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CERTIFICATE

This is to certify that Mr. KAMAL VASA Roll No TCS2324087 has successfully completed the necessary course of experiments in the subject of WEB SERVICES during the academic year 2023 – 2024 complying with the requirements of University of Mumbai, for the course of T.Y.BSc. Computer Science [Semester-V]

Head of the Department Prof. In-Charge (Computer Science)

Prof. Manoj Singh Mrs. Maya Nair

Date: 03/09/2023 COLLEGE SEAL

SR.NO	NAME	PAGE NO	TRS. SIGN
1	PRACTICAL 1	6	

	Create a TimeServer		
	webservice in Java		
	and Consume it in		
	java and other		
	technologies like		
	php and .NET		
2	PRACTICAL 2	7	
	Create a Java WS		
	for performing basic		
	calculations like		
	addition, subtraction		
	multiplication and		
	Division and create a		
	java client that		
	consumes the same.		
2		10	
3	PRACTICAL 3 Create a web service	12	
	that gives – (i) NSE		
	Index, (ii) BSE		
	Index, (iii)Gold		
	Rate. The values are		
	stored in database.		
	Also create a web		
	client for a share		
	trading firm that		
	displays these values		
	on its home page		
4	PRACTICAL 4	20	
	Create a web service		
	for UGC that		
	contains a method		
	which accepts		
	college name as		
	parameter and		
	returns the NAAC		
	rating. The college		
	names and their		
	ratings are stored in		
	_	i	
İ	database. Design a		
	database. Design a web client to test the		
5	web client to test the above web service.	25	
5	web client to test the above web service. PRACTICAL 5	25	
5	web client to test the above web service. PRACTICAL 5 Design a web	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel containing 2	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel containing 2 functions – 1st	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel containing 2 functions – 1st function called	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel containing 2 functions – 1st function called getBreakingNews	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel containing 2 functions – 1st function called getBreakingNews which accepts date	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel containing 2 functions – 1st function called getBreakingNews which accepts date as string parameter	25	
5	web client to test the above web service. PRACTICAL 5 Design a web service for a channel containing 2 functions – 1st function called getBreakingNews which accepts date	25	

	T		
	2nd function called		
	getPrediction		
	accepts sunsign		
	name as string		
	parameter and		
	returns predictions		
	as string. Design a		
	client to test the		
	above web service.		
6	PRACTICAL 6	32	
	Design a Restful		
	webservice from a		
	database table		
	Employee with		
	columns empid,		
	empname and		
	Designation. Test		
	the webservice for		
	the various http		
	requests		
7	PRACTICAL 7	42	
	Design a Restful		
	webservice from a		
	database table		
	Student with		
	columns rollno,		
	name and totalmarks		
	Create a restful		
	client that displays		
	the data by accessing		
	restful service.		
8	PRACTICAL 8	51	
	Create a WCF		
	service to perform		
	calculations like		
	Addition,		
	Subtraction,		
	Multiplication and		
	Division. Create a		
	client for WCF		
	which invokes the		
	various operations.		
9	PRACTICAL 9	59	
	Create a WCF		
	service with		
	different endpoint		
	for Soap based and		
	Rest based		
	implementation		
1		1	1

PRACTICAL 1	
Create a TimeServer webservice in Java and Consume it in java and oth technologies like php and .NET	er
CLIENT	
CODE	

TimeServerOne.java

```
/*
* To change this license header, choose License Headers in Project
Properties.
* To change this template file, choose Tools | Templates
* and open the template in the editor.
*/
package mypack;
import java.util.Date;
import javax.jws.WebService;
import javax.jws.WebMethod;
import javax.jws.WebParam;
/**
*
* @author patol
*/
@WebService(serviceName = "TimeServerOne")
public class TimeServerOne {
  /**
  * Web service operation
   */
  @WebMethod(operationName = "operation1")
  public String operation1() {
    //TODO write your implementation code here:
    return new Date().toString();
  }
```

```
/**
  * Web service operation
  */
  @WebMethod(operationName = "operation2")
  public long operation2() {
    //TODO write your implementation code here:
    return new Date().getTime();
}
```

OUTPUT

SERVER SIDE

TimeServerOne Web Service Tester

This form will allow you to test your web service implementation (WSDL File)

To invoke an operation, fill the method parameter(s) input boxes and click on the button labeled with the method name.

Methods:

public abstract long mypack.TimeServerOne.operation2()
operation2 ()

public abstract java.lang.String mypack.TimeServerOne.operation1()
operation1 ()

CLIENT SIDE

time as stringTue Aug 29 18:05:20 IST 2023time elapsed1693312520651

```
C:\Users\cs25\source\repos\TimeClient\TimeClient\bin\Debug\TimeClient.exe

Time as String1688528613067

Time as ElapsedWed Jul 05 09:13:33 IST 2023
```

PRACTICAL 2

Create a Java WS for performing basic calculations like addition, subtraction ,multiplication and Division and create a java client that consumes the same.

