

DATABASE : company\_db

TABLE: department

Queries

1. SELECT \* FROM company\_db.department;

	dname	dnumber	mgr_ssn	mgr_start_date
▶	Headquarters	1	888665555	1981-05-22
	Administration	4	987654321	1995-05-22
	Research	5	333445555	1988-05-22
•	NULL	NULL	NULL	NULL

TABLE: dependent

2. SELECT \* FROM company\_db.dependent;

	essn	dependent_name	sex	bdate	relationship
▶	123456789	Alice	M	1988-04-05	Daughter
	123456789	Elizabeth	M	1967-04-05	Spouse
	123456789	Michael	M	1988-04-05	Son
	333445555	Alice	F	1986-04-05	Daughter
	333445555	Joy	F	1958-04-05	Spouse
	333445555	Theodore	M	1983-04-05	Son
	987654321	Abner	M	1942-04-05	Spouse
•	NULL	NULL	NULL	NULL	NULL

TABLE: dept\_locations

3. SELECT \* FROM company\_db.dept\_locations;

	dnumber	dlocation
▶	1	Houston
	4	Stafford
	5	Bellaire
	5	Houston
	5	Sugarland
•	NULL	NULL

TABLE: employee

4. SELECT \* FROM company\_db.employee;

	fname	minit	lname	ssn	bdate	address	sex	salary	super_ssn	dno
▶	John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000.00	333445555	5
	Franklin	T	Wong	333445555	1955-01-09	638 Fondren, Houston, TX	M	40000.00	888665555	5
	Joyce	A	English	453453453	1972-01-09	5631 Fondren, Houston, TX	F	25000.00	333445555	5
	Ramesh	K	Narayan	666884444	1962-01-09	975 Fondren, Houston, TX	M	38000.00	333445555	5
	James	E	Borg	888665555	1937-01-09	450 Fondren, Houston, TX	M	55000.00	NULL	1
	Jennifer	S	Wallace	987654321	1941-01-09	21 Fondren, Houston, TX	F	43000.00	888665555	4
	Ahmad	V	Jabbar	987987987	1969-01-09	980 Fondren, Houston, TX	M	25000.00	987654321	4
	Alicia	J	Zelaya	999887777	1968-01-09	3321 Fondren, Houston, TX	F	25000.00	987654321	4
•	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

TABLE: works\_on

5. SELECT \* FROM company\_db.works\_on;

	essn	pno	hours
▶	123456789	1	32.50
	123456789	2	7.50
	333445555	2	10.00
	333445555	3	10.00
	333445555	10	10.00
	333445555	20	10.00
	453453453	1	20.00
	453453453	2	20.00
	666884444	3	40.00
	888665555	20	NULL
	987654321	20	15.00
	987654321	30	20.00
	987987987	10	35.00
	987987987	30	5.00
	999887777	10	10.00
	999887777	30	30.00
•	NULL	NULL	NULL

TABLE: project

6. SELECT \* FROM company\_db.project;

	pname	pnumber	plocation	dnum
▶	ProductX	1	Bellaire	5
	ProductY	2	Sugarland	5
	ProductZ	3	Houston	5
	Computerization	10	Stafford	4
	Reorganization	20	Houston	1
	Newbenefits	30	Stafford	4
•	NULL	NULL	NULL	NULL

## DATA RETRIEVAL

USE company\_db;

1.SELECT \* FROM tablename ;

2.SELECT COUNT(essn) FROM works\_on WHERE hours < 13 ;

	COUNT(essn)
▶	7

3. SELECT COUNT(DISTINCT hours) FROM works\_on ;

	COUNT(DISTINCT hours)
▶	9

4. SELECT COUNT(sex) FROM dependent ;

	COUNT(sex)
▶	7

5. SELECT \* FROM works\_on ORDER BY hours DESC ;

	essn	pno	hours
▶	666884444	3	40.00
	987987987	10	35.00
	123456789	1	32.50
	999887777	30	30.00
	453453453	1	20.00
	453453453	2	20.00
	987654321	30	20.00
	987654321	20	15.00
	333445555	2	10.00
	333445555	3	10.00
	333445555	10	10.00
	333445555	20	10.00
	999887777	10	10.00
	123456789	2	7.50
	987987987	30	5.00
	888665555	20	NULL
•	NULL	NULL	NULL

6. SELECT \* FROM works\_on ORDER BY hours DESC LIMIT 5 ;

	essn	pno	hours
▶	666884444	3	40.00
	987987987	10	35.00
	123456789	1	32.50
	999887777	30	30.00
	453453453	1	20.00
•	NULL	NULL	NULL

#### DATA AGGREGATION (GROUP BY, HAVING, COUNT, SUM, AVG, MIN, MAX)

1.SELECT COUNT(dependent\_name) FROM dependent ;

