



DATABASE MANAGEMENT SYSTEM(CBS-1007)

SLOT: L33+34

LAB ASSESSMENT -1

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Q1 -**Query:** Create table Product(marker varchar(10),model int PRIMARY KEY, type varchar(20));

```
mysql> Create table Product(marker varchar(10),model int PRIMARY KEY,type varchar(20));
Query OK, 0 rows affected (0.60 sec)

mysql> desc Product;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| marker | varchar(10)   | YES  |     | NULL    |       |
| model  | int           | NO   | PRI | NULL    |       |
| type   | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.16 sec)
```

Query: Create table Laptop(code int PRIMARY KEY, model int, speed float,ram int,hd int,screen float, price int, foreign key(model) references Product(model))

```
mysql> Create table Laptop(code int PRIMARY KEY,model int, speed float,ram int,hd int,screen float, price int, foreign key(model) references Product(model))
-> ;
Query OK, 0 rows affected (0.32 sec)

mysql> desc Laptop
-> ;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| code  | int  | NO   | PRI | NULL    |       |
| model | int  | YES  | MUL | NULL    |       |
| speed | float | YES  |     | NULL    |       |
| ram   | int  | YES  |     | NULL    |       |
| hd    | int  | YES  |     | NULL    |       |
| screen | float | YES  |     | NULL    |       |
| price | int  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.04 sec)

mysql>
```

Query: Create table PC(code int PRIMARY KEY, model int,speed float,ram int,hd int,cd int, price int,foreign key(model) references Product(model));

```
mysql> Create table PC(code int PRIMARY KEY, model int,speed float,ram int,hd int,cd int, price int,foreign key(model) references Product(model));
Query OK, 0 rows affected (0.20 sec)

mysql> desc PC;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| code  | int  | NO   | PRI | NULL    |       |
| model | int  | YES  | MUL | NULL    |       |
| speed | float| YES  |     | NULL    |       |
| ram   | int  | YES  |     | NULL    |       |
| hd    | int  | YES  |     | NULL    |       |
| cd    | int  | YES  |     | NULL    |       |
| price | int  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql>
```

Query: Create table Printer(code int PRIMARY KEY, model int, ,color varchar(10),type varchar(20), price int, foreign key(model) references Product(model))

```
mysql> Create table Printer(code int PRIMARY KEY, model int,color varchar(10),type varchar(20), price int, foreign key(model) references Product(model));
Query OK, 0 rows affected (0.10 sec)

mysql> desc Printer;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| code  | int           | NO   | PRI | NULL    |       |
| model | int           | YES  | MUL | NULL    |       |
| color | varchar(10)   | YES  |     | NULL    |       |
| type  | varchar(20)   | YES  |     | NULL    |       |
| price | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

Query: INSERT INTO Product VALUES ('L', 5101, 'pc');

INSERT INTO Product VALUES ('L', 5102, 'pc');

INSERT INTO Product VALUES ('L', 5103, 'pc');

INSERT INTO Product VALUES ('M', 5104, 'pc');

INSERT INTO Product VALUES ('M', 5105, 'pc');

INSERT INTO Product VALUES ('M', 5106, 'pc');

INSERT INTO Product VALUES ('Q', 5107, 'pc');

INSERT INTO Product VALUES ('Q', 5108, 'pc');

INSERT INTO Product VALUES ('O',5 109, 'pc');

