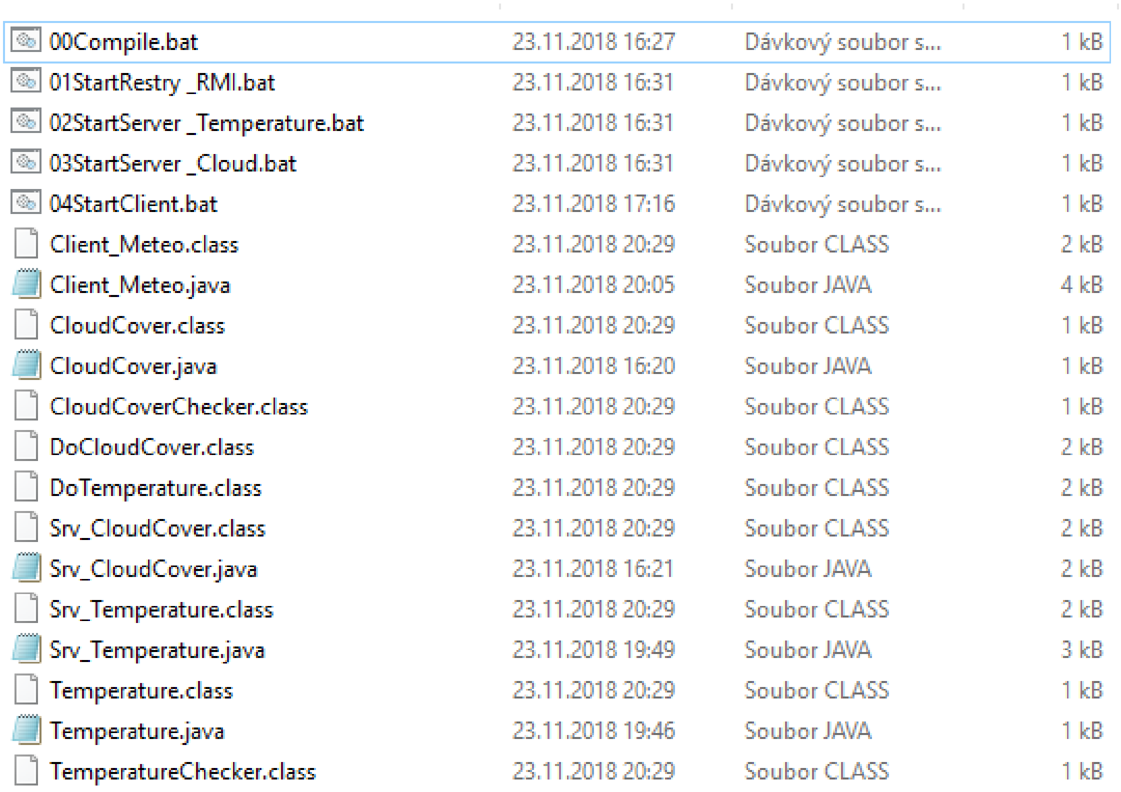
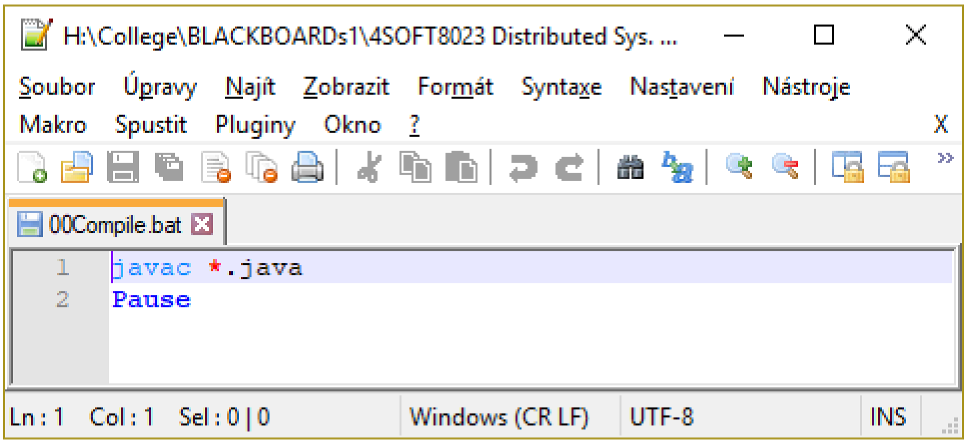
# Assignment 2 part 2

