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1.

```
mysql> create database Library;

mysql> create table LibraryBooks(
    -> Ac_No int primary key,
    -> Title varchar(25) not null,
    -> Author varchar(40) not null,
    -> Department varchar(30) not null,
    -> Purchase_Date date not null,
    -> Price decimal(5,2) not null);

mysql> Create table IssuedBooks(
    -> Ac_No int not null,
    -> Borrower Varchar(40) not null
    -> foreign key (Ac_No) references LibraryBooks(Ac_No));
```

1 a. Primary Key- Ac_No (Library Books)
Foreign Key- Ac_No (Issued Books)

```
mysql> insert into LibraryBooks values(12456,"Environmental
Science","S.C. Gupta","Environment Studies",'1997-01-12',105.00);
mysql>  insert into LibraryBooks values(78965,"Fundamental of
Statistics","V.K. Kapoor","Statistics",'2005/03/31',550.00);
mysql> insert into LibraryBooks values(34567,"Database System
Concepts","Navathe","CS",'2002/07/21',499.00);
mysql> insert into LibraryBooks values(89435,"Discrete Maths","K.
Kapoor","Mathematics",'1999/09/04',450.00);
mysql> insert into LibraryBooks values(23489,"Computer science with
Python","Sumita Arora","CS",'1997-01-12',105.00);
```

```
mysql> insert into IssuedBooks values( 34567,"Anuj Kumar");
mysql> insert into IssuedBooks values( 15623,"Amita Jain");
mysql> insert into IssuedBooks values( 78965,"Ankur Yadav");
mysql> insert into IssuedBooks values( 21826,"Khushi Arora");
mysql> insert into IssuedBooks values( 76389,"Anurika Manan");
```

b.
```
mysql> set foreign_key_checks=Off;
mysql> delete from librarybooks where Ac_No=34567;
mysql> delete from librarybooks where title="Database System
Concepts";
```

```
mysql> set foreign_key_checks=on;
```

c.
```
mysql> update librarybooks set department="CS" where title="Discrete Maths";
```

d.
```
mysql> select Title from librarybooks where department="CS";
```

e.
```
mysql> select Title from librarybooks where department="CS" and author="Navathe";
```

f.
```
mysql> select Title from librarybooks l, issuedbooks I where l.Ac_No=I.Ac_No and l.department="CS";
```

g.
```
mysql> select Title from librarybooks where price<500 and purchase_date between '1999/01/01' and '2004/01/01';
```

2.
```
mysql> create database Computer_Dept;

mysql> create table Personal_Information(
    -> Clg_Roll_no int(10) primary key,
    -> Name_of_student varchar(30) not null,
    -> DOB date not null,
    -> Address varchar(70) not null,
    -> Marks_in_perc int(2) not null,
    -> Phone_number Varchar(10) not null);

mysql> create table Paper_Details(
    -> Paper_Code int(8) unique,primary key,
    -> Name_of_Paper char(30) unique);

mysql> create table Academic_and_Attendance_Details(
    -> Clg_Roll_no int(10) primary key,
    -> Paper_code int(8) not null,
    -> Attendance decimal(5,2) not null,
```

```
    -> Marks int(3) not null,
    -> foreign key(Clg_Roll_no) references
personal_information(Clg_Roll_no),
    -> foreign key(Paper_Code) references Paper_Details(Paper_Code));
```

