

IT-234 – database concepts

UNIT 7 – MODIFY DATA IN AN EXISTING TABLE

overview



One of the primary functions of any database is to be able to manipulate the data stored within its tables.



Permitted users must be able to insert, update, and delete data as necessary in order to keep the database current and ensure that only the appropriate data is being stored.

overview

SQL provides three statements for basic data manipulation: INSERT, UPDATE, and DELETE.

In this unit, we examine each of these statements and demonstrate how they can be used in an SQL environment to modify data in the database.

overview

After completing this unit, you should be able to:

- Use DML commands to modify an existing table.

SQL - INSERT

The SQL INSERT INTO Statement is used to add new rows of data to a table in the database. There are two basic syntaxes of the INSERT INTO statement.

```
INSERT INTO TABLE_NAME (column1, column2, column3,...columnN)  
VALUES (value1, value2, value3,...valueN);
```

Here, column1, column2, column3,...columnN are the names of the columns in the table into which you want to insert the data.

SQL - INSERT

You may not need to specify the column(s) name in the SQL query if you are adding values for all the columns of the table.

Make sure the order of the values is in the same order as the columns in the table.

```
INSERT INTO TABLE_NAME VALUES (value1,value2,value3,...valueN);
```

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
89	White Clover Markets	Karl Jablonski	305 - 14th Ave. S. Suite 3B	Seattle	98128	USA
90	Wilman Kala	Matti Karttunen	Keskuskatu 45	Helsinki	21240	Finland
91	Wolski	Zbyszek	ul. Filtrowa 68	Walla	01-012	Poland



```
INSERT INTO Customers (CustomerName, ContactName, Address, City, PostalCode, Country)
VALUES ('Cardinal', 'Tom B. Erichsen', 'Skagen 21', 'Stavanger', '4006', 'Norway');
```



Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
89	White Clover Markets	Karl Jablonski	305 - 14th Ave. S. Suite 3B	Seattle	98128	USA
90	Wilman Kala	Matti Karttunen	Keskuskatu 45	Helsinki	21240	Finland
91	Wolski	Zbyszek	ul. Filtrowa 68	Walla	01-012	Poland
92	Cardinal	Tom B. Erichsen	Skagen 21	Stavanger	4006	Norway

SQL – INSERT example

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
89	White Clover Markets	Karl Jablonski	305 - 14th Ave. S. Suite 3B	Seattle	98128	USA
90	Wilman Kala	Matti Karttunen	Keskuskatu 45	Helsinki	21240	Finland
91	Wolski	Zbyszek	ul. Filtrowa 68	Walla	01-012	Poland



```
INSERT INTO Customers (CustomerName, City, Country)
VALUES ('Cardinal', 'Stavanger', 'Norway');
```



Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
89	White Clover Markets	Karl Jablonski	305 - 14th Ave. S. Suite 3B	Seattle	98128	USA
90	Wilman Kala	Matti Karttunen	Keskuskatu 45	Helsinki	21240	Finland
91	Wolski	Zbyszek	ul. Filtrowa 68	Walla	01-012	Poland
92	Cardinal	null	null	Stavanger	null	Norway

SQL – INSERT example

The order of the values must match the order of the columns in the column list.

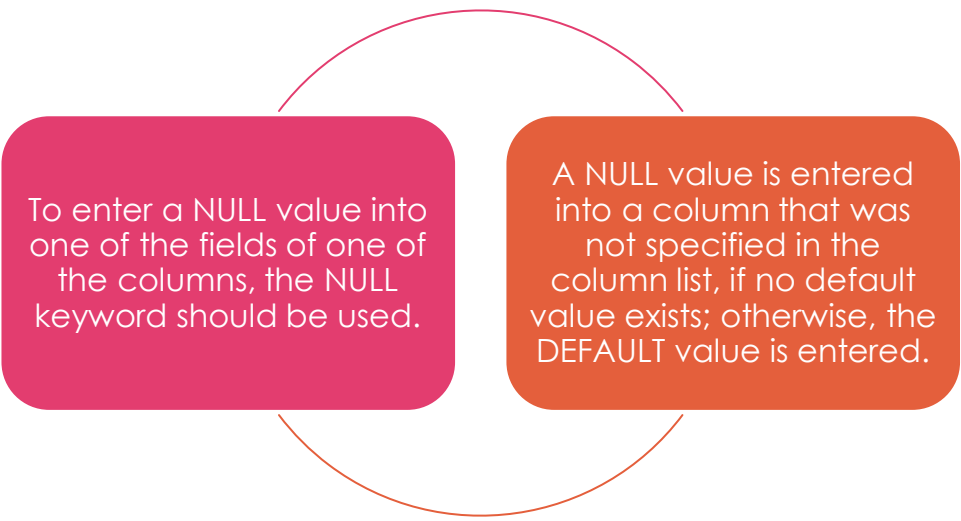
The value type must match the type of columns in the column list.

