M.Sc.IT Information TechnologySemester- I

Cloud Computing

Submitted By

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UNIVERSITY OF MUMBAI

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This is to certify that **Prashant Dnyaneshwar Shingade** Student of M.Sc.IT Part I (Sem-I)with Seat No._and college enrolled Roll no.**211532** has satisfactorily completed the practical work in

Information Technology Laboratory for the Course in the program of INFORMATIONTECHNOLOGY from the UNIVERSITY OF MUMBAI for the academic year 2021- 2022 .

Subject In-Charge:__________________ HOD: _________________

Examiner: _________________

Sr. No	Topic	Date	Sign
1	Write a program for implementing Client Server communication model using TCP		
2	• Write a program for implementing Client Servercommunication model using UDP • A client server based program using UDP to find thefactorial of the entered number. • A program to implement simple calculator operations like addition, subtraction, multiplication and division(RPC)		
	D. A program that finds the square, square root, cube and cube root of the entered number.(RPC)		
3	A multicast Socket example		
4	• Write a program to show the object communicationusing RMI • A RMI based application program that converts digits to words, e.g. 123 will be converted to one two three.		
5	Show the implementation of web services.		

6	Implement Xen virtualization and manage with Xen Center		
7	Implement virtualization using VMWare ESXi Server and managing with vCenter		
8	Implement Windows Hyper V virtualization		
9	Develop application for Microsoft Azure.		
10	Develop application for Google App Engine		

Practical No: 01

Practical 1A: A client server based program using TCP to find if the number

entered is prime.Code:

- **tcpSe**

rverPri

me.java

```
import

java.net.

*; import

java.io.*;

class tcpServerPrime {

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();
                DataOutputStream otc = new
                 DataOutputStream(s.getOutputStream());int y = x/2;
                if(x ==1 || x ==2 || x ==3) {
                otc.writeUTF(x + "is Prime"); System.exit(0);
                } for(int
                i=2; i<=y;
                i++) {
                if(x%i !=
                0) {
                otc.writeUTF(x + " is Prime");
        } else { otc.writeUTF(x + " is not Prime");
                }
        }
} catch(Exception e) {
        System.out.println(e.toString());
        }
        }
}
```

- tcp

Client

```
Prime.

java

import

java.ne

t.*;

import

java.io

.*;

class tcpClientPrime {

public static void main(String args[]) {

            try {

                        Socket cs = new Socket("LocalHost",8001); BufferedReader infu =
                        newBufferedReader(new

                        InputStreamReader(Syst

                        em.in));

                        System.out.println("Ente

                        r a number : ");

                        int a = Integer.parseInt(infu.readLine());

                        DataOutputStream out = new

                        DataOutputStream(cs.getOutputStream());

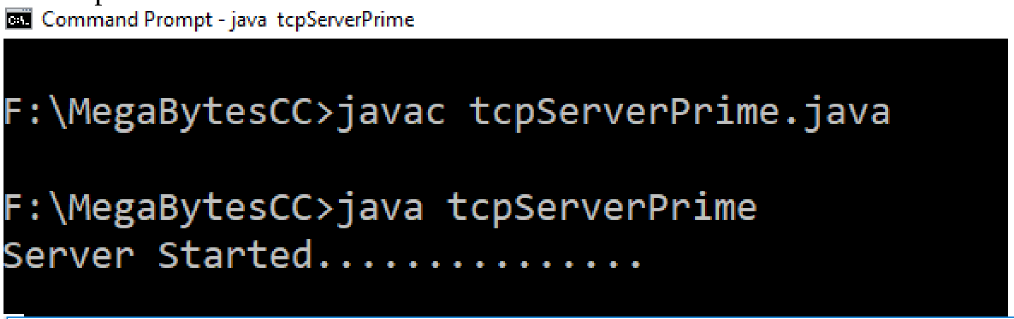
                        out.writeInt(a);

                        DataInputStream in = new
                        DataInputStream(cs.getInputStream());
                        System.out.println(in.readUTF()); cs.close();

            } catch(Exception e) {
```

```
                        System.out.println(e.toString());
            }
    }
    }
```

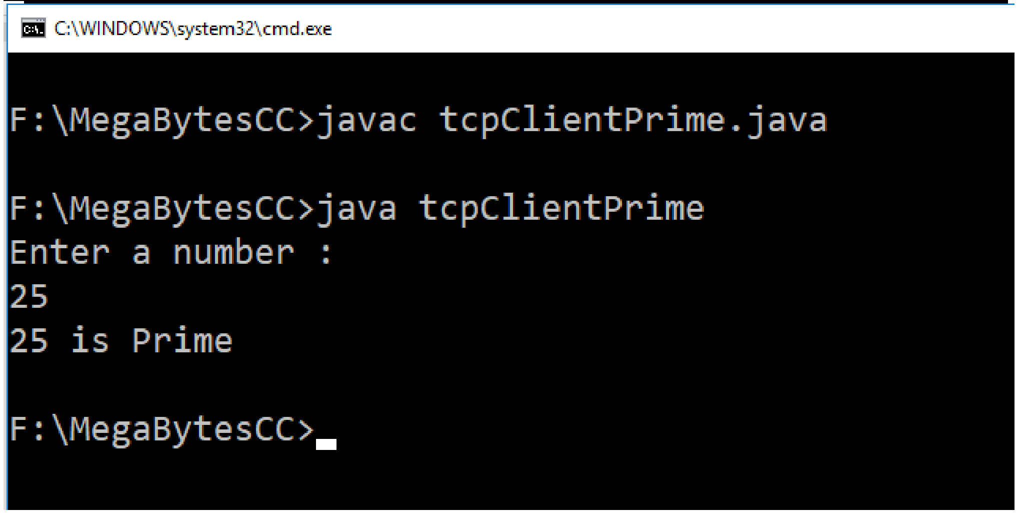
Output:



```
Command Prompt - java  tcpServerPrime

F:\MegaBytesCC>javac tcpServerPrime.java

F:\MegaBytesCC>java tcpServerPrime
Server Started...............
```



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

F:\MegaBytesCC>javac tcpClientPrime.java

F:\MegaBytesCC>java tcpClientPrime
Enter a number :
25
25 is Prime

F:\MegaBytesCC>
```

Practical 1B: A client server TCP based chatting application.

Code:

- **ChatServer.java**

```
imp
ort
java.
net.
*;
imp
ort
java.
io.*;
clas
s
Chat
Serv
er {
public static void
main(String args[]) {
try {
          ServerSocket ss = new
          ServerSocket(8000);
          System.out.println("Waiting for
          client to connect..");Socket s =
          ss.accept();
          BufferedReader br = new
```

```
BufferedReader(new InputStreamReader(System.in));
DataOutputStream out = new
DataOutputStream(s.getOutputStream());
DataInputStream in = new
DataInputStream(s.getInputStream()); String receive,
send;
while((receive = in.readLine()) != null) {
if(receive.equals("STOP"))
break;
System.out.println("Client
Says : "+receive);
System.out.print("Server
Says : ");
send =
br.readLine
();
out.writeBy
tes(send+"\
n");
}
br.close();
 in.close();
 out.close();
```

```
                s.close();
} catch(Exception e) {
                e.printStackTrace();
}
}
}
```

- **ChatClient.java**

```
import java.net.*;
import java.io.*;
clas
```

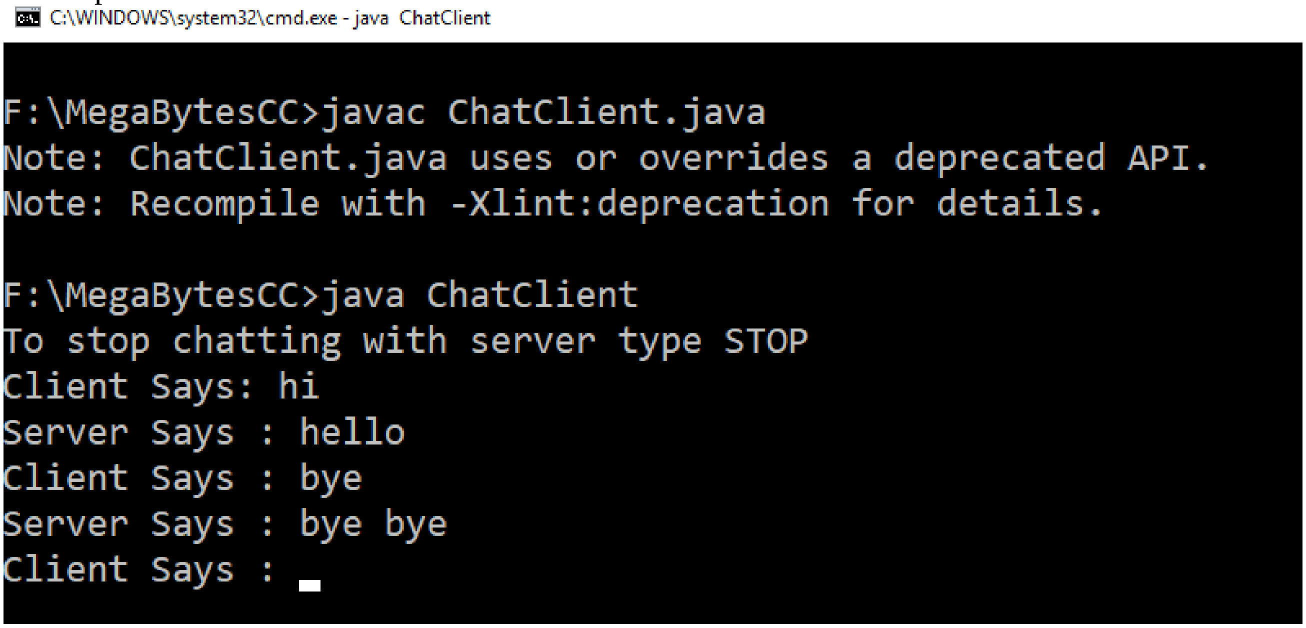
```
s
Cha
tCli
ent
{
public static void main(String args[]) {
                try {
                Socket s = new Socket("Localhost",8000); BufferedReader br = new
                BufferedReader(newInputStreamReader(System.in));
                DataOutputStream out = new DataOutputStream(s.getOutputStream());
                DataInputStream in =new DataInputStream(s.getInputStream()); String msg;
                System.out.println("To stop chatting with server type STOP");
                System.out.print("Client Says:"); while((msg = br.readLine()) != null)
                {
                out.writeBytes(msg+"\n");
                if(msg.equals("STOP"))break;
                System.out.println("Server Says :
                "+in.readLine());
                System.out.print("Client Says : ");
                } br.close();
                 in.close();
                 out.close();
                s.close();
} catch(Exception e)
{ e.printStackTrace();

}

}

}
```

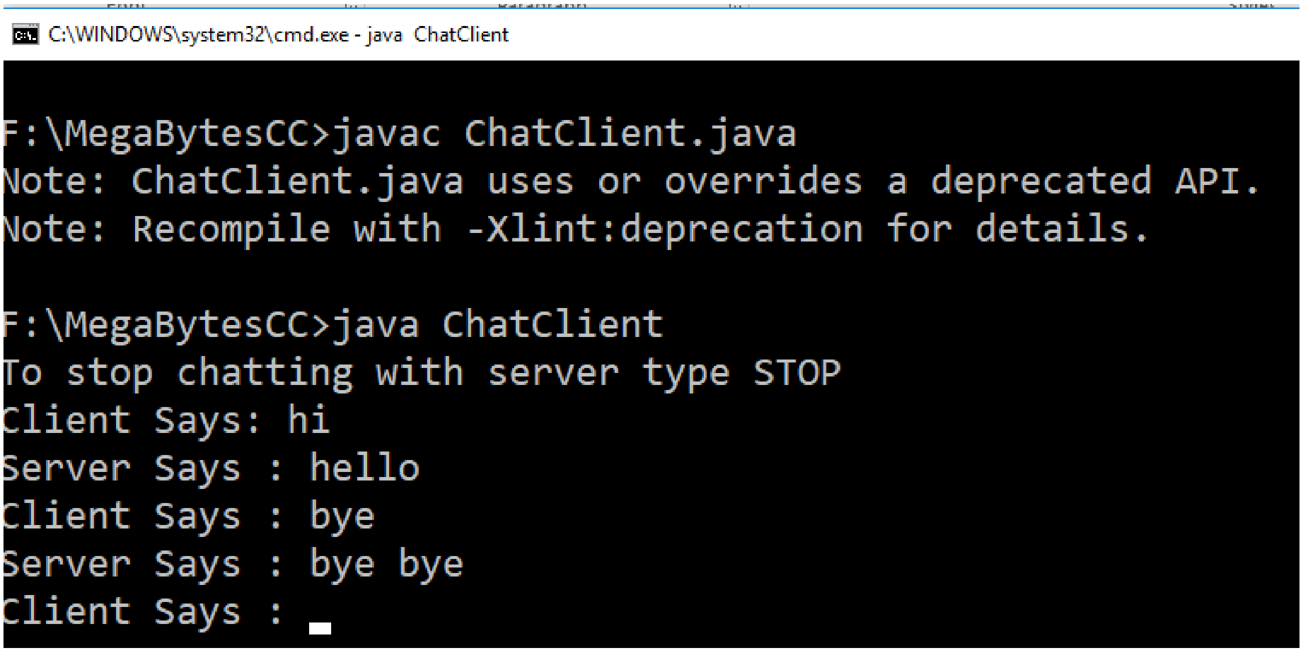
Output: Server:



```
F:\MegaBytesCC>javac ChatClient.java
Note: ChatClient.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

F:\MegaBytesCC>java ChatClient
To stop chatting with server type STOP
Client Says: hi
Server Says : hello
Client Says : bye
Server Says : bye bye
Client Says : _
```

Client:



```
F:\MegaBytesCC>javac ChatClient.java
Note: ChatClient.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

F:\MegaBytesCC>java ChatClient
To stop chatting with server type STOP
Client Says: hi
Server Says : hello
Client Says : bye
Server Says : bye bye
Client Says : _
```

Practical No: 02

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

Practical 2A: A client server based program using UDP to find if the number entered is even or odd.Code:

- udpServerEO.java

```
/*Program which finds entered number

is even or odd */import java.io.*;

import java.net.*;

public class udpServerEO {

public static void main(String args[])

 {

try {
```

```
DatagramSocket ds = new DatagramSocket(2000); byte b[] =
new byte[1024];DatagramPacket dp = new
DatagramPacket(b,b.length);
ds.receive(dp);
String str = new
String(dp.getData(),0,dp.getLength());
System.out.println(str);
int a=
Integer.pars
eInt(str);
String s=
new
String();
 if (a%2 == 0)
s =
"Num
ber 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();

