```
--create database
create database employee;
--create schema
create schema new_hire;


 --create table DDL(data definition language)
 create table emp
 (emp_id int,
 emp_name varchar,
 emp_dob date,
 emp_sal decimal(5,2),
 emp_state char(2),
 dept_id int);

--insert data
 insert into employee.new_hire.emp
 (emp_id,emp_name,emp_dob,emp_sal,emp_state,dept_id)
 values
 (100,'ritesh','2010-10-01',200,'ap',10);
 --query the table DML(data manipulation language)
insert into employee.new_hire.emp
 (emp_id,emp_name,emp_dob,emp_sal,emp_state,dept_id)
values
 (101,'rakesh','2011-10-01',300,'ap',10);
 insert into employee.new_hire.emp
 (emp_id,emp_name,emp_dob,emp_sal,emp_state,dept_id)
 values
 (102,'john','2012-10-01',400,'up',20);
 insert into employee.new_hire.emp
 (emp_id,emp_name,emp_dob,emp_sal,emp_state,dept_id)
 values
 (103,'vijay','2013-10-01',500,'mp',20);
 insert into employee.new_hire.emp
 (emp_id,emp_name,emp_dob,emp_sal,emp_state,dept_id)
 values
 (104,'bhaskar','2014-10-01',600,'ap',30);

 insert into employee.new_hire.emp
 (emp_id,emp_name,emp_dob,emp_sal,emp_state,dept_id)
 values
 (105,'mike','2015-10-01',700,'ap',40);
 select * from emp;
output:
```

EMP_ID	EMP_NAME	EMP_DOB	EMP_SAL	EMP_STATE	DEPT_ID
100	ritesh	2010-10-01	200.00	ap	10
101	rakesh	2011-10-01	300.00	ap	10
102	john	2012-10-01	400.00	up	20
103	vijay	2013-10-01	500.00	mp	20
104	bhaskar	2014-10-01	600.00	ap	30
105	mike	2015-10-01	700.00	ap	40
106	a	2010-10-01	300.00	ap	10

```
--creating  another table.
create table dept
 (department_id int,
 department_name varchar,
 department_loc varchar(2));
--Inserting values into dept table
insert into dept
 values
 (10,'HR','ap');

insert into dept
(department_name,department_loc,department_id)
 values
 ('MKT','ap',20);

 insert into dept
 values
 (30,'SLS','up');

 insert into dept
 values
 (40,'ADM','ap');

--select * from dept;
```

Output:

DEPARTMENT_ID	DEPARTMENT_NAME	DEPARTMENT_LOC	COUNTRY_CD
10	HR	ap	ind
20	MKT	ap	usa
30	SLS	up	ch
40	ADM	ap	rus

```
--innerjoin or equi join
 --gives only matching data
 select emp.emp_id,
 emp.emp_name,
```

```
 dept.department_id,
 dept.department_name
 from emp inner join dept
 on emp.dept_id=dept.department_id;

output:
EMP_ID      EMP_NAME   DEPARTMENT_ID    DEPARTMENT_NAME
100     ritesh  10      HR
101     rakesh 10       HR
102     john    20      MKT
103     vijay   20      MKT
104     bhaskar         30      SLS
105     mike    40      ADM
106     a       10      HR
--left outer join
select emp.emp_id,
 emp.emp_name,
 dept.department_id,
 dept.department_name
 from emp left outer join dept
 on emp.dept_id=dept.department_id;
output:
EMP_ID      EMP_NAME   DEPARTMENT_ID    DEPARTMENT_NAME
100     ritesh  10      HR
101     rakesh 10       HR
102     john    20      MKT
103     vijay   20      MKT
104     bhaskar         30      SLS
105     mike    40      ADM
106     a       10      HR
--using where clause
select emp_id,emp_name,emp_sal
 from emp
 where emp.dept_id=10;
output:
EMP_ID      EMP_NAME   EMP_SAL
100     ritesh  200.00
101     rakesh 300.00
106     a       300.00
--in and not in:
select emp_id,emp_name,dept_id
 from emp
 where dept_id in (10,20) ;
output:
```

EMP_ID EMP_NAME DEPT_ID
100 ritesh 10
101 rakesh 10
102 john 20
103 vijay 20
106 a 10

```
select emp_id,emp_name,dept_id
 from emp
 where dept_id not in (10,20) ;
```

output:

EMP_ID EMP_NAME DEPT_ID
104 bhaskar 30
105 mike 40

```
select emp_id,emp_name
 from dept inner join emp
 on dept.department_id = emp.dept_id
 where department_id in (20,40);
```

output:

