

# Database Management

BU.330.770

Session 2 (part I)

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#### Announcement



- >>> Assignment #1: Canvas > Assignments or Home > Week 3
- >>> Submit your deliverable to the same posting before the next class.
- >>> The work should be yours: add necessary explanations or reasonable assumptions you had to make.
- >>> Late submissions will be accepted within 48 hours from the due but discounted by 50%.
- Contact the instructor or TA for clarification if you are ever indoubt. You may use MS Teams or Q&A in Course Canvas Home to ask questions.



# Basic Query

# Session Objectives (1/2)



- >> Learn the syntax of the SELECT statement
  - Identify keywords, mandatory clauses, and optional clauses in a SELECT statement
- >>> Select and view one or all columns of a table
- >> Display multiple columns of a table
- >>> Use a column alias to clarify the contents of a particular column

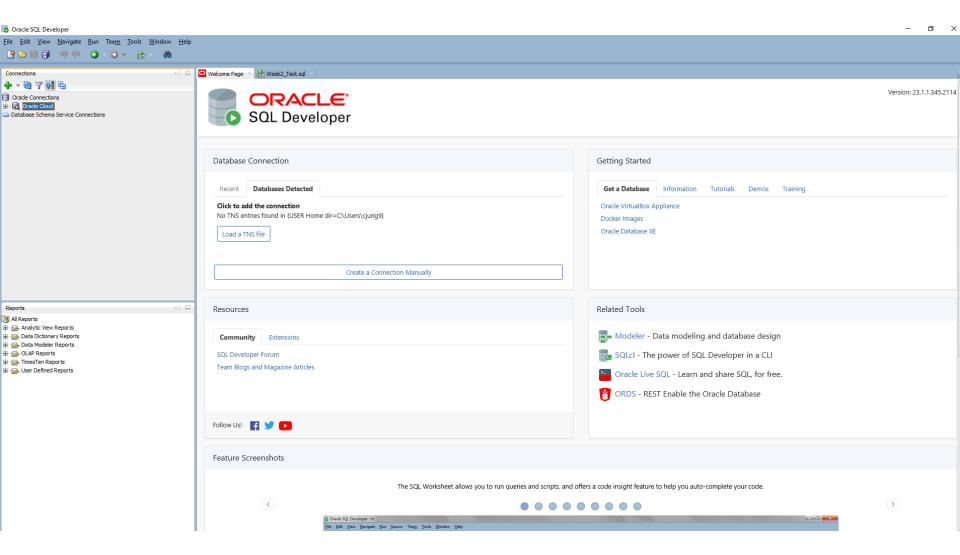
# Session Objectives (2/2)



- >>> Perform basic arithmetic operations in the SELECT clause
- >>> Remove duplicate lists using either the DISTINCT or UNIQUE keyword
- >>> Use concatenation to combine fields, literals, and other data

## Let's Run SQL Developer





#### Check the JustLee Database



- Download and Run Week 2 > JLDB Build.sql
- >>> Verify table contents using the DESCRIBE (or DESC) command

DESC BOOKS;

>> You may delete all the tables and recreate them by using the JLDB\_Build.sql scripts

Greates tables: (Centomery) Orders, Publisher, Author (Books) arderiteurs

#### SELECT Statement Syntax



- >>> Syntax gives the basic structure, or rules, for a command
- >>> SELECT statements are used to retrieve data from the database
- >> A SELECT statement is referred to as a query
- >>> Optional clauses and keywords are shown in brackets

```
SELECT [DISTINCT | UNIQUE] (*, columnname [AS alias], ...)

FROM tablename

[WHERE condition]

[GROUP BY group_by_expression]

[HAVING group_condition]

[ORDER BY columnname];
```

#### SELECT Statement Syntax (continued)



- >>> SELECT and FROM clauses are required
- >>> SELECT clause identifies column(s)/field(s) to be retrieved
- >>> FROM clause identifies table(s)
- Each clause begins with a keyword
  - SELECT, FROM, WHERE... these are all keywords

```
SELECT [DISTINCT | UNIQUE] (*, columnname [AS alias], ...)
FROM tablename
[WHERE condition]
[GROUP BY group_by_expression]
[HAVING group_condition]
[ORDER BY columnname];
```

#### SELECT Statement Syntax Practice



SELECT [DISTINCT | UNIQUE] (\*, columnname [AS alias], ...)

