

Database Design & Applications

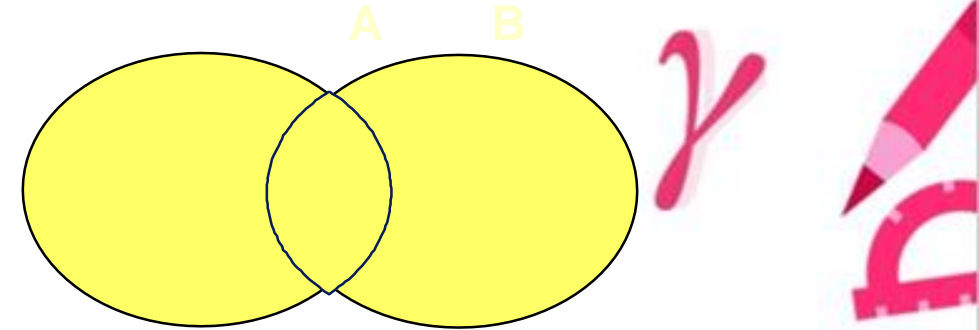
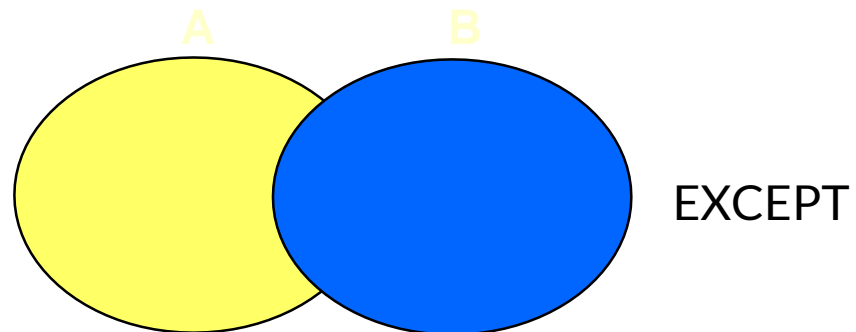
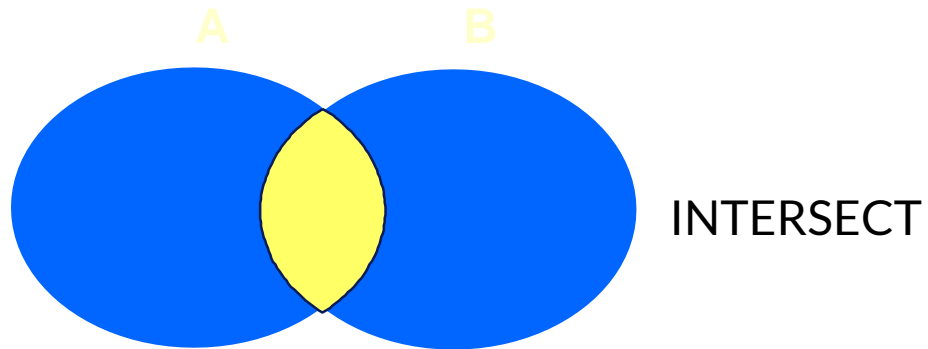
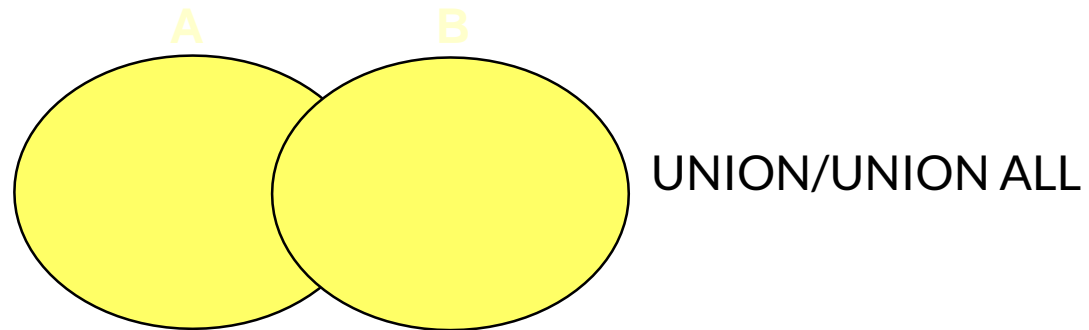
The Database Language - Set Operators

OBJECTIVES

After completing this lesson, you should be able to do the following:

- Describe SET operators
- Use a SET operator to combine multiple queries into a single query
- Control the order of rows returned