CLIENT

```
Index.html
CODE
<html>
    <head>
         <title>CALCULATOR</title>
    </head>
    <body>
         <h3>CALCULATOR</h3>
         <form action="calculate" method="get">
         <input name="opr1" type="text"/>
              <select name="Operation">
                   <option value="+">+</option>
                   <option value="-">-</option>
                   <option value="*">*</option>
                   <option value="'/">/</option>
                   <option value="%">%</option>
                </select>
              <input name="opr2" type="text"/>
              <input name="result" type="submit"/>
```

```
</form>
     </body></html>
Index.php
<%@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>
    <%
      float first=Float.parseFloat(request.getParameter("h1"));
      float second=Float.parseFloat(request.getParameter("h2"));
      String choice=request.getParameter("operation");
      if (choice.equals("add"))
           {
  try {
     calc.Calculator90_Service service = new calc.Calculator90_Service();
     calc.Calculator90 port = service.getCalculator90Port();
     float result = port.addition(first, second);
     out.println("Result = "+result);
  } catch (Exception ex) {
     // TODO handle custom exceptions here
  }
```

```
}
    else if(choice.equals("sub")){
       try {
   calc.Calculator90_Service service = new calc.Calculator90_Service();
   calc.Calculator90 port = service.getCalculator90Port();
   float result = port.subtraction(first, second);
   out.println("Result = "+result);
} catch (Exception ex) {
   // TODO handle custom exceptions here
}
    }
    else if(choice.equals("multiply")){
       try {
   calc.Calculator90_Service service = new calc.Calculator90_Service();
   calc.Calculator90 port = service.getCalculator90Port();
   float result = port.multiply(first, second);
   out.println("Result = "+result);
} catch (Exception ex) {
   // TODO handle custom exceptions here
}
    }
     else if(choice.equals("division")){
       try {
   calc.Calculator90_Service service = new calc.Calculator90_Service();
   calc.Calculator90 port = service.getCalculator90Port();
   float result = port.division(first, second);
   out.println("Result = "+result);
} catch (Exception ex) {
```

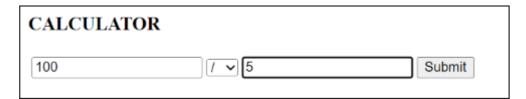
</form>

<h1></h1>

</body>

</html>

OUTPUT

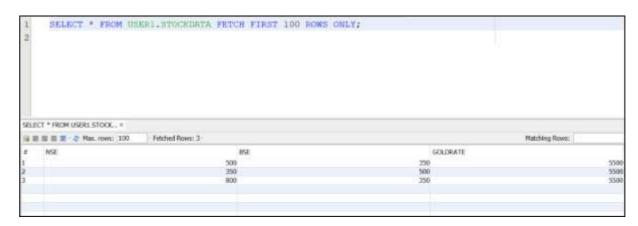


PRACTICAL 3

Create a web service that gives – (i) NSE Index, (ii) BSE Index, (iii) Gold Rate. The values are stored in database. Also create a web client for a share trading firm that displays these values on its home page

CODE

STOCKDATADB TABLE



STOCKDATASERVICE.JAVA

/*

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```
*/
package mypack;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
import javax.jws.WebService;
import javax.jws.WebMethod;
import javax.jws.WebParam;
/**
*
* @author patol
*/
@WebService(serviceName = "StockDataService")
public class StockDataService {
  /**
  * Web service operation
   */
  @WebMethod(operationName = "getNSE")
  public int getNSE() {
   int nse=0;
    try{
      //driver specification
      Class.forName("org.apache.derby.jdbc.ClientDriver");
      //connecting to database
```

```
Connection
con=DriverManager.getConnection("jdbc:derby://localhost:1527/StockDatad
b","user1","user1@123");
      //creating java statement object
      Statement stmt=con.createStatement();
      //executing the query and generating resultset
      ResultSet rs=stmt.executeQuery("SELECT * FROM
STOCKDATA");
      //bring resultset pointer to the first record
      rs.next();
      //retrieving values from the rs object at a specific column
      nse=rs.getInt("NSE");
      con.close();
         }
    catch(Exception e)
    {
         }
    return nse;
  }
  /**
   * Web service operation
   */
  @WebMethod(operationName = "getBSE")
  public int getBSE() {
    int bse=0;
    try{
      //driver specification
      Class.forName("org.apache.derby.jdbc.ClientDriver");
      //connecting to database
```

```
Connection
con=DriverManager.getConnection("jdbc:derby://localhost:1527/StockDatad
b","user1","user1@123");
      //creating java statement object
      Statement stmt=con.createStatement();
      //executing the query and generating resultset
      ResultSet rs=stmt.executeQuery("SELECT * FROM
STOCKDATA");
      //bring resultset pointer to the first record
      rs.next();
      //retrieving values from the rs object at a specific column
      bse=rs.getInt("BSE");
      con.close();
         }
    catch(Exception e)
    {
         }
    return bse;
  }
  /**
   * Web service operation
   */
  @WebMethod(operationName = "getGOLDRATE")
  public int getGOLDRATE() {
     int goldrate=0;
    try{
      //driver specification
      Class.forName("org.apache.derby.jdbc.ClientDriver");
      //connecting to database
```

```
Connection
con=DriverManager.getConnection("jdbc:derby://localhost:1527/StockDatad
b","user1","user1@123");
      //creating java statement object
      Statement stmt=con.createStatement();
      //executing the query and generating resultset
      ResultSet rs=stmt.executeQuery("SELECT * FROM
STOCKDATA");
      //bring resultset pointer to the first record
      rs.next();
      //retrieving values from the rs object at a specific column
      goldrate=rs.getInt("GOLDRATE");
      con.close();
         }
    catch(Exception e)
    {
         }
    return goldrate;
  }
NEWJSP.JSP
<%--
  Document: newjsp
  Created on: 29 Aug, 2023, 6:29:44 PM
  Author
            : patol
--<sup>0</sup>/<sub>0</sub>>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
```

