

## PART B

Create the following tables with properly specifying Primary keys, foreign keys and solve the following queries:

### BRANCH (Branchid, Branchname, HOD)

**CREATE TABLE BRANCH (Branchid integer primary key, Branchname varchar2 (15) not null, HOD varchar2 (10));**

**DESC BRANCH;**

Field	Type	Null	Key	Default	Extra
BRANCHID	int (5)	NO	PRI	NULL	
BRANCHNAME	varchar (15)	NO		NULL	
HOD	varchar (10)	YES		NULL	

3 rows in set (0.03 sec)

**INSERT INTO BRANCH (BRANCHID, BRANCHNAME, HOD) VALUES (10,'MCA','SUDHA M');**

**SELECT \* FROM BRANCH;**

BRANCHID	BRANCHNAME	HOD
10	MCA	SUDHA M
20	MBA	RENIN
30	MCOM	KRISHNA
40	MSC	ADIYA P
50	MA	RAMESH S

5 rows in set (0.00 sec)

### STUDENT (USN, Name, Address, Branchid, SEM)

**CREATE TABLE STUDENT (USN varchar2 (15) primary key, Name varchar2 (15) not null, Address varchar2 (15) not null, Branchid integer references branch, SEM varchar2 (10));**

**DESC STUDENT;**

Field	Type	Null	Key	Default	Extra
USN	varchar (15)	NO	PRI	NULL	
NAME	varchar (15)	NO		NULL	
ADDRESS	varchar (15)	NO		NULL	
BRANCHID	int (5)	YES		NULL	
SEM	varchar (10)	YES		NULL	

5 rows in set (0.01 sec)

**EXAMPLE:**

INSERT INTO STUDENT VALUES ('SCAS202201','ANURADHA','JAYANAGAR', 10,'II SEM');  
Query OK, 1 row affected (0.14 sec)

INSERT INTO STUDENT VALUES ('SCAS202202','MANJULA','BASAVANGUDI', 10,'II SEM');  
Query OK, 1 row affected (0.19 sec)

INSERT INTO STUDENT VALUES ('SCAS202203','LAKSHMI','BASAVANGUDI', 10,'IV SEM');  
Query OK, 1 row affected (0.11 sec)

INSERT INTO STUDENT VALUES ('SCAC202203','RENUKA','HANUMANTHNAGAR', 20,'II SEM');  
Query OK, 1 row affected (0.05 sec)

INSERT INTO STUDENT VALUES ('SCAC202204','ARUN','JPNAGAR', 30,'II SEM');  
Query OK, 1 row affected (0.13 sec)

INSERT INTO STUDENT VALUES ('SCAS202204','ABHI','GIRINAGAR', 40,'II SEM');  
Query OK, 1 row affected (0.06 sec)

INSERT INTO STUDENT VALUES ('SCAA202201','DEEPTI','GIRINAGAR', 50,'IV SEM');  
Query OK, 1 row affected (0.13 sec)

SELECT \* FROM STUDENT;

USN	NAME	ADDRESS	BRANCHID	SEM
SCAA202201	DEEPTI	GIRINAGAR	50	IV SEM
SCAC202203	RENUKA	HANUMANTHNAGAR	20	II SEM
SCAC202204	ARUN	JPNAGAR	30	II SEM
SCAS202201	ANURADHA	JAYANAGAR	10	II SEM
SCAS202202	MANJULA	BASAVANGUDI	10	II SEM
SCAS202203	LAKSHMI	BASAVANGUDI	10	IV SEM
SCAS202204	ABHI	GIRINAGAR	40	II SEM

7 rows in set (0.00 sec)

**BOOK (Bookid, Bookname, Authorid, Publisher, Branchid)**

CREATE TABLE BOOK (Bookid varchar2 (10) primary key, Bookname varchar2 (15) not null, Authorid varchar2 (10) reference author, publisher varchar2 (20) not null, Branchid number references branch);

DESC BOOK;

