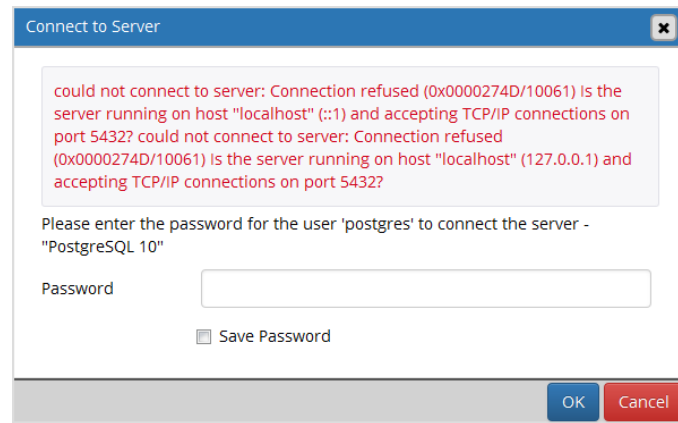
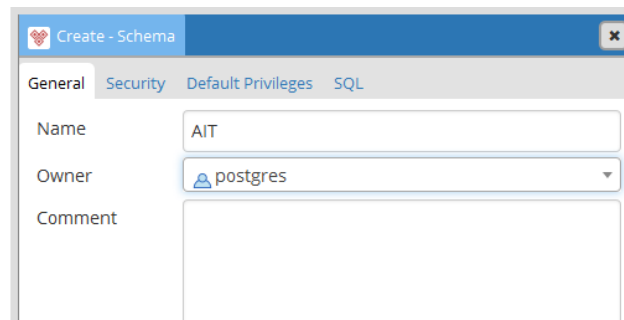


#### *AIT-Lab-04 (Exercises 10-11) By Amir Ebrahimi*

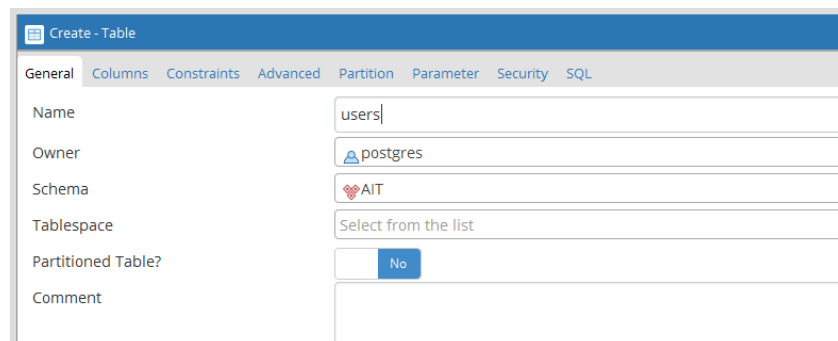
Postgres 10, and pgAdmin 4 as a GUI client are installed. During the installation, a password is given, and the port number 5432 by default is set. After the installation the postgresql service on the system is started automatically. But later, it might be started. Otherwise this error is received:



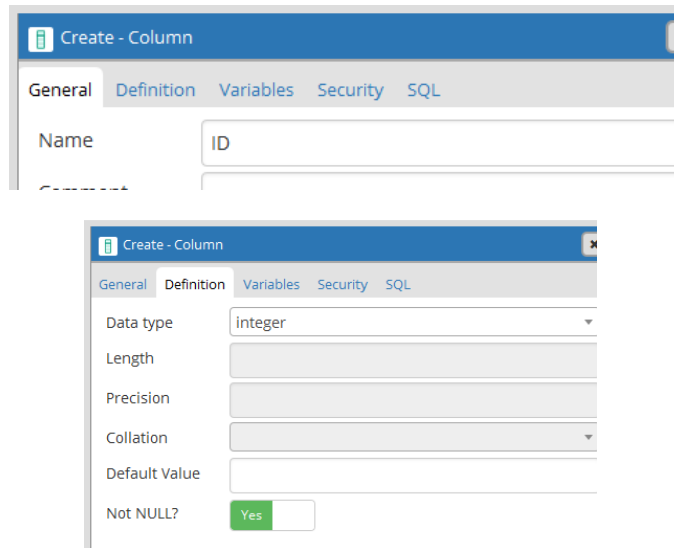
The first thing is to create a schema, named AIT.



