

## Particulars of the Experiments Performed

### CONTENTS

Expt No.	Date	Experiment	Marks Obtained	Page No.
01	05/03/2022	Basic Commands	82	01-04
02	08/03/2022	Book Database		05-12
03.	22/03/2022	Student Database		13-16
04	29/03/2022	Cricket Tournament Database		17-23
05	12/04/2022	Tourist Database		24-27
06	19/04/2022	Election Database		28-33
Open ended Question			10/10	
07	10/05/2022	Music Database	10	34-41
Hb 28/5/2022				

## BASIC COMMANDS

**SQL** [Structured Query Language]

SQL provides an interface to the relational database. It was developed by IBM.

The components of SQL are :-

- (1) DDL [Data Definition language]
- (2) DML [Data Manipulation language]
- (3) DQL [Data Query language]
- (4) DCL [Data control language]

**DDL** :-

It is a set of SQL commands to create, modify, delete the database structure but not the data. It deals with the structure of the data.

Some of the commands are:-

CREATE, DROP, ALTER, GRANT, TRUNCATE, REVOKE

**DML** :-

It is a set of SQL commands that allows to modify the data within the database some of the commands are:- INSERT, UPDATE, DELETE, MODIFY

**DCL** :- The commands under DCL are :- commit, savepoint, Rollback

**DQL** :- The command under DQL is Select.

# CREATE Command

Syntax:- `create table <tablename> (column name  
<datatype> <size>), column name 2  
<datatype> <size>));`

Table created

INSERT      command

Syntax:- insert into <table name> (column1, column2)  
values (value1, value2);

Eg:- insert into emp (ename, age, dob)  
values ('abcd', 43, '23.2.76');

Syntax 2 - [Inserting at a time]

```
insert into emp values ('fename', 'fage', 'fdob');  
enter value for ename : efg  
enter value for age : 44  
enter value for dob : 25.1.75
```

oldl - Insert into emp values ('&ename', '&age', '&dob');  
newl - Insert into emp values ('efgh', '44', '25.1.75');

row created

/ → used to insert next column

Select Commands :-

Select \* from emp;

Select \* from emp where age > 25;

Select Pname from emp;

Select age from emp;

Select \* from emp order by age;

Select \* from emp order by age desc;

AND Operator :-

Select dob from emp where age = 14 and ename = "efgh";

OR Operator :-

Select dob from emp where age = 45 or ename = "efgh";

NOT operator :-

Select dob from emp where not (age = 14 and  
ename = 'abcd');

Delete command:

delete from emp where age = 44;

delete \* from emp;

Alter command:

alter table emp add (id varchar2(2));

alter table emp add primary key (id);

Update command:

update emp set id = 'e01' where ename = 'abcd';

Truncate (deletes records but not table)

truncate table emp;

Drop (deletes table)

drop table emp;

COMMIT (saves)

commit;

Renaming Table

rename emp to employee;

Alter with modify

alter table employee modify Cename varchar2(25);

Range

Select dob from employee where age between  
10 and 25;

Pattern Matching :

This uses wild card character to match a pattern

Select \* from emp where color like '\_l%e';

Numerical functions

- (1) Dual
- (2) abs
- (3) power
- (4) Round
- (5) Sqrt

Select abs (-5) from dual;

Select power (2,4) from dual;

Select round (23.456) from dual;

Select round (23.456, 2) from dual;

Select sqrt (4) from dual;

## String functions

(1) lower

(2) initcap

(3) upper

(4) length

(5) substr

(6) ltrim

(7) rtrim

Select lower ('DBMS') from dual;

Select initcap ('DBMS') from dual;

Select initcap ('dbms') from dual;

Select upper ('dbms') from dual;

Select length ('dbms') from dual;

Select substr ('women', 3, 5) from dual;

Select ltrim ('bread', 'b') from dual;

Select rtrim ('sweety', 'y') from dual;

## Aggregate function

- (1) Average
- (2) Min
- (3) Max
- (4) Sum
- (5) count

Select avg (age) from emp;

Select min (age) from emp;

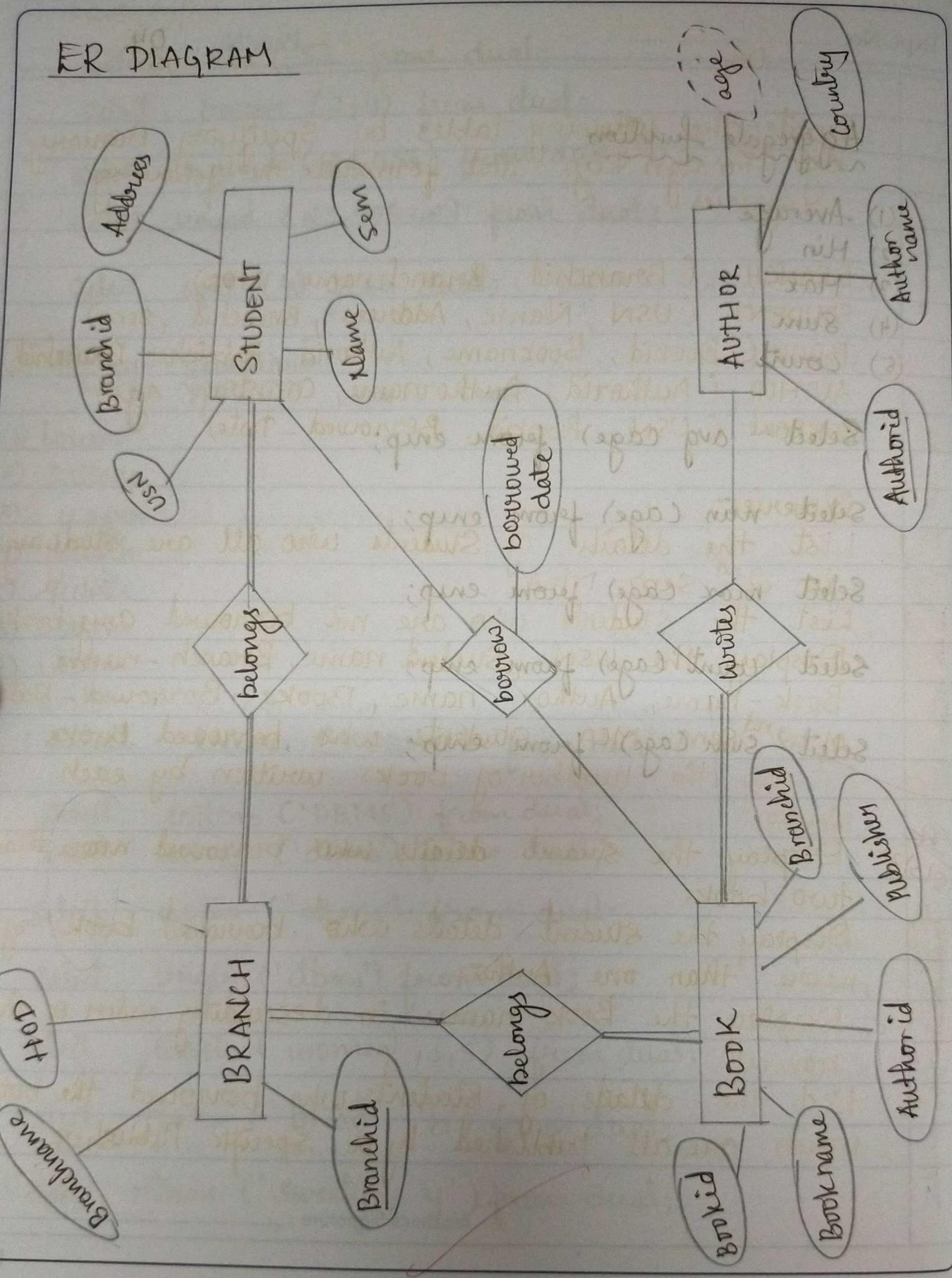
Select max (age) from emp;

