

Assignment 2

Implement Remote Method Invocation (RMI) by checking if "**RMServer**" already exists on the registry.

```
// RMInterface.java
import java.rmi.Remote;
import java.rmi.RemoteException;

public interface RMInterface extends Remote {
    String sayHello() throws RemoteException;
}
```

```
//RMImplementation.java
import java.rmi.RemoteException;
import java.rmi.server.UnicastRemoteObject;

public class RMImplementation extends UnicastRemoteObject implements
RMInterface {
    public RMImplementation() throws RemoteException {
        super();
    }

    @Override
    public String sayHello() throws RemoteException {
        return "Hello from the remote server!";
    }
}
```

```
//RMServer.java
import java.rmi.registry.LocateRegistry;
import java.rmi.registry.Registry;

public class RMServer {
    public static void main(String[] args) {
        try {
            RMImplementation rmImplementation = new RMImplementation();
            Registry registry = LocateRegistry.createRegistry(1099);
```

```
// Bind the remote object to the registry
registry.rebind("RMServer", rmImplementation);

System.out.println("RMServer is ready to accept requests.");
} catch (Exception e) {
System.err.println("RMServer exception: " + e.toString());
e.printStackTrace();
}
}
}
```

```
//RMClient.java
import java.rmi.registry.LocateRegistry;
import java.rmi.registry.Registry;

public class RMClient {
public static void main(String[] args) {
try {
Registry registry = LocateRegistry.getRegistry("localhost", 1099);

// Look up the remote object from the registry
RMInterface rmInterface = (RMInterface) registry.lookup("RMServer");

String result = rmInterface.sayHello();
System.out.println("Response from server: " + result);
} catch (Exception e) {
System.err.println("RMClient exception: " + e.toString());
e.printStackTrace();
}
}
}
```

Output

➔ a2 java RMServer.java
RMServer is ready to accept requests.

➔ a2 java RMClient

Response from server: Hello from the remote server!

```
Q rmiregistry ~/Downloads/a2
java RMServer rmiregistry x kbdharunkrishna@kjdk-fedora:~/Downloads/a2
➔ a2 java RMClient
Response from server: Hello from the remote server!
➔ a2 start rmiregistry
zsh: start: command not found...
➔ a2
➔ a2 rmiregistry
WARNING: A terminally deprecated method in java.lang.System has been called
WARNING: System::setSecurityManager has been called by sun.rmi.registry.RegistryImpl
WARNING: Please consider reporting this to the maintainers of sun.rmi.registry.RegistryImpl
WARNING: System::setSecurityManager will be removed in a future release
```

```
Q java RMServer ~/Downloads/a2
java RMServer x rmiregistry kbdharunkrishna@kjdk-fedora:~/Downloads/a2
➔ a2 java RMServer
RMServer exception: java.rmi.server.ExportException: Port already in use: 1099; nested exception is:
  java.net.BindException: Address already in use
java.rmi.server.ExportException: Port already in use: 1099; nested exception is:
  java.net.BindException: Address already in use
at java.rmi/sun.rmi.transport.tcp.TCPEndpoint.listen(TCPEndpoint.java:346)
at java.rmi/sun.rmi.transport.tcp.TCPEndpoint.exportObject(TCPEndpoint.java:243)
at java.rmi/sun.rmi.transport.tcp.TCPEndpoint.exportObject(TCPEndpoint.java:415)
at java.rmi/sun.rmi.transport.LiveRef.exportObject(LiveRef.java:147)
at java.rmi/sun.rmi.server.UnicastServerRef.exportObject(UnicastServerRef.java:235)
at java.rmi/sun.rmi.registry.RegistryImpl.setup(RegistryImpl.java:223)
at java.rmi/sun.rmi.registry.RegistryImpl.<init>(RegistryImpl.java:208)
at java.rmi/java.rmi.registry.LocateRegistry.createRegistry(LocateRegistry.java:203)
at RMServer.main(RMServer.java:8)
Caused by: java.net.BindException: Address already in use
at java.base/sun.nio.ch.Net.bind0(Native Method)
at java.base/sun.nio.ch.Net.bind(Net.java:555)
at java.base/sun.nio.ch.Net.bind(Net.java:544)
at java.base/sun.nio.ch.NioSocketImpl.bind(NioSocketImpl.java:643)
at java.base/java.net.ServerSocket.bind(ServerSocket.java:388)
at java.base/java.net.ServerSocket.<init>(ServerSocket.java:274)
at java.base/java.net.ServerSocket.<init>(ServerSocket.java:167)
at java.rmi/sun.rmi.transport.tcp.TCPDirectSocketFactory.createServerSocket(TCPDirectSocketFactory.java:45)
at java.rmi/sun.rmi.transport.tcp.TCPEndpoint.newServerSocket(TCPEndpoint.java:673)
at java.rmi/sun.rmi.transport.tcp.TCPEndpoint.listen(TCPEndpoint.java:335)
... 8 more
```