Field	Type	Null	Key	Default	Extra
BOOKID	varchar (10)	NO	PRI	NULL	
BOOKNAME	varchar (15)	NO		NULL	
AUTHORID	varchar (10)	YES		NULL	
PUBLISHER	varchar (20)	NO		NULL	
BRANCHID	int (5)	YES		NULL	

5 rows in set (0.01 sec)

INSERT INTO BOOK VALUES ('NEPDBMS','DBMS','NEPCOMP02','SKYWARD', 10);  
Query OK, 1 row affected (0.13 sec)

INSERT INTO BOOK VALUES ('NEPSE','SE','NEPCOMP02','SKYWARD', 10);  
Query OK, 1 row affected (0.13 sec)

INSERT INTO BOOK VALUES ('NEPJAVA','JAVA','NEPCOMM01','OXFORD', 20);  
Query OK, 1 row affected (0.14 sec)

INSERT INTO BOOK VALUES ('NEPMATHS','MATHS','NEPSCI01','OXFORD', 30);  
Query OK, 1 row affected (0.11 sec)

INSERT INTO BOOK VALUES ('NEPPHY','PHYSICS','NEPCOMM02','SHREE', 40);  
Query OK, 1 row affected (0.11 sec)

SELECT \* FROM BOOK;

BOOKID	BOOKNAME	AUTHORID	PUBLISHER	BRANCHID
NEPDBMS	DBMS	NEPCOMP02	SKYWARD	10
NEPJAVA	JAVA	NEPCOMM01	OXFORD	20
NEPMATHS	MATHS	NEPSCI01	OXFORD	30
NEPPHY	PHYSICS	NEPCOMM02	SHREE	40
NEPSE	SE	NEPCOMP02	SKYWARD	10

5 rows in set (0.00 sec)

**AUTHOR (Authorid, Authername, Country, age)**

CREATE TABLE AUTHOR (Authorid varchar2 (10) primary key, Authername varchar2 (15) not null, country varchar2 (15), Age integer);

DESC AUTHOR;

Field	Type	Null	Key	Default	Extra
AUTHORID	varchar (10)	NO	PRI	NULL	
AUTHERNAME	varchar (15)	NO		NULL	
COUNTRY	varchar (15)	YES		NULL	
AGE	int (11)	YES		NULL	

4 rows in set (0.02 sec)

INSERT INTO AUTHOR VALUES ('NEPCOMP01','ARUNA','INDIA', 36);  
Query OK, 1 row affected (0.13 sec)

INSERT INTO AUTHOR VALUES ('NEPCOMP02','SUMA','INDIA', 38);  
Query OK, 1 row affected (0.05 sec)

INSERT INTO AUTHOR VALUES ('NEPCOMM02','SANGEETHA','INDIA', 42);  
Query OK, 1 row affected (0.11 sec)

INSERT INTO AUTHOR VALUES ('NEPCOMM01','DILIP','INDIA', 39);

Query OK, 1 row affected (0.13 sec)

INSERT INTO AUTHOR VALUES ('NEPSCI01','SHEKAR','INDIA', 44);

Query OK, 1 row affected (0.11 sec)

SELECT \* FROM AUTHOR;

AUTHORID	AUTHERNAME	COUNTRY	AGE
NEPCOMM01	DILIP	INDIA	39
NEPCOMM02	SANGEETHA	INDIA	42
NEPCOMP01	ARUNA	INDIA	36
NEPCOMP02	SUMA	INDIA	38
NEPSCI01	SHEKAR	INDIA	44

5 rows in set (0.00 sec)

**BORROW (USN, Bookid, Borrowed\_Date)**

CREATE TABLE BORROS (USN Varchar2 (15) references student, Bookid varchar2 (10) references book, Borrowed\_Date date, primary key (USN, Bookid));

DESC BORROW;

Field	Type	Null	Key	Default	Extra
USN	varchar (15)	NO	PRI		
BOOKID	varchar (10)	NO	PRI		
BORROWED_DATE	date	YES		NULL	

3 rows in set (0.02 sec)