```
<head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-</pre>
8">
    <title>JSP Page</title>
  </head>
  <body>
    <%
    String stock=request.getParameter("stock");
    if(stock.equals ("NSE Index")){
  try {
     mypack.StockDataService_Service service = new
mypack.StockDataService_Service();
     mypack.StockDataService port = service.getStockDataServicePort();
     // TODO process result here
     int result = port.getNSE();
     out.println("Result = "+result);
  } catch (Exception ex) {
     // TODO handle custom exceptions here
  }
    }
    else if(stock.equals("BSE Index")){
  try {
     mypack.StockDataService_Service service = new
mypack.StockDataService_Service();
     mypack.StockDataService port = service.getStockDataServicePort();
```

```
// TODO process result here
     int result = port.getBSE();
     out.println("Result = "+result);
  } catch (Exception ex) {
     // TODO handle custom exceptions here
  }
    }
    else
    {
  try {
     mypack.StockDataService_Service service = new
mypack.StockDataService_Service();
     mypack.StockDataService port = service.getStockDataServicePort();
     // TODO process result here
     int result = port.getGOLDRATE();
      out.println("Result = "+result);
  } catch (Exception ex) {
     // TODO handle custom exceptions here
  }
    }
  %>
```

```
</body>
</html>
INDEX.JSP
<!DOCTYPE html>
<!--
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To change this template file, choose Tools | Templates
and open the template in the editor.
-->
<html>
  <head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-</pre>
scale=1.0">
  </head>
  <body>
      <form action="newjsp.jsp">
      Enter Your Choice:
      <input type="radio" name="stock" value="NSE Index" />NSE Index
      <input type="radio" name="stock" value="BSE Index" />BSE Index
      <input type="radio" name="stock" value="Gold Rate" />Gold
Rate<br>
      <input type="submit" value="Submit" />
    </form>
  </body>
</html>
OUTPUT
```

StockDataService Web Service Tester This form will allow you to test your web service implementation (WSDL File) To invoke an operation, fill the method parameter(s) input boxes and click on the button labeled with the method name. Methods: public abstract int mypack.StockDataService.getNSE() public abstract int mypack.StockDataService.getGOLDRATE() public abstract int mypack.StockDataService.getBSE() public abstract int mypack.StockDataService.getBSE()



PRACTICAL 4

Create a web service for UGC that contains a method which accepts college name as parameter and returns the NAAC rating. The college names and their ratings are stored in database. Design a web client to test the above web service.

CODE

RATINGS.JAVA

/*

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- * and open the template in the editor.

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.Statement;
import javax.jws.WebService;
import javax.jws.WebMethod;
import javax.jws.WebParam;
/**
*
* @author patol
*/
@WebService(serviceName = "ratings")
public class ratings {
  /**
  * Web service operation
   */
  @WebMethod(operationName = "getrating")
  public String getratings(@WebParam(name = "college") String college) {
    String cname=null;
    try{
    Class.forName("org.apache.derby.jdbc.ClientDriver");
    Connection
con=DriverManager.getConnection("jdbc:derby://localhost:1527/Collegeratin
gs","user1","user1@123");
```

package mypack;

```
Statement stmt=con.createStatement();
   ResultSet rs=stmt.executeQuery("SELECT * FROM
COLLEGERATINGTABLE WHERE COLLEGENAME=""+college+""");
    rs.next();
   cname=rs.getString("ADDRESS");
    rs.close();
   con.close();
   stmt.close();
  }
   catch(Exception e)
    {
      e.printStackTrace();
    }
 return cname;
 }
  }
CLIENT.JSP
<%--
 Document: client
  Created on: 25 Jul, 2023, 9:18:05 PM
 Author
          : patol
--%>
<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
  <head>
```

```
<meta http-equiv="Content-Type" content="text/html; charset=UTF-</pre>
8">
    <title>JSP Page</title>
  </head>
  <body>
  <%
    String choice = request.getParameter("colleg");
  try {
     mypack.Ratings_Service = new mypack.Ratings_Service();
     mypack.Ratings port = service.getRatingsPort();
      // TODO initialize WS operation arguments here
     java.lang.String college = "";
     // TODO process result here
     java.lang.String result = port.getrating(choice);
     out.println("Result = "+result);
  } catch (Exception ex) {
  }
  %>
  </body>
</html>
INDEX.HTML
<!DOCTYPE html>
<!--
```

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To change this template file, choose Tools | Templates and open the template in the editor.

```
-->
<html>
  <head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-</pre>
scale=1.0">
  </head>
  <body>
    <div></div>
    <form action="client.jsp">
      enter your colleges:-</br>
      <input type="text" name="colleg" value="" /><br></br>
      <input type="submit" value="submit" name="submit" /></br>
    </form>
  </body>
</html>
OUTPUT
```

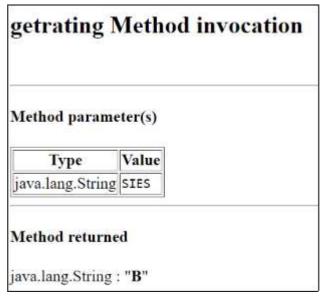
ratings Web Service Tester

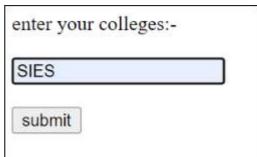
This form will allow you to test your web service implementation (WSDL File)

To invoke an operation, fill the method parameter(s) input boxes and click on the button labeled with the method name.