The number of values – must match the number of values in the column list.

You can use the GETDATE () function instead of specifying a date.



SQL –
INSERT –
Important
points



To enter a NULL value into one of the fields of one of the columns, the NULL keyword should be used.

A NULL value is entered into a column that was not specified in the column list, if no default value exists; otherwise, the DEFAULT value is entered.

SQL – INSERT – Important points

SQL – INSERT INTO SELECT

To insert data from other tables into a table, you use the following SQL Server INSERT INTO SELECT statement:

```
INSERT [ TOP ( expression ) [ PERCENT ] ]  
INTO target_table (column_list)  
query
```

In this syntax, the statement inserts rows returned by the query into the target_table.


SQL – INSERT INTO SELECT

The query is any valid SELECT statement that retrieves data from other tables.

It must return the values that are corresponding to the columns specified in the column_list.

SQL – INSERT INTO SELECT

The TOP clause part is optional → it allows you to specify the number of rows returned by the query to be inserted into the target table.



If you use the PERCENT option, the statement will insert the percent of rows instead.



Note that it is a best practice to always use the TOP clause with the ORDER BY clause.

Insert all rows from another table example

The following statement `inserts` all addresses from the `customers` table into the `addresses` table:

```
INSERT INTO sales.addresses (street, city, state, zip_code)
SELECT
    street,
    city,
    state,
    zip_code
FROM
    sales.customers
ORDER BY
    first_name,
    last_name;
```

```
CREATE TABLE sales.addresses (
    address_id INT IDENTITY PRIMARY KEY,
    street VARCHAR (255) NOT NULL,
    city VARCHAR (50),
    state VARCHAR (25),
    zip_code VARCHAR (5)
);
```

SQL – INSERT INTO SELECT - Example

To verify the insert, you use the following query:

```
SELECT
  *
FROM
  sales.addresses;
```

Here is the result:

address_id	street	city	state	zip_code
1	807 Grandrose Ave.	Yonkers	NY	10701
2	26 Market Drive	Forest Hills	NY	11375
3	60 Myers Dr.	Amityville	NY	11701
4	9782 Indian Spring Lane	Harlingen	TX	78552
5	167 James St.	Los Banos	CA	93635
6	755 East Henry Lane	Central Islip	NY	11722
7	8165 Baker Ave.	Franklin Square	NY	11010
8	669 S. Gartner Street	San Pablo	CA	94806
9	683 West Kirkland Dr.	East Northport	NY	11731
10	684 Westport Drive	Ballston Spa	NY	12020
11	720 Thompson Lane	Rego Park	NY	11374
12	973 Yukon Avenue	Encino	CA	91316
13	55 Cambridge Street	Plainview	NY	11803

SQL – INSERT INTO SELECT - Example

Insert some rows from another table example

Sometimes, you just need to insert some rows from another table into a table. In this case, you limit the number of rows returned from the query by using conditions in the `WHERE` clause.

The following statement adds the addresses of the stores located in `Santa Cruz` and `Baldwin` to the `addresses` table:

```
INSERT INTO
  sales.addresses (street, city, state, zip_code)
SELECT
  street,
  city,
  state,
  zip_code
FROM
  sales.stores
WHERE
  city IN ('Santa Cruz', 'Baldwin')
```

SQL – INSERT INTO SELECT - Example

SQL - UPDATE

The UPDATE statement is used to modify the existing records in a table.

UPDATE Syntax:

```
UPDATE table_name  
SET column1 = value1, column2 = value2, ...  
WHERE condition;
```

Be careful when updating records in a table!

- Notice the WHERE clause in the UPDATE statement.
- The WHERE clause specifies which record(s) that should be updated.
- If you omit the WHERE clause, all records in the table will be updated!

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

UPDATE Customers
SET ContactName = 'Alfred Schmidt', City= 'Frankfurt'
WHERE CustomerID = 1;

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Alfred Schmidt	Obere Str. 57	Frankfurt	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

SQL – UPDATE example

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Alfred Schmidt	Obere Str. 57	Frankfurt	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbkop	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

UPDATE Customers
SET ContactName='Juan'
WHERE Country='Mexico';

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Alfred Schmidt	Obere Str. 57	Frankfurt	12209	Germany
2	Ana Trujillo Emparedados y helados	Juan	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Juan	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbkop	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

SQL –
UPDATE
example

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Alfred Schmidt	Obere Str. 57	Frankfurt	12209	Germany
2	Ana Trujillo Emparedados y helados	Juan	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Juan	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

UPDATE Customers
SET ContactName='Juan';

Be careful when updating records. If you omit the WHERE clause, ALL records will be updated!