Select count (age) from emp;

~~Select sum (age) from emp;~~

Q1  
3/3/22

## ER DIAGRAM



Create the following tables by specifying Primary keys, Foreign keys and formulate the following queries.

BRANCH (Branchid, Branchname, HOD)

STUDENT (USN, Name, Address, Branchid, sem)

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

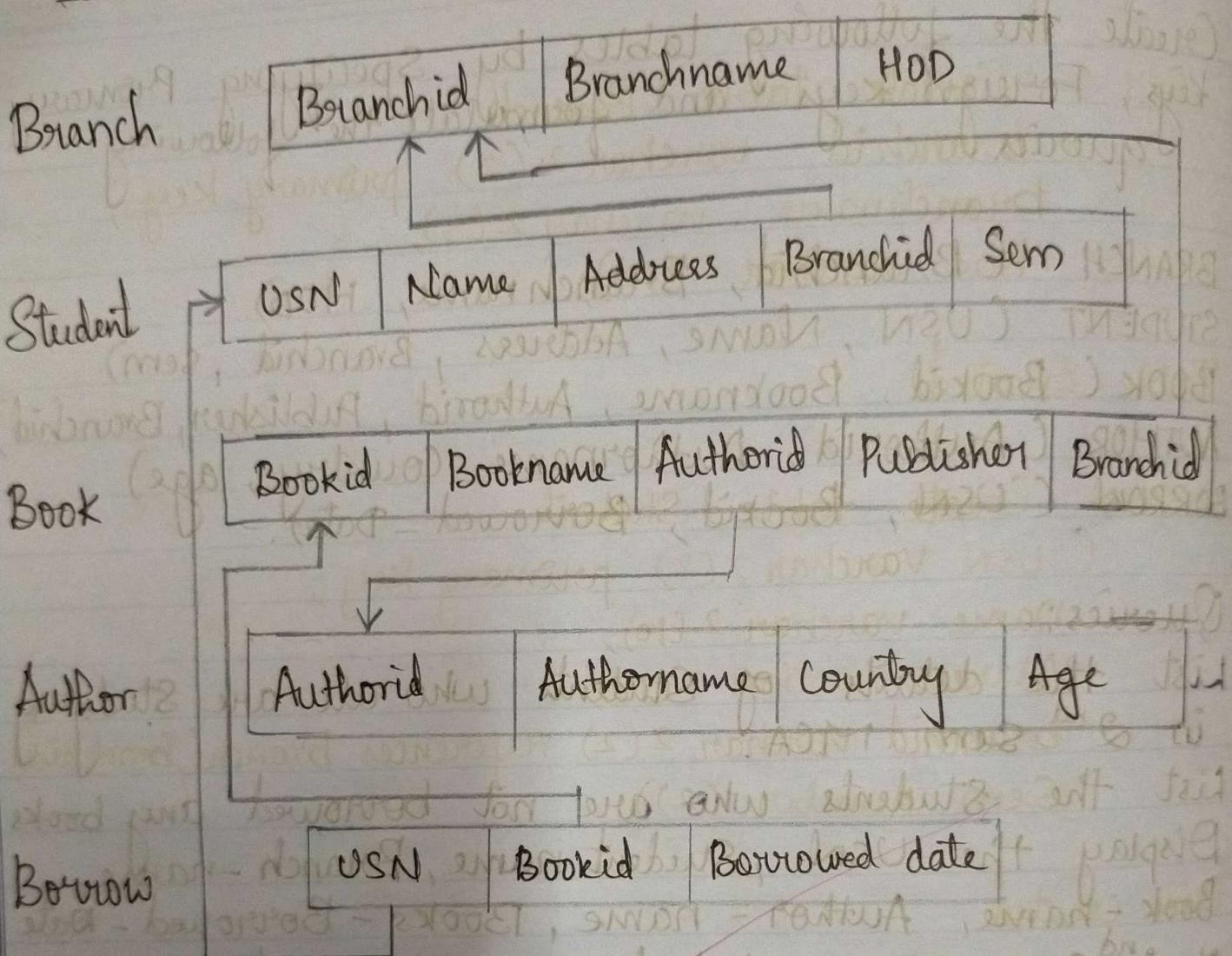
AUTHOR (Authorid, Authorname, Country, age)

BORROW (USN, Bookid, Borrowed - Date).

### Queries:

1. List the details of Students who all are studying in 2<sup>nd</sup> sem MCA.
2. List the students who are not borrowed any books
3. 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
4. Display the number of books written by each Author.
5. Display the student details who borrowed more than two books.
6. Display the student details who borrowed books of more than one Author.
7. Display the Book names in descending order of their names.
8. List the details of Students who borrowed the book which are all published by a Specific Publisher.

# Schema Diagram



SQL > Create table Branch  
 ( branchid varchar 2(2) primary key ,  
 branchname varchar 2(5),  
 hod varchar 2(10));

Table created

SQL > Create table Student  
 ( USN varchar 2(3) primary key ,  
 name varchar 2(10),  
 Address varchar 2(15),  
 branchid varchar 2(2) references branch(branchid),  
 Sem number (2));

Table created

SQL > Create table Author  
 ( authorid varchar 2(2) primary key ,  
 authorname varchar 2(20),  
 country varchar 2(10), age number (2));

Table created

SQL > Create table book

( bookid varchar 2(3) primary key , bookname varchar 2(15),  
 authorid varchar 2(2) references author (authorid),  
 publisher varchar 2(10),

<u>NAME</u>	<u>NULL?</u>	<u>TYPE</u>
Branchid	NOTNULL	varchar 2(2)
Branch name	(21)	varchar 2(5)
HOD	(5)	varchar 2(10)

<u>BR</u>	<u>BRANCH</u>	<u>HOD</u>
b1	mca	abc
b2	mba	xyz
b3	be	def
b4	civil	bbb
b5	mtech	xxx

branchid varchar 2(2) references branch (branchid);

Table created.

SQL > create table borrow

(USN varchar 2(3) references Student (USN),  
bookid varchar 2(3) references book (bookid),  
borrowdate varchar 2(15));

Table created.

