_No int,
  primary key(Roll_No)
);

CREATE TABLE COURSE_DETAILS
(
  Subject_ID int,
  Subject_Name varchar(20),
  Faculty_Name varchar(20),
  Faculty_ID varchar(30),
  primary key(Subject_ID)
);
```

```
CREATE TABLE GRADES
(
  Roll_No int,
  Subject_ID int,
  Grade varchar(30),
  foreign key (Roll_No) references STUDENT_DETAILS(Roll_No),
  foreign key (Subject_ID) references COURSE_DETAILS(Subject_ID)
);

INSERT INTO COURSE_DETAILS(Subject_ID,Subject_Name,Faculty_Name,Faculty_ID)
values(101,'EVS','PUNEET','F1');
INSERT INTO COURSE_DETAILS(Subject_ID,Subject_Name,Faculty_Name,Faculty_ID)
values(102,'Math','SURESH','F2');
INSERT INTO COURSE_DETAILS(Subject_ID,Subject_Name,Faculty_Name,Faculty_ID)
values(103,'CHEM','SIBA','F3');
INSERT INTO COURSE_DETAILS(Subject_ID,Subject_Name,Faculty_Name,Faculty_ID)
values(104,'BIO','BUNNY','F4');
INSERT INTO COURSE_DETAILS(Subject_ID,Subject_Name,Faculty_Name,Faculty_ID)
values(105,'ECO','SAGAR','F5');
INSERT INTO COURSE_DETAILS(Subject_ID,Subject_Name,Faculty_Name,Faculty_ID)
values(106,'GEO','SONU','F6');

INSERT INTO STUDENT_DETAILS(Student_Name,Phone,Roll_No)
values('NISHANT',123456987,1);
INSERT INTO STUDENT_DETAILS(Student_Name,Phone,Roll_No)
values('ANSHUL',25620056,2);
INSERT INTO STUDENT_DETAILS(Student_Name,Phone,Roll_No)
values('AARYA',989863215,3);
INSERT INTO STUDENT_DETAILS(Student_Name,Phone,Roll_No)
values('HEMISH',882516987,4);
INSERT INTO STUDENT_DETAILS(Student_Name,Phone,Roll_No)
values('AHNAAN',987654321,5);

INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(1,101,'A');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(1,102,'E');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(2,103,'B');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(2,104,'A');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(3,105,'B');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(3,106,'A');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(4,101,'C');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(4,104,'A');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(5,105,'D');
INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(5,103,'B');


SELECT*FROM COURSE_DETAILS;
SELECT*FROM STUDENT_DETAILS;
SELECT*FROM GRADES;
```

OUTPUT TABLE

```
171 •   INSERT INTO COURSE(Subject_ID, Subject_Name, Faculty_ID)
```

100%   31:173   1 error found

Result Grid | Filter Rows: Q Search | Edit: | Export/I

Student_N...	Phone	Roll_...
NISHANT	12345690	1
ANSHUL	25620056	2
AARYA	989863215	3
HEMISH	882516987	4
AHNAAN	987654321	5
NULL	NULL	NULL

STUDENT_DETAILS_J 10   Apply

```
98 •   INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(5,10
99 •   INSERT INTO GRADES(Roll No Subject ID Grade) values(5 10
```

100%   28:102   1 error found

Result Grid | Filter Rows: Q Search | Edit: | Export,

Subject...	Subject_N...	Faculty_Na...	Faculty_...
101	EVS	PUNEET	F1
102	Math	SURESH	F2
103	CHEM	SIBA	F3
104	BIO	BUNNY	F4
105	ECO	SAGAR	F5
106	GEO	SONU	F6
NULL	NULL	NULL	NULL

Result Grid | Filter Rows: Q Search | Export:

Roll_...	Subject...	Grade
1	101	A
1	102	E
2	103	B
2	104	A
3	105	B
3	106	A
4	101	C
4	104	A
5	105	D
5	103	B

GRADES 8   ℹ R

#3 TABLE

```sql
CREATE TABLE  STUDENT_DETAILS_J
(
 Student_Name varchar (20) ,
 Phone int,
 Roll_No int,
 primary key(Roll_No)
);

CREATE TABLE COURSE
(
 Subject_ID int ,
 Subject_Name varchar(20) ,
 Faculty_ID varchar(30),
 primary key(Subject_ID),
 foreign key (Faculty_ID) references FACULTY_DETAILS(Faculty_ID)
);

CREATE TABLE FACULTY_DETAILS
(
 Faculty_Name varchar(20),
 Faculty_ID varchar(30),
 primary key(Faculty_ID)
);

