Question 3

Write a RMI program to convert temperature to Fahrenheit and vice versa.

TemperatureConverter.java:

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

public interface TemperatureConverter extends Remote {
    double celsiusToFahrenheit(double celsius) throws RemoteException;

    double fahrenheitToCelsius(double fahrenheit) throws RemoteException;
}
```

TemperatureConverterImpl.java:

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

public class TemperatureConverterImpl extends UnicastRemoteObject implements TemperatureConverter {

    protected TemperatureConverterImpl() throws RemoteException {
        super();
    }

    public double celsiusToFahrenheit(double celsius) {
        return (celsius * 9 / 5) + 32;
    }

    public double fahrenheitToCelsius(double fahrenheit) {
        return (fahrenheit - 32) * 5 / 9;
    }
}
```

Server.java:

```
import java.rmi.Naming;
import java.rmi.registry.LocateRegistry;

public class Server {
    public static void main(String args[]) {
        try {
            TemperatureConverter converter = new TemperatureConverterImpl();

            //Create and start the RMI registry on port 1099
            LocateRegistry.createRegistry(1099);

            //Bind the remote object's stub in the registry
            Naming.rebind("TemperatureConverterService", converter);
            System.out.println("Server started");
        } catch (Exception e) {
```

```
            System.err.println("Server exception: " + e.toString());
            e.printStackTrace();
        }
    }
}
```

Client.java:

```
import java.rmi.Naming;
import java.util.Scanner;

public class Client {
    public static void main(String args[]) {
        try {
            Scanner scanner = new Scanner(System.in);
            System.out.print("Enter temperature in Celsius: ");
            double celsius = scanner.nextDouble();

            TemperatureConverter converter = (TemperatureConverter) Naming.lookup("rmi://localhost/TemperatureConverterService");

            double fahrenheit = converter.celsiusToFahrenheit(celsius);

            System.out.println(celsius + " degree Celsius is equal to " + fahrenheit + " degrees Fahrenheit.");

            System.out.print("Enter temperature in Fahrenheit: ");
            double fahrenheitInput = scanner.nextDouble();

            double newCelsius = converter.fahrenheitToCelsius(fahrenheitInput);

            System.out.println(fahrenheitInput + " degrees Fahrenheit is equal to " + newCelsius + " degrees Celsius.");
        }
        catch (Exception e) {
            System.err.println("Client exception: " + e.toString());
            e.printStackTrace();
        }
    }
}
```

Output:

Compile all the files, then:

1. **Run *Server* file first:**

```
Server started
```

2. **Then, open a new tab in the same path where your java files are, then run *Client* file:**

```
Enter temperature in Celsius: 10
10.0 degree Celsius is equal to 50.0 degrees Fahrenheit.
Enter temperature in Fahrenheit: 50
50.0 degrees Fahrenheit is equal to 10.0 degrees Celsius.
```
