SVKM'S
Mithibai College of Arts, Chauhan Institute of Science &
Amrutben Jivanlal College of Commerce and Economics (Autonomous)
Academic Year (2022-23)
Class: SYBSC Semester: IV
Program: B.Sc Computer Science Max. Marks: 75
Course Name: Advanced Java Time:
Course Code: USMACS402 Duration: 2 hrs 30 minutes
Date:

SOLUTION SET

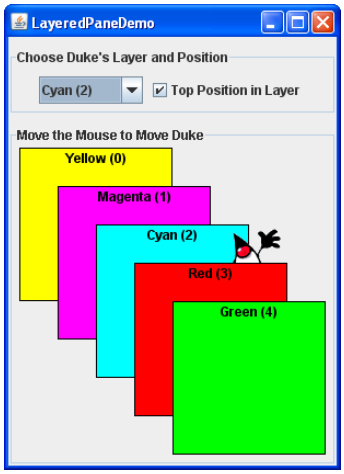
Q1	ATTEMPT ANY 3 FROM THE FOLLOWING:	[21]
A	Explain any 7 Swing components. 7 components 7m with explanation and syntax o JButton class o JRadioButton class o JTextArea class o JComboBox class o JTable class o JColorChooser class o JProgressBar class	**7**

B	Write a JDBC program to search records from Student table.
	Student (sap_id, name,date_of_birth,city)
	7m jdbc program
	// Java Program retrieving contents of
	// Table Using JDBC connection
	
	// Java code producing output which is based
	// on values stored inside the "student" table in DB
	
	// Importing SQL libraries to create database
	import java.sql.*;
		7

```
public class GFG {

    // Step1: Main driver method
    public static void main(String[] args)
    {
        // Step 2: Making connection using
        // Connection type and inbuilt function on
        Connection con = null;
        PreparedStatement p = null;
        ResultSet rs = null;

        con = connection.connectDB();

        // Try block to catch exception/s
        try {

            // SQL command data stored in String datatype
            String sql = "select * from student";
            p = con.prepareStatement(sql);
            rs = p.executeQuery();

            // Printing ID, name, email of customers
            // of the SQL command above
            System.out.println("id\t\tname\t\temail");

            // Condition check
            while (rs.next()) {

                int id = rs.getInt("id");
                String name = rs.getString("name");
                String email = rs.getString("email");
                System.out.println(id + "\t\t" + name
```

	+ "\t\t" + email);
	}
	}
	
	// Catch block to handle exception
	catch (SQLException e) {
	
	// Print exception pop-up on screen
	System.out.println(e);
	}
	}
	}	

C	What are Panes in Swings? Why they are required? Panes 3m + reasons 4m A layered pane is a Swing container that provides a third dimension for positioning components: *depth*, also known as *Z order*. When adding a component to a layered pane, you specify its depth as an integer. The higher the number, closer the component is to the "top" position within the container. If components overlap, the "closer" components are drawn on top of components at a lower depth. The relationship between components at the same depth is determined by their positions within the depth. Every Swing container that has a root pane — such as `JFrame`, `JApplet`, `JDialog`, or `JInternalFrame` — automatically has a layered pane. Most programs do not explicitly use the root pane's layered pane, so this section will not discuss it. You can find information about it in The Root Pane, which provides an overview, and The Layered Pane, which has further details. This section tells you how to create your own layered pane and use it anywhere you can use a regular Swing container.	**7**

	Swing provides two layered pane classes. The first, `JLayeredPane`, is the class that root panes use and is the class used by the example in this section. The second, `JDesktopPane`, is a `JLayeredPane` subclass that is specialized for the task of holding internal frames. For examples of using `JDesktopPane`, see How to Use Internal Frames. Here is a picture of an application that creates a layered pane and places overlapping, colored labels at different depths: 	
D	What is Statement in JDBC? How it is different from Callable Statement. Statement 2m + differentiate 5 points 5m Statement interface The Statement interface provides methods to execute queries with the database. The statement interface is a factory of ResultSet i.e. it provides factory method to get the object of ResultSet. Commonly used methods of Statement interface: The important methods of Statement interface are as follows: 1) public ResultSet executeQuery(String sql): is used to execute SELECT query. It returns the object of ResultSet. 2) public int executeUpdate(String sql): is used to execute specified query, it may be create, drop, insert, update, delete etc.	**7**

3) public boolean execute(String sql): is used to execute queries that may return multiple results.

