

# Unit 11.2B: Introduction to Databases

## Topic: Structured Query Language (SQL)

## **Learning objective:**

11.4.2.1 explain the purpose of data dictionary

11.4.2.2 compare the data definition language (DDL),  
and the data manipulation language (DML)

## **Lesson objectives:**

- Understand what is SQL and how it's used.
- Understand what the syntax commands do.
- Be able to write SQL commands.

# Success criteria

- Be able to use the SELECT, UPDATE, INSERT, DELETE
- Be able to create queries in SQL

# Lesson 1

- Discussed question «what is a query in the database?»»

# Research work.

- Students research “Data dictionary”
- Activity. Pair work.
- From the table, students define a data dictionary

Group work. Students create a data dictionary for the database, create poster

- automobile salon
- tourist company
- pizza delivery

protection of posters and evaluation

## Reflection

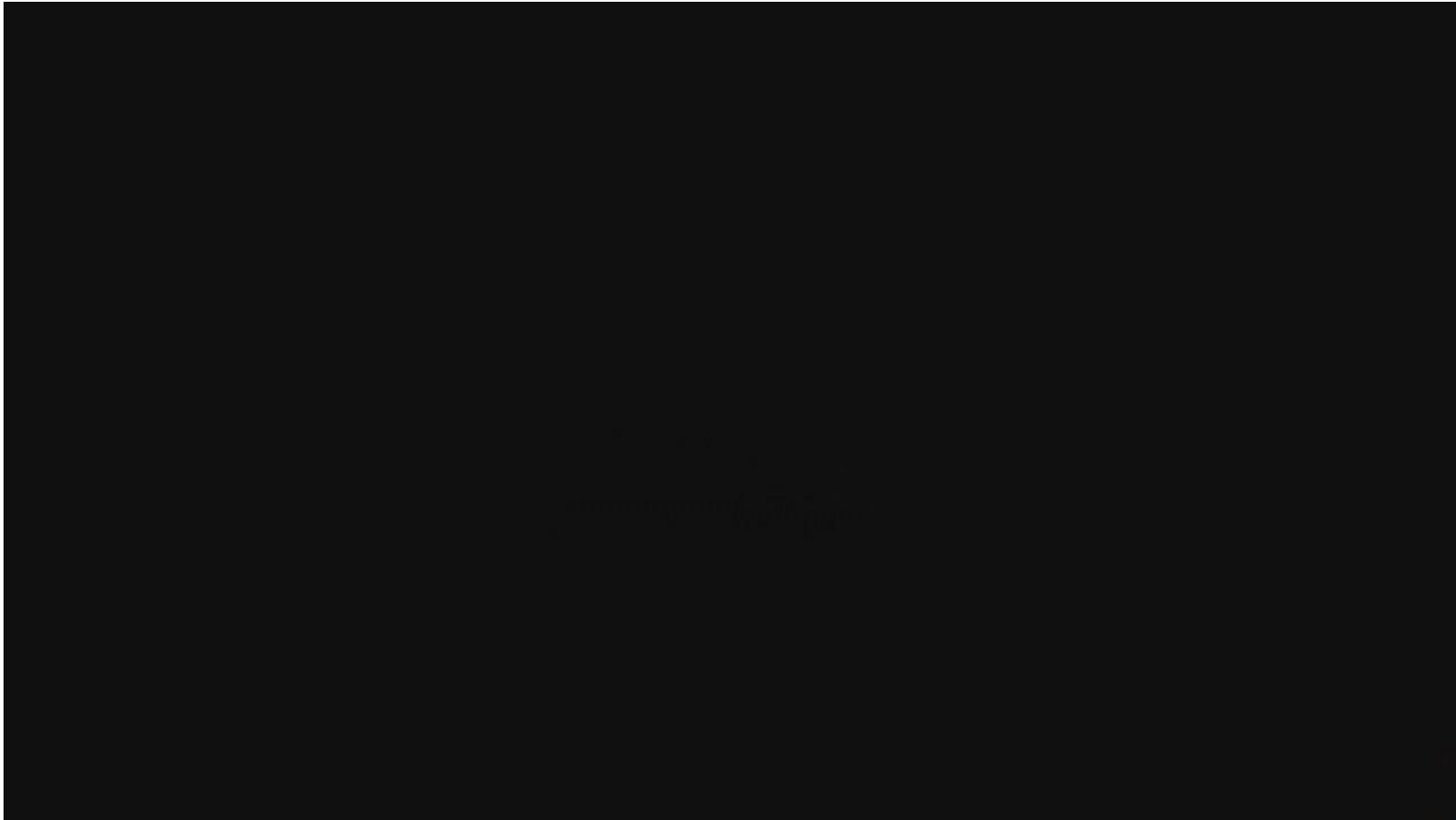
What I know about database?	What I have known about database?	What I want to know about database?