CREATE TABLE A_GRADE
(
 Roll_No int,
 Subject_ID int,
 Grade varchar(30),
 foreign key (Roll_No) references STUDENT_DETAILS_J(Roll_No),
 foreign key (Subject_ID) references COURSE_DETAILS(Subject_ID)
);

INSERT INTO STUDENT_DETAILS_J(Student_Name,Phone,Roll_No)
values('NISHANT',12345690,1);
INSERT INTO STUDENT_DETAILS_J(Student_Name,Phone,Roll_No)
values('ANSHUL',25620056,2);
INSERT INTO STUDENT_DETAILS_J(Student_Name,Phone,Roll_No)
values('AARYA',989863215,3);
INSERT INTO STUDENT_DETAILS_J(Student_Name,Phone,Roll_No)
values('HEMISH',882516987,4);
INSERT INTO STUDENT_DETAILS_J(Student_Name,Phone,Roll_No)
values('AHNAAN',987654321,5);

INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(1,101,'A');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(1,102,'E');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(2,103,'B');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(2,104,'A');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(3,105,'B');
```

```
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(3,106,'A');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(4,101,'C');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(4,104,'A');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(5,105,'D');
INSERT INTO A_GRADE(Roll_No,Subject_ID,Grade) values(5,103,'B');

INSERT INTO FACULTY_DETAILS(Faculty_Name,Faculty_ID) values('PUNEET','F1');
INSERT INTO FACULTY_DETAILS(Faculty_Name,Faculty_ID) values('SURESH','F2');
INSERT INTO FACULTY_DETAILS(Faculty_Name,Faculty_ID) values('SIBA','F3');
INSERT INTO FACULTY_DETAILS(Faculty_Name,Faculty_ID) values('BUNNY','F4');
INSERT INTO FACULTY_DETAILS(Faculty_Name,Faculty_ID) values('SAGAR','F5');
INSERT INTO FACULTY_DETAILS(Faculty_Name,Faculty_ID) values('SONU','F6');

INSERT INTO COURSE(Subject_ID,Subject_Name,Faculty_ID) values(101,'EVS','F1');
INSERT INTO COURSE(Subject_ID,Subject_Name,Faculty_ID) values(102,'Math','F2');
INSERT INTO COURSE(Subject_ID,Subject_Name,Faculty_ID) values(103,'CHEM','F3');
INSERT INTO COURSE(Subject_ID,Subject_Name,Faculty_ID) values(104,'BIO','F4');
INSERT INTO COURSE(Subject_ID,Subject_Name,Faculty_ID) values(105,'ECO','F5');
INSERT INTO COURSE(Subject_ID,Subject_Name,Faculty_ID) values(106,'GEO','F6');

SELECT*FROM STUDENT_DETAILS_J;
SELECT*FROM A_GRADE;
SELECT*FROM FACULTY_DETAILS;
SELECT*FROM COURSE;
```

OUTPUT TABLE

Student_N...	Phone	Roll_...
NISHANT	123456987	1
ANSHUL	25620056	2
AARYA	989863215	3
HEMISH	882516987	4
AHNAAN	987654321	5
NULL	NULL	NULL

STUDENT_DETAILS 7

```
98 •    INSERT INTO GRADES(Roll_No,Subject_ID,Grade) values(5,10
99 •    INSERT INTO CRADES(Roll No Subject ID Crade) values(5.10
```

100% ⌃ 28:102   1 error found

Result Grid | 🔍 Filter Rows: 🔍 Search   Edit: ✏️ 🔲 🔲   Export,

Subject...	Subject_N...	Faculty_Na...	Faculty_...	
▶ 101	EVS	PUNEET	F1	
102	Math	SURESH	F2	
103	CHEM	SIBA	F3	
104	BIO	BUNNY	F4	
105	ECO	SAGAR	F5	
106	GEO	SONU	F6	
NULL	NULL	NULL	NULL	

Result Grid | 🔍 Filter Rows: 🔍 Search   Export: 💾   ▢

Roll_...	Subject...	Grade	
▶ 1	101	A	
1	102	E	
2	103	B	
2	104	A	
3	105	B	
3	106	A	
4	101	C	
4	104	A	
5	105	D	
5	103	B	

GRADES 8   ❶ R

100% ⌃ 29:175   1 error found

Result Grid | 🔍 Filter Rows: 🔍 Search   Edit: ✏️ 🔲 🔲   Export/I

Faculty_Na...	Faculty_...	
▶ PUNEET	F1	
SURESH	F2	
SIBA	F3	
BUNNY	F4	
SAGAR	F5	
SONU	F6	
NULL	NULL	

FACULTY_DETAILS 13   Apply

#BCNF TABLE