} } }
```

- udpClientEO.java

```
/*Program which finds entered number

is even or odd*/import java.io.*;

 import java.net.*;

public class udpClientEO {

public static void

main(String args[]) {

try {

            DatagramSocket ds = new

            DatagramSocket(1000);

            BufferedReader br = new

            BufferedReader(new

            InputStreamReader(System.in));

            System.out.println("Enter a number

            : ");

            String num = br.readLine(); byte b[] =

             new byte[1024];b=num.getBytes();

            DatagramPacket dp = 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();

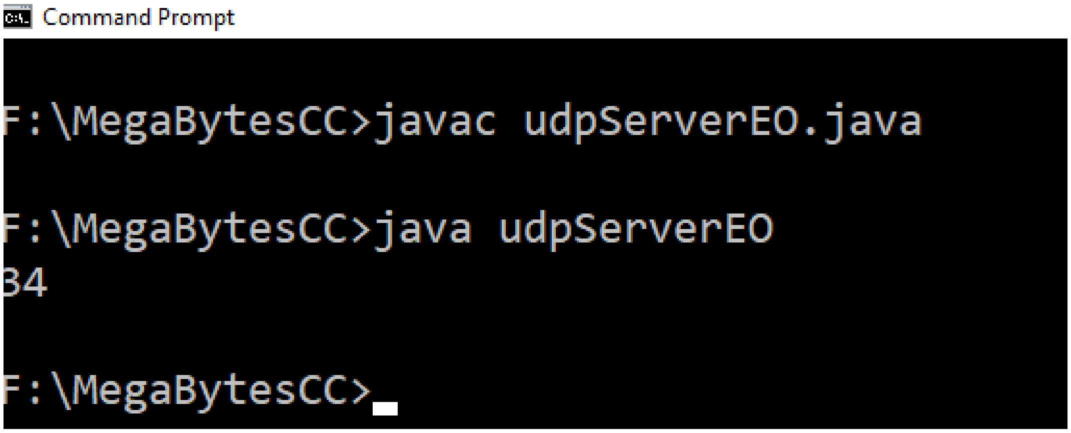
}

}

}
```

Output:

Server

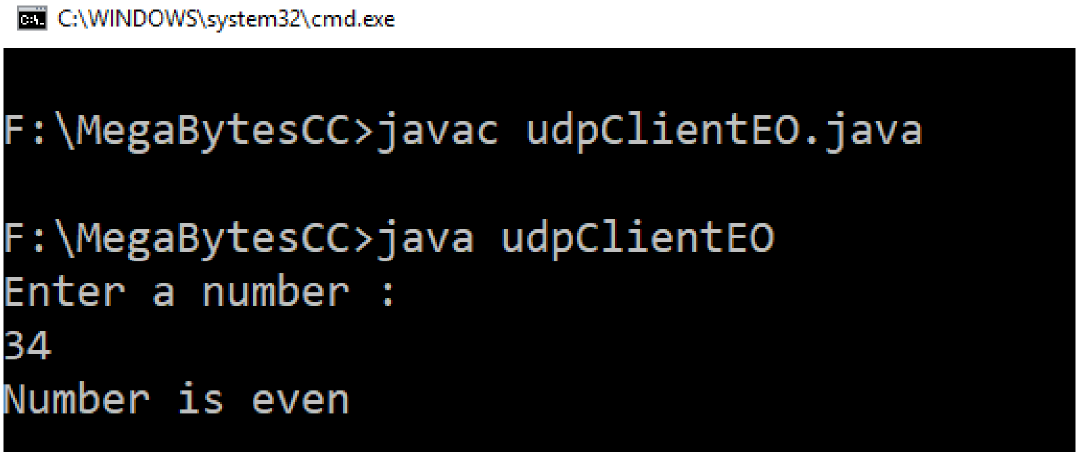


```
F:\MegaBytesCC>javac udpServerEO.java

F:\MegaBytesCC>java udpServerEO
34

F:\MegaBytesCC>_
```

Client



```
F:\MegaBytesCC>javac udpClientEO.java

F:\MegaBytesCC>java udpClientEO
Enter a number :
34
Number is even
```

Practical 2B: A client server based program using UDP to find the factorial of the entered number.Code:

- **udpServerFact.java**

/*Program which calculate factorial of a number*/

i

m

p

or

t

ja

va

.i

o.

*;

i

m

p

```
or

t

ja

va

.n

et.

*;

public class udpServerFact {

public static void

main(String args[]) {

try {

            DatagramSocket ds = new

            DatagramSocket(2000);byte b[] =

            new byte[1024];

            DatagramPacket dp = new

             DatagramPacket(b,b.length);

             ds.receive(dp);

            String str = new

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

            System.out.println(str);

            int a=

            Integer.pars
            eInt(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 " +
            str + " 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();
            }
}
}
```

- udpClientFact.java

```
/*Program which calculate

factorial of a number*/import

java.io.*;

 import java.net.*;

public class udpClientFact {

public static void

main(String args[]) {

try {

                DatagramSocket ds = new DatagramSocket(1000);
                BufferedReader br = newBufferedReader(new
                InputStreamReader(System.in));

                System.out.println("Enter a number : "); String num = br.readLine();
                byte b[] = newbyte[1024]; b=num.getBytes();

                DatagramPacket dp = 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) {

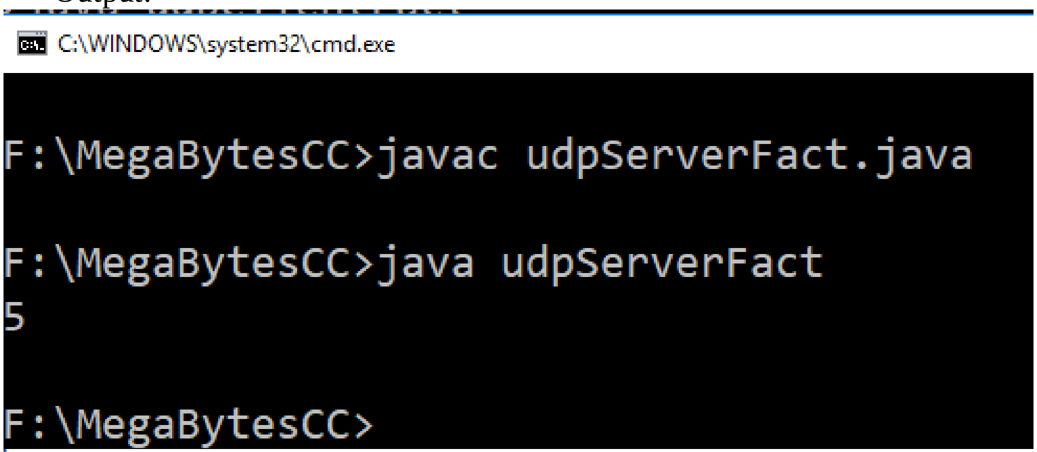
                e.printStackTrace();

}

}

}
```

Output:

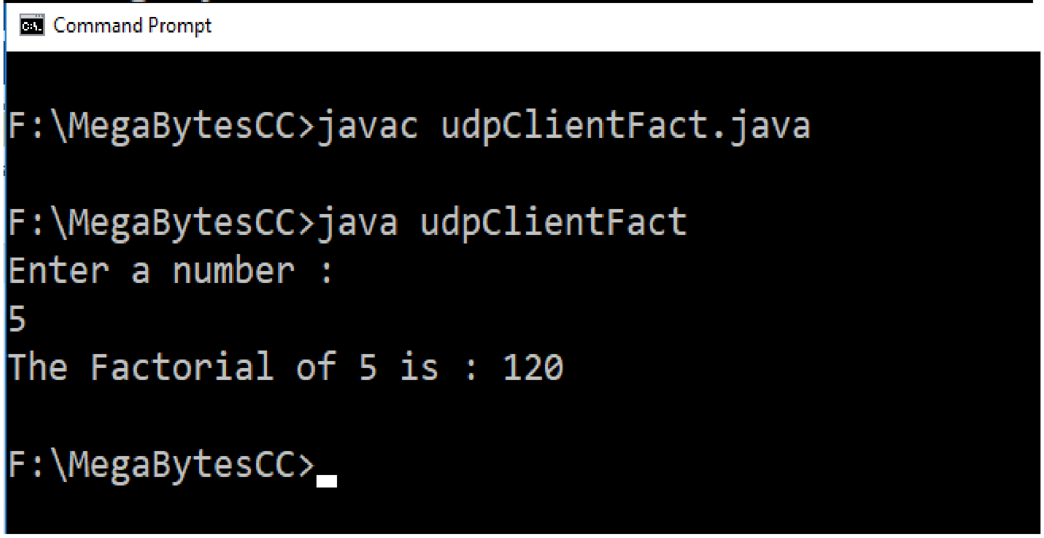


C:\WINDOWS\system32\cmd.exe

```
F:\MegaBytesCC>javac udpServerFact.java

F:\MegaBytesCC>java udpServerFact
5


F:\MegaBytesCC>
```



Command Prompt

```
F:\MegaBytesCC>javac udpClientFact.java

F:\MegaBytesCC>java udpClientFact
Enter a number :
5
The Factorial of 5 is : 120

F:\MegaBytesCC>
```

Practical 2C: A program to implement simple calculator operations like addition, subtraction,multiplication and division. Code:

- **R**

PC

Ser

ver.

java

imp

ort

```
java
.util.
*;
imp
ort
java
.net.
*;
clas
s
RP
CSe
rver
{
Data
gra
mSo
cket
ds;
Data
gra
mPa
```

```
cket
dp;
String
str,methodNa
me,result;int
val1,val2;
RPCServer()
{
try
{
ds=new
DatagramSocket
(1200);byte
b[]=new
byte[4096];
        while(true)
        {
        dp=new
        DatagramPacket(b,b.l
        ength);ds.receive(dp);
        str=new
        String(dp.getData(),0,dp.getLe
        ngth());
        if(str.equalsIgnoreCase("q"))
        {
        System.exit(1);
        }
        else
        {
        StringTokenizer st = new StringTokenizer(str,""); int i=0;
        while(st.hasMoreTokens())
        {
        String
        token=st.next
        Token();
        methodName
        =token;
        val1 =
        Integer.parseInt(st.next
        Token());val2 =
        Integer.parseInt(st.next
        Token());
        }
        }
System.out.println(str);
```

```
InetAddress ia =
InetAddress.getLocalHost();
if(methodName.equalsIgnore
Case("add"))
{
result= "" + add(val1,val2);
}
else if(methodName.equalsIgnoreCase("sub"))
{
result= "" + sub(val1,val2);
}
else if(methodName.equalsIgnoreCase("mul"))
{
result= "" + mul(val1,val2);
}
else if(methodName.equalsIgnoreCase("div"))
{
result= "" + div(val1,val2);
}
byte b1[]=result.getBytes();
DatagramSocket ds1 = new DatagramSocket();
```

```
DatagramPacket dp1 = new

DatagramPacket(b1,b1.length,InetAddress.getLocalHost(), 1300);

System.out.println("result :"+result+"\n"); ds1.send(dp1);

}

}

catch (Exception e)

{e.printStackTrace();

}

}

public int add(int val1, int val2)

{return val1+val2;

}

public int sub(int val3, int val4)

{return val3-val4;

}

public int mul(int val3, int val4)

{return val3*val4;

}

public int div(int val3, int val4)

{return val3/val4;

}

public static void main(String[] args)

{               new RPCServer();
```

```
}
}
```

- **RPCClient.java**

```
import java.io.*;
import java.net.*;
class RPCCl
```

```
ient

{


RPCClient()

{

try {

InetAddress ia =

InetAddress.getLocalHost();

DatagramSocket ds = new

DatagramSocket(); DatagramSocket ds1

= new DatagramSocket(1300);

System.out.println("\nRPC Client\n");

 System.out.println("Enter method name and parameter

like add 3 4\n");while (true) {

BufferedReader br = new BufferedReader(new

InputStreamReader(System.in));String str = br.readLine();

byte b[] =

str.getBytes();

DatagramPacket dp =

new

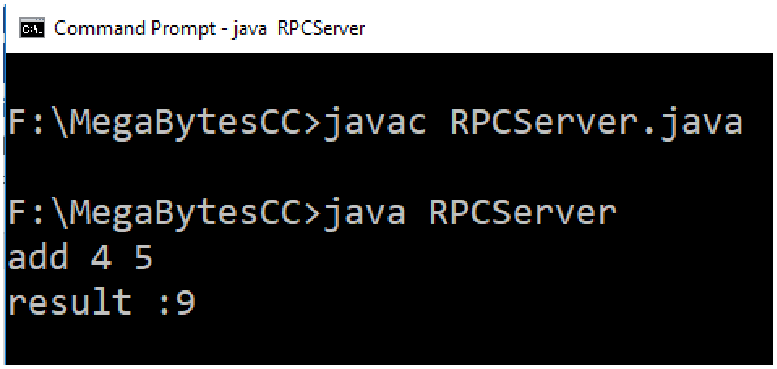
DatagramPacket(b,b.le

ngth,ia,1200);
ds.send(dp); dp = new
DatagramPacket(b,b.length);
ds1.receive(dp);
String s = new
String(dp.getData(),0,dp.getLength());
System.out.println("\nResult = " + s +
"\n");
}
} catch (Exception e) {
e.printStackTrace();
}
}
public static void
main(String[] args) {new
RPCClient();
}
}
```

Output:

Serv

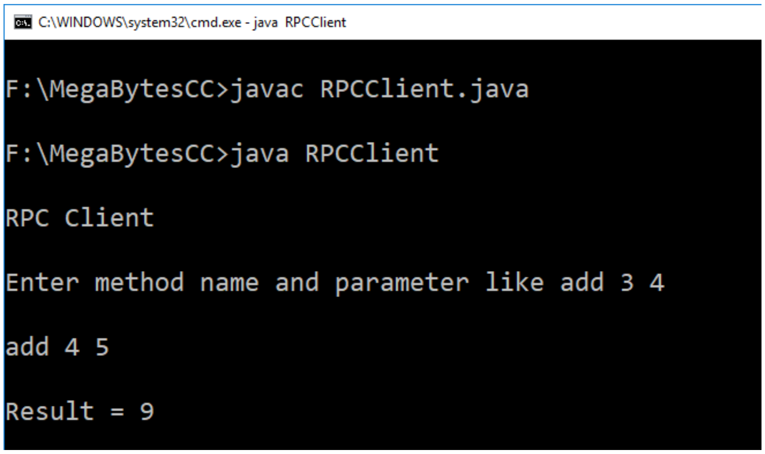
e
r



