Database Connectivity using Servlets

Servlets are mainly used in Dynamic web applications which provides dynamic responses to client requests. In most cases, Dynamic web applications access a database to provide the client requested data. We can use Java standard database connection – JDBC in Servlets to perform database operations.

A Servlet can generate dynamic HTML by retrieving data from the database and sending it back to the client as a response. We can also update the database based on data passed in the client HTTP request. We will create a simple servlet to fetch/retrieve data from the database based on the client's request.

Step 1: Setup Environment Variable

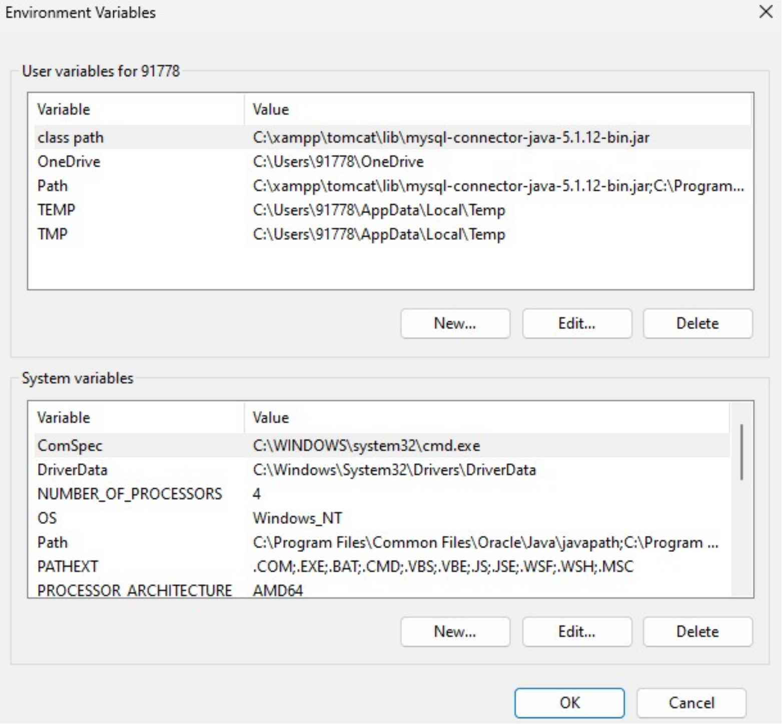
Download the JDBC driver (mysql-connector-java-5.1.12-bin.jar) from the MySQL Connector/J download page.

Add the path to the MySQL Connector/J JAR file to your system's classpath.

- Right-click on Computer or This PC and select Properties.
- Click on Advanced system settings.
- Click on Environment Variables.

Under System variables, find and select the CLASSPATH variable. If it does not exist, click New to create it.

- Edit the CLASSPATH variable and add the path to the JDBC JAR file.
- C:\path\to\mysql-connector-java-5.1.12-bin.jar;
- Click OK to save the changes.



User variables for 91778

Variable	Value
class path	C:\xampp\tomcat\lib\mysql-connector-java-5.1.12-bin.jar
OneDrive	C:\Users\91778\OneDrive
Path	C:\xampp\tomcat\lib\mysql-connector-java-5.1.12-bin.jar;C:\Program...
TEMP	C:\Users\91778\AppData\Local\Temp
TMP	C:\Users\91778\AppData\Local\Temp

System variables

Variable	Value
ComSpec	C:\WINDOWS\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS	4
OS	Windows_NT
Path	C:\Program Files\Common Files\Oracle\Java\javapath;C:\Program ...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64

Step 2: Create "Register.java" and "Register.class"

Code: Register.java -

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;
import java.sql.*;
public class Register extends HttpServlet {
  protected void doPost(HttpServletRequest request, HttpServletResponse response)
      throws ServletException, IOException {
    response.setContentType("text/html");
    PrintWriter out = response.getWriter();
    String fn = request.getParameter("first");
    String ln = request.getParameter("last");
    String em = request.getParameter("email");
       String uid = request.getParameter("uid");
       String pass = request.getParameter("password");
       String cpass = request.getParameter("confirm");
       String mob = request.getParameter("mobile");
    try{
    Class.forName("com.mysql.jdbc.Driver");
     Connection  con=DriverManager.getConnection
          ("jdbc:mysql://localhost:3306/gitam","root","");
    PreparedStatement ps=con.prepareStatement
         ("insert into reg values(?,?,?,?,?,?,?)");
    ps.setString(1, fn);
    ps.setString(2, ln);
    ps.setString(3, em);
       ps.setString(4, uid);
       ps.setString(5, pass);
       ps.setString(6, cpass);
       ps.setString(7, mob);
    int i=ps.executeUpdate();

     if(i>0)
     {
      out.println("You are sucessfully registered");
     }

    }
    catch(Exception se)
    {
      se.printStackTrace();
    }

   }
 }
```

To execute a Java file, here's the corrected terminal line code:

```
C:/Users/91778/Downloads/lab> javac -cp C:\xampp\tomcat\lib\servlet-api.jar Register.java
```

By running this command in the terminal, a .class file will be created in the same directory as the Register.java file.

- Now execute the code and get "Register.class" file.

- Deploy this file in xampp/examples/classes folder.

Step 3: Create "Retrieve.java" and "Retrieve.class"

Code: Retrieve.java -

```
import java.io.*;
import java.sql.*;
import javax.servlet.*;
import javax.servlet.http.*;
public class Retrieve extends HttpServlet
{
  protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
ServletException, IOException
    {
        response.setContentType("text/html");
            PrintWriter out = response.getWriter();
            try {
                Class.forName("com.mysql.jdbc.Driver");
                Connection c = DriverManager.getConnection("jdbc:mysql://localhost:3306/gitam", "root",
"");
                Statement stmt = c.createStatement();
            ResultSet rs = stmt.executeQuery("select first,last,email,uid,mobile from reg");
            out.println("<table border = '1'>");
            out.println("<tr><td>First Name</td><td>Last Name</td><td>Email ID</td><td>User
ID</td><td>Mobile No</td></tr>");
            while (rs.next())
            {
```

```
out.println("<tr><td>"+rs.getString("first")+"</td><td>"+rs.getString("last")+"</td><td>"+rs.getString("e
mail")+"</td><td>"+rs.getString("uid")+"</td><td>"+rs.getString("mobile")+"</td></tr>");

        } out.println("</table>");

        } catch (ClassNotFoundException | SQLException e) {

                e.printStackTrace();

            }

        }

}
```

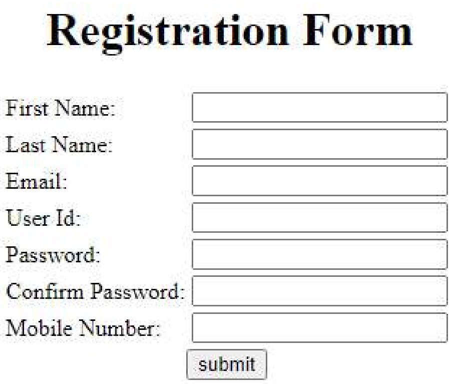
To execute a Java file, here's the corrected terminal line code:

```
C:/Users/91778/Downloads/lab> javac -cp C:\xampp\tomcat\lib\servlet-api.jar Retrieve.java
```

By running this command in the terminal, a .class file will be created in the same directory as the Retrieve.java file.

- Now execute the code and get "Retrieve. class" file.

- Deploy this file in xampp/examples/classes folder.



Registration Form

First Name:

Last Name:

Email:

User Id:

Password:

Confirm Password:

Mobile Number:

Step 4: Create "Registration.html" file

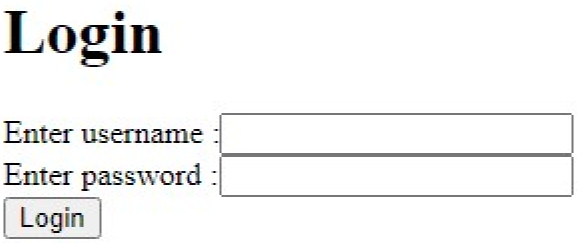
Create a Registration form file to fill the entries

To create a registration file with validation, use validation Code.

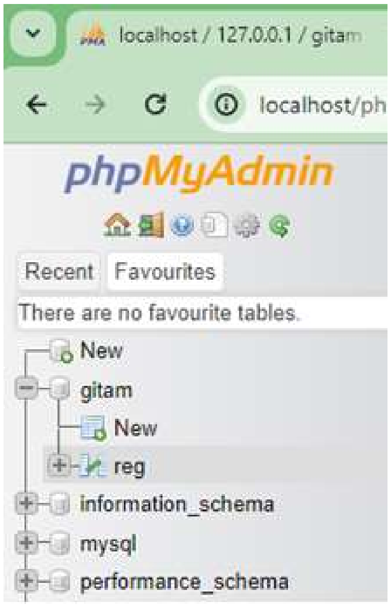
Make sure to Add this statement in the Code

```
<body>

    <h1 align="center"> Registration Form </h1>

    <table align="center">

<form method="post" action: "http://localhost:8080/examples/servlets/ Servlet/Register">

</body>
```

Step 5: Create "Login.html" file



```
<!DOCTYPE html>

<html>

<head>

<meta charset="ISO-8859-1">

<title>Insert title here</title>

</head>

<body>

        <h1>Login </h1>

        <form action="http://localhost:8080/examples/servlets/servlet/Retrieve" method="post">