SQL > desc branch;

SQL > insert into branch values ('&branchid',  
'&branchname', '&nod');

Enter value for branchid : b1

Enter value for branch name: mca

Enter value for nod : abc

Row created

SQL > Select \* from branch;

5 rows selected.

SQL > commit;

commit completed.

Name

NULL?

Type

USN

name

address

branchid

sem

varchar 2(3)

varchar 2(10)

varchar 2(15)

varchar 2(2)

number(2)

USN

Name

Address

BR

sem

S01	Kavya	bengaluru	b1	2
S02	Ramya	haasan	b2	4
S03	harish	mysuru	b3	1
S04	Usha	kolar	b1	2
S05	clinesh	gulbarga	b4	3
S06	ganesh	raichur	b5	1
S07	seema	haasan	b1	2

Name

NULL?

Type

authorid

Not Null

varchar 2(20)

authorname

varchar 2(20)

country

varchar 2(10)

Age

number(2)

Name	NULL?	Type
USN	NotNull	Varchar 2(3)
name		Varchar 2(10)
address		Varchar 2(15)
branchid		Varchar 2(2)
Sem		number(2)

USN	Name	Address	BR	Sem
S01	Kavya	bengaluru	b1	2
S02	Ramya	hassan	b2	4
S03	harish	mysuru	b3	1
S04	Usha	kolar	b1	2
S05	clinesh	gulbarga	b4	3
S06	ganesh	Majliswara	b5	1
S07	Seema	hassan	b1	2

Name	NULL?	Type
authorid	NotNull	Varchar 2(20)
authorname		Varchar 2(20)
country		Varchar 2(10)
Age		number(2)

SQL > desc student

SQL > insert into Student values ('& USN', '& name',  
'& address', '& branch', '& sem');

Enter value for USN : S01

Enter value for name : Kavya

Enter value for address : bengaluru

Enter value for branchid : b1

Enter value for Sem : 2

Row created

SQL > Select \* from Student;

7 rows created

SQL > desc author

Teacher's Signature : \_\_\_\_\_

<u>AU</u>	<u>AUTHOR NAME</u>	<u>COUNTRY</u>	<u>AGE</u>
a1	navathe	USA	55
a2	galvin	USA	45
a3	balaguruswamy	India	40
a4	hamacher	Spain	60
a5	morris man	Egypt	65

<u>Name</u>	<u>NULL?</u>	<u>Type</u>
Bookid	NotNull	varchar 2(3)
Bookname	NotNull	varchar 2(15)
Authorid	NotNull	varchar 2(2)
Publisher	NotNull	varchar 2(10)
Branchid	NotNull	varchar 2(2)

Date : .....

Expt. No. .... 02

Page No. .... 09

SQL > insert into author values ('&authorid', '&authorname', '&country', &age);

Enter value for authorid : a1  
Enter value for authorname : havathe  
Enter value for country : USA  
Enter value for age : 55

Now created

SQL > Select \* from author;

SQL > desc book

Teacher's Signature : \_\_\_\_\_

<u>BOD</u>	<u>BOOKNAME</u>	<u>AU</u>	<u>PUBLISHER</u>	<u>BR</u>
bk1	OS	a2	tmh	b1
bk2	datastructure	a2	pearson	b1
bk3	CO	a4	phi	b3
bk4	C	a3	thakur	b5
bk5	dbms	a1	tmh	b2
bk6	de	a5	tmh	b4
bk7	C++	a3	phi	b2

<u>Name</u>	<u>NULL</u>	<u>Type</u>
USN		Varchar 2(3)
Bookid		Varchar 2(3)
Borroweddate		Varchar 2(15)

<u>USN</u>	<u>BOD</u>	<u>BORROWEDDATE</u>
S01	bk1	02.08.2021
S01	bk2	09.09.2021
S01	bk3	11.09.2021
S03	bk5	01.10.2021
S03	bk6	10.10.2021
S02	bk3	11.11.2021
S02	bk7	12.12.2021
S04	bk4	14.11.2021
S05	bk4	20.11.2021

SQL > insert into book values ('&bookid', '&bookname',  
'&authorid', '&publisher', '&branched');

Enter value for bookid : bk1

Enter value for bookname : DS

Enter value for authorid : a2

Enter value for publisher : tmh

Enter value for Branched : b1

SQL > select \* from book;

SQL > desc borrow;

SQL > insert into borrow values ('&SIN', '&bookid',  
'& borrowed date');

Enter values for USN : S01

Enter values for bookid : bk1

Enter values for borroweddate : 02.08.2021

SQL > select \* from borrow;

<u>USN</u>	<u>Name</u>	<u>Address</u>	<u>SEM</u>	<u>Branch</u>
S01	Kavya	Bengaluru	2	mca
S04	Usha	Kolar	2	MCA
S07	Seema	Hassan	2	MCA

<u>USN</u>	<u>Name</u>	<u>Address</u>	<u>BR</u>	<u>SEM</u>
S06	Ganesh	Raichur	b5	1
S07	Seema	Hassan	b1	2

<u>USN</u>	<u>Name</u>	<u>Branch</u>	<u>Bookname</u>	<u>Author name</u>	<u>B.date</u>
S01	Kavya	MCA	co	hamacher	11.09.21
S01	Kavya	MCA	datastructure	galwani	09.09.21
S01	Kavya	MCA	eos	galwani	02.08.21
S04	Kavya	MCA	ca	balaguruswamy	14.11.21

<u>AU</u>	<u>COUNT (B,BOOKID)</u>
a1	1
a2	2
a3	2
a4	1
a5	1

<u>USN</u>	<u>COUNT (BO,BOOKID)</u>
S01	3

- Q1. SQL > Select s.usn, s.name, s.address, s.sem, b.branchname  
from student s, branch b where s.branchid =  
b.branchid. and b.branchname = 'mca' and sem = 2;
- Q2. SQL > Select \* from student where USN in  
(Select USN from student  
minus  
Select distinct USN from borrow);
- Q3. SQL > S.USN , s.name , br.branchname , b.book name ,  
a.authorname , bo.borrowed date from student s ,  
book b , branch br , borrow bo , author a where  
S.usn = bo.usn and s.branchid = br.branchid and  
b.bookid = bo.bookid and b.authorid = a.authorid and  
s.sem = 2 and br.branchname = 'mca' ;
- Q4. SQL > select a.authorid , count(b.bookid) from  
bookb , authora where a.author = b.authorid  
group by a.authorid ;
- SQL >
- Q5. Select s.usn , count(b.bookid) from student s , book b ,  
borrow bo where s.usn = bo.usn and bo.bookid = b.bookid  
group by s.usn having count(b.bookid) > 2 ;

Teacher's Signature : \_\_\_\_\_

USN

count (a.authorid)

