

Music Database :-

* Notown Record has decided to store information about musicians who perform on its albums. Each musician that records at Notown has an SSN, a name, an address, and a phone number. No musician has more than one phone. Each instrument used in songs recorded at Notown has a unique identification number, a name (e.g. guitar, synthesizer, and flute) and a musical key (e.g. C, B-flat, E-flat). Each album recorded on the Notown label has a unique identification number, a title, a copyright date and a format (e.g. CD or MC). Each song recorded at Notown has a id title and an author. Each musician may play several instruments; and a given instrument may be played by several musicians. Each album has a number of songs on it, but no song may appear on more than one album. Each song is performed by one or more musicians and a musician may perform a number of songs. Each album has exactly one musician who acts as its producer. A musician may produce several albums.

Step 1: Identification of entities.

Step 2: Identifications of attribute for each of the entities

Step 3: Relationship between the entities.

Step 4: Cardinality constraint and participate constraint

Step 5: ER Diagram

Step 6: Relationship Schema Diagram

* Entities :-

MUSICIAN, ALBUM, INSTRUMENT, SONG

* Attribute

* Entities

MUSICIAN, ALBUM, INSTRUMENT, SONG

* Attributes :-

MUSICIAN:- SSN, Name, Address, phone no

ALBUM:- AID, title, copyright Date

INSTRUMENT:-

I-ID, Name, key (c, B-flat, E-flat)