                Enter username :<input type="text" name="user"> <br>

                Enter password :<input type="password" name="pass"><br>

                <input type="submit" value="Login">

        </form>

</body>

</html>
```



Step 6: Create a Server on localhost:80

Connect Apache, MySQL, Tomcat on xampp Control panel.

Click on Browser.

Go to localhost: 80 click phpmyAdmin

Create a New Database named "gitam"

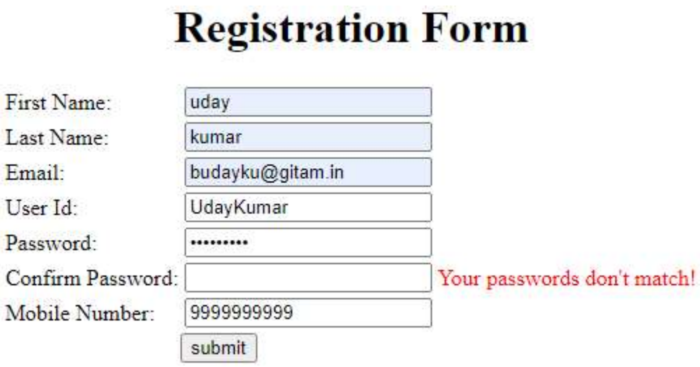
Create a Table

create table reg (first varchar (20), last varchar (20), email varchar (30), uid varchar (20), pass varchar (20), cpass varchar (20), mobile varchar (20))

Step 7 : Data Store and Registration

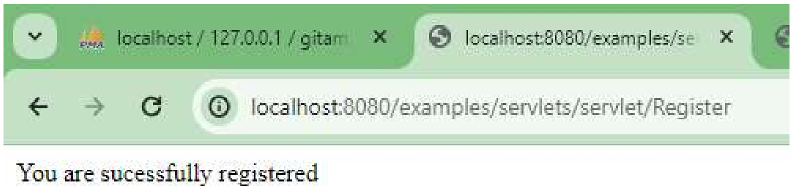
Open Registeration.html file in Browser and fill your details by following Validation rules

- After Submitting, you will get " you are successfully Registered" .
- Now Check the details which we have filled On phpMyAdmin



Registration Form

First Name:	uday	
Last Name:	kumar	
Email:	budayku@gitam.in	
User Id:	UdayKumar	
Password:	•••••••••	
Confirm Password:		Your passwords don't match!
Mobile Number:	9999999999	

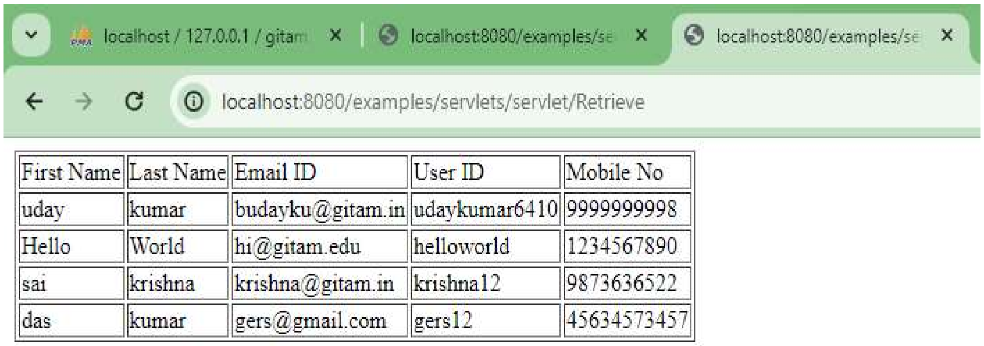


localhost:8080/examples/servlets/servlet/Register

You are sucessfully registered

Steps to login and check details, click on "login.html" file

- Enter username and password
- Now the table with given entries are visible clearly



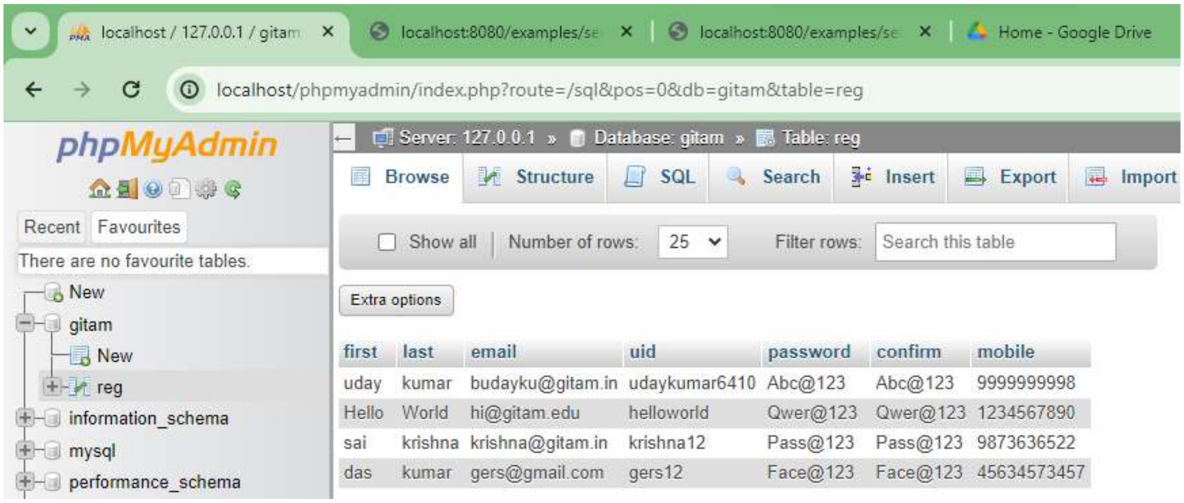
localhost / 127.0.0.1 / gitam
localhost:8080/examples/se
localhost:8080/examples/se

localhost:8080/examples/servlets/servlet/Retrieve

First Name	Last Name	Email ID	User ID	Mobile No
uday	kumar	budayku@gitam.in	udaykumar6410	9999999998