In that schema, a table, named users, should be created.

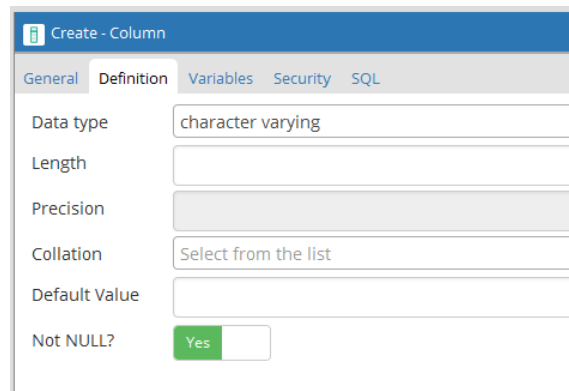


Now, it is time to add three **columns**, named ID, Firstname, and Lastname.



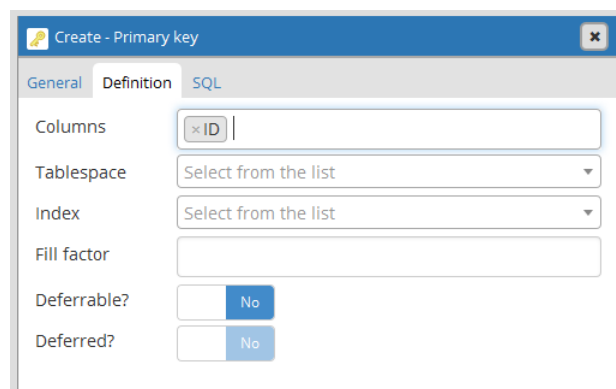
The first screenshot shows the 'Create - Column' dialog box with the 'General' tab selected. The 'Name' field contains 'ID'. The second screenshot shows the 'Definition' tab for the same column. The 'Data type' is set to 'integer', and the 'Not NULL?' checkbox is checked (labeled 'Yes').

The type of ID could be **integer**, and the not null is enabled. Firstname and Lastname could be in **character varying**. Char, and character are not appropriate.

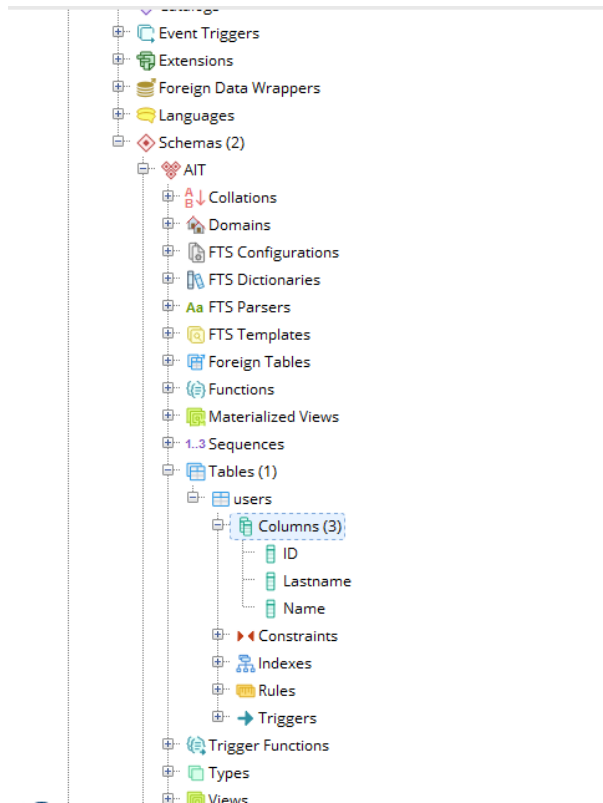


This screenshot shows the 'Create - Column' dialog box with the 'Definition' tab selected. The 'Data type' is set to 'character varying', and the 'Not NULL?' checkbox is checked (labeled 'Yes').

A **primary key** on ID is set by creating a constraint.



This screenshot shows the 'Create - Primary key' dialog box with the 'General' tab selected. The 'Columns' field contains 'ID'. The 'Deferrable?' checkbox is unchecked (labeled 'No').



users

General

Columns

Constraints

Advanced

Parameter

Security

SQL

Inherited from table(s)

Select to inherit from...