SONG:-

S-ID, Author, Title

③ Relationship :-

MUSICIAN and INSTRUMENT
plays

MUSICIAN and ALBUM
produces

MUSICIAN and SONG
performs

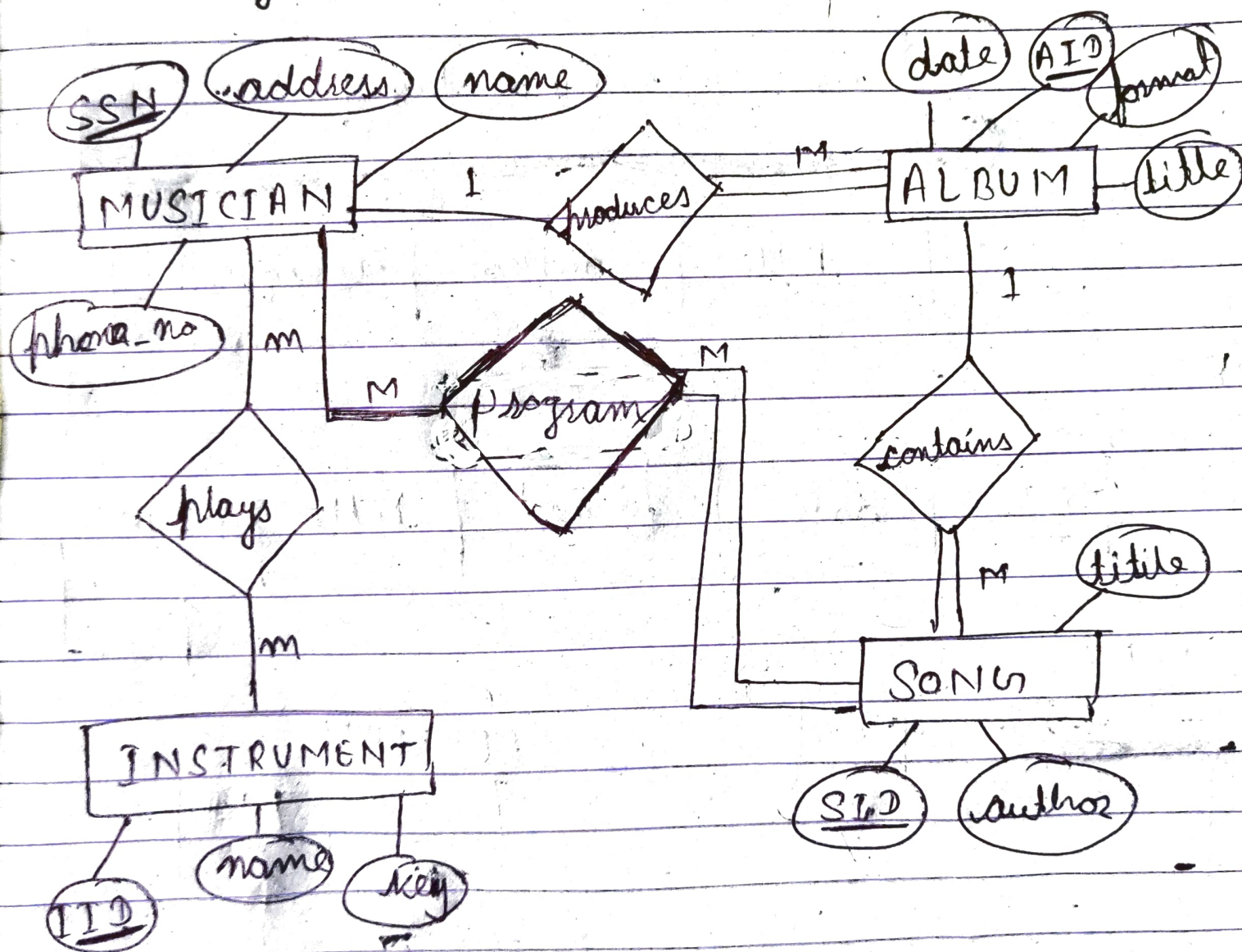
* ALBUM and SONG
appears/contains

④ Cardinality of relationship :-

- * Many to many [MUSICIAN, INSTRUMENT]
- * Many to many [MUSICIAN, SONG]
- * one to many [MUSICIAN, ALBUM]
- * one to many [ALBUM, SONG]

Step - 5 :-

* ER-Diagram



Step:- 6

① MUSICIAN

<u>SSN</u>	Name	address	Ph-no
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INSTRUMENT

<u>ID-NO</u>	name	musician-key
--------------	------	--------------

SONG

<u>SID</u>	title	author	unique-no
------------	-------	--------	-----------

ALBUM

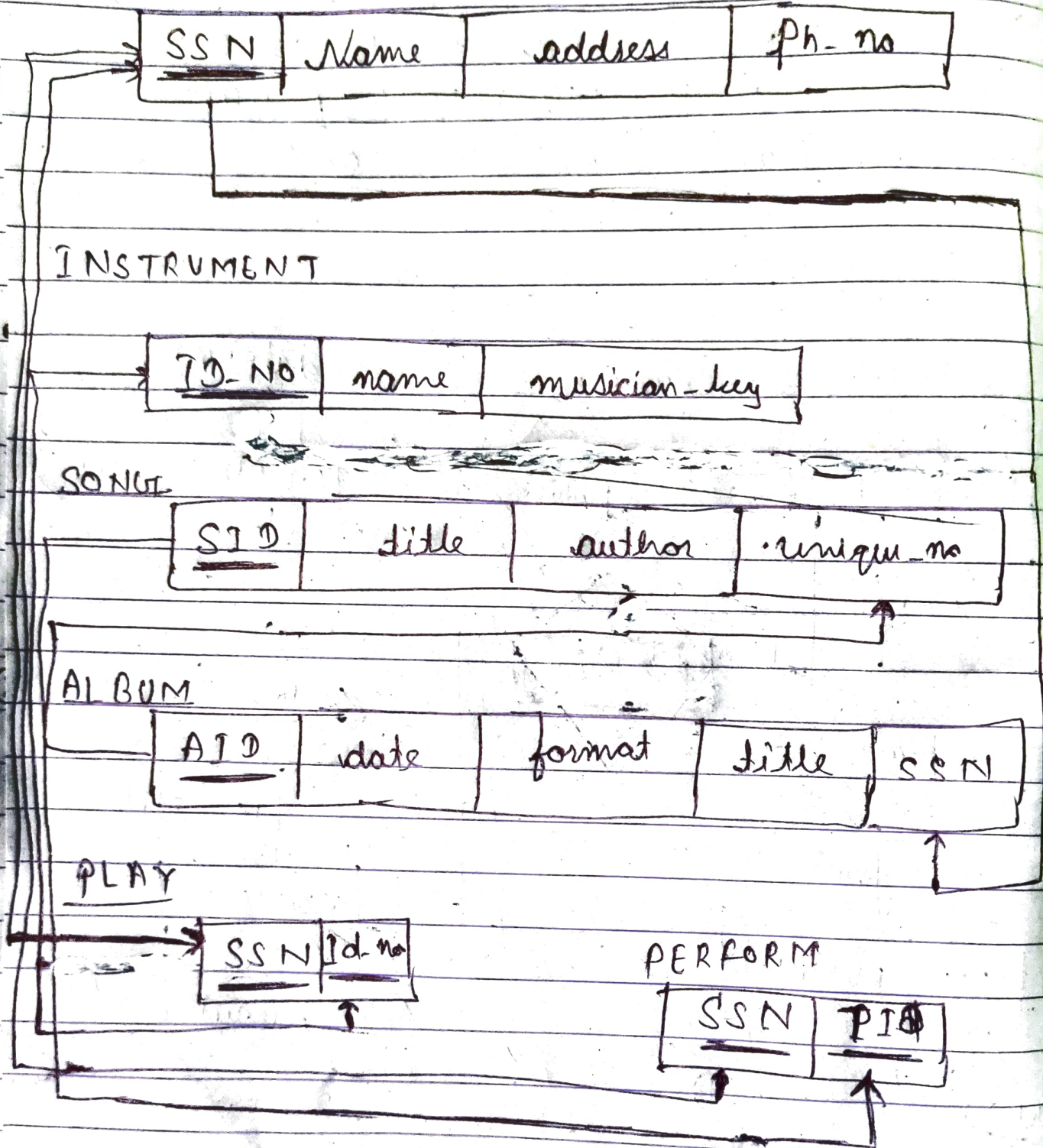
<u>AID</u>	date	format	title	SSN
------------	------	--------	-------	-----

