ГУАП

КАФЕДРА № 43

ОТЧЕТ   
ЗАЩИЩЕН С ОЦЕНКОЙ

ПРЕПОДАВАТЕЛЬ

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| ОТЧЕТ О ЛАБОРАТОРНОЙ РАБОТЕ |
| РАЗРАБОТКА ПРОСТОГО СЕРВЕРНОГО ПРИЛОЖЕНИЯ J2EE С ИСПОЛЬЗОВАНИЕМ СЕРВЛЕТОВ |
| по курсу: ТЕХНОЛОГИИ РАЗРАБОТКИ СЕРВЕРНЫХ ИНФОРМАЦИОННЫХ СИСТЕМ |
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РАБОТУ ВЫПОЛНИЛ

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Санкт-Петербург 2023

**Задание (Вариант 3)**

Расписание занятий в институте

**Описание разрабатываемого продукта**

Программа представляет собой веб-приложение с возможностью просмотра, добавления и удаления занятий.

Текст программы

**index.jsp**

<html>  
 <body>  
 <h2>Schedule of students classes</h2>  
 <a href="view">View schedule</a><br>  
 <a href="add">Add lesson</a><br>  
 <a href="delete">Delete lesson</a><br>  
 </body>  
</html>

**web.xml**

<!DOCTYPE web-app PUBLIC  
 "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"  
 "http://java.sun.com/dtd/web-app\_2\_3.dtd" >  
  
<web-app>  
 <display-name>Archetype Created Web Application</display-name>  
  
 <servlet>  
 <servlet-name>ViewServlet</servlet-name>  
 <servlet-class>ViewServlet</servlet-class>  
 </servlet>  
 <servlet-mapping>  
 <servlet-name>ViewServlet</servlet-name>  
 <url-pattern>/view</url-pattern>  
 </servlet-mapping>  
  
 <servlet>  
 <servlet-name>AddServlet</servlet-name>  
 <servlet-class>AddServlet</servlet-class>  
 </servlet>  
 <servlet-mapping>  
 <servlet-name>AddServlet</servlet-name>  
 <url-pattern>/add</url-pattern>  
 </servlet-mapping>  
  
 <servlet>  
 <servlet-name>DeleteServlet</servlet-name>  
 <servlet-class>DeleteServlet</servlet-class>  
 </servlet>  
 <servlet-mapping>  
 <servlet-name>DeleteServlet</servlet-name>  
 <url-pattern>/delete</url-pattern>  
 </servlet-mapping>  
</web-app>

**Lesson**

public class Lesson {  
 private int id;  
 private String num\_group; // номер группы  
 private String audience; // номер аудитории  
 private String teacher; // фамилия преподавателя  
 private String name; // название предмета  
 private int number; // порядковый номер пары  
 public Lesson(int id,String group,String audience,String teacher,String name,int number){  
 this.id = id;  
 this.num\_group = group;  
 this.audience = audience;  
 this.teacher = teacher;  
 this.name = name;  
 this.number = number;  
 }  
 int getId(){  
 return id;  
 }  
 void setId(int id){  
 this.id = id;  
 }  
 String getGroup(){  
 return num\_group;  
 }  
 void setGroup(String group){  
 this.num\_group = group;  
 }  
 String getAudience(){  
 return audience;  
 }  
 void setAudience(String audience){  
 this.audience = audience;  
 }  
 String getTeacher(){  
 return teacher;  
 }  
 void setTeacher(String teacher){  
 this.teacher = teacher;  
 }  
 String getName(){  
 return name;  
 }  
 void setName(String name){  
 this.name = name;  
 }  
  
 int getNumber(){  
 return number;  
 }  
 void setNumber(int number){  
 this.number = number;  
 }  
  
}

**ContextListener.java**

import javax.servlet.ServletContextEvent;  
import javax.servlet.ServletContextListener;  
import javax.servlet.annotation.WebListener;  
import java.sql.Connection;  
import java.sql.DriverManager;  
import java.sql.SQLException;  
  
@WebListener  
public class ContextListener implements ServletContextListener {  
 @Override  
 public void contextInitialized(ServletContextEvent servletContextEvent) {  
 DBHelper.*getConnection*();  
 }  
  
 @Override  
 public void contextDestroyed(ServletContextEvent servletContextEvent) {  
 DBHelper.*closeConnection*();  
 }  
}

**DBHelper**

import java.sql.\*;  
import java.util.LinkedList;  
import java.util.List;  
  
public class DBHelper {  
 private static Connection connection;  
 private static PreparedStatement selectStatement;  
 private static PreparedStatement addStatement;  
 private static PreparedStatement deleteStatement;  
  