Columns

<

Not it is time to populate the table by executing an **inserting script**:

```

Dashboard Properties SQL Statistics Dependencies Dependents Insert script **
[Icons] No limit [Icons]
postgres on postgres@PostgreSQL 10
1 INSERT INTO "AIT".users(
2   "ID", "Name", "Lastname")
3   VALUES (120548, 'Amir', 'Ebrahimi');

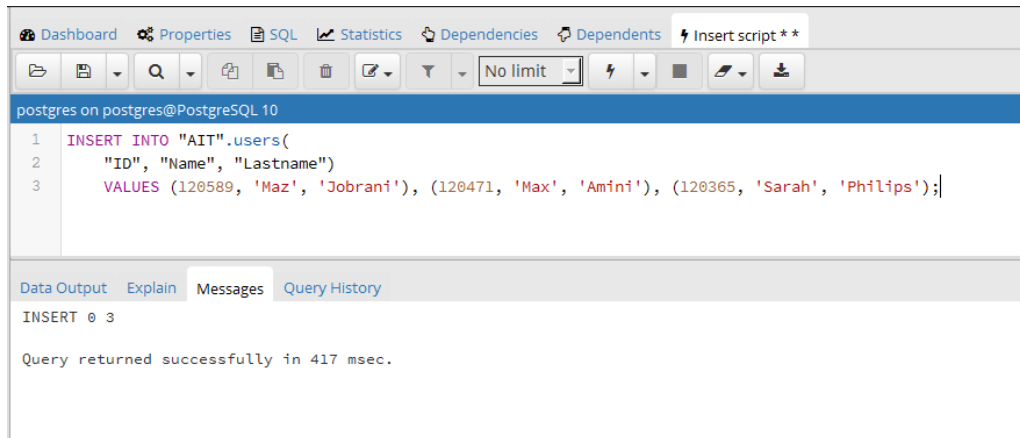
Data Output Explain Messages Query History
INSERT 0 1
Query returned successfully in 155 msec.

```

Fourth Lab- by .

In this example 120548 should be **without any quotation or single quotation**, and Amir and Ebrahimi should be in **single quotation**.

It is possible to add some data in a same time:



The screenshot shows a database IDE interface with a menu bar (Dashboard, Properties, SQL, Statistics, Dependencies, Dependents, Insert script \*\*) and a toolbar. The main editor displays an SQL query to insert three rows into the 'AIT'.users table. Below the editor, the 'Data Output' tab shows the execution result: 'INSERT 0 3' and a message 'Query returned successfully in 417 msec.'

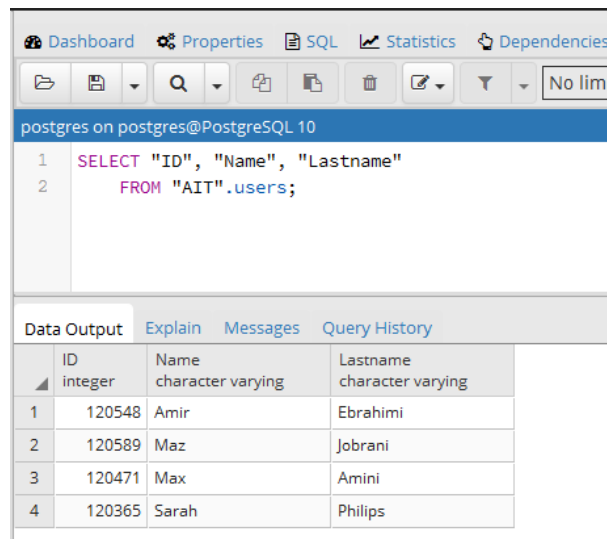
```
1 INSERT INTO "AIT".users(  
2   "ID", "Name", "Lastname")  
3   VALUES (120589, 'Maz', 'Jobrani'), (120471, 'Max', 'Amini'), (120365, 'Sarah', 'Philips');|
```

postgres on postgres@PostgreSQL 10

INSERT 0 3

Query returned successfully in 417 msec.