## Start-up



| | | | |
|---|---|---|---|
| 00Compile.bat | 23.11.2018 16:27 | Dávkový soubor s... | 1 kB |
| 01StartRestry _RMI.bat | 23.11.2018 16:31 | Dávkový soubor s... | 1 kB |
| 02StartServer _Temperature.bat | 23.11.2018 16:31 | Dávkový soubor s... | 1 kB |
| 03StartServer _Cloud.bat | 23.11.2018 16:31 | Dávkový soubor s... | 1 kB |
| 04StartClient.bat | 23.11.2018 17:16 | Dávkový soubor s... | 1 kB |
| Client_Meteo.class | 23.11.2018 20:29 | Soubor CLASS | 2 kB |
| Client_Meteo.java | 23.11.2018 20:05 | Soubor JAVA | 4 kB |
| CloudCover.class | 23.11.2018 20:29 | Soubor CLASS | 1 kB |
| CloudCover.java | 23.11.2018 16:20 | Soubor JAVA | 1 kB |
| CloudCoverChecker.class | 23.11.2018 20:29 | Soubor CLASS | 1 kB |
| DoCloudCover.class | 23.11.2018 20:29 | Soubor CLASS | 2 kB |
| DoTemperature.class | 23.11.2018 20:29 | Soubor CLASS | 2 kB |
| Srv_CloudCover.class | 23.11.2018 20:29 | Soubor CLASS | 2 kB |
| Srv_CloudCover.java | 23.11.2018 16:21 | Soubor JAVA | 2 kB |
| Srv_Temperature.class | 23.11.2018 20:29 | Soubor CLASS | 2 kB |
| Srv_Temperature.java | 23.11.2018 19:49 | Soubor JAVA | 3 kB |
| Temperature.class | 23.11.2018 20:29 | Soubor CLASS | 1 kB |
| Temperature.java | 23.11.2018 19:46 | Soubor JAVA | 1 kB |
| TemperatureChecker.class | 23.11.2018 20:29 | Soubor CLASS | 1 kB |

The first 00Compile.bat compiles all java files and pause.


H:\College\BLACKBOARDs1\4SOFT8023 Distributed Sys. ...
Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení Nástroje
Makro Spustit Pluginy Okno ?
00Compile.bat

```
javac *.java
Pause
```

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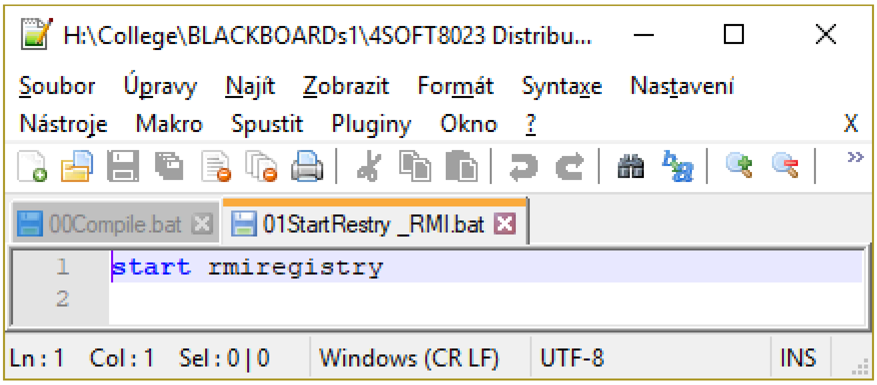
01StartRegistry_RMI.bat launch the RMI registry



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Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení
Nástroje Makro Spustit Pluginy Okno ?
00Compile.bat
01StartRestry _RMI.bat
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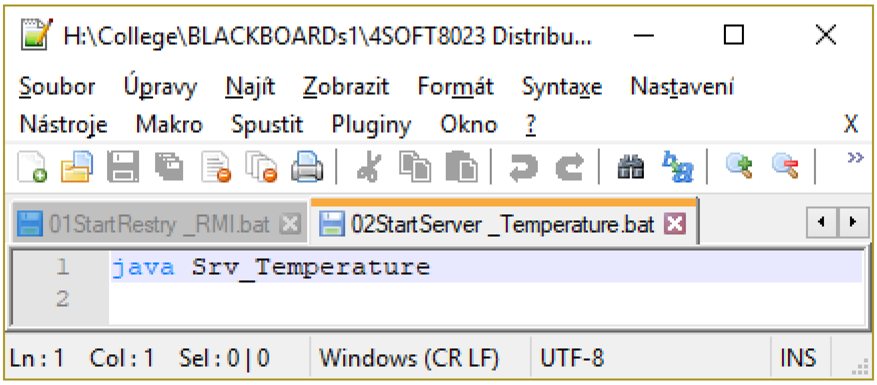
```
start rmiregistry
```

We are starting both servers by executing file 2 and 3.



