----------MYSQL----------

Topics:

1. ER Diagram
2. Database Schema
3. Create,Insert,Update,Delete
4. PK, FK, Check, Unique, Not Null
5. Alter,Truncate,Drop
6. Grant, Revoke,
7. Rollback, Commit , Save Point
8. Auto Increment
9. Copying Table with data
10. Copying Structure
11. Where
12. OR, AND
13. IN, NOT IN
14. NULL, NOT NULL
15. BETWEEN
16. DISTINCT
17. InBuilt Functions - Min, Max, Count, Average
18. Order By
19. Like using % , _
20. Limit
21. Group By
22. Joins
23. Subquery/Nested query
24. Exists / Not Exists
25. Union, Intersection, Minus
26. View
27. Temporary Table
28. Index
29. Function

30. Procedure
31. Exception Handling
32. Loops - While Do, Repeat, Loop, Cursor
33. Trigger

//Database for a company:

```
show databases;


create database HR;

show databases;

use HR;


create table Jobs(
        Job_ID int,
        Job_Title varchar(50) NOT NULL,
        Min_Salary int NOT NULL,
        Max_Salary int NOT NULL,
        primary key (Job_ID)
);

desc jobs;
```

```
create table Departments(
        Department_ID int,
        Department_Name varchar(40) NOT NULL,
        Location_ID int NOT NULL,
        primary key (Department_ID)
);
desc departments;

create table Employees(
        Emp_ID int,
        efname varchar(30) NOT NULL,
        elname varchar(30) NOT NULL,
        Phone_Number varchar(20),
        DOJ date,
        Job_ID int NOT NULL,
        Salary int NOT NULL,
        Department_ID int NOT NULL,
        primary key (Emp_ID),
        foreign key (Job_ID) references Jobs(Job_ID),
```

```
        foreign key (Department_ID) references
Departments(Department_ID)
);
desc employees;


create table Locations(
        Location_ID int,
        Street_Address varchar(60) NOT NULL,
        Postal_Code varchar(20),
        City varchar(30),
        State_Province varchar(30),
        Country_ID varchar(10) NOT NULL,
        primary key (Location_ID)
);
desc Locations;


create table Countries(
        Country_ID int,
        Country_Name varchar(30) NOT NULL,
        Region_ID int NOT NULL,
        primary key (Country_ID)
```

```
);
desc Countries;


create table Regions(
        Region_ID int,
        Region_Name varchar(30) NOT NULL,
        primary key (Region_ID)
);
desc Regions;


alter table departments
add foreign key (Location_ID) references
Locations(Location_ID);


alter table Countries
modify column Country_ID varchar(10);


alter table Locations
add foreign key (Country_ID) references
Countries(Country_ID);


alter table Countries
```

```
add foreign key (Region_ID) references Regions(Region_ID);

insert into Regions Values
(1,’Europe’),
(2,’America’),
(3,’Asia’),
(4,’Middle East and Africa’);
select * from regions;

insert into countries values
        ('AU','Australia',2),
        ('AR','Argentina',3),
        ('BE','Belgium',1),
        ('BR','Brazil',2),
        ('CA','Canada',2),
        ('CH','Switzerland',1),
        ('CN’,’China',3),
        ('DE','Germany’,1),
        ('DK','Denmark',1),
        ('EG','Egypt',4),
        ('FR','France',1),
```

```
        ('HK','Hong Kong',3),
        ('IL','Israel',4),
        ('IN','India',3),
        ('IT','Italy',1),
        ('JP','Japan’,3),
        ('KW','Kuwait',4),
        ('MX','Mexico',2),
        ('NG','Nigeria’,4),
        ('NL','Netherlands',1),
        ('SG','Singapore',3),
        ('UK','United Kingdom',1),
        ('US','United States of America',2),
        ('ZM','Zambia',4),
        ('ZW','Zimbabwe',4);
select * from countries;



insert into locations values
        (1400,'2014 Jobberwocky
Rd','26192','Southlake','Texas','US'),
```

```
        (1500,'2011 Interiors blvd','99236','South San
Francisco','California','US'),

        (1700,'2004 Charada
Rd','98199','Seattle','Washington','US’),

        (1800,'147 Spadina Ave','M5V
2L7','Toranto','Ontario','CA'),

        (2400,'8204 Aurthur St',NULL,'London',NULL,'UK'),

        (2500,'The Oxford Science
Park','OX99ZB','Oxford','Oxforf','UK'),

        (2700,'Schwanthalestr.
7031','80925','Munich','Baveria','DE');

select * from locations;



insert into departments values

        (1,’Administration',1700),

        (2,’Marketing',1800),

        (3,'Purchasing',1700),

        (4,'Human Resource',2400),

        (5,'Shipping',1500),

        (6,'IT',1400),

        (7,'Public Relations',2700),

        (8,'Sales',2500),
```

```
        (9,'Executive',1700),
        (10,'Finance',1700),
        (11,’Accounting’,1700);
select * from departments;


insert into jobs values
        (1,'Public Accountant',4200,9000),
        (2,'Accounting Manager',8200,16000),
        (3,'Administration Assistant',3000,6000),
        (4,'President',20000,40000),
        (5,'Administration Vice President',15000,30000),
        (6,'Accountant',4200,9000),
        (7,'Finance Manager',8200,16000),
        (8,'Human Resource Representative',4000,9000),
        (9,'Programmer',4000,10000),
        (10,'Marketing Manager',9000,15000),
        (11,'Marketing Representative',4000,9000),
        (12,'Public Relations Representative',4500,10500),
        (13,'Purchasing Clerk',2500,5500),
        (14,'Purchasing Manager',8000,15000),
```

```
        (15,'Sales Manager',10000,20000),
        (16,'Sales Represntative',6000,12000),
        (17,'Shipping Clerk',2500,5500),
        (18,'Stock Clerk',2000,5000),
        (19,'Stock Manager',5500,8500);
select * from jobs;


insert into employees values
        (100,'Steven','King','5151234567','1987-06-17',4,24000,9),
        (102,'Lex','De
Haan','5151234569','1993-01-13',5,17000,9),
        (104,'Bruce','Ernst','5904234568','1991-05-21',9,6000,6),
        (105,'David','Austin','5907684368','1997-06-25',9,4800,6),
        (110,'John','Chen','5151244269','1997-09-28',6,8200,10),
        (112,'Jose
Manuel','Urman','5151244469','1998-03-07',6,7800,10),
        (116,'Shelli','Baida','5151274563','1997-12-24',13,2900,3),
        (118,'Guy','Himuro','5151274565','1998-11-15',13,2600,3),

(120,'Matthew','Weiss','6501231234','1996-07-18',19,8000,5),
        (121,'Adam','Fripp','6501232234','1997-04-10',19,8200,5),
```

```
(126,'Irene','Mikkilineni','6501241224','1998-09-28',18,2700,5),
        (145,'John','Russell',NULL,'1996-10-01',15,14000,8),