**Selecting script** is shown for checking the data:



The screenshot shows the same database IDE interface. The main editor displays an SQL query to select all data from the 'AIT'.users table. Below the editor, the 'Data Output' tab shows the results of the query in a table format.

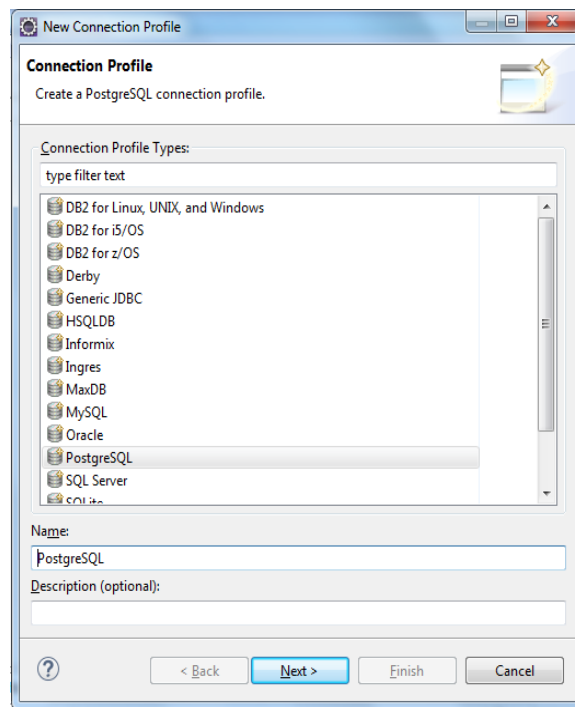
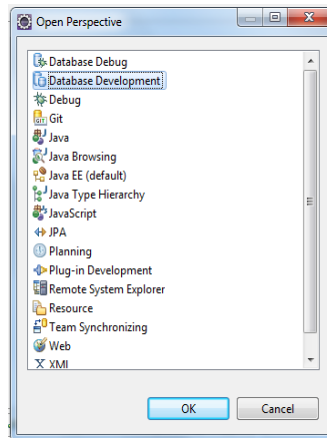
```
1 SELECT "ID", "Name", "Lastname"  
2   FROM "AIT".users;
```

postgres on postgres@PostgreSQL 10

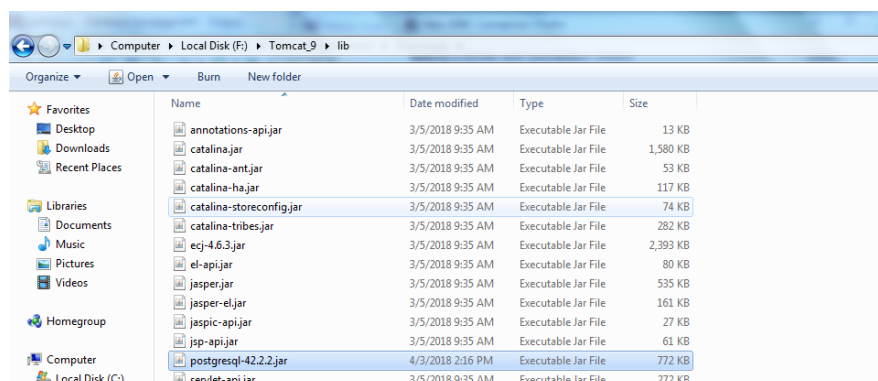
	ID	Name	Lastname
	integer	character varying	character varying
1	120548	Amir	Ebrahimi
2	120589	Maz	Jobrani
3	120471	Max	Amini
4	120365	Sarah	Philips

We should **connect to the database in Eclipse**. In order to satisfy this purpose, an appropriate **JDBC Driver** based on which version of **JDK** used should be downloaded and added to the project.