```sql
CREATE TABLE  STUDENT_DETAILS_B
(
  Student_Name varchar (20) ,
  Phone int,
  Roll_No int,
  primary key(Roll_No)
);

CREATE TABLE SUBJECT_DETAILS
(
  Subject_ID int   ,
  Subject_Name varchar(20) ,
  primary key(Subject_ID)
);

CREATE TABLE FACULTY_SUBJECT
(
  Faculty_ID varchar(30),
  Subject_ID int   ,
  foreign key (Faculty_ID) references FACULTY_DETAILS_1(Faculty_ID),
  foreign key (Subject_ID) references SUBJECT_DETAILS(Subject_ID)
  );

CREATE TABLE FACULTY_DETAILS_1
(
  Faculty_Name varchar(20),
  Faculty_ID varchar(30),
  Faculty_Address varchar (30),
  primary key(Faculty_ID)
);

CREATE TABLE NEW_GRADE
(
  Roll_No int,
  Subject_ID int,
  Grade varchar(30),
  foreign key (Roll_No) references STUDENT_DETAILS_B(Roll_No),
  foreign key (Subject_ID) references SUBJECT_DETAILS(Subject_ID)
);

INSERT INTO STUDENT_DETAILS_B(Student_Name,Phone,Roll_No)
values('NISHANT',12345690,1);
INSERT INTO STUDENT_DETAILS_B(Student_Name,Phone,Roll_No)
values('ANSHUL',25620056,2);
INSERT INTO STUDENT_DETAILS_B(Student_Name,Phone,Roll_No)
values('AARYA',989863215,3);
INSERT INTO STUDENT_DETAILS_B(Student_Name,Phone,Roll_No)
values('HEMISH',882516987,4);
INSERT INTO STUDENT_DETAILS_B(Student_Name,Phone,Roll_No)
values('AHNAAN',987654321,5);
```

```sql
#NEW ADMISSION
INSERT INTO STUDENT_DETAILS_B(Student_Name,Phone,Roll_No)
values('SHUBHAM',987651234,6);

INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(1,101,'E');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(1,102,'E');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(2,103,'A');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(2,104,'A');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(3,105,'B');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(3,106,'B');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(4,101,'C');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(4,104,'C');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(5,105,'D');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(5,103,'D');
INSERT INTO NEW_GRADE(Roll_No,Subject_ID,Grade) values(6,102,'A');

INSERT INTO FACULTY_DETAILS_1(Faculty_Name,Faculty_ID,Faculty_Address)
values('PUNEET','F1','GJ');
INSERT INTO FACULTY_DETAILS_1(Faculty_Name,Faculty_ID,Faculty_Address)
values('SURESH','F2','MH');
INSERT INTO FACULTY_DETAILS_1(Faculty_Name,Faculty_ID,Faculty_Address)
values('SIBA','F3','RJ');
INSERT INTO FACULTY_DETAILS_1(Faculty_Name,Faculty_ID,Faculty_Address)
values('BUNNY','F4','PB');
INSERT INTO FACULTY_DETAILS_1(Faculty_Name,Faculty_ID,Faculty_Address)
values('SAGAR','F5','MH');
INSERT INTO FACULTY_DETAILS_1(Faculty_Name,Faculty_ID,Faculty_Address)
values('SONU','F6','TN');
#
INSERT INTO FACULTY_DETAILS_1(Faculty_Name,Faculty_ID,Faculty_Address)
values('ANKIT','F7','MP');

INSERT INTO SUBJECT_DETAILS(Subject_ID,Subject_Name) values(101,'EVS');
INSERT INTO SUBJECT_DETAILS(Subject_ID,Subject_Name) values(102,'Math');
INSERT INTO SUBJECT_DETAILS(Subject_ID,Subject_Name) values(103,'CHEM');
INSERT INTO SUBJECT_DETAILS(Subject_ID,Subject_Name) values(104,'BIO');
INSERT INTO SUBJECT_DETAILS(Subject_ID,Subject_Name) values(105,'ECO');
INSERT INTO SUBJECT_DETAILS(Subject_ID,Subject_Name) values(106,'GEO');
INSERT INTO SUBJECT_DETAILS(Subject_ID,Subject_Name) values(107,'English');