a. Primary key -Clg_Roll_no (Personal_Information)
Paper_Code(Paper_Details)
Foreign key - Clg_Roll_n0 (Academic_and_Attendance_Details)
Paper_code (Academic_and_Attendance_Details)

```
mysql> insert into personal_information values(1945,"Nitin
Arora",'2001-01-04',"Nainital",89,"9874532123");
mysql> insert into personal_information values(1932,"Anuj
Kumar",'2000-07-29',"Lucknow",91,"9748483743");
mysql> insert into personal_information values(1935,"Bhavya
Arora",'2000-03-19',"Delhi",94,"9837643368");
mysql> insert into personal_information values(1943,"Ishita
Pandey",'2001-09-21',"Delhi",97,"9637453672");
mysql> insert into personal_information values(1957,"Praveen
Singh",'2001-11-09',"Delhi",92,"9764563726");
```

```
mysql> insert into paper_details value(1,"Environmental studies");
mysql> insert into paper_details value(2,"Database Concepts");
mysql> insert into paper_details value(3,"Descriptive studies");
mysql> insert into paper_details value(4,"physics");
mysql> insert into paper_details value(5,"Real Algebra");
```

```
mysql> insert into Academic_and_Attendance_Details values(1935,3,80,70);
mysql> insert into Academic_and_Attendance_Details(1957,2,70,90);
mysql> insert into Academic_and_Attendance_Details(1945,4,65,91);
mysql> insert into Academic_and_Attendance_Details(1932,2,65,91);
mysql> insert into Academic_and_Attendance_Details(1943,1,75,65);
```

```
b. mysql> select p.paper_code, p.name_of_paper, pi.name from
paper_details as pd, personal_information as pi where paper_code=2 and
pi.roll_no in(select roll_no from academic_details where paper_code=2 and
attendance>75 and marks>60);
```

c. mysql> select Name_of_Student from personal_informartion as p, Academic_and_Attendance_Details as aad where p.roll_no=aad.Clg_Roll_no and aad.marks>60 and aad.paper_code=1;

d. mysql> select p.name, aad.attendance, aad.marks from personal_informartion as p, Academic_and_Attendance_Details as aad where p.Clg_Roll_no=aad.Clg_Roll_no;

e. mysql> select Name_of_student from personal_informartion as p, Academic_and_Attendance_Details as aad where p.roll_no=aad.Clg_Roll_no and p.Clg_Roll_no=(select Clg_Roll_no from Academic_and_Attendance_Details where marks=(select max(marks) from Academic_and_Attendance_Details));

3.

```
mysql> create database Public_transport;

mysql> create table customer(
    -> Cust_Id varchar(20) primary key,
    -> email varchar(50) not null,
    -> Name char(30) not null,
    -> phone varchar(10) unique,
    -> Referrer_ID varchar(20));

mysql> create table BicycleModel(
    -> Model_No varchar(10) primary key,
    -> Manufacturer varChar(20) not null,
    -> Style Varchar(20) not null);

mysql> create table Bicycle(
    -> BicycleId varchar(20) primary key,
    -> DatePurchased date not null,
    -> Color varchar(10) not null,
    -> Cust_Id varchar(20) not null,
    -> Model_No varchar(10) not null,
    -> foreign key(Cust_Id) references customer(Cust_Id),
    -> foreign key(Model_No) references BicycleModel(Model_No));

mysql> create table Service(
```

```
    -> StartDate date not null,
    -> BicycleId varchar(20) not null,
    -> EndDate date not null,
    -> Foreign key(BicycleId) references Bicycle(BicycleId));
```

a. Primary Key - Cust_Id (Customer)
Model_No (BicycleModel)
BicycleId (Bicycle)
Foreign Key- Cust_Id (Bicycle)
Model_No (Bicycle)
BicycleId(Service)

```
mysql> insert into customer values(1221,"suraj234@gmail.com","suraj
Singh",9873645321,"C1");
mysql> insert into customer values(1222,"himesh@gmail.com","Himesh
Kumar",8373876327,"A2");
mysql> insert into customer values(1223,"rohan8653@gmail.com","Rohan
Kumar",9375472814,"C3");
mysql> insert into customer values(1224,"sumanjoshi7368@gmail.com","Suman
Joshi",8293765392,"B7");
mysql> insert into customer
values(1005,"anishatiwari3753@gmail.com","Aisha Tiwari",9375428765,"C5");
```

```
mysql> insert into bicyclemodel values("E786","Honda","Cruiser");
mysql> insert into bicyclemodel values("E787","Hero","Scooty");
mysql> insert into bicyclemodel values("E788","Apache","Dirt bike");
mysql> insert into bicyclemodel values("E789","Hero","Bike");
mysql> insert into bicyclemodel values("E790","Hero","Sport");
```

```
mysql> insert into bicycle
values("B501",'2019-02-05',"Red","1002","M101");
mysql> insert into bicycle
values("B502",'2018-05-22',"Silver","1001","M105");
mysql> insert into bicycle
values("B503",'2020-01-03',"Red","1004","M104");
mysql> insert into bicycle
values("B504",'2019-04-17',"blue","1003","M103");
mysql> insert into bicycle
values("B505",'2020-02-08',"black","1002","M102");
```

```
mysql> insert into service values('2019-09-09','B505',"2019-09-12");
```

```
mysql> insert into service values('2018-10-10','B502','2018-10-12');
mysql> insert into service values('2018-04-24','B502','2019-04-26');
mysql> insert into service values('2019-05-17','B501','2019-05-19');
mysql> insert into service values('2020-01-18','B502','2020-01-20');
```