Methods:

public abstract java.lang.String mypack.Ratings.getrating(java.lang.String)
getrating (SIES)





Result = B

PRACTICAL 5

Design a web service for a channel containing 2 functions -1^{st} function called getBreakingNews which accepts date as string parameter and returns special news of that day, 2nd function called getPrediction accepts sunsign name as string parameter and returns predictions as string. Design a client to test the above web service.

CODE

NEWSCHANNEL.JAVA

/*

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- * and open the template in the editor.

*/

package mypack;

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;
import javax.jws.WebService;
import javax.jws.WebMethod;
import javax.jws.WebParam;
/**
*
* @author patol
*/
@WebService(serviceName = "newschannel")
public class newschannel {
  /**
  * Web service operation
  */
  @WebMethod(operationName = "getBreakingnews")
  public String getBreakingnews(@WebParam(name = "date") String date) {
    String cname=null;
   try{
    Class.forName("org.apache.derby.jdbc.ClientDriver");
    Connection
con=DriverManager.getConnection("jdbc:derby://localhost:1527/user1","use
r1","user1@123");
    Statement stmt=con.createStatement();
    ResultSet rs=stmt.executeQuery("SELECT * FROM BREAKINGNEWS
WHERE DATE=""+date+""");
    rs.next();
```

```
cname=rs.getString("NEWS");
    rs.close();
    con.close();
    stmt.close();
  }
    catch(Exception e)
    {
      e.printStackTrace();
    }
  return cname;
 }
  /**
  * Web service operation
  */
  @WebMethod(operationName = "getPrediction")
  public String getPrediction(@WebParam(name = "sunsignname") String
sunsignname) {
    String cdname=null;
   try{
    Class.forName("org.apache.derby.jdbc.ClientDriver");
    Connection
con=DriverManager.getConnection("jdbc:derby://localhost:1527/user2","use
r1","user1@123");
    Statement stmt=con.createStatement();
    ResultSet rs=stmt.executeQuery("SELECT * FROM PREDICTION
WHERE SUNSIGNNAME=""+sunsignname+""");
    rs.next();
    cdname=rs.getString("HOROSCOPE");
    rs.close();
```

```
con.close();
    stmt.close();
  }
    catch(Exception e)
    {
      e.printStackTrace();
    }
  return cdname;
 }
  }
CLIENT.JSP
<%--
  Document: client
  Created on: 26 Jul, 2023, 7:43:25 PM
  Author: patol
--<sup>0</sup>/<sub>0</sub>>
<%@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>
    <%
   String choice=request.getParameter("newsdate");
```

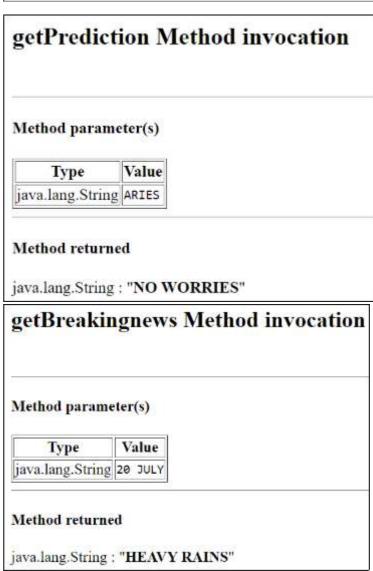
```
try {
     mypack.Newschannel Service service = new
mypack.Newschannel_Service();
      mypack.Newschannel port = service.getNewschannelPort();
      // TODO initialize WS operation arguments here
     java.lang.String date = "";
     // TODO process result here
     java.lang.String result = port.getBreakingnews(choice);
     out.println("Result = "+result);
  } catch (Exception ex) {
     // TODO handle custom exceptions here
  }
  %>
  </BR></BR>
  <%
    String choice2=request.getParameter("sunsign");
  try {
     mypack.Newschannel_Service service = new
mypack.Newschannel_Service();
      mypack.Newschannel port = service.getNewschannelPort();
      // TODO initialize WS operation arguments here
     java.lang.String sunsignname = "";
     // TODO process result here
     java.lang.String result = port.getPrediction(choice2);
      out.println("Result = "+result);
  } catch (Exception ex) {
     // TODO handle custom exceptions here
```

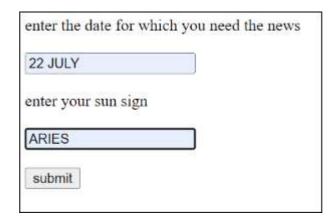
```
}
  %>
  </body>
</html>
INDEX.HTML
<!DOCTYPE html>
<!--
To change this license header, choose License Headers in Project Properties.
To change this template file, choose Tools | Templates
and open the template in the editor.
-->
<html>
  <head>
    <title>NEWS CHANNEL</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-</pre>
scale=1.0''>
  </head>
  <body>
    <div>
      <form action="client.jsp">
        enter the date for which you need the news</br>
        <input type="text" name="newsdate" value="" /></br>
        enter your sun sign</br>
        <input type="text" name="sunsign" value="" /></br></br>
        <input type="submit" value="submit" /></br></br>
      </form>
    </div>
  </body>
```

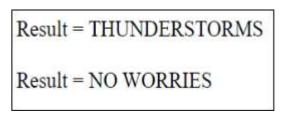
</html>

OUTPUT

newschannel Web Service Tester
This form will allow you to test your web service implementation (WSDL File)
To invoke an operation, fill the method parameter(s) input boxes and click on the button labeled with the method name.
Methods:
public abstract java.lang.String mypack.Newschannel.getPrediction(java.lang.String) getPrediction (ARIES)
public abstract java.lang.String mypack.Newschannel.getBreakingnews(java.lang.String) getBreakingnews (20 JULY)





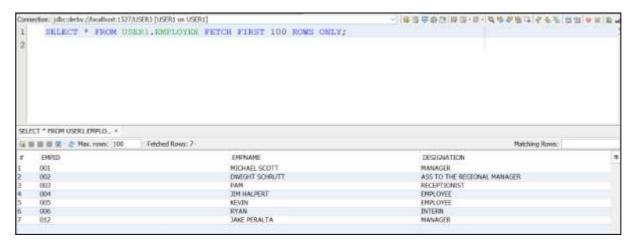


PRACTICAL 6

Design a Restful webservice from a database table Employee with columns empid, empname and Designation. Test the webservice for the various http requests

CODE

DATABASE TABLE EMPLOYEE



EMPLOYEEFACADEREST..JAVA

/*

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- * and open the template in the editor.

*/

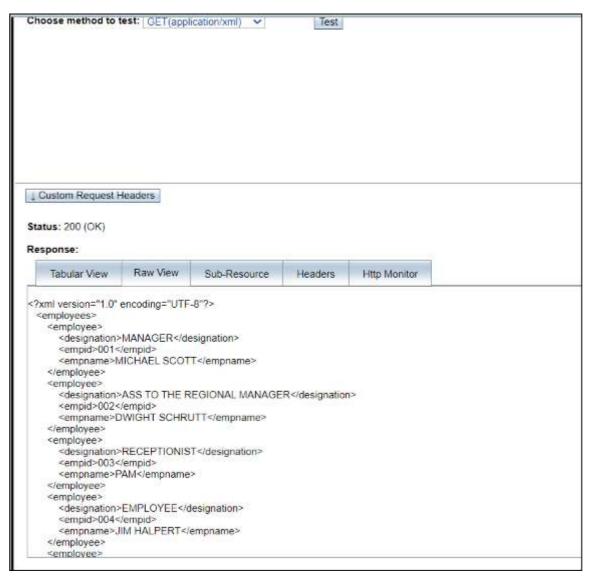
package mypack.service;