S01

S02

S03

3

2

2

45

BR

BOD

BOOKNAME

AO

PUBLISHER

bk1

OS

a2

tmh

b1

bk6

de

a5

tmh

b4

bk5

dbms

a1

tmp

b2

bk2

datastructure

a2

pearson

b1

bk3

co

a4

phi

b3

bk7

c++

a3

phi

b2

bk4

recursion

a3

thakuri

b5

USN

Name

Bookname

Publisher

S01

kavya

OS

tmh

S03

harish

dbms

tmh

S03

harish

de

tmh

authorname

Balaguruswamy

USN

Name

Address

BR

SBM

S02

nanya

b2

4

S07

seema

haesam

b1

2

06. SQL > Select s.usn , count(a.authorid) from Student s, book b, borrow bo, author a where s.usn = bo.usn and b.bookid = bo.bookid and a.authorid = b.authorid group by s.usn having count(a.authorid) > 1;
07. SQL > Select \* from book order by bookname desc;
08. SQL > Select s.usn , s.name , b.bookname , b.publisher from Student s, book b, borrow bo where s.usn = bo.usn and b.bookid = bo.bookid and b.publisher = 'tmh';
09. Display the details of the youngest author.  
 Select \* from author where age is (Select min(age) from author);
10. Display the details of student who are from haasan  
 SQL > Select \* from student where address = 'haasan';

Teacher's Signature : \_\_\_\_\_

2 tables: one of him/her student info, another of marks  
 N.B.: new 2 values in relation and whereas it stands  
**SCHEMA DIAGRAM:** ~~in the first slide, there is a diagram of the student structure (student) from which 2 parts are present: part 1 is for info of~~

Student	USN	Name	DOB	Branch	mark1	mark2	mark3	total	GPA
---------	-----	------	-----	--------	-------	-------	-------	-------	-----

Structure of the DBMS is as follows: There is a table named student in which student info is stored and marks table which stores marks of each student. There is also a table named branch which stores details of branches.

Name	NULL?	Type
USN	Not Null	number (4)
name		varchar 2(15)
dob		varchar 2(15)
branch		varchar 2(10)
mark1		number (3)
mark2		number (3)
mark3		number (3)

2. Consider the following Schema :

STUDENT (USN, Name, date of birth, branch, mark1, mark2, mark3, total, GPA)

Execute the following queries:-

- (i) Update the column total by adding the columns mark1, mark2, mark3.
- (ii) Find the GPA score of all the student
- (iii) Find the students who were born on a particular year of birth from the date of birth column
- (iv) List the students who are studying in a particular branch of study.
- (v) Find the maximum GPA score of the student branch wise
- (vi) Find the students whose name starts with alphabet "S".
- (vii) Find the students whose name ends with alphabet "AR".
- (viii) Delete the student details whose USN is given as 1001.

SQL > Create table Stud

(USN number (4) primary key,  
name varchar 2(15),  
dob varchar 2(15),  
branch varchar 2(10),  
mark1 number (3),  
mark2 number (3),  
mark3 number (3));

SQL > desc Stud

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>mark</u> <u>1</u>	<u>mark</u> <u>2</u>	<u>mark</u> <u>3</u>
1001	Asha	27.08.2000	MCA	90	98	88
1002	Aruna	16.09.1999	MBA	60	62	70
1003	Sagar	15.08.2001	MTECH	70	75	78
1004	Sawan	16.09.2001	MCA	40	42	45
1005	Amar	22.03.2002	MBA	50	52	55
1006	Akbar	25.05.2002	MTECH	66	68	65

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>
1001	Asha	27.08.2000	MCA	90	98	88	276
1002	Aruna	16.09.1999	MBA	60	62	70	192
1003	Sagar	15.08.2001	MTECH	70	75	78	223
1004	Sawan	16.09.2001	MCA	40	42	45	127
1005	Amar	22.03.2002	MBA	50	52	55	157
1006	Akbar	25.05.2002	MTECH	66	68	65	193

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1001	Asha	27.08.2000	MCA	90	98	88	276	9.2
1002	Aruna	16.09.1999	MBA	60	62	70	192	6.4
1003	Sagar	15.08.2001	MTECH	70	75	78	223	74.33
1004	Sawan	16.09.2001	MCA	40	42	45	127	42.33
1005	Amar	22.03.2002	MBA	50	52	55	157	52.33
1006	Akbar	25.05.2002	MTECH	66	68	65	193	64.33

SQL > insert into stud values ('&USN', '&name', '&dob', '&branch', '&mark1', '&mark2', '&mark3');

Enter value for USN : 1001

Enter value for name : arha

Enter value for dob : 27.08.2000

Enter value for branch : MEA

Enter value for mark1 : 90

Enter value for mark2 : 98

Enter value for mark3 : 88

SQL > Select \* from Stud;

01. SQL > alter table Stud add (total number(3));

Table altered.

SQL > update Stud set total = mark1 + mark2 + mark3;

02. SQL > alter table Stud add (gpa number (4,2));

Table altered

SQL > update Stud set gpa = total / 3;

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1002	aruna	16.09.1999	mba	60	62	70	192	64

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1001	asha	27.08.2000	mca	90	98	88	276	92
1004	sawan	16.09.2001	mca	40	42	45	127	42.33

<u>Branch</u>	<u>max(GPA)</u>
mba	64
mca	92
mtech	74.33

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1003	Sagar	15.08.2001	mtech	70	75	58	223	74.33
1004	sawan	16.09.2001	mca	40	42	45	127	42.33

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1003	sagar	15.08.2001	mtech	70	75	58	223	74.33
1005	amar	22.03.2002	mba	50	52	55	157	52.33
1006	akbar	25.05.2002	mtech	66	68	65	193	64.33

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1002	aruna	16.09.1999	mba	60	62	70	192	64
1003	Sagar	15.08.2001	mtech	70	75	78	223	74.33
1004	sawan	16.09.2001	mca	40	42	45	127	42.33
1005	amar	22.03.2002	mba	50	52	55	157	52.33
1006	akbar	25.05.2002	mtech	66	68	65	193	64.33

3. SQL > Select \* from stud where dob like '%.1999';
4. SQL > Select \* from stud where branch = 'mca';
5. SQL > select branch, max(GPA) from stud group by branch;
6. SQL > select \* from stud where name like 'S%';
7. SQL > select \* from stud where name like '%.ari';
8. SQL > delete from stud where USN = '1001';