**lesson 2**

**What is SQL?**







- SQL stands for Structured Query Language (Structured Query Language).
- SQL allows you to work with the database.
- SQL - this language, which is the ANSI standard.
- SQL allows you to query the database.
- SQL allows you to extract data from the database.
- SQL allows you to insert new records in the database.
- SQL allows you to delete records from the database.
- SQL allows you to update records in the database.
- SQL is easy to learn.

# SQL statements are divided into:

Operators of **data definition (Data Definition Language, DDL)**:

- **CREATE** creates a database object (database itself, tables, views, user, and so on. D.)
- **ALTER** modifies the object
- **DROP** deletes an object;

Operators of **data manipulation (Data Manipulation Language, DML)**:

- **SELECT** selects the data that meet certain conditions,
- **INSERT** adds new data,
- **UPDATE** modifies existing data,
- **DELETE** deletes the data;

# *Data Manipulation Language, DML:*

**SELECT** field\_name **FROM** table\_name **WHERE**  
condition

- **SELECT** - defines the fields that contain the necessary data
- **FROM** - specifies the tables that contain the fields specified in the the SELECT
- **WHERE** - specifies the conditions of selection fields, which must comply with all the records included in the results

# Data Manipulation Language, DML

Example:

- `SELECT * FROM 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	Student	Avda. de la Constituciyn 2222	Taraz	05021	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	Berlin	WA1 1DP	UK
5	Berglunds snabbkup	Christina Berglund	Berguvsvdgen 8	Lulee	S-958 22	Sweden

Output all fields and records the **Customers** table

# Data Manipulation Language, DML

Example:

- `SELECT CustomerName, Country FROM Customers;`

CustomerName	Country
Alfreds Futterkiste	Germany
Ana Trujillo Emparedados y helados	Mexico
Antonio Moreno Taqueria	Mexico
Around the Horn	UK
Berglunds snabbkup	Sweden

Shows records **CustomerName** , **Country** fields  
from **Customers** table

# Data Manipulation Language, DML

Example:

- `SELECT CustomerName, City FROM Customers  
WHERE City='Berlin';`

<b>CustomerName</b>	<b>City</b>
Alfreds Futterkiste	Berlin
Around the Horn	Berlin

Shows records **CustomerName, City** fields, from **Customers** table where the **City** field value is equal to the word '**Berlin**'



# Activity

- Go to this link

[http://sqlzoo.net/wiki/SELECT\\_from\\_Nobel\\_Tutorial](http://sqlzoo.net/wiki/SELECT_from_Nobel_Tutorial)

perform the task of 1, 2, 5, 8, 12

Show your answers for teacher

# *Data Manipulation Language, DML*

To change the values in one or more columns of the table used UPDATE statement.

- UPDATE `table_name` SET `Field = new_Value`  
WHERE `selection condition`;

# Data Manipulation Language, DML

Example:

- UPDATE Customers SET ContactName='Student', City='Taraz' WHERE CustomerID=2;

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 Constituciyn 2222	Miixico D.F.	05021	Mexico
3	Antonio Moreno Taqueria	Antonio Moreno	Mataderos 2312	Miixico D.F.	05023	Mexico

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Student	Avda. de la Constituciyn 2222	Taraz	05021	Mexico
3	Antonio Moreno Taqueria	Antonio Moreno	Mataderos 2312	Miixico D.F.	05023	Mexico

