Lab 5 : Dipesh Singh – 190905520

DDL:

create table employee(

    fname varchar(20),

    minit varchar(1),

    lname varchar(20),

    bdate varchar(20),

    address varchar(50),

    ssn number(20),

    sex char(1),

    supervisor number(20),

    salary number(10),

    dept\_no number(20),

    primary key(ssn)

);

*--*

insert into employee

values(

        'Dipesh',

        'S',

        'Chauhan',

        '14-01-2002',

        'Winterfell',

        190905520,

        'M',

        190900000,

        100000,

        11111111

    );

insert into employee

values(

        'Hemangi',

        'J',

        'Jain',

        '28-06-2001',

        'Winterfell',

        190905486,

        'F',

        190905520,

        40000,

        11111111

    );

insert into employee

values(

        'Shreya',

        'F',

        'Srikrishna',

        '29-06-2000',

        'King''s Landing',

        180905154,

        'F',

        190905520,

        25000,

        11111111

    );

insert into employee

values(

        'Ayush',

        'F',

        'Goyal',

        '01-01-2000',

        'King''s Landing',

        190905522,

        'M',

        180905154,

        10000,

        11111111

    );

insert into employee

values(

        'Ina',

        'G',

        'Goel',

        '17-06-2000',

        'Dorne',

        190911224,

        'F',

        190900000,

        200000,

        22222222

    );

insert into employee

values(

        'Kaushikee',

        'D',

        'Agnihotri',

        '02-09-2000',

        'Dorne',

        190907160,

        'F',

        190911224,

        30000,

        22222222

    );

insert into employee

values(

        'Parikalp',

        'A',

        'Singh',

        '01-01-2000',

        'Arryn',

        190905356,

        'M',

        190907160,

        6000,

        22222222

    );

insert into employee

values(

        'Naman',

        'I',

        'Goel',

        '01-01-2001',

        'Arryn',

        190905521,

        'M',

        190911224,

        20000,

        22222222

    );

insert into employee

values(

        'Abheesht',

        'R',

        'Roy',

        '11-10-2000',

        'Winterfell',

        190911066,

        'M',

        190900000,

        400000,

        33333333

    );

insert into employee

values(

        'Vedant',

        'R',

        'Das',

        '01-01-1999',

        'Winterfell',

        190905160,

        'M',

        190911066,

        20000,

        33333333

    );

insert into employee

values(

        'Nishika',

        'N',

        'Agarwal',

        '01-01-2002',

        'Arryn',

        190905523,

        'F',

        190911066,

        30000,

        33333333

    );

insert into employee

values(

        'Pritima',

        'C',

        'Singh',

        '28-03-1976',

        'Winterfell',

        190900000,

        'F',

        190900000,

        900000,

        11111111

    );

*--*

alter table employee

add *foreign key* (supervisor) *references* employee(ssn);

*--*

create table department(

    name varchar(20),

    dept\_no number(20),

    emp\_count number(10),

    manager number(20),

    start\_date varchar(20),

    primary key(dept\_no),

*foreign key*(manager) *references* employee(ssn)

);

*--*

insert into department

values(

        'Web Development',

        11111111,

        5,

        190905520,

        '02-06-2021'

    );

insert into department

values(

        'CyberSecurity',

        22222222,

        4,

        190911224,

        '02-04-2021'

    );

insert into department

values(

        'Machine Learning',

        33333333,

        3,

        190911066,

        '24-03-2021'

    );

*--*

alter table employee

add *foreign key* (dept\_no) *references* department(dept\_no);

*--*

create table locations(

    dept\_no number(20),

    area varchar(20),

    primary key (dept\_no, area),

*foreign key* (dept\_no) *references* department(dept\_no)

);

*--*

insert into locations

values(11111111, 'Winterfell');

insert into locations

values(11111111, 'King''s Landing');

insert into locations

values(22222222, 'Dorne');

insert into locations

values(22222222, 'Arryn');

insert into locations

values(33333333, 'Wintefell');

insert into locations

values(33333333, 'Arryn');

*--*

create table dependents(

    ssn number(20),

    name varchar(20),

    sex char(1),

    bdate varchar(20),

    relationship varchar(20),

    primary key (ssn, name),

*foreign key* (ssn) *references* employee(ssn)

);

*--*

insert into dependents

values(

        190905520,

        'Pritima',

        'F',

        '28-03-1976',

        'Mother'

    );

insert into dependents

values(

        190905520,

        'Harshita',

        'F',

        '18-09-2002',

        'Sister'

    );

*--*

create table projects(

    dept\_no number(20),

    location varchar(20),

    name varchar(20),

    project\_code number(20),

    primary key(project\_code),

*foreign key*(dept\_no) *references* department(dept\_no)

);

*--*

insert into projects

values(11111111, 'Winterfell', 'Web Scraper', 123456);

insert into projects

values(11111111, 'King''s Landing', 'Forms', 1234567);

insert into projects

values(22222222, 'Winterfell', 'Password Hashing', 123);

insert into projects

values(33333333, 'Winterfell', 'DCGANS', 1234);

*--*

create table works(

    ssn number(20),

    project\_code number(20),

    hours number(10),

    primary key(ssn, project\_code),

*foreign key*(ssn) *references* employee(ssn),

*foreign key*(project\_code) *references* projects(project\_code)

);