EMP_ID EMP_NAME
102 john
103 vijay
105 mike

```
select emp_id,emp_name
 from emp
 where emp_sal> 400;
```

output:

EMP_ID EMP_NAME
103 vijay
104 bhaskar
105 mike

```
select emp_name
 from dept inner join emp
 on dept.department_id=emp.dept_id
 where department_loc=emp_state;
```

output:

EMP_NAME
ritesh
rakesh
mike

a

--using group by
Select dept_id ,max(emp_sal)
From emp
Group by dept_id;
Output:

DEPT_ID	MAX(EMP_SAL)
10	300.00
20	500.00
30	600.00
40	700.00

--using order by
select *
 from emp
 order by dept_id desc;
output:

EMP_ID	EMP_NAME	EMP_DOB	EMP_SAL	EMP_STATE	DEPT_ID
105	mike	2015-10-01	700.00	ap	40
104	bhaskar	2014-10-01	600.00	ap	30
102	john	2012-10-01	400.00	up	20
103	vijay	2013-10-01	500.00	mp	20
100	ritesh	2010-10-01	200.00	ap	10
101	rakesh	2011-10-01	300.00	ap	10
106	a	2010-10-01	300.00	ap	10

--aggregate functions
Select dept_id ,
max(emp_sal) as max_salary,
min(emp_sal) as min_salary,
sum(emp_sal) as total_salary,
avg(emp_sal) as avg_salary,
count(*) as total_no_of_rows_in_group
From emp
Group by dept_id;

Output:

DEPT_ID	MAX_SALARY	MIN_SALARY	TOTAL_SALARY	AVG_SALARY	TOTAL_NO_OF_ROWS_IN_GROUP
10	300.00	200.00	800.00	266.66666667	3
20	500.00	400.00	900.00	450.00000000	2
30	600.00	600.00	600.00	600.00000000	1

40 700.00 700.00 700.00 700.00000000 1
--Rank function
select emp_id,emp_name,emp_sal,
RANK() over(order by emp_sal asc) as rank_salary
from emp;
output:
EMP_ID EMP_NAME EMP_SAL RANK_SALARY
100 ritesh 200.00 1
101 rakesh 300.00 2
106 a 300.00 2
102 john 400.00 4
103 vijay 500.00 5
104 bhaskar 600.00 6
105 mike 700.00 7
--qualify
select emp_id,emp_name,emp_sal,
RANK() over(order by emp_sal asc) as rank_salary
from emp
qualify rank_salary=1;
output:
EMP_ID EMP_NAME EMP_SAL RANK_SALARY
100 ritesh 200.00 1
--dense rank
select emp_id,emp_name,emp_sal,
dense_rank() over(order by emp_sal asc) as rank_salary
from emp;
output:
EMP_ID EMP_NAME EMP_SAL RANK_SALARY
100 ritesh 200.00 1
101 rakesh 300.00 2
106 a 300.00 2
102 john 400.00 3
103 vijay 500.00 4
104 bhaskar 600.00 5
105 mike 700.00 6

--to add additional column to an existing table
use database employee;
use schema new_hire;
alter table dept add state_cd varchar(2);
alter table dept drop column state_cd;
alter table dept add country_cd varchar(5);

```
select*
from dept;
output:
DEPARTMENT_ID    DEPARTMENT_NAME        DEPARTMENT_LOC COUNTRY_CD
10       HR      ap       ind
20       MKT     ap       usa
30       SLS     up       ch
40       ADM     ap       rus



--updating the table
update dept
set country_cd='rus'
where department_id=40;

--create table country
(country_cd varchar(5),
country_name varchar(20));

insert into country
values
('ind','india'),
('ch','china'),
('rus','russia'),
('usa','america');

select *
from country;
output:
COUNTRY_CD         COUNTRY_NAME
ind      india
ch       china
rus      russia
usa      America
--joining multiple tables

select emp.emp_name,country.country_name
from emp
inner join dept
   on emp.dept_id=dept.department_id
inner join country
   on dept.country_cd=country.country_cd
   where emp.emp_id=100;
```

output:
EMP_NAME COUNTRY_NAME
ritesh india

--subquery
select department_name
from dept
where department_id in
(Select dept_id
From emp
Where emp_id=100);
Output:
DEPARTMENT_NAME
HR

--give me the country name for department 10
select c.country_name
from country as c inner join dept as d
on c.country_cd=d.country_cd
where department_id=10;
output:
COUNTRY_NAME
india

--above question with subquery .
select country_name
from country
where country_cd in
(select country_cd
from dept as d
where department_id=10);
output:
COUNTRY_NAME
India

--sum of salaries by department
select sum(emp_sal)
from emp
group by dept_id;
output:
SUM(EMP_SAL)
800.00

