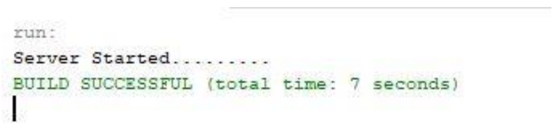
Practical No.1 :-

Write a program for implementing client & server communication model using TCP

A. A client server based program using TCP to find if the number entered is prime

PRIME_SERVER:

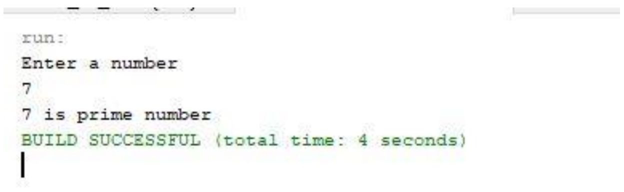
```
import java.net.*;
import java.io.*;
public class Prime_Server
{
   public static void main(String  args[])
   {
      try
      {
ServerSocket ss=new ServerSocket(8001);
System.out.println("Server Started.........");
         Socket s=ss.accept();
DataInputStream in=new DataInputStream(s.getInputStream());
         int x=in.readInt();
DataOutputStreamotc=new DataOutputStream(s.getOutputStream());
         int y=x/2;
         if(x==1||x==2||x==3)
         {
otc.writeUTF(x+" is Prime Number");
System.exit(0);
         }
         for (int i=2;i<=y;i++)
         {
                if(x%i==0)
                {
otc.writeUTF(x+" is not a prime number");
                }
                else
                {
otc.writeUTF(x+" is prime number");
                }
            }
        }
catch(Exception e)
        {
System.out.println("Error"+e);
        }
    }
}
```



```
run:
Server Started.........
BUILD SUCCESSFUL (total time: 7 seconds)
```

Prime_CLIENT

```
import java.net.*;
import java.io.*;
import java.lang.*;
public class Prime_Client
{
    public static void main(String args[])
    {
        try
        {
            Socket cs=new Socket("localhost",8001);
BufferedReader inf=new BufferedReader(new InputStreamReader(System.in));
System.out.println("Enter a number");
            int a=Integer.parseInt(inf.readLine());
DataOutputStream out=new DataOutputStream(cs.getOutputStream());
out.writeInt(a);
DataInputStream in =new DataInputStream(cs.getInputStream());
System.out.println(in.readUTF());
cs.close();
        }
catch(Exception e)
        {
System.out.println("Error"+e);
        }
    }
}
```

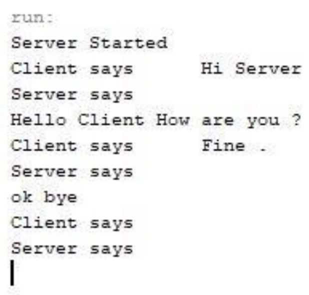


```
run:
Enter a number
7
7 is prime number
BUILD SUCCESSFUL (total time: 4 seconds)
```

B. A CLIENT SERVER TCP BASED CHATTING APPLICATION

Server_Program_Chat

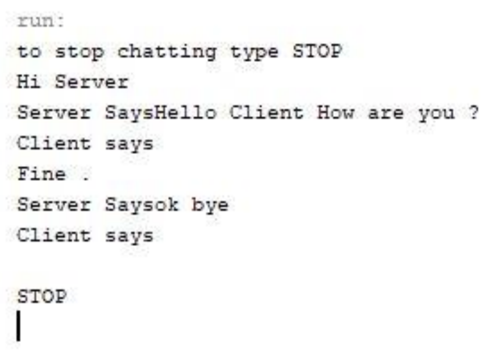
```
import java.io.*;
import java.net.*;
import java.lang.*;
public class Server_program_chat
{
        public static void main(String args[])
        {
    try
    {
ServerSocket ss=new ServerSocket(8005);
System.out.println("Server Started");
        Socket s=ss.accept();
BufferedReaderbr =new BufferedReader(new InputStreamReader(System.in));
DataOutputStream out =new DataOutputStream(s.getOutputStream());
DataInputStream in=new DataInputStream(s.getInputStream());
        String send,receive;
        while((receive=in.readLine())!=null)
        {
            if(receive.equals("STOP"))
                break;
System.out.println("Client says      "+receive);
System.out.println("Server says      ");
            send=br.readLine();
out.writeBytes(send+"\n");
        }
br.close();
in.close();
out.close();
s.close();
   }
catch(Exception e)
   {
System.out.println("Error "+e);
   }
}
}
```



```
run:
Server Started
Client says      Hi Server
Server says
Hello Client How are you ?
Client says      Fine .
Server says
ok bye
Client says
Server says
```

Client_Program_Chat

```
import java.io.*;
import java.net.*;
import java.lang.*;
public class Client_Program_Chat
{
   public static void main(String arge[])
   {
      try
      {
      Socket cs=new Socket("localhost",8005);
BufferedReaderbr =new BufferedReader(new InputStreamReader(System.in));
DataOutputStream out =new DataOutputStream(cs.getOutputStream());
DataInputStream in=new DataInputStream(cs.getInputStream());
System.out.println("to stop chatting type STOP");
    String msg;
    while((msg=br.readLine())!=null)
        {
out.writeBytes(msg+"\n");
            if(msg.equals("STOP"))
              Break;
System.out.println("Server Says"+in.readLine());
System.out.println("Client says");
        }
br.close();
in.close();
out.close();
cs.close();
  }
catch(Exception e)
  {
System.out.println("Error "+e);
  }}}
```

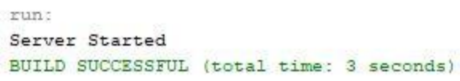


```
run:
to stop chatting type STOP
Hi Server
Server SaysHello Client How are you ?
Client says
Fine .
Server Saysok bye
Client says

STOP
```

C. A CLIENT SERVER TCP BASED DATE APPLICATION

DATE_CLIENT

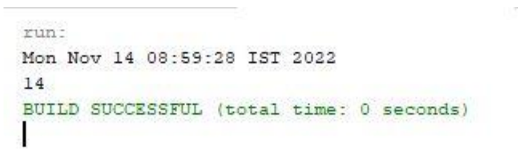
```
import java.io.*;

import java.net.*;

import java.util.*;

public class Date_Client

{

   public static void main( Stringargs[])

   {

      try

      {

         Socket cs=new Socket(InetAddress.getLocalHost(),8004);

BufferedReaderbr=new
BufferedReader(newInputStreamReader(cs.getInputStream()));

         String UserInput;

         while((UserInput=br.readLine())!=null)

         {

System.out.println(UserInput);

         }

cs.close();

      }

catch(Exception e)

      {

System.out.println("Error"+e);

      }  }  }
```



```
run:
Server Started
BUILD SUCCESSFUL (total time: 3 seconds)
```

DATE_SERVER

```
import java.io.*;

import java.net.*;

import java.util.*;

public class date_server

{

  public static void main( Stringargs[])

  {

     try

     {

ServerSocket ss=new ServerSocket(8004);

System.out.println("Server Started");

         Socket s=ss.accept();

         Calendar c=new GregorianCalendar();

PrintWriter pw=new PrintWriter(s.getOutputStream());

pw.println(new Date());

pw.println(c.get(Calendar.DATE));

pw.flush();

s.close();

     }

catch(Exception e)

     {

System.out.println("Error"+e);

     } }  }
```



```
run:
Mon Nov 14 08:59:28 IST 2022
14
BUILD SUCCESSFUL (total time: 0 seconds)
```

Practical NO. 2

Write a program for implementing Client Server communication model using UDP.

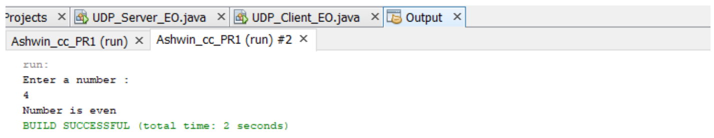
A. A client server based program using UDP to find if the number entered is even or odd.

udpServerEO.java

```
import java.io.*;

import java.net.*;

public class UDP_Server_EO

{

   public static void main(String args[])

   {

      try

      {

DatagramSocket ds= new DatagramSocket(2000);

         byte b[] =new byte[1024];

DatagramPacketdp=new DatagramPacket(b,b.length);

ds.receive(dp);

         String str=new

            String(dp.getData(),0,dp.getLength());

System.out.println(str);

         int a=Integer.parseInt(str);

         String s=new String();

         if(a%2==0)

            s="Number is even";

            else

            s="Number is odd";

            byte b1[]=new byte[1024];
            b1=s.getBytes();
DatagramPacket dp1=new
DatagramPacket(b1,b1.length,InetAddress.getLocalHost(),1000);
ds.send(dp1);
    }
catch(Exception e)
    {
e.printStackTrace();
    }
  }
}
```

UDP_Client_EO

```
import java.io.*;
import java.net.*;
public class UDP_Client_EO
{
  public static void main(String args[])
  {
    try
    {
DatagramSocket ds=new DatagramSocket(1000);
BufferedReaderbr=new BufferedReader(new InputStreamReader(System.in));
System.out.println("Enter a number :");
      String num=br.readLine();
      byte b[]=new byte[1024];
      b=num.getBytes();
DatagramPacketdp=new
DatagramPacket(b,b.length,InetAddress.getLocalHost(),2000);
ds.send(dp);
            byte b1[] =new byte[1024];
DatagramPacket dp1=new DatagramPacket(b1,b1.length);
ds.receive(dp1);
            String str=new String(dp1.getData(),0,dp1.getLength());
System.out.println(str);
        }
catch(Exception e)
        {
e.printStackTrace();
        }
    }
}
```



```
run:
Enter a number :
4
Number is even
BUILD SUCCESSFUL (total time: 2 seconds)
```

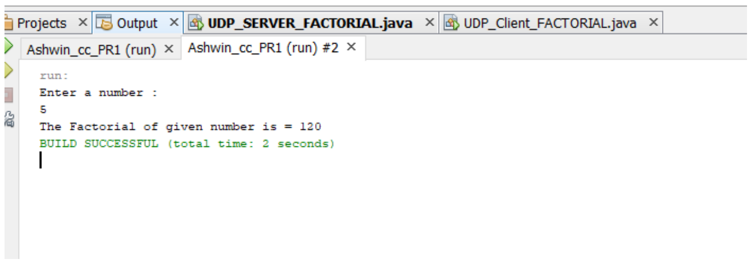
B. A client server based program using UDP to find the factorial of the entered number.

udpServerFact.java

```
import java.io.*;

import java.net.*;

public class UDP_SERVER_FACTORIAL

{

  public static void main(String args[])

  {

    try

    {

DatagramSocket ds=new DatagramSocket(2000);

      byte b[]= new byte[1024];

DatagramPacketdp=new DatagramPacket(b,b.length);

ds.receive(dp);

      String str=new String(dp.getData(),0,dp.getLength());

System.out.println(str);

      int a =Integer.parseInt(str);

      int f=1,i;

      String s=new String();

      for(i=1;i<=a;i++)

      {

        f=f*i;

      }

      s=Integer.toString(f);

      String str1="The Factorial of given number is = "+f;

      byte b1[]=new byte[1024];

      b1=str1.getBytes();
DatagramPacket dp1=new
DatagramPacket(b1,b1.length,InetAddress.getLocalHost(),1000);
ds.send(dp1);
    }
catch(Exception e)
    {
e.printStackTrace();
    }
  }
}
```

UDP_Client_FACTORIAL

```
import java.io.*;
import java.net.*;
public class UDP_Client_FACTORIAL
{
  public static void main(String args[])
  {
  try
    {
DatagramSocket ds=new DatagramSocket(1000);
BufferedReaderbr=new BufferedReader(new InputStreamReader(System.in));

System.out.println("Enter a number :");
      String num=br.readLine();
      byte b[]=new byte[1024];
      b=num.getBytes();
DatagramPacketdp=new
DatagramPacket(b,b.length,InetAddress.getLocalHost(),2000);
ds.send(dp);
          byte b1[] =new byte[1024];
DatagramPacket dp1=new DatagramPacket(b1,b1.length);
ds.receive(dp1);
          String str=new String(dp1.getData(),0,dp1.getLength());
System.out.println(str);
      }
catch(Exception e)
      {
e.printStackTrace();
      }
}
}
```



```
run:
Enter a number :
5
The Factorial of given number is = 120
BUILD SUCCESSFUL (total time: 2 seconds)
```

