GURU NANAK DEV ENGINEERING COLLEGE , LUDHIANA

DATA BASE MANAGEMENT SYSTEM PRACTICAL FILE

SUBMITTED BY: -

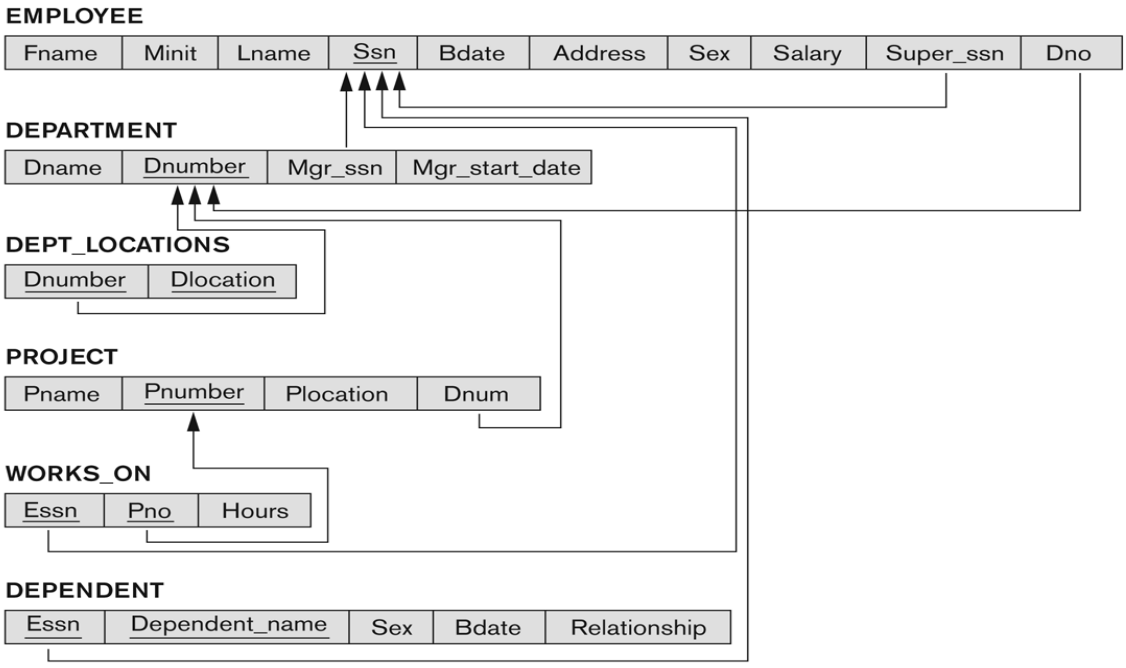
TARANJEET SINGH

1805996

D3 CSE(E3)

1. **Create all tables of company database specifying primary and foreign key for each table as per the schema.**
2. **Insert at least 4 tuples in each table**

Figure 5.7
Referential integrity constraints displayed on the COMPANY relational database schema.



CREATE TABLE employees

(first_name VARCHAR(50) , middle_name VARCHAR(50) , last_name VARCHAR(50) NOT NULL, ssn int PRIMARY KEY ,

b_date DATE , address varchar(10) , gender varchar(10) , salary INT , super_ssn int , dno int

);

INSERT INTO `employees`(`first_name`, `middle_name`, `last_name`, `ssn`, `b_date`, `address`, `gender`, `salary`, `super_ssn`,`dno`)

VALUES ("Taran" , "Jeet","Singh", 0011, "2001-02-27" ,"Abohar", "Male", 45000, 1122 , 01)

INSERT INTO `employees`(`first_name`, `middle_name`, `last_name`, `ssn`, `b_date`, `address`, `gender`, `salary`, `super_ssn`,`dno`)

