

# Database Design & Applications

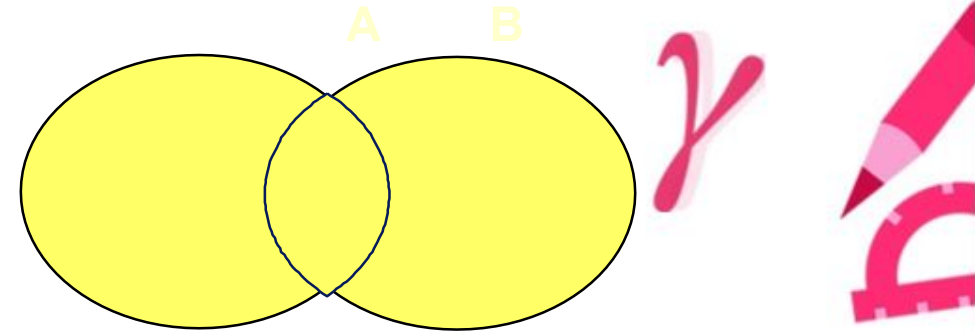
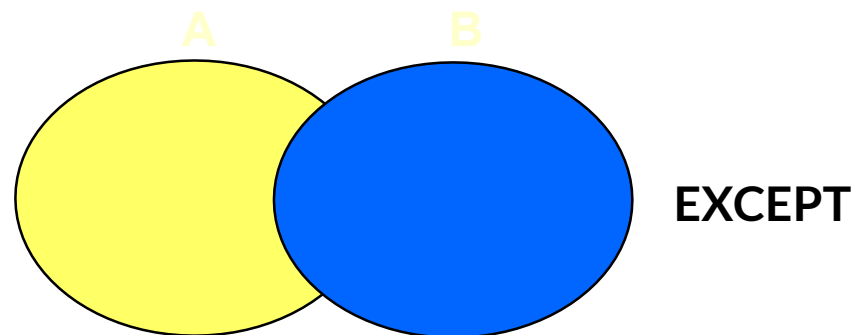
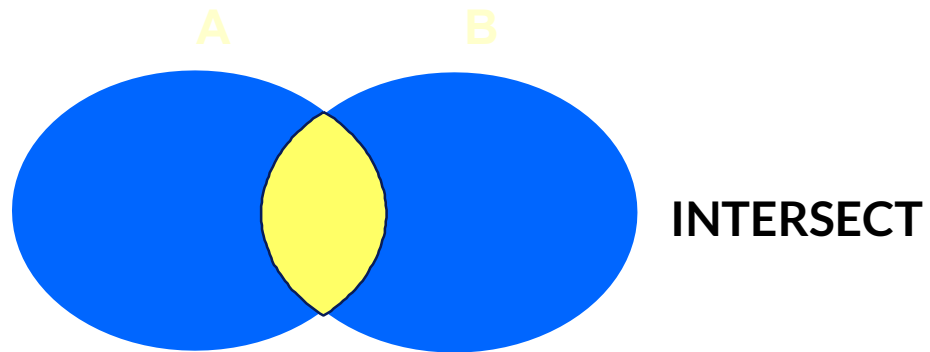
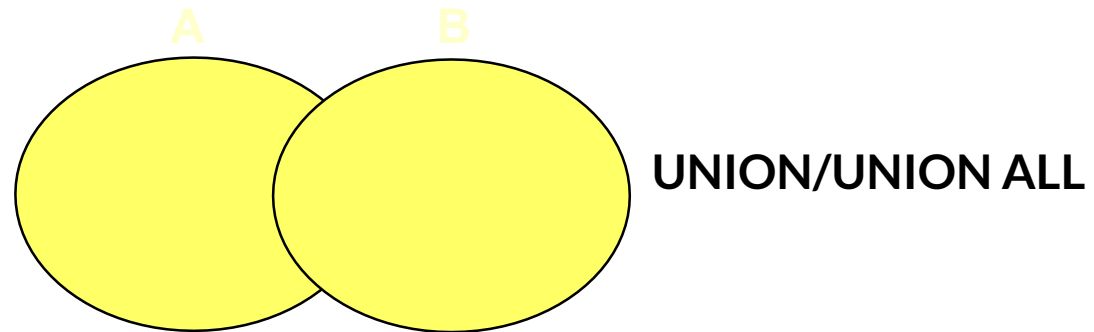
## The Database Language - Set Operators