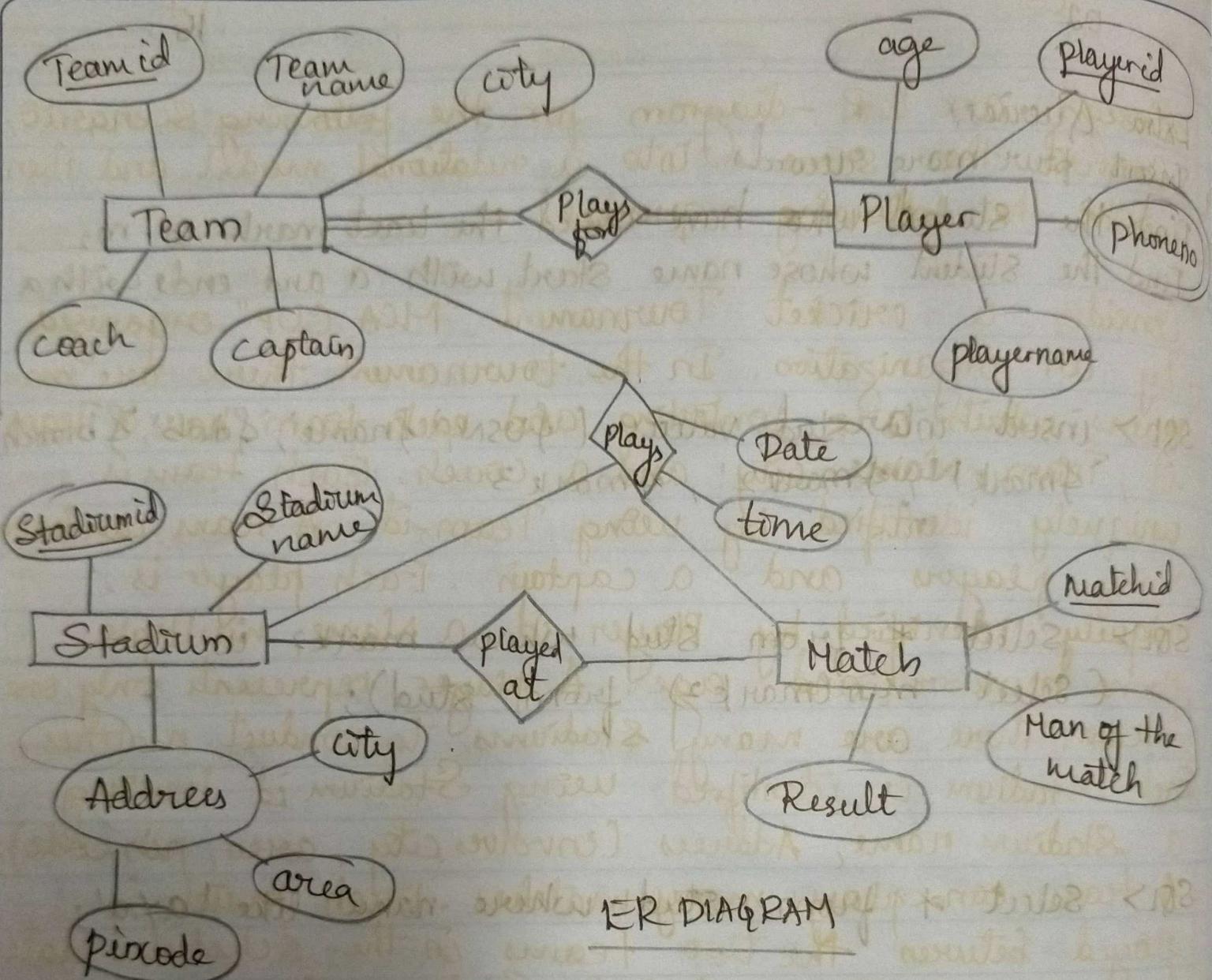
<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>
1001	asha	27.08.2000	mea	90	98	88
1002	aruna	16.09.1999	mba	60	62	70
1003	sagar	15.08.2001	mtech	70	75	78
1004	sawan	16.09.2001	mea	40	42	45
1005	amar	22.03.2002	mba	50	52	55
1006	akbar	25.05.2002	mtech	66	68	65
1007	bhanu	13.06.2000	mea	92	91	90
1008	ritu	14.07.2002	mba	93	90	90
1009	deepa	15.09.1999	mtech	94	88	90

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1004	sawan	16.09.2001	mea	40	42	45	127	42.33

<u>USN</u>	<u>name</u>	<u>dob</u>	<u>branch</u>	<u>m<sub>1</sub></u>	<u>m<sub>2</sub></u>	<u>m<sub>3</sub></u>	<u>total</u>	<u>GPA</u>
1001	asha	27.08.2000	mea	90	98	88	276	92
1002	aruna	16.09.1999	mba	66	62	70	192	64

## Extra Queries.

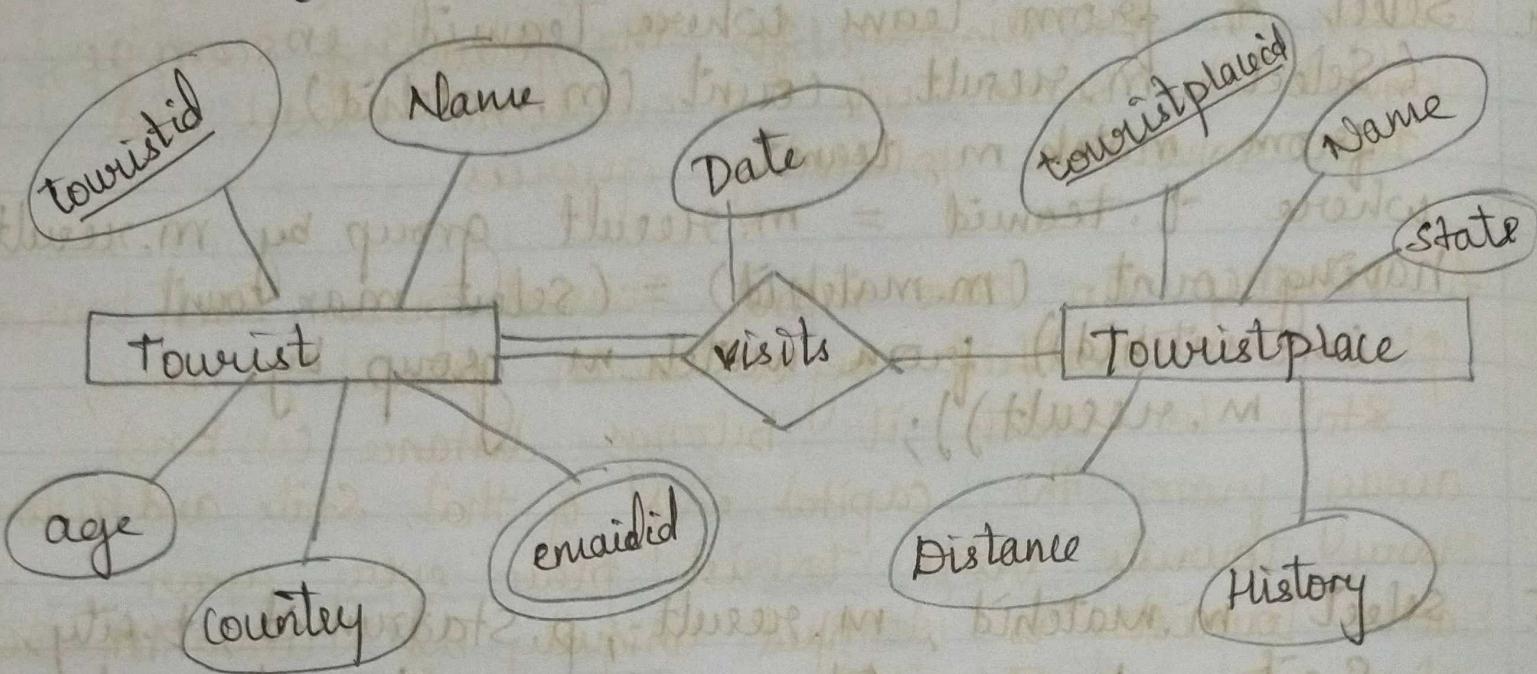
9. Insert four more records
10. Find the student who have scored the least marks in m<sub>2</sub>
12. Find the student whose name start with a and ends with a
  