```
import java.util.List;
import javax.ejb.Stateless;
import javax.persistence.EntityManager;
import javax.persistence.PersistenceContext;
import javax.ws.rs.Consumes;
import javax.ws.rs.DELETE;
import javax.ws.rs.GET;
import javax.ws.rs.POST;
import javax.ws.rs.PUT;
import javax.ws.rs.Path;
import javax.ws.rs.PathParam;
import javax.ws.rs.Produces;
import javax.ws.rs.core.MediaType;
import mypack. Employee;
/**
*
* @author patol
*/
@Stateless
@Path("mypack.employee")
public class EmployeeFacadeREST extends AbstractFacade<Employee> {
  @PersistenceContext(unitName = "PRACTICAL6_054PU")
  private EntityManager em;
  public EmployeeFacadeREST() {
    super(Employee.class);
  }
```

```
@POST
  @Override
  @Consumes({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public void create(Employee entity) {
    super.create(entity);
  }
  @PUT
  @Path("{id}")
  @Consumes({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public void edit(@PathParam("id") String id, Employee entity) {
    super.edit(entity);
  }
  @DELETE
  @Path("{id}")
  public void remove(@PathParam("id") String id) {
    super.remove(super.find(id));
  }
  @GET
  @Path("{id}")
  @Produces({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public Employee find(@PathParam("id") String id) {
    return super.find(id);
  }
```

```
@GET
  @Override
  @Produces({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public List<Employee> findAll() {
    return super.findAll();
  }
  @GET
  @Path("{from}/{to}")
  @Produces({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public List<Employee> findRange(@PathParam("from") Integer from,
@PathParam("to") Integer to) {
    return super.findRange(new int[]{from, to});
  }
  @GET
  @Path("count")
  @Produces(MediaType.TEXT_PLAIN)
  public String countREST() {
    return String.valueOf(super.count());
  }
  @Override
  protected EntityManager getEntityManager() {
    return em;
  }
```

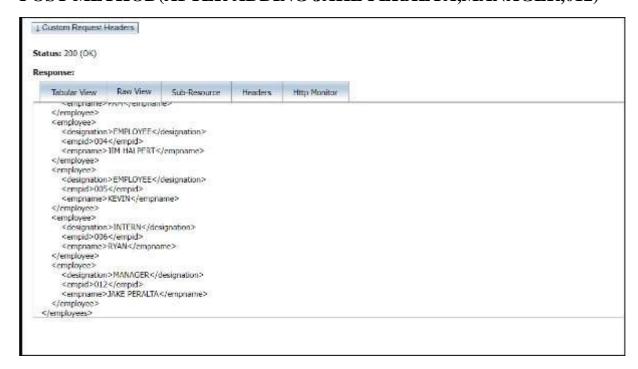
OUTPUT



GET METHOD



POST METHOD(AFTER ADDING JAKE PERALTA, MANAGER, 012)



CLIENT SIDE

CODE

EMPLOYEE.JSP

```
<%--
Document : employee
Created on : 2 Sep, 2023, 4:45:49 PM
Author : patol
--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
```