  
  
 public static Connection getConnection(){  
 if(connection != null) {  
 return connection;  
 }  
 try{  
 Class.forName("com.mysql.cj.jdbc.Driver").getDeclaredConstructor().newInstance();  
 System.out.println("Connection to DB successful...");  
 connection = DriverManager.getConnection("jdbc:mysql://localhost/trsis?serverTimezone=Europe/Moscow&useSSL=false",  
 "root",  
 "167831");  
 }  
 catch(Exception ex){  
 System.out.println("Connection to DB failed...");  
 System.out.println(ex);  
 }  
 return connection;  
 }  
 public static void closeConnection(){  
 try {  
 connection.close();  
 } catch (SQLException e) {  
 System.out.println(e);  
 }  
 }  
 public static PreparedStatement getSelectStatement() throws SQLException {  
 if(selectStatement == null){  
 String sql = "SELECT \* FROM lesson";  
 selectStatement = getConnection().prepareStatement(sql);  
 }  
 return selectStatement;  
 }  
 public static List<Lesson> getAllLessons(){  
 List<Lesson> result = new LinkedList<>();  
 try(ResultSet set = getSelectStatement().executeQuery()) {  
 while(set.next()){  
 Lesson lesson = new Lesson(  
 set.getInt("Id"),  
 set.getString("num\_group"),  
 set.getString("audience"),  
 set.getString("teacher"),  
 set.getString("name"),  
 set.getInt("number"));  
 result.add(lesson);  
 }  
 } catch (SQLException e) {  
 System.*out*.println(e);  
 }  
 return result;  
 }  
 public static PreparedStatement getAddStatement() throws SQLException {  
 if(addStatement == null){  
 String sql = "INSERT INTO lesson VALUES (0,?,?,?,?,?)";  
 addStatement = getConnection().prepareStatement(sql);  
 }  
 return addStatement;  
 }  
 public static void addLesson(String group,String audience, String teacher,String name,int number) throws SQLException {  
 PreparedStatement state = getAddStatement();  
 state.setString(1,group);  
 state.setString(2,audience);  
 state.setString(3,teacher);  
 state.setString(4,name);  
 state.setInt(5,number);  
 state.executeUpdate();  
 }  
 public static PreparedStatement getDeleteByGroupStatement() throws SQLException {  
 if(deleteStatement == null){  
 String sql = "DELETE FROM lesson WHERE num\_group=?";  
 deleteStatement = getConnection().prepareStatement(sql);  
 }  
 return deleteStatement;  
 }  
 public static void deleteLessonByGroup(String group) throws SQLException {  
 PreparedStatement state = getDeleteByGroupStatement();  
 state.setString(1,group);  
 state.executeUpdate();  
 }  
}

**ViewServlet**

import javax.servlet.ServletException;  
import javax.servlet.http.HttpServlet;  
import javax.servlet.http.HttpServletRequest;  
import javax.servlet.http.HttpServletResponse;  
import java.io.IOException;  
import java.util.List;  
  
public class ViewServlet extends HttpServlet {  
 private String responseTemplate1 =  
 "<html>\n"+  
 "<body>\n"+  
 "<h2>Schedule of students' classes</h2>\n"+  
 "<table>\n";  
 private String responseTemplate2 =  
 "</table>\n"+  
 "</body>\n"+  
 "</html>";  
// "<form method='post'><input name='delete'><input type='submit' value='Delete'></form></body>\n"+  
  
 @Override  
 protected void doGet(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {  
 process(req,resp);  
 }  
  
 @Override  
 protected void doPost(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {  
 process(req,resp);  
 }  
  
 private void process(HttpServletRequest req, HttpServletResponse resp) throws IOException {  
 resp.setStatus(200);  
 resp.setContentType("text/html;charset=UTF-8");  
 resp.getWriter().write(responseTemplate1);  
 List<Lesson> tempList = DBHelper.getAllLessons();  
 resp.getWriter().write("<tr>");  
 resp.getWriter().write("<td> Number </td>");  
 resp.getWriter().write("<td> Subject </td>");  
 resp.getWriter().write("<td> Audience </td>");  
 resp.getWriter().write("<td> Teacher </td>");  
 resp.getWriter().write("<td> Group </td>");  
 resp.getWriter().write("</tr>");  
 for(int i=0;i<tempList.size();++i){  
 resp.getWriter().write("<tr>");  
 resp.getWriter().write("<td>" + tempList.get(i).getNumber() +"</td>");  
 resp.getWriter().write("<td>" + tempList.get(i).getName() +"</td>");  
 resp.getWriter().write("<td>" + tempList.get(i).getAudience() +"</td>");  
 resp.getWriter().write("<td>" + tempList.get(i).getTeacher() +"</td>");  
 resp.getWriter().write("<td>" + tempList.get(i).getGroup() +"</td>");  
 resp.getWriter().write("</tr>");  
 }  
 resp.getWriter().write(responseTemplate2);  
// if(data != null) resp.getWriter().write(data);  
// else resp.getWriter().write("data is not provided");  
 }  
}