        (177,'Jack','Livingston',NULL,'1998-04-23',16,8400,8),

(200,'Jennifer','Whalen','5151234444','1987-09-17',3,4400,1),

(201,'Michael','Hartstein','5151235555','1996-02-17',10,13000,2
),
        (202,'Pat','Fay','6031236666','1997-08-17',11,6000,2),
        (213,'Susan','Marvis','5156843345','1994-06-07',8,6500,4),

(217,'Hermann','Baer','5159875555','1994-06-07',12,10000,7),

(222,'Shelley','Higgins','5154568080','1995-08-22',2,12000,11),

(225,'William','Gietz','6503578192','1996-03-17',1,8300,11);
select * from employees;


alter table employees
        add Gender enum('M','F');
alter table employees
        add Status enum('Active','Not Active','Vacation');
alter table departments
```

```
add Number_of_Employees int;


update employees set gender='M', Status='Active' where
Emp_ID=100;

update employees set gender='M', Status='Active' where
Emp_ID=102;

update employees set Gender=NULL, Status='Vacation' where
Emp_ID=104;

update employees set Gender='M', Status='Active' where
Emp_ID=105;

update employees set Gender='M', Status='Not Active' where
Emp_ID=110;

update employees set Gender='M', Status='Active' where
Emp_ID=112;

update employees set Gender='F', Status='Active' where
Emp_ID=116;

update employees set Gender='M', Status='Vacation' where
Emp_ID=118;

update employees set Gender=NULL, Status='Not Active'
where Emp_ID=120;

update employees set Gender='M', Status='Active' where
Emp_ID=121;

update employees set Gender='F', Status='Vacation' where
Emp_ID=126;
```

```
update employees set Gender='M', Status='Active' where
Emp_ID=145;

update employees set Gender='M', Status='Active' where
Emp_ID=177;

update employees set Gender='F', Status='Active' where
Emp_ID=200;

update employees set Gender='M', Status='Not Active' where
Emp_ID=201;

update employees set Gender=NULL, Status='Active' where
Emp_ID=202;

update employees set Gender='F', Status='Not Active' where
Emp_ID=213;

update employees set Gender='F', Status='Active' where
Emp_ID=217;

update employees set Gender='F', Status='Not Active' where
Emp_ID=222;


select * from employees;


update departments set Number_of_Employees=1 where
Department_ID=1;

update departments set Number_of_Employees=2 where
Department_ID=2;

update departments set Number_of_Employees=2 where
Department_ID=3;
```

```
update departments set Number_of_Employees=1 where
Department_ID=4;

update departments set Number_of_Employees=3 where
Department_ID=5;

update departments set Number_of_Employees=2 where
Department_ID=6;

update departments set Number_of_Employees=1 where
Department_ID=7;

update departments set Number_of_Employees=2 where
Department_ID=8;

update departments set Number_of_Employees=2 where
Department_ID=9;

update departments set Number_of_Employees=2 where
Department_ID=10;

update departments set Number_of_Employees=2 where
Department_ID=11;


select * from departments;


alter table regions add unique(Region_Name);

alter table countries add unique(Country_Name);

alter table locations add unique(Postal_Code);

alter table employees add unique(Phone_Number);

alter table departments add unique(Department_Name);
```

```
alter table jobs add unique(Job_Title);

create table Employees_Copy select * from employees;
create table Departments_Copy select * from departments;

delete from departments_Copy where Department_ID=7;
select * from departments_Copy;
delete from departments_Copy where Department_Name='IT';
select * from departments_copy;

delete from employees_copy where Emp_ID=118;
select * from employees_copy;
delete from employees_copy where Job_ID=9;
select * from employees_copy;

delete from departments_copy;
select * from departments_copy;
desc departments_copy;

truncate table employees_copy;
select * from employees_copy;
```

```
desc employees_copy;


insert into departments_copy select * from departments;

select * from departments_copy;


drop table departments_copy;

select * from departments_copy;

desc departments_copy;

show tables;

drop table employees_copy;

show tables;


select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,salary,status from employees;

select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,salary from employees where status='Not
Active';

select * from employees where year(DOJ)>=1995;

select * from employees where year(DOJ)>=1996 and
salary>=9000;


select department_name from departments where
number_of_employees<2;
```

```
select department_id,department_name from departments
where number_of_employees>2;


select Emp_Id,efname as Name,elname as
Title,Phone_Number from employees where status='Vacation';

select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,Job_Id,Department_Id from employees
where salary>=7000 and gender='F';

select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,Phone_Number from employees where
salary<10000 and gender='M';


select job_id,Job_title from jobs where min_salary>=8500 or
max_salary>=15000;


select * from countries where region_id=1 or region_id=2 or
region_id=4;

select * from countries where region_id in(1,2,4);

select * from countries where region_id<>3;

select * from countries where region_id!=3;

select * from countries where region_id not in(1,2,4);


select Emp_ID,efname,elname,phone_number,job_id from
employees where department_id in(10,11,6) and
status='Active';
```

```
select Emp_ID,efname,elname,phone_number,job_id from employees where department_id in(3,5,7,9,10) and status not in('not active','vacation');

select Emp_ID,efname as Emp_First_Name,elname as Emp_Last_Name,Job_ID,Department_ID from employees where salary>=8000 and salary<=15000;

select Emp_ID,efname as Emp_First_Name,elname as Emp_Last_Name,Job_ID,Department_ID from employees where salary between 8000 and 15000;

select Job_ID,Job_Title from jobs where min_salary between 7000 and 12000;

select Job_ID,Job_Title from jobs where max_salary between 12000 and 18000;


select distinct(country_id) from locations;

select distinct(location_id) from departments;

select distinct(year(doj)) from employees;

select distinct(Department_id) from employees where status='Vacation';

select * from departments where department_id in(3,5,6);


select emp_id,efname,elname from employees where phone_number is null;