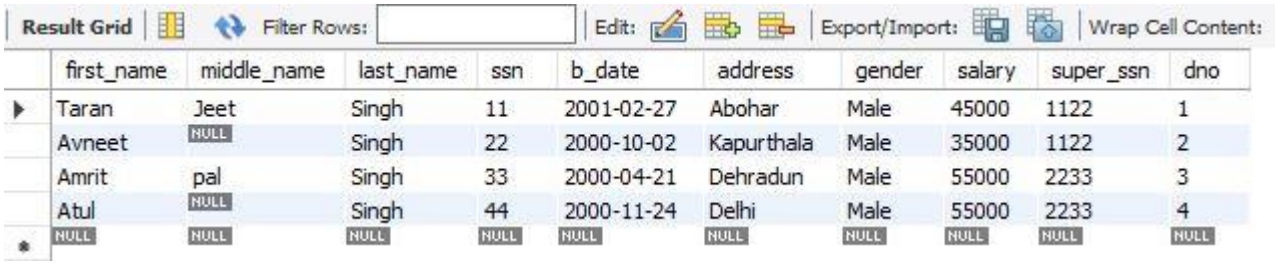
VALUES ("Avneet" , NULL ,"Singh", 0022, "2000-10-02" ,"Kapurthala", "Male", 35000, 1122 , 02)

INSERT INTO `employees`(`first_name`, `middle_name`, `last_name`, `ssn`, `b_date`, `address`, `gender`, `salary`, `super_ssn`,`dno`)

VALUES ("Amrit" , "pal" ,"Singh", 0033, "2000-04-21" ,"Dehradun", "Male", 55000, 2233 , 03

INSERT INTO `employees`(`first_name`, `middle_name`, `last_name`, `ssn`, `b_date`, `address`, `gender`, `salary`, `super_ssn`,`dno`)

VALUES ("Atul" , NULL ,"Singh", 0044, "2000-11-24" ,"Delhi", "Male", 55000, 2233 , 04)



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

first_name	middle_name	last_name	ssn	b_date	address	gender	salary	super_ssn	dno
Taran	Jeet	Singh	11	2001-02-27	Abohar	Male	45000	1122	1
Avneet	NULL	Singh	22	2000-10-02	Kapurthala	Male	35000	1122	2
Amrit	pal	Singh	33	2000-04-21	Dehradun	Male	55000	2233	3
Atul	NULL	Singh	44	2000-11-24	Delhi	Male	55000	2233	4
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

CREATE TABLE department

(dname VARCHAR(50) , dnumber int PRIMARY KEY ,

mgr_ssn_date DATE , mgr_ssn int , FOREIGN KEY(mgr_ssn) REFERENCES employees(SSN))

INSERT INTO `department`(`dname`, `dnumber`, `Mgr_ssn_date`, `mgr_ssn`)

VALUES ("Management",01,"2020-03-31",0011)

INSERT INTO `department`(`dname`, `dnumber`, `Mgr_ssn_date`, `mgr_ssn`)

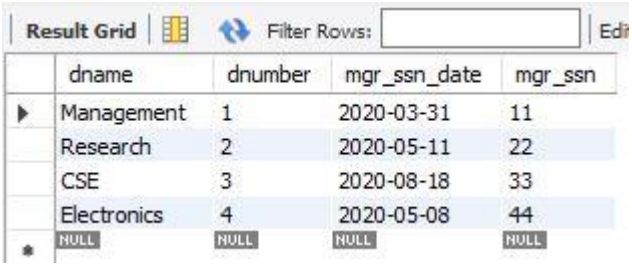
VALUES ("Research",02,"2020-05-11",0022)

INSERT INTO `department`(`dname`, `dnumber`, `Mgr_ssn_date`, `mgr_ssn`)

VALUES ("CSE",03,"2020-08-18",0033)

INSERT INTO `department`(`dname`, `dnumber`, `Mgr_ssn_date`, `mgr_ssn`)

VALUES ("Electronics",04,"2020-05-08",0044)



Result Grid | Filter Rows: | Edit

dname	dnumber	mgr_ssn_date	mgr_ssn
Management	1	2020-03-31	11
Research	2	2020-05-11	22
CSE	3	2020-08-18	33
Electronics	4	2020-05-08	44
NULL	NULL	NULL	NULL

CREATE TABLE dept_location

(dnumber int , dlocation varchar(10) , PRIMARY key(dnumber , dlocation), FOREIGN KEY(dnumber) REFERENCES Department(dnumber))

INSERT INTO `dept_location`(`dnumber`, `dlocation`) VALUES (01,"Chandigarh")

INSERT INTO `dept_location`(`dnumber`, `dlocation`) VALUES (02,"Mohali")

INSERT INTO `dept_location`(`dnumber`, `dlocation`) VALUES (03,"Delhi")

INSERT INTO `dept_location`(`dnumber`, `dlocation`) VALUES (04,"Ludhiana")

