B.Tech - Even Sem : Semester in Exam-I
Academic Year:2020-2021
19CS2107S - Enterprise Programming
Set No: 1

KEY

1.	**Define XML? Explain the Features of XML?**	**4.5Marks**

Scheme of Evaluation:
Definition -2 Marks
Features-2.5 Marks

Definition: 2 Marks

XML stands for eXtensible Markup Language.

XML stands for extensible markup language. A markup language is a set of codes, or tags, that describes the text in a digital document.

Features: (Any 3) 2.5 Marks

1) XML separates data from HTML

If you need to display dynamic data in your HTML document, it will take a lot of work to edit the HTML each time the data changes.

2) XML simplifies data sharing

In the real world, computer systems and databases contain data in incompatible formats.

This makes it much easier to create data that can be shared by different applications.

3) XML simplifies data transport

One of the most time-consuming challenges for developers is to exchange data between incompatible systems over the Internet.

4) XML simplifies Platform change

Upgrading to new systems (hardware or software platforms), is always time consuming. Large amounts of data must be converted and incompatible data is often lost.

5) XML increases data availability

Different applications can access your data, not only in HTML pages, but also from XML data sources.

6) XML can be used to create new internet languages

A lot of new Internet languages are created with XML.

Here are some examples:

- XHTML
- WSDL for describing available web services
- WAP and WML as markup languages for handheld devices

(OR)

2.	Interpret the problem, As you're in the very beginning stage of learning how to create an XML document. Write an XML to accept student details [Name, ID, Branch, and CGPA] for a minimum of 5 students. ABC 001 IT 9 : 4.5Marks

Scheme of Evaluation

Syntax for XML file: 2 Marks (for 1 student)
XML file for students: 2.5 Marks

Syntax for XML file 1 student →2 Marks

XML file for students: 2.5 Marks

```
<student_details>
   <student>
      <name>john</name>
      <id>2121</id>
      <branch>CSE</branch>
      <cgpa>7.2</cgpa>
   </student>

   <student>
      <name>James Gosling</name>
      <id>2122</id>
      <branch>CSE</branch>
      <cgpa>9.4</cgpa>
   </student>

   <student>
      <name>Guido van Rossum</name>
      <id>2123</id>
      <branch>CSE</branch>
      <cgpa>9.5</cgpa>
   </student>

   <student>
      <name> Arthur Tatnall </name>
      <id>2124</id>
      <branch>CSE</branch>
      <cgpa>9.6</cgpa>
   </student>

   <student>
      <name>Dennis M. Ritchie</name>
      <id>2125</id>
      <branch>CSE</branch>
      <cgpa>9.2</cgpa>
   </student>

    </student_details>
```

3.	Identify the differences between DTD vs. XSD? Describe the role of XML in Servlets? 8 Marks

Scheme of Evaluation:
Differences b/w DTD Vs. XSD →5 Marks
Role of XML in Servlet →3 Marks

Differences b/w DTD Vs. XSD (Any 5) →5 Marks

No.	DTD	XSD
1)	DTD stands for Document Type Definition.	XSD stands for XML Schema Definition.
2)	DTDs are derived from SGML syntax.	XSDs are written in XML.
3)	DTD doesn't support datatypes.	XSD supports datatypes for elements and attributes.
4)	DTD doesn't support namespace.	XSD supports namespace.
5)	DTD doesn't define order for child elements.	XSD defines order for child elements.
6)	DTD is not extensible.	XSD is extensible.
7)	DTD is not simple to learn.	XSD is simple to learn because you don't need to learn new language.
8)	DTD provides less control on XML structure.	XSD provides more control on XML structure.

Roles of XML in Servlet: →3 Marks

→XML file is used as deployment descriptor named as web.xml.

web. xml defines mappings between URL paths and the servlets that handle requests with those paths. The web server uses this configuration to identify the servlet to handle a given request and call the class method that corresponds to the request method. For example: the doGet() method for HTTP GET requests.

4.	Develop a JDBC application to create a student table in the oracle database. columns are sid Integer,sname varchar2(20),smarks integer?