FROM tablename

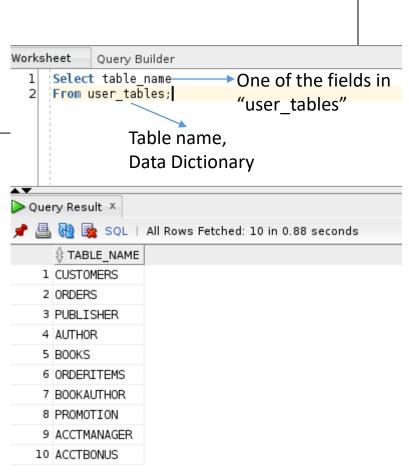
[WHERE condition]

[GROUP BY group\_by\_expression]

[HAVING group\_condition]

[ORDER BY columnname];

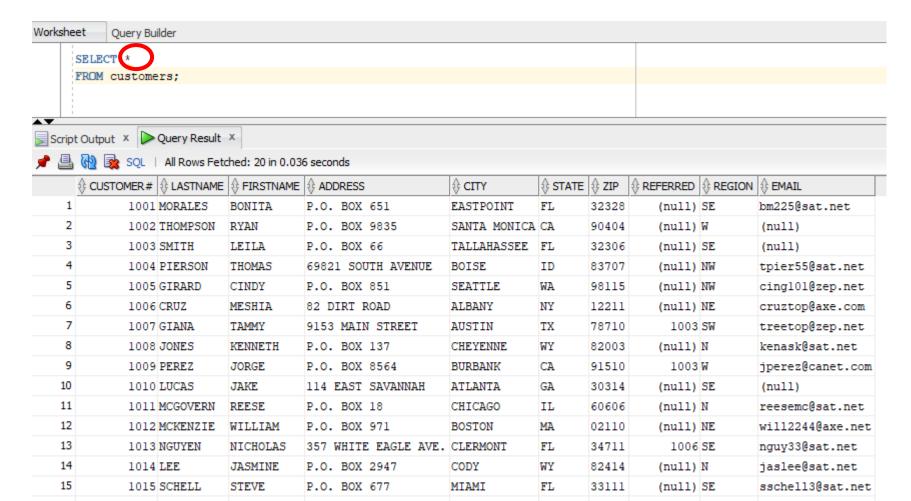
Let's check what tables exist under your account



#### Selecting All Data in a Table



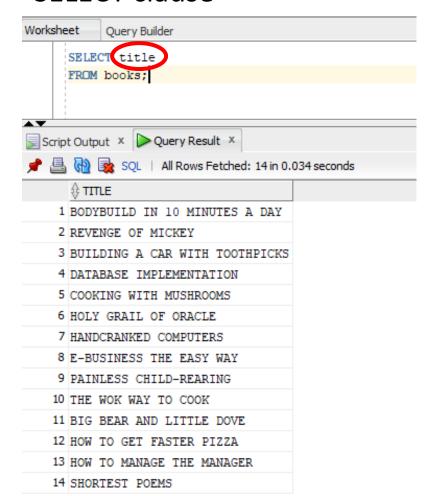
Substitute an asterisk for the column names in a SELECT clause



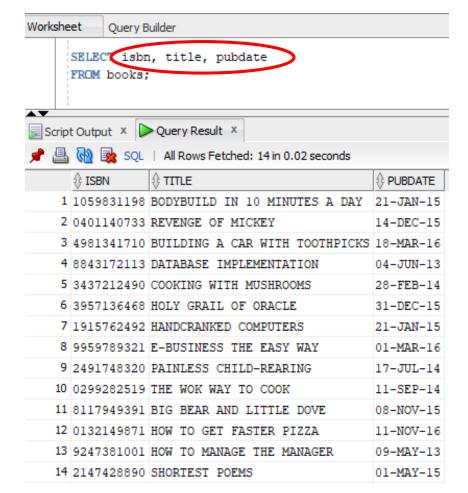
# Selecting One or Multiple Columns from a Table