*--*

insert into works

values(190905520, 123456, 12);

insert into works

values(190905520, 1234567, 30);

insert into works

values(180905154, 123456, 24);

insert into works

values(190905486, 1234567, 56);

insert into works

values(190911224, 123, 105);

insert into works

values(190905521, 123, 30);

insert into works

values(190911066, 1234, 300);

insert into works

values(190905523, 1234, 41);

*--*

Question 1 : Retrieve the birth date and address of the employee(s) whose name is ‘John B. Smith’. Retrieve the name and address of all employees who work for the ‘Research’ department.

select bdate,

    address

from employee

where fname = 'Dipesh'

    and minit = 'S'

    and lname = 'Chauhan';

select fname,

    minit,

    lname,

    address

from employee

    natural join department

where name = 'Web Development';

Question 2 : For every project located in ‘Stanford’, list the project number, the controlling department number, and the department manager’s last name, address, and birth date.

select project\_code,

    p.dept\_no,

    lname,

    address,

    bdate

from employee e,

    (

        select \*

        from projects

            inner join department using(dept\_no)

        where location = 'Winterfell'

    ) p

where manager = ssn;

Question 3 : Find all distinct salaries of employees.

select distinct salary

from employee;

Question 4 : For each employee, retrieve the employee’s first and last name and the first and last name of his or her immediate supervisor.

select a.fname,

    a.lname,

    b.fname,

    b.lname

from employee a,

    employee b

where a.supervisor = b.ssn;

Question 5 : Make a list of all project numbers for projects that involve an employee whose last name is ‘Smith’, either as a worker or as a manager of the department that controls the project.

select distinct project\_code

from projects

where project\_code in (

        select project\_code

        from works

            natural join employee

        where lname = 'Chauhan'

    )

    or project\_code in (

        select project\_code

        from projects

            inner join (

                select d.dept\_no,

                    lname

                from department d,

                    employee e

                where manager = ssn

            ) using(dept\_no)

        where lname = 'Chauhan'

    );

Question 6 : Retrieve all employees who reside is in Houston, Texas.

select \*

from employee

where address = 'Arryn';

Question 7 : Show the resulting salaries if every employee working on the ‘ProductX’ project is given a 10 percent raise.

select fname,

    lname,

    salary \* 1.01

from employee e,

    works w,

    projects p

where e.ssn = w.ssn

    and w.project\_code = p.project\_code

    and p.name = 'Web Scraper';

Question 8 : Retrieve all employees in department 5 whosesalary is between 30,000 and 40,000.

select \*

from employee

where dept\_no = 11111111

    and salary >= 30000

    and salary <= 40000;

Question 9 : Retrieve a list of employees and the projects they are working on, ordered by department and, within each department, ordered alphabetically by last name, then first name.

select fname,

    lname,

    project\_code,

    dept\_no

from employee

    natural join works

order by dept\_no,

    lname,

    fname;

Question 10 : Retrieve the names of all employees who do not have supervisors.

select \*

from employee

where supervisor is null;

Question 11 : Retrieve the name of each employee whohas a dependent with the same first name and is the same sex as the employee.

select fname,

    lname

from employee e

    inner join dependents d using(ssn)

where fname = name

    and d.sex = e.sex;

Question 12 : Retrieve the names of employees who have no dependents.

select fname,

    lname

from employee

    left outer join dependents using(ssn)

where name is null;

Question 13 : List the names of managers who have at least one dependent.

select distinct fname,

    lname

from (

        select \*

        from employee,

            department

        where manager = ssn

    )

    left outer join dependents d using(ssn)

where d.name is not null;

Question 14 : Retrieve the Social Security numbers of all employees who work on project numbers 1, 2, or 3.

select ssn

from works

where project\_code = 123

    or project\_code = 1234

    or project\_code = 123456;

Question 15 : Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary.

select max(salary) as maximum,

    min(salary) as minimum,

    avg(salary) as average,

    sum(salary) as summation

from employee;

Question 16 : Find the sum of the salaries of all employees of the ‘Research’ department, as well as the maximum salary, the minimum salary, and the average salary in this department.

select max(salary),

    min(salary),

    avg(salary),

    sum(salary)

from (

        select \*

        from employee

            inner join department using(dept\_no)

    )

group by name

having name = 'Web Development';

Question 17 : For each project, retrieve the project number, the project name, and the number of employees who work on that project.

with suum(project\_code, no\_of\_emp) as (

    select project\_code,

        count(\*)

    from works

    group by project\_code

)

select project\_code,

    name,

    no\_of\_emp

from suum

    inner join projects using(project\_code);

Question 18 : For each project on which more than two employees work, retrieve the project number, the project name, and the number of employees who work on the project.

with suum(project\_code, no\_of\_emp) as (

    select project\_code,

        count(\*)

    from works

    group by project\_code

)

select project\_code,

    name,

    no\_of\_emp

from suum

    inner join projects using(project\_code)

where no\_of\_emp > 2;

Question 19 : For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than 40,000.

with one(dept\_no, no) as (

    select dept\_no,

        count(\*)

    from employee

    group by dept\_no

),

two(dept\_no, no) as (

    select dept\_no,

        count(\*)

    from employee

    where salary > 40000

    group by dept\_no

)

select a.dept\_no,

    b.no

from one a,

    two b

where a.dept\_no = b.dept\_no

    and a.no > 5;