```
mysql> INSERT INTO Product VALUES ('L', 5101, 'pc');
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO Product VALUES ('L', 5102, 'pc');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('L', 5103, 'pc');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('M', 5104, 'pc');
Query OK, 1 row affected (0.04 sec)

mysql> INSERT INTO Product VALUES ('M', 5105, 'pc');
Query OK, 1 row affected (0.04 sec)

mysql> INSERT INTO Product VALUES ('M', 5106, 'pc');
Query OK, 1 row affected (0.04 sec)

mysql> INSERT INTO Product VALUES ('Q', 5107, 'pc');
Query OK, 1 row affected (0.05 sec)

mysql> INSERT INTO Product VALUES ('Q', 5108, 'pc');
Query OK, 1 row affected (0.04 sec)

mysql> INSERT INTO Product VALUES ('O', 5109, 'pc');
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '109, 'pc')' at line 1
mysql> INSERT INTO Product VALUES ('O', 5109, 'pc');
Query OK, 1 row affected (0.04 sec)

mysql>
```

Query: INSERT INTO Product VALUES ('O', 6101, 'laptop');

INSERT INTO Product VALUES ('O', 6102, 'laptop');

INSERT INTO Product VALUES ('Q', 6103, 'laptop');

INSERT INTO Product VALUES ('Q', 6204, 'laptop');

INSERT INTO Product VALUES ('N', 6205, 'laptop');

INSERT INTO Product VALUES ('N', 6206, 'laptop');

INSERT INTO Product VALUES ('L', 6107, 'laptop');

INSERT INTO Product VALUES ('L', 6108, 'laptop');

```
mysql> INSERT INTO Product VALUES ('O', 6101, 'laptop');
Query OK, 1 row affected (0.04 sec)

mysql> INSERT INTO Product VALUES ('O', 6102, 'laptop');
Query OK, 1 row affected (0.06 sec)

mysql> INSERT INTO Product VALUES ('Q', 6103, 'laptop');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('Q', 6204, 'laptop');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('N', 6205, 'laptop');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('N', 6206, 'laptop');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('L', 6107, 'laptop');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('L', 6107, 'laptop');
ERROR 1062 (23000): Duplicate entry '6107' for key 'product.PRIMARY'
mysql> INSERT INTO Product VALUES ('L', 6108, 'laptop');
Query OK, 1 row affected (0.04 sec)

mysql>
```

Query: INSERT INTO Product VALUES ('P', 7101, 'printer');

INSERT INTO Product VALUES ('P', 7102, 'printer');

INSERT INTO Product VALUES ('M', 7103, 'printer');

INSERT INTO Product VALUES ('M', 7104, 'printer');

INSERT INTO Product VALUES ('N', 7105, 'printer');

INSERT INTO Product VALUES ('N', 7106, 'printer');

```
mysql> INSERT INTO Product VALUES ('P', 7101, 'printer');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('P', 7102, 'printer');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('M', 7103, 'printer');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('M', 7104, 'printer');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('N', 7105, 'printer');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO Product VALUES ('N', 7106, 'printer');
Query OK, 1 row affected (0.01 sec)

mysql>
```

Query: Select * from Product;

```
mysql> select * from Product;
```

marker	model	type
L	5101	pc
L	5102	pc
L	5103	pc
M	5104	pc
M	5105	pc
M	5106	pc
Q	5107	pc
Q	5108	pc
O	5109	pc
O	6101	laptop
O	6102	laptop
Q	6103	laptop
L	6107	laptop
L	6108	laptop
Q	6204	laptop
N	6205	laptop
N	6206	laptop
P	7101	printer
P	7102	printer
M	7103	printer
M	7104	printer
N	7105	printer
N	7106	printer
Q	7107	printer

24 rows in set (0.00 sec)

For Pc

Query(code, model, speed, ram, hd, cd, price)-