```
F:\MegaBytesCC>javac RPCServer.java

F:\MegaBytesCC>java RPCServer
add 4 5
result :9
```

Client



```
F:\MegaBytesCC>javac RPCClient.java

F:\MegaBytesCC>java RPCClient

RPC Client

Enter method name and parameter like add 3 4

add 4 5

Result = 9
```

Practical 2D: A program that finds the square, square root, cube and cube root of the enterednumber. Code:

- **RPCNumServer.java**

impor

t

java.u

til.*;

impor

t

java.n

```
et.*;

impor

t

java.i

o.*;

class

RPC

NumS

erver

 {

DatagramSocket ds;

DatagramPacket dp; String str,methodName,result; int val;

RPCNumServer() {try {

            ds=new DatagramSocket(1200); byte b[]=new

            byte[4096]; while(true) {dp=new

            DatagramPacket(b,b.length); ds.receive(dp);

            str=new

            String(dp.getData(),0,dp.getLe

            ngth());

            if(str.equalsIgnoreCase("q")) {

            System.exit(1);

            } else {
```

```
StringTokenizer st = new
StringTokenizer(str," ");int i=0;
while(st.has
MoreTokens(
)) { String
token=st.next
Token();
methodName
=token;
val = Integer.parseInt(st.nextToken());
}
}
System.out.println(str);
InetAddress ia =
InetAddress.getLocalHost();
if(methodName.equalsIgnoreC
ase("square")) {result= "" +
square(val);


} else
if(methodName.equalsIgnoreCase("squar
eroot")) {result= "" + squareroot(val);
```

```
        } else
        if(methodName.equalsIgnoreCase("
        cube")) {result= "" + cube(val);
        } else
        if(methodName.equalsIgnoreCase("cub
        eroot")) {result= "" + cuberoot(val);
        } byte b1[]=result.getBytes();
        DatagramSocket ds1 = new DatagramSocket();
        DatagramPacket dp1 = new
        DatagramPacket(b1,b1.length,InetAddress.getLocalHost(), 1300);
        System.out.println("result : "+result+"\n"); ds1.send(dp1);
        }
} catch (Exception e) {
e.printStackTrace();
}
}
public double square(int a)
throws Exception {double ans;
ans = a*a;
return ans;
}
```

```
public double squareroot(int a)

throws Exception {double ans; ans

= Math.sqrt(a); return ans;

}

 public double cube(int a)

throws Exception {double

ans; ans = a*a*a; return ans;

}

public double cuberoot(int a)

throws Exception {double ans;

ans = Math.cbrt(a); return ans;

}

 public static void

main(String[] args) {new

RPCNumServer();

}

}
```

- **RPCNumClient.java**

```
import

java.io.

*;

import
```

```
java.ne
t.*;
class
RPCNu
mClien
t {
RPCNu
mClien
t() {
try
{
InetAddress ia =
InetAddress.getLocalHost();
DatagramSocket ds = new
DatagramSocket(); DatagramSocket
ds1 = new DatagramSocket(1300);
System.out.println("\nRPC
Client\n");
System.out.println("1. Square of the number square\n2. Square root of the number
squareroot\n3. Cube ofthe number cube\n4. Cube root of the number cuberoot");
System.out.println("Enter method name and
the number\n");while (true) {
```

```
BufferedReader(new

InputStreamReader(System.in));

BufferedReader br = new

String str =

br.readLine();

byte b[] =

str.getBytes();

DatagramPac

ket dp = new

DatagramPacket(b,b.length

,ia,1200);ds.send(dp);

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

ds1.receive(dp);

String s = new

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

 ;System.out.println("\nResult = " + s

 + "\n");

}

} catch (Exception e) {

e.printStackTrace();

}

}
```

```
public static void

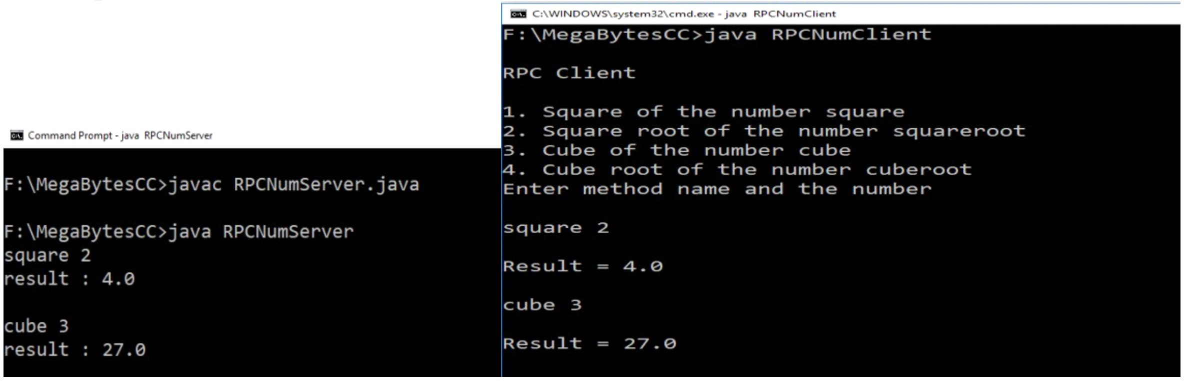
main(String[] args) {new

RPCNumClient();

}

}
```

Output:


Command Prompt - java RPCNumServer
C:\WINDOWS\system32\cmd.exe - java RPCNumClient

```
F:\MegaBytesCC>javac RPCNumServer.java

F:\MegaBytesCC>java RPCNumServer
square 2
result : 4.0

cube 3
result : 27.0
```

```
F:\MegaBytesCC>java RPCNumClient

RPC Client

1. Square of the number square
2. Square root of the number squareroot
3. Cube of the number cube
4. Cube root of the number cuberoot
Enter method name and the number

square 2

Result = 4.0

cube 3

Result = 27.0
```

Practical No: 03

Aim: A multicast Socket example.

Code:

- **BroadcastServer.java**

```
imp

ort

java.

net.*

;

imp

ort

java.
```

```
io.*;
imp
ort
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(10

000);

System.out.prin

tln("Sending ");

String str = ("This is Multicast data ... ");

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**

```
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 et
 .*
 ;
 i
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 p
 o
 rt
 ja
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 a.
 io
 .*
 ;
 public class
BroadcastClient {
public static final int
PORT = 1234;
public static void main(String
args[])throws Exception {
MulticastSocket socket;
 Datagra
 mPacket
 packet;
 InetAddr

 ess

 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:
```

Aim: Write a program to show the object

communication using RMI.Practical No: 04

Practical 4A: A RMI based application program to display current date and time.

Code:

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public interface InterDate

extends Remote {public

String display() throws

Exception;

}

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import

java.rmi.

server.*;

import

java.util.

*;

ja

```
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.…");

}

}
```

- C

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.*;
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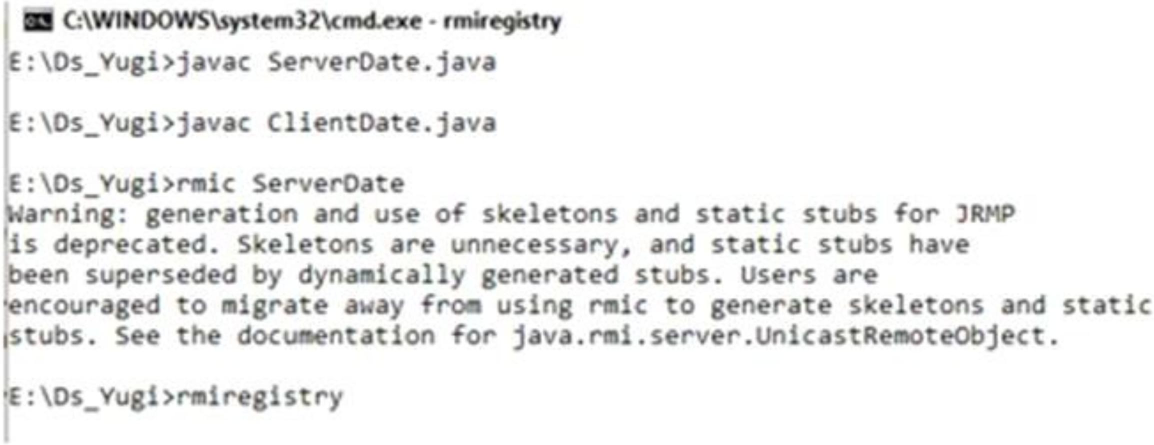
ja
va
.io
.*;
public class ClientDate {
public static void main(String args[])
throws Exception {String s1;
InterDate h1 =
 (InterDate)Naming.lookup("DS")
 ;s1 = h1.display();
System.out.println(s1);
}
}
```

Output:

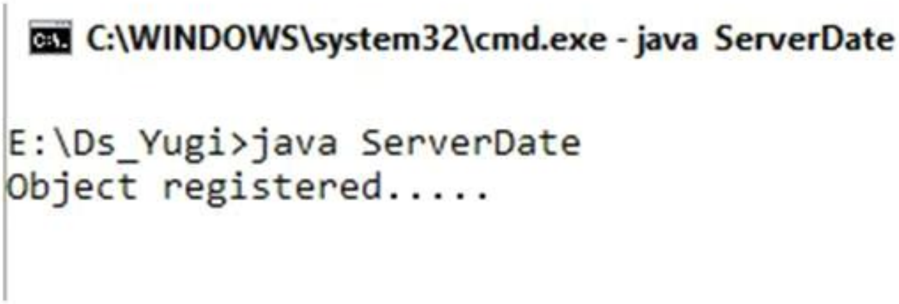


```
C:\WINDOWS\system32\cmd.exe - rmiregistry
E:\Ds_Yugi>javac ServerDate.java

E:\Ds_Yugi>javac ClientDate.java

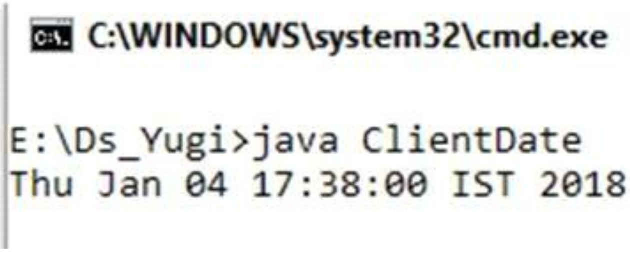
E:\Ds_Yugi>rmic ServerDate
Warning: generation and use of skeletons and static stubs for JRMP
is deprecated. Skeletons are unnecessary, and static stubs have
been superseded by dynamically generated stubs. Users are
encouraged to migrate away from using rmic to generate skeletons and static
stubs. See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

Practical 4B: A RMI based application program that converts digits to words, e.g. 123 will beconverted to one two three. Code:

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ert.j

ava

imp

ort

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

- Ser

```
verCo
nvert.j
ava
import
java.r
mi.*;
 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…");

}

}
```

- Cli

```
entCo

nvert.

java

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t

java.r

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java.i

o.*;

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);

}

}
```

Output:

Practical No: 05

Aim: Show the implementation of

web services. Practical 5A: Implementing “Big” Web

Service. 1) Creating a Web Service

- **Choosing a Container:**

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

- Name the project CalculatorWSApplication. Select a location for

the project. ClickNext.

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

- **Creating a Web Service from a Java Class**

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

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

- Click Finish. The Projects window displays the structure of the new web service and the source code isshown in the editor area.

- Adding an Operation to the Web Service The goal of this exercise is to add to the web service an operation that adds two numbers received from a client. The NetBeans IDE provides a dialog for adding an operation to a web service. You can open this dialog either in the web service visual designer or in theweb service context menu.

A. To add an operation to the web service:

- Change to the Design view in the editor.

- Click Add Operation in either the visual designer or the context

menu. The AddOperation dialog opens.

- In the upper part of the Add Operation dialog box, type add in Name and type int in the Return Typedrop-down list.

- In the lower part of the Add Operation dialog box, click Add and create a parameter of type int namedi.

- Click Add again and create a parameter of type int called j. You now see the following:

- Click OK at the bottom of the Add Operation dialog box. You return to the editor.

- The visual designer now displays the following:

- Click Source. And

code the following.

```
@WebMethod(operation

Name = "add")



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

{



i

n

t
k

=

i

+

j
;

r
e
t
u
r
n

k
;
}
```

- Deploying and Testing the Web Service After you deploy a web service to a server, you can use the IDE to open the server's test client, if the server has a test client. The GlassFish and WebLogic serversprovide test clients.

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

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

- In the IDE's Projects the CalculatorWSApplication project. Right-click the CalculatorWS node, andchoose Test Web Service

- The IDE opens the tester page in your browser, if you deployed a web application to the GlassFishserver.

- If you deployed to the GlassFish server, type two numbers in the tester page, as shown below:

- The sum of the two numbers is displayed:

- Consuming the Web Service Now that you have deployed the web service, you need to create a clientto make use of the web service's add method.

1. Client: Java Class in Java SE Application

- 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.

- Right-click the CalculatorWS_Client_Application node and

choose New > WebService Client. The New Web Service Client

wizard opens.