INSERT INTO FACULTY_SUBJECT(Faculty_ID,Subject_ID) values('F1',101);
INSERT INTO FACULTY_SUBJECT(Faculty_ID,Subject_ID) values('F2',102);
INSERT INTO FACULTY_SUBJECT(Faculty_ID,Subject_ID) values('F3',103);
INSERT INTO FACULTY_SUBJECT(Faculty_ID,Subject_ID) values('F4',104);
INSERT INTO FACULTY_SUBJECT(Faculty_ID,Subject_ID) values('F5',105);
INSERT INTO FACULTY_SUBJECT(Faculty_ID,Subject_ID) values('F6',106);
INSERT INTO FACULTY_SUBJECT(Faculty_ID,Subject_ID) values('F7',107);


SELECT*FROM STUDENT_DETAILS_B;
SELECT*FROM NEW_GRADE;
```
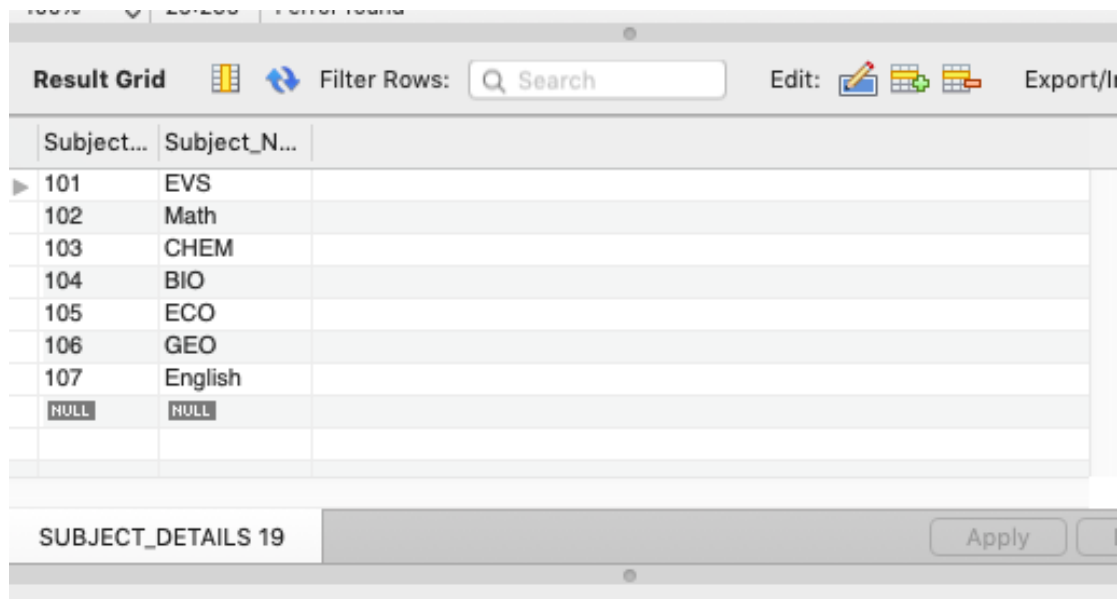
```
SELECT*FROM FACULTY_DETAILS_1;
SELECT*FROM SUBJECT_DETAILS;
SELECT*FROM FACULTY_SUBJECT;
```
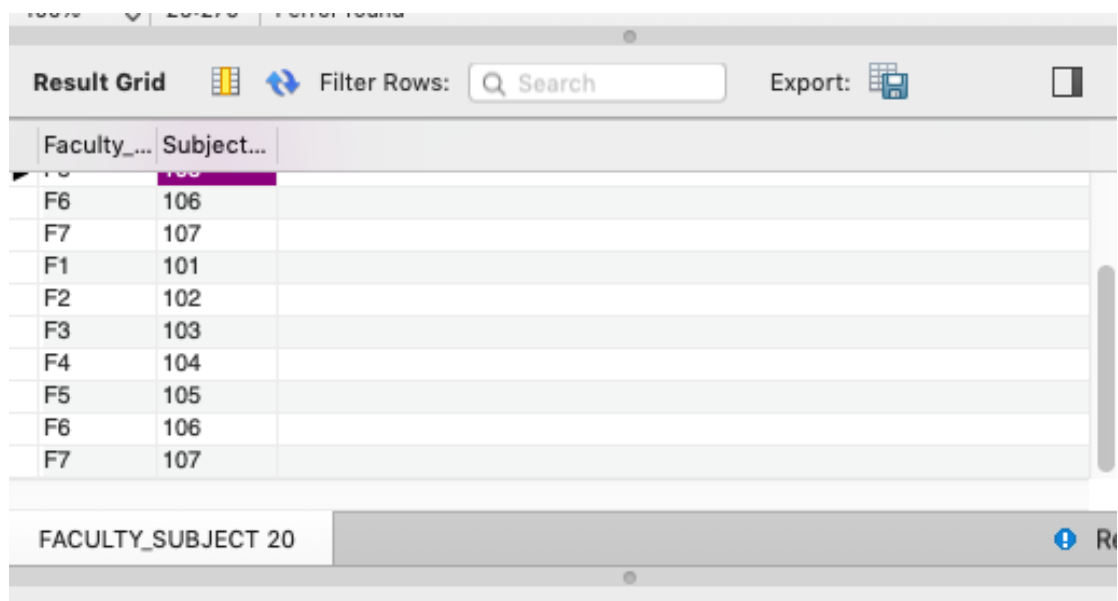
OUTPUT TABLE

Subject...	Subject_N...
101	EVS
102	Math
103	CHEM
104	BIO
105	ECO
106	GEO
107	English
NULL	NULL

SUBJECT_DETAILS 19

Apply

Faculty_...	Subject...
F6	106
F7	107
F1	101
F2	102
F3	103
F4	104
F5	105
F6	106
F7	107

FACULTY_SUBJECT 20

Result Grid | Filter Rows: [Q Search] | Export: | ☐

Roll_...	Subject...	Grade
▶ 1	101	A
1	102	E
2	103	B
2	104	A
3	105	B
3	106	A
4	101	C
4	104	A
5	105	D
5	103	B

A_GRADE 12   ❶ Re

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Result Grid | Filter Rows: [Q Search] | Edit: ✎ 🖿 🖿 | Export/I

Student_N...	Phone	Roll_...
▶ NISHANT	12345690	1
ANSHUL	25620056	2
AARYA	989863215	3
HEMISH	882516987	4
AHNAAN	987654321	5
SHUBHAM	987651234	6
NULL	NULL	NULL

STUDENT_DETAILS_B 15   [Apply]

Result Grid | Filter Rows: [Q Search] | Edit: ✎ 🖿 🖿 | Export/I

Faculty_Na...	Faculty_...	Faculty_Addr...
▶ PUNEET	F1	GJ
SURESH	F2	MH
SIBA	F3	RJ
BUNNY	F4	PB
SAGAR	F5	MH
SONU	F6	TN
ANKIT	F7	MP
NULL	NULL	NULL

FACULTY_DETAILS_1 18   [Apply]

And now the analysis of each output table :

First is the common output table where *Roll_No* is the primary key of this database table.

This Table has a fault
There are 2 attributes in the same column [Faculty_Name and Course]
And to rectify this fault we convert it into 1st Normal Form.