8 Marks

Scheme of Evaluation:
JDBC Database Connection: **4 marks**
JDBC Table creation: **4 Marks**

JDBC Database Connection: (Oracle or mysql..etc) –**4Marks**

```
import java.sql.*;

class OracleCon{

    public static void main(String args[]){
     try{
            //step1 load the driver class
              Class.forName("oracle.jdbc.driver.OracleDriver");

              //step2 create  the connection object
              Connection con=DriverManager.getConnection(
                   "jdbc:oracle:thin:@localhost:1521:xe","system","oracle");

              //step3 create the statement object
                Statement stmt=con.createStatement();

String sql = "CREATE TABLE EMP " +
             "(id INTEGER not NULL, " +
             " first VARCHAR(255), " +
             " last VARCHAR(255), " +
             " age INTEGER, " +
             " PRIMARY KEY ( id ))";

 stmt.executeUpdate(sql);

              //step5 close the connection object
               con.close();
}
  catch(Exception e){  System.out.println(e); }

   }
}
```

JDBC Table creation: (nested table ..) **4 Marks**

5.A.	Interpret the problem, Ramesh wants to help the organization store the student's information in the XML file. develop an XML file for Students' information, and the XML file is created that contains Student [id, regno, name, avg, dob, time, mobileno, distinction], the information about five students of different categories and displaying the XML file.? : 6 Marks

Scheme of Evaluation:

Syntax for XML file: 3 Marks (for 1 student)

XML file for students: 3 Marks

Syntax for XML file 1 student →3 Marks

XML file for students: 3 Marks

```
<student_details>

<student>
    <id>100</id>
    <regno>A0129950H</regno>
    <name>Chirs</name>
    <avg>7.2</avg>
    <dob>02-01-1992</dob>
    <time>4:41 AM</time>
    <mobileno>9848033218</mobileno>,
    <distinction>YES</distinction>
  </student>

<student>
    <id>100</id>
    <regno>A0129951H</regno>
    <name>Lakshman</name>
    <avg>8</avg>
    <dob>02-01-1992</dob>
    <time>4:41 AM</time>
    <mobileno>9848033218</mobileno>,
    <distinction>YES</distinction>
  </student>
```

```
<student>
      <id>100</id>
      <regno>A0129952H</regno>
      <name>Ramesh</name>
      <avg>8.4</avg>
      <dob>02-01-1992</dob>
      <time>4:41 AM</time>
      <mobileno>9848033218</mobileno>,
      <distinction>YES</distinction>
    </student>

<student>
      <id>100</id>
      <regno>A0129953H</regno>
      <name>Ashok</name>
      <avg>8.5</avg>
      <dob>02-01-1992</dob>
      <time>4:41 AM</time>
      <mobileno>9848033218</mobileno>,
      <distinction>YES</distinction>
    </student>

<student>
      <id>100</id>
      <regno>A0129954H</regno>
      <name>Lakshmi</name>
      <avg>9.2</avg>
      <dob>02-01-1992</dob>
      <time>4:41 AM</time>
      <mobileno>9848033218</mobileno>,
      <distinction>YES</distinction>
    </student>


</student_details>
```

5.B.	Compare and contrast the advantages of Servlets over CGI?			6.5Marks

Scheme of Evaluation:
Disadvantages of CGI →**2 Marks**
Advantages of Servlet →**4.5 Marks**

Disadvantages of CGI

There are many problems in CGI technology:

1. If the number of clients increases, it takes more time for sending the response.
2. For each request, it starts a process, and the web server is limited to start processes.
3. It uses platform dependent language e.g. C, C++, perl.

Advantages of Servlet

There are many advantages of Servlet over CGI.

The web container creates threads for handling the multiple requests to the Servlet. Threads have many benefits over the Processes such as they share a common memory area, lightweight, cost of communication between the threads are low. The advantages of Servlet are as follows:

1. Better performance: because it creates a thread for each request, not process.
2. Portability: because it uses Java language.
3. Robust: JVM manages Servlets, so we don't need to worry about the memory leak, garbage collection, etc.
4. Secure: because it uses java language.

6.A.	Explain about JDBC statement and prepared Statement?

6 Marks

Scheme of Evaluation:
Statement with syntax**: 3 Marks**
Prepared Statement with syntax: **3 Marks**

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

It is used to execute queries with the database query.

It is used to execute non parameterized query.

Statement stmt=con.createStatement();

//stmt.executeUpdate("insert into emp765 values(33,'Irfan',50000)");

PreparedStatement interface

The PreparedStatement interface is a subinterface of Statement.

It is used to execute parameterized query.

Let's see the example of parameterized query:

String sql="insert into emp values(?,?,?)";

As you can see, we are passing parameter (?) for the values. Its value will be set by calling the setter methods of PreparedStatement.