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

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

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

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

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);
}
```

- In the main() method body, replace the TODO comment with code that initializesvalues 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("Res
ult = " + result);
}
```

- 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("Ex

ception: " + ex);

}

}
```

- Right-click the project node and choose Run.

The Output window now

shows the sum:compile:

run: Result = 7

Practical 5B:

Implementing Web Service that connects to

MySQL database.Building Web Service:

Let’s build a Web Service that returns the book name along with its cost for a particular ISBN.

To begin building this service, create the data store. The server will access the data stored in a MySQLtable to serve the client.

Creating

MySQL DB

Tablecreate

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("1","Learn My SQL","250");

insert into books values("2","Java EE 6 for

Beginners","850"); insert into books

values("3","Programming with Android","500");

insert into books values("4","Oracle Database for

you","400");

insert into books values("5","Asp.Net for advanced programmers","1250");

Creating a web service

- 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 Webapplication.

- 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 WebApplication 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 theContext Path.

Click –Finish

The Web application named BookWS is created.

- 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 theoption implement web service as a stateless session bean as shown in the diagram.

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

- 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 thename of the BookWS.java tab.

The window changes as shown in the diagram. Click Add Operation available in the design view of theweb service.

Add Operation dialog appears. Enter the name getBookDetails in the Name

textbox andjava.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 inthe diagram.

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

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

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

Code Spec

```
pack

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e;

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rt

java.

sql.*;

import

javax.jws.Web

Method;import

javax.jws.Web

Param;


import

javax.jws.Web

Service;import

javax.ejb.State

less;
```

```
@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:

Connecti

on 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 ="Name" +rs.getString("bookname") + " cost : "
+rs.getString("bookprice") ;

return bookDetails;

}

catch(Exception e)

{

}

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

return null;

}

}
```

Explanation

In the above code number entered by spec, a database connection is established. Based on the ISBN theuser, the associated book name and price is retrieved and

- Adding the MySQL connector

We need to add a reference of MySQL connector to our web service. It is via this connector that our webservice 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 asshown.

- 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 itfunctions as expected.

The tester application provided by GlassFish, is integrated into the IDE for this purpose as it allows thedeveloper 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 thediagram.

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 BookWSWeb 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 usingGlassFish server as shown in the figure.

Enter the ISBN number as shown in the diagram.

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

- Consuming the web service

Once the web service is deployed, the next most logical step is to create a client to make use of the webservice’s getBookDetails() method.

- 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 webapplication available under the projects section. Click Finish.

New web application dialog box appears. Enter BookWSServletClient as the project name in the ProjectName 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 thecontext path.

Click Finish. The web application named BookWSServletClient is created.

- Adding the web service to the client application

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

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 WebService Client as shown in the diagram.

Leave settings as it is. Click Finish the other

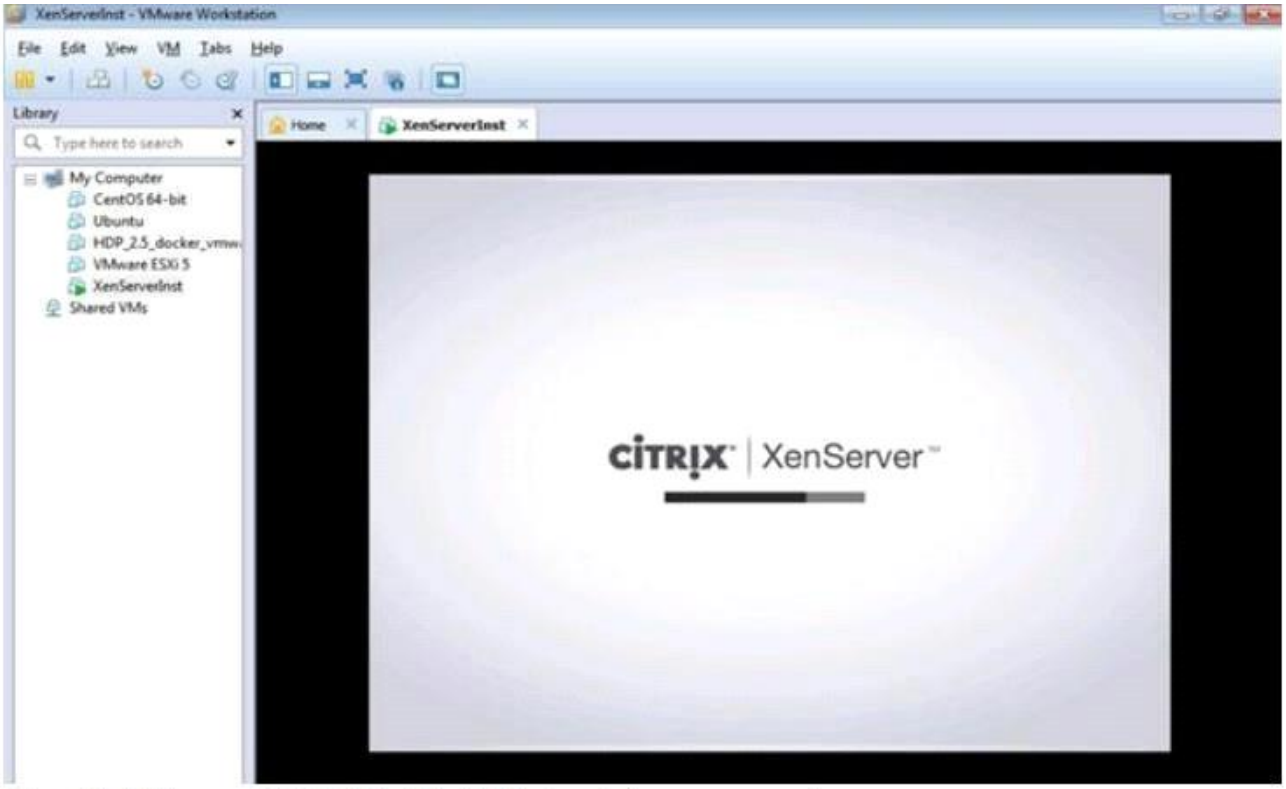
The Web Service Reference directory is added to the BookWSServletClient application as shown in thediagram. It displays the structure of the newly created client including the getBookDetails() method created earlier.

Practical: 06

Aim: Implement Xen virtualization and manage with Xen Center

Install XenServer in VMware Workstation.

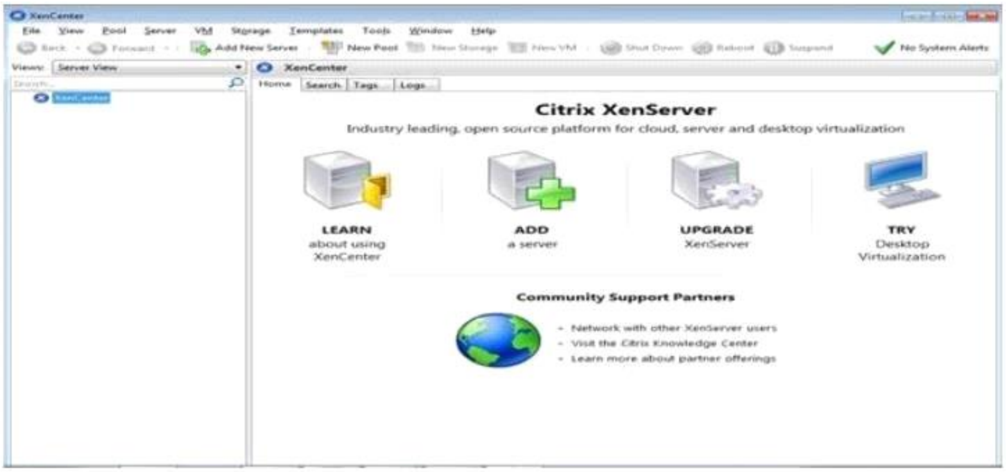
Note IP Address – " 192.168.124.137"(varies machine to machine) ping it from command prompt.



Now Install Citrix Client App(XenCenter) if

not installedNow Open Citrix XenCenter –

and Click and Add Server.


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
XenCenter
Home
Search
Tags
Logs
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 wehad given during installation and Click on Add.

Then click on Ok

Now Click on New Storage

Select Window File Sharing (CIFS)

and click on nextUncheck Auto

generate option Click on Next.

Provide the path of shared windows XP image and enter local pc credential ,

click on FinishClick on New VM – and Windows XP SP3

Select ISO file and

click on next –

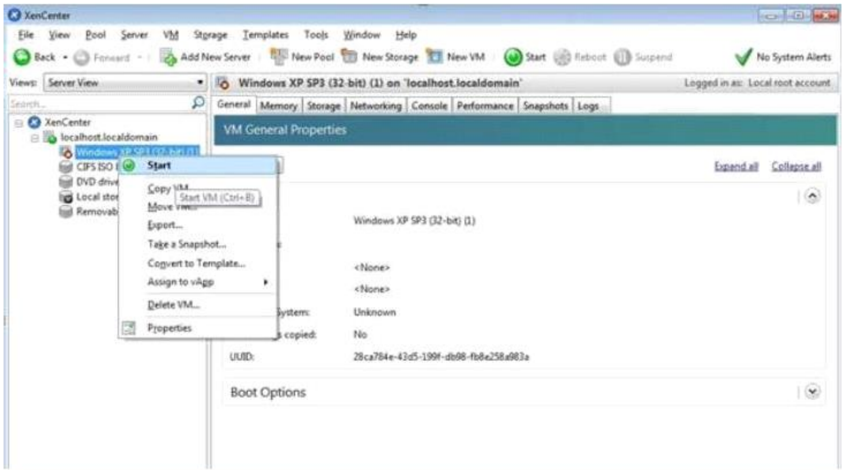
Click on Next –

Uncheck – Start the new VM and

click on create nowNow Right click

on Windows XP and Start

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


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)

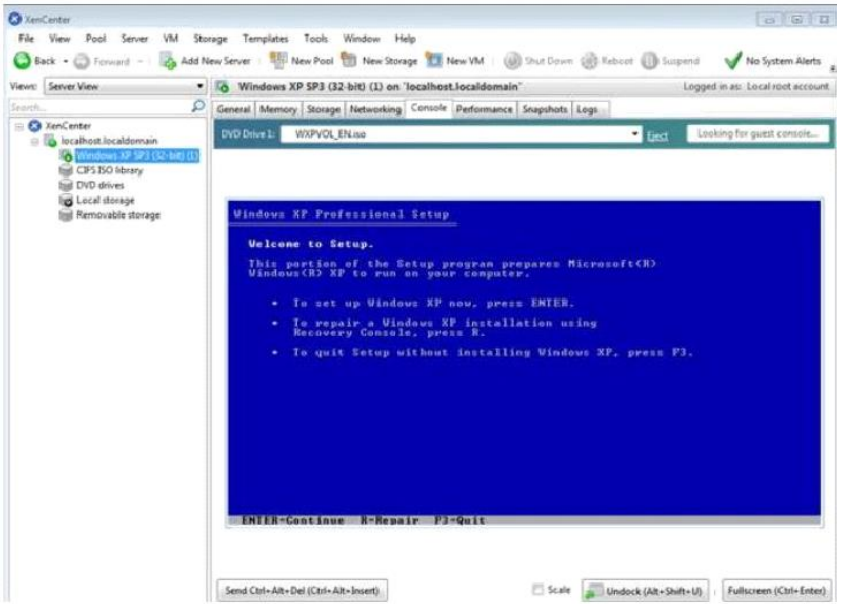
<None>

<None>

System: Unknown

copied: No

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


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.

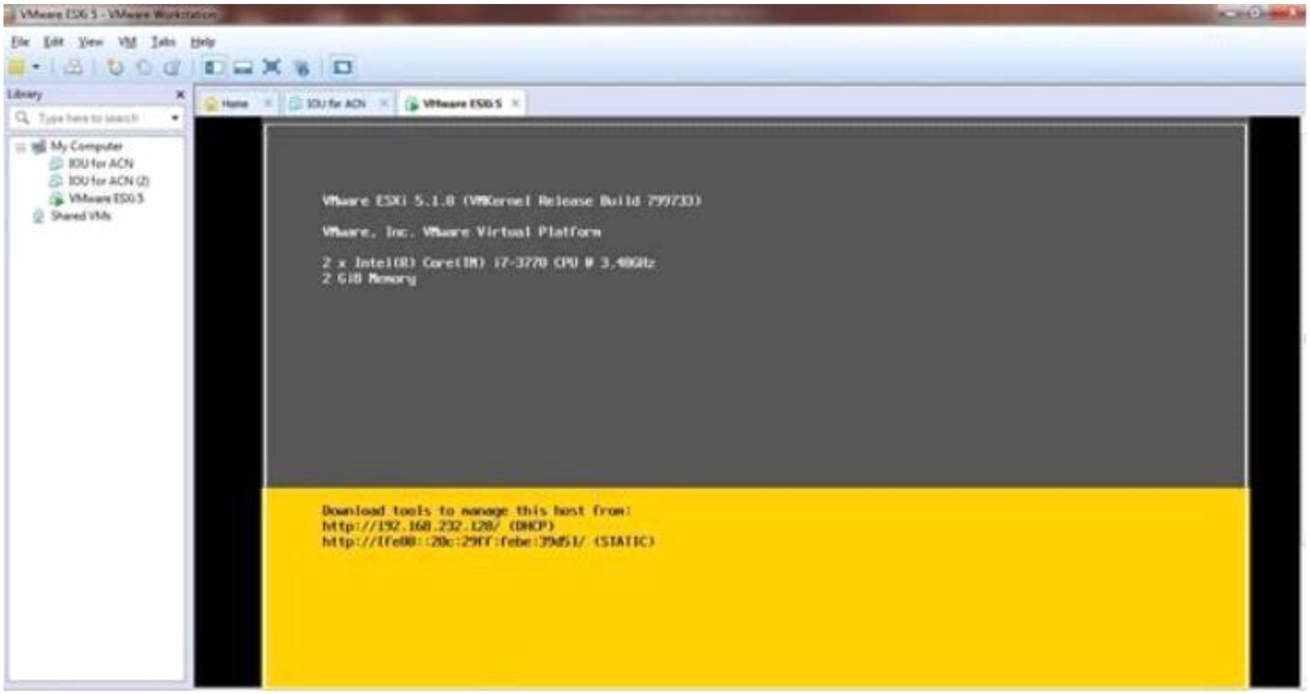
     •  To quit Setup without installing Windows XP, press F3.

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

Practical: 07

Aim: Implement virtualization using VMWare ESXi Server and managing with vCenter

Steps: Install ESXi iso in VMWare workstation.



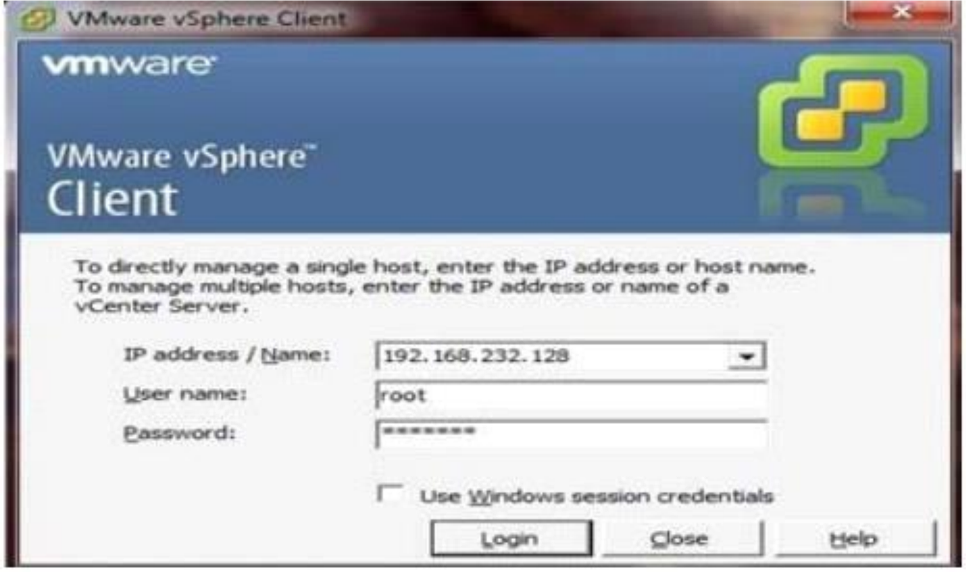
```
VMware ESXi 5.1.0 (VMKernel Release Build 799733)