Result Grid | Filter Rows:

dnumber	dlocation
1	Chandigarh
2	Mohali
3	Delhi
4	Ludhiana
NULL	NULL

CREATE TABLE project

(pname VARCHAR(50) , pnumber int PRIMARY key, plocation varchar(10) , dnum int , FOREIGN KEY(Dnum)REFERENCES Department(Dnumber)

);

INSERT INTO `project`(`pname`, `pnumber`, `plocation`, `dnum`)

VALUES ("Weapon",1,"chandigarh",01)

INSERT INTO `project`(`pname`, `pnumber`, `plocation`, `dnum`)

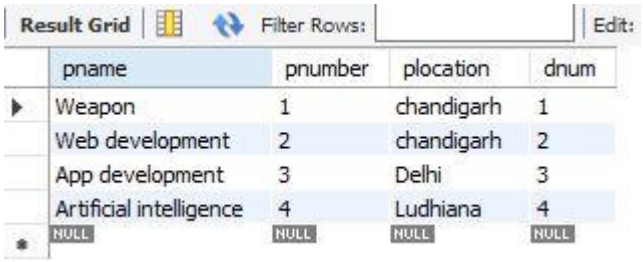
VALUES ("Web development",2,"chandigarh",02)

INSERT INTO `project`(`pname`, `pnumber`, `plocation`, `dnum`)

VALUES ("App development",3,"Delhi",03)

INSERT INTO `project`(`pname`, `pnumber`, `plocation`, `dnum`)

VALUES ("Artificial intelligence",4,"Ludhiana",04)



Result Grid | Filter Rows: | Edit:

pname	pnumber	plocation	dnum
Weapon	1	chandigarh	1
Web development	2	chandigarh	2
App development	3	Delhi	3
Artificial intelligence	4	Ludhiana	4
NULL	NULL	NULL	NULL

CREATE TABLE workson

(essn int , pno int ,

hours int , PRIMARY KEY(Essn,pno) , FOREIGN KEY(Essn) REFERENCES employees(SSN), FOREIGN KEY(pno)REFERENCES Project(Pnumber)

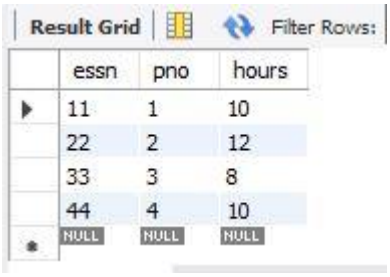
);

INSERT INTO `workson`(`essn`, `pno`, `hours`) VALUES (0011,1,10)

INSERT INTO `workson`(`essn`, `pno`, `hours`) VALUES (0022,2,12)

INSERT INTO `workson`(`essn`, `pno`, `hours`) VALUES (0033,3,08)

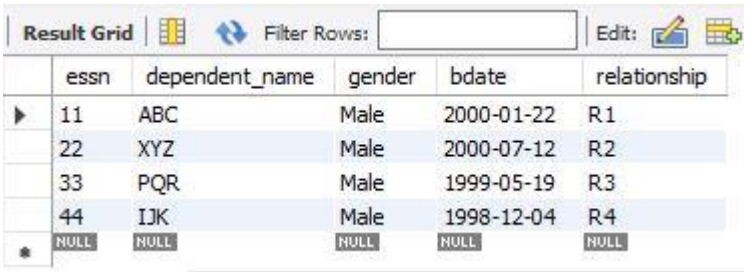
INSERT INTO `workson`(`essn`, `pno`, `hours`) VALUES (0044,4,10)



Result Grid | Filter Rows:

essn	pno	hours
11	1	10
22	2	12
33	3	8
44	4	10
NULL	NULL	NULL

```
CREATE TABLE dependent

( essn int , dependent_name varchar(20),  gender varchar(10) ,

 bdate date , relationship varchar(10) , PRIMARY KEY(Essn,dependent_name),FOREIGN KEY(Essn) REFERENCES employees(SSN)

);


INSERT INTO `dependent`(`essn`, `dependent_name`, `gender`, `bdate`, `relationship`)

 VALUES (0011,"ABC","Male","2000-01-22","R1")


INSERT INTO `dependent`(`essn`, `dependent_name`, `gender`, `bdate`, `relationship`)

 VALUES (0022,"XYZ","Male","2000-07-12","R2")


 INSERT INTO `dependent`(`essn`, `dependent_name`, `gender`, `bdate`, `relationship`)

 VALUES (0033,"PQR","Male","1999-05-19","R3")


 INSERT INTO `dependent`(`essn`, `dependent_name`, `gender`, `bdate`, `relationship`)

 VALUES (0044,"IJK","Male","1998-12-04","R4")
```