6.B.	Develop a JDBC Callable Program by scanning the data from the keyboard dynamically, which can insert the employee data (empid,empname,empemail) in the oracle database?			6.5Marks

Scheme of Evaluation:

Table creation →
Procedure Creation → 3 Marks
JDBC Callable Program →3.5 Marks

Table creation

```
create table employee(empid number(10), empname varchar2(200), empemail
varchar2(200));
```

Procedure Creation

```
create or replace procedure "INSERTR"
(empid IN NUMBER,
empname IN VARCHAR2
empemail IN VARCHAR2)
is
begin
insert into employee values(empid,empname,empemail) ;
end;
/
```

JDBC Callable Program

```
import java.sql.*;
public class Proc {
public static void main(String[] args) throws Exception{

Class.forName("oracle.jdbc.driver.OracleDriver");
Connection con=DriverManager.getConnection(
"jdbc:oracle:thin:@localhost:1521:xe","system","oracle");

CallableStatement stmt=con.prepareCall("{call insertR(?,?,?)}");
. stmt.setInt(1,1011);
. stmt.setString(2,"Amit");
. stmt.setString(3,"Amit@gmail.com");

. stmt.execute();
.
. System.out.println("success");
. }
. }
```

7.	List out Scripting elements with examples?	choice Q-8		4.5Marks

Scheme of Evaluation:

Scripting Elements List →2 Marks

Examples →2.5 Marks

Scripting Elements List

There are three types of scripting elements:

1. declaration tag <%! field or method declaration %>
2. scriptlet tag <% java source code %>
3. expression tag <%= statement %>

Example for JSP Declaration Tag

```
<html>
<body>
<%! int data=50; %>
<%= "Value of the variable is:"+data %>
</body>
</html>
```

Example for JSP Scriptlet Tag

```
<html>
<body>
<% out.print("welcome to jsp"); %>
</body>
</html>
```

Example for JSP Expression Tag

```
<html>
<body>
<%= "welcome to jsp" %>
</body>
</html>
```

8.	Differentiate between scriptlet and expression?	4.5Marks

Scheme of Evaluation:

Scriptlet example : → 1.5 Marks

Expression example: →1.5 Marks

Difference b/w Scriptlet & Expression Tag: 1.5 Marks

Scriptlet example

```
<%@ page import = "java.io.*,java.util.*, javax.servlet.*" %>
<%
  Date date=new Date();
%>
```

Expression example

```
<%=
   Date.toString()
%>
```

Difference b/w Scriptlet & Expression Tag:

We use Expression in a JSP to return a value and display it at a specific location. It is generally used for dynamically print information like- time, counter etc in a HTML code.

Scriptlet is for writing Java code in a JSP. We can define variable, methods etc in a Scriptlet. A Scriptlet can handle much more complex code and can be also reused.

9.	List out and explain any two JSP implicit objects with an example?	choice Q-10		8Marks

Scheme of Evaluation

List out the JSP Implicit Objects**: 3 Marks** (any four)

JSP implicit objects with an example **:5 Marks** (any two)

List out the JSP Implicit Objects:

1. out
2. request
3. response
4. config
5. application
6. session
7. pageContext
8. page
9. exception

1)Example of out implicit object

In this example we are simply displaying date and time.

index.jsp

```
<html>
<body>
<% out.print("Today is:"+java.util.Calendar.getInstance().getTime()); %>
</body>
</html>
```

2)Example of JSP request implicit object

index.html

```
<form action="welcome.jsp">
<input type="text" name="uname">
<input type="submit" value="go"><br/>
</form>
```

welcome.jsp

```
<%
String name=request.getParameter("uname");
out.print("welcome "+name);
%>
```

10.	List the advantages of Hibernate Framework?	8Marks

Scheme of Evaluation

List out advantages of Hibernate :→8 Marks

List out advantages of Hibernate

1) Open Source and Lightweight
2) Fast Performance
3) Database Independent Query
4) Automatic Table Creation
5) Simplifies Complex Join
6) Provides Query Statistics and Database Status

Advantages of Hibernate Framework(Any 4)

Following are the advantages of hibernate framework:

1) Open Source and Lightweight

Hibernate framework is open source under the LGPL license and lightweight.

2) Fast Performance

The performance of hibernate framework is fast because cache is internally used in hibernate framework. There are two types of cache in hibernate framework first level cache and second level cache. First level cache is enabled by default.

3) Database Independent Query

HQL (Hibernate Query Language) is the object-oriented version of SQL. It generates the database independent queries. So you don't need to write database specific queries. Before Hibernate, if database is changed for the project, we need to change the SQL query as well that leads to the maintenance problem.