THE SET OPERATORS

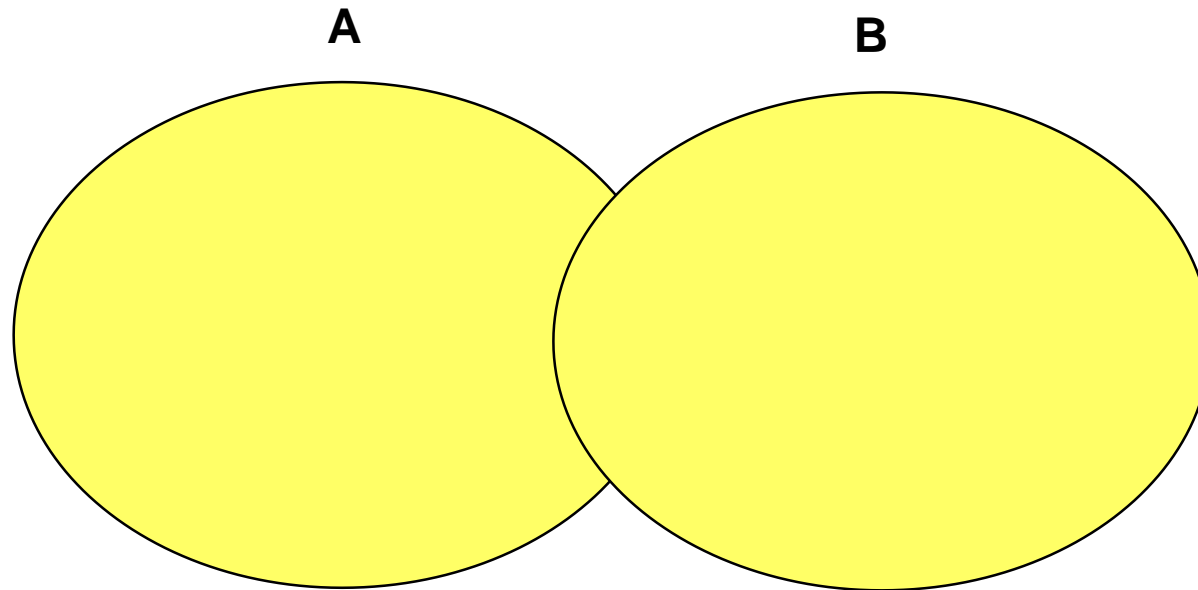


TABLES USED IN THIS LESSON

The tables used in this lesson are:

- EMPLOYEES: Provides details regarding all current employees
- JOB_HISTORY: Records the details of the start date and end date of the former job, and the job identification number and department when an employee switches jobs

THE UNION OPERATOR



The UNION operator returns results from both queries after eliminating duplications.