PLAY

<u>SSN</u>	<u>Id-no</u>
------------	--------------

PERFORM

<u>SSN</u>	<u>PIID</u>
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```
mysql> create database lab1;
Query OK, 1 row affected (0.23 sec)

mysql> use rvce;
Database changed
```

Table Creation

```
mysql> create table MUSICIAN(ssn varchar(10) primary key,name varchar (10) NOT NULL,contact bigint(10),address varchar(10));
Query OK, 0 rows affected, 1 warning (1.34 sec)
```

```
mysql> desc MUSICIAN;
```

```
+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| ssn   | varchar(10) | NO   | PRI | NULL    |      |
| name  | varchar(10) | NO   |     | NULL    |      |
| contact | bigint   | YES  |     | NULL    |      |
| address | varchar(10) | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+
4 rows in set (0.05 sec)
```

```
mysql> create table INSTRUMENT(instID varchar(10)primary key,name varchar(10),musickey varchar(5));
```

```
mysql> create table ALBUM(albumid varchar(10)primary key,title varchar(10),copyrightdate date,ssn varchar(10),foreign key(ssn)
references MUSICIAN(ssn));
```

```
mysql> create table PLAY(ssn varchar(10),inst_ID varchar(10),foreign key(ssn) references MUSICIAN(ssn),foreign key(inst_ID) references
INSTRUMENT(instID),primary key(ssn,inst_ID));
```

```
mysql> create table SONG(id varchar(10)primary key,title varchar(10) NOT NULL,author varchar(10),albumid varchar(10),foreign
key(albumid) references ALBUM(albumid));
```

```
mysql> create table PERFORM(ssn varchar(10),id varchar(10),foreign key(ssn) references MUSICIAN(ssn), foreign key(id) references
SONG(id),primary key(ssn,id));
```

Insert Data into a Musician Table:-

```
Sql>insert into musician(ssn,name,contact,address) values("M1","Durgesh",7564533456,"BGP");
```

Check the Description of a table:-

```
XAMPP for Windows - mysql -u root
MariaDB [rvce]> show tables;
+-----+
| Tables_in_rvce |
+-----+
| album           |
| instrument       |
| musician        |
| perform         |
| play            |
| song            |
+-----+
6 rows in set (0.001 sec)

MariaDB [rvce]> desc album;
+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| albumid | varchar(10) | NO   | PRI | NULL    |      |
| title   | varchar(10) | YES  |     | NULL    |      |
| copyrightdate | date | YES  |     | NULL    |      |
| format  | varchar(10) | YES  |     | NULL    |      |
| ssn     | varchar(10) | YES  | MUL | NULL    |      |
+-----+-----+-----+-----+-----+
5 rows in set (0.044 sec)

MariaDB [rvce]> desc instrument;
+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| instID | varchar(10) | NO   | PRI | NULL    |      |
| name   | varchar(10) | YES  |     | NULL    |      |
| musickey | varchar(5) | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+
3 rows in set (0.048 sec)

MariaDB [rvce]> desc musician;
+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| ssn   | varchar(10) | NO   | PRI | NULL    |      |
| name  | varchar(10) | NO   |     | NULL    |      |
| contact | bigint(10) | YES  |     | NULL    |      |
| address | varchar(10) | YES  |     | NULL    |      |
+-----+-----+-----+-----+-----+
4 rows in set (0.048 sec)
```

