Programare avansata pe obiecte – laborator 11

Alina Puscasu *alina.puscasu@endava.com*

JDBC

JDBC (Java Database Connectivity) is an API for connecting and executing queries on a database.

JDBC can work with any database if proper drivers are provided.

Connecting to a Database

To connect to a database, we simply must initialize the driver and open a database connection.

Registering the Driver: We're using a MySQL database, we need the mysql-connector-java dependency:
https://mvnrepository.com/artifact/mysql/mysql-connector-java/8.0.20 - download jar

(Ctrl + Alt + Shift + S -> "+" from below or Alt+Insert and select downloaded jar)
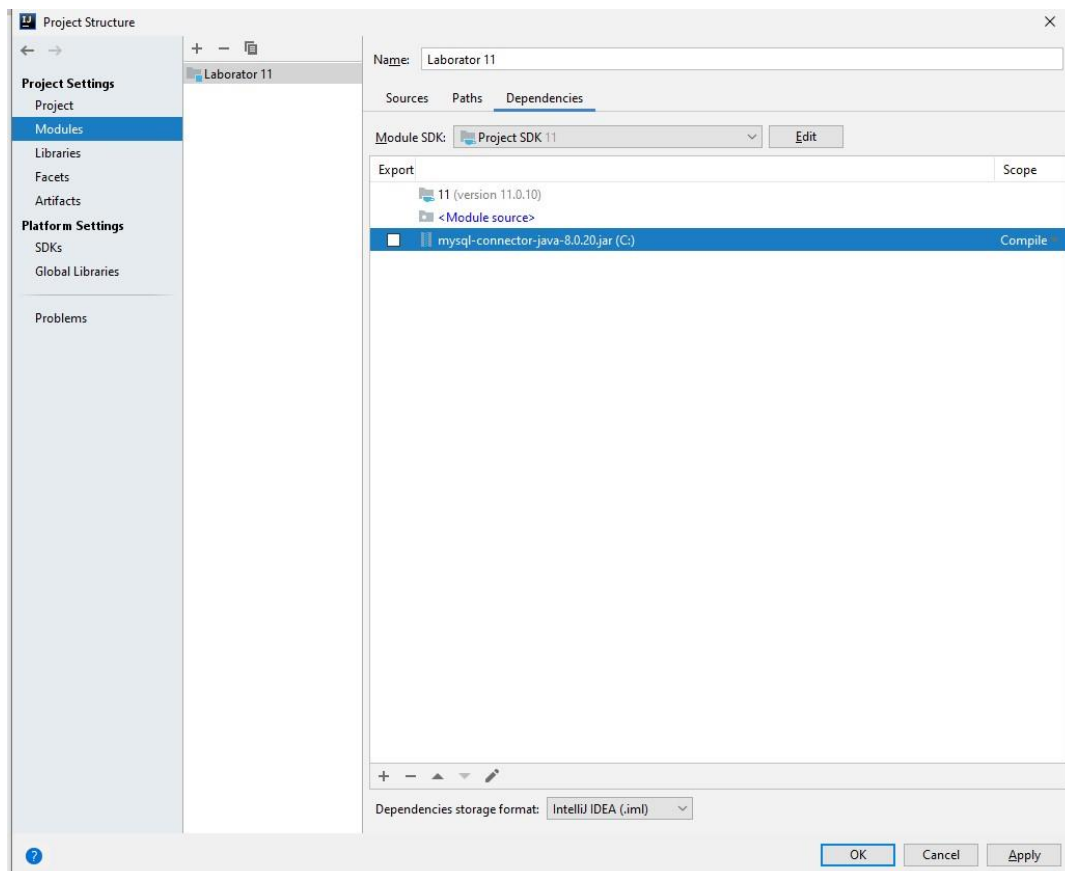
Creating the Connection

We will assume that we already have a MySQL server installed and running on localhost (default port 3306).

We will also need to create the database and user.

Send SQL instructions to the database

We can use instances of type **Statement**, **PreparedStatement** or **CallableStatement**. These are obtained using the **Connection** object.

After executing a query, the result is represented by a **ResultSet** object, which has a structure like a table, with lines and columns. The ResultSet uses the **next()** method to move to the next line.

- **Statement** - The Statement interface contains the essential functions for executing SQL commands.
- **PreparedStatement** - PreparedStatement objects contain precompiled SQL sequences. They can have one or more parameters denoted by a question mark.
- **CallableStatement** – used to call stored procedures
    - Setting input parameter values for the stored procedure is done like in the PreparedStatement interface, using **setX**() methods
    - If the stored procedure has output parameters, we need to add them using the **registerOutParameter**() method

For the CallableStatement example to work, we need to create the stored procedure into the database (lab example):

DELIMITER //
CREATE PROCEDURE insertPerson(OUT id int, IN name varchar(30), IN age double)
BEGIN
INSERT INTO persons(name,age)
VALUES (name,age);
SET id = LAST_INSERT_ID();
END//
DELIMITER ;

Closing the Connection

When we are no longer using, it is necessary to close the connection to release database resources.