```
font-family: arial, sans-serif;
         border-collapse: collapse;
       }
       td,th{
         border:1px solid #000000;
         text-align:center;
         padding: 8px;
       }
    </style>
    <script>
       var request=new XMLHttpRequest();
request.open('GET','http://localhost:8080/EmployeeRest/webresources/mypac
k.employee',true); //url from test web service parameter
      request.onload=function(){
         //data will hold http request
         var data=JSON.parse(this.response);
         for (var i=0;i<data.length;i++)</pre>
         {
           var table=document.getElementById("emptable");
           var row=table.insertRow();
           var cell1=row.insertCell(0);
           var cell2=row.insertCell(1);
           var cell3=row.insertCell(2);
           cell1.innerHTML=data[i].empid;
           cell2.innerHTML=data[i].empname;
           cell3.innerHTML=data[i].designation;
         }
       };
```

```
request.send();
    </script>
  </head>
  <body>
    Employee Id
        Employee Name
        Employee Designation
      </body>
</html>
INDEX.HTML
<!DOCTYPE html>
<!--
To change this license header, choose License Headers in Project Properties.
To change this template file, choose Tools | Templates
and open the template in the editor.
-->
<html>
  <head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-</pre>
scale=1.0">
  </head>
  <body>
    <form>
```

**Get List of Employees
>dr>**

<input type="submit" formaction="employee.jsp" value="Get
Employees"></br>

</form>

</body>

</html>

Employee Id	Employee Name		
001	MICHAEL SCOTT		
002	DWIGHT SCHRUTT	ASS TO THE REGIONAL MANAGER	
003	PAM	RECEPTIONIST	
004	JIM HALPERT	EMPLOYEE	
005	KEVIN	EMPLOYEE	
006	RYAN	INTERN	
012	JAKE PERALTA	MANAGER	

Get List of Employees

Get Employees

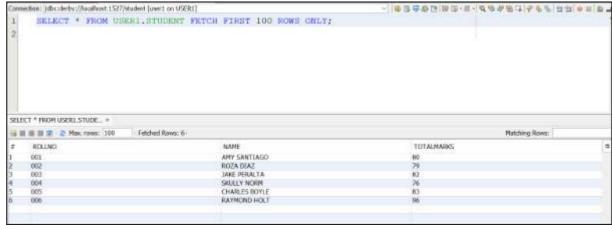
OUTPUT

PRACTICAL 7

Design a Restful webservice from a database table Student with columns rollno, name and totalmarks. Create a restful client that displays the data by accessing restful service.

CODE

DATABASE TABL



 \mathbf{E}

STUDENTFACADEREST.JAVA

/*

- * To change this license header, choose License Headers in Project Properties.
- * To change this template file, choose Tools | Templates
- * and open the template in the editor.

*/

package mypack.service;

import java.util.List;

import javax.ejb.Stateless;

import javax.persistence.EntityManager;

import javax.persistence.PersistenceContext;

import javax.ws.rs.Consumes;

import javax.ws.rs.DELETE;

import javax.ws.rs.GET;

import javax.ws.rs.POST;

import javax.ws.rs.PUT;

import javax.ws.rs.Path;

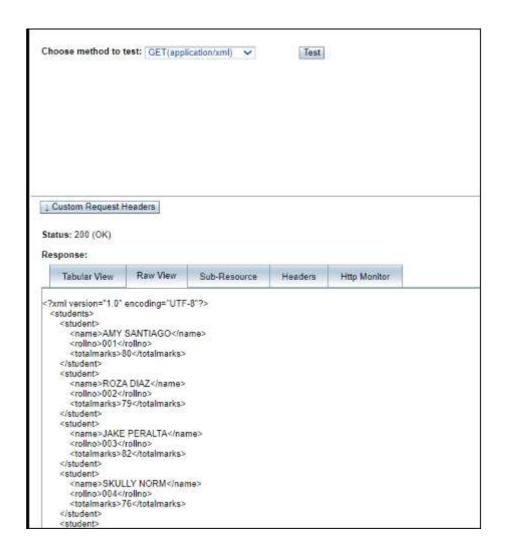
import javax.ws.rs.PathParam;

```
import javax.ws.rs.Produces;
import javax.ws.rs.core.MediaType;
import mypack.Student;
/**
*
* @author patol
*/
@Stateless
@Path("mypack.student")
public class StudentFacadeREST extends AbstractFacade<Student> {
  @PersistenceContext(unitName = "PRACTICAL7_054PU")
  private EntityManager em;
  public StudentFacadeREST() {
    super(Student.class);
  }
  @POST
  @Override
  @Consumes({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public void create(Student entity) {
    super.create(entity);
  }
  @PUT
  @Path("{id}")
```

```
@Consumes({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public void edit(@PathParam("id") String id, Student entity) {
    super.edit(entity);
  }
  @DELETE
  @Path("{id}")
  public void remove(@PathParam("id") String id) {
    super.remove(super.find(id));
  }
  @GET
  @Path("{id}")
  @Produces({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public Student find(@PathParam("id") String id) {
    return super.find(id);
  }
  @GET
  @Override
  @Produces({MediaType.APPLICATION_JSON})
  public List<Student> findAll() {
    return super.findAll();
  }
  @GET
  @Path("{from}/{to}")
```

```
@Produces({MediaType.APPLICATION_XML,
MediaType.APPLICATION_JSON})
  public List<Student> findRange(@PathParam("from") Integer from,
@PathParam("to") Integer to) {
    return super.findRange(new int[]{from, to});
  }
  @GET
  @Path("count")
  @Produces(MediaType.TEXT\_PLAIN)
  public String countREST() {
    return\ String.valueOf(super.count());
  }
  @Override
  protected EntityManager getEntityManager() {
    return em;
  }
}
```

OUTPUT



CLIENT SIDE

CODE

CLIENT.JSP

<%--

Document: client

Created on: 2 Sep, 2023, 5:20:13 PM

Author: patol

--%>

<%@page contentType="text/html" pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>