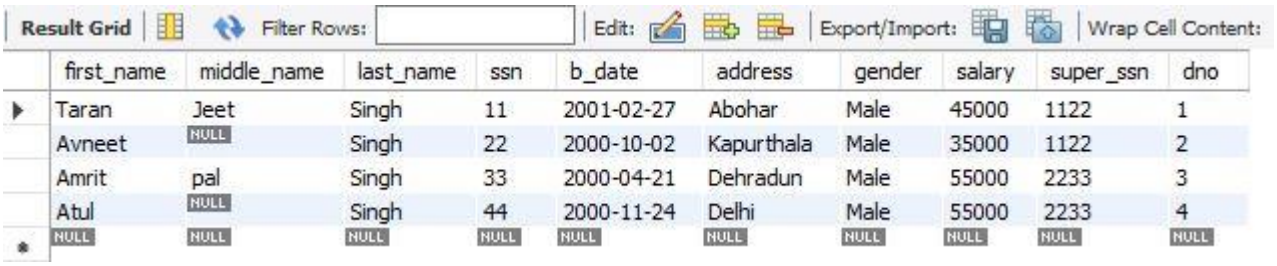


Result Grid | Filter Rows: | Edit:

essn	dependent_name	gender	bdate	relationship
11	ABC	Male	2000-01-22	R1
22	XYZ	Male	2000-07-12	R2
33	PQR	Male	1999-05-19	R3
44	IJK	Male	1998-12-04	R4
NULL	NULL	NULL	NULL	NULL

3. Delete entries of employees who are born after 20 November, 1990

DELETE FROM employees WHERE b_date>"1990-11-20";

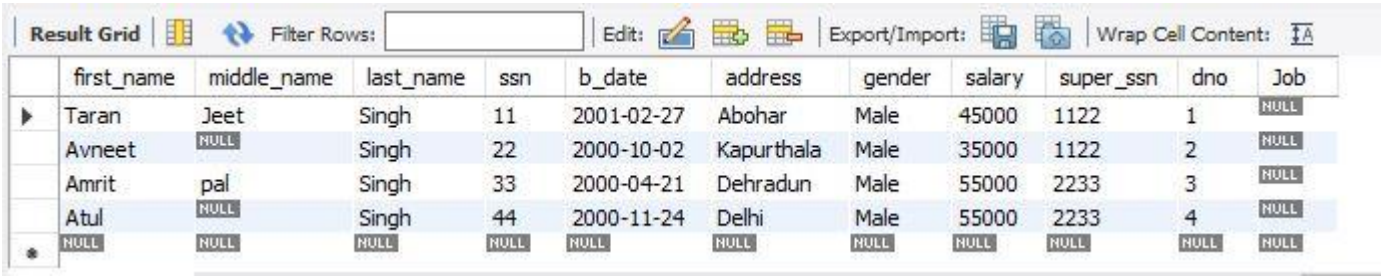


Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

first_name	middle_name	last_name	ssn	b_date	address	gender	salary	super_ssn	dno
Taran	Jeet	Singh	11	2001-02-27	Abohar	Male	45000	1122	1
Avneet	NULL	Singh	22	2000-10-02	Kapurthala	Male	35000	1122	2
Amrit	pal	Singh	33	2000-04-21	Dehradun	Male	55000	2233	3
Atul	NULL	Singh	44	2000-11-24	Delhi	Male	55000	2233	4
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

4. Alter table employee, ADD COLUMN Job VARCHAR(12);

ALTER TABLE employees Add Job varchar(12);