INSERT INTO BORROW VALUES ('SCAS202201','NEPDBMS','2022/05/20');

Query OK, 1 row affected (0.05 sec)

INSERT INTO BORROW VALUES ('SCAS202201','NEPSE','2022/05/28');

Query OK, 1 row affected (0.11 sec)

INSERT INTO BORROW VALUES ('SCAC202204','NEPMATHS','2022/06/06');

Query OK, 1 row affected (0.11 sec)

INSERT INTO BORROW VALUES ('SCAA202201','NEPPHY','2022/06/12');

Query OK, 1 row affected (0.13 sec)

INSERT INTO BORROW VALUES ('SCAS202203','NEPPHY','2022/06/12');

Query OK, 1 row affected (0.13 sec)

INSERT INTO BORROW VALUES ('SCAS202201','NEPMATHS','2022/06/05');

Query OK, 1 row affected (0.11 sec)

**INSERT INTO BORROW VALUES ('SCAS202201','NEPJAVA','2022/06/05');**

Query OK, 1 row affected (0.14 sec)

**SELECT \* FROM BORROW;**

USN	BOOKID	BORROWED_DATE
SCAA202201	NEPPHY	2022-06-12
SCAC202204	NEPMATHS	2022-06-06
SCAS202201	NEPDBMS	2020-05-22
SCAS202201	NEPJAVA	2022-06-05
SCAS202201	NEPMATHS	2022-06-05
SCAS202201	NEPSE	2022-05-28
SCAS202203	NEPPHY	2022-06-18

7 rows in set (0.00 sec)

1. Perform the following:

a. Viewing all databases

**Show Databases;**

b. Creating a Database

**Create Database Databasename.**

**Example:**

**Create Database colleagedb;**

c. Viewing all Tables in a Database

**Show tables;**

```
+-----+
| Tables_in_colleagedb |
+-----+
| author                |
| book                  |
| borrow                |
| branch                |
| student               |
+-----+
5 rows in set (0.00 sec)
```

d. Creating Tables (with and Without Constraints)

**Create table tablename (attributes type (size).....);**

**Example**

**Create table student (sno integer, sname char (20), dbirth date);**

e. Inserting the records

**Insert into tablename values (values.....);**

**Example**

**Insert into student (101,'rajesh','1969-03-06');**

f. Updating the records

**Update tablename set attributename="value";**

**Example**

**Update student set sname="rajeshrao";**

g. Deleting the records

**Delete student where sno='101';**

h. Saving (Commit)

**Commit;**

i. Undoing (Rollback)

**Rollback;**

2. Execute the following queries:

- a. List the details of students who are all studying in 2<sup>nd</sup> sem MCA.

**SELECT \* FROM STUDENT S, BRANCH B WHERE S.BRANCHID=B.BRANCHID AND S.SEM='II SEM' AND B.BRANCHNAME='MCA';**

USN	NAME	ADDRESS	BRANCHID	SEM	BRANCH ID	BRANCHNAME	HOD
SCAS202201	ANURADHA	JAYANAGAR	10	II SEM	10	MCA	SUDHA M
SCAS202202	MANJULA	BASAVANGUDI	10	II SEM	10	MCA	SUDHA M

2 rows in set (0.00 sec)

- b. List the students who are not borrowed any books.

**SELECT \* FROM STUDENT S WHERE S.USN NOT IN (SELECT B.USN FROM BORROW B);**

USN	NAME	ADDRESS	BRANCHID	SEM
SCAC202203	RENUKA	HANUMANTH NAGAR	20	II SEM
SCAC202204	ARUN	JPNAGAR	30	II SEM
SCAS202202	MANJULA	BASAVANGUDI	10	II SEM
SCAS202204	ABHI	GIRINAGAR	40	II SEM

4 rows in set (0.11 sec)

3. a. Display the USN, Student\_name, Branch\_name, Book\_name, Author\_name, Books\_Borrowed\_Date of 2<sup>nd</sup> sem MCA students who borrowed books