```
<head>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-</pre>
8">
    <title>JSP Page</title>
    <style>
       table{
         font-family: arial, sans-serif;
         border-collapse: collapse;
       }
       td,th{
         border:1px solid #000000;
         text-align:center;
         padding: 8px;
       }
    </style>
    <script>
       var request=new XMLHttpRequest();
request.open('GET','http://localhost:8080/PRACTICAL7_054/webresources/
mypack.student',true); //url from test web service parameter
       request.onload=function(){
         //data will hold http request
         var data=JSON.parse(this.response);
         for (var i=0;i<data.length;i++)
         {
           var table=document.getElementById("stdtable");
           var row=table.insertRow();
           var cell1=row.insertCell(0);
            var cell2=row.insertCell(1);
            var cell3=row.insertCell(2);
```

```
cell1.innerHTML=data[i].rollno;
         cell2.innerHTML=data[i].name;
         cell3.innerHTML=data[i].totalmarks;
        }
      };
     request.send();
    </script>
  </head>
  <body>
     Roll Number
        Student Name
        Total Marks
      </body>
</html>
INDEX.HTML
<!DOCTYPE html>
<!--
To change this license header, choose License Headers in Project Properties.
To change this template file, choose Tools | Templates
and open the template in the editor.
-->
<html>
  <head>
    <title>TODO supply a title</title>
```

OUTPUT

Roll Number	Student Name	Total Marks
001	AMY SANTIAGO	80
002	ROZA DIAZ	79
003	JAKE PERALTA	82
004	SKULLY NORM	76
005	CHARLES BOYLE	83
006	RAYMOND HOLT	96

get list of students

press here for details

PRACTICAL 8

Create a WCF service to perform calculations like Addition, Subtraction, Multiplication and Division. Create a client for WCF which invokes the various operations.

CODE

```
ISERVICE1.CS
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;
namespace CalculatorService
{
  // NOTE: You can use the "Rename" command on the "Refactor" menu to
change the interface name "IService1" in both code and config file together.
  [ServiceContract]
  public interface IService1
  {
    [OperationContract]
    double Add(double num1, double num2);
    [OperationContract]
    double Subtract(double num1, double num2);
    [OperationContract]
    double Multiply(double num1, double num2);
    [OperationContract]
    double Divide(double num1, double num2);
  }
```

SERVICE1.SVC.CS

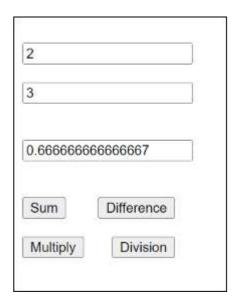
```
using System;
using System.Collections.Generic;
using System.Ling;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;
namespace CalculatorService
{
  // NOTE: You can use the "Rename" command on the "Refactor" menu to
change the class name "Service1" in code, svc and config file together.
  // NOTE: In order to launch WCF Test Client for testing this service, please
select Service1.svc or Service1.svc.cs at the Solution Explorer and start
debugging.
  public class Service1: IService1
  {
    public double Add(double num1, double num2)
    {
      return num1 + num2;
    }
    public double Divide(double num1, double num2)
    {
      return num1 / num2;
    }
    public double Multiply(double num1, double num2)
    {
```

```
return num1 * num2;
    }
    public double Subtract(double num1, double num2)
    {
      return num1 - num2;
    }
  }
}
DEFAULT.ASPX
<%@ Page Language="C#" AutoEventWireup="true"
CodeBehind="Default.aspx.cs" Inherits="ArithmeticClient.Default" %>
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
  <title></title>
</head>
<body>
  <form id="form1" runat="server">
    <div>
      <br/>hr/>
      <asp:TextBox ID="TextBox1" runat="server"</pre>
OnTextChanged=''TextBox1_TextChanged''></asp:TextBox>
  
      <br />
      <br />
      <asp:TextBox ID="TextBox2" runat="server"></asp:TextBox>
```

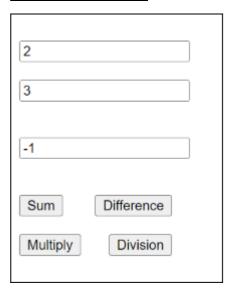
```
<br />
      <br/>>
      <br/>>
     <asp:TextBox ID="TextBox3" runat="server"></asp:TextBox>
      <br/>br />
      <br />
      <br />
      <asp:Button ID="Button1" runat="server"
OnClick="Button1_Click" Text="Sum" />
     
      <asp:Button ID="Button2" runat="server"
OnClick="Button2_Click" Text="Difference" />
      <br/>>
      <br/>br />
     <asp:Button ID="Button3" runat="server"
OnClick="Button3_Click" Text="Multiply" />
    
     <asp:Button ID="Button4" runat="server"
OnClick="Button4_Click" Text="Division" />
      <br />
      <br/>>
    </div>
  </form>
</body>
</html>
DEFAULT.ASPX.CS
using System;
using System.Collections.Generic;
using System.Ling;
using System.Web;
```