After Converting it into 1st Normal Form

In this table we can say that it is following the 1st Normal form rules which are

- ➤ There is a unique name for each attribute
- ➤ Column domain doesn't change
- ➤ Only single valued attributes allowed
- ➤ Order of the data doesn't matter

Hence we can conclude that the above table is in 1st Normal Form.

2nd Normal Form

In this table the primary key is **Roll_No**

In the Course table **Subject_Id** is the primary key

In the grade Table the foreign key are **Roll_no** and **Subject_Id**

We have divide our Normal Form into 3 parts
Course
Student_Details_J1
Grades

We used 2nd Normal Form Table because it helps us to connect tables
As we can combine foreign key tables with primary keys of individual tables and club them.

To Satisfy the 2nd Normal Form we follow 2 Rules

➢ Primary keys should be in Single Columns
➢ It should be in 1 Normal Form

3rd Normal Form

Faculty_Id and Subject_Id are the foreign key and primary key respectively in the Course Table

Subject_ID and Roll_no are the foreing keys

Roll_No is the primary key in the Student_Details_J table

Faculty_Id is the primary key in Facult_Details Table

To convert into 3rd Normal form we again divide our tables and check for and dependency
To Satisfy the 3rd Normal Form we Follow 2 Rules

> ➢ It should be in 2nd Normal Form
> ➢ No dependencies of the columns

Boyce-Codd Normal Form

Student_Name is the Primary key in the Student_Details_B table

Faculty_ID is the primary key in the Faculty_Details Table

Subject_Id is the Primary key in the Subject_Details table

Subject_Id and Faculty_Id both of them are the primary key in this table

Roll_No and Subject_Id both are foreign keys in B_Grade table

Boyce-Codd Normal Form does not have any column dependency and it is a type of extension of 3rd Normal Form which is divided in many tables for better understanding.

And Finally after doing all this we can see that which faculty will teach which subject at what time.