INTERNATIONAL UNIVERSITY

VIETNAM NATIONAL UNIVERSITY HCMC

School of Computer Science & Engineer

Report Lab 3

Course: WEB APPLICATION DEVELOPMENT

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Lab 3: Introduction to Servlet Programming

Exercise 1: Design a form with three parameters:

My code:

Index.jsp (ThreeParams.jsp): Take input from user.

```jsp
<%--
    Document   : ThreeParams.jsp
    Created on : Apr 11, 2024, 12:46:06 PM
    Author     : thanhphatchau
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>JSP Page</title>
    </head>
    <body>
        <h1>Collect Three Parameters</h1>
        <form action="./GetThreeParam" method="GET">
            <table>
                <tr>
                    <td>
                        First Parameter:
                    </td>
                    <td>
                        <input type="text" name="p1">
                    </td>
                </tr>
                <tr>
                    <td>
                        Second Parameter:
                    </td>
                    <td>
                        <input type="text" name="p2">
                    </td>
                </tr>
                <tr>
                    <td>
                        Third Parameter:
                    </td>
                    <td>
                        <input type="text" name="p3">
                    </td>
                </tr>
                <tr>
                    <td spancols="2">
                        <input type="submit"
                    </td>
                </tr>
            </table>
        </form>
    </body>
```

```
</html>
```