900.00
600.00
700.00

--functions
--substring
update emp set emp_name='vijay bhaskar ritesh'
where emp_id=100;
select emp_name, substr(emp_name,1,5), substr(emp_name,7,7)
from emp
where emp_id=100;
output:
EMP_NAME SUBSTR(EMP_NAME,1,5) SUBSTR(EMP_NAME,7,7)
vijay bhaskar ritesh vijay bhaskar

--concat
select concat(emp_id, ' ',emp_name)
from emp
where emp_id=100;
output:
CONCAT(EMP_ID, ' ',EMP_NAME)
100 vijay bhaskar ritesh

--char index
select charindex(' ','vijay bhaskar');
output:
CHARINDEX(' ','VIJAY BHASKAR')
6

--extract year,day,month
select extract (day from emp_dob)
from emp
where emp_id=101;
output:
EXTRACT (DAY FROM EMP_DOB)
1

--ifnull
update emp
set emp_state=null
where emp_id=103;
select ifnull(emp_state , 'unknown')
from emp;
output:

IFNULL(EMP_STATE , 'UNKNOWN')
ap
ap
up
unknown
ap
ap
ap

--left

```
select left(emp_name ,3)
from emp;
```

output:
LEFT(EMP_NAME ,3)
vij
rak
joh
vij
bha
mik
A

--right

```
select right(emp_name,4)
from emp;
```

output:
RIGHT(EMP_NAME,4)
tesh
kesh
john
ijay
skar
mike
a

--case

```
select emp_name,
case
    when emp_sal > 300 then 'low'
    when emp_sal between 400 and 600 then 'medium'
    else 'high'
```

```
    end as cat
from emp;
```

output:

```
EMP_NAME    CAT
vijay bhaskar ritesh     high
rakesh high
john     low
vijay    low
bhaskar          low
mike    low
a         high
```

```
--caluculate bonus for each employee based on his department level bonus peercentage
--hr =10 ,sales =15, mkt=20


select emp.emp_name,
case
   when dept.department_name='HR' then  emp.emp_sal + (emp.emp_sal*0.10)
   when dept.department_name='sls'then emp.emp_sal + (emp.emp_sal*0.15)
   when dept.department_name='mkt'then emp.emp_sal + emp.emp_sal*0.20
   else emp_sal
   end as bonus
from emp inner join dept
on emp.dept_id=dept.department_id;
```

output:

```
EMP_NAME    BONUS
vijay bhaskar ritesh     220.0000
rakesh 330.0000
john     400.0000
vijay    500.0000
bhaskar          600.0000
mike    700.0000
a         330.0000
```

```
--using having
select emp_state, avg(emp_sal)
from emp
group by emp_state
having avg(emp_sal)>400;
```

output:

```
EMP_STATE  AVG(EMP_SAL)
ap         420.00000000
mp         500.00000000
```

```
select dept_id
from emp
group by dept_id
having dept_id>10;
```

output:

```
DEPT_ID
30
20
40
```

```
select emp_state, count(*),sum(emp_sal)
from emp
where emp_sal>250
group by emp_state
having sum(emp_sal)>1000;
```

output:

```
EMP_STATE  COUNT(*)      SUM(EMP_SAL)
ap         4             1900.00
```

```
--creating new table
create table emp_new
 (emp_id int,
 emp_name varchar,
 emp_dob date,
 emp_sal decimal(5,2),
 emp_state char(2),
 dept_id int);

--inserting data from one table to another
insert into emp_new
select * from emp;
select *
from emp_new;
```

output:

EMP_ID	EMP_NAME	EMP_DOB	EMP_SAL	EMP_STATE	DEPT_ID
200	ritesh	2010-10-01	300.00	ap	10
201	rakesh	2011-10-01	400.00	ap	10
202	john	2012-10-01	500.00	up	20
203	vijay	2013-10-01	600.00	mp	20
204	bhaskar	2014-10-01	700.00	ap	30
205	mike	2015-10-01	800.00	ap	40
206	a	2010-10-01	400.00	ap	10

```
--union will remove duplicates
select emp_id,emp_name,emp_sal
from emp
union
select emp_id,emp_name,emp_sal
from emp_new;
```

output:

EMP_ID	EMP_NAME	EMP_SAL
100	vijay bhaskar ritesh	200.00
101	rakesh	300.00
102	john	400.00
103	vijay	500.00
104	bhaskar	600.00
105	mike	700.00
106	a	300.00
200	ritesh	300.00
201	rakesh	400.00
202	john	500.00
203	vijay	600.00
204	bhaskar	700.00
205	mike	800.00
206	a	400.00

```
CREATE OR REPLACE TABLE sales(
  emp_id INTEGER,
  year INTEGER,
  revenue DECIMAL(10,2));

INSERT INTO sales VALUES
  (0, 2010, 1000),
  (0, 2011, 1500),
  (0, 2012, 500),
  (0, 2013, 750);
```

```
INSERT INTO sales VALUES
  (1, 2010, 10000),
  (1, 2011, 12500),
  (1, 2012, 15000),
  (1, 2013, 20000);
INSERT INTO sales VALUES
  (2, 2012, 500),
  (2, 2013, 800);


--creating table

CREATE OR REPLACE TABLE sales(
  emp_id INTEGER,
  year INTEGER,
  revenue DECIMAL(10,2));

INSERT INTO sales VALUES
  (0, 2010, 1000),
  (0, 2011, 1500),
  (0, 2012, 500),
  (0, 2013, 750);
INSERT INTO sales VALUES
  (1, 2010, 10000),
  (1, 2011, 12500),
  (1, 2012, 15000),
  (1, 2013, 20000);
INSERT INTO sales VALUES
  (2, 2012, 500),
  (2, 2013, 800);

  select year,emp_id,revenue,
  lag(revenue) over (partition by emp_id order by year asc) as lag_revenue,
  lead(revenue) over (partition by emp_id order by year asc) as lead_revenue,
  first_value(revenue) over (partition by emp_id order by year asc) as first_revenue,
  last_value(revenue) over (partition by emp_id order by year asc) as last_revenue,
  row_number() over (partition by revenue order by revenue asc) as row_revenue,
  dense_rank() over (partition by revenue order by revenue asc) as dense_revenue
  from sales;


output:
YEAR  EMP_ID         REVENUE      LAG_REVENUE        LEAD_REVENUE
        FIRST_REVENUE     LAST_REVENUE       ROW_REVENUE       DENSE_REVENUE
```

2010 0 1000.00 1500.00 1000.00 750.00 1 1
2012 1 15000.00 12500.00 20000.00 10000.00 20000.00 1
1
2012 2 500.00 800.00 500.00 800.00 1 1
2012 0 500.00 1500.00 750.00 1000.00 750.00 2 1
2011 0 1500.00 1000.00 500.00 1000.00 750.00 1 1
2013 2 800.00 500.00 500.00 800.00 1 1
2011 1 12500.00 10000.00 15000.00 10000.00 20000.00 1
1
2010 1 10000.00 12500.00 10000.00 20000.00 1 1
2013 1 20000.00 15000.00 10000.00 20000.00 1 1
2013 0 750.00 500.00 1000.00 750.00 1 1

```
--union
 select emp_state
 from emp
 union
 select department_loc
 from dept;
```

output:
EMP_STATE
up
mp
ap

```
--union all
 select emp_state
 from emp
 union all
 select department_loc
 from dept;
```

output:
EMP_STATE
ap
ap
up
mp
ap
ap
ap
ap
ap
up

ap

--dense rank
```
select emp_id,emp_name,dept_id,emp_sal,
dense_rank() over(partition by dept_id order by emp_sal desc ) as rnk_1
from emp;
```

output:

EMP_ID	EMP_NAME	DEPT_ID	EMP_SAL	RNK_1
101	rakesh	10	300.00	1
106	a	10	300.00	1
100	vijay bhaskar ritesh	10	200.00	2
103	vijay	20	500.00	1
102	john	20	400.00	2
104	bhaskar	30	600.00	1
105	mike	40	700.00	1

--rank

```
select emp_id,emp_name,dept_id,emp_sal,
rank() over(partition by dept_id order by emp_sal desc ) as rnk_1
from emp;
```

output:

EMP_ID	EMP_NAME	DEPT_ID	EMP_SAL	RNK_1
101	rakesh	10	300.00	1
106	a	10	300.00	1
100	vijay bhaskar ritesh	10	200.00	3
103	vijay	20	500.00	1
102	john	20	400.00	2
104	bhaskar	30	600.00	1
105	mike	40	700.00	1

__row number

```
SELECT emp_name,
      emp_state,
      emp_sal,
      dept_id,
      ROW_NUMBER() OVER (PARTITION BY dept_id ORDER BY emp_sal DESC) AS rn
FROM emp;
```

Output:

EMP_NAME	EMP_STATE	EMP_SAL	DEPT_ID	RN
rakesh	ap	300.00	10	1
a	ap	300.00	10	2
vijay bhaskar ritesh	ap	200.00	10	3
vijay	mp	500.00	20	1
john	up	400.00	20	2
bhaskar	ap	600.00	30	1
mike	ap	700.00	40	1