```
INSERT INTO PC VALUES (1001, 5101,2.36, 512,60, 80, 650);
```

```
INSERT INTO PC VALUES (1002, 5102, 1.20, 2048, 120,80, 770);
```

```
INSERT INTO PC VALUES (1003, 5103,4.42, 2048, 240,250, 478);
```

```
INSERT INTO PC VALUES (1004, 5104, 3.20, 512, 80,320, 1049);
```

```
INSERT INTO PC VALUES (1005, 5105,2.20, 2048, 250,320, 490);
```

```
INSERT INTO PC VALUES (1006, 5106, 2.00, 512, 320,80, 550);
```

```
INSERT INTO PC VALUES (1007, 5107, 3.20, 512, 200,250, 630);
```

```
INSERT INTO PC VALUES (1008, 5108, 3.40, 1024,120, 320, 770);
```

```
INSERT INTO PC VALUES (1009, 5109,1.25, 512,100, 200, 2114);
```

```
mysql> select * from PC;
```

code	model	speed	ram	hd	cd	price
1001	5101	2.36	512	60	80	650
1002	5102	1.2	2048	120	80	770
1003	5103	4.42	2048	240	250	478
1004	5104	3.2	512	80	320	1049
1005	5105	2.2	2048	250	320	490
1006	5106	2	512	320	80	550
1007	5107	3.2	512	200	250	630
1008	5108	3.4	1024	120	320	770
1009	5109	1.25	512	100	200	2114

```
9 rows in set (0.03 sec)
```

```
mysql>
```

Query: Select * from PC

for Laptop

Query: Laptop(code, model, speed, ram, hd, screen, price)-

INSERT INTO Laptop VALUES (2001, 6101, 1.60, 512, 60,17.1, 949);

INSERT INTO Laptop VALUES (2002, 6102, 1.83, 2048, 240, 15.0, 3749);

INSERT INTO Laptop VALUES (2003, 6103,2.00, 1024, 80, 13.4, 1150);

INSERT INTO Laptop VALUES (2004, 6104, 1.92, 1024, 80, 17.3, 2250);

INSERT INTO Laptop VALUES (2005, 6105, 2.00, 2048, 240, 15.0, 1700);

INSERT INTO Laptop VALUES (2006, 6106, 2.16, 512, 120, 13.4, 1429);

INSERT INTO Laptop VALUES (2007, 6107, 1.78, 2048, 100, 17.1, 900);

INSERT INTO Laptop VALUES (2008, 6108,1.45, 2048, 120, 15.4, 949);

```
mysql> select * from Laptop;
```

code	model	speed	ram	hd	screen	price
2001	6101	1.6	512	60	17.1	949
2002	6102	1.83	2048	240	15	3749
2003	6103	2	1024	80	13.4	1150
2007	6107	1.78	2048	100	17.1	900
2008	6108	1.45	2048	120	15.4	949

```
5 rows in set (0.00 sec)
```

Query: INSERT INTO Printer VALUES (3001, 7101, 'false', 'laser', 139);

INSERT INTO Printer VALUES (3002, 7102,'false', 'ink-jet', 899);

INSERT INTO Printer VALUES (3003, 7103,'true', 'laser', 139);

INSERT INTO Printer VALUES (3004, 7104, 'true', 'ink-jet', 99);

INSERT INTO Printer VALUES (3005, 7105, 'true', 'laser', 120);

INSERT INTO Printer VALUES (3006, 7106, 'false', 'ink-jet', 100);

INSERT INTO Printer VALUES (3007, 7107, 'true', 'laser', 99);

```
mysql> select * from Printer;
```

code	model	color	type	price
3001	7101	false	laser	139
3002	7102	false	ink-jet	899
3003	7103	true	laser	139
3004	7104	true	ink-jet	99
3005	7105	true	laser	120
3006	7106	false	ink-jet	100
3007	7107	true	laser	99

```
7 rows in set (0.00 sec)
```

1. Find the model number, speed and hard drive capacity for all the PCs with prices below \$500. Result set: model, speed, hd.

Query: select price,model,speed,hd from PC where price<500 group by model,speed,hd;

```
mysql> select price,model,speed,hd from PC where price<500 group by model,speed,hd;
```

price	model	speed	hd
478	5103	4.42	240
490	5105	2.2	250

```
2 rows in set (0.00 sec)
```

```
mysql>
```

2. Find printer makers. Result set: maker

Query: Select distinct maker from Product where model in (select model from Printer);