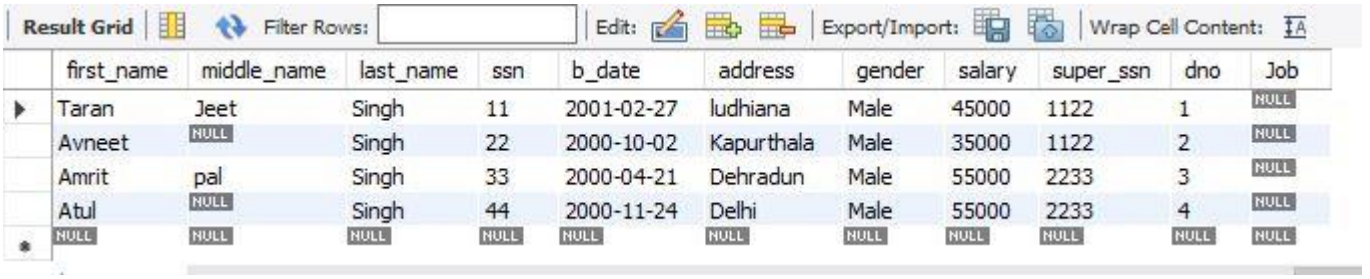


Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

first_name	middle_name	last_name	ssn	b_date	address	gender	salary	super_ssn	dno	Job
Taran	Jeet	Singh	11	2001-02-27	Abohar	Male	45000	1122	1	NULL
Avneet	NULL	Singh	22	2000-10-02	Kapurthala	Male	35000	1122	2	NULL
Amrit	pal	Singh	33	2000-04-21	Dehradun	Male	55000	2233	3	NULL
Atul	NULL	Singh	44	2000-11-24	Delhi	Male	55000	2233	4	NULL
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

5. Use update command to modify the value of address in employee table for any one of the inserted tuple.

UPDATE employees SET address ="ludhiana" where ssn=0011



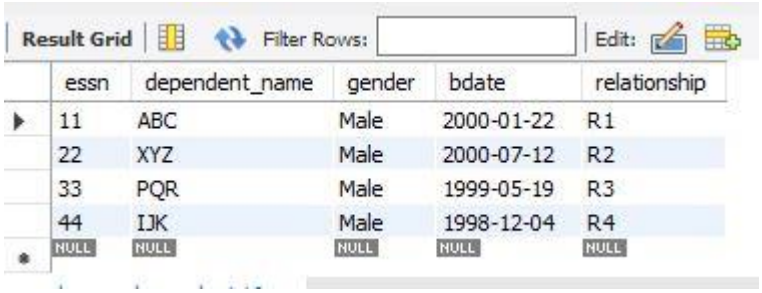
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

first_name	middle_name	last_name	ssn	b_date	address	gender	salary	super_ssn	dno	Job
Taran	Jeet	Singh	11	2001-02-27	ludhiana	Male	45000	1122	1	NULL
Avneet	NULL	Singh	22	2000-10-02	Kapurthala	Male	35000	1122	2	NULL
Amrit	pal	Singh	33	2000-04-21	Dehradun	Male	55000	2233	3	NULL
Atul	NULL	Singh	44	2000-11-24	Delhi	Male	55000	2233	4	NULL
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

6. Rename the dependent table to Employee_dependent table.

alter table dependent rename to Employee_dependent

select * from employee_dependent

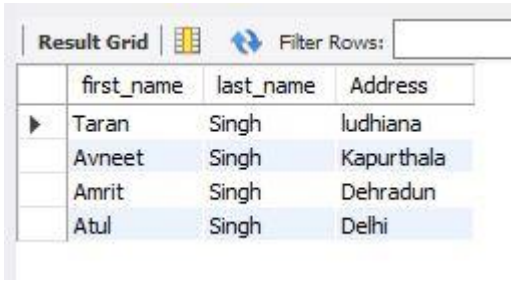


Result Grid | Filter Rows: | Edit:

essn	dependent_name	gender	bdate	relationship
11	ABC	Male	2000-01-22	R1
22	XYZ	Male	2000-07-12	R2
33	PQR	Male	1999-05-19	R3
44	IJK	Male	1998-12-04	R4
NULL	NULL	NULL	NULL	NULL

7. Retrieve the name and address of all employees who work for the 'Research' department.

Select first_name, last_name, Address from employees ,department where dname="Research";



Result Grid | Filter Rows:

first_name	last_name	Address
Taran	Singh	ludhiana
Avneet	Singh	Kapurthala
Amrit	Singh	Dehradun
Atul	Singh	Delhi

8.Retrieve the SSN values for all employees.

select Ssn from employees

Result Grid

Ssn
11
22
33
44

9. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthdate.

UPDATE Project SET plocation="STAFFORD" WHERE pnumber=1

Result Grid | Filter Rows: | Edit:

pname	pnumber	plocation	dnum
Weapon	1	STAFFORD	1
Web development	2	chandigarh	2
App development	3	Delhi	3
Artificial intelligence	4	Ludhiana	4
NULL	NULL	NULL	NULL

10.For each employee, retrieve the employee's name, and the name of his or her immediate supervisor

select first_name , dependent_name from employees, employee_dependent where ssn=essn

Result Grid | Filter Rows:

first_name	dependent_name
Taran	ABC
Avneet	XYZ
Amrit	PQR
Atul	IJK

11.Retrieve the distinct values of salaries for all employees.