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Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení
Nástroje Makro Spustit Pluginy Okno ?
01StartRestry _RMI.bat
02StartServer _Temperature.bat
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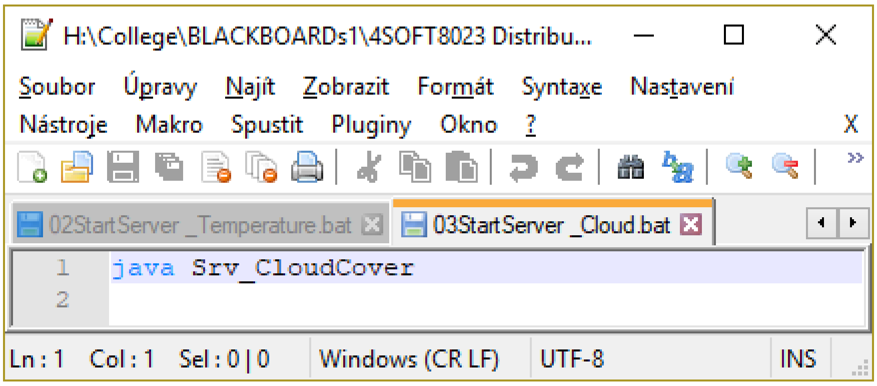
```
java Srv_Temperature
```



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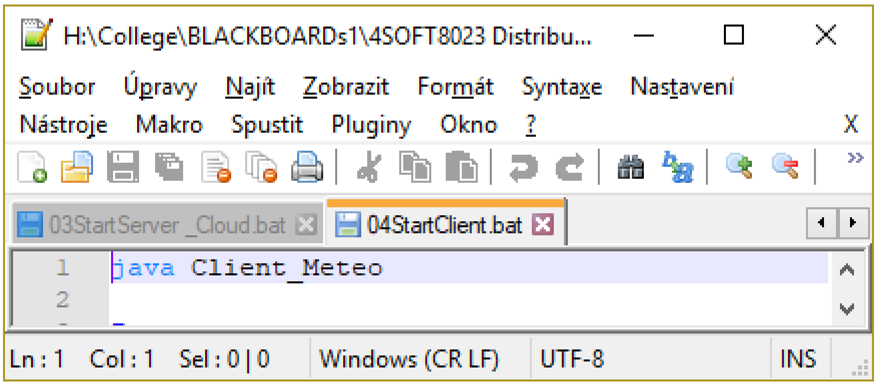
Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení
Nástroje Makro Spustit Pluginy Okno ?
02StartServer _Temperature.bat
03StartServer _Cloud.bat
Ln : 1 Col : 1 Sel : 0 | 0 Windows (CR LF) UTF-8 INS

```
java Srv_CloudCover
```

Finally, the client, file 4.



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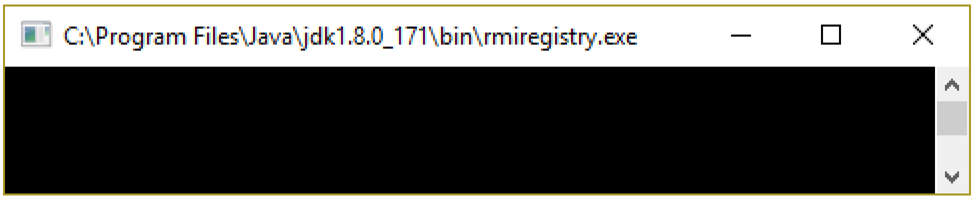
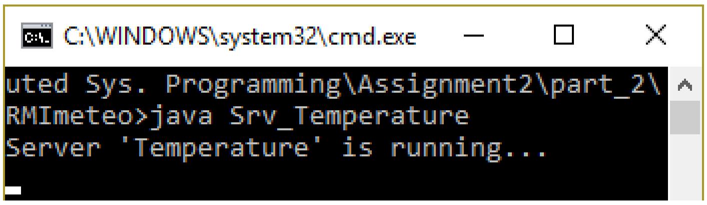
Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení
Nástroje Makro Spustit Pluginy Okno ?
03StartServer _Cloud.bat
04StartClient.bat
Ln : 1 Col : 1 Sel : 0 | 0 Windows (CR LF) UTF-8 INS

```
java Client_Meteo
```

