**Practical 2.2**

**Aim:**

Write RMI application where client will input two matrices from User and One Server will Multiply them and Second Server will add given matrices. Client will print results on its output screen. (Matrix can be initialized or taken from user).

**Program code:**

**RemoteInterface1.java**

**import** java**.**rmi**.\*;**

public interface RemoteInterface1 **extends** Remote

**{**

public int**[][]** add**(**int**[][]** x**,**int**[][]** y**)throws** Exception**;**

**}**

**ServerImplements1.java**

**import** java**.**rmi**.\*;**

**import** java**.**rmi**.**server**.\*;**

**import** java**.**lang**.**String**;**

public class ServerImplements1 **extends** UnicastRemoteObject **implements** RemoteInterface1 **{**

public ServerImplements1**()throws** Exception **{**

**super();**

**}**

public int**[][]** add**(**int**[][]** x**,**int**[][]** y**)** **{**

int**[][]** mat\_temp **=** **new** int**[**3**][];**

**for(**int i **=** 0**;** i**<**3**;** i**++){**

mat\_temp**[**i**]** **=** **new** int**[**3**];**

**for(**int j **=** 0**;** j**<**3**;** j**++){**

mat\_temp**[**i**][**j**]** **=** x**[**i**][**j**]** **+** y**[**i**][**j**];**

**}**

**}**

**return** mat\_temp**;**

**}**

**}**

**Server1.java**

**import** java**.**rmi**.\*;**

**import** java**.**net**.\*;**

public class Server1 **{**

public static void main**(**String args**[])** **{**

**try** **{**

ServerImplements1 s1**=new** ServerImplements1**();**

Naming**.**rebind**(**"SERVICE1"**,**s1**);**

System**.**out**.**println**(**"Server 1 Started "**);**

**}** **catch(**Exception e**){**

System**.**out**.**println**(**e**.**getMessage**());**

**}**

**}**

**}**

**RemoteInterface2.java**

**import** java**.**rmi**.\*;**

public interface RemoteInterface2 **extends** Remote

**{**

public int**[][]** mul**(**int**[][]** x**,**int**[][]** y**)throws** Exception**;**

**}**

**ServerImplements2.java**

**import** java**.**rmi**.\*;**

**import** java**.**rmi**.**server**.\*;**

**import** java**.**lang**.**String**;**

public class ServerImplements2 **extends** UnicastRemoteObject **implements** RemoteInterface2 **{**

public ServerImplements2**()throws** Exception **{**

**super();**

**}**

public int**[][]** mul**(**int**[][]** x**,**int**[][]** y**){**

int**[][]** mat\_temp **=** **new** int**[**3**][];**

**for(**int i **=** 0**;** i**<**3**;** i**++){**

mat\_temp**[**i**]** **=** **new** int**[**3**];**

**for(**int j **=** 0**;** j**<**3**;** j**++){**

mat\_temp**[**i**][**j**]** **=** 0**;**

**for(**int k **=** 0**;** k**<**3**;** k**++){**

mat\_temp**[**i**][**j**]** **+=** x**[**i**][**k**]** **\*** y**[**k**][**j**];**

**}**

**}**

**}**

**return** mat\_temp**;**

**}**

**}**

**Server2.java**

**import** java**.**rmi**.\*;**

**import** java**.**net**.\*;**

public class Server2 **{**

public static void main**(**String args**[])** **{**

**try** **{**

ServerImplements2 s2**=new** ServerImplements2**();**

Naming**.**rebind**(**"SERVICE2"**,**s2**);**

System**.**out**.**println**(**"Server 2 Started "**);**

**}** **catch(**Exception e**){**

System**.**out**.**println**(**e**.**getMessage**());**

**}**

**}**

**}**

**Client.java**

**import** java**.**rmi**.\*;**

**import** java**.**io**.\*;**

public class Client **{**

public static void main**(**String args**[])** **{**

int**[][]** matrice1 **=** **{{**1**,** 1**,** 1**},{**2**,** 2**,** 2**},{**3**,** 3**,** 3**}};**

int**[][]** matrice2 **=** **{{**3**,** 3**,** 3**},{**2**,** 2**,** 2**},{**1**,** 1**,** 1**}};**

int**[][]** matrice3 **=** **new** int**[**3**][];**

matrice3**[**0**]** **=** **new** int**[**3**];**

matrice3**[**1**]** **=** **new** int**[**3**];**

matrice3**[**2**]** **=** **new** int**[**3**];**

int**[][]** matrice4 **=** **new** int**[**3**][];**

matrice4**[**0**]** **=** **new** int**[**3**];**

matrice4**[**1**]** **=** **new** int**[**3**];**

matrice4**[**2**]** **=** **new** int**[**3**];**

**try** **{**

System**.**out**.**println**(**"Enroll no: 130050131067"**);**

String ip1**=**"rmi://localhost/SERVICE1"**;**

String ip2**=**"rmi://localhost/SERVICE2"**;**

RemoteInterface1 s1 **=** **(**RemoteInterface1**)**Naming**.**lookup**(**ip1**);**

RemoteInterface2 s2 **=** **(**RemoteInterface2**)**Naming**.**lookup**(**ip2**);**

System**.**out**.**println**(**"Matrice 1 is: "**);**

**for(**int i **=** 0**;** i**<**3**;** i**++){**

**for(**int j **=** 0**;** j**<**3**;** j**++){**

System**.**out**.**print**(**matrice1**[**i**][**j**]+**" "**);**

**}**

System**.**out**.**println**();**

**}**

System**.**out**.**println**(**"Matrice 2 is: "**);**

**for(**int i **=** 0**;** i**<**3**;** i**++){**

**for(**int j **=** 0**;** j**<**3**;** j**++){**

System**.**out**.**print**(**matrice2**[**i**][**j**]+**" "**);**

**}**

System**.**out**.**println**();**

**}**

matrice3 **=** s1**.**add**(**matrice1**,** matrice2**);**

System**.**out**.**println**(**"sum is: "**);**

**for(**int i **=** 0**;** i**<**3**;** i**++){**

**for(**int j **=** 0**;** j**<**3**;** j**++){**

System**.**out**.**print**(**matrice3**[**i**][**j**]+**" "**);**

**}**

System**.**out**.**println**();**

**}**

matrice4 **=** s2**.**mul**(**matrice1**,** matrice2**);**

System**.**out**.**println**(**"product is: "**);**

**for(**int i **=** 0**;** i**<**3**;** i**++){**

**for(**int j **=** 0**;** j**<**3**;** j**++){**

System**.**out**.**print**(**matrice4**[**i**][**j**]+**" "**);**

**}**

System**.**out**.**println**();**

**}**

**}** **catch(**Exception e**)** **{**

System**.**out**.**println**(**e**.**getMessage**());**

e**.**printStackTrace**();**

**}**

**}**

**}**

**Input Output:**

