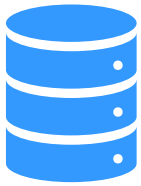
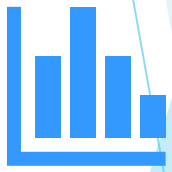
Module 8: Performing Basic Queries



Retrieving Data

Formatting Result Sets



Modifying Data

Retrieving Data

- Using the SELECT Statement
- Specifying Columns
- Using the WHERE Clause to Specify Rows
- WHERE Clause Search Conditions

Using the SELECT Statement

Select List
Specifies the Columns

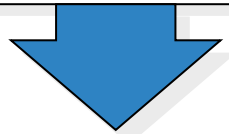
WHERE Clause
Specifies the Rows

FROM Clause
Specifies the Table

Partial Syntax

```
SELECT [ALL | DISTINCT] <select_list>
 FROM {<table_source>} [,…n]
 WHERE <search_condition>
```

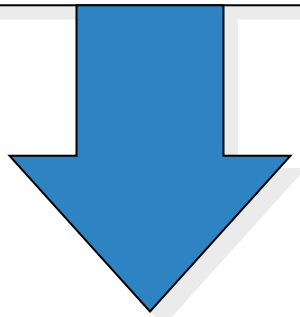
```
USE northwind
SELECT employeeid, lastname, firstname, title
FROM employees
```



employeeid	lastname	firstname	title
1	Davolio	Nancy	Sales Representative
2	Fuller	Andrew	Vice President, Sales
3	Leverling	Janet	Sales Representative
4	Peacock	Margaret	Sales Representative
5	Buchanan	Steven	Sales Manager
6	Suyama	Michael	Sales Representative
7	King	Robert	Sales Representative
8	Callahan	Laura	Inside Sales Coordinator
9	Dodsworth	Anne	Sales Representative

Using the WHERE Clause to Specify Rows

```
USE northwind
SELECT employeeid, lastname, firstname, title
FROM employees
WHERE employeeid = 5
```



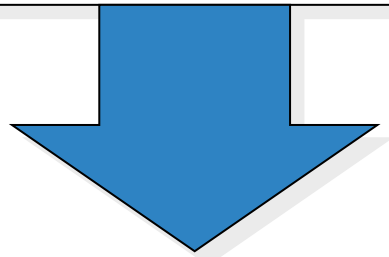
employeeid	lastname	firstname	title
5	Buchanan	Steven	Sales Manager

WHERE Clause Search Conditions

Using	Using Comparison Operators
Using	Using String Comparisons
Using	Using Logical Operators
Retrieving	Retrieving a Range of Values
Using	Using a List of Values as Search Criteria
Retrieving	Retrieving Unknown Values

Using Comparison Operators

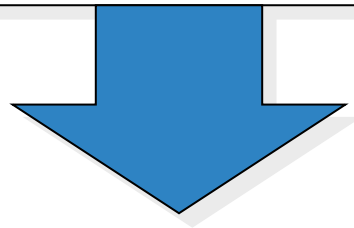
```
USE northwind
SELECT lastname, city
FROM employees
WHERE country = 'USA'
```



lastname	city
Davolio	Seattle
Fuller	Tacoma
Leverling	Kirkland
Peacock	Redmond
Callahan	Seattle

Using String Comparisons

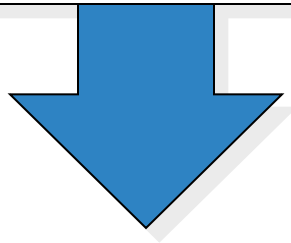
```
USE northwind
SELECT companyname
FROM customers
WHERE companyname LIKE '%Restaurant%'
```



companyname
GROSELLA-Restaurante
Lonesome Pine Restaurant
Tortuga Restaurante

Using Logical Operators

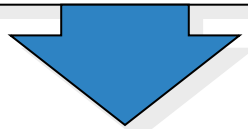
```
USE northwind
SELECT productid, productname, supplierid, unitprice
FROM products
WHERE (productname LIKE 'T%' OR productid = 46) AND
   (unitprice > 16.00)
```



productid	productname	supplierid	unitprice
14	Tofu	6	23.25
29	Thüringer Rostbratwurst	12	123.79
62	Tarte au sucre	29	49.3

Retrieving a Range of Values

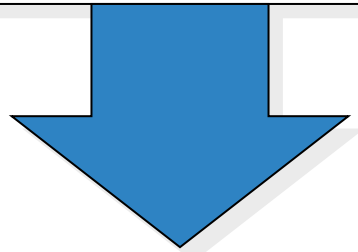
```
USE northwind
SELECT productname, unitprice
FROM products
WHERE unitprice BETWEEN 10 AND 20
```



productname	unitprice
Chai	18
Chang	19
Aniseed Syrup	10
Genen Shouyu	15.5
Pavlova	17.45
Sir Rodney's Scones	10
.	.
.	.
.	.