```
mysql> Select distinct maker from Product where model in (select model from Printer);
+-----+
| maker |
+-----+
| P     |
| M     |
| N     |
| Q     |
+-----+
4 rows in set (0.04 sec)
```

3. Find the model number, RAM and screen size of the laptops with prices over \$1000

Query: Select model,ram,screen,price from Laptop where price > 1000;

```
mysql> Select model,ram,screen,price from Laptop where price > 1000;
+-----+-----+-----+-----+
| model | ram  | screen | price |
+-----+-----+-----+-----+
| 6102  | 2048 | 15     | 3749  |
| 6103  | 1024 | 13.4   | 1150  |
+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

4. Find the model number, speed and hard drive capacity of the PCs having 12x CD and prices less than \$600 or having 24x CD and prices less than \$600.

Query: Select model,speed,hd from PC where PC.cd IN (12,24) and price<600;

```
mysql> Select model,speed,hd from PC where PC.cd IN (12,24) and price<600;
Empty set (0.03 sec)
```

5. For each maker producing laptops with a hard drive capacity of 10 Gb or higher, find the speed of such laptops. Result set: maker, speed.

Query: Select distinct maker,speed from Product,Laptop where Laptop.hd>=10 and type in (select type from Product where type='laptop');

```
mysql> Select distinct maker,speed,hd from Product,Laptop where Laptop.hd>=10 and type in (select type from Product where type='laptop');
```

maker	speed	hd
O	1.6	60
O	1.83	240
O	2	80
O	1.78	100
O	1.45	120
Ø	1.6	60
Ø	1.83	240
Ø	2	80
Ø	1.78	100
Ø	1.45	120
Q	1.6	60
Q	1.83	240
Q	2	80
Q	1.78	100
Q	1.45	120
L	1.6	60
L	1.83	240
L	2	80
L	1.78	100
L	1.45	120
N	1.6	60
N	1.83	240
N	2	80
N	1.78	100
N	1.45	120

25 rows in set (0.00 sec)

6. Find out the models and prices for all the products (of any type) produced by maker B.

Query: Select model,price from PC where model in (Select model from Product where maker ='M' and type='pc') union select model,price from Laptop where model in (select model from Product where maker='M' and

type='laptop') union select model,price from printer where model in (select model from Product where maker='M' and type='printer');

```
mysql> select model,price from PC where model in(select model from Product where maker='M' and type='pc')
-> union select model,price from Laptop where model in (select model from Product where maker='M' and type='laptop')
-> union select model,price from printer where model in (select model from Product where maker='M' and type='printer');
```

model	price
5104	1049
5105	490
5106	550
7103	139
7104	99

5 rows in set (0.00 sec)

7. Find out the makers that sale PCs but not laptops.

Query: select distinct maker from Product where type ='pc' and not (type='laptop');

```
mysql> select distinct maker from Product where type ='pc' and not (type='laptop');
```

maker
L
M
Q
O

4 rows in set (0.00 sec)

8. Find the printers having the highest price. Result set: model, price.

Query: Select model,max(price) from Printer;

```
mysql> Select model,max(price) from Printer;
+-----+-----+
| model | max(price) |
+-----+-----+
| 7101  |      899   |
+-----+-----+
1 row in set (0.03 sec)
```

9. Find all the makers who have all their models of PC type in the PC table

Query: Select distinct maker from Product where model in (select model from Product where type='pc');

```
mysql> Select distinct maker from Product where model in (select model from Product where type='pc');
+-----+
| maker |
+-----+
| L     |
| M     |
| Q     |
| O     |
+-----+
4 rows in set (0.00 sec)
```

10. Find out the average speed of the PCs produced by maker A.

Query: Select model,avg(speed) from PC where model in (select model from Product where maker='L' and type='pc');

```
mysql> Select model,avg(speed) from PC where model in (select model from Product where maker='L' and type='pc');
+-----+-----+
| model | avg(speed) |
+-----+-----+
| 5101  | 2.6600000063578286 |
+-----+-----+
1 row in set (0.02 sec)

mysql>
```