GetThreeParam.java: servlet class ouputs data.

```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to
change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit
this template
 */

import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.*;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.*;

/**
 *
 * @author thanhphatchau
 */
@WebServlet(urlPatterns = {"/GetThreeParam"})
public class GetThreeParam extends HttpServlet {

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse
response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        String firstpara = request.getParameter("p1");
        String secondpara = request.getParameter("p2");
        String thirdpara = request.getParameter("p3");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet GetThreeParam</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1>Reading Three Request Parameters</h1>");
            out.println("<ul><li>param1: " + firstpara +"</li>");
            out.println("<li>param2: " + secondpara +"</li>");
            out.println("<li>param3: " + thirdpara +"</li></ul>");
```

```java
            out.println("</body>");
            out.println("</html>");
        }
    }

    // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the +
sign on the left to edit the code.">
    /**
     * Handles the HTTP <code>GET</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Handles the HTTP <code>POST</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Returns a short description of the servlet.
     *
     * @return a String containing servlet description
     */
    @Override
    public String getServletInfo() {
        return "Short description";
    }// </editor-fold>

}
```
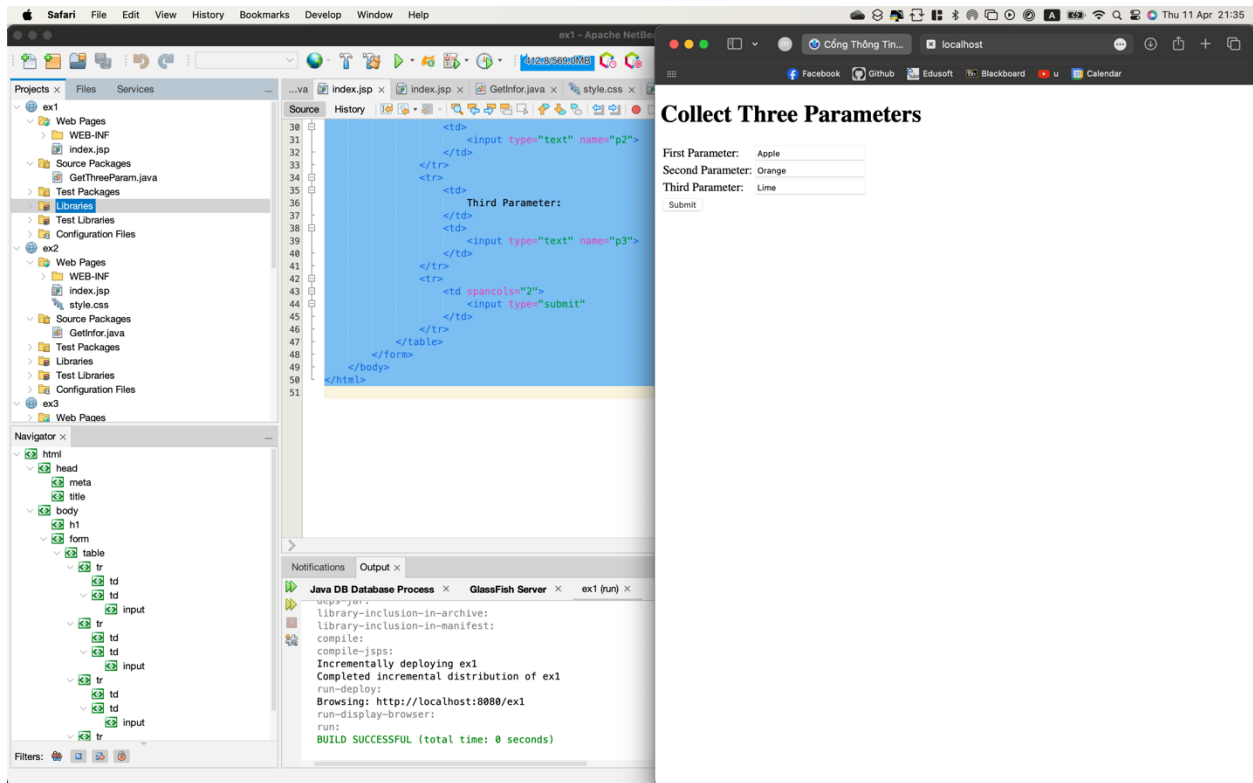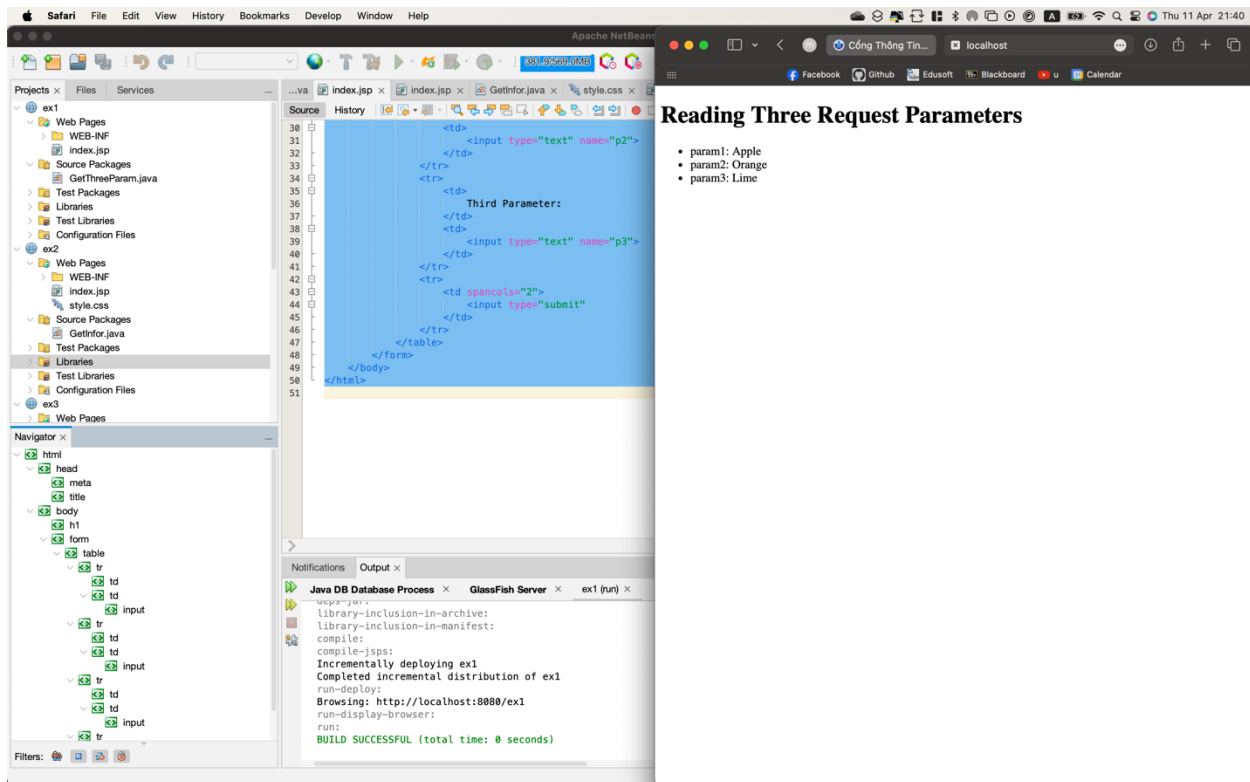
Output:

When I executed the project, a screen shows up and let me input 3 different parameter.

After filling out the blanks, I click on button "submit" to see the servlet class would executed as expected.

Exercise 2:

My code:

Index.jsp (PersonalInfor.jsp): Input user information into the form.

```jsp
<%--
    Document    : index
    Created on  : Apr 11, 2024, 1:18:37 PM
    Author      : thanhphatchau
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>JSP Page</title>
    </head>
    <body>
        <h1>Personal Information</h1>
        <hr>
        <form action="./GetInfor" method="GET">
            <table>
                <tr>
                    <td>
                        ID:
                    </td>
                    <td>
                        <input type="text" name="id">
```

```html
            </td>
        </tr>
        <tr>
            <td>
                Name:
            </td>
            <td>
                <input type="text" name="name">
            </td>
        </tr>
        <tr>
            <td>
                Email:
            </td>
            <td>
                <input type="email" name="email">
            </td>
        </tr>
        <tr>
            <td>
                Gender:
            </td>
            <td>
                <input type="radio" name="gender" value="male">Male
                <input type="radio" name="gender" value="female">Female
            </td>
        </tr>
        <tr>
            <td>
                Major:
            </td>
            <td>
                <select name="major" size="1">
                    <option>Business Administration</option>
                    <option>Information Technology</option>
                    <option>Biotechnologies</option>
                    <option>English Literature</option>
                </select>
            </td>
        </tr>
        <tr>
            <td>
                Interesting field:
            </td>
            <td>
                <textarea name="interest" rows="4" cols="50"></textarea>
            </td>
        </tr>
        <tr>
            <td>
                <input type="submit" value="Insert">
            </td>
            <td>
```

```html
                        <input type="reset" value="Cancel">
                    </td>
                </tr>
            </table>
        </form>
    </body>
</html>
```

GetInfor.java: Servlet class to print out my parameters in order.

```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to
change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit
this template
 */

import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.*;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.*;

/**
 *
 * @author thanhphatchau
 */
@WebServlet(urlPatterns = {"/GetInfor"})
public class GetInfor extends HttpServlet {

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse
response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        String id = request.getParameter("id");
        String name = request.getParameter("name");
        String email = request.getParameter("email");
        String gender = request.getParameter("gender");
        String major = request.getParameter("major");
        String interest = request.getParameter("interest");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
```

```java
            out.println("<title>Servlet GetInfor</title>");
            out.println("<link rel=\"stylesheet\" href=\"style.css\">");
            out.println("</head>");
            out.println("<body>");
            out.println("<div class=\"content\">");
            out.println("<h1 style=\"text-align:center;\">Reading Personal
Information</h1>");
            out.println("<hr>");
            out.println("<table align = center>");
            out.println("<tr><td>ID:</td><td>"+id+"</td></tr>");
            out.println("<tr><td>Name:</td><td>"+name+"</td></tr>");
            out.println("<tr><td>Email:</td><td>"+email+"</td></tr>");
            out.println("<tr><td>Gender:</td><td>"+gender+"</td></tr>");
            out.println("<tr><td>major:</td><td>"+major+"</td></tr>");
            out.println("<tr><td>Interest Field:</td><td>"+interest+"</td></tr>");
            out.println("</table>");
            out.println("</div>");
            out.println("</body>");
            out.println("</html>");
        }
    }

    // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the +
sign on the left to edit the code.">
    /**
     * Handles the HTTP <code>GET</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Handles the HTTP <code>POST</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
```

```
     * Returns a short description of the servlet.
     *
     * @return a String containing servlet description
     */
    @Override
    public String getServletInfo() {
        return "Short description";
    }// </editor-fold>

}
```