```
Select XAMPP for Windows - mysql -u root
3 rows in set (0.048 sec)

MariaDB [rvce]> desc musician;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| ssn   | varchar(10) | NO | PRI | NULL | |
| name  | varchar(10) | NO | | NULL | |
| contact | bigint(10) | YES | | NULL | |
| address | varchar(10) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.050 sec)

MariaDB [rvce]> desc perform;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| ssn   | varchar(10) | NO | PRI | NULL | |
| id    | varchar(10) | NO | PRI | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.047 sec)

MariaDB [rvce]> desc play;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| ssn   | varchar(10) | NO | PRI | NULL | |
| inst_ID | varchar(10) | NO | PRI | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.050 sec)

MariaDB [rvce]> desc song;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | varchar(10) | NO | PRI | NULL | |
| title | varchar(10) | NO | | NULL | |
| author | varchar(10) | YES | | NULL | |
| albumid | varchar(10) | YES | MUL | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.049 sec)

MariaDB [rvce]> _
```

Show Data of all Table:-

```
XAMPP for Windows - mysql -u root

MariaDB [rvce]> select * from album;
+-----+-----+-----+-----+-----+
| albumid | title | copyrighdate | format | ssn |
+-----+-----+-----+-----+-----+
| A1      | AAA   | 2021-06-11   | CD     | M1  |
| A2      | BBB   | 2018-08-01   | HD     | M4  |
| A3      | CCC   | 2020-01-12   | Mp3    | M1  |
| A4      | EEE   | 2019-01-01   | Mp4    | M5  |
| A5      | UUU   | 2018-06-25   | mp4    | M3  |
+-----+-----+-----+-----+-----+
5 rows in set (0.005 sec)

MariaDB [rvce]> select * from instrument;
+-----+-----+-----+
| instID | name | musickey |
+-----+-----+-----+
| I1     | keyboard | k1 |
| I2     | flute | f1 |
| I3     | tabla | t1 |
| I4     | guitar | g1 |
| I5     | Bass | a |
+-----+-----+-----+
5 rows in set (0.008 sec)

MariaDB [rvce]> select * from musician;
+-----+-----+-----+-----+
| ssn | name | contact | address |
+-----+-----+-----+-----+
| M1  | Durgesh | 7654345682 | BGP |
| M2  | AMAN | 654345675 | PNBE |
| M3  | Aunag | 704345679 | UP |
| M4  | Saurav | 984345699 | Bhagalpur |
| M5  | Gaurav | 9843456999 | Mysore |
+-----+-----+-----+-----+
5 rows in set (0.008 sec)

MariaDB [rvce]> select * from perform;
+-----+-----+
| ssn | id |
+-----+-----+
| M1  | S1 |
| M2  | S1 |
| M2  | S2 |
+-----+-----+
3 rows in set (0.008 sec)
```

```
Select XAMPP for Windows - mysql -u root

MariaDB [rvce]> select * from perform;
+-----+
| ssn | id |
+-----+
| M1  | S1 |
| M2  | S1 |
| M2  | S2 |
| M3  | S1 |
| M3  | S3 |
| M4  | S4 |
| M5  | S5 |
+-----+
7 rows in set (0.008 sec)

MariaDB [rvce]> select * from play;
+-----+
| ssn | inst_ID |
+-----+
| M1  | I1      |
| M2  | I2      |
| M3  | I3      |
| M4  | I4      |
| M5  | I5      |
+-----+
5 rows in set (0.008 sec)

MariaDB [rvce]> select * from song;
+-----+
| id | title | author | albumid |
+-----+
| S1 | Song1 | SN     | A1      |
| S2 | Song2 | UN     | A3      |
| S3 | Song3 | AS     | A2      |
| S4 | Song4 | AY     | A5      |
| S5 | Song5 | SN     | A4      |
+-----+
5 rows in set (0.008 sec)