select emp_id,efname,elname from employees where gender is not null;
```

```
select * from locations where postal_code is not null;

select * from locations where state_province is NULL;


select * from employees order by salary;

select * from employees order by salary desc;

select * from jobs order by min_salary;

select * from jobs order by max_salary desc;


create table employee1 like employees;

desc employee1;

select * from employee1;

drop table employee1;


select max(salary) as Maximum_Salary,min(salary) as
Minimum_Salary,avg(salary) as Average_Salary from
employees;

select count(status) as Total_Active_Employees from
employees where status='Active';

select count(status) as Total_Non_Active_Employees from
employees where status<>'Active';

select count(gender) as Total_Male_Employees from
employees where gender='M';
```

```
select count(gender) as Total_Female_Employees from
employees where gender='F';

select count(Job_Id) as Total_Accountants from employees
where Job_ID=6;


select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name from employees limit 7;

select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name from employees limit 0,7;

select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name from employees limit 4,6;

select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name,Gender from employees limit 12,9;


select Job_ID,count(Job_ID) from employees group by Job_ID;

select Department_ID,count(Department_ID) from employees
group by department_ID;

select job_id,avg(salary) from employees group by job_id;

select department_id,max(salary) from employees group by
department_id order by max(salary) desc;

select gender,count(gender) from employees group by gender
having gender='F';

select gender,avg(Salary) as Average_Salary from employees
group by gender having gender='F';
```

```
select gender,avg(Salary) as Average_Salary from employees
group by gender having gender='M';

select department_id,avg(salary) as Average_Salary from
employees group by department_id having
Average_Salary>=10000;


set autocommit=0;

delete from employees where Emp_ID IN(120,177,213);

select * from employees;

rollback;

select * from employees;


savepoint one;

delete from employees where emp_id=112;

insert into employees values
(113,'Hyna','Marsh','5158643578','1992-07-23',5,24000,9,'F','Ac
tive');


savepoint two;

update employees set elname='Cena' where emp_id=110;


savepoint three;

delete from employees;
```

```
savepoint four;
update jobs set min_salary=5000 where job_id=17;
update jobs set max_salary=9500 where job_id=17;

select * from jobs;
select * from employees;

rollback to four;
select * from jobs;
select * from employees;

rollback to three;
select * from employees;

rollback to two;
select * from employees;

rollback to one;
select * from employees;
commit;
```

```
set autocommit=1;


create user testuser@localhost identified by'123456';

grant create,select on hr.* to testuser@localhost;

grant drop on hr.test to testuser@localhost;

revoke select on hr.* from testuser@localhost;

grant create,select on hr.* to testuser@localhost;

grant drop on hr.* to testuser@localhost;

grant insert on hr.* to testuser@localhost;

revoke create,insert,select,drop on hr.* from
testuser@localhost;

drop user testuser@localhost;


create table abc(ID int auto_increment,Name
varchar(20),primary key(ID));

set @@auto_increment_increment=10;

insert into abc (Name) values ('Shubham');

insert into abc (Name) values ('Karan'),('Ankita'),('Rashmi');

select * from abc;

set @@auto_increment_increment=5;

insert into abc (Name) values ('Nidhi'),('Rishu'),('Aradhaya');

select * from abc;
```

```
drop table abc;


select efname,elname,department_name from
employees,departments where
employees.department_id=departments.department_id;

select efname as Emp_First_Name,elname as
Emp_Last_Name,Job_Title as Designation from employees
e,jobs j where e.Job_ID=j.Job_ID;

select
department_name,Street_Address,Postal_Code,City,State_Pro
vince,Country_ID from departments d join locations l on
d.location_id=l.location_id;

select emp_id,efname,elname,job_title from employees e join
jobs j on e.job_id=j.job_id;

select
country_name,street_address,postal_code,city,state_province
from countries c left join locations l on
c.country_id=l.country_id;

select country_name,region_name from regions r right join
countries c on r.region_id=c.region_id;


select emp_id,efname,elname from employees where
salary>=(select avg(salary) from employees);

select job_id,job_title from jobs where min_salary=(select
min(min_salary) from jobs);
```

```
select job_id,Job_title from jobs where min_salary=(select
max(min_salary)from jobs);

select department_id,department_name from departments
where number_of_employees=(select
max(number_of_employees) from departments);


select * from employees where phone_number like '515%';

select * from employees where phone_number not like '515%';

select * from employees where efname like 'jo__';

select * from employees where phone_number like
'650___12__';


select department_name as 'departments and jobs' from
departments union select job_title from jobs;

select efname,elname from employees e where exists (select *
from departments d where e.department_id=d.department_id
and department_id in(1,2,5,7,10));


create table employees_copy like employees;

insert into employees_copy select * from employees;

create view emp as select emp_id,efname as
Emp_First_Name,elname as Emp_Last_Name,Gender as Sex
from employees_copy;

show full tables;
```

```
update employees_copy set gender='M' where emp_id=104;

select * from employees_copy;

select * from emp;

update emp set Sex='M' where emp_id=217;

select * from emp;

select * from employees_copy;

drop view emp;

drop table employees_copy;

show full tables;


create temporary table male_employees as select * from
employees where gender='M';

show full tables;

select * from male_employees;

update male_employees set phone_number='5501232244'
where emp_id=145;

select * from male_employees;

select * from employees;

select avg(salary) as Average_Salary_of_male_employees
from male_employees;

exit;

select * from male_employees;
```

