Working with Oracle SQL

Chapter 4:

Set Operators

Chapter Objectives

In this chapter, we will discuss:

- Set operators
  - `UNION, UNION ALL`
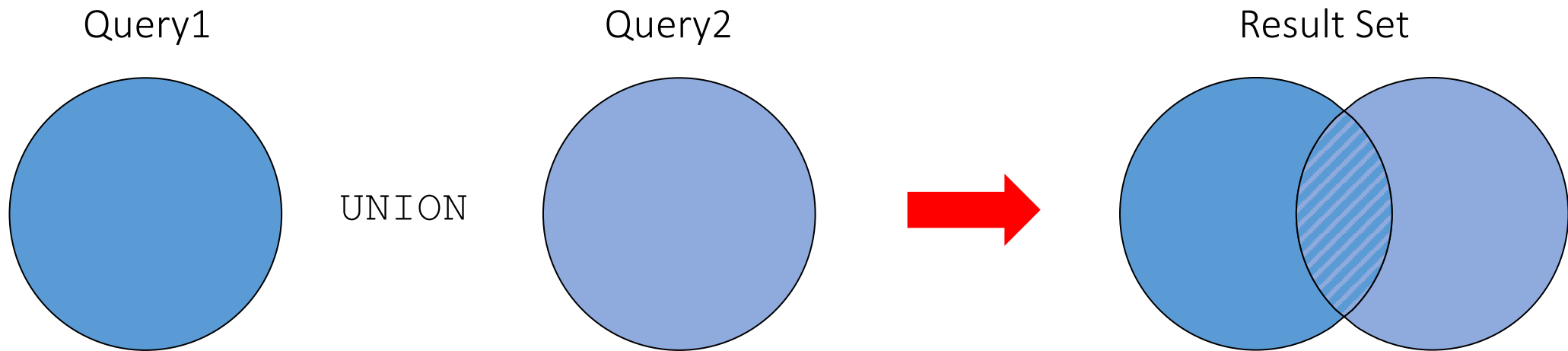 - `INTERSECT`
  - `MINUS`

Set Operators

Chapter Summary

Set Operators

- Set operators specify interactions between whole tables or query results
  - Each set must be the same
    - The same number of columns
    - And the columns be the same datatype
      - Or, be implicitly convertible
  - The first `SELECT` list is used for the column headings
  - Only one `ORDER BY` clause can be used
    - Applies to the entire result set
- Set operators are specified between the description of sets
  - Sets are nothing more than queries

- Returns the distinct rows from the combination of Query1 and Query2
  - `UNION` does an automatic distinct across the result of the two queries
  - The results are **NOT** implicitly sorted

Query1   Query2   Result Set

UNION

UNION Example

ACTORS

FIRST_NAME	LAST_NAME
Priyanka	Chopra
Johnny	Depp
Tom	Hanks
Peter	O'Toole
Jing	Tian

OSCAR_WINNERS

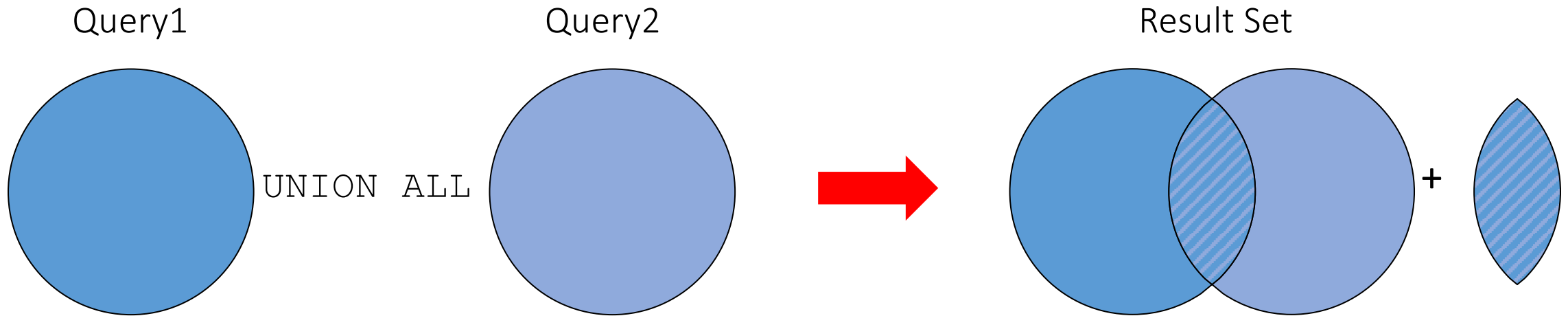| FIRST_NAME	LAST_NAME
Tom	Hanks
Neil	Jordan
Ang	Lee
Peter	O'Toole