C. A program to implement simple calculator operations like addition, subtraction, multiplication and division.

RPCServer.java

```
import java.io.IOException;
import java.net.*;
import java.net.*;
import java.util.*;
// Main class
// Calc_Server_UDP
class RPCServer {
  // MAin driver method
  public static void main(String[] args)
    throws IOException
  {
    // Creating a socket to listen at port 1234
DatagramSocket ds = new DatagramSocket(1001);
byte[] buf = null;
    // Initializing them initially with null
DatagramPacketDpReceive = null;
DatagramPacketDpSend = null;
    while (true) {
buf = new byte[65535];
      // Creating a DatagramPacket to receive the data.
DpReceive = new DatagramPacket(buf, buf.length);
      // Receiving the data in byte buffer.
ds.receive(DpReceive);
      String inp = new String(buf, 0, buf.length);
      // Using trim() method to
```

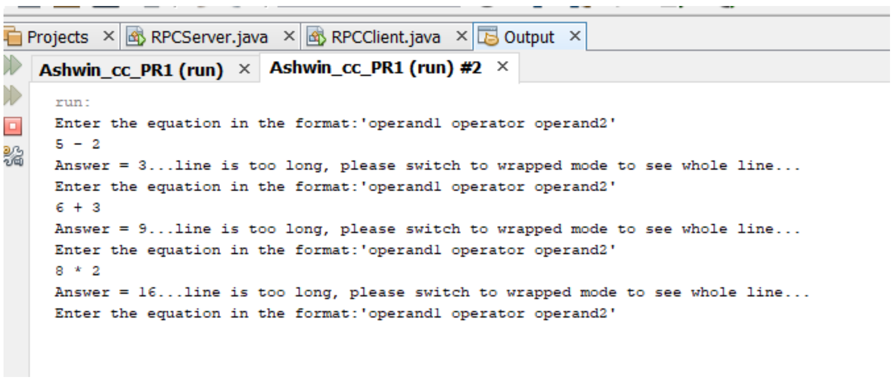
```
            // remove extra spaces.
inp = inp.trim();
System.out.println("Equation Received:- "  + inp);
            // Exit the server if the client sends "bye"
            if (inp.equals("bye"))
 {
System.out.println( "Client sent bye.....EXITING");
                  break;
            }
            int result;
StringTokenizerst = new StringTokenizer(inp);
              int oprnd1 = Integer.parseInt(st.nextToken());
            String operation = st.nextToken();
            int oprnd2 = Integer.parseInt(st.nextToken());
            if (operation.equals("+"))
                result = oprnd1 + oprnd2;
            else if (operation.equals("-"))
                result = oprnd1 - oprnd2;
            else if (operation.equals("*"))
                result = oprnd1 * oprnd2;
            else
                result = oprnd1 / oprnd2;
System.out.println("Sending the result...");
            String res = Integer.toString(result);
            // Clearing the buffer after every message
buf = res.getBytes()
            // Getting the port of client
            int port = DpReceive.getPort();
```

```
DpSend = new DatagramPacket(
buf, buf.length, InetAddress.getLocalHost(),
            port);
ds.send(DpSend);
      }
   }
}
```

<u>RPCCLIENT</u>

```
import java.io.IOException;
import java.net.*;
import java.net.*;
import java.util.*;
// Calc_Client_UDP
public class RPCClient {
   // Main driver method
   public static void main(String args[])
      throws IOException
   {
       Scanner sc = new Scanner(System.in);
DatagramSocket ds = new DatagramSocket();
InetAddressip = InetAddress.getLocalHost();
      byte buf[] = null;
      while (true) {
System.out.print("Enter the equation in the format:");
System.out.println( "'operand1 operator operand2'");
         // Awaiting from entered input
         String inp = sc.nextLine();
buf = new byte[65535];
```

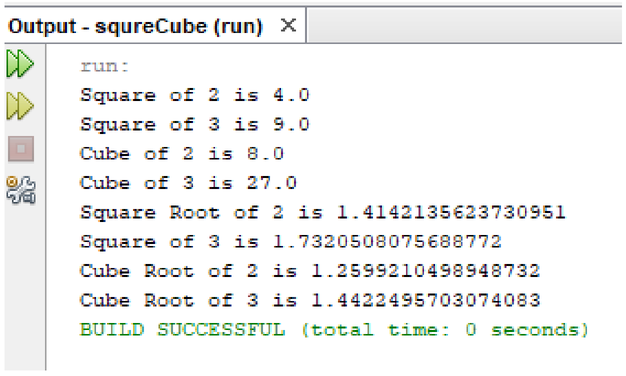
```
            // Converting the String input into the byte
            // array
buf = inp.getBytes();
            // Step 2
            // Creating the datagramPacket for sending the
            // data.
DatagramPacketDpSend = new DatagramPacket(
buf, buf.length, ip, 1001);
            // Invoking the send call to actually send the
            // data.
ds.send(DpSend);
            // Break the loop if user enters "bye"
            // using the break keyword
            if (inp.equals("bye"))
                break;
buf = new byte[65535];
DatagramPacketDpReceive  = new DatagramPacket(buf, buf.length);
ds.receive(DpReceive);
System.out.println("Answer = " + new String(buf, 0, buf.length));
        }
    }
}
```



```
run:
Enter the equation in the format:'operand1 operator operand2'
5 - 2
Answer = 3...line is too long, please switch to wrapped mode to see whole line...
Enter the equation in the format:'operand1 operator operand2'
6 + 3
Answer = 9...line is too long, please switch to wrapped mode to see whole line...
Enter the equation in the format:'operand1 operator operand2'
8 * 2
Answer = 16...line is too long, please switch to wrapped mode to see whole line...
Enter the equation in the format:'operand1 operator operand2'
```

D. A program that finds the square, square root, cube and cube root of the entered

```
package squrecube;
public class SqureCube {
   public static void main(String[] args) {
   int num1=2,num2=3;
   System.out.println("Square of "+num1+" is "+Math.pow(num1,2));
   System.out.println("Square of "+num2+" is "+Math.pow(num2,2));
   System.out.println("Cube of "+num1+" is "+Math.pow(num1,3));
   System.out.println("Cube of "+num2+" is "+Math.pow(num2,3));
   System.out.println("Square Root of "+num1+" is "+Math.sqrt(num1));
   System.out.println("Square of "+num2+" is "+Math.sqrt(num2));
   System.out.println("Cube Root of "+num1+" is "+Math.cbrt(num1));
   System.out.println("Cube Root of "+num2+" is "+Math.cbrt(num2));
   }
}
```



```
run:
Square of 2 is 4.0
Square of 3 is 9.0
Cube of 2 is 8.0
Cube of 3 is 27.0
Square Root of 2 is 1.4142135623730951
Square of 3 is 1.7320508075688772
Cube Root of 2 is 1.2599210498948732
Cube Root of 3 is 1.4422495703074083
BUILD SUCCESSFUL (total time: 0 seconds)
```

Practical No: 03

A multicast Socket example.

BroadcastServer.java

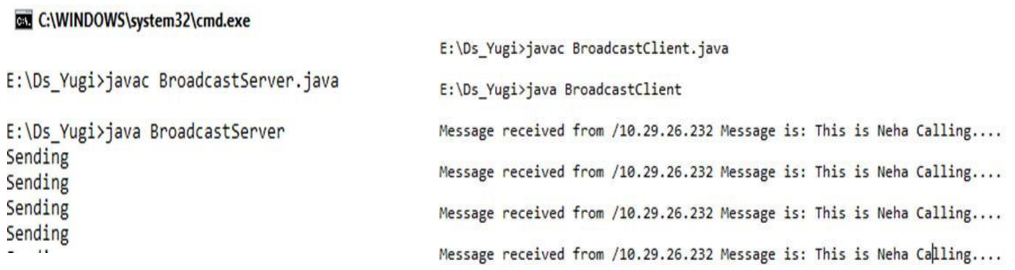
```
import java.net.*;

import java.io.*;

import java.util.*;

public class BroadcastServer

{ public static final int PORT = 1234;

public static void main(String args[])throws Exception {

MulticastSocket socket;

DatagramPacket packet;

InetAddress address;

// set the multicast address to your local subnet address =
InetAddress.getByName("239.1.2.3"); socket = new MulticastSocket();

// join a Multicast group and send the group messages socket.joinGroup(address);

byte[] data = null; for(;;)

{

Thread.sleep(10000);

System.out.println("Sending "); String str = ("This is Neha Calling...."); data

= str.getBytes();

 packet = new DatagramPacket(data, str.length(),address,PORT);

 // Sends the packet socket.send(packet);

} // end for

} // end main

} // end class BroadcastServer
```

BroadcastClient.java

```
import java.net.*;

import java.io.*;
```

```
public class BroadcastClient

{ public static final int PORT = 1234;

public static void main(String args[])throws Exception {

MulticastSocket socket;

DatagramPacket packet;

InetAddress address;

// set the mulitcast address to your local subnet address =
InetAddress.getByName("239.1.2.3"); socket = new MulticastSocket(PORT);

//join a Multicast group and wait for a message socket.joinGroup(address); byte[]
data = new byte[100];

 packet = new DatagramPacket(data,data.length);

for(;;)

{

// receive the packets

socket.receive(packet);

String str = new String(packet.getData()); System.out.println("Message received from
"+ packet.getAddress() + "

Message is : "+str);

} // for

} // main

} // end BroadcastClient
```

Output:



```
C:\WINDOWS\system32\cmd.exe

E:\Ds_Yugi>javac BroadcastServer.java

E:\Ds_Yugi>java BroadcastServer
Sending
Sending
Sending
Sending
```

```
E:\Ds_Yugi>javac BroadcastClient.java

E:\Ds_Yugi>java BroadcastClient

Message received from /10.29.26.232 Message is: This is Neha Calling....

Message received from /10.29.26.232 Message is: This is Neha Calling....

Message received from /10.29.26.232 Message is: This is Neha Calling....

Message received from /10.29.26.232 Message is: This is Neha Calling....
```

Practical No: 04

Write a program to show the object communication using RMI.

A. A RMI based application program to display current date and time.

InterDate.java

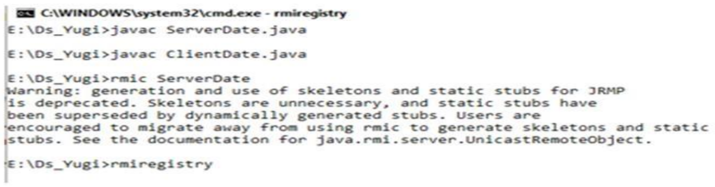
```
import java.rmi.*;

public interface InterDate extends Remote

{ public String display() throws Exception;

}
```

ServerDate.java

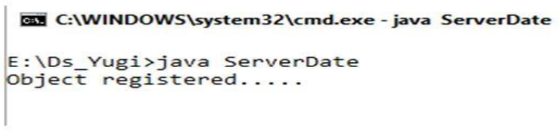
```
import java.rmi.*;

 import java.rmi.server.*;

 import java.util.*;

public class ServerDate extends UnicastRemoteObject implements

InterDate {

public ServerDate() throws Exception

{

}

public String display() throws Exception

{

String str = "";

Date d = new Date(); str = d.toString(); return str;

}

public static void main(String args[]) throws Exception {

ServerDate s1 = new ServerDate();

Naming.bind("DS",s1);

System.out.println("Object registered.....");


}
}
```

ClientDate.java

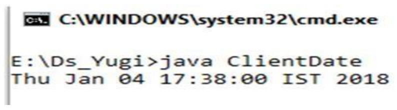
```
import java.rmi.*;

import java.io.*;

public class ClientDate

{

public static void main(String args[]) throws Exception {

String s1;

InterDate h1 = (InterDate)Naming.lookup("DS"); s1 = h1.display();
System.out.println(s1);

}

}
```



```
C:\WINDOWS\system32\cmd.exe - rmiregistry
E:\Ds_Yugi>javac ServerDate.java

E:\Ds_Yugi>javac ClientDate.java

E:\Ds_Yugi>rmic ServerDate
Warning: generation and use of skeletons and static stubs for JRMP
is deprecated. Skeletons are unnecessary, and static stubs have
been superseded by dynamically generated stubs. Users are
encouraged to migrate away from using rmic to generate skeletons and static
stubs. See the documentation for java.rmi.server.UnicastRemoteObject.

E:\Ds_Yugi>rmiregistry
```



```
C:\WINDOWS\system32\cmd.exe - java ServerDate

E:\Ds_Yugi>java ServerDate
Object registered.....
```



```
C:\WINDOWS\system32\cmd.exe

E:\Ds_Yugi>java ClientDate
Thu Jan 04 17:38:00 IST 2018
```

B. A RMI based application program that converts digits to words, e.g. 123 will be converted to one two three.

1. InterConvert.java

```
import java.rmi.*;
public interface InterConvert extends Remote
{ public String convertDigit(String no) throws Exception; }
```