After **UPDATE** statements, records fields **CustomerName**, **City** in **Customers** table has changed

# Activity

- Go to this link

[http://www.w3schools.com/sql/trysql.asp?filename=trysql\\_select\\_all](http://www.w3schools.com/sql/trysql.asp?filename=trysql_select_all)

Update London to Berlin for CustomerID = 4  
Perform the task. Show your answers for teacher

# *Data Manipulation Language, DML*

- To add records to the table, use the **INSERT** statement

```
INSERT INTO table_name (field1, field2, field3, ...)  
VALUES (value1, value2, value3, ...);
```

# Data Manipulation Language, DML:

Example:

- `INSERT INTO Customers (CustomerName, ContactName, Address, City, PostalCode, Country) VALUES ('Student', 'Anuar Samatov', 'Satpayev 2', 'Taraz', '000000', 'Kazakhstan');`

91	Wolski	Zbyszek	ul. Filtrowa 68	Walla	01-012	Poland
92	Bake	Askar Nagay	Abai 1	Taraz	200000	Kazakhstan
93	Student	Anuar Samatov	Satpayev 2	Taraz	000000	Kazakhstan

After the **INSERT INTO** proposals at the end of the table create a new record with the given values.

# Activity

Go to this link

[http://www.w3schools.com/sql/trysql.asp?filename=trysql\\_select\\_all](http://www.w3schools.com/sql/trysql.asp?filename=trysql_select_all)

```
INSERT VALUES ('Bala', 'Askar Nagay', 'Abai 1',  
                'Taraz', '200000', 'Kazakhstan');
```

## *Data Manipulation Language, DML:*

To delete rows from a table, use a **DELETE** statement

```
DELETE FROM table-name  
WHERE selection condition
```



# Data Manipulation Language, DML

Example:

```
DELETE FROM Customers WHERE CustomerID=3;
```

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	Maria Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Student	Avda. de la Constituciyn 2222	Taraz	05021	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	Berlin	WA1 1DP	UK

After the proposal **DELETE FROM**, the third record with values completely delete.

# Activity

Go to this link

[http://www.w3schools.com/sql/trysql.asp?filename=trysql\\_select\\_all](http://www.w3schools.com/sql/trysql.asp?filename=trysql_select_all)

Delete row where CustomerID=12

Perform the task. Show your answers for teacher

# Practical work

Table: actor\_info

actor_id	first_name	last_name	total_films
1	Leonardo	DiCaprio	35
2	Matt	Damon	61
3	Jack	Nicholson	75
4	Mark	Wahlberg	37

# INSERT Query

```
INSERT INTO actor_info VALUES  
(1, 'Leonardo' , 'DiCaprio' ,35),  
(2, 'Matt' , 'Damon' ,61),  
(3, 'Jack' , 'Nicholson' ,75),  
(4, 'Mark' , 'Wahlberg' ,37),
```

# SELECT Query

```
SELECT * FROM actor_info;
```

# SELECT Query

```
SELECT actor_id, total_films  
FROM actor_info;
```

# UPDATE Query

```
UPDATE actor_info  
SET total_films = 36  
WHERE actor_id = 1;
```

# DELETE Query

```
DELETE FROM actor_info  
WHERE total_films > 70
```



# DELETE Query

```
DELETE FROM actor_info
```



## Feedback

- Did you learn useful information for yourself?
- Where did you have difficulties?
- What would like to explore in the next lesson?



# Used links:

- [sqlzoo.net](http://sqlzoo.net)
- [https://en.wikibooks.org/wiki/A-level\\_Computing\\_2009/AQA/Problem\\_Solving,\\_Programming,\\_Operating\\_Systems,\\_Databases\\_and\\_Networking/Databases/SQL](https://en.wikibooks.org/wiki/A-level_Computing_2009/AQA/Problem_Solving,_Programming,_Operating_Systems,_Databases_and_Networking/Databases/SQL)
- <http://articles.org.ru/cn/showdetail.php?cid=7163>
- <http://www.w3schools.com/sql/default.asp>
- <http://www.site-do.ru/db/sql9.php>
- <https://ru.wikipedia.org/wiki/>
- AQA A2 p. 161-163