9. SQL > insert into stud values ('&usn', '&name', '&dob', '&branch', '&mark1', '&mark2', '&mark3')
  
10. SQL > Select \* from stud where mark2 in  
(Select min(mark2) from stud);
  
11. SQL > Select \* from stud where name like 'ay.a';



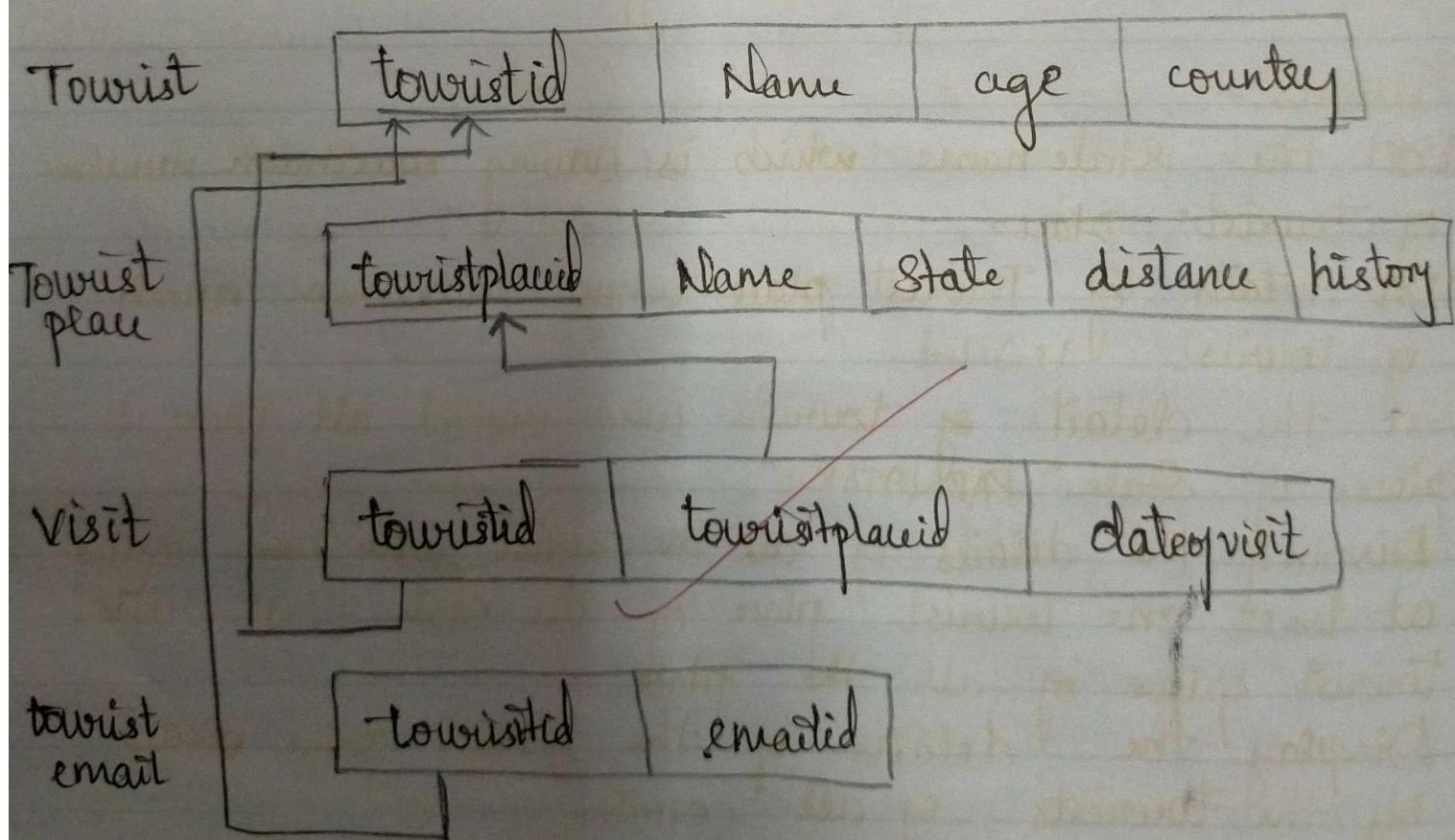
## SCHEMA DIAGRAM

Player	Playerid	Playername	age
	Playerid	Playername	age
Team	teamid	teamname	city
	teamid	teamname	city
Match	Matchid	Result	Man of the match
	Matchid	Result	Man of the match