Output:

First of all, I fill out the form all of my information.

Then, I clicked on insert button to let the servlet print out expected information in order.

Exercise 3:

Index.jsp:

```jsp
<%--
    Document    : index
    Created on  : Apr 11, 2024, 1:56:08 PM
    Author      : thanhphatchau
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
        <title>JSP Page</title>
    </head>
<body>
    <h1>School of Computer Science & Engineering</h1>
    <hr>
    <article>
        <h2>Register Form</h2>
        <form action="./RegisterCourse" method="post">
            <table>
                <tr>
                    <th align="left">
                        <label for="fullname">Full Name: </label>
                    </th>
                    <th align="left">
                        <input type="text" id="fullname" name="Fullname" ><br>
```

```html
                </th>
            </tr>
            <tr>
                <th align="left">
                    <label for="id">ID:</label>
                </th>
                <th align="left">
                    <input type="text" id="id" name="ID"><br>
                </th>
            </tr>
            <tr>
                <th align="left">
                    <label for="email">Email:</label>
                </th>
                <th align="left">
                    <input type="email" id="mail" name="Mail"><br>
                </th>
            </tr>
            <tr>
                <th align="left">
                    <label for="gender">Gender:</label>
                </th>
                <th align="left">
                    <input type="radio" name="Gender" value="male">Male
                    <input type="radio" name="Gender" value="female">Female
                </th>
            </tr>
            <tr>
                <th><label for="field">Field of Study:</label></th>
                <th align="left"><select name="Field of Study" size="1">
                    <option value="CS">CS</option>
                    <option value="DS">DS</option>
                    <option value="CN">CN</option>
                    <option value="NE">NE</option>
                    <option value="Others">Others</option>
                </select></th>
            </tr>
            <tr>
                <th>
                    <label for="subj">List of subjects:</label>
                </th>
                <th align="left">
                    <input type="checkbox" name="List of Subjects"
value="Principle of EE1">Principle of EE1 <br>
                    <input type="checkbox" name="List of Subjects" value="Computer
Network">Computer Network <br>
                    <input type="checkbox" name="List of Subjects" value="Web
Application Development">Web Application Development <br>
                    <input type="checkbox" name="List of Subjects" value="Object
Oriented Programming">Object Oriented Programming <br>
                    <input type="checkbox" name="List of Subjects" value="Computer
Graphics">Computer Graphics <br>
                </th>
```

```html
                </tr>
                <tr>
                    <th align="left">
                        <label for="comment">Comment:</label>
                    </th>
                    <th align="left">
                        <textarea name="Comment" cols="50" rows="5"></textarea>
                    </th>
                </tr>
                <tr>
                    <th>
                        <input type="submit">
                    </th>
                    <th align="left">
                        <input type="reset" value="Cancel">
                    </th>
                </tr>
            </table>
        </form>
    </article>
</body>
</html>
```