4) public int[] executeBatch(): is used to execute batch of commands.

CallableStatement	PreparedStatement
It is used when the stored procedures are to be executed.	It is used when SQL query is to be executed multiple times.
You can pass 3 types of parameter IN, OUT, INOUT.	You can pass any type of parameters at runtime.
Used to execute functions.	Used for the queries which are to be executed multiple times.
Performance is very high.	Performance is better than Statement.
Used to call the stored procedures.	Used to execute dynamic SQL queries.
It extends PreparedStatement interface.	It extends Statement Interface.
No protocol is used for communication.	Protocol is used for communication.

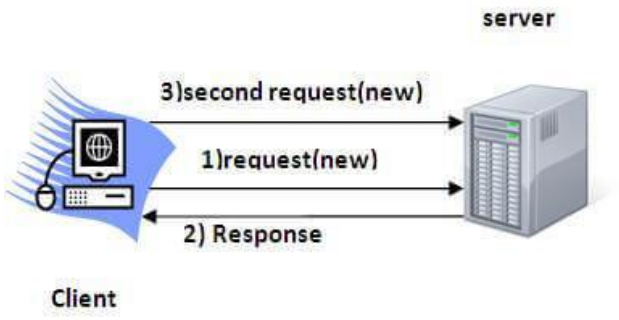
Q2	**ATTEMPT ANY 3 FROM THE FOLLOWING:**	**[21]**
A	What is Deployment descriptor in servlet? Explain its structure. Deployment descriptor 2m +5m structure The **deployment descriptor** is an xml file, from which Web Container gets the information about the servet to be invoked. The web container uses the Parser to get the information from the web.xml file. There are many xml parsers such as SAX, DOM and Pull. There are many elements in the web.xml file. Here is given some necessary elements to run the simple servlet program. <web-app> represents the whole application. <servlet> is sub element of <web-app> and represents the servlet. <servlet-name> is sub element of <servlet> represents the name of the servlet. <servlet-class> is sub element of <servlet> represents the class of the servlet. <servlet-mapping> is sub element of <web-app>. It is used to map the servlet.	**7**

	<url-pattern> is sub element of <servlet-mapping>. This pattern is used at client side to invoke the servlet.	

B	Write a program in JSP to create a cookie to count the number of times the page is visited.
	7m for all steps
	<form>
	<fieldset style="width:20%; background-color:#e6ffe6;">
	<legend>Count visitor</legend>
	<%
	Integer hitsCount =
	(Integer)application.getAttribute("hitCounter");
	if(hitsCount ==null || hitsCount == 0)
	{
	/* First visit */
	out.println("Welcome to my website!!");
	hitsCount = 1;
	}
	else
	{
	/* return visit */
	out.println("Welcome to my website!!");
	hitsCount += 1;
	}
	application.setAttribute("hitCounter", hitsCount);
	%>
	 You are visitor number: <%= hitsCount%>
	</fieldset>
	</form>
	</body>
	</html>
		7

C	What is a JSP Implicit Object? Describe any 5 implicit JSP objects. 2m implicit object+ 5 object 5m syntax	**7**

	These objects are *created by the web container* that are available to all the jsp pages. Object Type out JspWriter request HttpServletRequest response HttpServletResponse config ServletConfig application ServletContext session HttpSession pageContext PageContext page Object exception Throwable	
D	What is session Management in servlet? Discuss any one method to manage session in servlets. Session management 3m 1 method 4m **Session** simply means a particular interval of time. **Session Tracking** is a way to maintain state (data) of an user. It is also known as **session management** in servlet. Http protocol is a stateless so we need to maintain state using session tracking techniques. Each time user requests to the server, server treats the request as the new request. So we need to maintain the state of an user to recognize to particular user. HTTP is stateless that means each request is considered as the new request. It is shown in the figure given below:	**7**

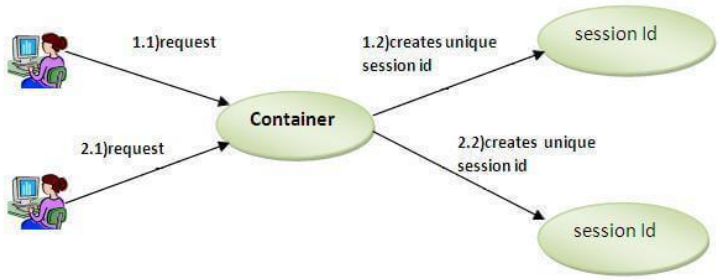


Why use Session Tracking?