b.
```
mysql> Select * from customer where custID in(Select custid from
   bicycle where modelno in(select Modelno from bicyclemodel where
   manufacturer="Honda"));
```

c.
```
mysql> Select * from bicyclemodel where modelno in(select modelno
   from bicycle where custid in(select custid from customer where
   referrerId="C1"));
```

d.
```
mysql> select bm.manufacturer from bicycle as bi, bicyclemodel as bm
where bi.modelno=bm.modelno  and bi.color="red";
```

e.
```
mysql> select modelno from bicycle where bicycleid in(select distinct
bicycleid from service);
```

4.
```
mysql> create database emp_details;
 mysql> use emp_details;

mysql> create table employee(
 -> Person_name varchar(30) primary key,
 -> Street varchar(30) not null,
 -> city varchar(15) not null);

mysql> create table Company(
 -> Company_name varchar(30) Primary key,
 -> City varchar(15));


mysql> create table Works(
 -> Person_name  varchar(30),
 -> Company_name varchar(30),
 -> Salary decimal(10,2),
 -> foreign key(Person_name) references employee(Person_name),
 -> foreign key(Company_name) references Company(Company_name));
```

```
mysql> Create table manages(
 -> Person_name char(30),
 -> Manager_name char(30),
 -> foreign key(Person_name) references employee(Person_name));
```

```
mysql> insert into employee values("Rohan","23/34 D block","Delhi");
mysql> insert into employee values("Tanya","62/4 F block","Faridabad");
mysql> insert into employee values("Anmol","65/6 A block","Gurgaon");
mysql> insert into employee values("Kavya","67/5 D block","Lucknow");
mysql> insert into employee values("Garvit","74/2 F block","Delhi");
mysql> insert into employee values("Saumya","54/2 G block","Noida");
mysql> insert into employee values("Kanika","34/56 A block","Delhi");
mysql> insert into employee values("Paavni","68/8 V block","Gurgaon");
mysql> insert into employee values("Nick","62/7 d block","Lucknow");
mysql> insert into employee values("Honey","91/8 C block","Gaziabad");
```

```
mysql> insert into company values("Samba Bank","Delhi");
mysql> insert into company values("NCB Bank","Gurgaon");
mysql> insert into company values("Axis Bank","Noida");
mysql> insert into company values("SBI bank","Lucknow");
mysql> insert into company values("Kotak Bank","Gaziabad");
```

```
mysql> insert into works values("Rohan","Samba Bank", 16000);
mysql> insert into works values("Tanya","NCB Bank",20000);
mysql> insert into works values("Anmol","Samba Bank",10000);
mysql> insert into works values("Kavya","SBI Bank",7000);
mysql> insert into works values("Garvit","Axis Bank",8000);
mysql> insert into works values("Saumya","NCB Bank",20000);
mysql> insert into works values("Kanika","Kotak Bank",30000);
mysql> insert into works values("Paavni","Axis Bank",20000);
mysql> insert into works values("Nick","SBI Bank",12000);
mysql> insert into works values("Honey","Kotak Bank",17000);
```

```
a. Primary Key- Person_name (employee)
                Company_name ( company)
        Foreign Key- Person_name( works)
                Company_name  (works)
                Person_name  (manages)
```

b. mysql> alter table employee add column email varchar(20);

c. mysql> select distinct(manager_name) from manages as m, works as w where m.person_name=w.person_name and (w.company_name="Samba bank" or w.Company_name="NCB Bank");

d. mysql> select e.Person_name, e.Street, e.City, w.salary from employee as e, works as w where e.person_name=w.person_name and w.company_name="Samba Bank" and w.salary>10000;

e. mysql> select e.person_name from employee as e, works as w, company as c where e.person_name=w.person_name and e.city=c.city and w.company_name=c.company_name;

f. mysql> select company_name, max(salary), min(salary), avg(salary) from works group by company_name;

g. mysql> select company_name, sum(salary), count(company_name) as "number of employees" from works group by company_name;

h. mysql> select company_name,max(salary) from works;