RegisterCourse.java:

```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to
change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit
this template
 */

import java.io.IOException;
import java.io.PrintWriter;
import jakarta.servlet.*;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.*;
import java.util.Enumeration;


/**
 *
 * @author thanhphatchau
 */
@WebServlet(urlPatterns = {"/RegisterCourse"})
public class RegisterCourse extends HttpServlet {
    private String host;
    private String port;
    private String user;
    private String pass;

    public void init(){
        ServletContext context = getServletContext();
        host = context.getInitParameter("host");
```

```java
        port = context.getInitParameter("port");
        user = context.getInitParameter("user");
        pass = context.getInitParameter("pass");
    }

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        response.setContentType("text/html;charset=UTF-8");
        Enumeration paramNames = request.getParameterNames();
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet RegisterCourse</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1 align=center>Successfully Register to The Courses</h1>");
            out.println("<table border=1 align=center>\n"+"<tr>\n"+"<th>Titles<th>User Input");
            while(paramNames.hasMoreElements()){
                String paramName= (String)paramNames.nextElement();
                out.print("<tr><td>"+paramName+"\n<td>");
                String[] paramValues = request.getParameterValues(paramName);
                if (paramValues.length ==1 ){
                    String paramValue = paramValues[0];
                    if (paramValue.length() == 0)
                        out.println("<i>No Value</i>");
                    else
                        out.println(paramValue);
                }else {
                    out.println("<ul>");
                    for(int i = 0; i < paramValues.length;i++){
                        out.println("<li>"+paramValues[i]);
                    }
                    out.println("</ul>");
                }
            }
            out.println("</table>");
            out.println("</body>");
            out.println("</html>");
        }
    }
```

```java
    // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the +
sign on the left to edit the code.">
    /**
     * Handles the HTTP <code>GET</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Handles the HTTP <code>POST</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
        String recipient = request.getParameter("Mail");
        String subject = new String("Successfully Registered Courses");
        String content = request.getParameter("Comment");
        String resultMessage = "";
        try{
            EmailUtility.sendEmail(host,port,user,pass,recipient,subject,content);
            resultMessage = "The e-mail was sent successfully";
        }/**end of try*/catch (Exception ex){
            ex.printStackTrace();
            resultMessage = "There were an error: " + ex.getMessage();
        } finally {
            request.setAttribute("Message", resultMessage);

getServletContext().getRequestDispatcher("Result.jsp").forward(request,response);
        }
    }

    /**
     * Returns a short description of the servlet.
     *
     * @return a String containing servlet description
     */
    @Override
    public String getServletInfo() {
```

```
        return "Short description";
    }// </editor-fold>


}
```
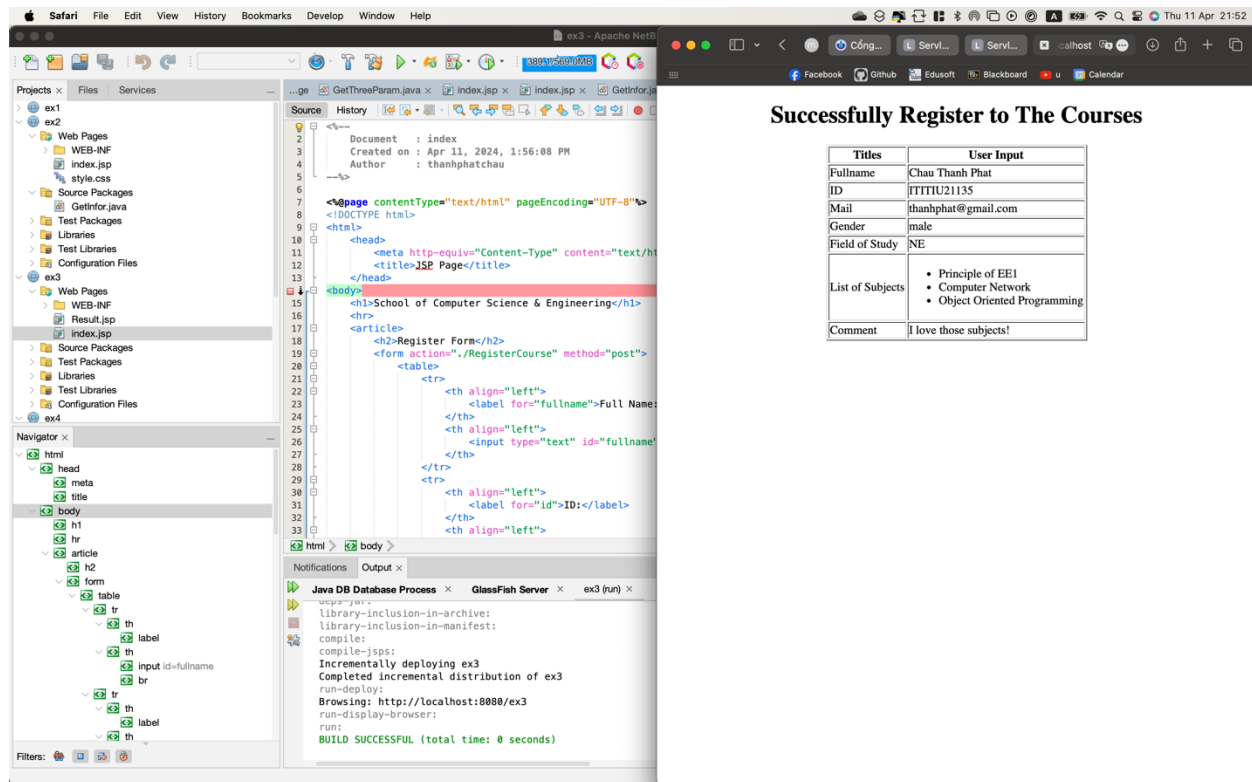
Output:

I filled out the form.

And then I clicked on submit button to receive the expected information in order of the table.

Exercise 4:

In the previous project, I add 2 more class which will help me establish connection to SMTP server and execute my command of sending email over jsp and servlet.

First of all:

EmailSessionBean.java – This session bean helped me initialize the connection between my local host and SMTP. I used google free SMTP server so I provide the code with my password for application (already hiden for privacy) and also my email username.

When the server's application for signing in SMTP, it might be required of the authentication so construction of a Authenticator is necessary.

I also construct a Mimemessage instance for populating the message header and content.

```
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to
change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/Classes/Class.java to edit this
template
```

```java
    */
package com.example;

import jakarta.ejb.LocalBean;
import jakarta.ejb.Stateless;
import jakarta.mail.Authenticator;
import jakarta.mail.Message;
import jakarta.mail.MessagingException;
import jakarta.mail.PasswordAuthentication;
import jakarta.mail.Session;
import jakarta.mail.Transport;
import jakarta.mail.internet.InternetAddress;
import jakarta.mail.internet.MimeMessage;
import java.util.Date;
import java.util.Properties;

/**
 *
 * @author thanhphatchau
 */
@LocalBean
@Stateless
public class EmailSessionBean {
        private int port = 465;
        private String host ="smtp.example.com";
        private String from ="iamayase0018@gmail.com";
        private boolean auth = true;
        private String username ="iamayase0018@gmail.com";
        private String password ="secret password";
        private Protocol protocol = Protocol.SMTPS;
        private boolean debug = true;
    public void sendEmail (String to, String subject, String body){
        Properties props = new Properties();
        props.put("mail.smtp.host", host);
        props.put("mail.smtp.port",port);
        switch(protocol){
            case SMTPS:
                props.put("mail.smtp.ssl.enable", true);
                break;
            case TLS:
                props.put("mail.smtp.starttls.enable", true);
                break;
        }
        Authenticator authenticator = null;
if (auth) {
    props.put("mail.smtp.auth", true);
    authenticator = new Authenticator() {
```

```java
        private PasswordAuthentication pa = new PasswordAuthentication(username,
password);
        @Override
        public PasswordAuthentication getPasswordAuthentication() {
            return pa;
        }
    };
}

Session session = Session.getInstance(props, authenticator);
session.setDebug(debug);

MimeMessage message = new MimeMessage(session);
try {
    message.setFrom(new InternetAddress(from));
    InternetAddress[] address = {new InternetAddress(to)};
    message.setRecipients(Message.RecipientType.TO, address);
    message.setSubject(subject);
    message.setSentDate(new Date());
    message.setText(body);
    Transport.send(message);
} catch (MessagingException ex) {
    ex.printStackTrace();
}




    }


}
```