ERROR 1146 (42S02): Table 'hr.male_employees' doesn't exist

```
create temporary table female_employees as Select * from
employees where gender="F";

select emp_id,efname,elname,job_id,salary from
female_employees where year(DOJ)>=1995;

select max(salary) as
Maximum_Salary_of_Female_Employees from
female_employees;

drop temporary table female_employees;


create temporary table departments as select * from
departments where location_id=1700;

select * from departments;

insert into departments values (4,'Marketing',1800,2);

select * from departments;

exit;

select * from departments;



delimiter /

create function count_employees() returns int

begin
```

```
return(select count(emp_id) from employees);
end/

delimiter ;
select count_employees() as Total_Employees;

delimiter /
create function get_job_title(empid int) returns varchar(40)
begin
declare jid int;
declare title varchar(40);
select job_id into jid from employees where empid=emp_id;
select job_title into title from jobs where jid=job_id;
return title;
end/

delimiter ;
select get_job_title(177);

delimiter /
create function get_department(eid int) returns varchar(40)
```

```
begin

declare depid int;

declare depname varchar(40);

select department_id into depid from employees where
eid=emp_id;

select department_name into depname from departments
where depid=department_id;

return(depname);

end/


delimiter ;

select get_department(120);


delimiter /

create procedure get_employee_details()

begin

select * from employees;

end/


delimiter ;

call get_employee_details();


delimiter /
```

```
create procedure getdepartmentlocations(depid int)

begin

select department_name,street_address,postal_code,city,state_province
from departments d,locations l where d.location_id=l.location_id and
depid=d.department_id;

end/


delimiter ;

call getdepartmentlocations(7);
```