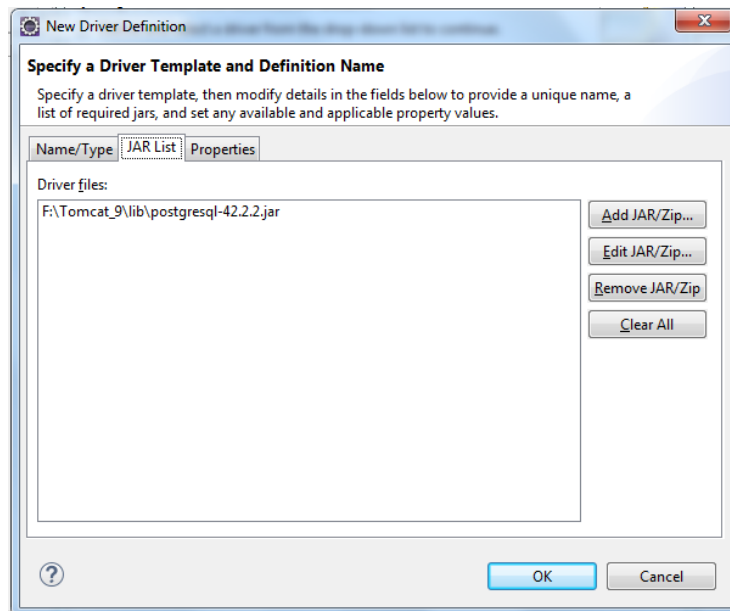
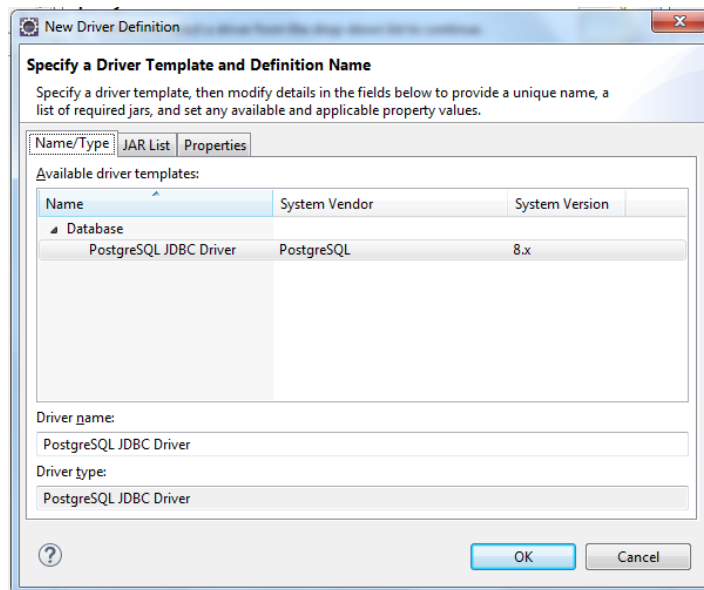
In **Eclipse**, these steps should be followed:



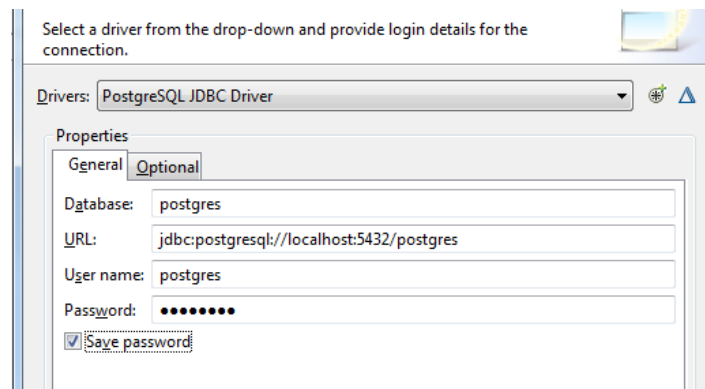
The downloaded **jar** file should be transmitted to the **lib directory of the Tomcat**.



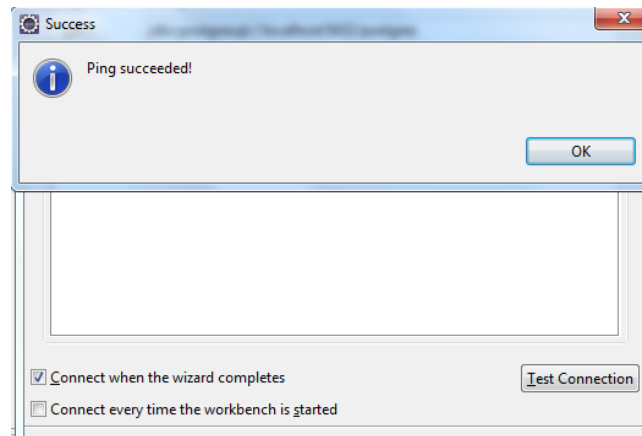
Fourth Lab- by Amir(aebraimi@unibz.it)