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Juan	Obere Str. 57	Frankfurt	12209	Germany
2	Ana Trujillo Emparedados y helados	Juan	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Juan	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Juan	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Juan	Berguvsvägen 8	Luleå	S-958 22	Sweden

SQL – UPDATE example

SQL - delete

The DELETE statement is used to delete existing records in a table.

DELETE Syntax:

```
DELETE FROM table_name WHERE condition;
```

Be careful when deleting records in a table!

- Notice the WHERE clause in the DELETE statement.
- The WHERE clause specifies which record(s) that should be deleted.
- If you omit the WHERE clause, all records in the table will be deleted!

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbkop	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden



```
DELETE FROM Customers WHERE CustomerName='Alfreds Futterkiste';
```



Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbkop	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden

SQL – delete example

Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden



```
DELETE FROM Customers;
```



Customers

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
NO DATA FOUND						

SQL – delete example



UNIT 7 ASSIG NMENT

UNIT 7 ASSIGNMENT

▶ Purpose:

- ▶ In business, things change, and data in the organization's database must be modified to reflect those changes.
- ▶ In this week's Assignment, you will insert new data into the Northwind database, and you will then update a table in the database.

UNIT 7 ASSIGNMENT

Assignment Instructions:

- You will use the Northwind database for this assignment.
- Leverage the database design diagram provided in the assignment posting as a guide in forming your DML statements for the assignment problems.

UNIT 7 ASSIGNMENT

- ▶ Assignment Instructions:
- ▶ Your assignment submittal needs to show both the generated SQL statements and confirmatory screenshots verifying task completion.

UNIT 7 ASSIGNMENT

Assignment Instructions:

- **Problem 1:** Use an SQL INSERT statement to populate the Categories table with a new category called "Fresh Produce" and a description of "Fresh Fruits and Vegetables." There is no picture for this record insert. Remember, the CategoryID field auto populates so you do not include this in your insert statement. After you have added the category, select all records in the Categories table to see if the record was added.

	CategoryID	CategoryName	Description	Picture
1	9	Fresh Produce	Fresh Fruits and Vegetables	NULL

UNIT 7 ASSIGNMENT

Assignment Instructions:

- **Problem 2:** Use the SQL INSERT command to add a new region to handle customers in the Midwest. In this case, the RegionID field does not auto populate so you should first find how many regions are in the table before adding the new region and RegionID. Use a query after completing this to verify that the new region has been added.

	RegionID	RegionDescription
1	5	Midwest

UNIT 7 ASSIGNMENT

► Assignment Instructions:

- Problem 3: Northwind has decided to change the employee title that is now called “Sales Representative” to “Sales Specialist.” Use the SQL UPDATE statement to reflect the change in the Employees table. After you have updated the Employees table, select all records in the Employees table to see if the update was performed correctly.

	EmployeeID	LastName	FirstName	Title
1	1	Davolio	Nancy	Sales Specialist
2	3	Leverling	Janet	Sales Specialist
3	4	Peacock	Margaret	Sales Specialist
4	6	Suyama	Michael	Sales Specialist
5	7	King	Robert	Sales Specialist
6	9	Dodsworth	Anne	Sales Specialist

UNIT 7 ASSIGNMENT

Assignment Instructions:

- **Problem 4:** The Sales department has realigned and before they implement the new “Midwest” region you added, they noted that it really should be called the “Southeast” region. Change the “Midwest” region name to “Southeast” and show the regions again to confirm this change.

	RegionID	RegionDescription
1	5	Southeast

UNIT 7 ASSIGNMENT

► Assignment Instructions:

- Problem 5: An order needs to be deleted. The order number is 11071. However, before you can delete the order, you must delete the order details. Delete all records in the OrderDetails table that references order number 11071. Then execute a query against the OrderDetails table to show that the records associated with order number 11071 have been removed.