To recognize the user It is used to recognize the particular user.

In such case, container creates a session id for each user.The container uses this id to identify the particular user.An object of HttpSession can be used to perform two tasks:

1. bind objects
2. view and manipulate information about a session, such as the session identifier, creation time, and last accessed time.



How to get the HttpSession object ?

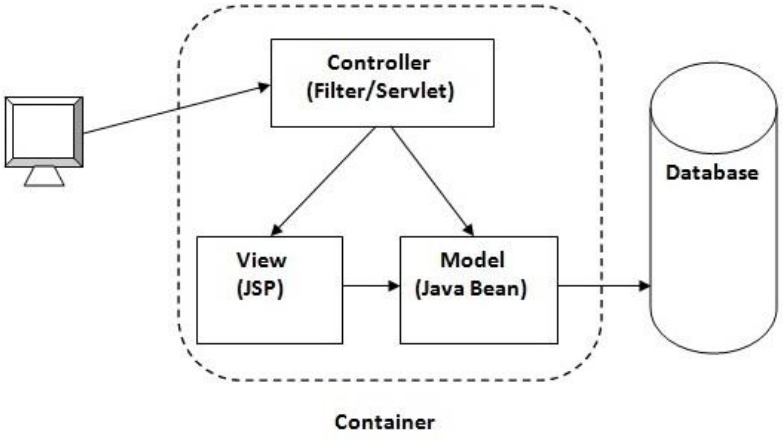
The HttpServletRequest interface provides two methods to get the object of HttpSession:

1. **public HttpSession getSession():**Returns the current session associated with this request, or if the request does not have a session, creates one.

	2. **public HttpSession getSession(boolean create):**Returns the current HttpSession associated with this request or, if there is no current session and create is true, returns a new session.	
Q3	**ATTEMPT ANY 3 FROM THE FOLLOWING:**	**[21]**

A	Write a code snippet to encode and decode JSON.
	Encode 3.5 +decode3.5m
	1. **import** org.json.simple.JSONObject;
	2. **public class** JsonExample1{
	3. **public static void** main(String args[]){
	4. JSONObject obj=**new** JSONObject();
	5. obj.put("name","rohit");
	6. obj.put("age",**new** Integer(27));
	7. obj.put("salary",**new** Double(600000));
	8. System.out.print(obj);
	9. }}
	
	1. **import** java.util.HashMap;
	2. **import** java.util.Map;
	3. **import** org.json.simple.JSONValue;
	4. **public class** JsonExample2{
	5. **public static void** main(String args[]){
	6. Map obj=**new** HashMap();
	7. obj.put("name","rohit");
	8. obj.put("age",**new** Integer(27));
	9. obj.put("salary",**new** Double(600000));
	10. String jsonText = JSONValue.toJSONString(obj);
	11. System.out.print(jsonText);
	12. }}
		7

B	What is MVC? Explain the core components of struts2 framework.	**7**

	MVC 2m+ components of struts2 5m MVC (Model View Controller) design pattern. The MVC design pattern consists of three modules model, view and controller. **Model** The model represents the state (data) and business logic of the application. **View** The view module is responsible to display data i.e. it represents the presentation. **Controller** The controller module acts as an interface between view and model. It intercepts all the requests i.e. receives input and commands to Model / View to change accordingly.  from a high level, Struts2 is a pull-MVC (or MVC2) framework. The Model-ViewController pattern in Struts2 is implemented with the following five core components – • Actions • Interceptors • Value Stack / OGNL • Results / Result types • View technologies	
C	Describe struts.xml. Configuration file. Explanation + structure 7m	**7**

Struts 2 Configuration File

1. Struts 2 Configuration File
2. Elements of struts.xml file

The struts application contains two main configuration files **struts.xml** file and **struts.properties** file.

