



OCTOBER 10, 2024

# HOMEWORK 4 A LAB

CS 457 B

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20281 - SFBU

1. `SELECT Fname, Name FROM EMPLOYEE WHERE Super_ssn IS NULL;`

	* Fname varchar(15)	* Lname varchar(15)
> 1	James	Borg

2. `SELECT DISTINCT Pnumber FROM PROJECT WHERE Pnumber IN (SELECT number FROM PROJECT, DEPARTMENT, EMPLOYEE WHERE Dnum = Dnumber AND Mgr_ssn = ssn AND Lname = 'Smith') OR Pnumber IN (SELECT Pno FROM WORKS_ON, EMPLOYEE WHERE Essn = Ssn AND Lname = 'Smith');`

Pnumber int
1
2

3. `SELECT DISTINCT Essn FROM WORKS_ON WHERE (Pno, Hours) IN (SELECT Pno, Hours FROM WORKS_ON WHERE Essn = '123456789');`

Essn string
123456789

4. `SELECT Lname, Fname FROM EMPLOYEE WHERE Salary > ALL (SELECT Salary FROM EMPLOYEE WHERE Dno = 5);`

Lname varchar	Fname varchar
Borg	James
Wallace	Jennifer


5. `SELECT Fname, Lname FROM EMPLOYEE WHERE EXISTS (SELECT * FROM DEPENDENT WHERE Ssn = Essn) AND EXISTS (SELECT * FROM DEPENDENT WHERE Ssn = Mgr_Ssn);`

Fname varchar	Lname varchar
Franklin	Wong
Jennifer	Wallace

6. `SELECT Fname, LName FROM EMPLOYEE WHERE NOT EXISTS ((SELECT Pnumber FROM PROJECT WHERE Dno = 5) EXCEPT (SELECT Pno FROM WORKS_ON WHERE Ssn = Essn));`

Fname varchar	LName varchar
James	Borg
Jennifer	Wallace
Ahmad	Jabbar
Alicia	Zelaya

7. `SELECT DISTINCT Essn FROM WORKS_ON WHERE Pno IN (1, 2, 3);`

*  Essn char(9)
123456789
453453453
333445555
666884444

8. `SELECT E.Lname AS Employee_name, S.Lname AS Supervisor_name FROM EMPLOYEE AS E, EMPLOYEE AS S WHERE E.Super_ssn = S.Ssn;`

Employee_name varchar	Supervisor_name varchar
Smith	Wong
Wong	Borg
English	Wong
Narayan	Wong
Wallace	Borg
Jabbar	Wallace
Zelaya	Wallace

9. **SELECT** Fname, Lname, Address **FROM** EMPLOYEE **JOIN** DEPARTMENT **ON** Dno = Dnumber **WHERE** Dname = 'Research';

Fname varchar	Lname varchar	Address varchar
John	Smith	731 Fondren, Houston, TX
Franklin	Wong	638 Voss, Houston, TX
Joyce	English	631 Rice, Houston, TX
Ramesh	Narayan	975 Fire Oak, Humble, TX

10. **SELECT** E.Lname, S.Lname **FROM** EMPLOYEE E, EMPLOYEE S **WHERE** E.Super\_ssn = S.Ssn;

Q	Lname varchar	Lname varchar
> 1	Smith	Wong
> 2	Wong	Borg
> 3	English	Wong
> 4	Narayan	Wong
> 5	Wallace	Borg
> 6	Jabbar	Wallace
> 7	Zelaya	Wallace

11. **SELECT** E.Lname **AS** Employee\_Name, S.Lname **AS** Supervisor\_Name **FROM** EMPLOYEE **AS** E **LEFT OUTER JOIN** EMPLOYEE **AS** S **ON** E.Super\_ssn = S.Ssn;

Q	Fname varchar	Lname varchar	Address varchar
> 1	John	Smith	731 Fondren, Houston, TX
> 2	Franklin	Wong	638 Voss, Houston, TX
> 3	Joyce	English	631 Rice, Houston, TX
> 4	Ramesh	Narayan	975 Fire Oak, Humble, TX

12. **SELECT** Fname, Lname, **Address** **FROM** EMPLOYEE **NATURAL JOIN** (**SELECT** Dname, Dnumber Dno, Mgr\_ssn Mssn, Mgr\_start\_date Msdate **FROM** DEPARTMENT) **AS** DEPT **WHERE** Dname = 'Research';

Pnumber int	Dnum int	Lname varchar	Address varchar	Bdate date
10	4	Wallace	291 Berry, Bellaire, TX	1941-06-20
30	4	Wallace	291 Berry, Bellaire, TX	1941-06-20

13. **SELECT** Pnumber, Dnum, Lname, **Address**, Bdate **FROM** (PROJECT **JOIN** DEPARTMENT **ON** Dnum = Dnumber) **JOIN** EMPLOYEE **ON** Mgr\_ssn = Ssn **WHERE** Plocation = 'Stafford';