EmailServlet.java – I added more codes to initial required variable of a standard email (TO, SUBJECT, and CONTENT).

```java
/*
 * Click nbfs://nbhost/SystemFileSystem/Templates/Licenses/license-default.txt to
change this license
 * Click nbfs://nbhost/SystemFileSystem/Templates/JSP_Servlet/Servlet.java to edit
this template
 */
package com.example;

import jakarta.ejb.EJB;
import jakarta.servlet.ServletException;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
```

```java
import jakarta.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.io.PrintWriter;
import java.util.Enumeration;



/**
 *
 * @author thanhphatchau
 */
@WebServlet(name = "EmailServlet", urlPatterns = {"/EmailServlet"})
public class EmailServlet extends HttpServlet {

    @EJB
    private EmailSessionBean emailBean;

    /**
     * Processes requests for both HTTP <code>GET</code> and <code>POST</code>
     * methods.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    protected void processRequest(HttpServletRequest request, HttpServletResponse
response)
            throws ServletException, IOException {
                Enumeration paramNames = request.getParameterNames();
        String to = request.getParameter("Mail");
        String subject = new String("Register form sucessfully.");
        String body = new String("You sucessfully registered to the course!");
        emailBean.sendEmail(to, subject, body);
        response.setContentType("text/html;charset=UTF-8");
        try (PrintWriter out = response.getWriter()) {
            /* TODO output your page here. You may use following sample code. */
            out.println("<!DOCTYPE html>");
            out.println("<html>");
            out.println("<head>");
            out.println("<title>Servlet RegisterCourse</title>");
            out.println("</head>");
            out.println("<body>");
            out.println("<h1 align=center>Successfully Register to The Courses</h1>");
            out.println("<table border=1 align=center>\n"+"<tr>\n"+"<th>Titles<th>User
Input");
            while(paramNames.hasMoreElements()){
                String paramName= (String)paramNames.nextElement();
                out.print("<tr><td>"+paramName+"\n<td>");
```

```java
                String[] paramValues = request.getParameterValues(paramName);
                if (paramValues.length ==1 ){
                    String paramValue = paramValues[0];
                    if (paramValue.length() == 0)
                        out.println("<i>No Value</i>");
                    else
                        out.println(paramValue);
                }else {
                    out.println("<ul>");
                    for(int i = 0; i < paramValues.length;i++){
                        out.println("<li>"+paramValues[i]);
                    }
                    out.println("</ul>");
                }
            }
            out.println("</table>");
            out.println("</body>");
            out.println("</html>");
        }
    }

    // <editor-fold defaultstate="collapsed" desc="HttpServlet methods. Click on the +
sign on the left to edit the code.">
    /**
     * Handles the HTTP <code>GET</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doGet(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
        processRequest(request, response);
    }

    /**
     * Handles the HTTP <code>POST</code> method.
     *
     * @param request servlet request
     * @param response servlet response
     * @throws ServletException if a servlet-specific error occurs
     * @throws IOException if an I/O error occurs
     */
    @Override
    protected void doPost(HttpServletRequest request, HttpServletResponse response)
            throws ServletException, IOException {
```

```
        processRequest(request, response);
    }

    /**
     * Returns a short description of the servlet.
     *
     * @return a String containing servlet description
     */
    @Override
    public String getServletInfo() {
        return "Short description";
    }// </editor-fold>


}
```

Output:

I filled out the form as expected.

When I clicked SUBMIT button, an email contains prepared message is also sent directly to my provided email in the form.