	COUNT(dependent_name)
▶	7

2. SELECT SUM(salary) AS TOTALSUMSALARY FROM employee ;

	TOTALSUMSALARY
▶	281000.00

3. SELECT AVG(salary) AS averagesalary FROM employee ;

	averagesalary
▶	35125.000000

4. SELECT Iname,salary FROM employee

WHERE salary =( SELECT MAX(salary) FROM employee ) ;

	Iname	salary
▶	Borg	55000.00

5. SELECT Iname,salary FROM employee

WHERE salary =( SELECT MIN(salary) FROM employee ) ;

	Iname	salary
▶	English	25000.00
	Jabbar	25000.00
	Zelaya	25000.00

6. SELECT MAX(salary) AS highest\_salary , MIN(salary) AS lowest\_salary FROM employee ;

	highest_salary	lowest_salary
▶	55000.00	25000.00

7. SELECT sex ,COUNT(sex) FROM employee GROUP BY sex ;

	sex	COUNT(sex)
▶	M	5
	F	3

8. SELECT sex ,COUNT(sex) FROM employee GROUP BY sex

HAVING COUNT(sex) > 4 ;

	sex	COUNT(sex)
▶	M	5

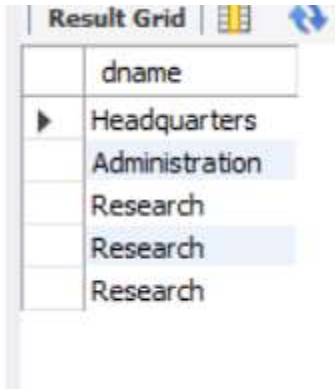
## JOINS (combination of multiple tables)

### Inner join:

1. SELECT dname FROM department

INNER JOIN dept\_locations

ON department.dnumber=dept\_locations.dnumber ;



	dname
▶	Headquarters
	Administration
	Research
	Research
	Research

### Outer Joins

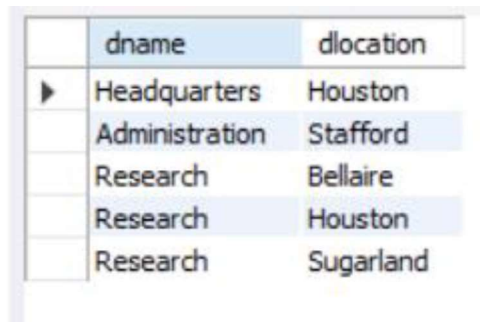
1. Left Inner Join.

SELECT department.dname ,dept\_locations.dlocation

FROM department

LEFT JOIN dept\_locations

ON department.dnumber = dept\_locations.dnumber ;



	dname	dlocation
▶	Headquarters	Houston
	Administration	Stafford
	Research	Bellaire
	Research	Houston
	Research	Sugarland

2. Right Inner Join

SELECT department.dname ,dept\_locations.dlocation, department.mgr\_ssn

FROM department

RIGHT JOIN dept\_locations

ON department.dnumber = dept\_locations.dnumber ;

	dname	dlocation	mgr_ssn
►	Headquarters	Houston	888665555
	Administration	Stafford	987654321
	Research	Bellaire	333445555
	Research	Houston	333445555
	Research	Sugarland	333445555

### 3. Left Outer Join.

```
SELECT department.dname ,dept_locations.dlocation, department.mgr_ssn, department.mgr_start_date
FROM department
LEFT OUTER JOIN dept_locations
ON department.dnumber = dept_locations.dnumber ;
```

	dname	dlocation	mgr_ssn	mgr_start_date
►	Headquarters	Houston	888665555	1981-05-22
	Administration	Stafford	987654321	1995-05-22
	Research	Bellaire	333445555	1988-05-22
	Research	Houston	333445555	1988-05-22
	Research	Sugarland	333445555	1988-05-22

### 4. Right Outer Join.

```
SELECT department.dname ,dept_locations.dlocation, department.mgr_ssn, department.mgr_start_date
FROM department
RIGHT OUTER JOIN dept_locations
ON department.dnumber = dept_locations.dnumber ;
```

	dname	dlocation	mgr_ssn	mgr_start_date
►	Headquarters	Houston	888665555	1981-05-22
	Administration	Stafford	987654321	1995-05-22
	Research	Bellaire	333445555	1988-05-22
	Research	Houston	333445555	1988-05-22
	Research	Sugarland	333445555	1988-05-22

## Common Table Expressions (CTEs)

### 1. WITH male\_employee AS (

```
SELECT dependent_name ,bdate
FROM dependent WHERE sex = "M" )
SELECT * FROM male_employee ;
```



	dependent_name	bdate
▶	Alice	1988-04-05
	Elizabeth	1967-04-05
	Michael	1988-04-05
	Theodore	1983-04-05
	Abner	1942-04-05