**INTERNATIONAL UNIVERSITY**

VIETNAM NATIONAL UNIVERSITY HCMC

**School of Computer Science & Engineer**

**Report Lab 3**

Course: WEB APPLICATION DEVELOPMENT

Lab Instructor: Assoc. Prof.Nguyen Van Sinh

Lecturer. T.K.Minh

Group: ITIT22IU01

Name: Chau Thanh Phat

ID: ITITIU21135

**Lab 3: Introduction to Servlet Programming**

**Exercise 1:** Design a form with three parameters:

My code:

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

*<*%--

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.

/\*

\* 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>");

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>

}

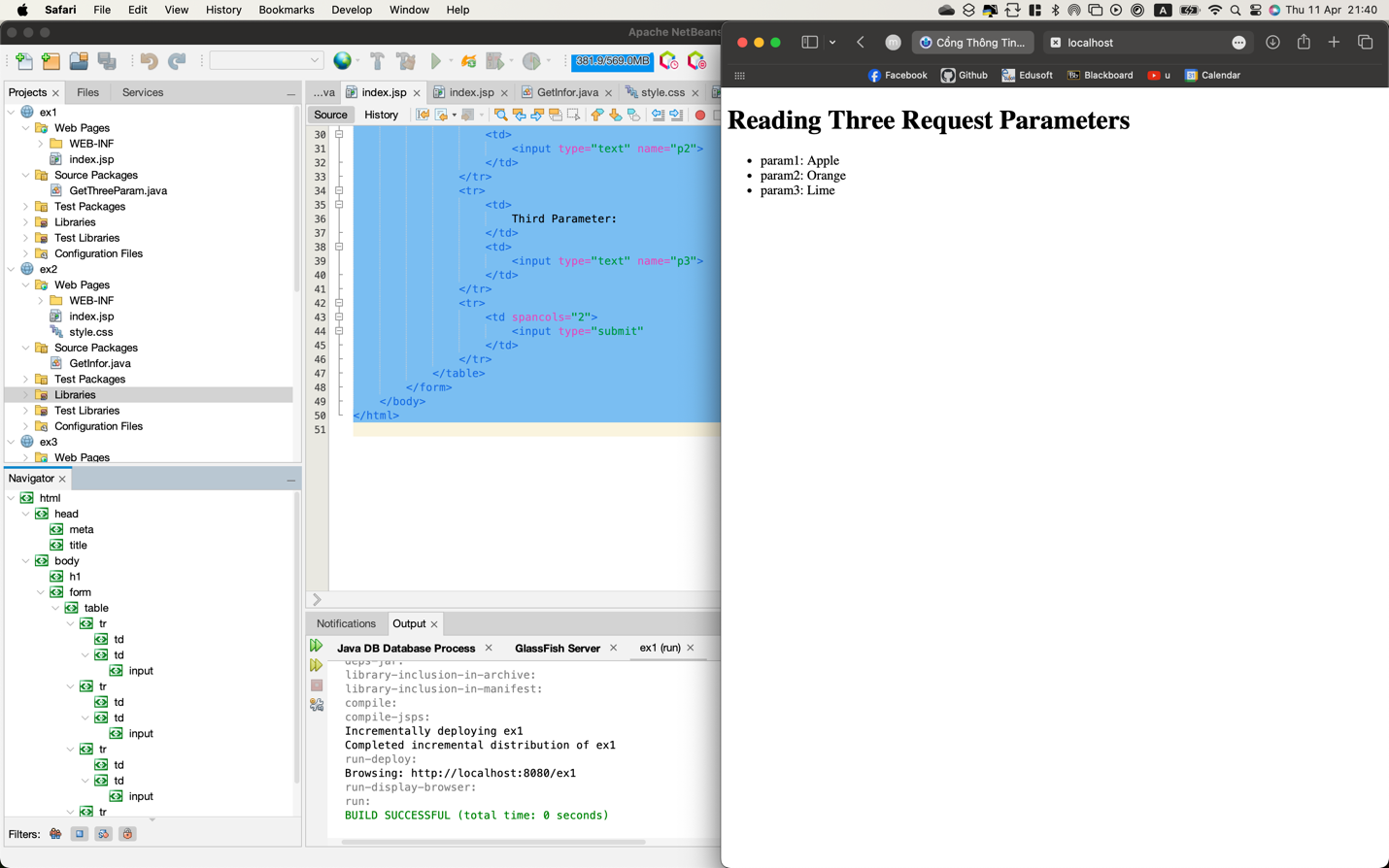
Output:

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

A screenshot of a computer

Description automatically generated

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.

*<*%--

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">

</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>

<input *type*="reset" *value*="Cancel">

</td>

</tr>

</table>

</form>

</body>

</html>

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

/\*

\* 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>");

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.

A screenshot of a computer

Description automatically generated

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

A screenshot of a computer

Description automatically generated

**Exercise 3:**

Index.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:&nbsp;</label>

</th>

<th *align*="left">

<input *type*="text" *id*="fullname" *name*="Fullname" ><br>

</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>

</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:

/\*

\* 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");

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>");

}

}

// <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.

A screenshot of a computer

Description automatically generated

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

A screenshot of a computer

Description automatically generated

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

\*/

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() {

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).

/\*

\* 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;

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>");

*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.

A screenshot of a computer

Description automatically generated

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