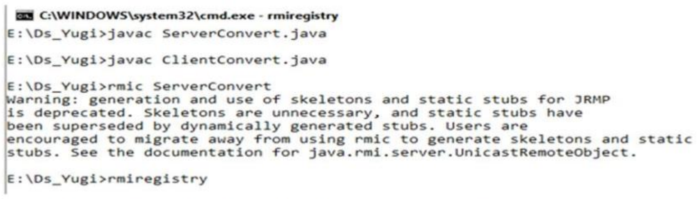
2. ServerConvert.java

```
import java.rmi.*;
import java.rmi.server.*;
public class ServerConvert extends UnicastRemoteObject implements
InterConvert {
public ServerConvert() throws Exception
{
}
public String convertDigit(String no) throws Exception {
String str = "";
for(int i = 0; i < no.length(); i++)
{ int p = no.charAt(i); if( p == 48)
{ str += "zero ";
} if( p == 49)
{ str += "one ";
} if( p == 50)
{ str += "two ";
} if( p == 51)
{ str += "three ";
} if( p == 52)
{ str += "four ";
} if( p == 53)
{ str += "five ";
} if( p == 54)
{ str += "six ";
} if( p == 55)
{
str += "seven ";
}
if( p == 56)
{
str += "eight ";
}
if( p == 57)
{ str += "nine ";
}
} return str;
}
public static void main(String args[]) throws Exception {
ServerConvert s1 = new ServerConvert();
Naming.bind("Wrd",s1);
System.out.println("Object registered...."); }
}
```

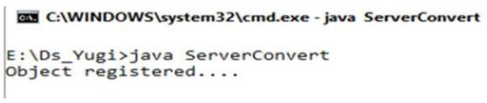
3. ClientConvert.java

```
import java.rmi.*;
import java.io.*; public class ClientConvert
{
```

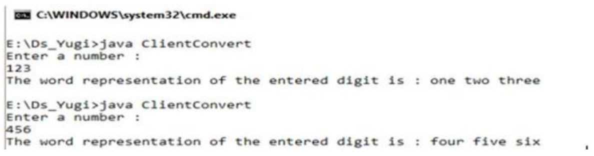
```
public static void main(String args[]) throws Exception {

InterConvert h1 =
(InterConvert)Naming.lookup("Wrd"); BufferedReader br = new BufferedReader(new

InputStreamReader(System.in));
System.out.println("Enter a number :
\t"); String no = br.readLine();

String ans = h1.convertDigit(no);
System.out.println("The word representation of the entered digit is : " +ans);
}
}
```



```
C:\WINDOWS\system32\cmd.exe - rmiregistry
E:\Ds_Yugi>javac ServerConvert.java

E:\Ds_Yugi>javac ClientConvert.java

E:\Ds_Yugi>rmic ServerConvert
Warning: generation and use of skeletons and static stubs for JRMP
is deprecated. Skeletons are unnecessary, and static stubs have
been superseded by dynamically generated stubs. Users are
encouraged to migrate away from using rmic to generate skeletons and static
stubs. See the documentation for java.rmi.server.UnicastRemoteObject.

E:\Ds_Yugi>rmiregistry
```



```
C:\WINDOWS\system32\cmd.exe - java ServerConvert

E:\Ds_Yugi>java ServerConvert
Object registered....
```



```
C:\WINDOWS\system32\cmd.exe

E:\Ds_Yugi>java ClientConvert
Enter a number :
123
The word representation of the entered digit is : one two three

E:\Ds_Yugi>java ClientConvert
Enter a number :
456
The word representation of the entered digit is : four five six
```

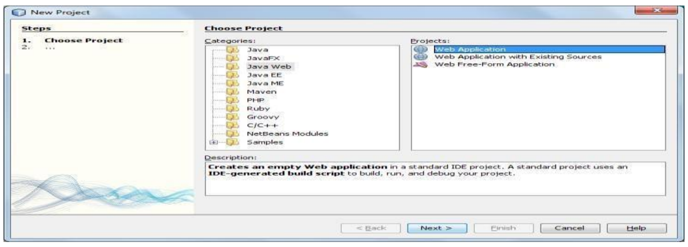
Practical 5

Implementing "Big" Web Service.

1. Creating a Web Service

A. Choosing a Container:

1. Choose File > New Project. Select Web Application from the Java Web.



New Project

Steps
1. Choose Project
2. ...

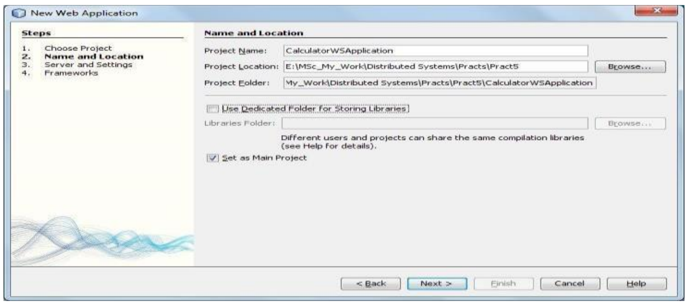
Choose Project

Categories: Java, JavaFX, Java Web, Java EE, Java ME, Maven, PHP, Ruby, Groovy, C/C++, NetBeans Modules, Samples

Projects: Web Application, Web Application with Existing Sources, Web Free-Form Application

Description: **Creates an empty Web application** in a standard IDE project. A standard project uses an **IDE-generated build script** to build, run, and debug your project.

2. Name the project CalculatorWSApplication. Select a location for the project. Click Next.



New Web Application

Steps
1. Choose Project
2. Name and Location
3. Server and Settings
4. Frameworks

Name and Location

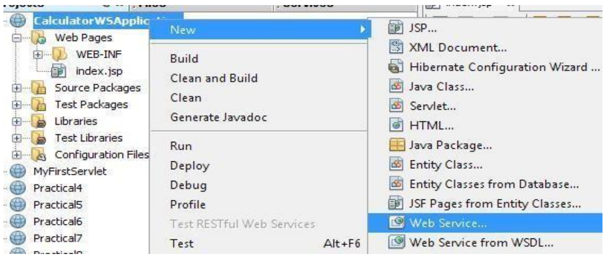
Project Name: CalculatorWSApplication
Project Location: E:\MSc_My_Work\Distributed Systems\Practs\Pract5
Project Folder: My_Work\Distributed Systems\Practs\Pract5\CalculatorWSApplication

[ ] Use Dedicated Folder for Storing Libraries
Libraries Folder:
Different users and projects can share the same compilation libraries (see Help for details).
[✓] Set as Main Project

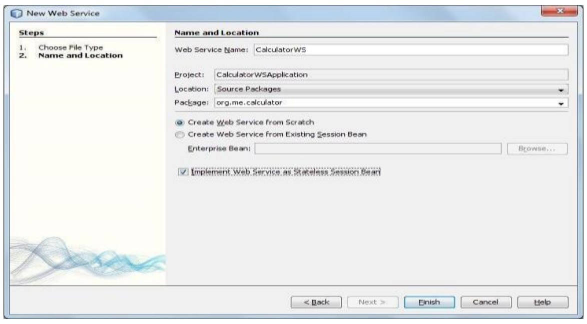
3. Select your server and Java EE version and click Finish.

B. Creating a Web Service from a Java Class

1. Right-click the CalculatorWSApplication node and choose New > Web Service.



2. Name the web service CalculatorWS and type org.me.calculator in Package. Leave Create Web Service from Scratch selected. If you are creating a Java EE 6 project on GlassFish or WebLogic, select Implement Web Service as a Stateless Session Bean.



New Web Service

Steps
1. Choose File Type
2. Name and Location

Name and Location

Web Service Name: CalculatorWS

Project: CalculatorWSApplication
Location: Source Packages
Package: org.me.calculator

(●) Create Web Service from Scratch
( ) Create Web Service from Existing Session Bean
Enterprise Bean:

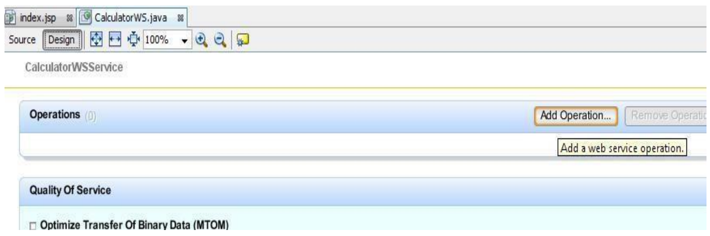
[✓] Implement Web Service as Stateless Session Bean

3. Click Finish. The Projects window displays the structure of the new web service and the source code is shown in the editor area.

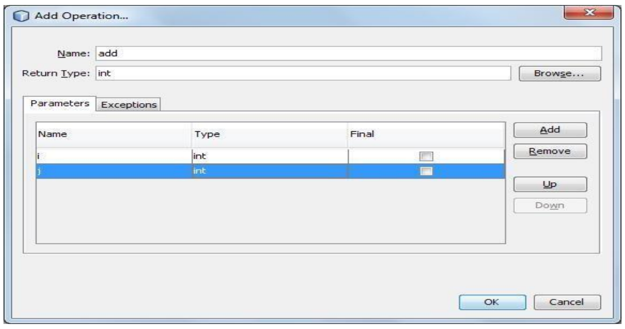
2. Adding an Operation to the Web Service

A. To add an operation to the web service:

1. Change to the Design view in the editor.



2. Click Add Operation in either the visual designer or the context menu. The Add Operation dialog opens.
3. In the upper part of the Add Operation dialog box, type add in Name and type int in the Return Type drop-down list.
4. In the lower part of the Add Operation dialog box, click Add and create a parameter of type int named i.
5. Click Add again and create a parameter of type int called j. You now see the following:

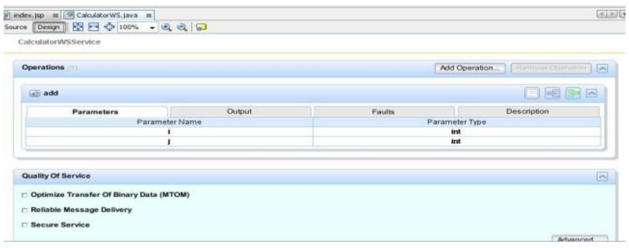


Add Operation...

Name: add
Return Type: int

Name	Type	Final
i	int	☐
j	int	☐

6. Click OK at the bottom of the Add Operation dialog box. You return to the editor.
7. The visual designer now displays the following:



Parameter Name	Parameter Type
i	int
j	int

8. Click Source. And code the following.

@WebMethod(operationName = "add") public int add(@WebParam(name = "i") int i, @WebParam(name = "j") int j)

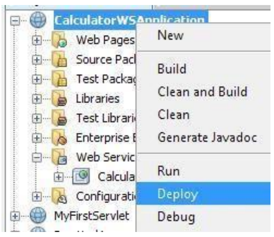
{ int k = i + j; return k;

}

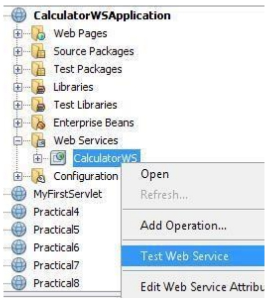
3. Deploying and Testing the Web Service

A. To test successful deployment to a GlassFish or WebLogic server:

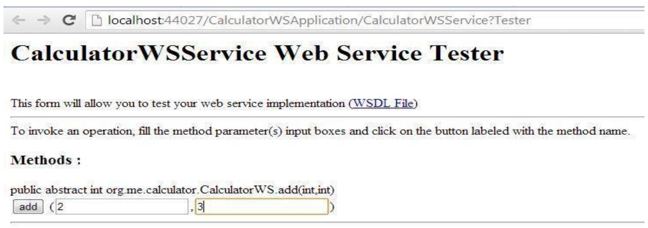
1. Right-click the project and choose Deploy. The IDE starts the application server, builds the application, and deploys the application to the server



2. In the IDE's Projects tab, expand the Web Services node of the CalculatorWSApplication project. Right-click the CalculatorWS node, and choose Test Web Service.