## 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

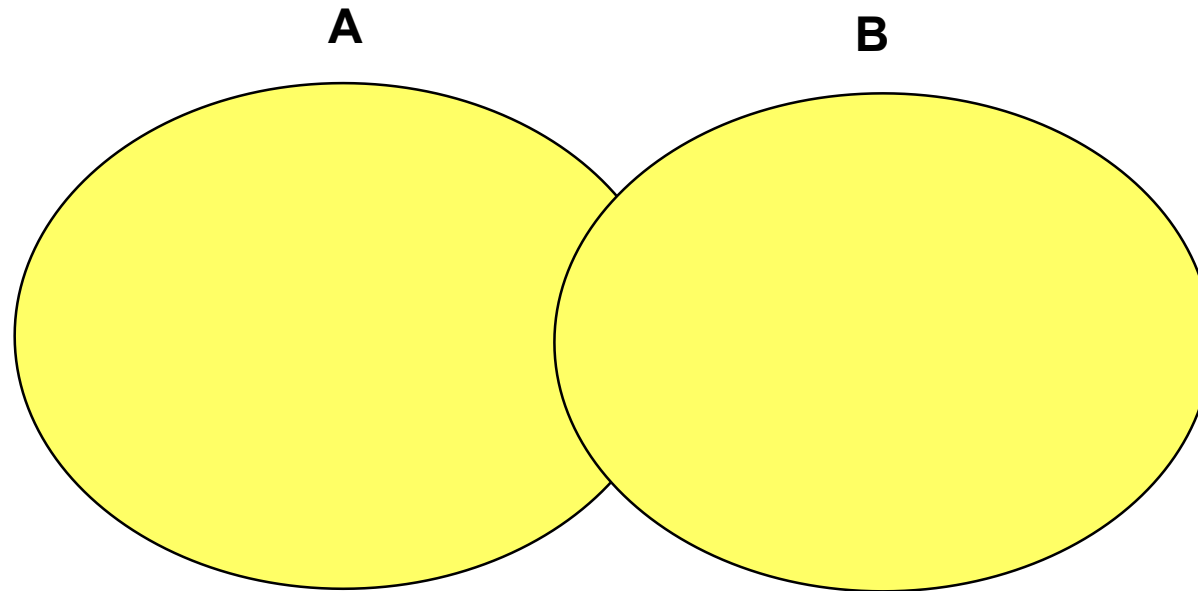


## TABLES USED IN THIS LESSON

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

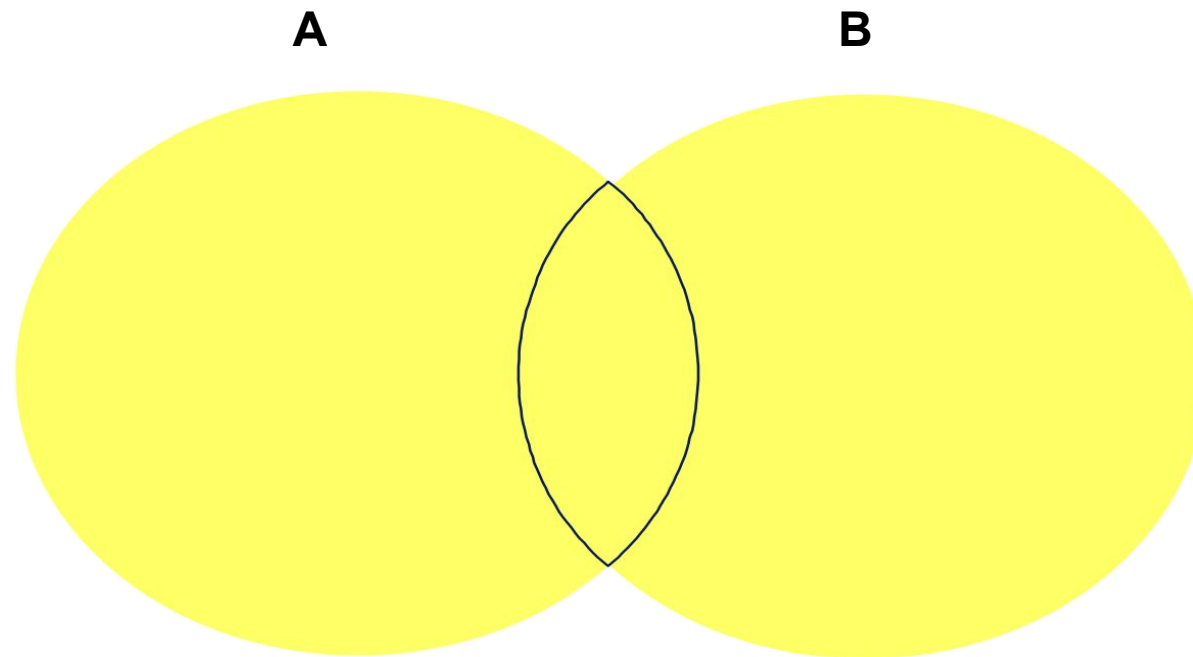
Display the current and previous job details of all employees. Display each employee only once.

```
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
```