4) Automatic Table Creation

Hibernate framework provides the facility to create the tables of the database automatically. So there is no need to create tables in the database manually.

5) Simplifies Complex Join

Fetching data from multiple tables is easy in hibernate framework.

6) Provides Query Statistics and Database Status

Hibernate supports Query cache and provide statistics about query and database status.

11.A.	Illustrate Hibernate Query Language(HQL) API?	6Marks

Scheme of Evaluation:
Explanation about Hibernate Query Language→ 2 Marks
Explanation about Query Interface & Its methods→4 Marks
(Any of the one method example query like select,update,delete operation)

org.hibernate.Query

Hibernate Query Language (HQL)

Hibernate Query Language (HQL) is same as SQL (Structured Query Language) but it doesn't depends on the table of the database. Instead of table name, we use class name in HQL. So it is database independent query language.

Advantage of HQL

There are many advantages of HQL. They are as follows:

- database independent
- supports polymorphic queries
- easy to learn for Java Programmer

Query Interface

It is an object oriented representation of Hibernate Query. The object of Query can be obtained by calling the createQuery() method Session interface.

The query interface provides many methods. There is given commonly used methods:

1. public int executeUpdate() is used to execute the update or delete query.
2. public List list() returns the result of the ralation as a list.
3. public Query setFirstResult(int rowno) specifies the row number from where record will be retrieved.
4. public Query setMaxResult(int rowno) specifies the no. of records to be retrieved from the relation (table).
5. public Query setParameter(int position, Object value) it sets the value to the JDBC style query parameter.
6. public Query setParameter(String name, Object value) it sets the value to a named query parameter.

Example of HQL to get all the records

```
Query query=session.createQuery("from Emp");//here persistent class name is Emp
List list=query.list();
```

Example of HQL update query

```
Transaction tx=session.beginTransaction();
Query q=session.createQuery("update User set name=:n where id=:i");
q.setParameter("n","Udit Kumar");
q.setParameter("i",111);

int status=q.executeUpdate();
System.out.println(status);
tx.commit();
```

Example of HQL delete query

```
Query query=session.createQuery("delete from Emp where id=100");
//specifying class name (Emp) not tablename
query.executeUpdate();
```

11.B.	Compare and Contrast between Hibernate Query Language(HQL), Structured Query Language(SQL). ?			6.5Marks

Scheme of Evaluation:

Syntax for HQL & SQL Any 1 operations like

CREATE,SELECT,UPDATE,DELETE Queries → 3M

Compare and Contrast b/w HQL Vs. SQL →3.5 Marks

Syntax for HQL & SQL Any 1 operation:

```
CREATE TABLE STUDENT (
   ID          NUMBER,
   NAME     VARCHAR2(20),
   EMAIL     VARCHAR2(20)
);
```

```
INSERT INTO STUDENT VALUES(101,'LOKESH','lokesh@gmail.com');
INSERT INTO STUDENT VALUES(102,'ASHOK','ashok@gmail.com');
INSERT INTO STUDENT VALUES(103,'SOWMYA','sowmya@gmail.com');
INSERT INTO STUDENT VALUES(104,'RANI','rani@gmail.com');
```

```
UPDATE STUDENT
SET
      NAME= 'VARUN TEJ'
      WHERE ID=101 ;
```

```
DELETE FROM STUDENT;
```

Example of HQL to get all the records

```
Query query=session.createQuery("from Emp");//here persistent class name is Emp
List list=query.list();
```

Example of HQL update query

```
Transaction tx=session.beginTransaction();
Query q=session.createQuery("update User set name=:n where id=:i");
q.setParameter("n","Udit Kumar");
q.setParameter("i",111);

int status=q.executeUpdate();
System.out.println(status);
tx.commit();
```

Example of HQL delete query

```
Query query=session.createQuery("delete from Emp where id=100");
//specifying class name (Emp) not tablename
query.executeUpdate();
```

Differences between HQL and: SQL

SQL is based on a relational database model whereas HQL is a combination of object-oriented programming with relational database concepts.

SQL manipulates data stored in tables and modifies its rows and columns. HQL is concerned about objects and its properties.

SQL is concerned about the relationship that exists between two tables while HQL considers the relation between two objects.