Using a List of Values as Search Criteria

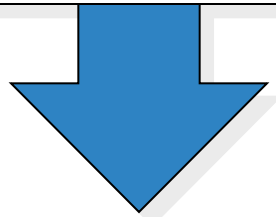
```
USE northwind
SELECT companyname, country
FROM suppliers
WHERE country IN ('Japan', 'Italy')
```



companyname	country
Tokyo Traders	Japan
Mayumi's	Japan
Formaggi Fortini s.r.l.	Italy
Pasta Buttini s.r.l.	Italy

Retrieving Unknown Values

```
USE northwind
SELECT companyname, fax
FROM suppliers
WHERE fax IS NULL
```



companyname	fax
Exotic Liquids	NULL
New Orleans Cajun Delights	NULL
Tokyo Traders	NULL
Cooperativa de Quesos 'Las Cabras'	NULL
.	
.	
.	

Formatting Result Sets

1. Sorting Data
2. Eliminating Duplicates
3. Changing Column Names
4. Using Literals

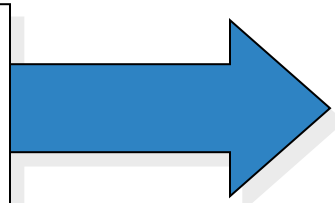
Sorting Data

```
USE northwind
SELECT productid, productname, categoryid, unitprice
FROM products
ORDER BY categoryid, unitprice DESC
```

productid	productname	categoryid	unitprice
38	Cote de Blaye	1	263.5
43	Ipoh Coffee	1	46
2	Chang	1	19
.			
.			
.			
63	Vegie-spread	2	43.9
8	Northwoods Cranberry Sauce	2	40
61	Sirop d'érable	2	28.5
.			
.			

Eliminating Duplicates

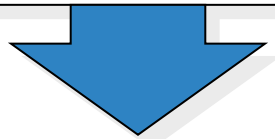
```
USE northwind
SELECT DISTINCT country
FROM suppliers
ORDER BY country
```



country
Australia
Brazil
Canada
Denmark
Finland
France
Germany
Italy
Japan
Netherlands
Norway
Singapore
Spain
Sweden
UK
USA

Changing Column Names

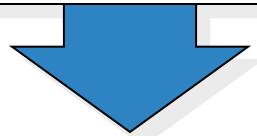
```
USE northwind
SELECT firstname AS First, lastname AS Last,
    employeeid AS 'Employee ID:'
FROM employees
```



First	Last	Employee ID:
Nancy	Davolio	1
Andrew	Fuller	2
Janet	Leverling	3
Margaret	Peacock	4
Steven	Buchanan	5
Michael	Suyama	6
Robert	King	7
Laura	Callahan	8
Anne	Dodsworth	9

Using Literals

```
USE northwind
SELECT firstname, lastname,
    'Identification number:', employeeid
FROM employees
```



firstname	lastname		employeeid
Nancy	Davolio	Identification number:	1
Andrew	Fuller	Identification number:	2
Janet	Leverling	Identification number:	3
Margaret	Peacock	Identification number:	4
Steven	Buchanan	Identification number:	5
Michael	Suyama	Identification number:	6
Robert	King	Identification number:	7
Laura	Callahan	Identification number:	8
Anne	Dodsworth	Identification number:	9

Lab: Retrieving Data and Manipulating Result Sets

Modifying Data

1. Inserting Rows
2. Deleting Rows
3. Updating Rows

Inserting Rows

```
USE northwind
INSERT customers
   (customerid, companyname, contactname, contacttitle,
   address, city, region, postalcode, country, phone,
       fax)

VALUES ('PECOF', 'Pecos Coffee Company', 'Michael Dunn',
   'Owner', '1900 Oak Street', 'Vancouver', 'BC',
   'V3F 2K1', 'Canada', '(604) 555-3392',
   '(604) 555-7293')
```

Inserting Data by Using Default Values

- DEFAULT Keyword
  - Inserts default values for specified columns
  - Columns must have a default value or allow null values

```
USE northwind
INSERT shippers (companyname, phone)
VALUES ('Kenya Coffee Co.', DEFAULT)
```

- DEFAULT VALUES Keyword
  - Inserts default values for all columns
  - Columns must have a default value or allow null values

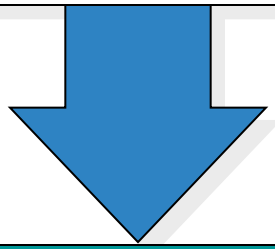
Inserting Partial Data

Adding new data

```
USE northwind
INSERT shippers (companyname)
VALUES ('Fitch & Mather')
```