----------MongoDb----------

show databases

use hostel

db.createCollection('students')

show databases

db.students.insert({studentid:'S001',fname:'abc',lname:'xyz',roomno:'G1',contactno:9638527412,course:'dac'})

db.students.find()

db.students.insert({studentid:'S002',fname:'rohit',roomno:'G2',course:'dbda'})

```
db.students.insert({studentid:'S003',fname:'virat',lname:'kohli',roomno:'G3',course:'dac'})

db.students.insert({studentid:'S007',fname:'surya',roomno:'F1',course:'AI'})

db.students.insert({studentid:'S006',fname:'sunil',roomno:'G2',course:'dbda',contactno:4563217895})

db.students.find().pretty()

db.students.find().pretty().skip(3)

db.createCollection('staff')

db.staff.insert({empname:'joy',empid:'E002',salary:45000})

db.staff.insert({empname:'montu',empid:'E004',shift:'N',contactno:9876543210,salary:25000})

db.staff.insert({empname:'jays',empid:'E003',shift:'D',contactno:8765432190,salary:55000,position:'manager'})

db.staff.insert({empname:'hardik',empid:'E005',shift:'N',contactno:6543219870,salary:35000,position:'guard'})

db.staff.insert({empid:'E006',shift:'D',salary:47000,position:'warden'})

db.staff.find().pretty()

db.staff.find().pretty().skip(2)
```

```
db.staff.find({},{empid:1})

db.staff.find({},{_id:0,empid:1,position:1})

var bulk = db.room.initializeUnorderedBulkOp();

bulk.insert({roomno:'G1',capacity:5,cost:9000})

bulk.insert({roomno:'F2',cost:8500})

bulk.insert({rooomno:'G3',status:'A',cost:12000})

bulk.execute();

db.room.find().pretty().limit(2)

db.students.find({})

db.students.find({course:'dac'},{_id:0,fname:1,roomno:1,course:
1}).pretty()
```

```
db.staff.find({salary:{$gt:40000}},{_id:0,salary:1})

db.staff.find({salary:{$gt:40000}},{_id:0,salary:1}).pretty()

db.staff.find({salary:{$gt:40000}},{_id:0,salary:1,position:1}).pretty()

db.staff.find({salary:{$lte:50000}},{_id:0,salary:1,empname:1,position:1}).pretty()

db.staff.find({shift:'N'},{_id:0,empname:1,shift:1}).pretty()

db.staff.find({shift:{$in:['D']}},{_id:0,empid:1,empname:1,position:1})

db.staff.find({shift:{$in:['D']}},{_id:0,empid:1,empname:1,position:1}).pretty()

db.staff.find({shift:{$in:['D']}},{_id:0,empid:1,shift:1,empname:1,position:1}).pretty()

db.students.find({$or:[{roomno:'G2'},{course:'dbda'}]},{studentid:1,roomno:1,course:1,fname:1})
```