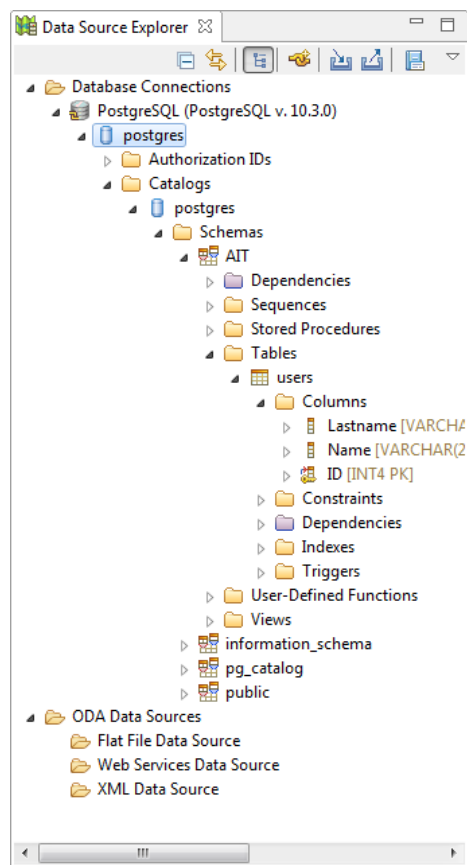
The database, username, and password should be chosen in this step. The **URL value** is used in the code for connecting to the database.



After that the connection could be checked.



The tree:



Now it is time to create a **servlet class** and write the code in the **doGet** method:

Fourth Lab- by Amir(aebrahimi@unibz.it)

As it is said, the value of the URL in the previous step should be used as a string parameter of the `getConnection`.

```
protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
    String dbname = "jdbc:postgresql://localhost:5432/postgres";
    String driver = "org.postgresql.Driver";
    try {
        Class.forName(driver);
    } catch (ClassNotFoundException e) {
        e.printStackTrace();
    }
    Connection con = null;
    try {
        con = DriverManager.getConnection(dbname, "postgres", "admin123");
    } catch (SQLException e) {
        e.printStackTrace();
    }
    Statement statement = null;
    try {
        statement = con.createStatement();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
```

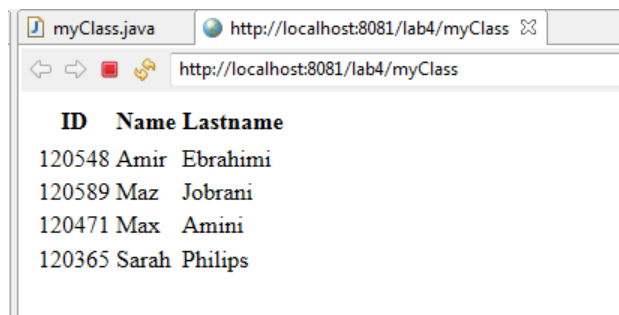
The database name is postgres but the schema created in pgAdmin is AIT. Hence, we should select the data from the table, named users, in the schema, named AIT. We should use a `backslash` before quotation character in the string.

```
String sql = "SELECT * FROM \"AIT\".users";
ResultSet rs = null;
try {
    rs = statement.executeQuery(sql);
} catch (SQLException e) {
    e.printStackTrace();
}
```

for showing data in the table, `table tags` should be used.

```
PrintWriter out = response.getWriter();
try {
    out.println("<table>");
    out.println("<tr><th>ID</th><th>Name</th><th>Lastname</th><tr>");
    while(rs.next())
    {
        out.println("<tr><td>" + rs.getString("ID") + "</td><td>" + rs.getString("Name") + "</td><td>" + rs.getString("Lastname") + "</td><tr>");
    }
    out.println("</table>");
} catch (SQLException e) {
    e.printStackTrace();
}
```

The output:



ID	Name	Lastname
120548	Amir	Ebrahimi
120589	Maz	Jobrani
120471	Max	Amini
120365	Sarah	Philips