3. The IDE opens the tester page in your browser, if you deployed a web application to the GlassFish server.
4. If you deployed to the GlassFish server, type two numbers in the tester page, as shown below:


localhost:44027/CalculatorWSApplication/CalculatorWSService?Tester

CalculatorWSService 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 :

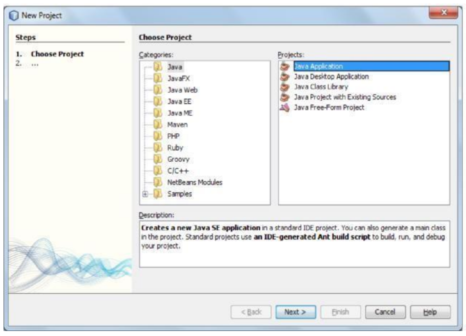
public abstract int org.me.calculator.CalculatorWS.add(int,int)
add (2 , 3)

5. The sum of the two numbers is displayed:

4. Consuming the Web Service

A. Client: Java Class in Java SE Application

1. Choose File > New Project. Select Java Application from the Java category. Name the project CalculatorWS_Client_Application. Leave Create Main Class selected and accept all other default settings. Click Finish.\


New Project

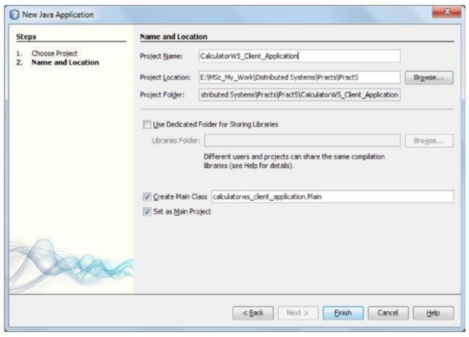
Steps
1. Choose Project
2. ...

Choose Project

Categories: Java, JavaFX, Java Web, Java EE, Java ME, Maven, PHP, Ruby, Groovy, C/C++, NetBeans Modules, Samples

Projects: Java Application, Java Desktop Application, Java Class Library, Java Project with Existing Sources, Java Free-Form Project

Description:
Creates a new Java SE application in a standard IDE project. You can also generate a main class in the project. Standard projects use **an IDE-generated Ant build script** to build, run, and debug your project.


New Java Application

Steps
1. Choose Project
2. Name and Location

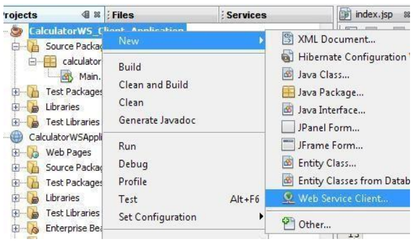
Name and Location

Project Name: CalculatorWS_Client_Application
Project Location: E:\MSc_My_Work\Distributed Systems\Practs\Pract5
Project Folder: stributed Systems\Practs\Pract5\CalculatorWS_Client_Application

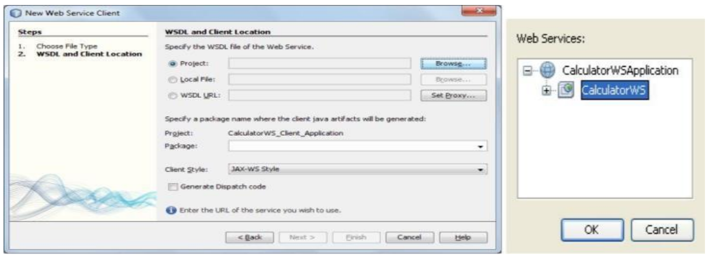
Use Dedicated Folder for Storing Libraries
Libraries Folder:
Different users and projects can share the same compilation libraries (see Help for details).

Create Main Class [✓] calculatorws_client_application.Main
Set as Main Project [✓]

2. Right-click the CalculatorWS_Client_Application node and choose New > Web Service Client. The New Web Service Client wizard opens.



3. Select Project as the WSDL source. Click Browse. Browse to the CalculatorWS web service in the CalculatorWSApplication project. When you have selected the web service, click OK.


New Web Service Client

Steps
1. Choose File Type
2. WSDL and Client Location

WSDL and Client Location

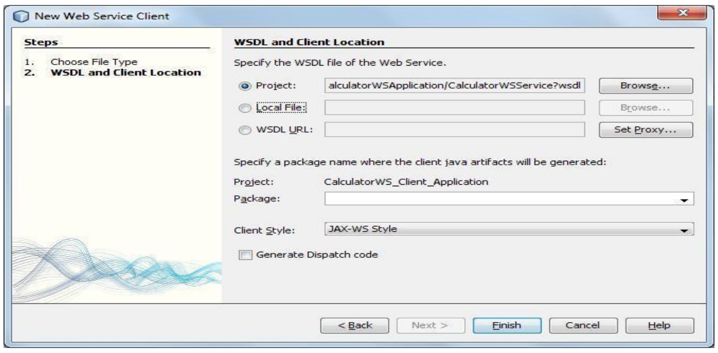
Specify the WSDL file of the Web Service.
(●) Project:
( ) Local File:
( ) WSDL URL:

Specify a package name where the client java artifacts will be generated:
Project: CalculatorWS_Client_Application
Package:
Client Style: JAX-WS Style
Generate Dispatch code

Enter the URL of the service you wish to use.

Web Services:
CalculatorWSApplication
CalculatorWS

4. Do not select a package name. Leave this field empty.



New Web Service Client

Steps

1. Choose File Type
2. **WSDL and Client Location**

WSDL and Client Location

Specify the WSDL file of the Web Service.

(●) Project: alculatorWSApplication/CalculatorWSService?wsdl [Browse...]
( ) Local File: [Browse...]
( ) WSDL URL: [Set Proxy...]

Specify a package name where the client java artifacts will be generated:

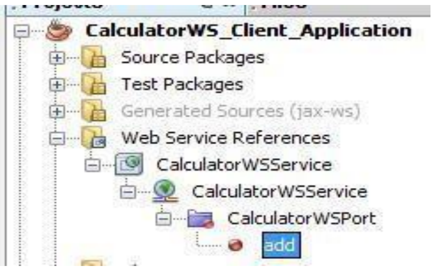
Project: CalculatorWS_Client_Application
Package:

Client Style: JAX-WS Style

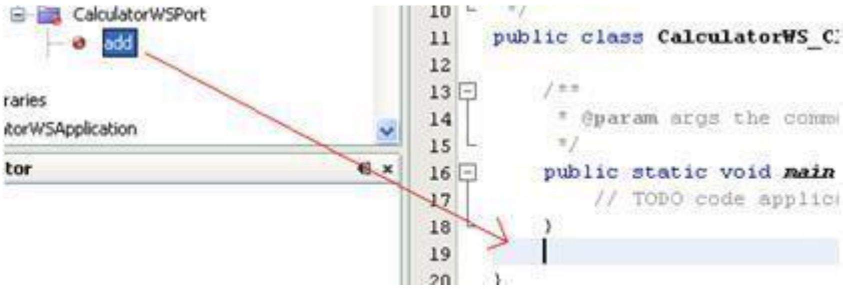
[ ] Generate Dispatch code

[< Back] [Next >] [Finish] [Cancel] [Help]

5. Leave the other settings at default and click Finish. The Projects window displays the new web service client, with a node for the add method that you created:



6. Double-click your main class so that it opens in the Source Editor. Drag the add node below the main() method.



```
public class CalculatorWS_C
    /**
     * @param args the comm
     */
    public static void main
        // TODO code applic
    }

}
```

You now see the following:

public static void main(String[] args)

{

// TODO code application logic here

}

private static int add(int i, int j)

{

org.me.calculator.CalculatorWS_Service service = new

org.me.calculator.CalculatorWS_Service();

```
org.me.calculator.CalculatorWS port = service.getCalculatorWSPort(); return
port.add(i, j);

}
```

7. In the main() method body, replace the TODO comment with code that initializes values for i and j, calls add(), and prints the result.

```
public static void main(String[] args)

{ int i = 3; int j = 4;

int result = add(i, j);

System.out.println("Result = " + result); }
```

8. Surround the main() method code with a try/catch block that prints an exception.

```
public static void main(String[] args)

{ try

{ int i = 3;

int j = 4;

int result = add(i, j);

System.out.println("Result = " + result);

} catch (Exception ex) {

System.out.println("Exception: " + ex); }

}
```

9. Right-click the project node and choose Run.

The Output window now shows the sum:

```
compile: run: Result = 7

BUILD SUCCESSFUL (total time: 1 second)
```

B. Implementing Web Service that connects to MySQL database.

A. Creating MySQL DB Table

```
create database bookshop;

use bookshop;
```

Create a table named Books that will store valid books information

```
create table books(isbn varchar(20) primary key, bookname varchar(100), bookprice
varchar(10));
```

Insert valid records in the Books table

```
insert into books values("111-222-333","Learn My SQL","250");

insert into books values("111-222-444","Java EE 6 for Beginners","850");

insert into books values("111-222-555","Programming with Android","500");

insert into books values("111-222-666","Oracle Database for you","400");

insert into books values("111-222-777","Asp.Net for advanced
programmers","1250");
```

B. Creating a web service

i. **Choosing a container**

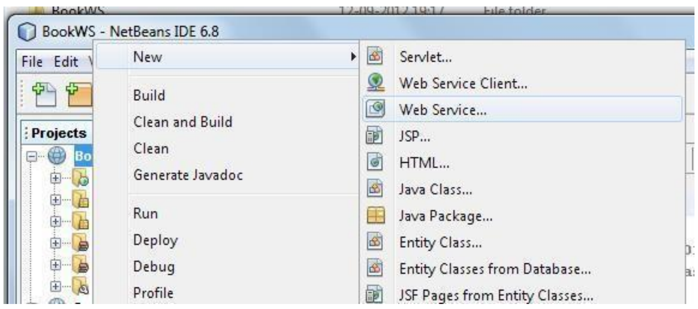
- ➢ Web service can be either deployed in a Web container or in an EJB container.
- ➢ If a Java EE 6 application is created, use a Web container because EJBs can be placed directly in a Web application.

ii. **Creating a web application**

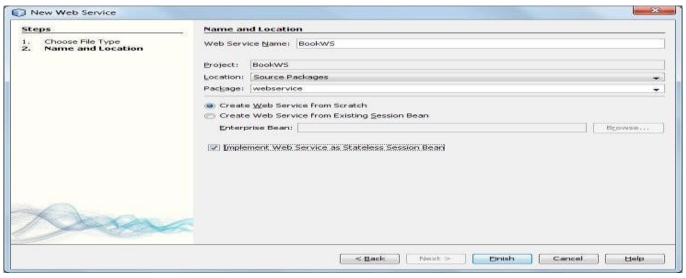
- ➢ To create a Web application, select File - New Project.
- ➢ New Project dialog box appears. Select Java Web available under the Categories section and Web Application available under the Projects section. Click Next.
- ➢ New Web Application dialog box appears. Enter BookWS as the project name in the Project Name textbox and select the option Use Dedicated Folder for Storing Libraries.
- ➢ Click Next. Server and Settings section of the New Web Application dialog box appears. Choose the default i.e. GlassFish v3 Domain as the Web server, the Java EE 6 Web as the Java EE version and the Context Path.
- ➢ Click –Finish
- ➢ The Web application named BookWS is created.

iii. Creating a web service

- Right-click the BookWS project and select New -> Web Service as shown in diagram



- New Web Service dialog box appears. Enter the name BookWS in the Web Service Name textbox, webservice in the Package textbox, select the option Create Web Service from scratch and also select the option implement web service as a stateless session bean as shown in the diagram.



New Web Service

Steps
1. Choose File Type
2. **Name and Location**

Name and Location

Web Service Name: BookWS

Project: BookWS

Location: Source Packages

Package: webservice

(●) Create Web Service from Scratch

( ) Create Web Service from Existing Session Bean

Enterprise Bean:

[✓] Implement Web Service as Stateless Session Bean

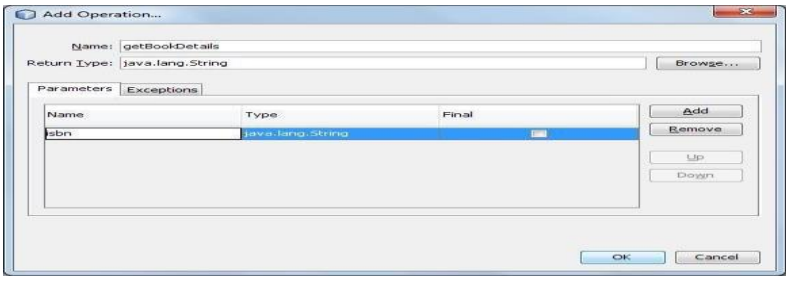
- Click Finish.
- The web service in the form of java class is ready.

4. Designing the web service

- Now add an operation which will accept the ISBN number from the client to the web service.