SUM(Salary) newdecimal	MAX(Salary) newdecimal	MIN(Salary) newdecimal	AVG(Salary) newdecimal
281000.00	55000.00	25000.00	35125.000000

14. **SELECT** SUM(Salary), MAX(Salary), MIN(Salary), AVG(Salary) **FROM** EMPLOYEE;

SUM(Salary) newdecimal	MAX(Salary) newdecimal	MIN(Salary) newdecimal	AVG(Salary) newdecimal
133000.00	40000.00	25000.00	33250.000000

15. **SELECT** SUM(Salary) **AS** Total\_Sal, MAX(Salary) **AS** Highest\_Sal, MIN(Salary) **AS** Lowest\_Sal, AVG(Salary) **AS** Average\_Sal **FROM** EMPLOYEE;

COUNT(*) bigint
8

16. **SELECT** SUM(Salary), MAX(Salary), MIN(Salary), AVG(Salary) **FROM** EMPLOYEE **JOIN** DEPARTMENT **ON** Dno = Dnumber **WHERE** Dname = 'Research';

COUNT(\*)  
bigint

4

17. SELECT COUNT(\*) FROM EMPLOYEE;

* Dno int	COUNT(*) bigint	AVG(Salary) newdecimal
5	4	33250.000000
1	1	55000.000000
4	3	31000.000000

18. SELECT COUNT(\*) FROM EMPLOYEE, DEPARTMENT WHERE Dno = Dnumber AND Dname = 'Research';



Pnumber int	Pname varchar	COUNT(*) bigint
10	Computerization	3
30	Newbenefits	3
1	ProductX	2
2	ProductY	3
3	ProductZ	2
20	Reorganization	3

19. **SELECT** Dno, **COUNT**(\*), **AVG**(Salary) **FROM** EMPLOYEE **GROUP BY** Dno;

Pnumber int	Pname varchar	COUNT(*) bigint
10	Computerization	3
30	Newbenefits	3
2	ProductY	3
20	Reorganization	3

20. **SELECT** Pnumber, Pname, **COUNT(\*)** **FROM** PROJECT, WORKS\_ON **WHERE** Pnumber = Pno **GROUP BY** Pnumber, Pname;

Dnumber int	COUNT(*) bigint
4	1

21. **SELECT** Pnumber, Pname, **COUNT(\*)** **FROM** PROJECT, WORKS\_ON **WHERE** Pnumber = Pno **GROUP BY** Pnumber, Pname **HAVING** **COUNT(\*)** > 2;

Pnumber int	Pname varchar	COUNT(*) bigint
10	Computerization	3
30	Newbenefits	3
2	ProductY	3
20	Reorganization	3

22. `SELECT Dnumber, COUNT(*) FROM DEPARTMENT, EMPLOYEE WHERE Dnumber = Dno AND Salary > 40000 AND Dno IN (SELECT Dno FROM EMPLOYEE GROUP BY Dno HAVING COUNT(*) > 2);`

SupSsn string	EmpSsn string
333445555	123456789
888665555	333445555
333445555	453453453
333445555	666884444
(NULL)	888665555
888665555	987654321
987654321	987979897
987654321	999887777

23. `UPDATE EMPLOYEE SET Salary = CASE WHEN Dno = 5 THEN Salary + 2000 WHEN Dno = 4 THEN Salary + 1500 WHEN Dno = 1 THEN Salary + 3000 END;`

Fname varchar(15)	Minit char(1)	Lname varchar(15)	Ssn char(9)	Bdate date	Address varchar(30)	Sex char(1)	Salary decimal(10,2)	Super_ssn char(9)	Dno int
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	34000.00	333445555	5
Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	44000.00	888665555	5
Joyce	A	English	453453453	1972-07-31	631 Rice, Houston, TX	F	29000.00	333445555	5
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	42000.00	333445555	5
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	61000.00	(NULL)	1
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	46000.00	888665555	4
Ahmad	V	Jabbar	987979897	1969-03-29	980 Dallas, Houston, TX	M	28000.00	987654321	4
Alicia	J	Zelaya	999887777	1968-01-19	321 Castle, Spring, TX	F	28000.00	987654321	4

24. **WITH RECURSIVE** SUP\_EMP (SupSsn, EmpSsn) **AS** (**SELECT** Super\_ssn, Ssn **FROM** EMPLOYEE **UNION SELECT** E.Super\_ssn, E.Ssn **FROM** EMPLOYEE **AS** E, SUP\_EMP **AS** S **WHERE** E.Super\_ssn = S.EmpSsn) **SELECT** \* **FROM** SUP\_EMP;

SupSsn string	EmpSsn string
333445555	123456789
888665555	333445555
333445555	453453453
333445555	666884444
(NULL)	888665555
888665555	987654321
987654321	987979897
987654321	999887777