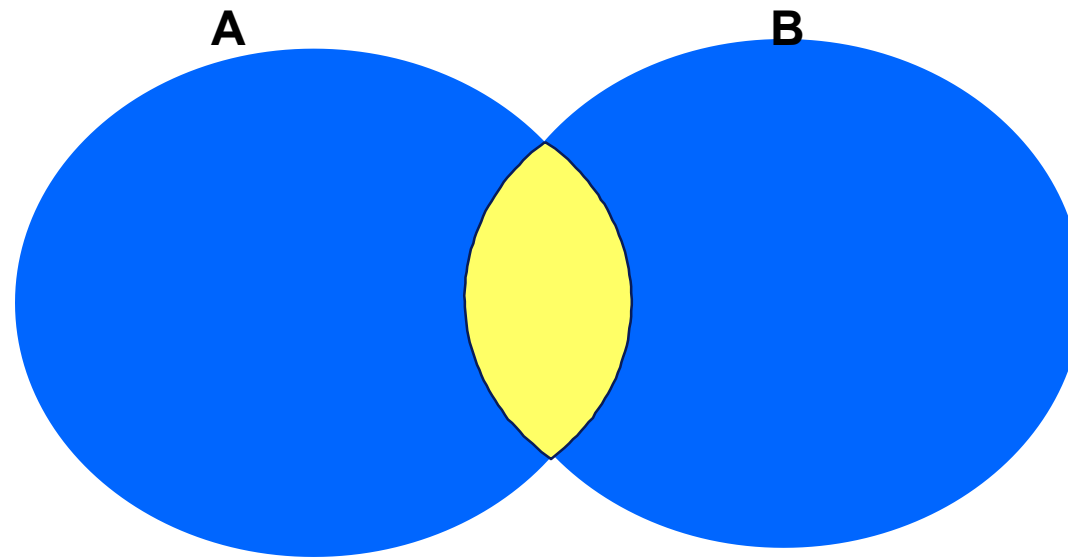
```
SELECT employee_id, job_id, department_id  
FROM job_history ORDER BY employee_id;
```

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



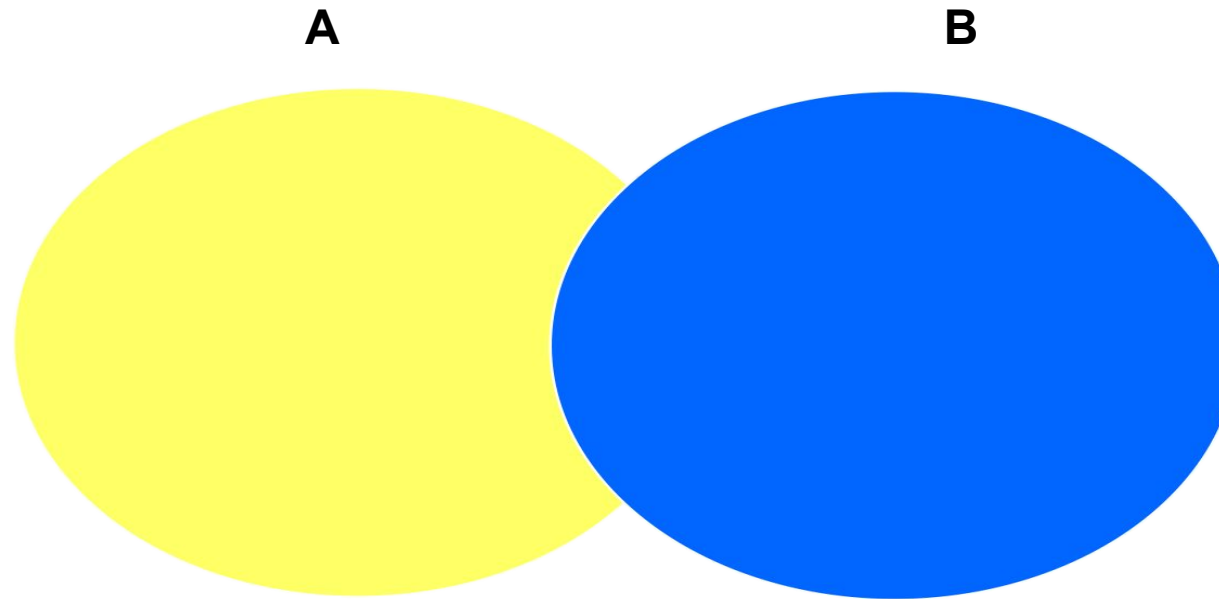
## USING THE INTERSECT OPERATOR

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!