**SELECT S.USN, S.NAME, S.SEM, BR.BRANCHNAME, BK.BOOKNAME, A.AUTHORNAME, B.BORROWED\_DATE FROM STUDENT S, BRANCH BR, BOOK BK, AUTHOR A, BORROW B WHERE S.BRANCHID=BR.BRANCHID AND A.AUTHORID=BK.AUTHORID AND B.USN=S.USN AND BK.BOOKID=B.BOOKID AND S.SEM='II SEM' AND BR.BRANCHNAME='MCA';**

USN	NAME	SEM	BRANCHNAME	BOOKNAME	AUTHORNAME	BORROWED_DATE
SCAS202201	ANURADHA	II SEM	MCA	DBMS	SUMA	2020-05-22
SCAS202201	ANURADHA	II SEM	MCA	JAVA	DILIP	2022-06-05
SCAS202201	ANURADHA	II SEM	MCA	MATHS	SHEKAR	2022-06-05
SCAS202201	ANURADHA	II SEM	MCA	SE	SUMA	2022-05-28

4 rows in set (0.00 sec)

- b. Display the student details who borrowed books of more than one Author.

**SELECT A.AUTHERNAME, COUNT(DISTINCT BK.BOOKID) AS "NO OF BOOKS" FROM  
AUTHOR A, BOOK BK WHERE A.AUTHORID=BK.AUTHORID GROUP BY A.AUTHERNAME;**

AUTHERNAME	NO OF BOOKS
DILIP	1
SANGEETHA	1
SHEKAR	1
SUMA	2

4 rows in set (0.06 sec)

4. a. Display the student details who borrowed more than two books.

**SELECT S.NAME FROM STUDENT S, BORROW B  
WHERE S.USN=B.USN  
GROUP BY S.NAME  
HAVING COUNT (DISTINCT B.BOOKID) > 2;**

NAME
ANURADHA

1 row in set (0.00 sec)

- b. Display the student details who borrowed books of more than one Author;

**SELECT S.NAME, COUNT (DISTINCT BK.BOOKID) FROM STUDENT S, BOOK BK, BORROW B  
WHERE S.USN=B.USN AND B.BOOKID = BK.BOOKID GROUP BY S.NAME  
HAVING COUNT (DISTINCT BK.AUTHORID) > 1;**

NAME	COUNT (DISTINCT BK.BOOKID)
ANURADHA	4

1 row in set (0.00 sec) 3 rows in set (0.14 sec)

5. a. Display the book names in descending order of their names.

**SELECT \* FROM BOOK ORDER BY BOOKNAME DESC;**

BOOKID	BOOKNAME	AUTHORID	PUBLISHER	BRANCHID
NEPSE	SE	NEPCOMP02	SKYWARD	10
NEPPHY	PHYSICS	NEPCOMM02	SHREE	40
NEPMATHS	MATHS	NEPSCI01	OXFORD	30
NEPJAVA	JAVA	NEPCOMM01	OXFORD	20
NEPDBMS	DBMS	NEPCOMP02	SKYWARD	10

5 rows in set (0.00 sec)



- b. List the details of students who borrowed the books which are all published by the same publisher.

```
SELECT S.NAME, COUNT (BK.PUBLISHER) FROM STUDENT S, BOOK BK, BORROW B
WHERE S.USN=B.USN AND B.BOOKID=BK.BOOKID
GROUP BY S.NAME;
```

NAME	COUNT (BK.PUBLISHER)
ANURADHA	4
DEEPTI	1
LAKSHMI	1

2 rows in set (0.00 sec)

Consider the following schema:

**STUDENT2 (USN, name, date\_of\_birth, branch, mark1, mark2, mark3, total, GPA);**

6. Perform the following:

a. Creating Tables (with Constraints).

```
CREATE TABLE STUDENT2
(USN VARCHAR(10) PRIMARY KEY,
NAME VARCHAR(20) NOT NULL,
DOB DATE,
BRANCH VARCHAR(10) NOT NULL,
MARK1 INTEGER(3) NOT NULL,
MARK2 INTEGER(3) NOT NULL,
MARK3 INTEGER(3) NOT NULL,
TOTAL INTEGER(4),
GPA DECIMAL(4,2));
Query OK, 0 rows affected (0.27 sec)
```

b. Inserting the value in the record

```
INSERT INTO STUDENT2 VALUES('SCA202201','SANJANA','2004-08-
24','BCA',85,96,97,NULL,NULL);
Query OK, 1 row affected (0.12 sec)
```

```
INSERT INTO STUDENT2 VALUES('SCAC202201','ANIRUDH','2004-10-
10','BCOM',75,85,65,NULL,NULL);
Query OK, 1 row affected (0.02 sec)
```

```
INSERT INTO STUDENT2 VALUES('SCAB202201','AKASH','2004-11-
10','BBA',75,85,83,NULL,NULL);
Query OK, 1 row affected (0.13 sec)
```

```
INSERT INTO STUDENT2 VALUES('SCA202202','TANDRA','2004-12-01','BCA',84,56,63,NULL,NULL);
```

Query OK, 1 row affected (0.13 sec)

```
INSERT INTO STUDENT2 VALUES('SCA202203','ANUSHA','2005-01-01','BCA',68,72,78,NULL,NULL);
```

Query OK, 1 row affected (0.03 sec)

c. Display the entered value in student2 table.

```
SELECT * FROM STUDENT2;
```

```
+-----+-----+-----+-----+-----+-----+-----+-----+
| USN    | NAME  | DOB   | BRANCH | MARK1 | MARK2 | MARK3 | TOTAL | GPA |
+-----+-----+-----+-----+-----+-----+-----+-----+
| SCA202201 | SANJANA | 2004-08-24 | BCA | 85 | 96 | 97 | NULL | NULL |
| SCA202202 | TANDRA | 2004-12-01 | BCA | 84 | 56 | 63 | NULL | NULL |
| SCA202203 | ANUSHA | 2005-01-01 | BCA | 68 | 72 | 78 | NULL | NULL |
| SCAB202201 | AKASH | 2004-11-10 | BBA | 75 | 85 | 83 | NULL | NULL |
| SCAC202201 | ANIRUDH | 2004-10-10 | BCOM | 75 | 85 | 65 | NULL | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

d. Updating the record (for calculate Total)

```
UPDATE STUDENT2 SET TOTAL = MARK1 + MARK2 + MARK3;
```

Query OK, 0 rows affected (0.14 sec)

Rows matched: 5 Changed: 0 Warnings: 0

```
SELECT * FROM STUDENT2;
```

```
+-----+-----+-----+-----+-----+-----+-----+-----+
| USN | NAME  | DOB   | BRANCH | MARK1 | MARK2 | MARK3 | TOTAL | GPA |
+-----+-----+-----+-----+-----+-----+-----+-----+
| SCA202201 | SANJANA | 2004-08-24 | BCA | 85 | 96 | 97 | 278 | NULL |
| SCA202202 | TANDRA | 2004-12-01 | BCA | 84 | 56 | 63 | 203 | NULL |
| SCA202203 | ANUSHA | 2005-01-01 | BCA | 68 | 72 | 78 | 218 | NULL |
| SCAB202201 | AKASH | 2004-11-10 | BBA | 75 | 85 | 83 | 243 | NULL |
| SCAC202201 | ANIRUDH | 2004-10-10 | BCOM | 75 | 85 | 65 | 225 | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+
```

5 rows in set (0.01 sec)

7. Execute the following queries:

a. Find the GPA score of all the students.