25. **CREATE** VIEW WORKS\_ON1 **AS SELECT** Fname, Lname, Pname, **Hours** **FROM** EMPLOYEE, PROJECT, WORKS\_ON  
**WHERE** Ssn = Essn **AND** Pno = Pnumber;

* Fname varchar(15) ▲▼	* Lname varchar(15) ▲▼	* Pname varchar(15) ▲▼	Hours decimal(3,1) ▲▼
Franklin	Wong	Computerization	10.0
Ahmad	Jabbar	Computerization	35.0
Alicia	Zelaya	Computerization	10.0
Jennifer	Wallace	Newbenefits	20.0
Ahmad	Jabbar	Newbenefits	5.0
Alicia	Zelaya	Newbenefits	30.0
John	Smith	ProductX	32.5
Joyce	English	ProductX	20.0
John	Smith	ProductY	7.5
Franklin	Wong	ProductY	10.0
Joyce	English	ProductY	20.0
Franklin	Wong	ProductZ	10.0
Ramesh	Narayan	ProductZ	40.0
Franklin	Wong	Reorganization	10.0
James	Borg	Reorganization	(NULL)
Jennifer	Wallace	Reorganization	15.0

26. **CREATE** VIEW DEPT\_INFO(Dept\_name, No\_of\_ems, Total\_sal) **AS SELECT** Dname, **COUNT**(\*), **SUM**(Salary) **FROM** DEPARTMENT, EMPLOYEE **WHERE** Dnumber = Dno **GROUP BY** Dname;

* Dept_name varchar(15)	* No_of_ems bigint	Total_sal decimal(32,2)
Research	4	149000.00
Headquarters	1	61000.00
Administration	3	102000.00

27. **CREATE** VIEW DEPT5EMP **AS SELECT** \* **FROM** EMPLOYEE **WHERE** Dno = 5;

* Fname varchar(15)	Minit char(1)	* Lname varchar(15)	* Ssn char(9)	Bdate date	Address varchar(30)	Sex char(1)	Salary decimal(10,2)	Super_ssn char(9)	* Dno int
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	34000.00	333445555	5
Franklin John	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	44000.00	888665555	5
Joyce	A	English	453453453	1972-07-31	631 Rice, Houston, TX	F	29000.00	333445555	5
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	42000.00	333445555	5

## TABLE DATA

### 1. EMPLOYEE TABLE


* Fname varchar(15)	Minit char(1)	* Lname varchar(15)	* Ssn char(9)	Bdate date	Address varchar(30)	Sex char(1)	Salary decimal(10,2)	Super_ssn char(9)	* Dno int
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
Joyce	A	English	453453453	1972-07-31	631 Rice, Houston, TX	F	25000.00	333445555	5
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000.00	333445555	5
James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000.00	(NULL)	1
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000.00	888665555	4
Ahmad	V	Jabbar	987979897	1969-03-29	980 Dallas, Houston, TX	M	25000.00	987654321	4
Alicia	J	Zelaya	999887777	1968-01-19	321 Castle, Spring, TX	F	25000.00	987654321	4

### 2. DEPARTMENT TABLE


* Dname varchar(15)	* Dnumber int	* Mgr_ssn char(9)	Mgr_start_date date
Headquarters	1	888665555	1981-06-19
Administration	4	987654321	1995-01-01
Research	5	333445555	1988-05-22

### 3. DEPT\_LOCATIONS TABLE



*  Dnumber int	* Dlocation varchar(15)
1	Houston
4	Stafford
5	Bellaire
5	Houston
5	Sugarland

#### 4. PROJECT TABLE

* Pname varchar(15)	* Pnumber int	Plocation varchar(15)	*  Dnum int
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4

#### 5. WORKS\_ON TABLE

* Essn char(9)	* Pno int	Hours decimal(3,1)
123456789	1	32.5
123456789	2	7.5
333445555	2	10.0
333445555	3	10.0
333445555	10	10.0
333445555	20	10.0
453453453	1	20.0
453453453	2	20.0
666884444	3	40.0
888665555	20	(NULL)
987654321	20	15.0
987654321	30	20.0
987979897	10	35.0
987979897	30	5.0
999887777	10	10.0
999887777	30	30.0

## 6. DEPENDENT TABLE

* Essn char(9)	* Dependent_name varchar(15)	Sex char(1)	Bdate date	Relationship varchar(8)
123456789	Alice	F	1988-12-30	Daughter
123456789	Elizabeth	F	1967-05-05	Spouse
123456789	Michael	M	1988-01-04	Son
333445555	Alice	F	1986-04-05	Daughter
333445555	Joy	F	1958-05-03	Spouse
333445555	Theodore	M	1983-10-25	Son
987654321	Abner	M	1942-02-28	Spouse