Tutorial 9

Homework revision

Lecture revision

1. What is DBMS? What is the difference between DB and DBMS?
2. What is SQL? What is CRUD? What SQL statements do you know?
3. What objects does C# have to connect to database in connected architecture?
4. What objects does C# have to connect to database in disconnected architecture?

Programming exercise I – Database

The task is to create a new MS Access database, add a table and manipulate its data using SQL statements.

1. Create new MS Access file. Name it WIUT.mdb
2. Create a table tb\_teacher of the following structure:

tb\_teacher

id {PK}

first\_name

last\_name

address

phone

1. Input sample data
2. Create a query to select data from the table

select \* from tb\_teacher

1. Create a query to insert data into the table

insert into tb\_teacher (first\_name , last\_name, address, phone) values ('Anna', 'Kozlova', 'Tashkent', '111-11-11')

1. Create a query to update data in the table

update tb\_teacher set phone = '222-22-22' where id = 1

1. Create a query to delete data from the table

delete from tb\_teacher where id = 1

Programming exercise II – Connected architecture

Write a program that is able to insert and retrieve data from database created in previous task.

1. Create new Windows application called DBConnected
2. Add OleDbConnection to your toolbox
3. Add an OleDbConnection to the form and set up a new connection via Wizzard.
4. Add import statement to import System.Data.OleDb
5. Add a button. Name it btnRetrieve and set text property to Retrieve.
6. Insert the following code into Click event handler for the button:

try

{

var sql = "select \* from tb\_teacher";

var cmd = new OleDbCommand(sql, conn);

conn.Open();

var rdr = cmd.ExecuteReader();

var result = "";

while (rdr.Read())

{

result += $"Id: {rdr.GetInt32(0)}; First name: {rdr.GetString(1)}; Last name: {rdr.GetString(2)}; Address: {rdr.GetString(3)}; Phone: {rdr.GetString(4)}";

result += "\n";

}

MessageBox.Show(result);

}

catch (Exception ex)

{

MessageBox.Show(ex.Message);

}

finally

{

if ((conn.State != ConnectionState.Closed))

{

conn.Close();

}

}

1. Add four text boxes to the form and another button to insert data
2. Add code to Click event handler for the insert button. Use the following code as a sample:

try

{

var sql = $@"

insert into tb\_teacher (last\_name, first\_name, address, phone)

values('{tbxLastName.Text}', '{tbxFirstName.Text}', '{tbxAddress.Text}', '{tbxPhone.Text}')";

var cmd = new OleDbCommand(sql, conn);

conn.Open();

cmd.ExecuteNonQuery();

MessageBox.Show("Inserted");

}

catch (Exception ex)

{

MessageBox.Show(ex.ToString());

}

finally

{

if ((conn.State != ConnectionState.Closed))

{

conn.Close();

}

}

1. Run the program and see the result

Programming exercise III – Disconnected Architecture

Write a program that retrieves data from database using disconnected architecture.

1. Create new Windows application called DBDisconnected
2. Go to Data Sources window and add new data source
3. Select Dataset and allow copying to project directory
4. Select db.mdb in Solution Explorer and set Copy to Output Directory property to Copy if newer
5. Set up display mode for tb\_teacher to DataGridView and drag-drop it to the form
6. Make grid read-only
7. Set up display mode for tb\_teacher to Details and drag-drop it to the form
8. Add two buttons – Refresh and Save
9. Create a subprocedure LoadData and move code to load data from the database from form load event handler to new subprocedure
10. Call LoadData from Refresh button and in FormLoad event hander
11. Create a subprocedure SaveData and move code to save data from navigator’s button event handler to new subprocedure
12. Call SaveData from Save button and from navigator’s button
13. Run the program and see the result

Home work

Enhance Connected Architecture exercise:

1. Add tab control to the from and add a tab for each of the CRUD operations
2. Copy functionality for Create and Retrieve tabs
3. Add ability to edit and delete data: add NumericUpDown to select id and other required controls to let a user to edit or delete a particular row.

Enhance Disconnected Architecture exercise:

1. Rearrange columns for DataGrid controls