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)
```

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

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.

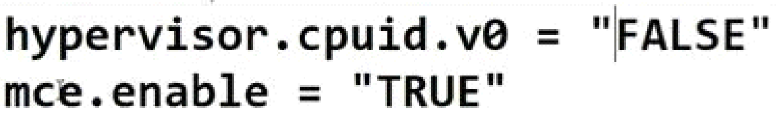
- To set up Windows XP now, press ENTER.
- To repair a Windows XP installation using Recovery Console, press R.
- To quit Setup without installing Windows XP, press F3.

ENTER=Continue R=Repair F3=Quit

Practical: 08
Aim: Implement Windows Hyper V virtualization

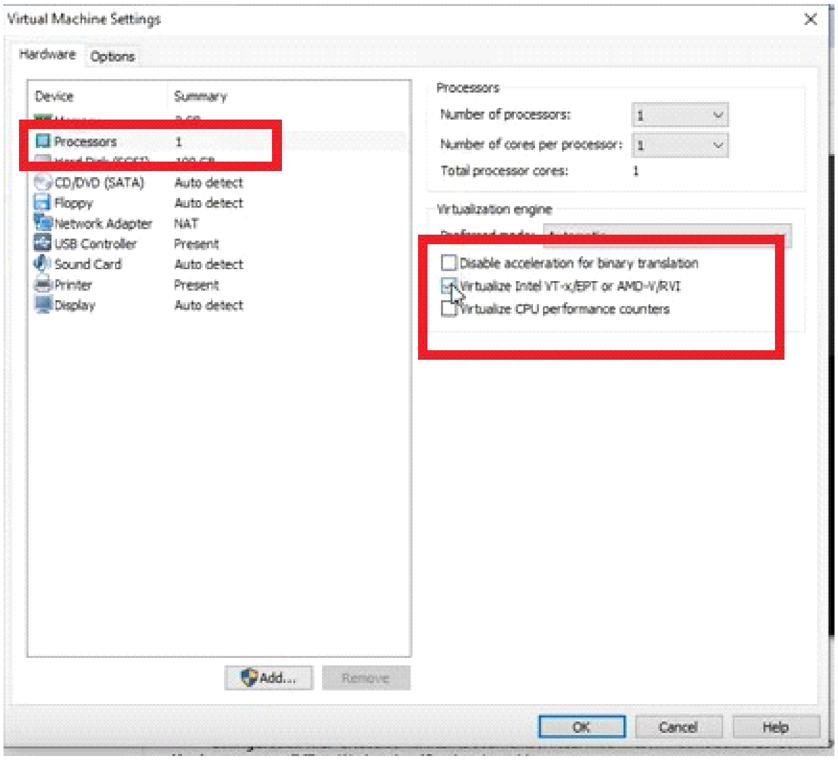
Install Windows Server 2012 in VMWare Workstation.

To enable Hyper V add these line in the configuration file(.vmx) of the Virtual machine



```
hypervisor.cpuid.v0 = "FALSE"
mce.enable = "TRUE"
```

Also check Vtx feature in the vm setting



Device	Summary
Memory	2 GB
Processors	1
Hard Disk (SCSI)	100 GB
CD/DVD (SATA)	Auto detect
Floppy	Auto detect
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Processors

Number of processors: 1

Number of cores per processor: 1

Total processor cores: 1

Virtualization engine

Preferred mode: Automatic

☐ Disable acceleration for binary translation

☑ Virtualize Intel VT-x/EPT or AMD-V/RVI

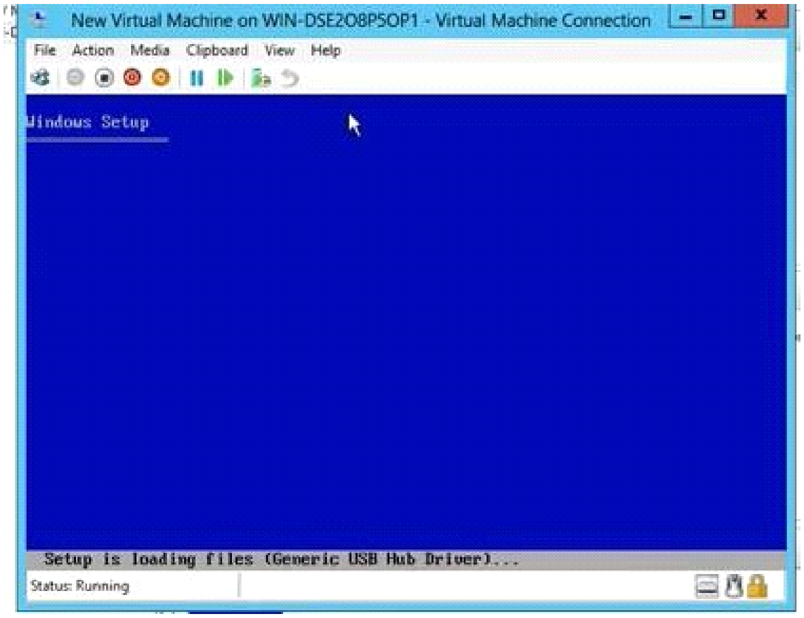
☐ Virtualize CPU performance counters

Install Hyper V.

Add role and feature -> Next -> Next-> Role(Select Hyper V) -> Next -> NextSelect auto restart if required.

Click finish

After Machine reboots go to Start -> Hyper V Manager -> Install New VM.install windows XP .iso and virtual machine will start.



New Virtual Machine on WIN-DSE2O8PSOP1 - Virtual Machine Connection
File Action Media Clipboard View Help
Windows Setup
Status: Running

Setup is loading files (Generic USB Hub Driver)...

Practical: 09

Aim: Develop application for Microsoft Azure.

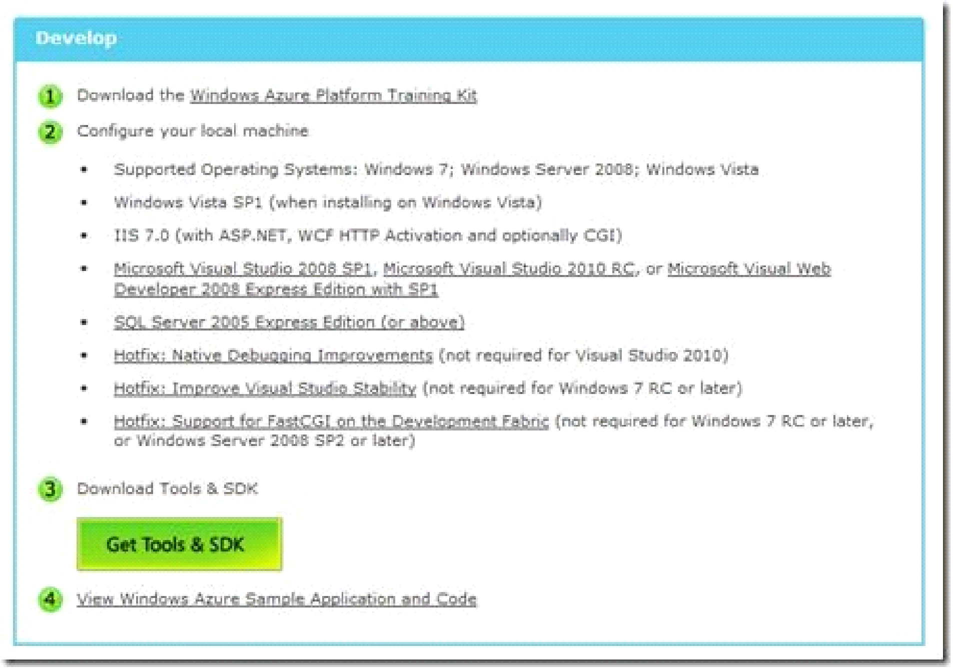
Step 1: To develop an application for Windows Azure on Visual Studio install the "Microsoft Azure SDKfor .NET (VS 2010) – 2.8.2.1"

Step2: Turn windows Features ON or OFF: Go to Control panel and click on programs. Turn Windowsfeatures on or off.

Step3: Now, Start the visual studio 2010 and Go To

Setting up your development environment

From the Windows Azure Getting Started Roadmap HYPERLINK "http://www.microsoft.com/windowsazure/getstarted/" there are some bullet points on how to get startedwith your development environment.


Develop

1. Download the Windows Azure Platform Training Kit
2. Configure your local machine
   - Supported Operating Systems: Windows 7; Windows Server 2008; Windows Vista
   - Windows Vista SP1 (when installing on Windows Vista)
   - IIS 7.0 (with ASP.NET, WCF HTTP Activation and optionally CGI)
   - Microsoft Visual Studio 2008 SP1, Microsoft Visual Studio 2010 RC, or Microsoft Visual Web Developer 2008 Express Edition with SP1
   - SQL Server 2005 Express Edition (or above)
   - Hotfix: Native Debugging Improvements (not required for Visual Studio 2010)
   - Hotfix: Improve Visual Studio Stability (not required for Windows 7 RC or later)
   - Hotfix: Support for FastCGI on the Development Fabric (not required for Windows 7 RC or later, or Windows Server 2008 SP2 or later)
3. Download Tools & SDK

4. View Windows Azure Sample Application and Code

Step 1: download the Windows HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en" HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en"Azure HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en" HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en"Platform HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en" HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en"Training HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en" HYPERLINK "http://www.microsoft.com/downloads/details.aspx?FamilyID=413E88F8-5966-4A83-B309-53B7B77EDF78&displaylang=en"Kit

Step 2 - Configuring & install Visual Studio 2010

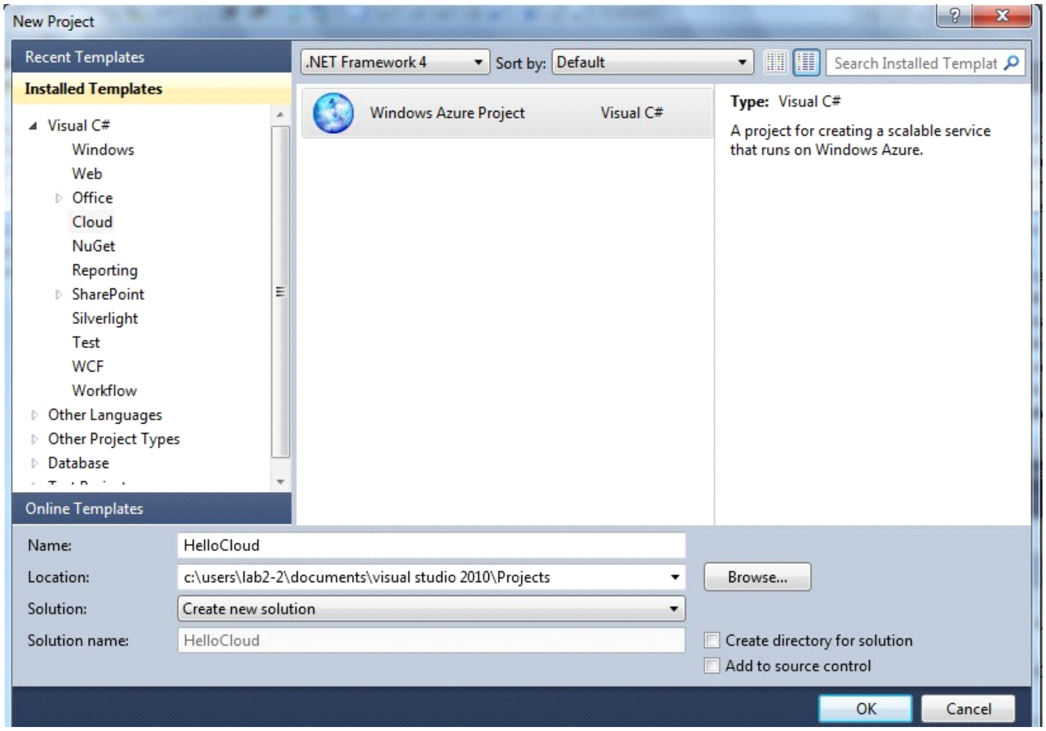
Step 3 – Download Tools & SDK: using Web HYPERLINK "http://www.microsoft.com/web/downloads/platform.aspx" HYPERLINK "http://www.microsoft.com/web/downloads/platform.aspx"Platform HYPERLINK "http://www.microsoft.com/web/downloads/platform.aspx" HYPERLINK "http://www.microsoft.com/web/downloads/platform.aspx"Installer HYPERLINK "http://www.microsoft.com/web/downloads/platform.aspx" as shown above or Manually.

Step 4 – After Installation prepare the first deploable Hello world application

A) Building Your First Windows Azure Cloud Application with Visual Studio 2010

You don’t need to sign up for *anything* or request any invitation tokens to walk through the steps inthis post.

Start Visual Studio 2010, and begin a new project. Scroll to the new Cloud Service project type, select theCloud Service template, and name the project *HelloCloud*.



Type: Visual C#

A project for creating a scalable service that runs on Windows Azure.

Name: HelloCloud

Location: c:\users\lab2-2\documents\visual studio 2010\Projects

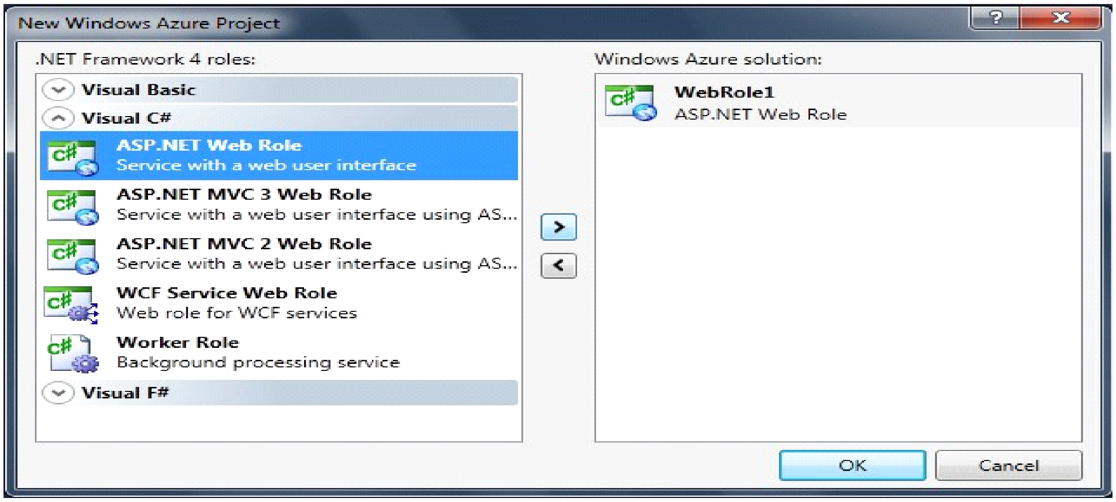
Solution: Create new solution

Solution name: HelloCloud

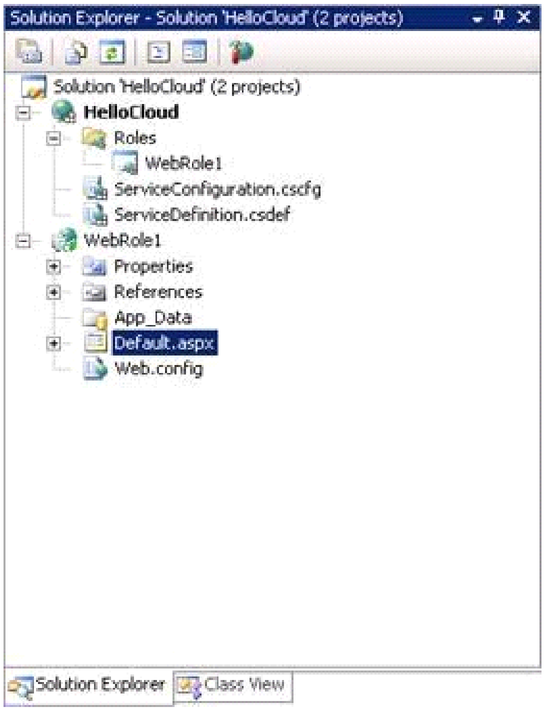
□ Create directory for solution

□ Add to source control

When you choose the Cloud Service template, you are creating at least two projects for your solution: thecloud service project itself, and any number of hosted role projects which Visual Studio prompts for withthe New Cloud Service Project dialog. There are three types of role projects you can have, but the one we’re interested in is the ASP.NET Web Role. Add an ASP.NET Web Role to the solution from the Visual C# group and click OK.


New Windows Azure Project
.NET Framework 4 roles:
Visual Basic
Visual C#
ASP.NET Web Role
Service with a web user interface
ASP.NET MVC 3 Web Role
Service with a web user interface using AS...
ASP.NET MVC 2 Web Role
Service with a web user interface using AS...
WCF Service Web Role
Web role for WCF services
Worker Role
Background processing service
Visual F#
Windows Azure solution:
WebRole1
ASP.NET Web Role
OK
Cancel

We now have two separate projects in our solution: a Cloud Service project named *HelloCloud*, and anASP.NET Web Role project named *WebRole1*:



The *HelloCloud* service project just holds configuration information for hosting one or more role projectsin the cloud. Its *Roles* node in Solution Explorer presently indicates that it's hosting one role, which is our*WebRole1* ASP.NET Web Role. Additional roles can be added to the service, including ASP.NET Web Roles that host WCF services in the cloud, but we'll cover that in a future post. Note also that it's set as the solution's startup project.

The project contains two XML files named *ServiceDefinition.csdef* and *ServiceConfiguration.cscfg*. Together, these two files define the roles hosted by the service. Again, for our first cloud application, theycurrently reflect the single ASP.NET Web Role named *WebRole1*:

ServiceDefinition.csdef