	OrderID	ProductID	UnitPrice	Quantity	Discount
1	11070	1	18.00	40	0.15
2	11070	2	19.00	20	0.15
3	11070	16	17.45	30	0.15
4	11070	31	12.50	20	0
5	11071	7	30.00	15	0.05
6	11071	13	6.00	10	0.05
7	11072	2	19.00	8	0
8	11072	41	9.65	40	0
9	11072	50	16.25	22	0
10	11072	64	33.25	130	0

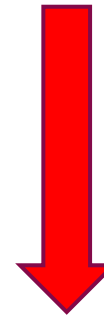


	OrderID	ProductID	UnitPrice	Quantity	Discount
1	11070	1	18.00	40	0.15
2	11070	2	19.00	20	0.15
3	11070	16	17.45	30	0.15
4	11070	31	12.50	20	0
5	11072	2	19.00	8	0
6	11072	41	9.65	40	0
7	11072	50	16.25	22	0
8	11072	64	33.25	130	0

► Assignment Instructions:

	OrderID	CustomerID	EmployeeID	OrderDate	RequiredDate
1	11070	LEHMS	2	1998-05-05 00:00:00.000	1998-06-02 00:00:00.000
2	11071	LILAS	1	1998-05-05 00:00:00.000	1998-06-02 00:00:00.000
3	11072	ERNSH	4	1998-05-05 00:00:00.000	1998-06-02 00:00:00.000

- Problem 6: Delete order number 11071 from the Orders table. Then execute a query against the Orders table to show that the record was removed.



	OrderID	CustomerID	EmployeeID	OrderDate	RequiredDate
1	11070	LEHMS	2	1998-05-05 00:00:00.000	1998-06-02 00:00:00.000
2	11072	ERNSH	4	1998-05-05 00:00:00.000	1998-06-02 00:00:00.000

UNIT 7 ASSIGNMENT

UNIT 7 ASSIGNMENT

► Assignment Instructions:

- Problem 7: An employee named Margaret Peacock just received a 5% raise from Northwind. Update Ms. Peacock's employee record to reflect this change. In order to do this, her current salary needs to be multiplied by 1.05 in the update statement.

	EmployeeID	LastName	FirstName	Title	Salary
1	4	Peacock	Margaret	Sales Specialist	61500.00



	EmployeeID	LastName	FirstName	Title	Salary
1	4	Peacock	Margaret	Sales Specialist	64575.00

UNIT 7 ASSIGNMENT

Assignment Instructions:

- **Problem 8:** A new supplier needs to be added to the Northwind database. Generate an SQL statement to insert the following details:

Company Name: Acme Enterprises

Contact Name: Wylie Coyote

Contact Title: Executive Manager

Address: 123 Main Street

City: Las Vegas

Region: NV

Postal Code: 89108

Country: USA

Phone: (702) 555-9876

	SupplierID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone	Fax	HomePage
1	30	Acme Enterprises	Wylie Coyote	Executive Manager	123 Main Street	Las Vegas	NV	89108	USA	(702) 555-9876	NULL	NULL

UNIT 7 ASSIGNMENT

	ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	40	Boston Crab Meat	19	8	24 - 4 oz tins	18.40	123	0	30	0

► Assignment Instructions:

	ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	40	Boston Crab Meat	19	8	24 - 4 oz tins	18.40	83	0	30	0



- Problem 9: A customer just purchased 40 units of a product called "Boston Crab Meat" from Northwind. Reduce the current UnitsInStock value in the Products table by 40 for this product.

UNIT 7 ASSIGNMENT

- ▶ Assignment Instructions:
- ▶ Problem 10: A final call has come in from the Sales Department. After presenting the new regional alignment to the board, the board has rejected this part of the reorganization plan. Please DELETE that new region that was added earlier in Problem 2 and then changed in Problem 4 of this assignment.

	RegionID	RegionDescription
1	1	Eastern
2	2	Western
3	3	Northern
4	4	Southern
5	5	Southeast



	RegionID	RegionDescription
1	1	Eastern
2	2	Western
3	3	Northern
4	4	Southern

UNIT 7 ASSIGNMENT

Assignment Requirements:

Microsoft SQL Server Express and SQL Server Management Studio (SSMS) MUST be installed to complete this Assignment.

Compose your Assignment in a Word document.

UNIT 7 ASSIGNMENT

Assignment Requirements:

- Embed the screenshots of your SQL statements and confirmatory output (e.g., query results) into the Word document.
- The assignment is due by the final day of the Unit 7 week.

UNIT 7 ASSIGNMENT

Directions for Submitting Your Assignment:

- Name your assignment document according to this convention:
IT234_<YourName>_Unit7.docx
(replace **<YourName>** with your full name).
- Submit your completed assignment to the Unit 7 Assignment Dropbox by the final day of the Unit 7 week.
- Review the Unit 7 Assignment Rubric before beginning this activity.

Any
Questions?