12.	Answer the following Questions	12.5Marks
12.A.	Demonstrate the Life of cycle of JSP.?	6Marks

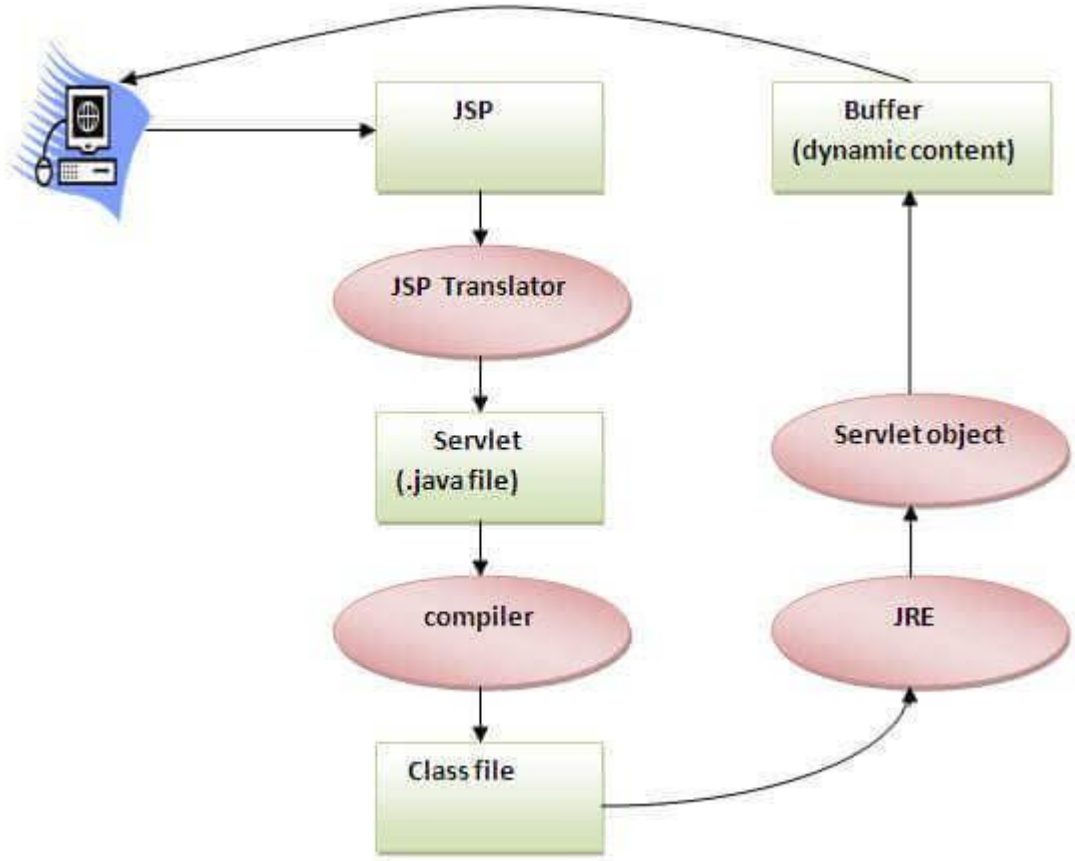
Scheme of Evaluation:
JSP Life Cycle Diagram→ 3 Marks
Explanation of JSP Life Cycle phases → 3 Marks

The Lifecycle of a JSP Page

The JSP pages follow these phases:

- Translation of JSP Page
- Compilation of JSP Page
- Classloading (the classloader loads class file)
- Instantiation (Object of the Generated Servlet is created).
- Initialization (the container invokes jspInit() method).
- Request processing (the container invokes _jspService() method).
- Destroy (the container invokes jspDestroy() method).

JSP Life Cycle Diagram



As depicted in the above diagram, JSP page is translated into Servlet by the help of JSP translator. The JSP translator is a part of the web server which is responsible for translating the JSP page into Servlet. After that, Servlet page is compiled by the compiler and gets converted into the class file. Moreover, all the processes that happen in Servlet are performed on JSP later like initialization, committing response to the browser and destroy.

12.B.	Develop a JSP application that redirects to the next page, first page contains a form to submit a username and shows the username in redirected page ?.	6.5Marks

Scheme of Evaluation:

JSP First Page

(Index.jsp or index.html page) → 3 Marks

JSP Second Page

(welcome.jsp page) →3.5 Marks

Index,jsp (or) index.html

```
<form name="myForm" action="welcome.jsp">
 <input type="text" name="username">
 <input type="submit" value="submit">
</form>
```

Welcome.jsp

```
<%

String user=(String)request.getAttribute("username");

%>
```

NOTE: The Enterprise Programming Test-1 Key with Scheme of Evaluation.
The above sample code represents one of the solutions for the given problem. You may attempt the problem in a different way to obtain the solution.

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