SELECT DISTINCT salary FROM employees

Result Grid

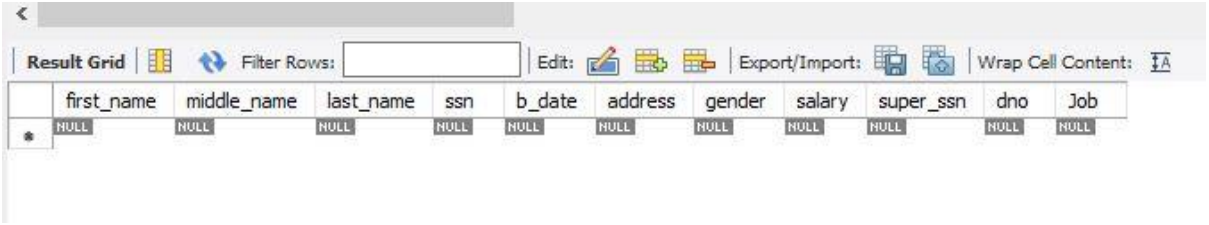
salary
45000
35000
55000

12. Retrieve the name of each employee who has a dependent with the same first name as the employee.

Select First_name FROM employees,employee_dependent WHERE employees.Ssn=employee_dependent.essn AND employees.first_name=employee_dependent.dependent_name;

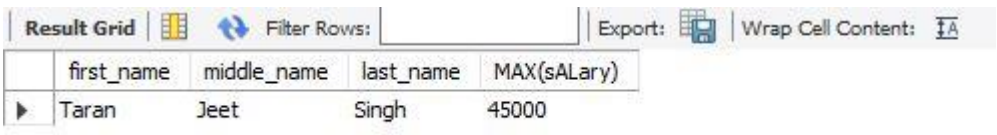
13.Retrieve the names of employees who have no dependents

select * from employees where super_ssn=NULL



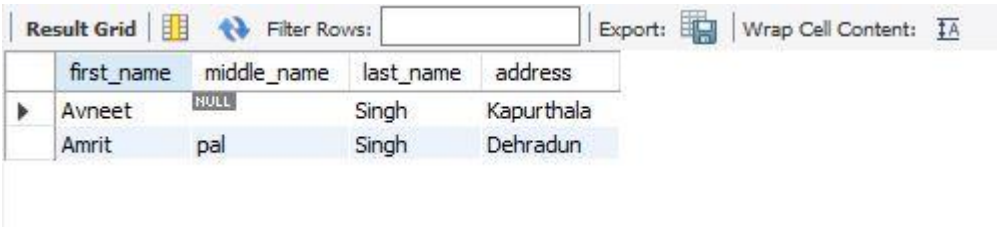
14. select name of employees having second highest salary

SELECT first_name,middle_name,last_name, MAX(sALary) FROM employees WHERE salary <(SELECT MAX(salAry) FROM employees);



15. Retrive the name and address of all employees who either work in the research dept or in the comp. dept

SELECT first_name,middle_name,last_name, address from employees where dno=(SELECT dnumber FROM Department WHERE dname="RESEARCH") or dno=(SELECT dnumber FROM Department WHERE dname="CSE")



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

first_name	middle_name	last_name	address
Avneet	NULL	Singh	Kapurthala
Amrit	pal	Singh	Dehradun

16. Retreive name of each employye who works on all project controlled by dept 4

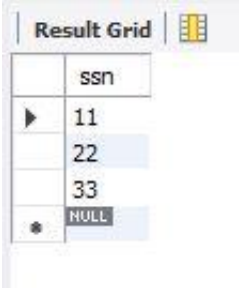
SELECT first_name,middle_name,last_name, address from employees where dno=(SELECT dnum FROM Project where dnum=4)

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

first_name	middle_name	last_name	address
Atul	NULL	Singh	Delhi

17. Retrieve the ssn of all emp who work on prjct no 1 , 2 or 3

SELECT ssn FROM employees where dno=(SELECT dnum FROM Project where pnumber=1) OR dno=(SELECT dnum FROM Project where pnumber=2) OR dno=(SELECT dnum FROM Project where pnumber=3)