db.staff.find({salary:{$gt:40000}},{_id:0,salary:1,position:1}).sort({salary:1})

db.students.find({$or:[{roomno:'G3'},{course:'dac'}]},{_id:0,studentid:1,roomno:1,course:1)}

db.staff.find({$or:[{salary:$lte:45000},{shift:'D'}],(_id:0,empid:1,empname:1,salary:1,shift:1})

db.staff.aggregate([{$group:{_id:'$empid',coutemp:{$sum:1}}}])

db.students.aggregate([{$group:{_id:'course',countcour:{$sum:1}}}])

db.students.aggregate([{$group:{_id:'position',countcour:{$sum:1}}}])

db.staff.findAndModify({query:{position:'manager'},update:{$inc:{salary:5000}},new:true})

db.room.update

db.student.update

```
db.students.update({roomno:'G2'},{$set:{roomno:'G3'}})

db.students.find().pretty()

db.students.updateMany({roomno:'G2'},{$set:{roomno:'G3'}})

db.students.update({course:'AI'},{$unset:{course:'ditiss'}})

db.students.update({course:'dbda'},{$set:{course:'AI'}})

db.students.updateMany({course:'dbda'},{$set:{course:'AI'}})

db.students.distinct('course')

db.students.distinct('roomno')

db.staff.remove({position:'warden'})
db.staff.find().pretty()
-MYSQL----------------------

//Company
```

```
show databases;

create database HR;
show databases;
use HR;

create table Jobs(
        Job_ID int,
        Job_Title varchar(50) NOT NULL,
        Min_Salary int NOT NULL,
        Max_Salary int NOT NULL,
        primary key (Job_ID)
);
desc jobs;

create table Departments(
        Department_ID int,
        Department_Name varchar(40) NOT NULL,
        Location_ID int NOT NULL,
```

```
        primary key (Department_ID)
);
desc departments;

create table Employees(
        Emp_ID int,
        efname varchar(30) NOT NULL,
        elname varchar(30) NOT NULL,
        Phone_Number varchar(20),
        DOJ date,
        Job_ID int NOT NULL,
        Salary int NOT NULL,
        Department_ID int NOT NULL,
        primary key (Emp_ID),
        foreign key (Job_ID) references Jobs(Job_ID),
        foreign key (Department_ID) references
Departments(Department_ID)
);
desc employees;

create table Locations(
```

```
	Location_ID int,
	Street_Address varchar(60) NOT NULL,
	Postal_Code varchar(20),
	City varchar(30),
	State_Province varchar(30),
	Country_ID varchar(10) NOT NULL,
	primary key (Location_ID)
);
desc Locations;

create table Countries(
	Country_ID int,
	Country_Name varchar(30) NOT NULL,
	Region_ID int NOT NULL,
	primary key (Country_ID)
);
desc Countries;

create table Regions(
	Region_ID int,
	Region_Name varchar(30) NOT NULL,
```

```
        primary key (Region_ID)
);
desc Regions;


alter table departments
add foreign key (Location_ID) references
Locations(Location_ID);


alter table Countries
modify column Country_ID varchar(10);


alter table Locations
add foreign key (Country_ID) references
Countries(Country_ID);


alter table Countries
add foreign key (Region_ID) references Regions(Region_ID);


insert into Regions Values
(1,'Europe'),
(2,'America'),
(3,'Asia'),
```

```
(4,’Middle East and Africa’);
select * from regions;

insert into countries values
        ('AU','Australia',2),
        ('AR','Argentina',3),
        ('BE','Belgium',1),
        ('BR','Brazil',2),
        ('CA','Canada',2),
        ('CH','Switzerland',1),
        ('CN’,’China',3),
        ('DE','Germany’,1),
        ('DK','Denmark',1),
        ('EG','Egypt',4),
        ('FR','France',1),
        ('HK','Hong Kong',3),
        ('IL','Israel',4),
        ('IN','India',3),
        ('IT','Italy',1),
        ('JP','Japan’,3),
        ('KW','Kuwait',4),
```

```
        ('MX','Mexico',2),
        ('NG','Nigeria’,4),
        ('NL','Netherlands',1),
        ('SG','Singapore',3),
        ('UK','United Kingdom',1),
        ('US','United States of America',2),
        ('ZM','Zambia',4),
        ('ZW','Zimbabwe',4);
select * from countries;



insert into locations values
        (1400,'2014 Jobberwocky
Rd','26192','Southlake','Texas','US'),
        (1500,'2011 Interiors blvd','99236','South San
Francisco','California','US'),
        (1700,'2004 Charada
Rd','98199','Seattle','Washington','US’),
        (1800,'147 Spadina Ave','M5V
2L7','Toranto','Ontario','CA'),
        (2400,'8204 Aurthur St',NULL,'London',NULL,'UK'),
```

```
        (2500,'The Oxford Science
Park','OX99ZB','Oxford','Oxforf','UK'),

        (2700,'Schwanthalestr.
7031','80925','Munich','Baveria','DE');

select * from locations;



insert into departments values

        (1,’Administration',1700),

        (2,’Marketing',1800),

        (3,'Purchasing',1700),

        (4,'Human Resource',2400),

        (5,'Shipping',1500),

        (6,'IT',1400),

        (7,'Public Relations',2700),

        (8,'Sales',2500),

        (9,'Executive',1700),

        (10,'Finance',1700),

        (11,’Accounting’,1700);

select * from departments;
```

```
insert into jobs values
        (1,'Public Accountant',4200,9000),
        (2,'Accounting Manager',8200,16000),
        (3,'Administration Assistant',3000,6000),
        (4,'President',20000,40000),
        (5,'Administration Vice President',15000,30000),
        (6,'Accountant',4200,9000),
        (7,'Finance Manager',8200,16000),
        (8,'Human Resource Representative',4000,9000),
        (9,'Programmer',4000,10000),
        (10,'Marketing Manager',9000,15000),
        (11,'Marketing Representative',4000,9000),
        (12,'Public Relations Representative',4500,10500),
        (13,'Purchasing Clerk',2500,5500),
        (14,'Purchasing Manager',8000,15000),
        (15,'Sales Manager',10000,20000),
        (16,'Sales Represntative',6000,12000),
        (17,'Shipping Clerk',2500,5500),
        (18,'Stock Clerk',2000,5000),
        (19,'Stock Manager',5500,8500);
select * from jobs;
```

```
insert into employees values
        (100,'Steven','King','5151234567','1987-06-17',4,24000,9),
        (102,'Lex','De
Haan','5151234569','1993-01-13',5,17000,9),
        (104,'Bruce','Ernst','5904234568','1991-05-21',9,6000,6),
        (105,'David','Austin','5907684368','1997-06-25',9,4800,6),
        (110,'John','Chen','5151244269','1997-09-28',6,8200,10),
        (112,'Jose
Manuel','Urman','5151244469','1998-03-07',6,7800,10),
        (116,'Shelli','Baida','5151274563','1997-12-24',13,2900,3),
        (118,'Guy','Himuro','5151274565','1998-11-15',13,2600,3),

(120,'Matthew','Weiss','6501231234','1996-07-18',19,8000,5),
        (121,'Adam','Fripp','6501232234','1997-04-10',19,8200,5),

(126,'Irene','Mikkilineni','6501241224','1998-09-28',18,2700,5),
        (145,'John','Russell',NULL,'1996-10-01',15,14000,8),
        (177,'Jack','Livingston',NULL,'1998-04-23',16,8400,8),

(200,'Jennifer','Whalen','5151234444','1987-09-17',3,4400,1),
```

```
(201,'Michael','Hartstein','5151235555','1996-02-17',10,13000,2
),
        (202,'Pat','Fay','6031236666','1997-08-17',11,6000,2),
        (213,'Susan','Marvis','5156843345','1994-06-07',8,6500,4),

(217,'Hermann','Baer','5159875555','1994-06-07',12,10000,7),

(222,'Shelley','Higgins','5154568080','1995-08-22',2,12000,11),