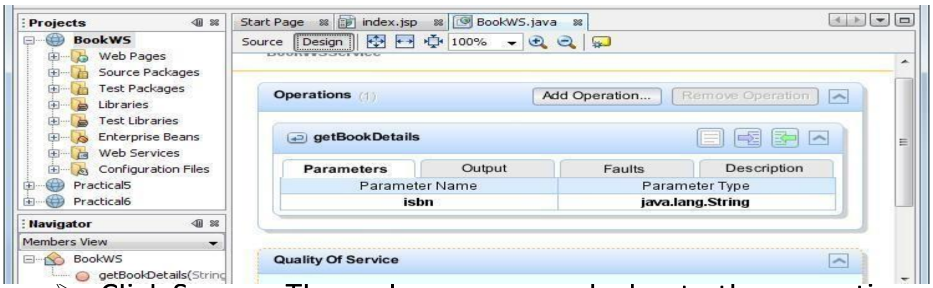
i. Adding an operation to the web service

- Change the source view of the BookWS.java to design view by clicking Design available just below the name of the BookWS.java tab.
- The window changes as shown in the diagram.
- Click Add Operation available in the design view of the web service.
- Add Operation dialog appears. Enter the name getBookDetails in the Name textbox and java.lang.String in the Return Type textbox as shown in the diagram.
- In Add Operation dialog box, click Add and create a parameter of the type String named isbn as shown in the diagram.


Name: getBookDetails
Return Type: java.lang.String

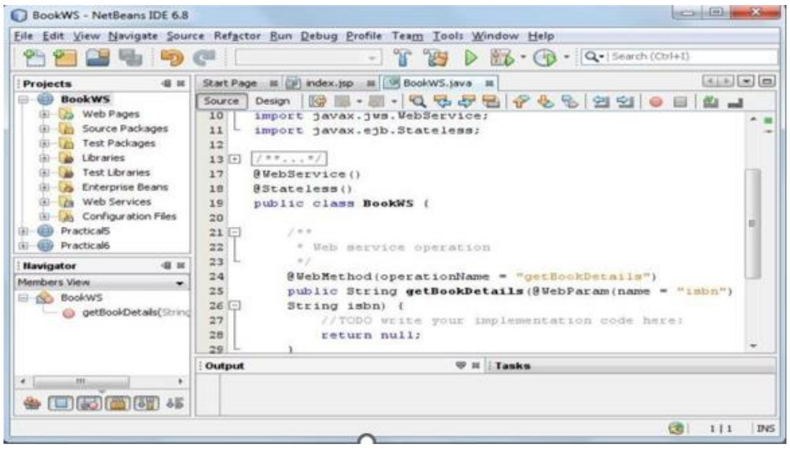
Name	Type	Final
isbn	java.lang.String	

- ➢ Click Ok. The design view displays the operation added as shown in the diagram.


Operations (1)
getBookDetails

Parameter Name	Parameter Type
isbn	java.lang.String

- ➢ Click Source. The code spec expands due to the operation added to the web service as shown in the diagram.


```
import javax.jws.WebService;
import javax.ejb.Stateless;

/**...*/
@WebService()
@Stateless()
public class BookWS {

    /**
     * Web service operation
     */
    @WebMethod(operationName = "getBookDetails")
    public String getBookDetails(@WebParam(name = "isbn")
    String isbn) {
        //TODO write your implementation code here:
        return null;
    }
```

- ➢ Modify the code spec of the web service BookWS.java.

Code Spec

package webservice;

import java.sql.*;

import javax.jws.WebMethod;

import javax.jws.WebParam;

import javax.jws.WebService;

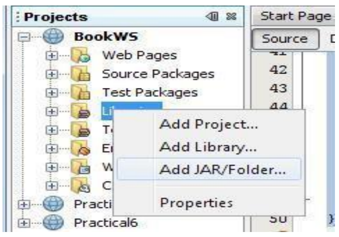
import javax.ejb.Stateless;

```
@WebService()

@Stateless()

public class BookWS {

/**

* Web service operation */

@WebMethod(operationName = "getBookDetails") public String
getBookDetails(@WebParam(name = "isbn") String isbn) {

//TODO write your implementation code here:

Connection dbcon = null;

Statement stmt = null;

ResultSet rs = null;

String query = null;

 try

{

Class.forName("com.mysql.jdbc.Driver").newInstance();

        dbcon =
DriverManager.getConnection("jdbc:mysql://localhost/bookshop","root","123");

 stmt = dbcon.createStatement();

query = "select * from books where isbn = '" +isbn+ "'"; rs =
stmt.executeQuery(query); rs.next();

        String  bookDetails   =        "<h1>The      name  of      the     book   is
        <b>" +rs.getString("bookname") + "</b> and its cost is <b>"
+rs.getString("bookprice") + "</b></h1>.";

 return bookDetails;

}

catch(Exception e)

{

System.out.println("Sorry failed to connect to the database.." + e.getMessage());

}
```

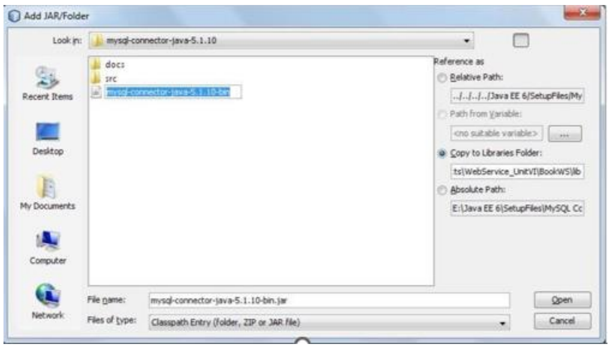
```
 return null;
}
}
```

5. **Adding the MySQL connector**

- ➢ We need to add a reference of MySQL connector to our web service. It is via this connector that our web service will be able to communicate with the database.
- ➢ Right click on the libraries and select Add JAR/Folder as shown in the diagram.



- ➢ Choose the location where mysql-coonector-java-5.1.10-bin is located, select it and click on open as shown



Add JAR/Folder

Look in: mysql-connector-java-5.1.10

docs
src
mysql-connector-java-5.1.10-bin

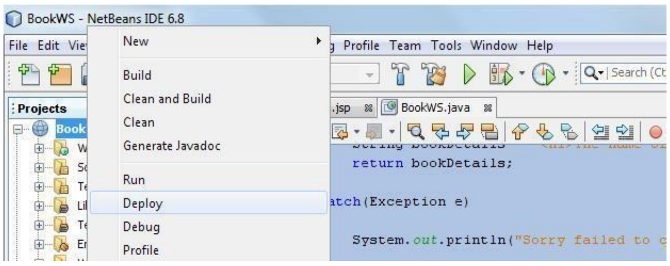
Reference as
Relative Path: ../../../../Java EE 6/SetupFiles/My
Path from Variable: <no suitable variable>
Copy to Libraries Folder: ts\WebService_UnitVI\BookWS\lib
Absolute Path: E:\Java EE 6\SetupFiles\MySQL Cc

File name: mysql-connector-java-5.1.10-bin.jar
Files of type: Classpath Entry (folder, ZIP or JAR file)

Open
Cancel

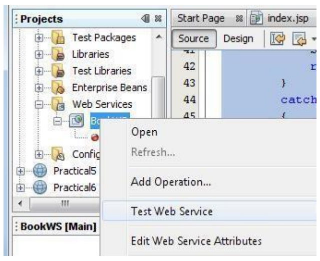
6. **Deploying and testing the web service**

- ➢ When a web service is deployed to a web container, the IDE allows testing the web service to see if it functions as expected.
- ➢ The tester application provided by GlassFish, is integrated into the IDE for this purpose as it allows the developer to enter values and test them.
- ➢ No facility for testing whether an EJB module is deployed successfully is currently available.
- ➢ To test the BookWS application, right click the BookWS project and select Deploy as shown in the diagram.

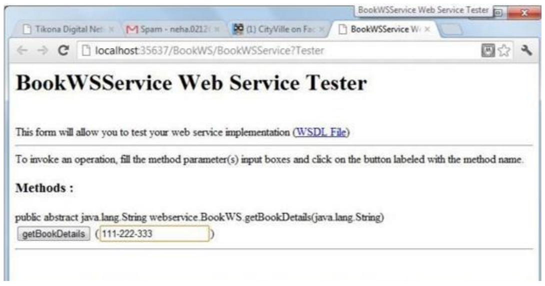


```
return bookDetails;
atch(Exception e)
 System.out.println("Sorry failed to c
```

- ➢ The IDE starts the server, builds the application and deploys the application to the server.
- ➢ Follow the progress of these operations in the BookWS (run-deploy) and GlassFish v3 Domain tabs in the Output view.
- ➢ Now expand the web services directory of the BookWS project, right-click the BookWS Web service and select Test web service as shown in the diagram.



- ➢ The IDE opens the tester page in the web browser, if the web application is deployed using GlassFish server as shown in the figure.



localhost:35637/BookWS/BookWSService?Tester

BookWSService Web Service Tester

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

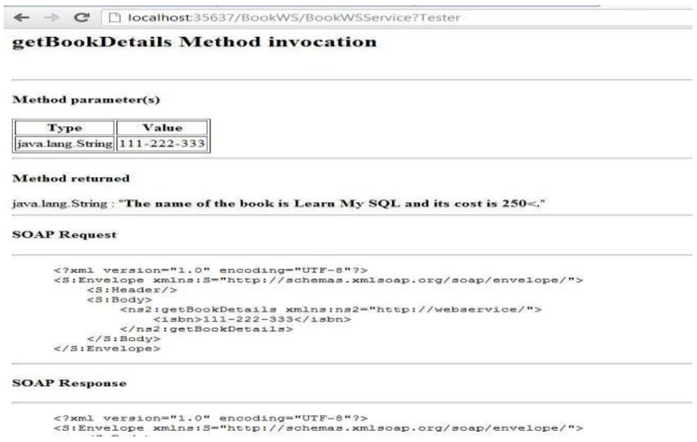
To invoke an operation, fill the method parameter(s) input boxes and click on the button labeled with the method name.

Methods :

public abstract java.lang.String webservice.BookWS.getBookDetails(java.lang.String)

getBookDetails (111-222-333)

- ➢ Enter the ISBN number as shown in the diagram.
- ➢ Click getBookDetails. The book name and its cost are displayed as shown in the diagram.



localhost:35637/BookWS/BookWSService?Tester

getBookDetails Method invocation

Method parameter(s)

Type	Value
java.lang.String	111-222-333

Method returned

java.lang.String : "The name of the book is Learn My SQL and its cost is 250<."

SOAP Request

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
    <S:Header/>
    <S:Body>
        <ns2:getBookDetails xmlns:ns2="http://webservice/">
            <isbn>111-222-333</isbn>
        </ns2:getBookDetails>
    </S:Body>
</S:Envelope>
```

SOAP Response

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
```

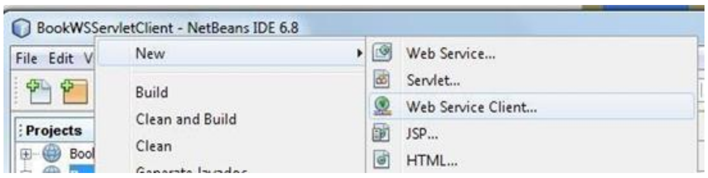
7. Consuming the web service

i. Creating a web application

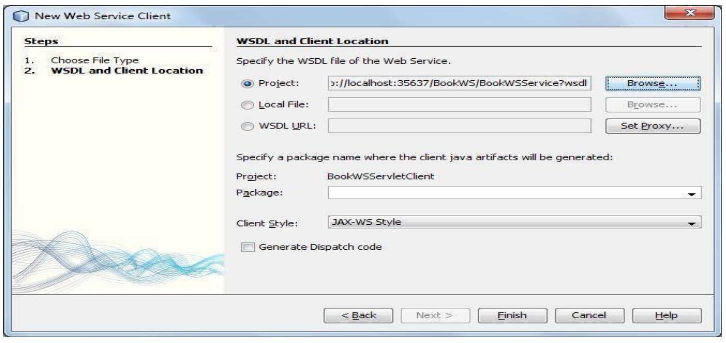
- ➢ To create a web application, select File -> New Project.
- ➢ New project dialog box appears, select java web available under the categories section and web application available under the projects section. Click Finish.
- ➢ New web application dialog box appears. Enter BookWSServletClient as the project name in the Project Name textbox and select the option Use Dedicated Folder for Storing Libraries.
- ➢ Click Next. Server and settings section of the new web application, dialog box appears. Choose the default i.e. GlassFish v3 Domain as the web serevr, the Java EE 6 web as the Java EE version and the context path.
- ➢ Click Finish.
- ➢ The web application named BookWSServletClient is created.

ii. Adding the web service to the client application

- ➢ Right-click the BookWSServletClient project and select New -> Web Service Client as shown in the diagram.



- ➢ New Web Service Client dialog box appears. In the Project section, click Browse and browse through the web service which needs to be consumed. Click ok. The name of the web service appears in the New Web Service Client as shown in the diagram.


New Web Service Client

Steps
1. Choose File Type
2. **WSDL and Client Location**

WSDL and Client Location

Specify the WSDL file of the Web Service.