Q2-

Query- create table books(isbn int, title varchar(50), price float,qty int);

desc books;

```
mysql> create table books(isbn int,
-> title varchar(50),
-> price float,
-> qty int);
Query OK, 0 rows affected (1.28 sec)

mysql> desc books
-> desc books;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'desc books' at line 2
mysql> desc books;
```

Field	Type	Null	Key	Default	Extra
isbn	int	YES		NULL	
title	varchar(50)	YES		NULL	
price	float	YES		NULL	
qty	int	YES		NULL	

4 rows in set (0.32 sec)

Query- create table books_authors(authorid int, isbn int);

desc books_authors;

```
mysql> create table books_authors( authorid int,
-> isbn int);
Query OK, 0 rows affected (0.45 sec)

mysql> desc books_authors;
```

Field	Type	Null	Key	Default	Extra
authorid	int	YES		NULL	
isbn	int	YES		NULL	

2 rows in set (0.12 sec)

Query- create table authors(authorid int,name varchar(30),email
varchar(50));
desc authors;

```
mysql> create table authors( authorid int,  
-> name varchar(30),  
-> email varchar(50));  
Query OK, 0 rows affected (0.54 sec)  
  
mysql> desc authors;  
+-----+-----+-----+-----+-----+-----+  
| Field | Type | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| authorid | int | YES | | NULL | |  
| name | varchar(30) | YES | | NULL | |  
| email | varchar(50) | YES | | NULL | |  
+-----+-----+-----+-----+-----+-----+  
3 rows in set (0.08 sec)
```

Query: INSERT INTO books VALUES(1000,'JAVA',15.21,2);
INSERT INTO books VALUES(1005,'PYTHON',22.21,2);
INSERT INTO books VALUES(1234,'CPP',19.21,5);
INSERT INTO books VALUES(1034,'C',22.21,2);
INSERT INTO books VALUES(1022,'HTML',15.31,7);
INSERT INTO books VALUES(1003,'CSS',34.21,5);
select *from books;

```
mysql> INSERT INTO books VALUES(1000,'JAVA',15.21,2);
Query OK, 1 row affected (0.30 sec)

mysql> INSERT INTO books VALUES(1005,'PYTHON',22.21,2);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO books VALUES(1234,'CPP',19.21,5);
Query OK, 1 row affected (0.07 sec)

mysql> INSERT INTO books VALUES(1034,'C',22.21,2);
Query OK, 1 row affected (0.28 sec)

mysql> INSERT INTO books VALUES(1022,'HTML',15.31,7);
Query OK, 1 row affected (0.06 sec)

mysql> INSERT INTO books VALUES(1003,'CSS',34.21,5);
Query OK, 1 row affected (0.10 sec)

mysql> select *from books;
+-----+-----+-----+-----+
| isbn | title | price | qty |
+-----+-----+-----+-----+
| 1000 | JAVA  | 15.21 | 2   |
| 1005 | PYTHON | 22.21 | 2   |
| 1234 | CPP   | 19.21 | 5   |
| 1034 | C     | 22.21 | 2   |
| 1022 | HTML  | 15.31 | 7   |
| 1003 | CSS   | 34.21 | 5   |
+-----+-----+-----+-----+
6 rows in set (0.06 sec)
```

Query:

```
INSERT INTO books_authors VALUES(11,1000);
```

```
INSERT INTO books_authors VALUES(21,1005);
```

```
INSERT INTO books_authors VALUES(15,1234);
```

```
INSERT INTO books_authors VALUES(25,1034);
```

```
INSERT INTO books_authors VALUES(19,1022);
```

```
INSERT INTO books_authors VALUES(30,1003);
```

```
select *from books_authors;
```



```
mysql> INSERT INTO books_authors VALUES(11,1000);
Query OK, 1 row affected (0.23 sec)

mysql> INSERT INTO books_authors VALUES(21,1005);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO books_authors VALUES(15,1234);
Query OK, 1 row affected (0.07 sec)

mysql> INSERT INTO books_authors VALUES(25,1034);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO books_authors VALUES(19,1022);
Query OK, 1 row affected (0.08 sec)

mysql> INSERT INTO books_authors VALUES(30,1003);
Query OK, 1 row affected (0.13 sec)

mysql> select *from books_authors;
+-----+-----+
| authorid | isbn |
+-----+-----+
|      11 | 1000 |
|      21 | 1005 |
|      15 | 1234 |
|      25 | 1034 |
|      19 | 1022 |
|      30 | 1003 |
+-----+-----+
6 rows in set (0.00 sec)
```