```
<?xml version="1.0"?>
<ServiceConfiguration serviceName="HelloCloud" xmlns="http://schemas.microsoft.com/ServiceHosting/2008/10/ServiceConfiguration">
<Role name="WebRole1">
<Instances count="1" />
<ConfigurationSettings />
</Role>
</ServiceConfiguration>
```

ServiceConfiguration.cscfg

```
<?xml version="1.0" encoding="utf-8"?>
<ServiceDefinition name="HelloCloud" xmlns="http://schemas.microsoft.com/ServiceHosting/2008/10/ServiceDefinition">
<WebRole name="WebRole1" enableNativeCodeExecution="false">
<InputEndpoints>
<!-- Must use port 80 for http and port 443 for https when running in the cloud -->
<InputEndpoint name="HttpIn" protocol="http" port="80" />
</InputEndpoints>
<ConfigurationSettings />
</WebRole>
</ServiceDefinition>
```

The second project, *WebRole1*, is nothing more than a conventional ASP.NET application that holds a reference to the Azure runtime assembly System.ServiceHosting.ServiceRuntime. From your perspective as an ASP.NET developer, an ASP.NET Web Role is an ASP.NET application, but one that can be hosted in the cloud. You can add any Web components to it that you would typically include in a Web application, including HTML pages, ASPX pages, ASMX or WCF services, images, media, etc.

For our exercise, we'll just set the title text and add some HTML content in the Default.aspx page createdby Visual Studio for the WebRole1 project.

```

<html xmlns="http://www.w3.org/1999/xhtml">

<head runat="server">
<title>Hello Windows Azure</title>
</head>
<body>
```

```
<form id="form1" runat="server">
<div>
<h1>Hello From The Cloud!</h1>
</div>
</form>
</body>
</html>
```

We’re ready to debug/run our application, but unlike debugging a conventional ASP.NET Webapplication:

- The ASP.NET Web Role project is not the startup project; the Cloud Service project is
- The ASP.NET Web Role project won’t run on the Development Server (aka Cassini) or IIS

So debugging cloud services locally means starting the Cloud Service project, which in turn will start allthe role projects that the service project hosts. And instead of Cassini or IIS, the ASP.NET Web Role projects will be hosted by two special services that simulate the cloud on your local machine: Development Fabric and Development Storage. The Development Fabric service provides the Azure computational services used in the cloud, and the Development Storage service provides the Azure storage services used in the cloud.

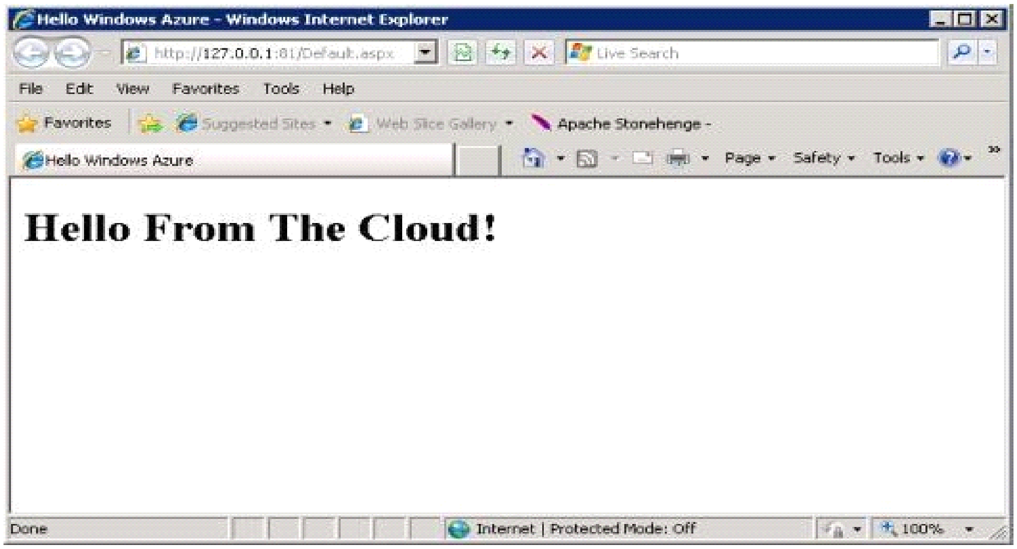
There are still a few things you need to ensure before you hit F5:

- You must have started Visual Studio as an administrator. If you haven’t, you’ll get an error message complaining that “The Development Fabric must be run elevated.” You’ll need to restartVisual Studio as an administrator and try again.
- SQL Server Express Edition (2005 or 2008) must be running as the .\SQLEXPRESS instance,your Windows account must have a login in .\SQLEXPRESS, and must be a member of the *sysadmin* role. If SQL Express isn’t configured properly, you’ll get a permissions error.

Go ahead and hit F5 and give it a run.

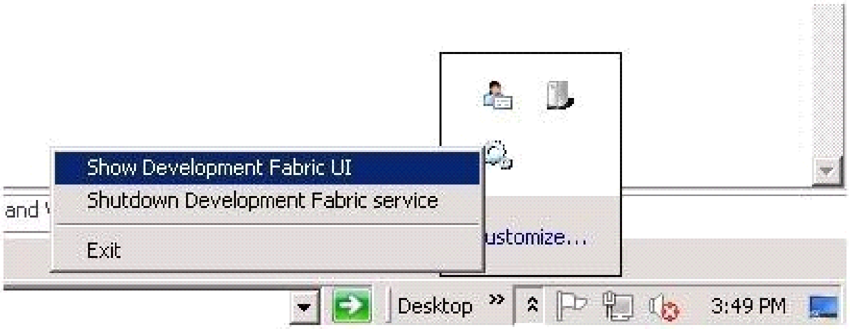
Visual Studio will prompt you to initialize the Development Storage service (this won’t happen again for future builds). Click Yes, and wait a few moments while Visual Studio sets up the SQLExpress database.

Once the build is complete, Internet Explorer should launch and display our Hello Cloud page.

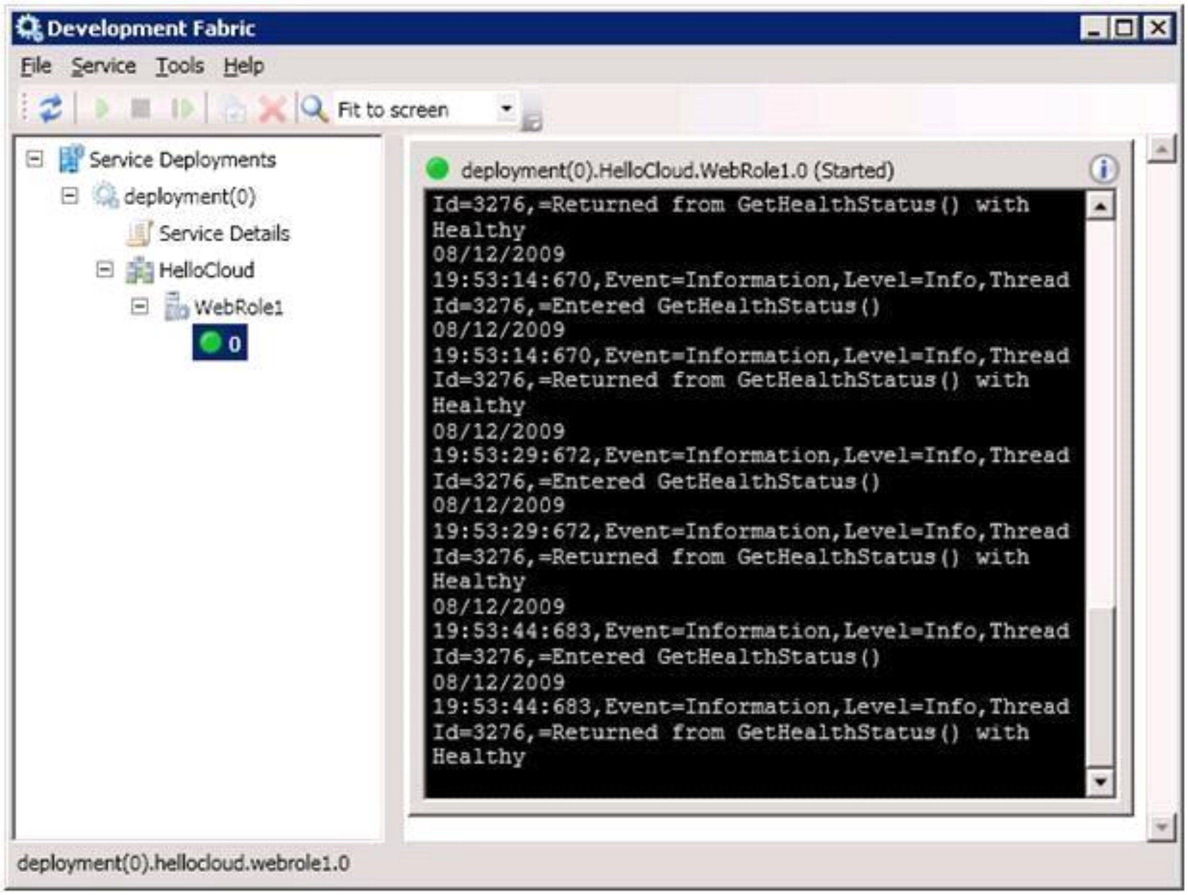

Hello Windows Azure - Windows Internet Explorer
http://127.0.0.1:81/Default.aspx
Live Search
File Edit View Favorites Tools Help
Favorites
Suggested Sites
Web Slice Gallery
Apache Stonehenge -
Hello Windows Azure
Page Safety Tools
Done
Internet | Protected Mode: Off
100%

Hello From The Cloud!

In the tray area, the Development Fabric service appears as a gears icon. Click on the gears icon todisplay the context menu:


Show Development Fabric UI
Shutdown Development Fabric service
Exit
ustomize...
and
Desktop
3:49 PM

Click *Show Development Fabric UI* to display the service's user interface. In the Service Deployments treeview on the left, drill down to the *HelloCloud* service. Beneath it, you'll see the *WebRole1* project isrunning. Expand the *WebRole1* project to see the number of fabric instances that are running:



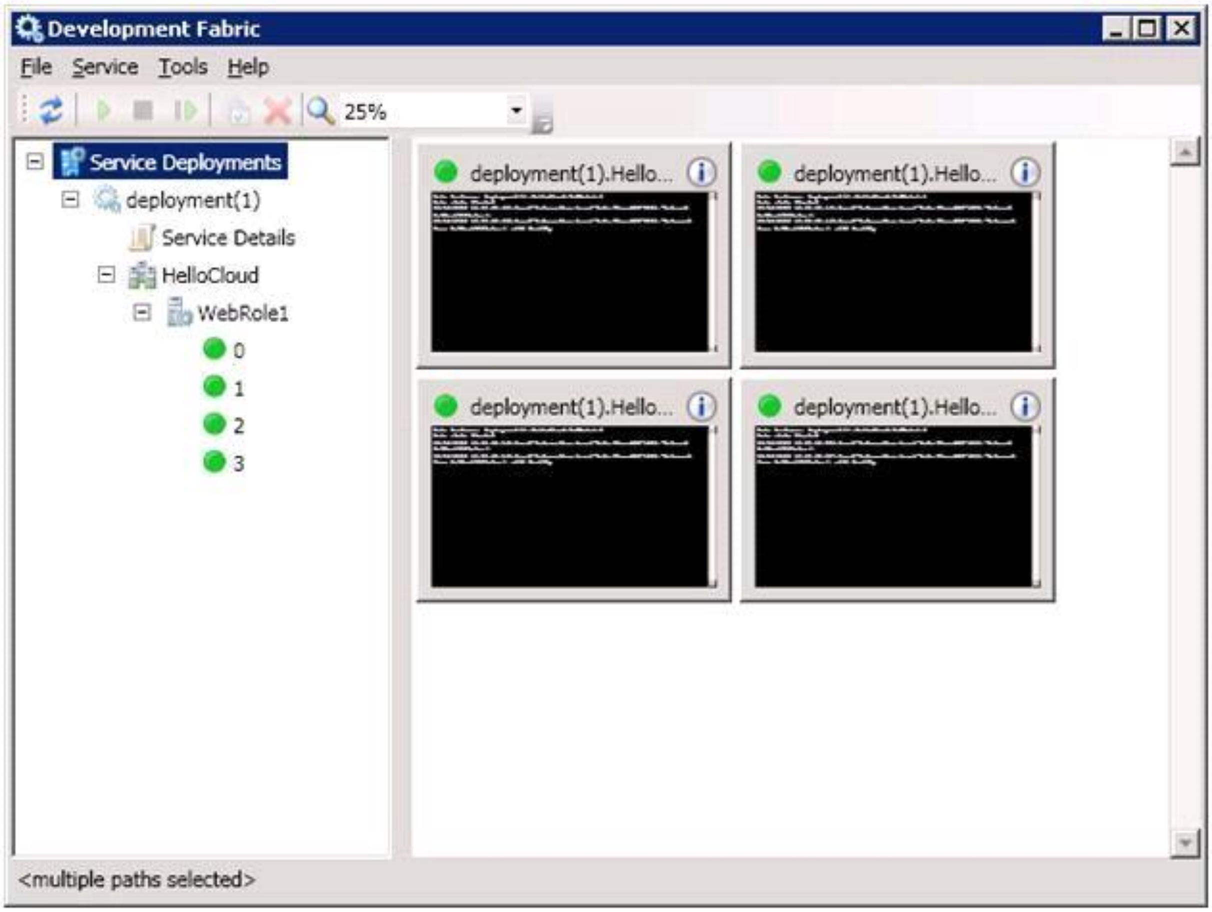
```
Id=3276,=Returned from GetHealthStatus() with
Healthy
08/12/2009
19:53:14:670,Event=Information,Level=Info,Thread
Id=3276,=Entered GetHealthStatus()
08/12/2009
19:53:14:670,Event=Information,Level=Info,Thread
Id=3276,=Returned from GetHealthStatus() with
Healthy
08/12/2009
19:53:29:672,Event=Information,Level=Info,Thread
Id=3276,=Entered GetHealthStatus()
08/12/2009
19:53:29:672,Event=Information,Level=Info,Thread
Id=3276,=Returned from GetHealthStatus() with
Healthy
08/12/2009
19:53:44:683,Event=Information,Level=Info,Thread
Id=3276,=Entered GetHealthStatus()
08/12/2009
19:53:44:683,Event=Information,Level=Info,Thread
Id=3276,=Returned from GetHealthStatus() with
Healthy
```

At present, and by default, only one instance is running. But you can scale out to increase the capacity ofyour application simply by changing one parameter in the *ServiceDefinition.csdef* file.

Close the browser and open *ServiceDefinition.csdef* in the *HelloCloud* service project. Change the valueof the *count* attribute in the *Instances* tag from 1 to 4:

```
<Instances count="4" />
```

Now hit F5 again, and view the Development Fabric UI again. This time, it shows 4 instances hosting
WebRole1:



As you can see, it’s easy to instantly increase the capacity of our applications and services. Theexperience would be the same in the cloud.

Congratulations! You’ve just built your first Windows Azure application.

Practical: 10

Aim: Develop application for

Google App EngineOpen Eclipse Luna. Go to Help Menu

Install New Software…

In Install window Click on the “Add” button besides the Work

with textbox. AddRepository window appears. Enter the Location as “https://dl.google.com/eclipse/plugin/4.4” and click on “OK”

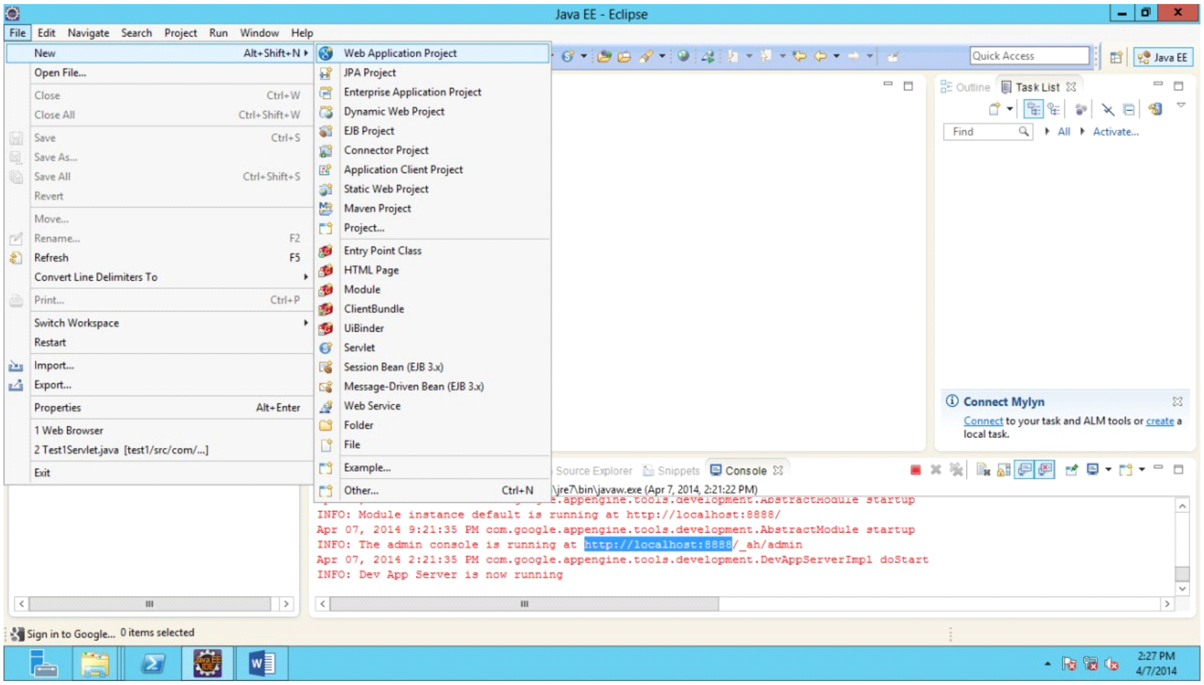
button.

From the available softwares select the required softwares and tools as shown in the below image for theGAE. Then click on the “Next” button.

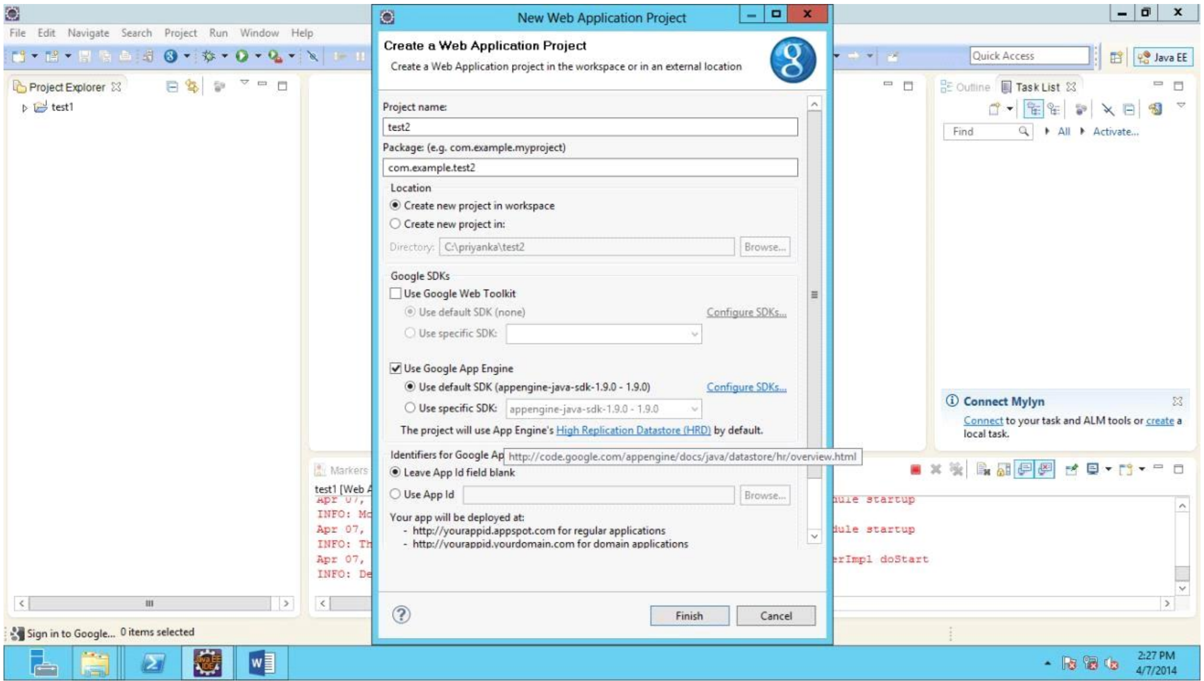
In the Install Details window click on “Next” button.

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.Afte



```
\jre7\bin\javaw.exe (Apr 7, 2014, 2:21:22 PM)
e.appengine.tools.development.AbstractModule startup
INFO: Module instance default is running at http://localhost:8888/
Apr 07, 2014 9:21:35 PM com.google.appengine.tools.development.AbstractModule startup
INFO: The admin console is running at http://localhost:8888/_ah/admin
Apr 07, 2014 2:21:35 PM com.google.appengine.tools.development.DevAppServerImpl doStart
INFO: Dev App Server is now running
```



New Web Application Project

Create a Web Application Project

Create a Web Application project in the workspace or in an external location

Project name: test2

Package: (e.g. com.example.myproject) com.example.test2

Location

● Create new project in workspace

○ Create new project in:

Directory: C:\priyanka\test2

Google SDKs

□ Use Google Web Toolkit

○ Use default SDK (none)

○ Use specific SDK:

☑ Use Google App Engine

● Use default SDK (appengine-java-sdk-1.9.0 - 1.9.0)

○ Use specific SDK: appengine-java-sdk-1.9.0 - 1.9.0

The project will use App Engine's High Replication Datastore (HRD) by default.

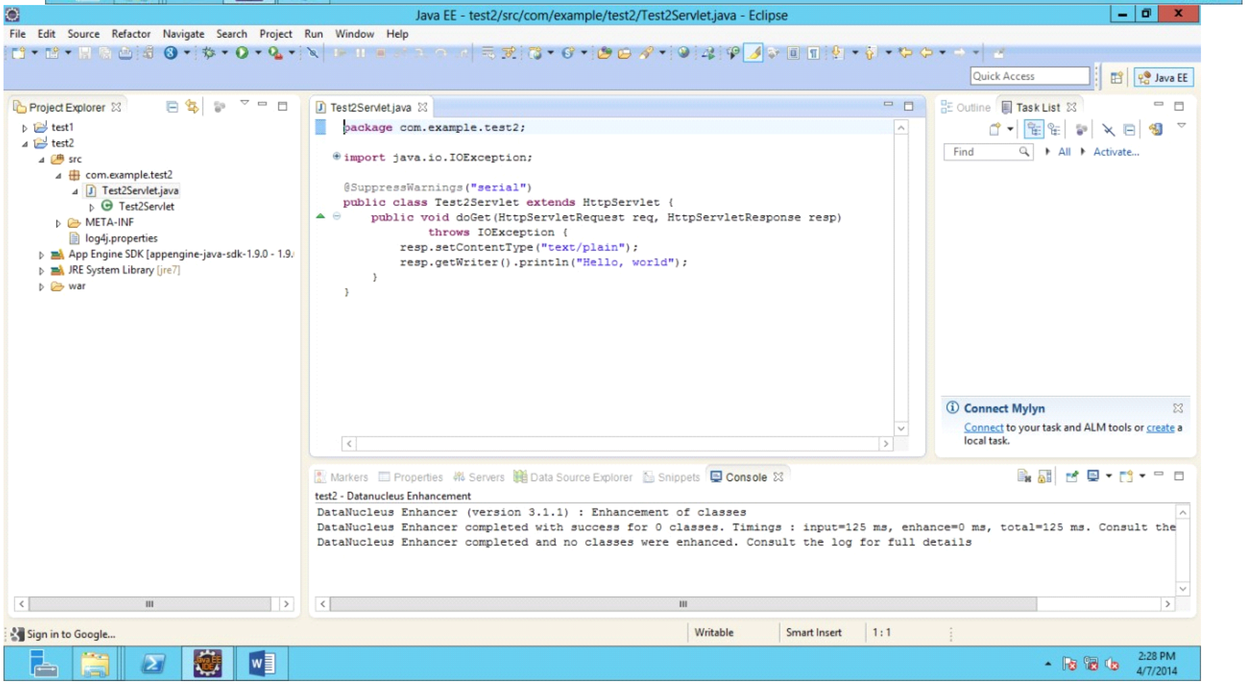
http://code.google.com/appengine/docs/java/datastore/hr/overview.html

Identifiers for Google Ap

● Leave App Id field blank

○ Use App Id

Your app will be deployed at:
- http://yourappid.appspot.com for regular applications
- http://yourappid.yourdomain.com for domain applications



Java EE - test2/src/com/example/test2/Test2Servlet.java - Eclipse

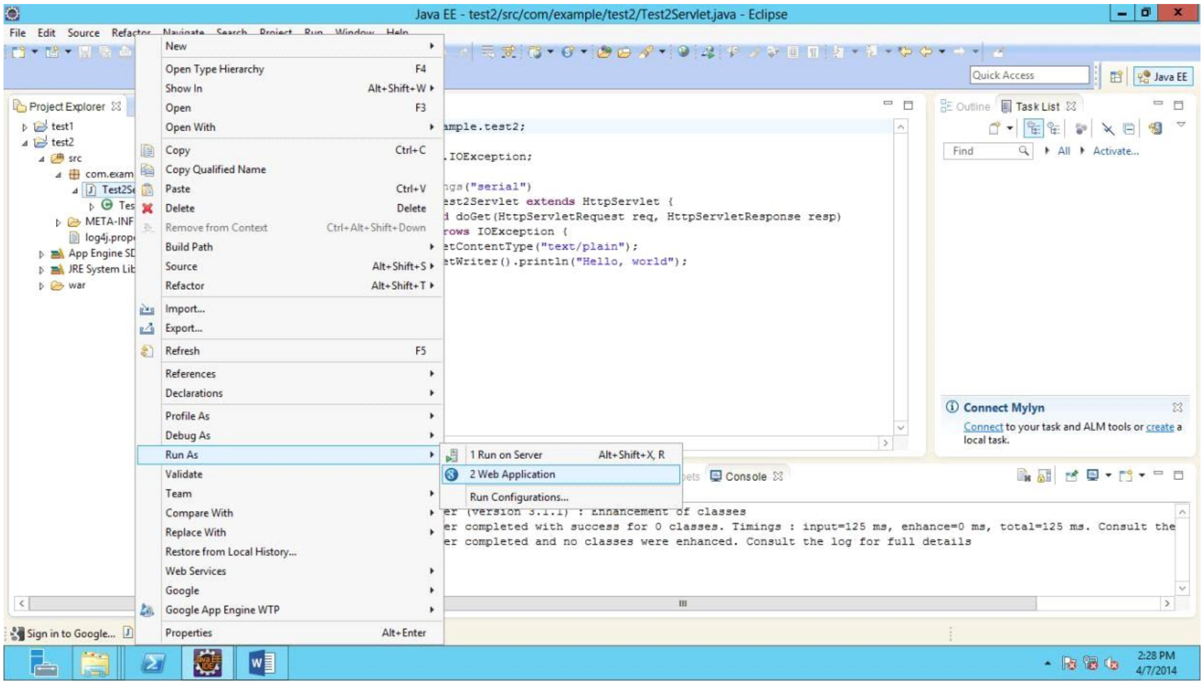
Test2Servlet.java