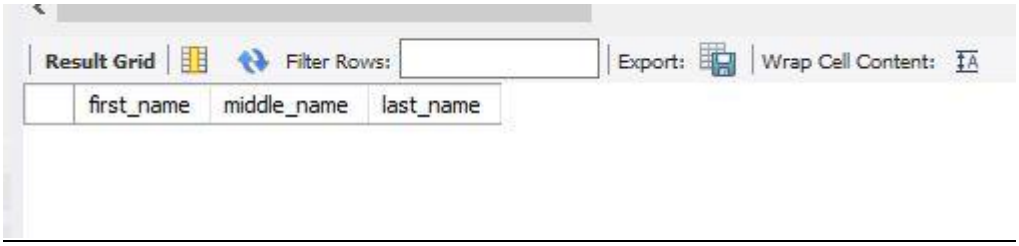


Result Grid

ssn
11
22
33
NULL

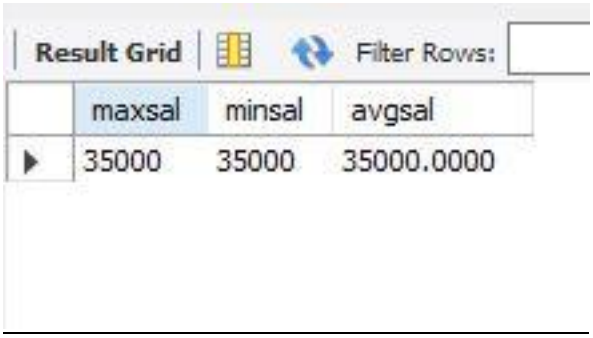
18. Retrieve name of all emp who do not have supervisor

SELECT first_name, middle_name,last_name FROM employees WHERE super_ssn is NULL;



19. Find max min avg salry amng emp who wrk fr resrch dept

SELECT MAX(E.salary) as maxsal, MIN(E.salary) AS minsal, AVG(salary) AS avgsal FROM employees E inner join Department D on D.mgr_ssn=E.ssn WHERE D.Dname="RESEARCH" group by D.mgr_ssn

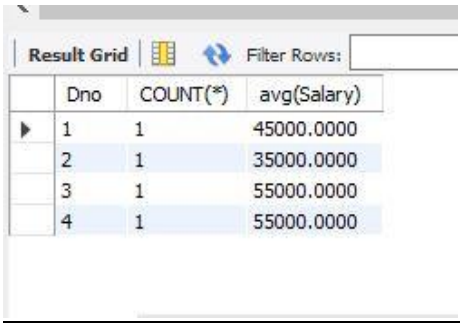


20. For each dept retrieve deptno. the no. of emp in dept along with avg sal

SELECT Dno, COUNT (*), avg(Salary)

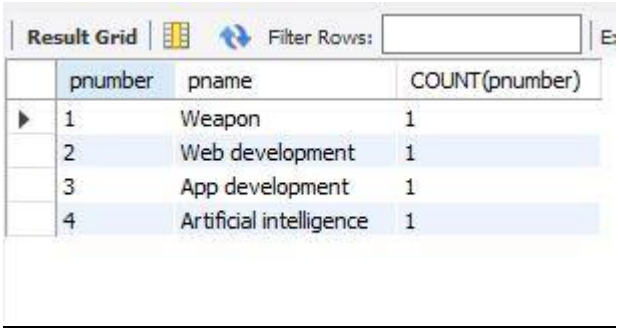
FROM employees

GROUP BY Dno;



21. For each project ret proj no. proj name and no. of emp who work on that project

SELECT pnumber, pname, COUNT (pnumber) from Project GROUP by pname



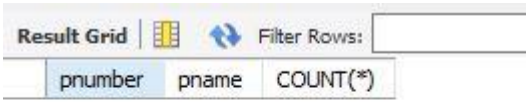
Result Grid | Filter Rows:

pnumber	pname	COUNT(pnumber)
1	Weapon	1
2	Web development	1
3	App development	1
4	Artificial intelligence	1

---

22. For each proj. on which more than 2 emp work ret. proj no. proj name and no. of emp wrkn on that project

SELECT pnumber, pname, COUNT (*) FROM Project, Workson WHERE pnumber = pno GROUP BY pnumber, pname HAVING COUNT (*) > 2;



Result Grid | Filter Rows:

pnumber	pname	COUNT(*)