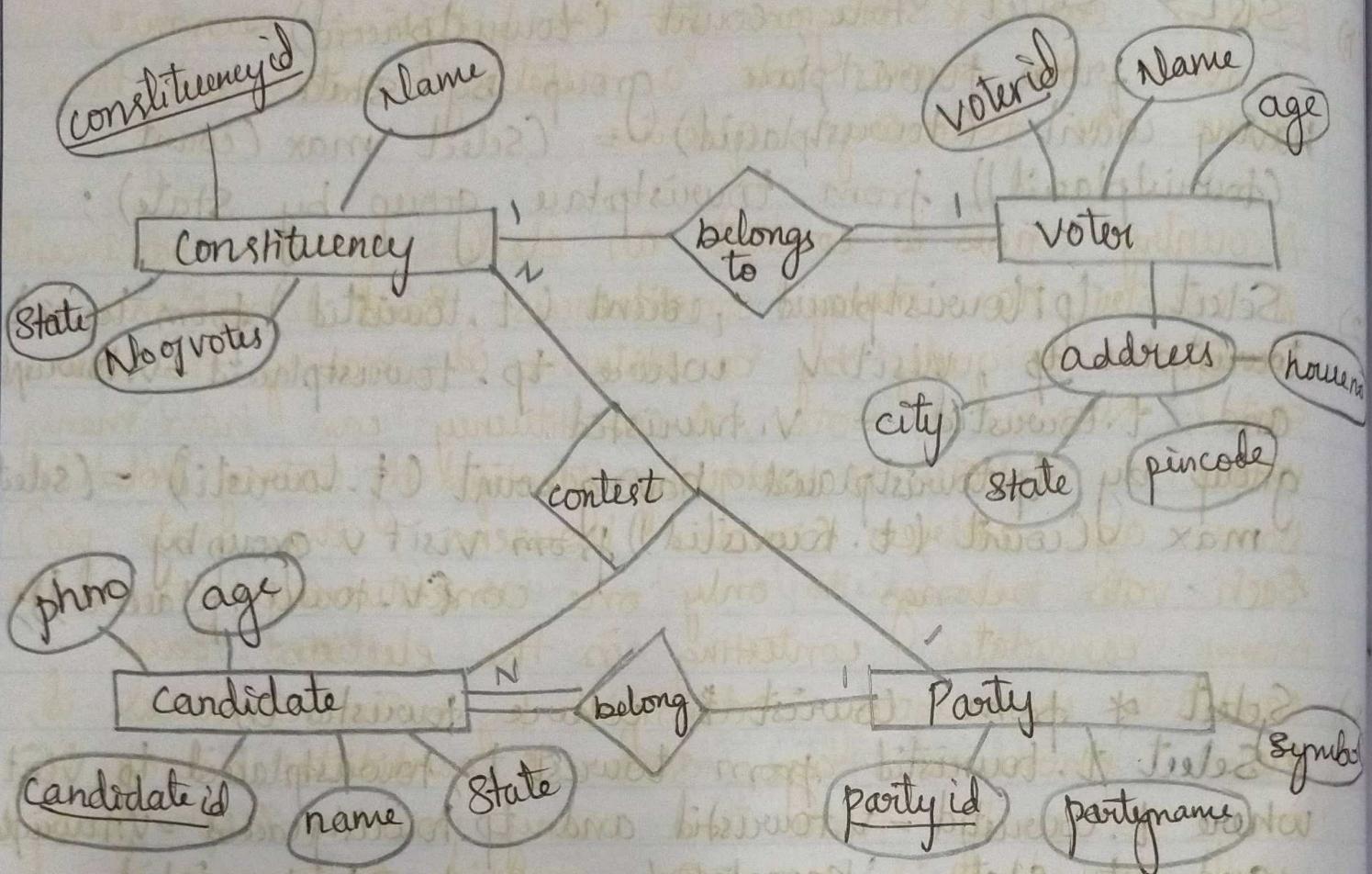
## ER DIAGRAM:-



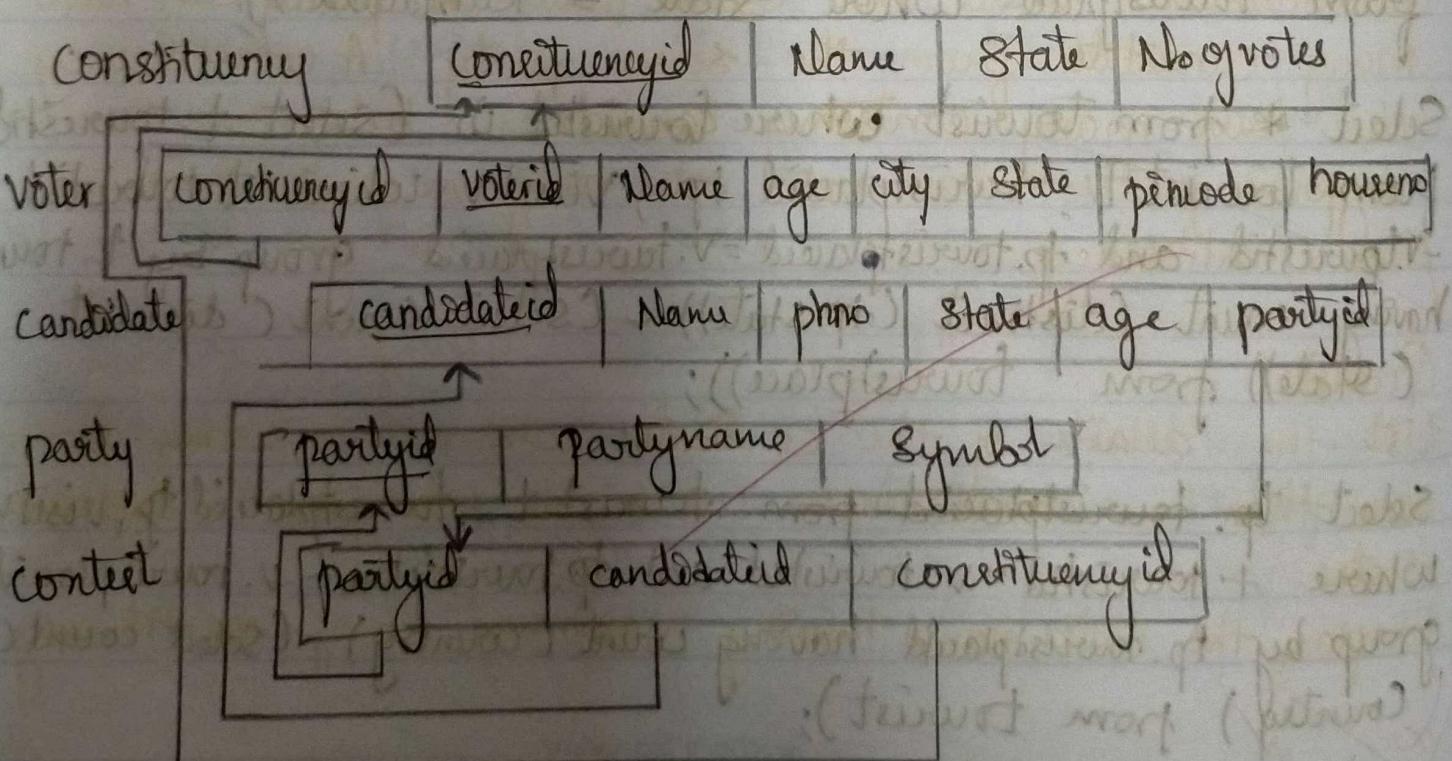
## SCHEMA DIAGRAM:-

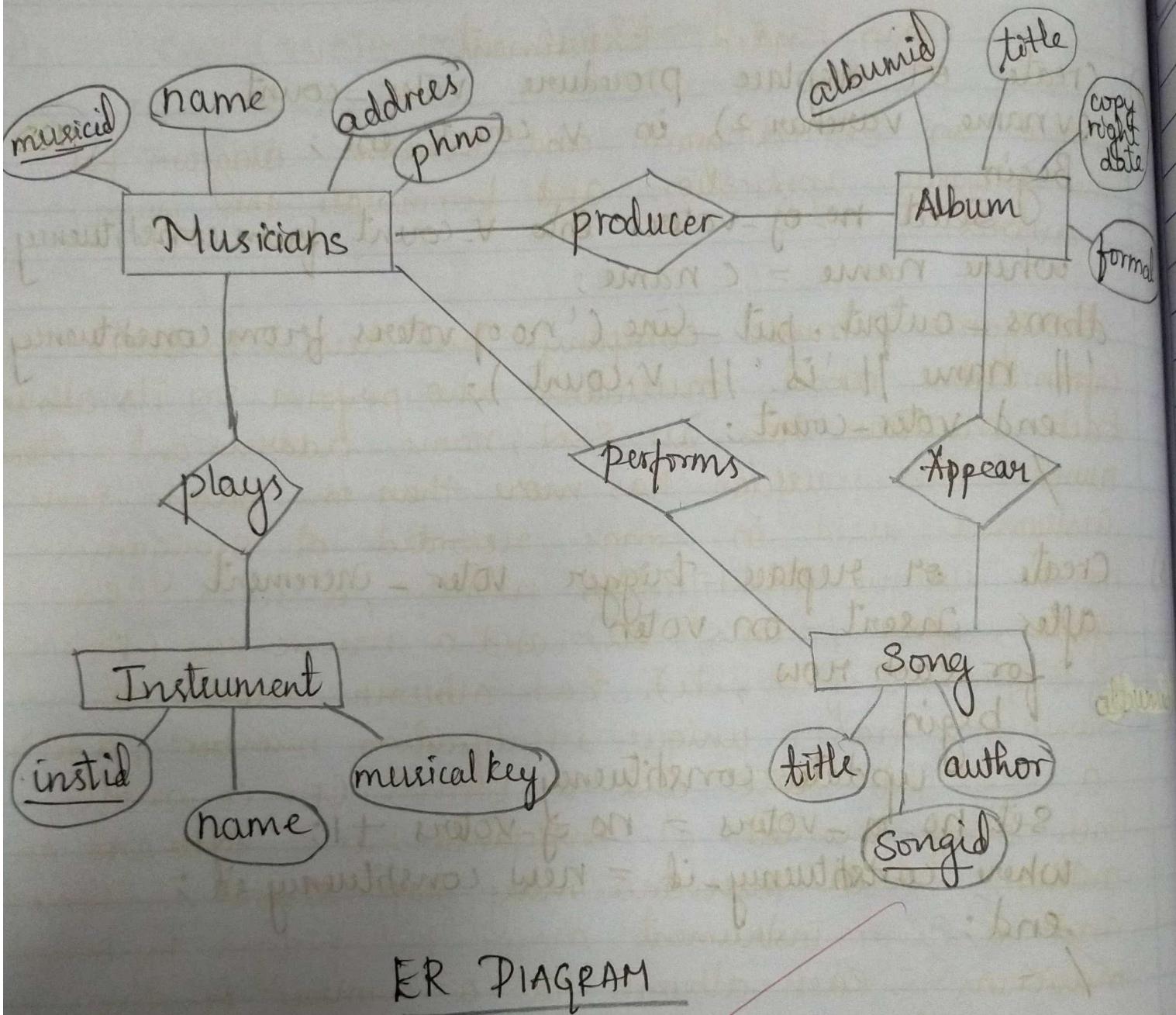


## ER DIAGRAM :-

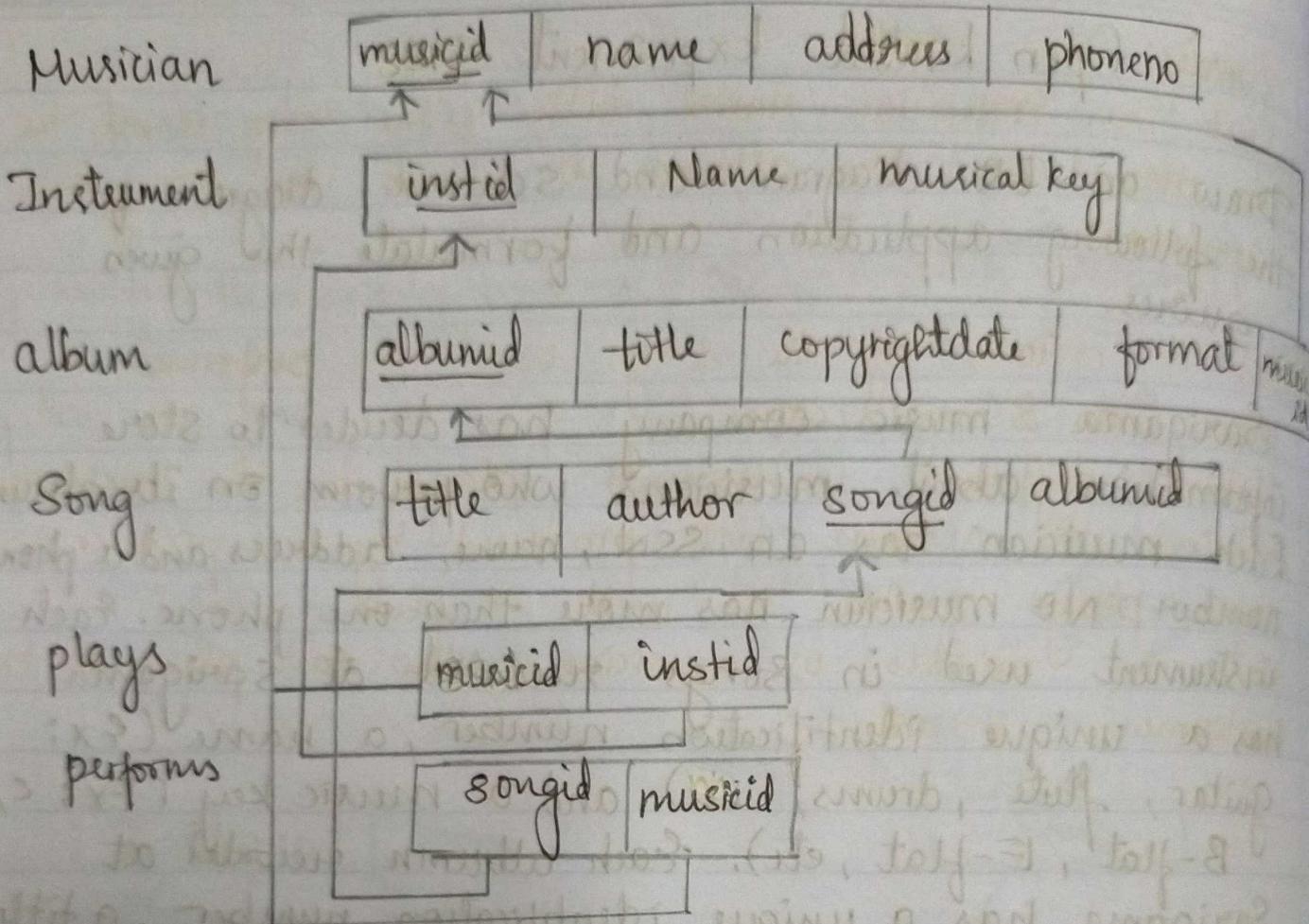


## SCHEMA DIAGRAM :-





## SCHEMA DIAGRAM:-



Name	NOT NULL?	Type
ssn	notnull	Varchar 2(3)
name		Varchar 2(15)
address		Varchar 2(20)
phoneno		number (10)

Name	NULL?	Type
instid	not null	Varchar 2(3)
Name		Varchar 2(15)
musical key		Varchar 2(20)