(225,'William','Gietz','6503578192','1996-03-17',1,8300,11);
select * from employees;


alter table employees
        add Gender enum('M','F');
alter table employees
        add Status enum('Active','Not Active','Vacation');
alter table departments
        add Number_of_Employees int;


update employees set gender='M', Status='Active' where
Emp_ID=100;
update employees set gender='M', Status='Active' where
Emp_ID=102;
```

```
update employees set Gender=NULL, Status='Vacation' where
Emp_ID=104;

update employees set Gender='M', Status='Active' where
Emp_ID=105;

update employees set Gender='M', Status='Not Active' where
Emp_ID=110;

update employees set Gender='M', Status='Active' where
Emp_ID=112;

update employees set Gender='F', Status='Active' where
Emp_ID=116;

update employees set Gender='M', Status='Vacation' where
Emp_ID=118;

update employees set Gender=NULL, Status='Not Active'
where Emp_ID=120;

update employees set Gender='M', Status='Active' where
Emp_ID=121;

update employees set Gender='F', Status='Vacation' where
Emp_ID=126;

update employees set Gender='M', Status='Active' where
Emp_ID=145;

update employees set Gender='M', Status='Active' where
Emp_ID=177;

update employees set Gender='F', Status='Active' where
Emp_ID=200;

update employees set Gender='M', Status='Not Active' where
Emp_ID=201;
```

```
update employees set Gender=NULL, Status='Active' where
Emp_ID=202;

update employees set Gender='F', Status='Not Active' where
Emp_ID=213;

update employees set Gender='F', Status='Active' where
Emp_ID=217;

update employees set Gender='F', Status='Not Active' where
Emp_ID=222;


select * from employees;


update departments set Number_of_Employees=1 where
Department_ID=1;

update departments set Number_of_Employees=2 where
Department_ID=2;

update departments set Number_of_Employees=2 where
Department_ID=3;

update departments set Number_of_Employees=1 where
Department_ID=4;

update departments set Number_of_Employees=3 where
Department_ID=5;

update departments set Number_of_Employees=2 where
Department_ID=6;

update departments set Number_of_Employees=1 where
Department_ID=7;
```

```
update departments set Number_of_Employees=2 where
Department_ID=8;

update departments set Number_of_Employees=2 where
Department_ID=9;

update departments set Number_of_Employees=2 where
Department_ID=10;

update departments set Number_of_Employees=2 where
Department_ID=11;


select * from departments;


alter table regions add unique(Region_Name);

alter table countries add unique(Country_Name);

alter table locations add unique(Postal_Code);

alter table employees add unique(Phone_Number);

alter table departments add unique(Department_Name);

alter table jobs add unique(Job_Title);


create table Employees_Copy select * from employees;

create table Departments_Copy select * from departments;


delete from departments_Copy where Department_ID=7;
```

```
select * from departments_Copy;
delete from departments_Copy where Department_Name='IT';
select * from departments_copy;

delete from employees_copy where Emp_ID=118;
select * from employees_copy;
delete from employees_copy where Job_ID=9;
select * from employees_copy;

delete from departments_copy;
select * from departments_copy;
desc departments_copy;

truncate table employees_copy;
select * from employees_copy;
desc employees_copy;

insert into departments_copy select * from departments;
select * from departments_copy;

drop table departments_copy;
```

```
select * from departments_copy;

desc departments_copy;

show tables;

drop table employees_copy;

show tables;


select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,salary,status from employees;

select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,salary from employees where status='Not
Active';

select * from employees where year(DOJ)>=1995;

select * from employees where year(DOJ)>=1996 and
salary>=9000;


select department_name from departments where
number_of_employees<2;

select department_id,department_name from departments
where number_of_employees>2;


select Emp_Id,efname as Name,elname as
Title,Phone_Number from employees where status='Vacation';
```

```
select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,Job_Id,Department_Id from employees
where salary>=7000 and gender='F';

select Emp_ID,efname as Emp_First_Name,elname as
Emp_Last_Name,Phone_Number from employees where
salary<10000 and gender='M';


select job_id,Job_title from jobs where min_salary>=8500 or
max_salary>=15000;


select * from countries where region_id=1 or region_id=2 or
region_id=4;

select * from countries where region_id in(1,2,4);

select * from countries where region_id<>3;

select * from countries where region_id!=3;

select * from countries where region_id not in(1,2,4);


select Emp_ID,efname,elname,phone_number,job_id from
employees where department_id in(10,11,6) and
status='Active';

select Emp_ID,efname,elname,phone_number,job_id from
employees where department_id in(3,5,7,9,10) and status not
in('not active','vacation');
```

```
select Emp_ID,efname as Emp_First_Name,elname as Emp_Last_Name,Job_ID,Department_ID from employees where salary>=8000 and salary<=15000;

select Emp_ID,efname as Emp_First_Name,elname as Emp_Last_Name,Job_ID,Department_ID from employees where salary between 8000 and 15000;

select Job_ID,Job_Title from jobs where min_salary between 7000 and 12000;

select Job_ID,Job_Title from jobs where max_salary between 12000 and 18000;


select distinct(country_id) from locations;

select distinct(location_id) from departments;

select distinct(year(doj)) from employees;

select distinct(Department_id) from employees where status='Vacation';

select * from departments where department_id in(3,5,6);


select emp_id,efname,elname from employees where phone_number is null;

select emp_id,efname,elname from employees where gender is not null;

select * from locations where postal_code is not null;

select * from locations where state_province is NULL;
```

```
select * from employees order by salary;

select * from employees order by salary desc;

select * from jobs order by min_salary;

select * from jobs order by max_salary desc;


create table employee1 like employees;

desc employee1;

select * from employee1;

drop table employee1;


select max(salary) as Maximum_Salary,min(salary) as
Minimum_Salary,avg(salary) as Average_Salary from
employees;

select count(status) as Total_Active_Employees from
employees where status='Active';

select count(status) as Total_Non_Active_Employees from
employees where status<>'Active';

select count(gender) as Total_Male_Employees from
employees where gender='M';

select count(gender) as Total_Female_Employees from
employees where gender='F';

select count(Job_Id) as Total_Accountants from employees
where Job_ID=6;
```

```
select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name from employees limit 7;

select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name from employees limit 0,7;