 Enter the column name in SELECT clause



 Separate column names with a comma



#### Operations within the SELECT Statement



- >>> Column alias can be used for column headings
  - SELECT title AS **BookTitle**

Alias for column 'title'

- >>> Perform arithmetic operations
- >>> Suppress duplicates: present unique (distinct) values
- Concatenate data

#### Using Column Aliases

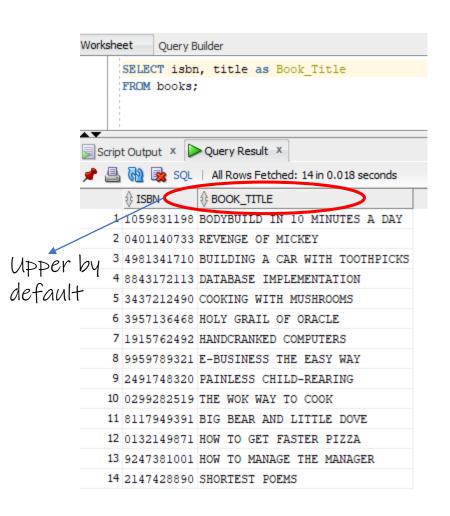


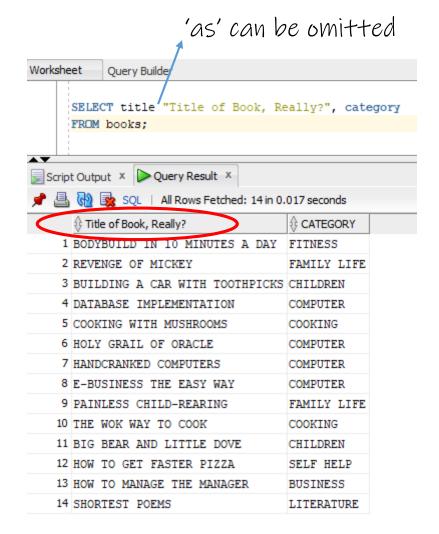
- >>> A column alias can be used to clarify the contents of a particular column
- >>> List the alias after the column heading
- >> AS keyword is optional
- Must enclose the alias in double quotation marks if:
  - it contains blank space(s)
  - it contains special symbol(s)
  - you want to retain case

Note: by default, column names are listed in upper case in the query result.

#### Column Alias Example







#### Using Arithmetic Operations



- >>> Arithmetic operations in SQL
  - Executed left to right
  - Multiplication and division are solved first
  - Addition and subtraction are solved last
  - Override order with parentheses

These are the same as the arithmetic operation orders in math, so there is nothing to remember!

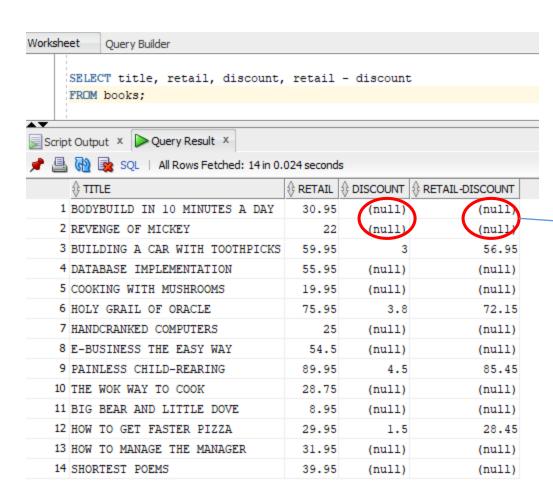
# Example: Arithmetic Operation with Column Alias