Registry running

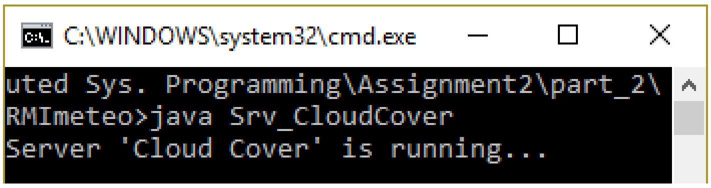


Server Temperature with humidity running.



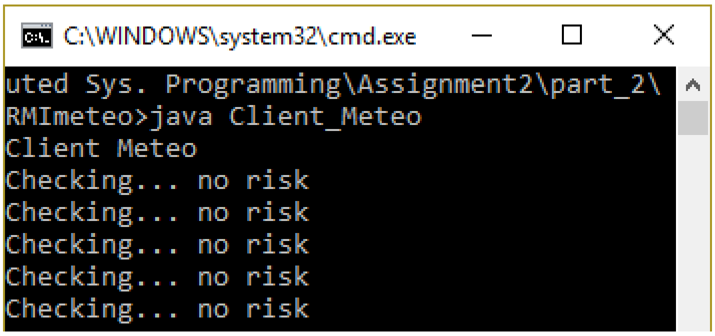
```
uted Sys. Programming\Assignment2\part_2\
RMImeteo>java Srv_Temperature
Server 'Temperature' is running...
```

Server Cloud Coverage running.



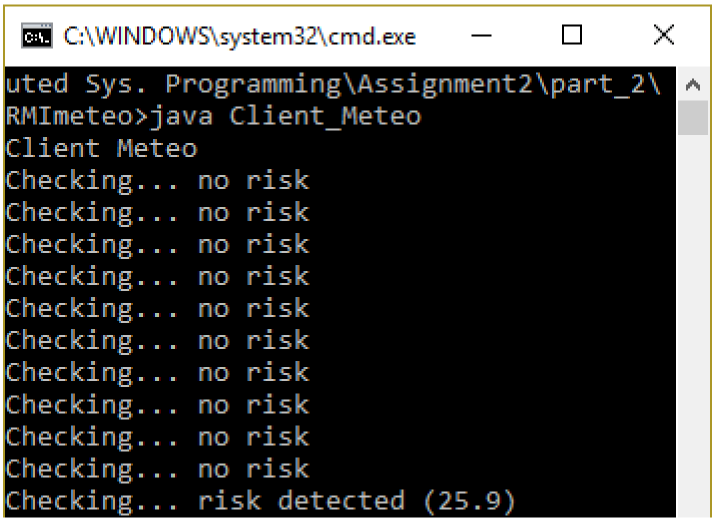
```
uted Sys. Programming\Assignment2\part_2\
RMImeteo>java Srv_CloudCover
Server 'Cloud Cover' is running...
```

Client Running



```
uted Sys. Programming\Assignment2\part_2\
RMImeteo>java Client_Meteo
Client Meteo
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
```

The risk is detected when the result from both servers
(Celcius) x (100 - Humidity %) x (100 - Cloud Cover %) is greater than 20 °C.



```
uted Sys. Programming\Assignment2\part_2\
RMImeteo>java Client_Meteo
Client Meteo
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... no risk
Checking... risk detected (25.9)
```