```java
package com.example.test2;

import java.io.IOException;

@SuppressWarnings("serial")
public class Test2Servlet extends HttpServlet {
    public void doGet(HttpServletRequest req, HttpServletResponse resp)
            throws IOException {
        resp.setContentType("text/plain");
        resp.getWriter().println("Hello, world");
    }
}
```

Console

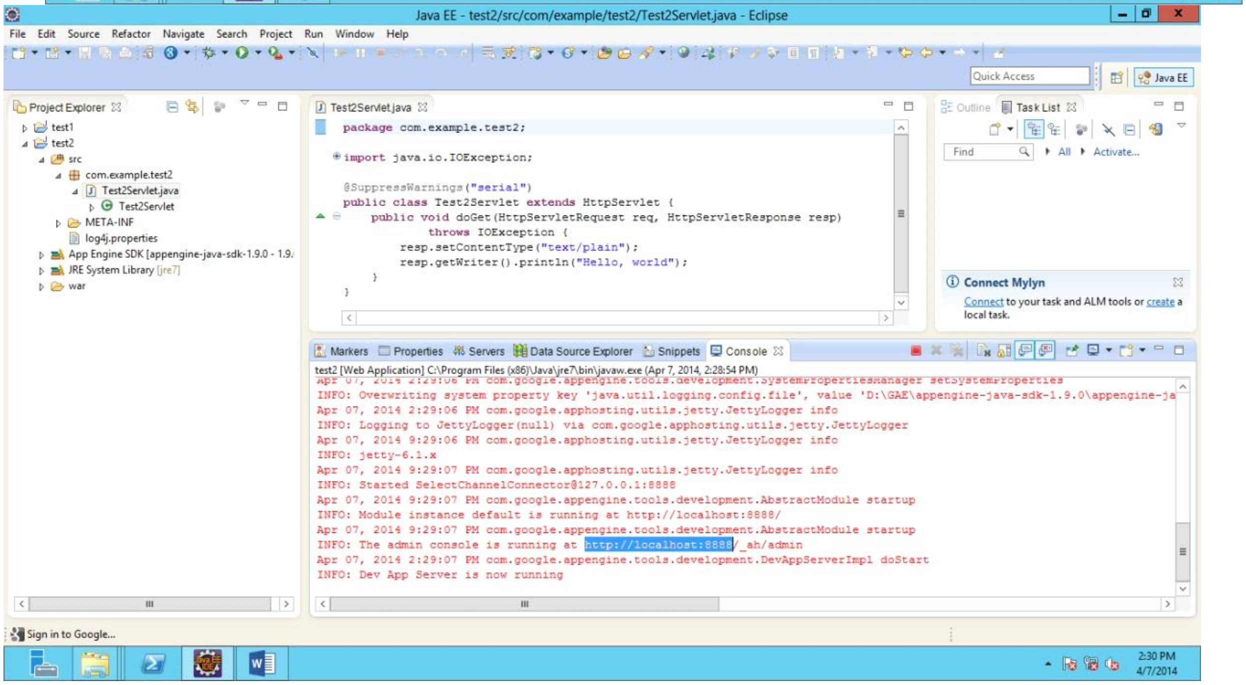
test2 - Datanucleus Enhancement

```
DataNucleus Enhancer (version 3.1.1) : Enhancement of classes
DataNucleus Enhancer completed with success for 0 classes. Timings : input=125 ms, enhance=0 ms, total=125 ms. Consult the
DataNucleus Enhancer completed and no classes were enhanced. Consult the log for full details
```



```
ample.test2;

.IOException;

ngs("serial")
est2Servlet extends HttpServlet {
d doGet(HttpServletRequest req, HttpServletResponse resp)
rows IOException {
etContentType("text/plain");
etWriter().println("Hello, world");
```

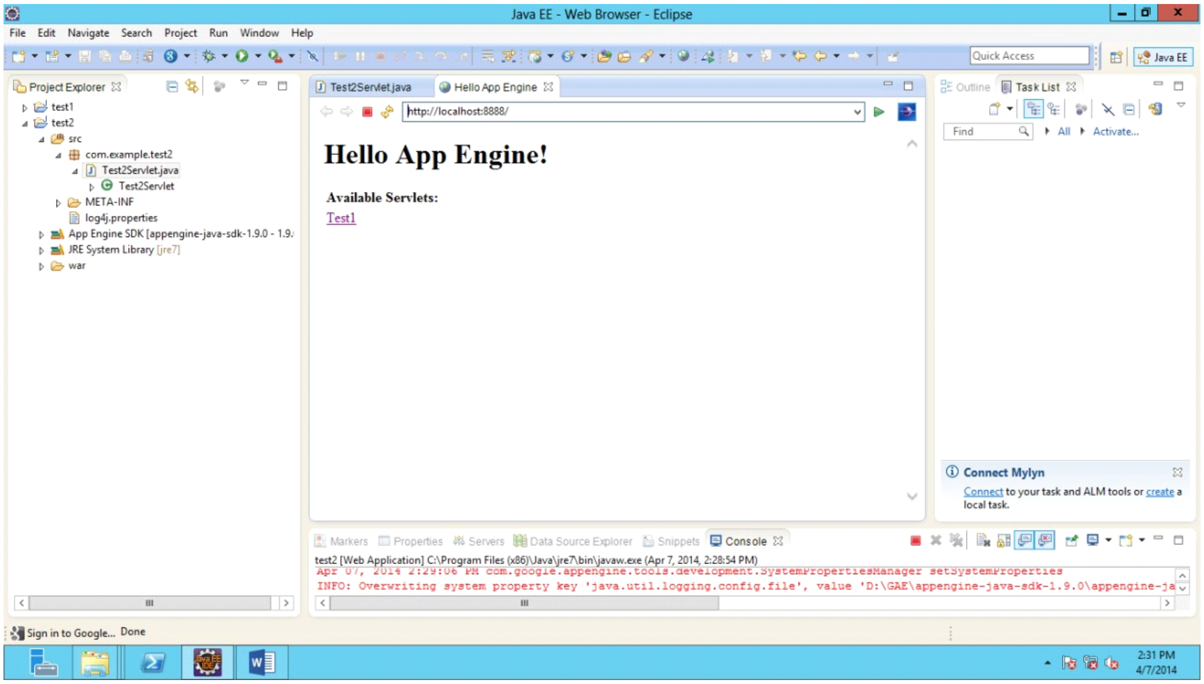
```
er (version 3.1.1) : Enhancement of classes
er completed with success for 0 classes. Timings : input=125 ms, enhance=0 ms, total=125 ms. Consult the
er completed and no classes were enhanced. Consult the log for full details
```



```java
package com.example.test2;

import java.io.IOException;

@SuppressWarnings("serial")
public class Test2Servlet extends HttpServlet {
    public void doGet(HttpServletRequest req, HttpServletResponse resp)
            throws IOException {
        resp.setContentType("text/plain");
        resp.getWriter().println("Hello, world");
    }
}
```

```
test2 [Web Application] C:\Program Files (x86)\Java\jre7\bin\javaw.exe (Apr 7, 2014, 2:28:54 PM)
Apr 07, 2014 2:29:06 PM com.google.appengine.tools.development.SystemPropertiesManager setSystemProperties
INFO: Overwriting system property key 'java.util.logging.config.file', value 'D:\GAE\appengine-java-sdk-1.9.0\appengine-ja
Apr 07, 2014 2:29:06 PM com.google.apphosting.utils.jetty.JettyLogger info
INFO: Logging to JettyLogger(null) via com.google.apphosting.utils.jetty.JettyLogger
Apr 07, 2014 9:29:06 PM com.google.apphosting.utils.jetty.JettyLogger info
INFO: jetty-6.1.x
Apr 07, 2014 9:29:07 PM com.google.apphosting.utils.jetty.JettyLogger info
INFO: Started SelectChannelConnector@127.0.0.1:8888
Apr 07, 2014 9:29:07 PM com.google.appengine.tools.development.AbstractModule startup
INFO: Module instance default is running at http://localhost:8888/
Apr 07, 2014 9:29:07 PM com.google.appengine.tools.development.AbstractModule startup
INFO: The admin console is running at http://localhost:8888/_ah/admin
Apr 07, 2014 2:29:07 PM com.google.appengine.tools.development.DevAppServerImpl doStart
INFO: Dev App Server is now running
```

Copy the url selected.



http://localhost:8888/

Hello App Engine!

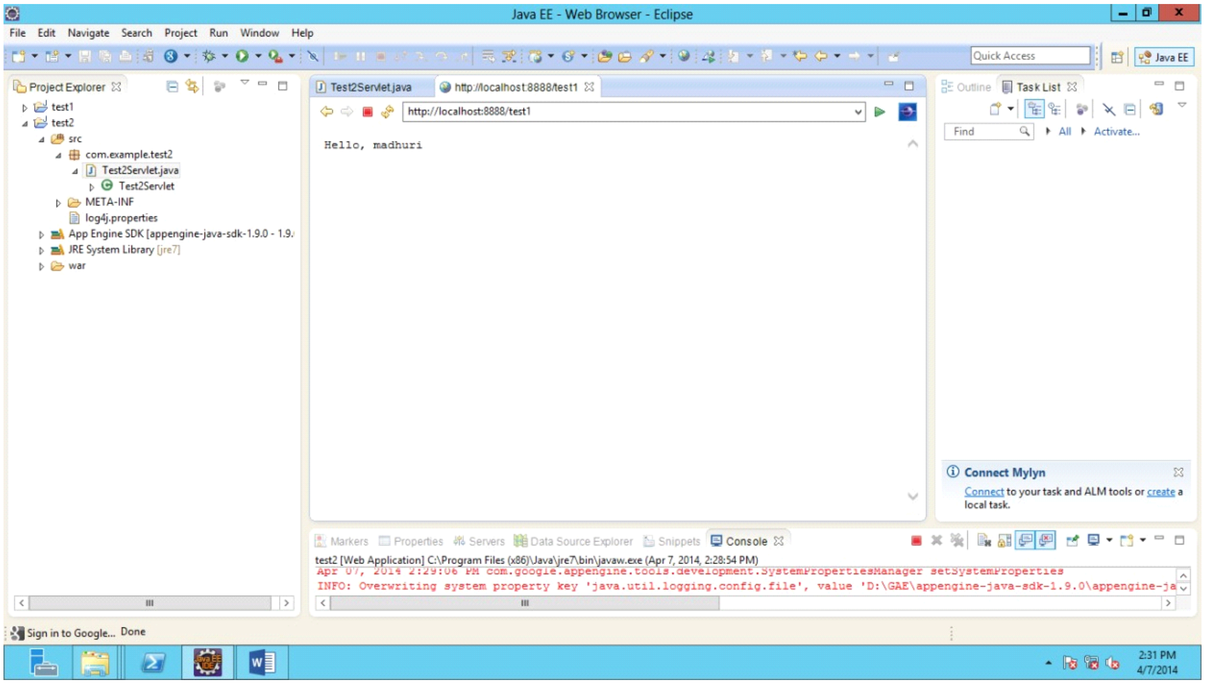
Available Servlets:

Test1

Connect to your task and ALM tools or create a local task.

```
test2 [Web Application] C:\Program Files (x86)\Java\jre7\bin\javaw.exe (Apr 7, 2014, 2:28:54 PM)
Apr 07, 2014 2:29:06 PM com.google.appengine.tools.development.SystemPropertiesManager setSystemProperties
INFO: Overwriting system property key 'java.util.logging.config.file', value 'D:\GAE\appengine-java-sdk-1.9.0\appengine-ja
```

Click on test 1



http://localhost:8888/test1

```
Hello, madhuri
```

Connect to your task and ALM tools or create a local task.

```
test2 [Web Application] C:\Program Files (x86)\Java\jre7\bin\javaw.exe (Apr 7, 2014, 2:28:54 PM)
Apr 07, 2014 2:29:06 PM com.google.appengine.tools.development.SystemPropertiesManager setSystemProperties
INFO: Overwriting system property key 'java.util.logging.config.file', value 'D:\GAE\appengine-java-sdk-1.9.0\appengine-ja
```