Query:

```
INSERT INTO authors VALUES(11,'GAURAV','xyx@gmail.com');
INSERT INTO authors VALUES(21,'SAURABH','xwx@gmail.com');
INSERT INTO authors VALUES(15,'KARAN','xax@gmail.com');
INSERT INTO authors VALUES(25,'UTSAV','xvx@gmail.com');
INSERT INTO authors VALUES(19,'VISHAL','xfyx@gmail.com');
INSERT INTO authors VALUES(30,'DAKSH','qyx@gmail.com');
select *from authors;
```

```
mysql> INSERT INTO authors VALUES(11,'GAURAV','xyx@gmail.com');
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO authors VALUES(21,'SAURABH','xwx@gmail.com');
Query OK, 1 row affected (0.13 sec)

mysql> ^C
mysql> INSERT INTO authors VALUES(15,'KARAN','xax@gmail.com');
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO authors VALUES(25,'UTSAV','xvx@gmail.com');
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO authors VALUES(19,'VISHAL','xfyx@gmail.com');
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO authors VALUES(30,'DAKSH','qyx@gmail.com');
Query OK, 1 row affected (0.12 sec)

mysql> select *from authors;
+-----+
| authorid | name      | email          |
+-----+
| 11       | GAURAV    | xyx@gmail.com  |
| 21       | SAURABH   | xwx@gmail.com  |
| 15       | KARAN     | xax@gmail.com  |
| 25       | UTSAV     | vxv@gmail.com  |
| 19       | VISHAL    | xfyx@gmail.com |
| 30       | DAKSH     | qyx@gmail.com  |
+-----+
6 rows in set (0.05 sec)
```

1-Add unique constraint to title in books table

Query- ALTER TABLE books ADD UNIQUE(isbn);

desc books;

```
mysql> ALTER TABLE books ADD UNIQUE(isbn);
Query OK, 0 rows affected (1.50 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc books;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| isbn  | int           | YES  | UNI | NULL    |       |
| title | varchar(50)   | YES  |     | NULL    |       |
| price | float         | YES  |     | NULL    |       |
| qty   | int           | YES  |     | NULL    |       |
+-----+
4 rows in set (0.07 sec)
```

2- Add not null constraint to price in books table

Query: alter table books modify price float not null;

desc books;

```
mysql> alter table books modify price float not null;
Query OK, 0 rows affected (2.60 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| isbn  | int           | YES  | UNI | NULL    |       |
| title | varchar(50)   | YES  |     | NULL    |       |
| price | float         | NO   |     | NULL    |       |
| qty   | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.06 sec)
```

3- Alter check constraint in price that it greater than 0

Query: alter table books add check(price>0);

desc books;

```
mysql> alter table books add check(price>0);
Query OK, 6 rows affected (2.34 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| isbn  | int           | YES  | UNI | NULL    |       |
| title | varchar(50)   | YES  |     | NULL    |       |
| price | float         | NO   |     | NULL    |       |
| qty   | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

4- Drop not null constraints for qty

Query: alter table books modify qty int null;

desc books;

```
mysql> alter table books modify qty int null;
Query OK, 0 rows affected (0.54 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| isbn  | int           | YES  | UNI | NULL    |       |
| title | varchar(50)   | YES  |     | NULL    |       |
| price | float         | NO   |     | NULL    |       |
| qty   | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.07 sec)
```

5- Set default qty for books to 0

Query: alter table books alter qty set default 0;

desc books;