select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name from employees limit 4,6;

select Emp_ID, efname as Emp_First_Name, elname as
Emp_Last_Name,Gender from employees limit 12,9;


select Job_ID,count(Job_ID) from employees group by Job_ID;

select Department_ID,count(Department_ID) from employees
group by department_ID;

select job_id,avg(salary) from employees group by job_id;

select department_id,max(salary) from employees group by
department_id order by max(salary) desc;

select gender,count(gender) from employees group by gender
having gender='F';

select gender,avg(Salary) as Average_Salary from employees
group by gender having gender='F';

select gender,avg(Salary) as Average_Salary from employees
group by gender having gender=‘M’;

select department_id,avg(salary) as Average_Salary from
employees group by department_id having
Average_Salary>=10000;
```

```
set autocommit=0;

delete from employees where Emp_ID IN(120,177,213);

select * from employees;

rollback;

select * from employees;


savepoint one;

delete from employees where emp_id=112;

insert into employees values
(113,'Hyna','Marsh','5158643578','1992-07-23',5,24000,9,'F','Ac
tive');


savepoint two;

update employees set elname='Cena' where emp_id=110;


savepoint three;

delete from employees;


savepoint four;

update jobs set min_salary=5000 where job_id=17;

update jobs set max_salary=9500 where job_id=17;
```

```
select * from jobs;
select * from employees;

rollback to four;
select * from jobs;
select * from employees;

rollback to three;
select * from employees;

rollback to two;
select * from employees;

rollback to one;
select * from employees;
commit;
set autocommit=1;

create user testuser@localhost identified by'123456';
grant create,select on hr.* to testuser@localhost;
```

```
grant drop on hr.test to testuser@localhost;

revoke select on hr.* from testuser@localhost;

grant create,select on hr.* to testuser@localhost;

grant drop on hr.* to testuser@localhost;

grant insert on hr.* to testuser@localhost;

revoke create,insert,select,drop on hr.* from
testuser@localhost;

drop user testuser@localhost;


create table abc(ID int auto_increment,Name
varchar(20),primary key(ID));

set @@auto_increment_increment=10;

insert into abc (Name) values ('Shubham');

insert into abc (Name) values ('Karan'),('Ankita'),('Rashmi');

select * from abc;

set @@auto_increment_increment=5;

insert into abc (Name) values ('Nidhi'),('Rishu'),('Aradhaya');

select * from abc;

drop table abc;
```

```
select efname,elname,department_name from
employees,departments where
employees.department_id=departments.department_id;

select efname as Emp_First_Name,elname as
Emp_Last_Name,Job_Title as Designation from employees
e,jobs j where e.Job_ID=j.Job_ID;

select
department_name,Street_Address,Postal_Code,City,State_Pro
vince,Country_ID from departments d join locations l on
d.location_id=l.location_id;

select emp_id,efname,elname,job_title from employees e join
jobs j on e.job_id=j.job_id;

select
country_name,street_address,postal_code,city,state_province
from countries c left join locations l on
c.country_id=l.country_id;

select country_name,region_name from regions r right join
countries c on r.region_id=c.region_id;


select emp_id,efname,elname from employees where
salary>=(select avg(salary) from employees);

select job_id,job_title from jobs where min_salary=(select
min(min_salary) from jobs);

select job_id,Job_title from jobs where min_salary=(select
max(min_salary)from jobs);
```

```
select department_id,department_name from departments
where number_of_employees=(select
max(number_of_employees) from departments);


select * from employees where phone_number like '515%';

select * from employees where phone_number not like '515%';

select * from employees where efname like 'jo__';

select * from employees where phone_number like
'650___12__';


select department_name as 'departments and jobs' from
departments union select job_title from jobs;

select efname,elname from employees e where exists (select *
from departments d where e.department_id=d.department_id
and department_id in(1,2,5,7,10));


create table employees_copy like employees;

insert into employees_copy select * from employees;

create view emp as select emp_id,efname as
Emp_First_Name,elname as Emp_Last_Name,Gender as Sex
from employees_copy;

show full tables;

update employees_copy set gender='M' where emp_id=104;

select * from employees_copy;
```

```
select * from emp;

update emp set Sex='M' where emp_id=217;

select * from emp;

select * from employees_copy;

drop view emp;

drop table employees_copy;

show full tables;


create temporary table male_employees as select * from
employees where gender='M';

show full tables;

select * from male_employees;

update male_employees set phone_number='5501232244'
where emp_id=145;

select * from male_employees;

select * from employees;

select avg(salary) as Average_Salary_of_male_employees
from male_employees;

exit;

select * from male_employees;

ERROR 1146 (42S02): Table 'hr.male_employees' doesn't exist
```

```
create temporary table female_employees as Select * from
employees where gender="F";

select emp_id,efname,elname,job_id,salary from
female_employees where year(DOJ)>=1995;

select max(salary) as
Maximum_Salary_of_Female_Employees from
female_employees;

drop temporary table female_employees;


create temporary table departments as select * from
departments where location_id=1700;

select * from departments;

insert into departments values (4,'Marketing',1800,2);

select * from departments;

exit;

select * from departments;



delimiter /

create function count_employees() returns int

begin

return(select count(emp_id) from employees);

end/
```

```
delimiter ;
select count_employees() as Total_Employees;

delimiter /
create function get_job_title(empid int) returns varchar(40)
begin
declare jid int;
declare title varchar(40);
select job_id into jid from employees where empid=emp_id;
select job_title into title from jobs where jid=job_id;
return title;
end/

delimiter ;
select get_job_title(177);

delimiter /
create function get_department(eid int) returns varchar(40)
begin
declare depid int;
```

```
declare depname varchar(40);

select department_id into depid from employees where
eid=emp_id;

select department_name into depname from departments
where depid=department_id;

return(depname);

end/


delimiter ;

select get_department(120);


delimiter /

create procedure get_employee_details()

begin

select * from employees;

end/


delimiter ;

call get_employee_details();


delimiter /

create procedure getdepartmentlocations(depid int)

begin
```

```
select department_name,street_address,postal_code,city,state_province
from departments d,locations l where d.location_id=l.location_id and
depid=d.department_id;

end/


delimiter ;

call getdepartmentlocations(7);
```