**AddServlet**

import javax.servlet.ServletException;  
import javax.servlet.http.HttpServlet;  
import javax.servlet.http.HttpServletRequest;  
import javax.servlet.http.HttpServletResponse;  
import java.io.IOException;  
import java.util.List;  
  
public class AddServlet extends HttpServlet {  
 private String responseTemplate =  
 "<html>\n"+  
 "<body>\n"+  
 "<h2>Schedule of students' classes</h2>\n"+  
 "<form method='post'>" +  
 "<label>Number</label><input name='number'><br>" +  
 "<label>Subject</label><input name='subject'><br>" +  
 "<label>Audience</label><input name='audience'><br>" +  
 "<label>Teacher</label><input name='teacher'><br>" +  
 "<label>Group</label><input name='group'><br>" +  
 "<input type='submit' value='Add'>"+  
 "</form>\n"+  
 "</body>\n"+  
 "</html>";  
  
 @Override  
 protected void doGet(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {  
 process(req,resp);  
 }  
  
 @Override  
 protected void doPost(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {  
 process(req,resp);  
 }  
  
 private void process(HttpServletRequest req, HttpServletResponse resp) throws IOException {  
 resp.setStatus(200);  
 resp.setContentType("text/html;charset=UTF-8");  
 resp.getWriter().write(responseTemplate);  
 String number = req.getParameter("number");  
 String subject = req.getParameter("subject");  
 String audience = req.getParameter("audience");  
 String teacher = req.getParameter("teacher");  
 String group = req.getParameter("group");  
 if(number!=null && subject!=null && audience!=null && teacher!=null && group!=null){  
 if(number!="" && subject!="" && audience!="" && teacher!="" && group!=""){  
 try{  
 int num = Integer.*parseInt*(number);  
 DBHelper.*addLesson*(group,audience,teacher,subject,num);  
 }catch(Exception ex){  
 System.*out*.println(ex);  
 }  
 }  
 }  
 }  
}

**DeleteServlet**

import javax.servlet.ServletException;  
import javax.servlet.http.HttpServlet;  
import javax.servlet.http.HttpServletRequest;  
import javax.servlet.http.HttpServletResponse;  
import java.io.IOException;  
import java.sql.SQLException;  
  
public class DeleteServlet extends HttpServlet {  
 private String responseTemplate =  
 "<html>\n"+  
 "<body>\n"+  
 "<h2>Schedule of students' classes</h2>\n"+  
 "<form method='post'>" +  
 "<input name='group'><input type='submit' value='Delete by group'><br>" +  
 "</form>\n"+  
 "</body>\n"+  
 "</html>";  
  
  
 @Override  
 protected void doGet(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {  
 try {  
 process(req,resp);  
 } catch (SQLException e) {  
 throw new RuntimeException(e);  
 }  
 }  
  
 @Override  
 protected void doPost(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {  
 try {  
 process(req,resp);  
 } catch (SQLException e) {  
 throw new RuntimeException(e);  
 }  
 }  
  
 private void process(HttpServletRequest req, HttpServletResponse resp) throws IOException, SQLException {  
 resp.setStatus(200);  
 String group = req.getParameter("group");  
 if(group!=null){  
 DBHelper.deleteLessonByGroup(group);  
 }  
 resp.setContentType("text/html;charset=UTF-8");  
 resp.getWriter().write(responseTemplate);  
  
 }  
}

**pom.xml**

<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4\_0\_0.xsd">  
 <modelVersion>4.0.0</modelVersion>  
 <groupId>org.example</groupId>  
 <artifactId>untitled3</artifactId>  
 <packaging>war</packaging>  
 <version>1.0-SNAPSHOT</version>  
 <name>untitled3 Maven Webapp</name>  
 <url>http://maven.apache.org</url>  
  
 <dependencies>  
 <dependency>  
 <groupId>junit</groupId>  
 <artifactId>junit</artifactId>  
 <version>3.8.1</version>  
 <scope>test</scope>  
 </dependency>  
 <dependency>  
 <groupId>org.apache.tomcat</groupId>  
 <artifactId>tomcat-servlet-api</artifactId>  
 <version>8.5.4</version>  
 <scope>provided</scope>  
 </dependency>  
 <dependency>  
 <groupId>mysql</groupId>  
 <artifactId>mysql-connector-java</artifactId>  
 <version>8.0.28</version>  
 </dependency>  
 </dependencies>  
  
 <build>  
 <finalName>untitled3</finalName>  
 <plugins>  
 <plugin>  
 <groupId>org.apache.tomcat.maven</groupId>  
 <artifactId>tomcat7-maven-plugin</artifactId>  
 <version>2.2</version>  
 <configuration>  
 <path>/Lab1</path>  
 </configuration>  
 </plugin>  
 </plugins>  
 </build>  
  
 <properties>  
 <maven.compiler.source>1.8</maven.compiler.source>  
 <maven.compiler.target>1.8</maven.compiler.target>  
 </properties>  
  
</project>