MariaDB [rvce]>
```

Class Work:-

1.a:- List musician name, title of the song which he has played, the album in which song has occurred.

Answer:-select m.name,s.title,a.albumid from musician m,perform p,song s,album a where m.ssn=p.ssn and p.id=s.id and s.albumid=a.albumid;

or

select m.name,s.title,a.title from musician m,perform p,song s,album a where m.ssn=p.ssn and p.id=s.id and s.albumid=a.albumid;

2.b:-List the musicians who have not produced any album.

Answer:-select m.ssn,m.name from musician m where m.ssn not in(select m.ssn from musician m,album a where m.ssn=a.ssn);

3.c:-List the details of songs which are performed by more than 3 musicians.

Answer:-select s.id,s.title from song s,perform p where s.id=p.id group by p.id having count(p.id)>=3;

4.d:-List the different instruments played by the musicians and the average number of musicians who play the instrument.

Answer:-select count(p.inst_id), i.name,count(p.Inst_ID)/(select count(*) from musician) as 'Musician name' from play p ,instrument i where i.instID=p.inst_id group by p.inst_id ;

5:-Retrieve album title produced by the producer who plays guitar as well as flute and has produced no of songs greater than the average songs produced by all producers.

Answer:-select m.*from musician m,play p,instrument i where m.ssn=p.ssn group by p.ssn having count(distinct p.inst_ID)=count(distinct i.instid);

6.f:-List the details of musicians who can play all the instruments present.

Answer:-select distinct(a.title) from album a, instrument i, play p where p.inst_ID=i.instID and a.ssn=p.ssn and p.ssn in (select ssn from album where noofsongs >(select avg(noofsongs) from album)) and i.name in ('flute','guitar');

Screenshot of class Work:-

```
XAMPP for Windows - mysql -u root

MariaDB [rvce]> select m.name,s.title,a.albumid from musician m,perform p,song s,album a where m.ssn=p.ssn and p.id=s.id and s.albumid=a.albumid;
+-----+
| name | title | albumid |
+-----+
| Durgesh | Song1 | A1 |
| AMAN | Song1 | A1 |
| AMAN | Song2 | A3 |
| Aurag | Song1 | A1 |
| Aurag | Song3 | A2 |
| Saurav | Song4 | A5 |
| Gaurav | Song5 | A4 |
+-----+
7 rows in set (0.032 sec)

MariaDB [rvce]> select m.name,s.title,a.title from musician m,perform p,song s,album a where m.ssn=p.ssn and p.id=s.id and s.albumid=a.albumid;
+-----+
| name | title | title |
+-----+
| Durgesh | Song1 | AAA |
| AMAN | Song1 | AAA |
| Aurag | Song1 | AAA |
| Aurag | Song3 | BBB |
| AMAN | Song2 | CCC |
| Gaurav | Song5 | EEE |
| Saurav | Song4 | UUU |
+-----+
7 rows in set (0.003 sec)

MariaDB [rvce]> select m.ssn,m.name from musician m where m.ssn not in(select m.ssn from musician m,album a where m.ssn=a.ssn);
+-----+
| ssn | name |
+-----+
| M2 | AMAN |
+-----+
1 row in set (0.010 sec)

MariaDB [rvce]> select s.id,s.title from song s,perform p where s.id=p.id group by p.id having count(p.id)>=3;
+-----+
| id | title |
+-----+
| S1 | Song1 |
+-----+
1 row in set (0.007 sec)

XAMPP for Windows - mysql -u root

MariaDB [rvce]> select count(p.inst_id), i.name,count(p.inst_id)/(select count(*) from musician) as 'Musician name' from play p ,instrument i where i.instID=p.inst_id group by p.inst_id ;
+-----+
| count(p.inst_id) | name | Musician name |
+-----+
| 1 | keyboard | 0.2000 |
| 3 | flute | 0.6000 |
| 2 | tabla | 0.4000 |
| 3 | guitar | 0.6000 |
| 2 | Bass | 0.4000 |
+-----+
5 rows in set (0.007 sec)

MariaDB [rvce]> select m.*from musician m,play p,instrument i where m.ssn=p.ssn group by p.ssn having count(distinct p.inst_ID)=count(distinct i.instid);
+-----+
| ssn | name | contact | address |
+-----+
| M1 | Durgesh | 7654345682 | BGP |
+-----+
1 row in set (0.003 sec)

MariaDB [rvce]> select distinct(a.title) from album a, instrument i, play p where p.inst_ID=i.instID and a.ssn=p.ssn and p.ssn in (select ssn from album where noofsongs >(select avg(noofsongs) from album)) and i.name in ('flute','guitar');
+-----+
| title |
+-----+
| AAA |
| CCC |
+-----+
2 rows in set (0.003 sec)

MariaDB [rvce]>
```