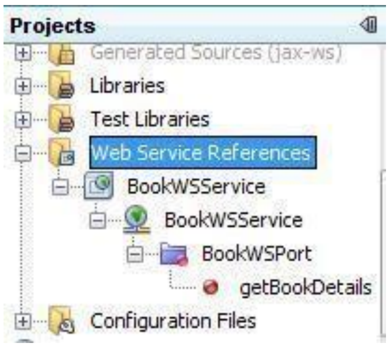
(●) Project: ɔ://localhost:35637/BookWS/BookWSService?wsdl [Browse...]
( ) Local File: [Browse...]
( ) WSDL URL: [Set Proxy...]

Specify a package name where the client java artifacts will be generated:

Project: BookWSServletClient
Package:
Client Style: JAX-WS Style
[ ] Generate Dispatch code

< Back | Next > | Finish | Cancel | Help

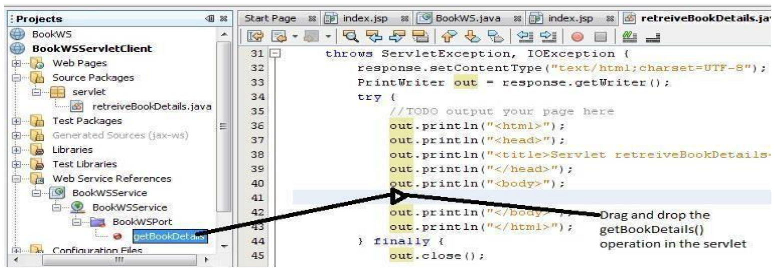
- ➢ Leave the other settings as it is. Click Finish
- ➢ The Web Service Reference directory is added to the BookWSServletClient application as shown in the diagram. It displays the structure of the newly created client including the getBookDetails() method created earlier.



iii. Creating a servlet

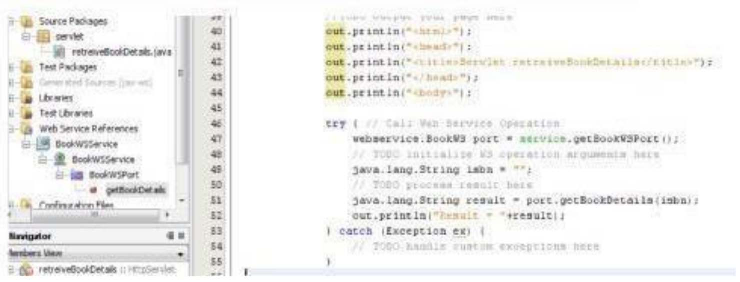
- ➢ Create retreiveBookDetails.java using NetBeans IDE.
- ➢ Right click source package directory, select New -> Servlet.
- ➢ New Servlet dialog box appears. Enter retreiveBookDetails in the Class Name textbox and enter servlet in the package textbox.
- ➢ Click Next. Configure Servlet Deployment section of the New Servlet dialog box appears. Keep the defaults.
- ➢ Click Finish.
- ➢ This creates the servlet named retreiveBookDetails.java in the servlet package.
- ➢ retreiveBookDetails.java is available with the default skeleton created by the NetBeans IDE which needs to be modified to hold the application logic.
- ➢ In the retreieveBookDetails.java source code, remove the following comments available in the body of the processRequest() method.
- ➢ /*TODO output your page here*/
- ➢ Replace the following code spec: out.println("<h1>Servlet retreiveBookDetails at " + request.getContextPath () + "</h1>");

With the code spec of the getBookDetails() operation of the web service by dragging and dropping the getBookDetails operation as shown in the diagram.



```
        throws ServletException, IOException {
            response.setContentType("text/html;charset=UTF-8");
            PrintWriter out = response.getWriter();
            try {
                //TODO output your page here
                out.println("<html>");
                out.println("<head>");
                out.println("<title>Servlet retreiveBookDetails
                out.println("</head>");
                out.println("<body>");

                out.println("</body>");
                out.println("</html>");
            } finally {
                out.close();
```

➢ The Servlet code spec changes as shown in the diagram



```
// TODO output your page here
out.println("<html>");
out.println("<head>");
out.println("<title>Servlet retreiveBookDetails</title>");
out.println("</head>");
out.println("<body>");

try { // Call Web Service Operation
    webservice.BookWS port = service.getBookWSPort();
    // TODO initialize WS operation arguments here
    java.lang.String isbn = "";
    // TODO process result here
    java.lang.String result = port.getBookDetails(isbn);
    out.println("Result = "+result);
} catch (Exception ex) {
    // TODO handle custom exceptions here
}
```

- The web service is instantiated by the @WebServiceRef annotation.
- Now change the following code spec:

java.lang.String isbn = “”;

to

java.lang.String isbn = request.getParameter(“isbn”);

iv. Creating an HTML form

- Once the web service is added and the servlet is created, the form to accept ISBN from the user needs to be coded.
- Since NetBeans IDE by default [as a part of Web Application creation] makes available index.jsp file. Modify it to hold the following code spec.

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

HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"

"http://www.w3.org/TR/html4/loose.dtd">

<html>

<head>

<meta http-equiv="Content-Type" content="text/html; charset=UTF-8">

<title>SOAP Cleint - Get Book Details</title>

</head>

<body bgcolor="pink">

<form name="frmgetBookDetails" method="post" action="retreiveBookDetails">
<h1>

ISBN : <input type="text" name="isbn"/><br><br> </h1>

<input type="submit" value="Submit"/>

</form>
```

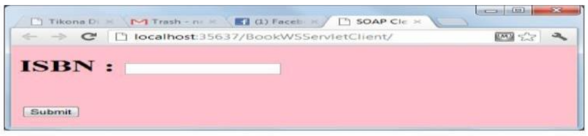
```
</body>

</html>
```

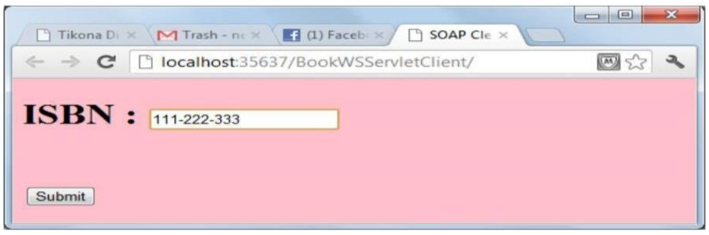
v. Building the Web Application

- Build the web application.
- Right click BookWSServletClient project and select Build.
- Once the Build menu item is clicked the details about the compilation and building of the BookWSServletClient Web application appears in the output – BookWSServletClient (dist) window.

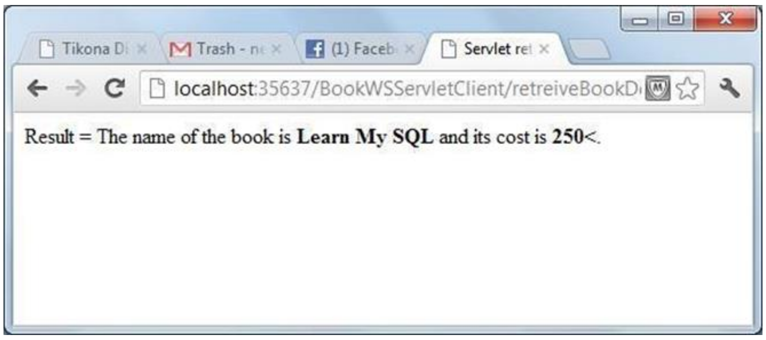
vi. Running the Application

- Once the compilation and building of the web application is done run the application. Right click the BookWSServerCleint project and select run.
- Once the run processing completes in NetBeans IDE a web browser is automatically launched and the BookWSServletCleint application is executed as shown in the diagram.
- Enter the ISBN as shown in the diagram





- Click Submit. The book name and its cost are displayed as shown in the diagram.

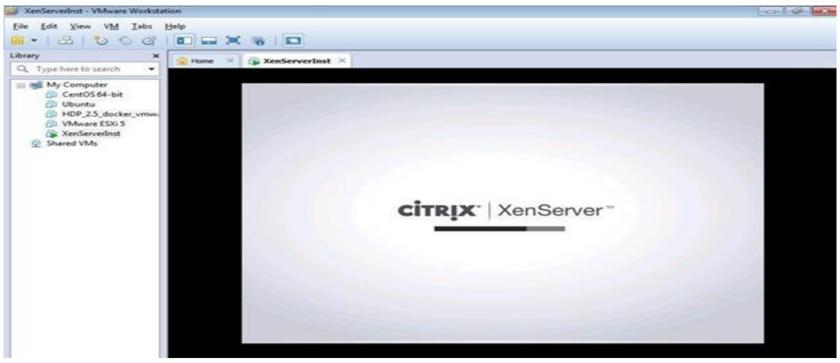


Result = The name of the book is **Learn My SQL** and its cost is **250**<.

Practical: 06

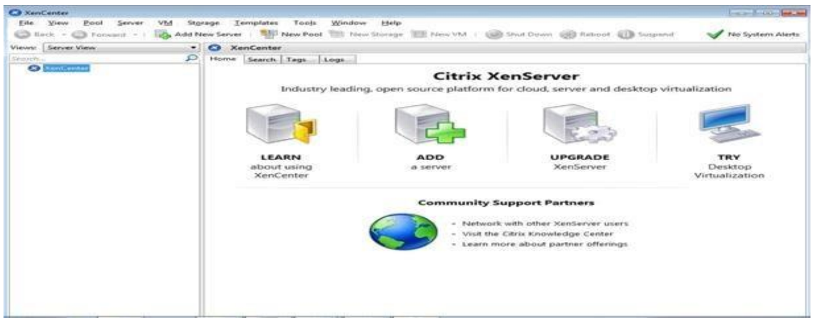
Implement Xen virtualization and manage with Xen Center

- Install XenServer in VMware Workstation and select Guest operating system as Linux.

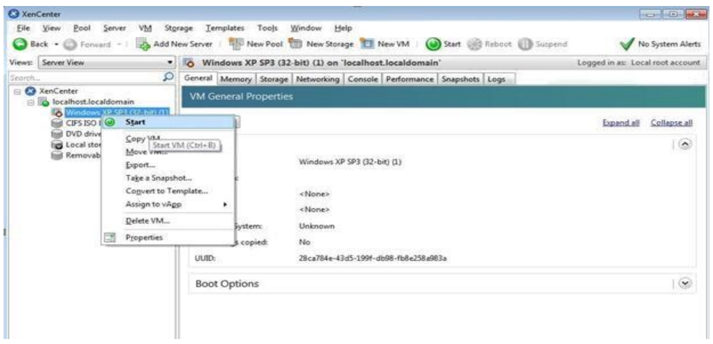


Note IP Address – " 192.168.124.137" ping it from command prompt.

- Now Install Citrix App if not installed
- Now Open Citrix XenCenter – and Click and Add Server.


XenCenter
File View Pool Server VM Storage Templates Tools Window Help
Add New Server
New Pool
New Storage
New VM
Shut Down
Reboot
Suspend
No System Alerts
Citrix XenServer
Industry leading, open source platform for cloud, server and desktop virtualization
LEARN about using XenCenter
ADD a server
UPGRADE XenServer
TRY Desktop Virtualization
Community Support Partners
Network with other XenServer users
Visit the Citrix Knowledge Center
Learn more about partner offerings

- Fill IP address copied from Installation and User name as "root" and Password as "root123" which we had given during installation and Click on Add.
- Then click on Ok
- Now Click on New Storage
- Select Window File Sharing (CIFS) and click on next • Uncheck Auto generate option Click on Next.
- Provide the path of shared windows XP image and enter local pc credential , click on Finish
- Click on New VM – and Windows XP SP3
- Select ISO file and click on next – • Click on Next –
- Uncheck – Start the new VM and click on create now
- Now Right click on Windows XP and Start –


XenCenter
File View Pool Server VM Storage Templates Tools Window Help
Back Forward Add New Server New Pool New Storage New VM Start Reboot Suspend No System Alerts
Views: Server View
Windows XP SP3 (32-bit) (1) on 'localhost.localdomain'
Logged in as: Local root account
General Memory Storage Networking Console Performance Snapshots Logs
XenCenter
localhost.localdomain
Windows XP SP3 (32-bit) (1)
Start
Copy VM...
Start VM (Ctrl+B)
Move VM...
Export...
Take a Snapshot...
Convert to Template...
Assign to vApp
Delete VM...
Properties
VM General Properties
Expand all
Collapse all
Boot Options

Windows XP SP3 (32-bit) (1)

<None>

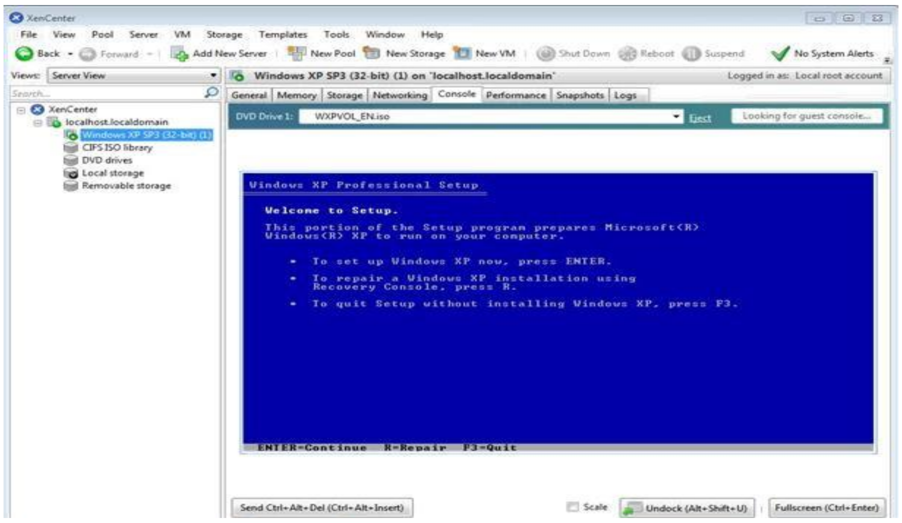
<None>

System: Unknown

s copied: No

UUID: 28ca784e-43d5-199f-db98-fb8e258a983a

- Installation is successful and virtual node has been created if we get below Welcome screen of Windows XP machine.


XenCenter
File View Pool Server VM Storage Templates Tools Window Help
Back Forward Add New Server New Pool New Storage New VM Shut Down Reboot Suspend No System Alerts
Views: Server View
Windows XP SP3 (32-bit) (1) on 'localhost.localdomain'
Logged in as: Local root account
General Memory Storage Networking Console Performance Snapshots Logs
XenCenter
localhost.localdomain
Windows XP SP3 (32-bit) (1)
CIFS ISO library
DVD drives
Local storage
Removable storage
Eject
Looking for guest console...
Send Ctrl+Alt+Del (Ctrl+Alt+Insert)
Scale
Undock (Alt+Shift+U)
Fullscreen (Ctrl+Enter)

DVD Drive 1: WXPVOL_EN.iso

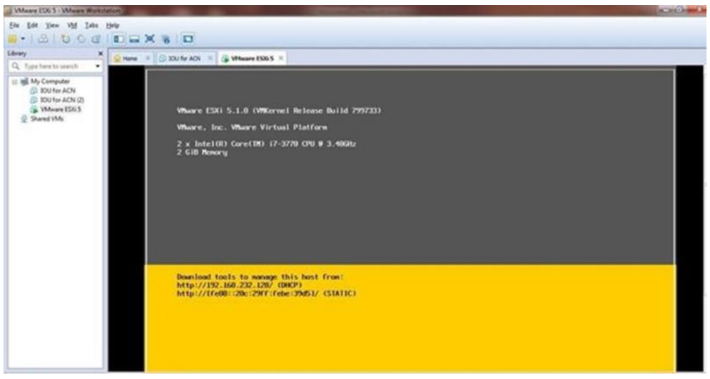
```
Windows XP Professional Setup

