

1.

```
mysql> create database Bank;
Query OK, 1 row affected (0.03 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| Bank     |
| information_schema |
| mysql    |
| performance_schema |
| sys      |
| university |
+-----+
6 rows in set (0.00 sec)
```

2.

```
mysql> drop database Bank;
Query OK, 0 rows affected (0.03 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql          |
| performance_schema |
| sys            |
| university      |
+-----+
5 rows in set (0.00 sec)
```

3.

```
mysql> create database Bank;
Query OK, 1 row affected (0.37 sec)

mysql> use Bank;
Database changed
mysql> create table branch(branch_number int not null, branch_city varchar(20), assests varchar(10), primary key(branch_number, branch_city));
Query OK, 0 rows affected (0.14 sec)

mysql> create table customer(customer_name varchar(25) not null, customer_street varchar(20), customer_city varchar(15), primary key(customer_name));
Query OK, 0 rows affected (0.24 sec)
```

3.

```
mysql> create table loan(loan_number int not null, branch_name varchar(20)
, amount int, primary key(loan_number));
Query OK, 0 rows affected (1.60 sec)

mysql> create table borrower(customer_name varchar(25), loan_number int, p
rimary key(customer_name, loan_number), constraint fk_cus foreign key(cust
omer_name) references customer(customer_name), constraint fk_loan foreign
key(loan_number) references loan(loan_number));
Query OK, 0 rows affected (0.26 sec)

mysql> create table account(account_number int not null, branch_name varchar(20) not null, balance int, primary key(account_number));
Query OK, 0 rows affected (0.14 sec)

mysql> create table depositor(customer_name varchar(25), account_number int, primary key(customer_name, account_number),
-> constraint fk_cus1 foreign key(customer_name) references customer(customer_name),
-> constraint fk_acc foreign key(account_number) references account(account_number));
Query OK, 0 rows affected (2.29 sec)
```

4.

```
mysql> show tables;
+-----+
| Tables_in_Bank |
+-----+
| account         |
| borrower        |
| branch          |
| customer        |
| depositor       |
| loan            |
+-----+
6 rows in set (0.00 sec)
```

5.

```
mysql> show columns from branch;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| branch_number  | int           | NO   | PRI | NULL    |       |
| branch_city    | varchar(20)   | NO   | PRI | NULL    |       |
| assests        | varchar(10)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> describe customer;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| customer_name  | varchar(25)   | NO   | PRI | NULL    |       |
| customer_street | varchar(20)   | YES  |     | NULL    |       |
| customer_city  | varchar(15)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

6.

```
mysql> alter table branch add branch_manager varchar(25);
Query OK, 0 rows affected (0.12 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from branch;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| branch_number  | int           | NO   | PRI | NULL    |       |
| branch_city    | varchar(20)   | NO   | PRI | NULL    |       |
| assests        | varchar(10)   | YES  |     | NULL    |       |
| branch_manager | varchar(25)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)
```

7.

```
mysql> alter table branch drop branch_manager;
Query OK, 0 rows affected (0.10 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from branch;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| branch_number  | int           | NO   | PRI | NULL    |       |
| branch_city    | varchar(20)   | NO   | PRI | NULL    |       |
| assests        | varchar(10)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

8.

```
mysql> alter table account modify column balance int;
Query OK, 0 rows affected (0.06 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> describe account;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| account_number | int           | NO   | PRI | NULL    |       |
| branch_name    | varchar(20)   | NO   |     | NULL    |       |
| balance        | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

9.

```
mysql> alter table customer modify column customer_name varchar(50);
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

10.

```
mysql> alter table branch modify column branch_city varchar(20) not null;
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

11.

```
mysql> alter table account alter balance set default 1000;
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

12.

```
mysql> alter table account alter balance drop default;
Query OK, 0 rows affected (0.07 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

13.

```
mysql> alter table branch add constraint check_asset_city check (assects>10000000 and branch_city in ('KTM','PKR', 'BRT'));
Query OK, 0 rows affected (0.30 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

14.

```
mysql> alter table branch drop constraint check_asset_city;
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

15.

```
mysql> alter table branch add primary key(branch_number);
mysql> alter table customer add primary key(customer_name);
mysql> alter table loan add primary key(loan_number);
mysql> alter table borrower add primary key(customer_name, loan_number);
mysql> alter table account add primary key(account_number);
mysql> alter table depositor add primary key(customer_name, account_number);
```

16.

```
mysql> alter table account drop primary key;
```

17.

```
mysql> alter table borrower add constraint fk_const foreign key(customer_name) references customer(customer_name);
Query OK, 0 rows affected (0.36 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table borrower add constraint fk_const1 foreign key(loan_number) references loan(loan_number);
Query OK, 0 rows affected (0.52 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table depositor add constraint fk_acc_const foreign key(account_number) references account(account_number);
Query OK, 0 rows affected (0.34 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table depositor add constraint cons foreign key(customer_name) references customer(customer_name);
Query OK, 0 rows affected (0.39 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

18.

```
mysql> alter table depositor drop constraint fk_acc;
Query OK, 0 rows affected (0.06 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table depositor drop constraint fk_acc_const;
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table depositor drop constraint fk_cus1;
Query OK, 0 rows affected (0.06 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

19.

```
mysql> alter table customer add constraint const2 unique(customer_name);
Query OK, 0 rows affected (0.15 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

20.

```
mysql> alter table customer drop index const2;
Query OK, 0 rows affected (0.08 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

21.

```
mysql> alter table depositor add constraint fkey_cons1 foreign key(customer_name) references customer(customer_name);
Query OK, 0 rows affected (0.32 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table depositor add constraint fkey_cons2 foreign key(account_number) references account(account_number);
Query OK, 0 rows affected (0.43 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