Hello	World	hi@gitam.edu	helloworld	1234567890
sai	krishna	krishna@gitam.in	krishna12	9873636522
das	kumar	gers@gmail.com	gers12	45634573457

To view the Registered details, click on localhost:80

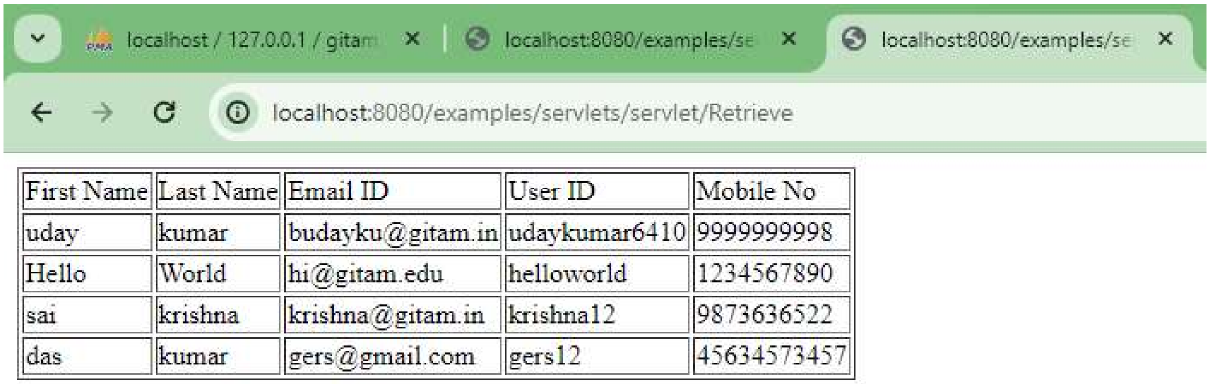
- Go to phpmyadmin
- Open Gitam Database
- You can see the details as mentioned below


localhost / 127.0.0.1 / gitam
localhost:8080/examples/se
localhost:8080/examples/se
Home - Google Drive
localhost/phpmyadmin/index.php?route=/sql&pos=0&db=gitam&table=reg
phpMyAdmin
Server: 127.0.0.1 » Database: gitam » Table: reg
Browse
Structure
SQL
Search
Insert
Export
Import
Recent
Favourites
There are no favourite tables.
New
gitam
New
reg
information_schema
mysql
performance_schema
Show all
Number of rows:
25
Filter rows:
Search this table
Extra options

first	last	email	uid	password	confirm	mobile
uday	kumar	budayku@gitam.in	udaykumar6410	Abc@123	Abc@123	9999999998
Hello	World	hi@gitam.edu	helloworld	Qwer@123	Qwer@123	1234567890
sai	krishna	krishna@gitam.in	krishna12	Pass@123	Pass@123	9873636522
das	kumar	gers@gmail.com	gers12	Face@123	Face@123	45634573457

To Retrieve the details in table form, run login.html file

- open login.html file
- Fill some details and submit
- You can view Table filled with registered details


localhost / 127.0.0.1 / gitam
localhost:8080/examples/se
localhost:8080/examples/se
localhost:8080/examples/servlets/servlet/Retrieve

First Name	Last Name	Email ID	User ID	Mobile No
uday	kumar	budayku@gitam.in	udaykumar6410	9999999998
Hello	World	hi@gitam.edu	helloworld	1234567890
sai	krishna	krishna@gitam.in	krishna12	9873636522
das	kumar	gers@gmail.com	gers12	45634573457