  Welcome to Setup.

  This portion of the Setup program prepares Microsoft(R)
  Windows(R) XP to run on your computer.

     •  To set up Windows XP now, press ENTER.

     •  To repair a Windows XP installation using
        Recovery Console, press R.

     •  To quit Setup without installing Windows XP, press F3.



  ENTER=Continue   R=Repair   F3=Quit
```

Practical: 07

Implement virtualization using VMWare ESXi Server and managing with vCenter

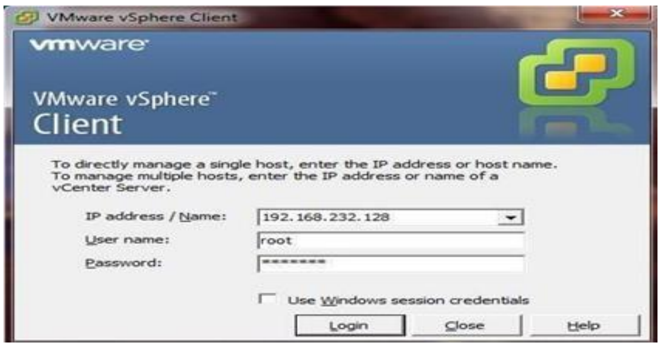
Steps:

1. Install ESXi iso in VMWare workstation.



```
VMware ESXi 5.1.0 (VMKernel Release Build 799733)

VMware, Inc. VMware Virtual Platform

2 x Intel(R) Core(TM) i7-3770 CPU @ 3.40GHz
2 GiB Memory

Download tools to manage this host from:
http://192.168.232.128/ (DHCP)
http://[fe80::20c:29ff:febe:39d51/ (STATIC)
```

2. Install VMware vSphere Client

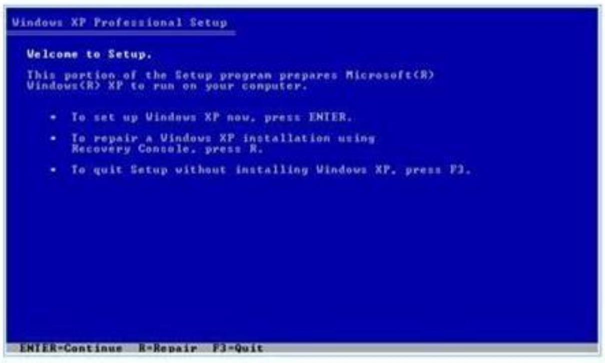


To directly manage a single host, enter the IP address or host name.
To manage multiple hosts, enter the IP address or name of a vCenter Server.

IP address / Name: 192.168.232.128
User name: root
Password: ********

Use Windows session credentials

3. In vSphere create new Virtual Machine. Install Windows XP iso file and open it.

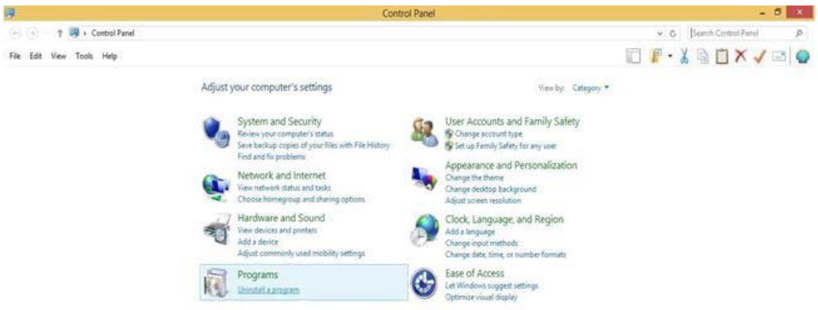


```
Windows XP Professional Setup

  Welcome to Setup.

  This portion of the Setup program prepares Microsoft(R)
  Windows(R) XP to run on your computer.

      •  To set up Windows XP now, press ENTER.

      •  To repair a Windows XP installation using
         Recovery Console, press R.

      •  To quit Setup without installing Windows XP, press F3.

 ENTER=Continue   R=Repair   F3=Quit
```

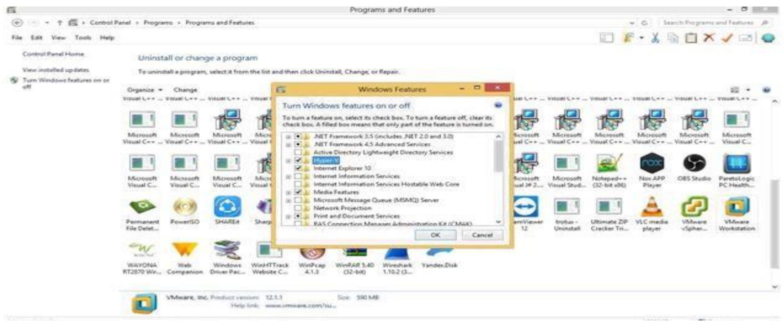
Practical: 08

Implement Windows Hyper V virtualization

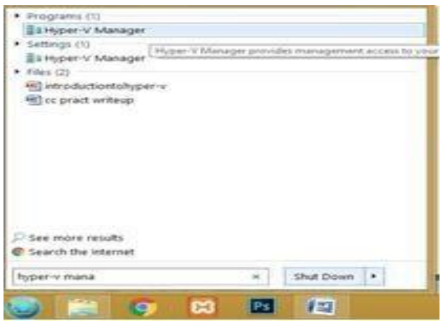
- First we have to uninstall vmware software if already installed on computer because the VMware Workstation installer does not support running on a Hyper-V virtual machine. after uninstalling vmware we can proceed to next step go to control panel and click on uninstall a program.


Control Panel
Adjust your computer's settings
View by: Category
System and Security
Review your computer's status
Save backup copies of your files with File History
Find and fix problems
Network and Internet
View network status and tasks
Choose homegroup and sharing options
Hardware and Sound
View devices and printers
Add a device
Adjust commonly used mobility settings
Programs
Uninstall a program
User Accounts and Family Safety
Change account type
Set up Family Safety for any user
Appearance and Personalization
Change the theme
Change desktop background
Adjust screen resolution
Clock, Language, and Region
Add a language
Change input methods
Change date, time, or number formats
Ease of Access
Let Windows suggest settings
Optimize visual display

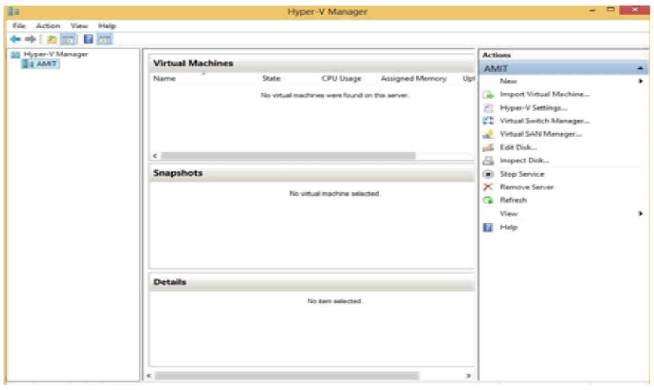
- Click on Turn windows features on or off.
- Now in windows features check on Hyper-V option.


Programs and Features
Uninstall or change a program
Turn Windows features on or off
Windows Features
.NET Framework 3.5 (includes .NET 2.0 and 3.0)
.NET Framework 4.5 Advanced Services
Active Directory Lightweight Directory Services
Hyper-V
Internet Explorer 10
Internet Information Services
Internet Information Services Hostable Web Core
Media Features
Microsoft Message Queue (MSMQ) Server
Network Projection
Print and Document Services
OK
Cancel

- After Restart Search for hyper-v manager in search box and click on that.



- for creating virtual machine first we have to create virtual switch click on virtual switch manager option.

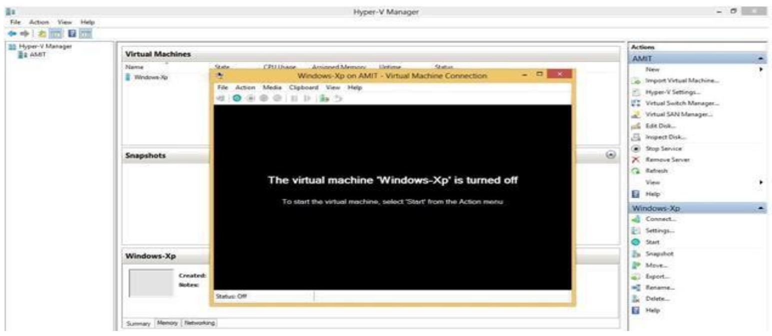


No virtual machines were found on this server.

No virtual machine selected.

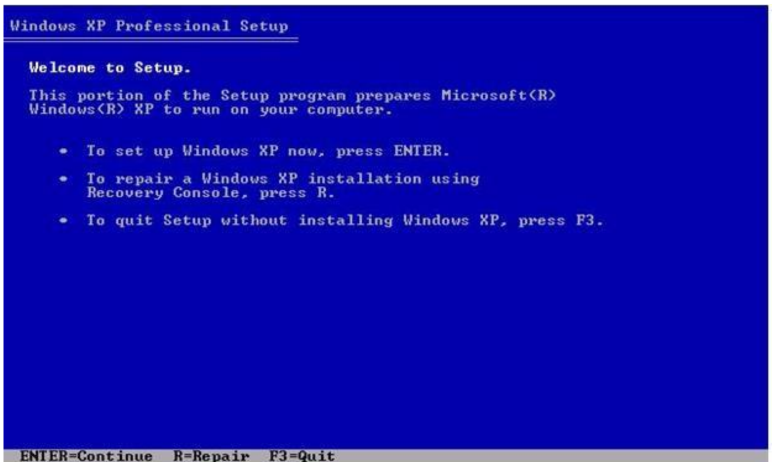
No item selected.

- ➢ Select External as a connection type and then click on create virtual switch.
- ➢ Create new Virtual switch and install windows XP .iso and virtual machine will start.



The virtual machine 'Windows-Xp' is turned off

To start the virtual machine, select 'Start' from the Action menu



```
Windows XP Professional Setup

  Welcome to Setup.