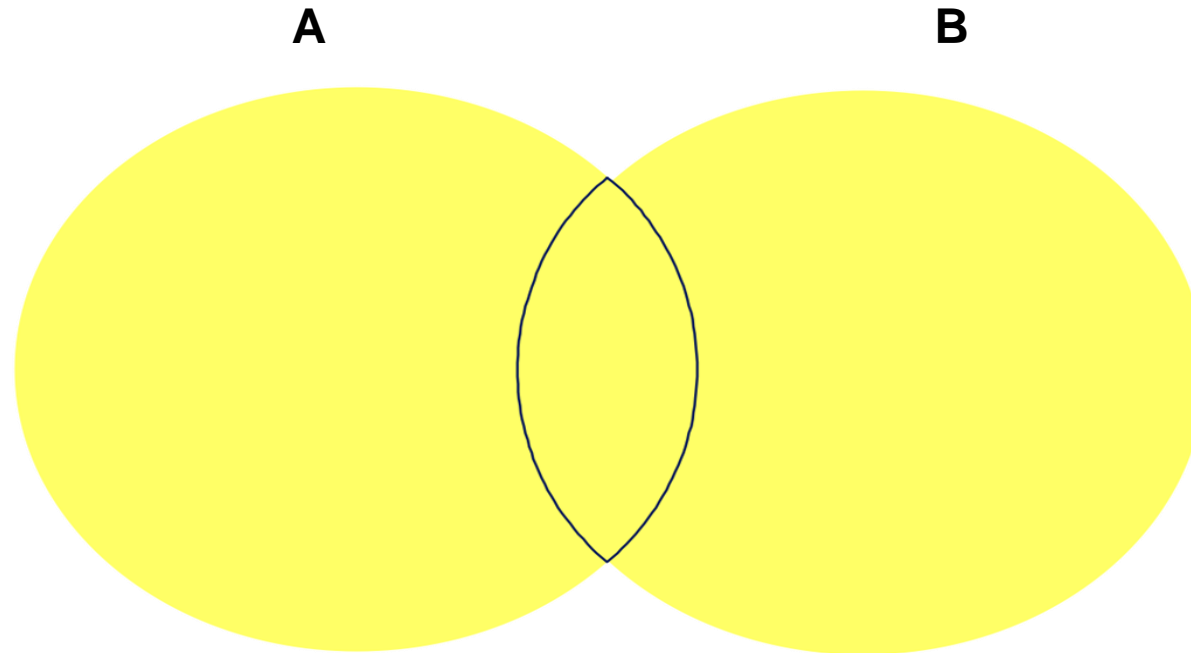
USING THE UNION OPERATOR

Display the current and previous job details of all employees. Display each employee only once.

```
SELECT employee_id, job_id FROM employees
UNION
SELECT employee_id, job_id FROM job_history;
```

EMPLOYEE_ID	JOB_ID
100	AD_PRES
101	AC_ACCOUNT
...	
200	AC_ACCOUNT
200	AD_ASST
...	
205	AC_MGR
206	AC_ACCOUNT

THE UNION ALL OPERATOR



The UNION ALL operator returns results from both queries, including all duplications.

USING THE UNION ALL OPERATOR

Display the current and previous departments of all employees.

```
SELECT employee_id, job_id, department_id FROM employees
```

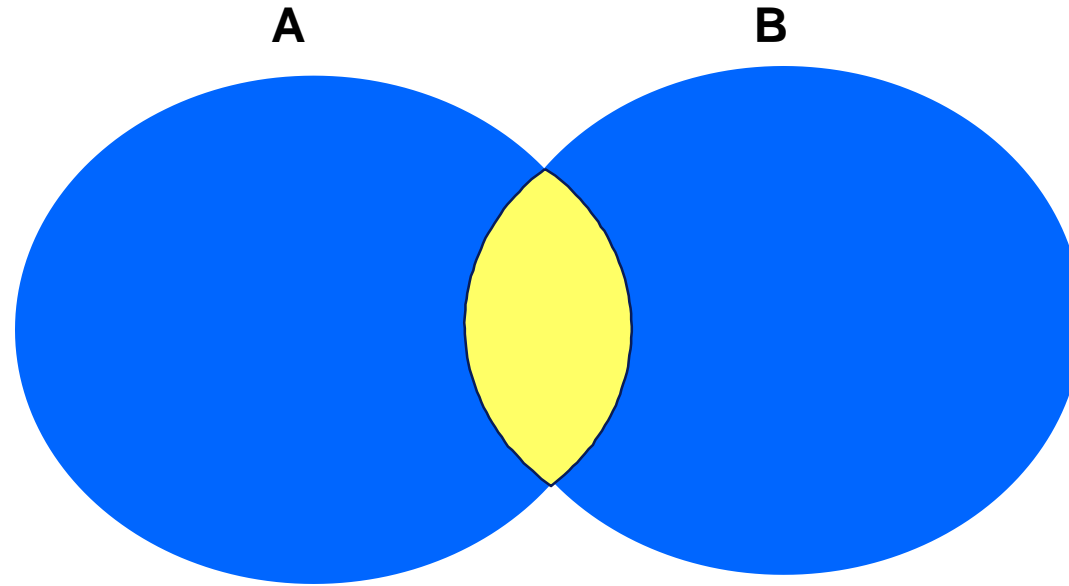
```
UNION ALL
```

```
SELECT employee_id, job_id, department_id  
FROM job_history ORDER BY employee_id;
```

EMPLOYEE_ID	JOB_ID	DEPARTMENT_ID
100	AD_PRES	90
101	AD_VP	90
...		
200	AD_ASST	10
200	AD_ASST	90
200	AC_ACCOUNT	90
...		
205	AC_MGR	110
206	AC_ACCOUNT	110

30 rows selected.