```
UPDATE STUDENT2 SET GPA = (TOTAL*100)/300;
```

Query OK, 5 rows affected, 3 warnings (0.05 sec)

Rows matched: 5 Changed: 5 Warnings: 3

**SELECT \* FROM STUDENT2;**

USN	NAME	DOB	BRANCH	MARK1	MARK2	MARK3	TOTAL	GPA
SCA202201	SANJANA	2004-08-24	BCA	85	96	97	278	92.67
SCA202202	TANDRA	2004-12-01	BCA	84	56	63	203	67.67
SCA202203	ANUSHA	2005-01-01	BCA	68	72	78	218	72.67
SCAB202201	AKASH	2004-11-10	BBA	75	85	83	243	81.00
SCAC202201	ANIRUDH	2004-10-10	BCOM	75	85	65	225	75.00

5 rows in set (0.00 sec)

- b. Find the students who born on a particular year of birth from the date of birth column

**SELECT USN, NAME, BRANCH, DOB FROM STUDENT2 WHERE DOB LIKE '2004%';**

USN	NAME	BRANCH	DOB
SCA202201	SANJANA	BCA	2004-08-24
SCA202202	TANDRA	BCA	2004-12-01
SCAB202201	AKASH	BBA	2004-11-10
SCAC202201	ANIRUDH	BCOM	2004-10-10

3 rows in set, 1 warning (0.00 sec)

8. a. List the students who are studying in a particular branch of study.

**SELECT USN,NAME, BRANCH, DOB FROM STUDENT2 WHERE BRANCH='BCA';**

USN	NAME	BRANCH	DOB
SCA202201	SANJANA	BCA	2004-08-24
SCA202202	TANDRA	BCA	2004-12-01
SCA202203	ANUSHA	BCA	2005-01-01

4 rows in set (0.00 sec)

- b. Find the maximum GPA score of the student branch-wise

**SELECT BRANCH, MAX (GPA) FROM STUDENT2 GROUP BY BRANCH;**

BRANCH	MAX (GPA)
BBA	81.00
BCA	92.67
BCOM	75.00

3 rows in set (0.01 sec)

9. a. Find the students whose name starts with the alphabet "S"

**SELECT \* FROM STUDENT2 WHERE NAME LIKE 'S%';**

USN	NAME	DOB	BRANCH	MARK1	MARK2	MARK3	TOTAL	GPA
SCA202201	SANJANA	2004-08-24	BCA	85	96	97	278	92.67

1 row in set (0.00 sec)

- b. Update the column total by adding the columns mark1, mark2, mark3.

**UPDATE STUDENT2 SET TOTAL = MARK1 + MARK2 + MARK3;**

Query OK, 0 rows affected (0.14 sec)

Rows matched: 5 Changed: 0 Warnings: 0

10. Execute the following quires:

- a. Find the students whose name ends with the alphabets "AR".

**SELECT NAME FROM STUDENT2 WHERE NAME LIKE '%AR';**

Empty set (0.00 sec)

Find the students whose address ends with the alphabets "AR".

**SELECT \* FROM STUDENT WHERE ADDRESS LIKE '%AR';**

USN	NAME	ADDRESS	BRANCHID	SEM
SCAA202201	DEEPTI	GIRINAGAR	50	IV SEM
SCAC202203	RENUKA	HANUMANTHNAGAR	20	II SEM
SCAC202204	ARUN	JPNAGAR	30	II SEM
SCAS202201	ANURADHA	JAYANAGAR	10	II SEM
SCAS202204	ABHI	GIRINAGAR	40	II SEM

5 rows in set (0.00 sec)

- b. Delete the student details whose USN is greater than 1001.

**SELECT \* FROM STUDENT WHERE USN > '1001';**

USN	NAME	ADDRESS	BRANCHID	SEM
SCAA202201	DEEPTI	GIRINAGAR	50	IV SEM
SCAC202203	RENUKA	HANUMANTHNAGAR	20	II SEM
SCAC202204	ARUN	JPNAGAR	30	II SEM
SCAS202201	ANURADHA	JAYANAGAR	10	II SEM
SCAS202202	MANJULA	BASAVANGUDI	10	II SEM
SCAS202203	LAKSHMI	BASAVANGUDI	10	IV SEM
SCAS202204	ABHI	GIRINAGAR	40	II SEM

7 rows in set (0.00 sec)