- List all the people once

```
SELECT first_name, last_name FROM actors
UNION
SELECT first_name, last_name FROM oscar_winners
ORDER BY last_name, first_name;

FIRST_NAME            LAST_NAME
-------------------- --------------------
Priyanka             Chopra
Johnny               Depp
Tom                  Hanks
Neil                 Jordan
Ang                  Lee
Peter                O'Toole
Jing                 Tian


7 rows selected.
```

- Returns ALL rows from both Query1 and Query2
  - `UNION ALL` is much more efficient than `UNION`
  - If you know that there will not be any duplicates, choose `UNION ALL`

UNION ALL Example

ACTORS

FIRST_NAME	LAST_NAME
Priyanka	Chopra
Johnny	Depp
Tom	Hanks
Peter	O'Toole
Jing	Tian

OSCAR_WINNERS

FIRST_NAME	LAST_NAME
Tom	Hanks
Neil	Jordan
Ang	Lee
Peter	O'Toole

- List all the people as many times as they appear

```
SELECT first_name, last_name FROM actors
UNION ALL
SELECT first_name, last_name FROM oscar_winners
ORDER BY last_name DESC, first_name;

FIRST_NAME           LAST_NAME
-------------------- --------------------
Jing                 Tian
Peter                O'Toole
Peter                O'Toole
Ang                  Lee
Neil                 Jordan
Tom                  Hanks
Tom                  Hanks
Johnny               Depp
Priyanka             Chopra

9 rows selected.
```
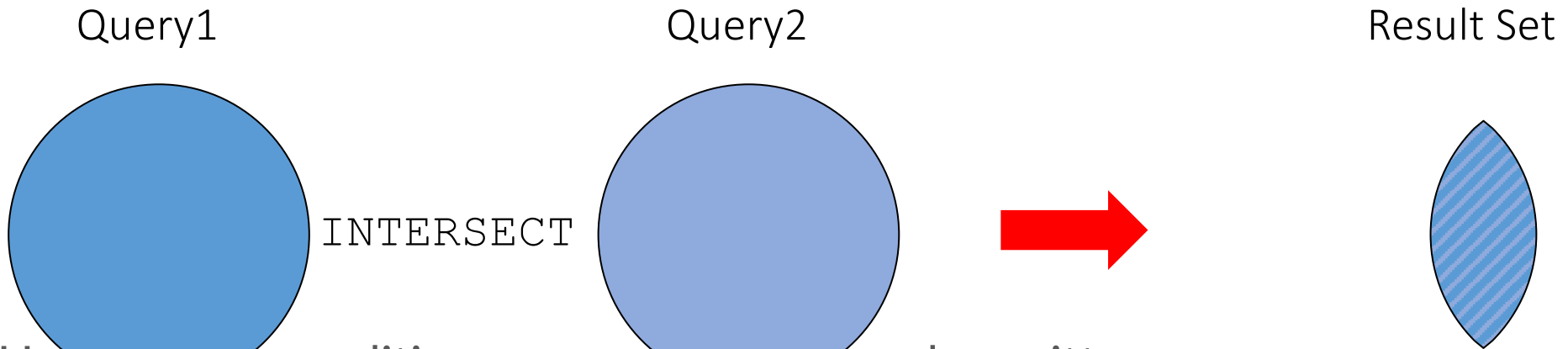
- Returns rows from Query1 and Query2 If they are the same

Query1   Query2   Result Set

INTERSECT

- *Hint*: Under the conditions, `INTERSECT` may be written as `JOIN`s
  - If they can, the `JOIN` is usually more efficient