The struts.properties file is used to override the default values of **default.xml** file provided by struts framework. So it is not mandatory. Mostly, you will not use struts.properties file. We will learn about it later.

Here, we are going to learn all about struts.xml file. First of all let us see the simple example of struts.xml file

struts.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE struts PUBLIC "-
//Apache Software Foundation//DTD Struts
Configuration 2.1//EN" "http://struts.apache.org/dtds/struts-2.1.dtd">
<struts>
<package name="default" extends="struts-default">

<action name="product" class="com.javatpoint.Product">
<result name="success">welcome.jsp</result>
</action>

</package>
</struts>
```

D	State the properties of JSON. Also compare JSON and XML.	**7**

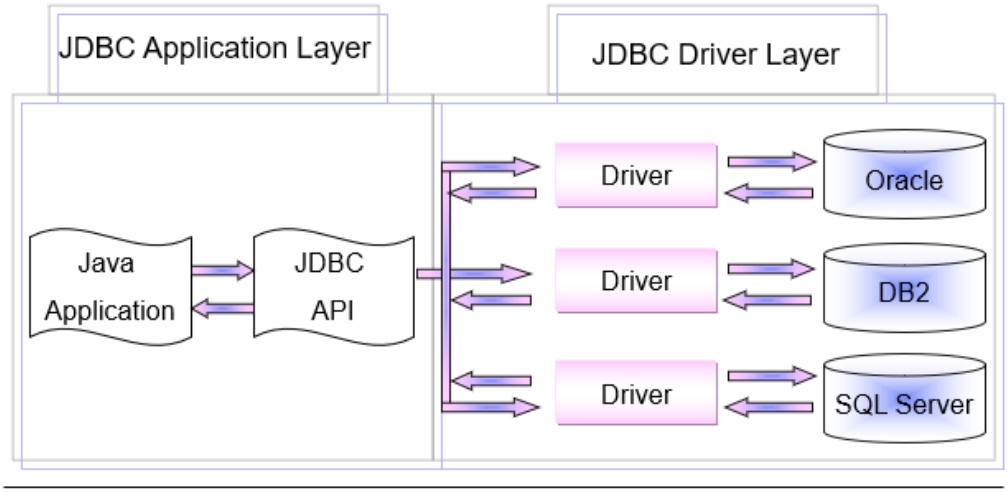
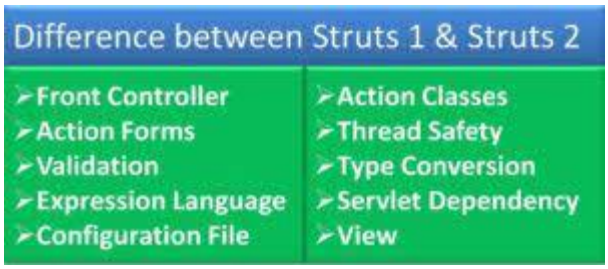
Features of JSON

- Simplicity
- Openness
- Self-Describing
- Internationalization

- Extensibility
- Interoperability

JSON	XML
JSON stands for javascript object notation.	XML stands for an extensible markup language.
The extension of json file is .json.	The extension of xml file is .xml.
The internet media type is application/json.	The internet media type is application/xml or text/xml.
The type of format in JSON is data interchange.	The type of format in XML is a markup language.
It is extended from javascript.	It is extended from SGML.
It is open source means that we do not have to pay anything to use JSON.	It is also open source.
The object created in JSON has some type.	XML data does not have any type.

Q4	**ATTEMPT ANY 3 FROM THE FOLLOWING:**	**[12]**
A	Enlist 4 types of drivers available in JDBC. 4 drivers 4m JDBC-ODBC Bridge Driver Native-API Partly-Java Driver JDBC-Net Pure-Java Driver Native Protocol Pure-Java Driver	**4**
B	State any 4 functions of web container. Any 4 functions 4m • Communication Support • Lifecycle Management • Multi-threading support • Security • JSP Support	**4**

C	Write a short note on JDBC architecture. 4m ▪ It can be categorized into into two layers:  	**4**
D	How a struts 2 is different from struts 1? 4 points 4m  	**4**