  This portion of the Setup program prepares Microsoft(R)
  Windows(R) XP to run on your computer.

      •  To set up Windows XP now, press ENTER.

      •  To repair a Windows XP installation using
         Recovery Console, press R.

      •  To quit Setup without installing Windows XP, press F3.

  ENTER=Continue   R=Repair   F3=Quit
```

Practical: 09

Develop application for Microsoft Azure.

Step 1:

To develop an application for Windows Azure on Visual Studio install the "Microsoft Azure SDK for .NET (VS 2010) – 2.8.2.1"

Step2:

Turn windows Features ON or OFF:

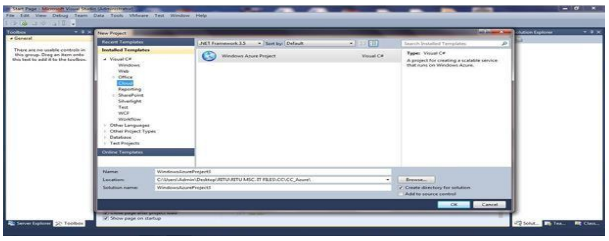
Go to Control panel and click on programs.

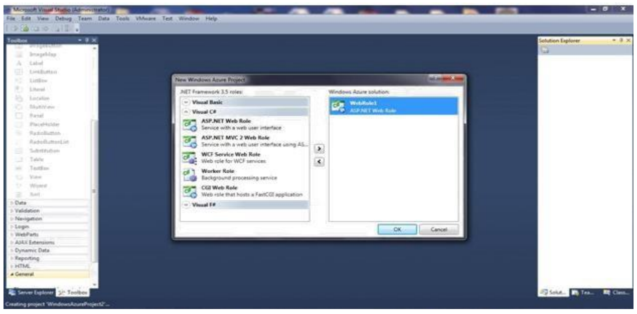
Turn Windows features on or off.

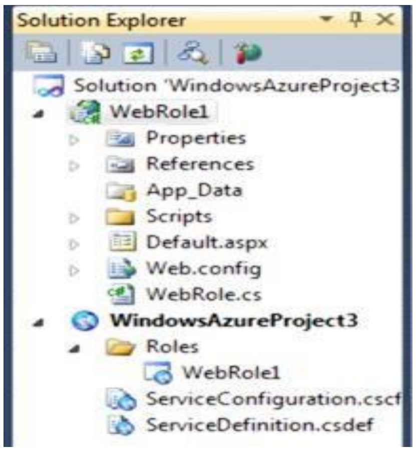
Step3 :

Now, Start the visual studio 2010 and Go To File->New->Project

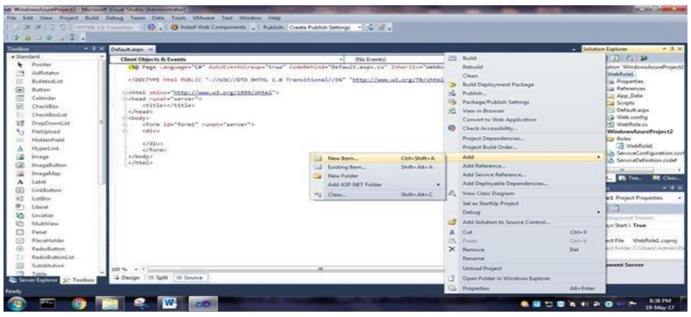
Expand Visual C#-> Select Cloud





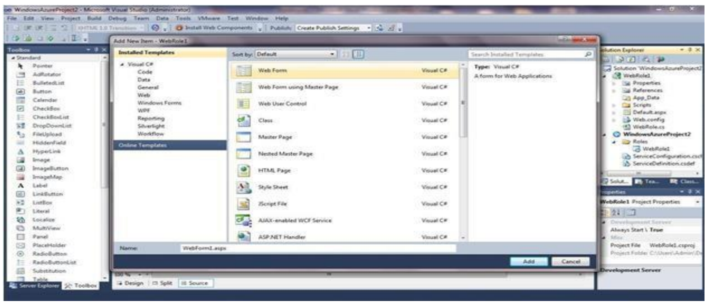


➢ Right Click on WebRole1>>ADD>>New Item



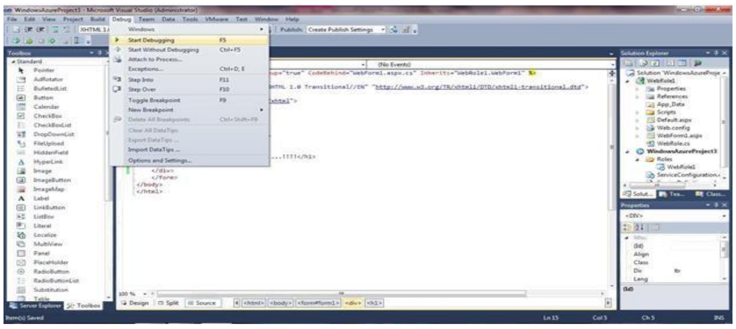
```
<%@ Page Language="C#" AutoEventWireup="true" CodeBehind="Default.aspx.cs" Inherits="WebRo
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
    <div>

    </div>
    </form>
</body>
</html>
```

➢ Add a New web Form. Give it a name. Click Add

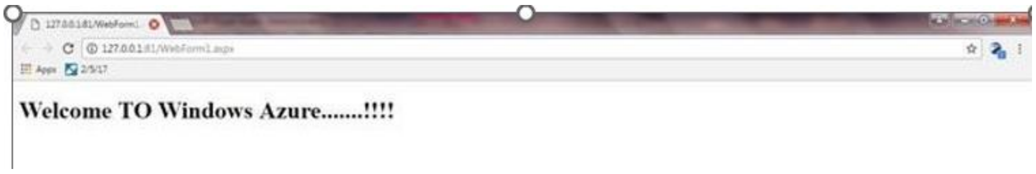


Name: WebForm1.aspx

➢ Deploy the project:



➢ Run Project

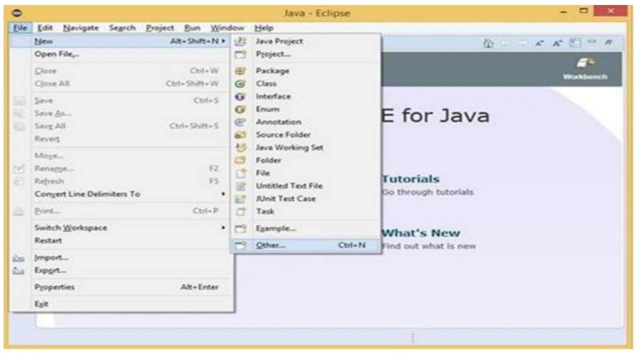


```
Welcome TO Windows Azure.......!!!!
```

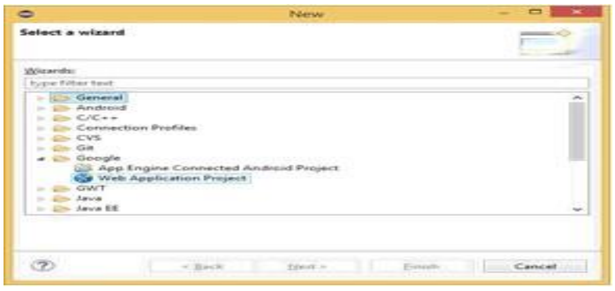
Practical: 10

Develop application for Google App Engine

- Open Eclipse Luna. Go to Help Menu Install New Software…
- In Install window Click on the “Add” button besides the Work with textbox. Add Repository window appears. Enter the Location as “https://dl.google.com/eclipse/plugin/4.4” and click on “OK” button.
- From the available softwares select the required softwares and tools as shown in the below image for the GAE. Then click on the “Next” button.
- In the Install Details window click on “Next” button.
- In the Next Window "Review the Items to be Installed" then click on “Next”
- In the next window for Review Licenses select the option “I accept……” and click on “Finish” • button.
- After Installation you will get option to "Restart Eclipse", click on Yes. So that the software you selected gets updated...
- Now, go to File Menu_New_Other.

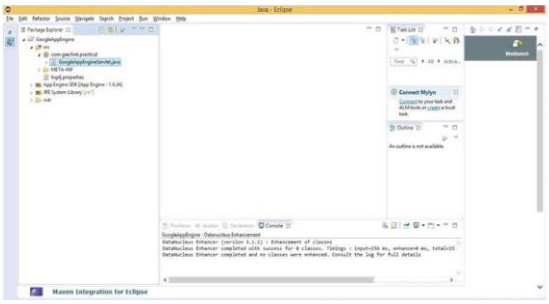


- In the New window select Google_Web Application Project and click on “Next” button.



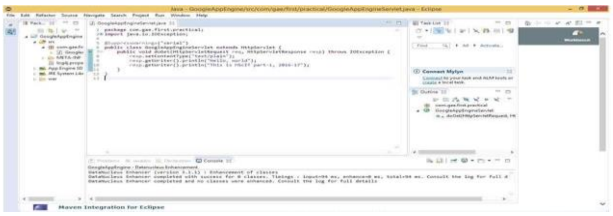
- Enter the details for the new Web application project. Deselect the Use Google Web Toolkit option under the section Google SDKs. Click on the “Finish” button.

- ➢ From the Package Explorer open the .java file (Here it “Google_App_EngineServlet.java”).



```
DataNucleus Enhancer (version 3.1.1) : Enhancement of classes
DataNucleus Enhancer completed with success for 0 classes. Timings : input=156 ms, enhance=0 ms, total=15
DataNucleus Enhancer completed and no classes were enhanced. Consult the log for full details
```

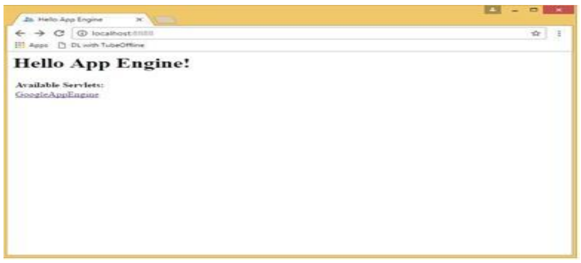
- ➢ Edit the file as required (Unedited file too can be used. Here the editing is done to “what should be displayed” on the browser). Save the file. Click on the Run option available on the Tools bar



```
package com.gae.first.practical;
import java.io.IOException;

@SuppressWarnings("serial")
public class GoogleAppEngineServlet extends HttpServlet {
    public void doGet(HttpServletRequest req, HttpServletResponse resp) throws IOException {
        resp.setContentType("text/plain");
        resp.getWriter().println("Hello, world");
        resp.getWriter().println("This is MScIT part-1, 2016-17");
    }
}
```

```
DataNucleus Enhancer (version 3.1.1) : Enhancement of classes
DataNucleus Enhancer completed with success for 0 classes. Timings : input=94 ms, enhance=0 ms, total=94 ms. Consult the log for full d
DataNucleus Enhancer completed and no classes were enhanced. Consult the log for full details
```

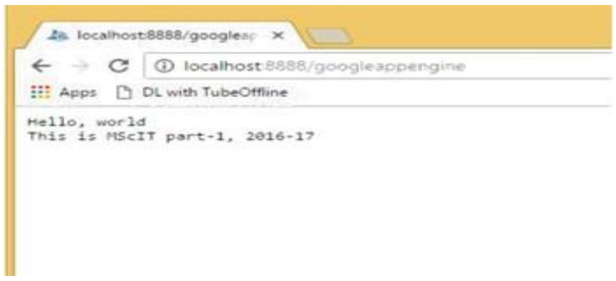
- ➢ In the browser (Here, Google Chrome) type the address as “localhost:8888” which is "Default".



Hello App Engine!

Available Servlets:
GoogleAppEngine

- ➢ In localhost:8888 the link to the Google_App_EngineServlet.java file as Google_App_Engine is displayed. Click on this link. It will direct you to “localhost:8888/Google_App_Engine”.



```
Hello, world
This is MScIT part-1, 2016-17
```

- ➢ The output text entered in the java program is displayed as the output when clicked the link “Google_App_Engine”.