The INTERSECT Operator



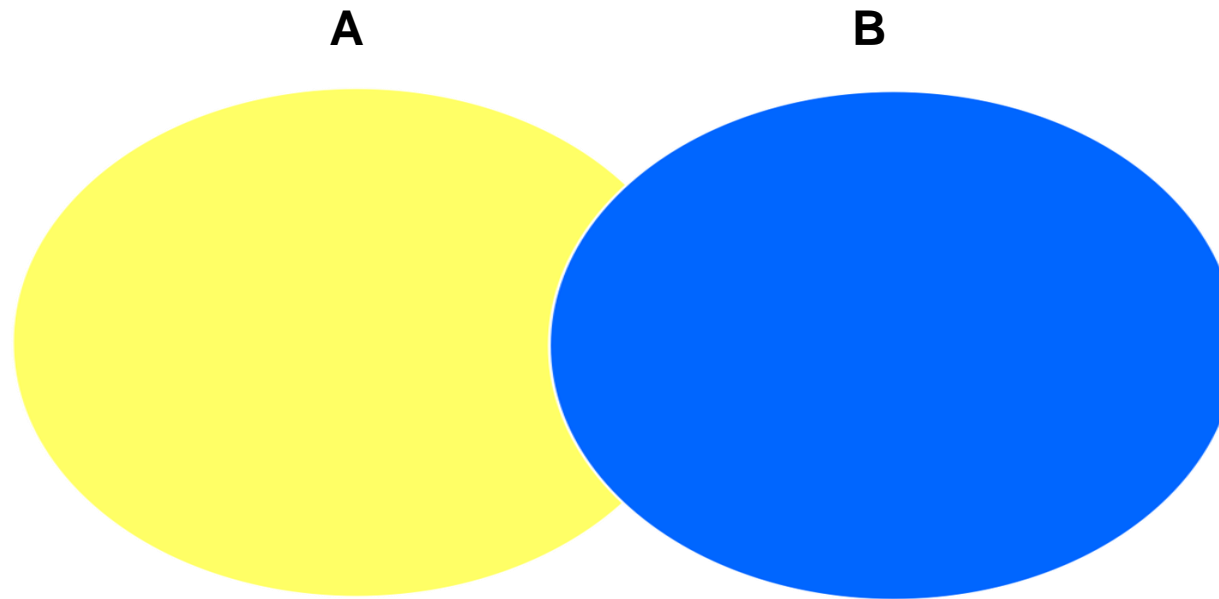
USING THE INTERSECT OPERATOR

Display the employee IDs and job IDs of employees who currently have a job title that they held before beginning their tenure with the company.

```
SELECT employee_id, job_id FROM      employees
INTERSECT
SELECT employee_id, job_id FROM      job_history;
```

EMPLOYEE_ID		JOB_ID
	176	SA_REP
	200	AD_ASST

The EXCEPT Operator



THE EXCEPT OPERATOR

Display the employee IDs of those employees who have not changed their jobs even once.

```
SELECT employee_id,job_id FROM
       employees
EXCEPT
SELECT employee_id,job_id FROM
       job_history;
```

EMPLOYEE_ID		JOB_ID
	100	AD_PRES
	101	AD_VP
	102	AD_VP
	103	IT_PROG
...		
	201	MK_MAN
	202	MK_REP
	205	AC_MGR
	206	AC_ACCOUNT

18 rows selected.

SET OPERATOR GUIDELINES

- The expressions in the SELECT lists must match in number and data type.
- Parentheses can be used to alter the sequence of execution.
- The ORDER BY clause:
 - Can appear only at the very end of the statement
 - Will accept the column name, aliases from the first SELECT statement, or the positional notation

THE SQL SERVER AND SET OPERATORS

- Duplicate rows are automatically eliminated except in UNION ALL.
- Column names from the first query appear in the result.
- The output is sorted in ascending order by default except in UNION ALL.

MATCHING THE SELECT STATEMENTS

Using the UNION operator, display the department ID, location, and hire date for all employees.

```
SELECT department_id, TO_NUMBER(null) , location, hire_date FROM employees
UNION
SELECT department_id, location_id, TO_DATE(null) FROM departments;
```

DEPARTMENT_ID	LOCATION	HIRE_DATE
10	1700	
10		17-SEP-87
20	1800	
20		17-FEB-96
...		
110	1700	
110		07-JUN-94
190	1700	
		24-MAY-99

27 rows selected.

MATCHING THE SELECT STATEMENT

- Using the UNION operator, display the employee ID, job ID, and salary of all employees.

```
SELECT employee_id, job_id, salary FROM employees
UNION
SELECT employee_id, job_id, 0 FROM
    job_history;
```

EMPLOYEE_ID	JOB_ID	SALARY
100	AD_PRES	24000
101	AC_ACCOUNT	0
101	AC_MGR	0
...		
205	AC_MGR	12000
206	AC_ACCOUNT	8300

30 rows selected.

CONTROLLING THE ORDER OF ROWS

Produce an English sentence using two UNION operators.

```
COLUMN a_dummy NOPRINT  
SELECT 'sing' AS "My dream", 3 a_dummy FROM dual  
UNION  
SELECT 'I'd like to teach', 1 FROM dual  
UNION  
SELECT 'the world to', 2 FROM dual  
ORDER BY 2;
```

My dream
I'd like to teach
the world to
sing

THANK YOU!