5.

```
mysql> create database Stock;
mysql> use Stock;

mysql> create table suppliers(
    -> Sno int(8) primary key,
    -> Sname varchar(20) not null,
    -> Status varchar(20) not null,
    -> Scity varchar(30) not null);

mysql> create table Parts(
```

```
    -> PNo int(8) primary key,
    -> Pname varchar(20) not null,
    -> Colour varchar(20) not null,
    -> Weight int(4) not null,
    -> City varchar(20) not null);

mysql> create table Project(
    -> Jno int(8) Primary key,
    -> Jname varchar(20) not null,
    -> Jcity varchar(20) not null);

mysql> create table  Shipment(
    -> Sno varchar(20) not null,
    -> Pno int(8) not null,
    -> Jno int(8) not null,
    -> Quantity int(8) not null,
    -> foreign key(Sno) references suppliers(Sno),
    -> foreign key(Pno) references Parts(Pno),
    -> Foreign key(Jno) references Project(Jno));



mysql> insert into suppliers values("501","S1",25,"Harward");
mysql> insert into suppliers values("502","S2",10,"Buckingham");
mysql> insert into suppliers values("503","S1",20,"Paris");
mysql> insert into suppliers values("504","S2",55,"Paris");
mysql> i5sert into suppliers values("505","S2",60,"Los Angeles");



mysql> insert into parts values( "601","P1","Red",16,"Switzerland ");
mysql> insert into parts values( "602","P2","Gray",40,"Singapore");
mysql> insert into parts values( "603","P3","Black",20,"London");
mysql> insert into parts values( "603","P2","Black",60,"Londin");
mysql> insert into parts values( "605","P2","Green",10,"New York");



mysql> insert into project values(2331,"J1","London");
mysql> insert into project values(2332,"J2","New York");
mysql> insert into project values(2333,"J3","New York");
mysql> insert into project values(2334,"J4","Singapore");
mysql> insert into project values(2335,"J4","Delhi");



mysql> insert into shipment values("501",601, 2331,250);
mysql> insert into shipment values("502",602,2332,100);
mysql> insert into shipment values(503,603, 2333,500);
mysql> insert into shipment values(504,604,2334,300);
```

```
mysql> insert into shipment values(505,605,2335,750);
```

a. Primary Key- Sno (Suppliers)
Pno (Parts)
Jno (Project)

Foreign Key- Sno (Shipment)
Pno (Shipment)
Jno (Shipment)

```
b. mysql> select Sno from suppliers where scity="Paris" and Status>20;
```

```
c. mysql> Select * from suppliers where Sno in(select Sno from shipment
where Pno in(select Pno from parts where Pname="P2")) Order by sno;
```

```
d. mysql> Select Sname from suppliers where Sno in(Select distinct sno
from shipment where Pno in(select Pno from parts where Pname!="P2"));
```

```
e. mysql> select s.Sno, s.Pno, s.Jno, s.Quantity, s.quantity*p.weight as
"Total_shipment_weight" from shipment as s, parts as p where s.pno=p.pno;
```

```
f. mysql> Select * from shipment where quantity between 300 and 750;
```

```
g. mysql> select Pno from parts where weight>16 or pno in(select pno from
shipment where sno in(select s.sno from shipment as s, suppliers as su
where s.sno=su.sno and su.sname="S2"));
```

```
h. mysql> select city from parts where colour="Red" and Pno in(select pno
from shipment where quantity>5);
```

```
i. mysql> select * from parts where pno in(select Pno from shipment where
sno in(select sno from suppliers where Scity="London"));
```

```
j. mysql> select Pno from shipment where sno in(select sno from suppliers
where scity="London") and Jno in(Select jno from project where
Jcity="London");
```

k. mysql> select count(distinct(Jno)) as "No. of Project Supplied by supplier S1" from shipment where sno in(select sno from suppliers where Sname="S1");

l. mysql> select count(*) from parts where Pno in(Select Pno from shipment where sno in(select Sno from suppliers where sname ="S1")) and Pname="P1";