INTERSECT Example

ACTORS

FIRST_NAME	LAST_NAME
Priyanka	Chopra
Johnny	Depp
Tom	Hanks
Peter	O'Toole
Jing	Tian

OSCAR_WINNERS

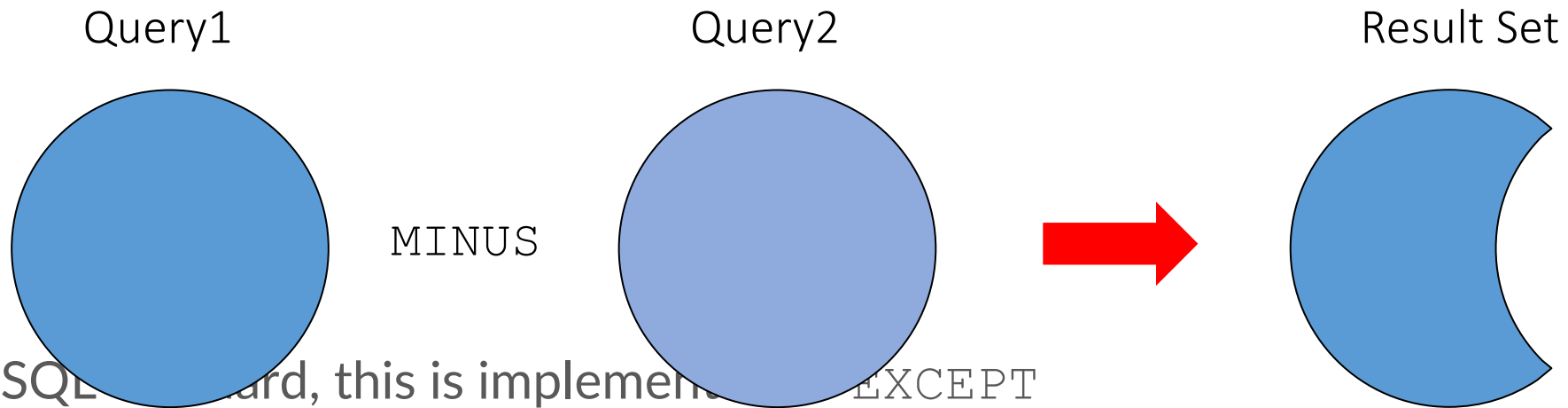| FIRST_NAME	LAST_NAME
Tom	Hanks
Neil	Jordan
Ang	Lee
Peter	O'Toole

- List all the actors who are Oscar winners

```
SELECT first_name, last_name FROM actors
INTERSECT
SELECT first_name, last_name FROM oscar_winners
ORDER BY first_name;

FIRST_NAME               LAST_NAME
--------------------     ---------------------

Peter                    O'Toole
Tom                      Hanks
```

- Returns rows from Query1 that are NOT in Query2

Query1   Query2   Result Set

MINUS

- In the SQL standard, this is implemented as EXCEPT

MINUS Example

ACTORS

FIRST_NAME	LAST_NAME
Priyanka	Chopra
Johnny	Depp
Tom	Hanks
Peter	O'Toole
Jing	Tian

OSCAR_WINNERS

FIRST_NAME	LAST_NAME
Tom	Hanks
Neil	Jordan
Ang	Lee
Peter	O'Toole

- List all the actors who are not Oscar winners

```
SELECT first_name, last_name FROM actors
MINUS
SELECT first_name, last_name FROM oscar_winners
ORDER BY last_name;

FIRST_NAME              LAST_NAME
--------------------    ----------------------
Priyanka                Chopra
Johnny                  Depp
Jing                    Tian
```

SET Operators: More than One Query

- The construction can be:

  `query1  set_operator   query2  set_operator  query3 …`

- The grouping will be sequence
  - Unless forced by parentheses `()`

- No matter how many operators, there can only be one `ORDER BY`

10 min

- Please complete this exercise in your Exercise Manual

Set Operators

Chapter Summary

Chapter Summary

In this chapter, we have discussed:

- Set operators
  - UNION, UNION ALL
  - INTERSECT
  - MINUS