Verifying new data

```
USE northwind
SELECT *
FROM shippers
WHERE companyname = 'Fitch & Mather'
```



Allows NULL Values

shipperid	companyname	phone
37	Fitch & Mather	NULL

Deleting Rows

DELETE Statement

- Use to remove one or more rows in a table
- Always include a WHERE clause
- Each deleted row is logged in the transaction log

TRUNCATE TABLE Statement

- Use to delete all rows in a table
- SQL Server retains table structure and associated objects
- Only deallocation of data pages is logged in the transaction log

Updating Rows

- WHERE Clause Specifies Rows to Change
- SET Keyword Specifies the New Data
- Input Values Must Be the Same Data Types as Columns

```
USE northwind
UPDATE products
SET unitprice = (unitprice * 1.1)
Where condition
```

Performance Considerations

Use	Use Positive Search Conditions
Avoid	Avoid Using the LIKE Search Condition
Use	Use Exact Matches or Ranges
ORDER BY	ORDER BY Clause May Slow Data Retrieval

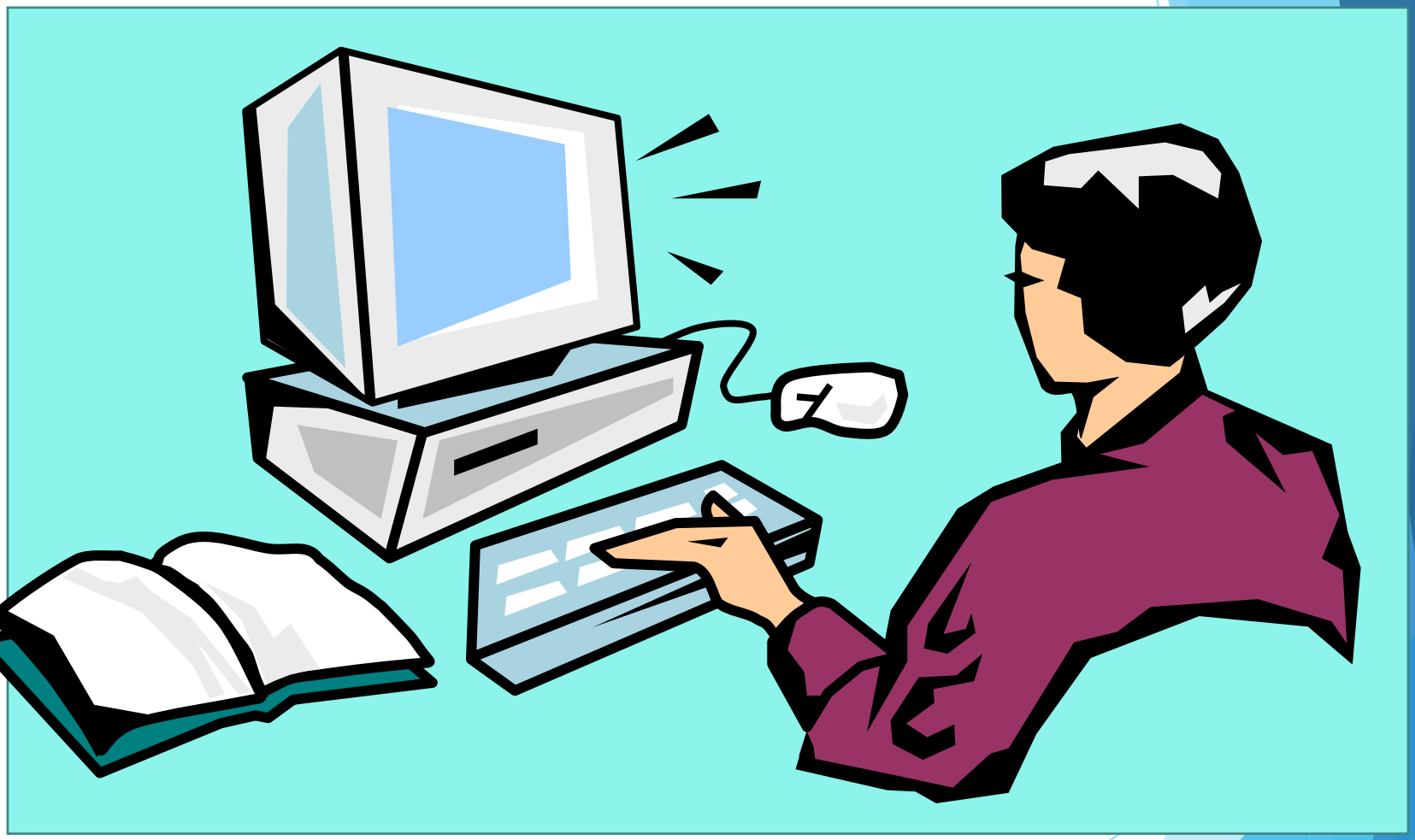
Recommended Practices

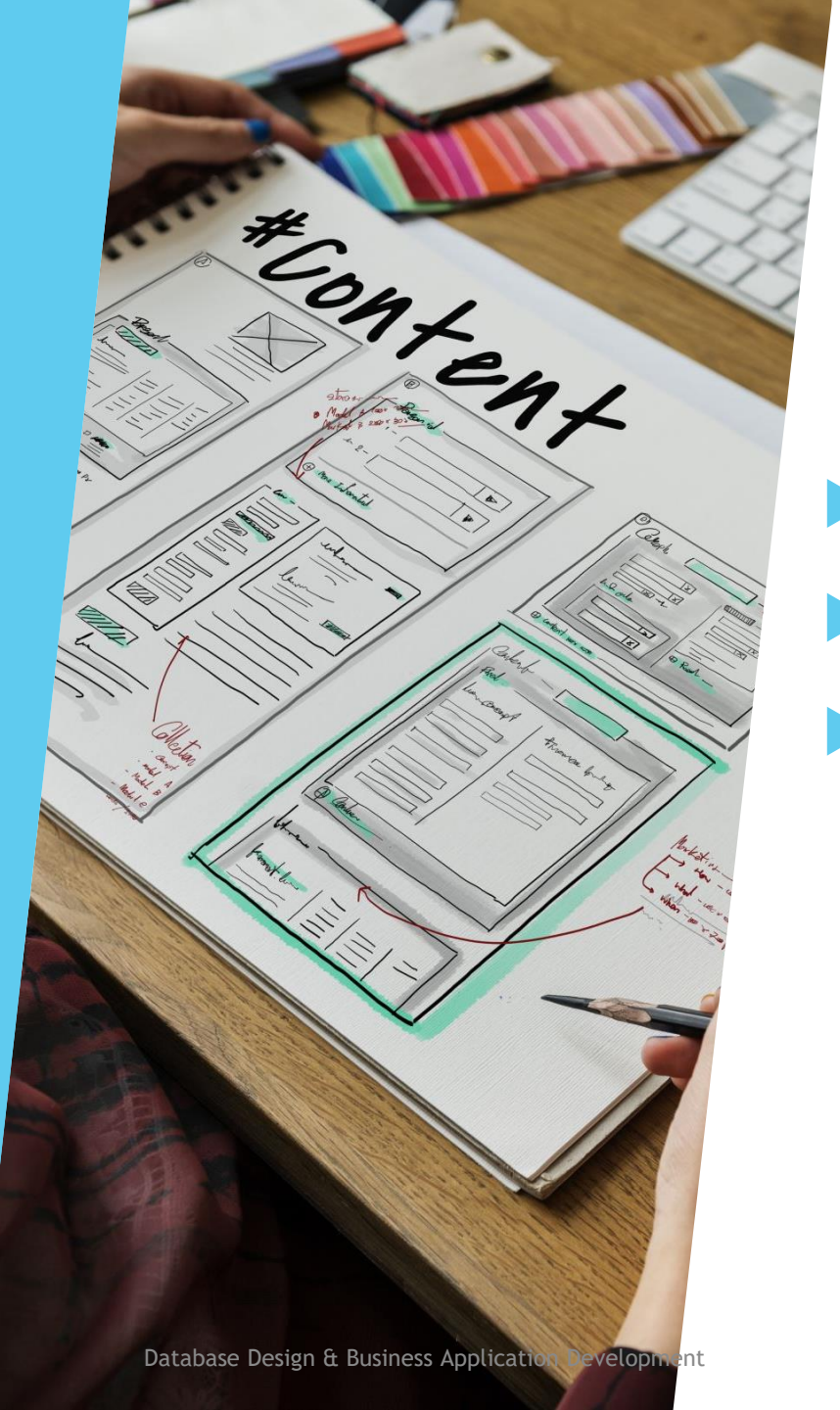
Use the DISTINCT Clause to Eliminate Duplicate Rows in the Result Set

Improve the Readability of a Result Set by Changing Column Names or by Using Literals

Always Include a WHERE Clause with the DELETE and UPDATE Statements

Lab: Modifying Data





Review

- Retrieving Data
- Formatting Result Sets
- Modifying Data

Module References

- Introduction to Transact-SQL - https://docs.microsoft.com/en-us/learn/modules/introduction-to-transact-sql/
- Tutorial: Writing Transact-SQL Statements - https://docs.microsoft.com/en-us/sql/t-sql/tutorial-writing-transact-sql-statements?view=sql-server-ver15
- Querying for and Displaying Data - https://docs.oracle.com/database/121/TDPJD/querdata.htm#TDPJD147
- Querying a MySQL database - https://dev.mysql.com/doc/mysql-tutorial-excerpt/8.0/en/examples.html