Worksheet Query Builder				
SELECT title, retail, cost, retail - cost profit FROM books;				
Script Output × Query Result ×				
📌 📇 🝓 📚 SQL   All Rows Fetched: 14 in 0.019 seconds				
	∯ TITLE	∯ RETAIL	∯ COST	♦ PROFIT
1	BODYBUILD IN 10 MINUTES A DAY	30.95	18.75	12.2
2	REVENGE OF MICKEY	22	14.2	7.8
3	BUILDING A CAR WITH TOOTHPICKS	59.95	37.8	22.15
4	DATABASE IMPLEMENTATION	55.95	31.4	24.55
5	COOKING WITH MUSHROOMS	19.95	12.5	7.45
6	HOLY GRAIL OF ORACLE	75.95	47.25	28.7
7	HANDCRANKED COMPUTERS	25	21.8	3.2
8	E-BUSINESS THE EASY WAY	54.5	37.9	16.6
9	PAINLESS CHILD-REARING	89.95	48	41.95
10	THE WOK WAY TO COOK	28.75	19	9.75
11	BIG BEAR AND LITTLE DOVE	8.95	5.32	3.63
12	HOW TO GET FASTER PIZZA	29.95	17.85	12.1
13	HOW TO MANAGE THE MANAGER	31.95	15.4	16.55
14	SHORTEST POEMS	39.95	21.85	18.1

#### **NULL Values**





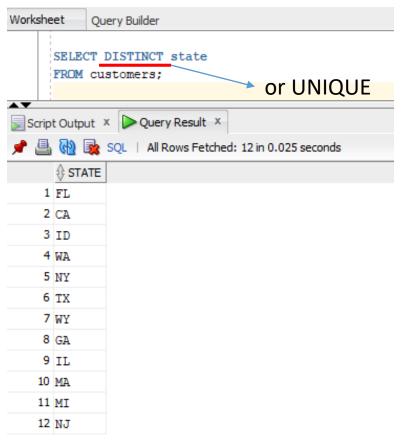
>>> NULL values indicate an absence of a value

Arithmetic operation result becomes null if the operation contains a null value

#### Using DISTINCT and UNIQUE



>>> Enter DISTINCT or UNIQUE after SELECT keyword to suppress duplicates



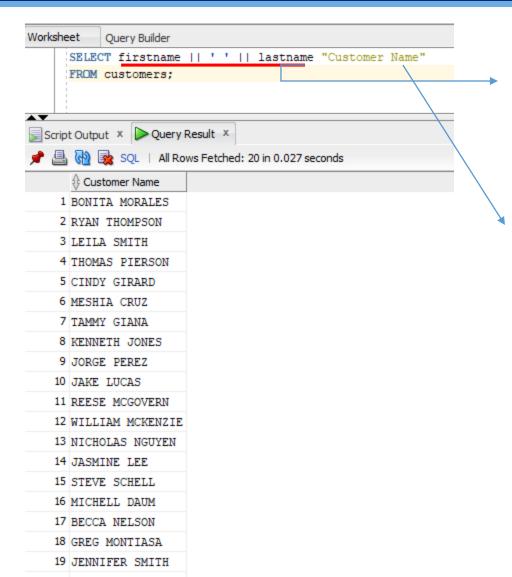
#### **Using Concatenation**



- >>> You can combine data with a string literal
- >>> Use the concatenation operator, ||
- >>> It allows the use of column aliases

#### Concatenation Example





data value in the 'firstname' column

- + space
- + data value in the 'lastname' column

Then, give a new name "Customer Name" to the concatenated result

### Summary (1/2)



- >>> A basic query in Oracle SQL includes the SELECT and FROM clauses, the only mandatory clauses in a SELECT statement
- >>> To view all columns in the table, specify an asterisk (\*) or list all of the column names individually in the SELECT clause
- >>> To display a specific column or set of columns, list the column names in the SELECT clause (in the order in which you want them to appear)
- >>> When listing column names in the SELECT clause, a comma must separate column names
- >>> To specify which table contains the desired columns, you must list the name of the table after the keyword FROM

### Summary (2/2)



- >>> A column alias can be used to clarify the contents of a particular column; if the alias contains **spaces** or special **symbols**, or if you want to display the column with any **lowercase** letters, you must enclose the column alias in double quotation marks (" ")
- >>> Basic arithmetic operations can be performed in the SELECT clause
- >>> NULL values indicate an absence of a value
- >>> To remove duplicate listings, include either the DISTINCT or UNIQUE keyword
- >>> Use vertical bars (||) to combine, or concatenate, fields, literals, and other data