```
using System.Web.UI;
using System.Web.UI.WebControls;
namespace ArithmeticClient
{
  public partial class Default: System.Web.UI.Page
  {
    protected void Page_Load(object sender, EventArgs e)
    {
    }
    protected void TextBox1_TextChanged(object sender, EventArgs e)
    {
    }
    protected void Button1_Click(object sender, EventArgs e)
    {
       ServiceReference1.Service1Client client = new
ServiceReference1.Service1Client();
       double num1 = double.Parse(TextBox1.Text);
      double num2 = double.Parse(TextBox2.Text);
      TextBox3.Text = Convert.ToString(client.Add(num1, num2));
    }
    protected void Button2_Click(object sender, EventArgs e)
    {
```

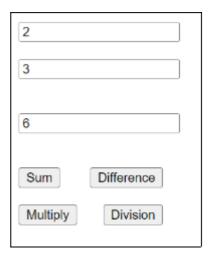
```
ServiceReference1.Service1Client client = new
ServiceReference1.Service1Client():
      double num1 = double.Parse(TextBox1.Text);
      double num2 = double.Parse(TextBox2.Text);
      TextBox3.Text = Convert.ToString(client.Subtract(num1, num2));
    }
    protected void Button3_Click(object sender, EventArgs e)
    {
      ServiceReference1.Service1Client client = new
ServiceReference1.Service1Client();
      double num1 = double.Parse(TextBox1.Text);
      double num2 = double.Parse(TextBox2.Text);
      TextBox3.Text = Convert.ToString(client.Multiply(num1, num2));
    }
    protected void Button4_Click(object sender, EventArgs e)
    {
      ServiceReference1.Service1Client client = new
ServiceReference1.Service1Client();
      double num1 = double.Parse(TextBox1.Text);
      double num2 = double.Parse(TextBox2.Text);
      TextBox3.Text = Convert.ToString(client.Divide(num1, num2));
    }
  }
OUTPUT
DIVISION
```



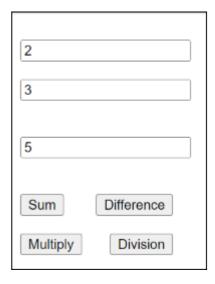
SUBTRACTION



MULTIPLY



ADDITION



PRACTICAL 9

Create a WCF service with different endpoint for Soap based and Rest based implementation.

```
CODE
ISERVICE1.CS
using System;
using System.Collections.Generic;
using System.Linq;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;
namespace WcfService2
{
  // NOTE: You can use the "Rename" command on the "Refactor" menu to
change the interface name "IService1" in both code and config file together.
  [ServiceContract]
  public interface IService1
  {
    [OperationContract]
```

```
[System.ServiceModel.Web.WebInvoke(Method = "GET", UriTemplate
= "/SayHello/{value}", RequestFormat =
System.ServiceModel.Web.WebMessageFormat.Json, ResponseFormat =
System.ServiceModel.Web.WebMessageFormat.Json)]
    string SayHello(string value);
  }
  }
SERVICE1.SVC.CS
using System;
using System.Collections.Generic;
using System.Ling;
using System.Runtime.Serialization;
using System.ServiceModel;
using System.Text;
namespace WcfService2
{
  // NOTE: You can use the "Rename" command on the "Refactor" menu to
change the class name "Service1" in code, svc and config file together.
  // NOTE: In order to launch WCF Test Client for testing this service, please
select Service1.svc or Service1.svc.cs at the Solution Explorer and start
debugging.
  public class Service1 : IService1
  {
    public string SayHello(string value)
    {
      return string.Format($''hello {value}!!welcome to wcf'');
```

```
}
  }
}
WEB.CONFIG
<?xml version="1.0"?>
<configuration>
 <appSettings>
  <add key="aspnet:UseTaskFriendlySynchronizationContext"
value="true"/>
 </appSettings>
 <system.web>
  <compilation debug="true" targetFramework="4.7.2" />
  <a href="httpRuntime targetFramework="4.7.2"/>
 </system.web>
 <system.serviceModel>
       <services>
             <service name="WcfService2.Service1">
                  <endpoint address="jsonservice"</pre>
binding="webHttpBinding" contract="WcfService2.IService1"
behaviorConfiguration="web">
                  </endpoint>
                  <endpoint address="soapservice"</pre>
binding="basicHttpBinding" contract="WcfService2.IService1">
                  </endpoint>
             </service>
       </services>
  <br/>
<br/>
dehaviors>
```

```
<serviceBehaviors>
    <br/><br/>behavior>
     <!-- To avoid disclosing metadata information, set the values below to
false before deployment -->
     <serviceMetadata httpGetEnabled="true" httpsGetEnabled="true"/>
     <!-- To receive exception details in faults for debugging purposes, set the
value below to true. Set to false before deployment to avoid disclosing
exception information -->
     <serviceDebug includeExceptionDetailInFaults="false"/>
    </behavior>
   </serviceBehaviors>
           <endpointBehaviors>
                 <br/><br/>behavior name="web">
                       <webHttp/>
                 </behavior>
           </endpointBehaviors>
  </behaviors>
  colMapping>
    <add binding="basicHttpsBinding" scheme="https"/>
  </protocolMapping>
  <serviceHostingEnvironment aspNetCompatibilityEnabled="true"</pre>
multipleSiteBindingsEnabled="true"/>
 </system.serviceModel>
 <system.webServer>
  <modules runAllManagedModulesForAllRequests="true"/>
  <!--
```

To browse web app root directory during debugging, set the value below to true.

Set to false before deployment to avoid disclosing web app folder information.

</system.webServer>

</configuration>

OUTPUT

"hello arvin!!welcome to wcf"