```
mysql> alter table books alter qty set default 0;
Query OK, 0 rows affected (0.25 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| isbn  | int           | YES  | UNI | NULL    |       |
| title | varchar(50)   | YES  |     | NULL    |       |
| price | float         | NO   |     | NULL    |       |
| qty   | int           | YES  |     | 0       |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

6-Drop email from author table

Query: alter table authors drop column email;

desc authors;

```
mysql> alter table authors drop column email;
Query OK, 0 rows affected (1.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc authors;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| authorid | int | YES | | NULL | |
| name | varchar(30) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.11 sec)
```

7- Drop any one foreign key constraint

Query:

alter table books_authors drop foreign key books_authors_ibfk_1;

desc book_aurhor;

```
mysql> alter table book_author drop foreign key book_author_ibfk_1;
Query OK, 0 rows affected (0.39 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc book_author;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| authorid | int | YES | MUL | NULL | |
| isbn | int | YES | MUL | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.41 sec)
```

8- Drop a primary key

Query:

alter table author drop primary key; desc author; alter table authors drop column authorid;

desc authors;

```
MySQL 8.0 Command Line Client
mysql> alter table author drop primary key;
Query OK, 5 rows affected (2.89 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql> desc author;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| authorid | int          | NO   |     | NULL    |       |
| name     | varchar(50)  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.07 sec)

mysql> alter table author drop column authorid;
Query OK, 0 rows affected (1.78 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc author;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| name  | varchar(50)  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

9- Attribute to author table and set constraint for it

Query:

```
alter table authors add authorSSN varchar(50);
```

```
desc authors;
```

```
mysql> alter table authors add authorSSN varchar(50);
Query OK, 0 rows affected (1.82 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc authors;
ERROR 1146 (42S02): Table 'database.authors' doesn't exist
mysql> desc authors;
```

Field	Type	Null	Key	Default	Extra
authorid	int	YES		NULL	
name	varchar(30)	YES		NULL	
authorSSN	varchar(50)	YES		NULL	

```
3 rows in set (0.10 sec)
```

```
update authors set authorSSN='19BBS0026' where name='GAURAV';
```

```
update authors set authorSSN='19BCI0026' where name='SAURABH';
```

```
update authors set authorSSN='19BMI0026' where name='KARAN';
```

```
update authors set authorSSN='19BLI0026' where name='DAKSH';
```

```
update authors set authorSSN='19BBD0026' where name='VISHAL';
```

```
update authors set authorSSN='19BVS0026' where name='UTSAV';
```

```
alter table authors add primary key(authorSSN);
```

```
select* from authors;
```

```
mysql> update authors set authorSSN='19BBS0026' where name='GAURAV';
Query OK, 1 row affected (0.11 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update authors set authorSSN='19BCI0026' where name='SAURABH';
Query OK, 1 row affected (0.09 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update authors set authorSSN='19BMI0026' where name='KARAN';
Query OK, 1 row affected (0.30 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update authors set authorSSN='19BLI0026' where name='DAKSH';
Query OK, 1 row affected (0.18 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update authors set authorSSN='19BBD0026' where name='VISHAL';
Query OK, 1 row affected (0.07 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update authors set authorSSN='19BVS0026' where name='UTSAV';
Query OK, 1 row affected (0.11 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> alter table authors add primary key(authorSSN);
Query OK, 0 rows affected (1.75 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select* from author;
ERROR 1146 (42S02): Table 'database.author' doesn't exist
mysql> select* from authors;
+-----+-----+
| name   | authorSSN |
+-----+-----+
| VISHAL | 19BBD0026 |
| GAURAV | 19BBS0026 |
| SAURABH | 19BCI0026 |
| DAKSH  | 19BLI0026 |
| KARAN  | 19BMI0026 |
| UTSAV  | 19BVS0026 |
+-----+-----+
6 rows in set (0.05 sec)
```