# Session 4-3 Retrieving Data from Database 2

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# Operations Within the SELECT Statement

- Column alias can be used for column headings
- Perform arithmetic operations
- Suppress duplicates
- Concatenate data

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# Using Column Aliases

- List the alias after the column heading
- "AS" keyword is optional
- Enclose in "double quotation" marks:
  - If it contains blank space(s)
  - If it contains special symbol(s)
  - To retain case

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# Column Alias Example

```
SELECT title as "Title of Books", category
 FROM books;
```

( Execute )  ( Load Script )  ( Save Script )  ( Cancel )

| Title of Books | CATEGORY |
|---|---|
| BODYBUILD IN 10 MINUTES A DAY | FITNESS |
| REVENGE OF MICKEY | FAMILY LIFE |
| BUILDING A CAR WITH TOOTHPICKS | CHILDREN |
| DATABASE IMPLEMENTATION | COMPUTER |
| COOKING WITH MUSHROOMS | COOKING |
| HOLY GRAIL OF ORACLE | COMPUTER |
| HANDCRANKED COMPUTERS | COMPUTER |
| E-BUSINESS THE EASY WAY | COMPUTER |
| PAINLESS CHILD-REARING | FAMILY LIFE |
| THE WOK WAY TO COOK | COOKING |
| BIG BEAR AND LITTLE DOVE | CHILDREN |
| HOW TO GET FASTER PIZZA | SELF HELP |
| HOW TO MANAGE THE MANAGER | BUSINESS |
| SHORTEST POEMS | LITERATURE |

14 rows selected.

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# Using Arithmetic Operations

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

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# Example Arithmetic Operation with Column Alias

```
SELECT title, retail-cost profit
 FROM books;
```

( Execute )  ( Load Script )  ( Save Script )  ( Cancel )

| TITLE | PROFIT |
|-------|--------|
| BODYBUILD IN 10 MINUTES A DAY | 12.2 |
| REVENGE OF MICKEY | 7.8 |
| BUILDING A CAR WITH TOOTHPICKS | 22.15 |
| DATABASE IMPLEMENTATION | 24.55 |
| COOKING WITH MUSHROOMS | 7.45 |
| HOLY GRAIL OF ORACLE | 28.7 |
| HANDCRANKED COMPUTERS | 3.2 |
| E-BUSINESS THE EASY WAY | 16.6 |
| PAINLESS CHILD-REARING | 41.95 |
| THE WOK WAY TO COOK | 9.75 |
| BIG BEAR AND LITTLE DOVE | 3.63 |
| HOW TO GET FASTER PIZZA | 12.1 |
| HOW TO MANAGE THE MANAGER | 16.55 |
| SHORTEST POEMS | 18.1 |

14 rows selected.

# Duplicative Rows

```
select state
from customers;
```

( Execute ) ( Load Script ) ( Save Script ) ( Cancel )

| |
|---|
| FL |
| CA |
| FL |
| ID |
| WA |
| NY |
| TX |
| WY |
| CA |
| GA |
| IL |
| MA |
| FL |
| WY |
| FL |
| CA |
| MI |
| GA |
| NJ |
| NJ |

20 rows selected.

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# DISTINCT or UNIQUE to Suppress Duplicates

```
SELECT DISTINCT state
 FROM customers;
```

Execute    Load Script    Save Script    Cancel

| STATE |
|-------|
| CA |
| FL |
| GA |
| ID |
| IL |
| MA |
| MI |
| NJ |
| NY |
| TX |
| WA |
| WY |

12 rows selected.
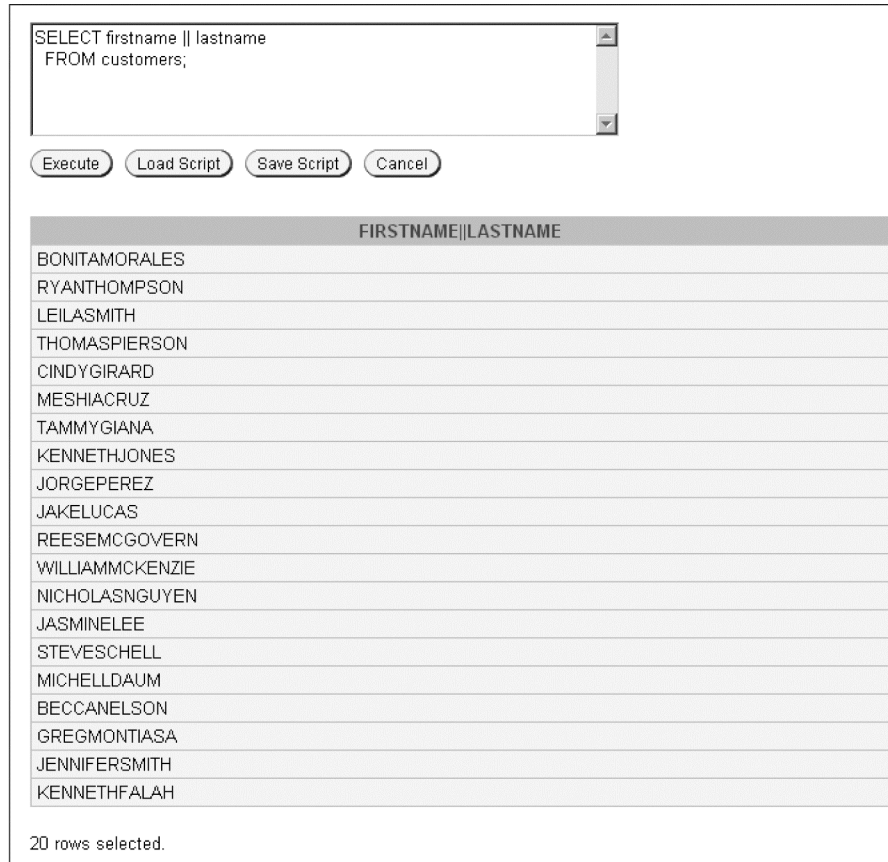
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# Using Concatenation

- You can combine data with a string literal
  - String values enclosed in single quote marks (')
- Use the concatenation operator, ||
- It allows the use of column aliases

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# Concatenation Example



**FIGURE 2-16** Concatenation of two columns

# Concatenation Example



```
select lname || ', ' || fname
from author;
```

Execute   Load Script   Save Script   Cancel

| |
|---|
| SMITH, SAM |
| JONES, JANICE |
| AUSTIN, JAMES |
| MARTINEZ, SHEILA |
| KZOCHSKY, TAMARA |
| PORTER, LISA |
| ADAMS, JUAN |
| BAKER, JACK |
| PETERSON, TINA |
| WHITE, WILLIAM |
| WHITE, LISA |
| ROBINSON, ROBERT |
| FIELDS, OSCAR |
| WILKINSON, ANTHONY |

14 rows selected.

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# Wrap-up

- Use a column alias to clarify the contents of a particular column

- 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

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