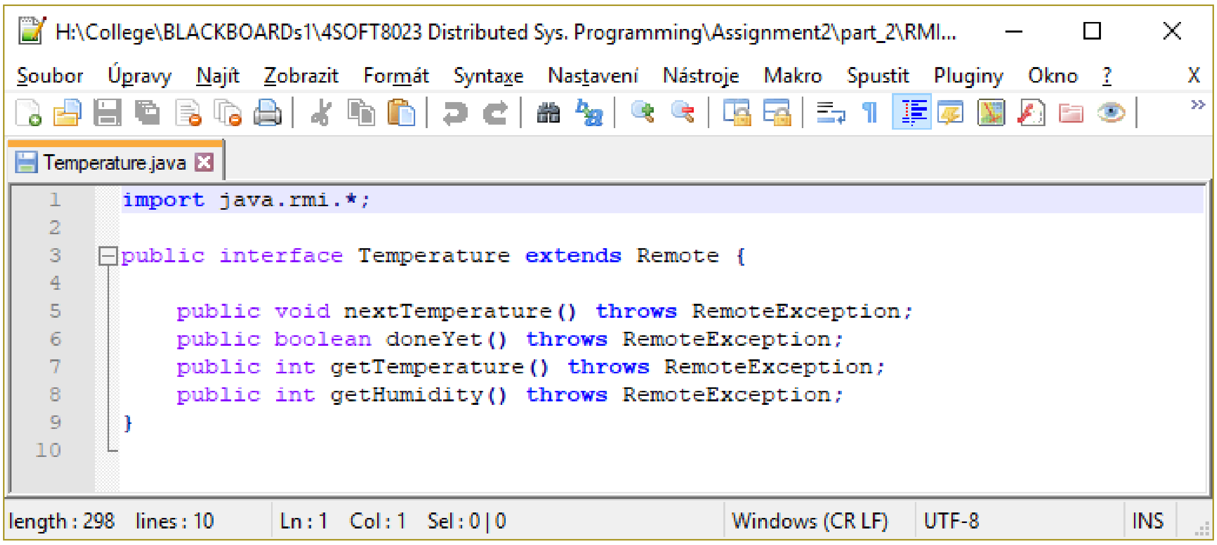
## Question

*There is arguably a slightly better way of implementing this type of program instead of using polling. What is it and briefly explain, in about 2 sentences, what the approach entails and why it might be an improvement?*

The better way would is Callback. The server can notify the client, when the result is ready, which is better then make the client asking every 100ms the result.

# Appendix

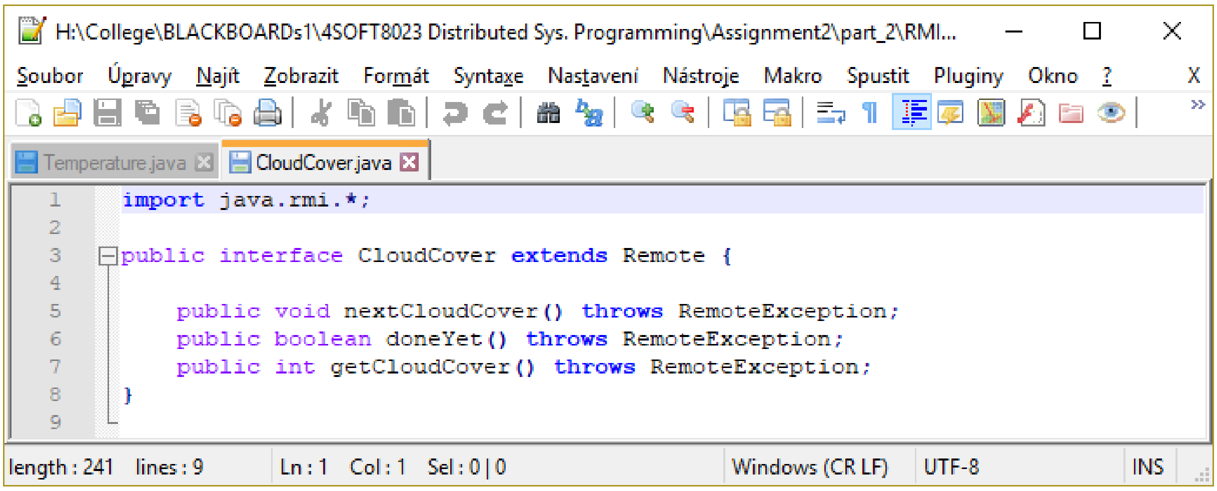
## Temperature Interface



H:\College\BLACKBOARDs1\4SOFT8023 Distributed Sys. Programming\Assignment2\part_2\RMI...
Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení Nástroje Makro Spustit Pluginy Okno ?
Temperature.java
length : 298 lines : 10 Ln : 1 Col : 1 Sel : 0 | 0 Windows (CR LF) UTF-8 INS

```java
import java.rmi.*;

public interface Temperature extends Remote {

    public void nextTemperature() throws RemoteException;
    public boolean doneYet() throws RemoteException;
    public int getTemperature() throws RemoteException;
    public int getHumidity() throws RemoteException;
}

```

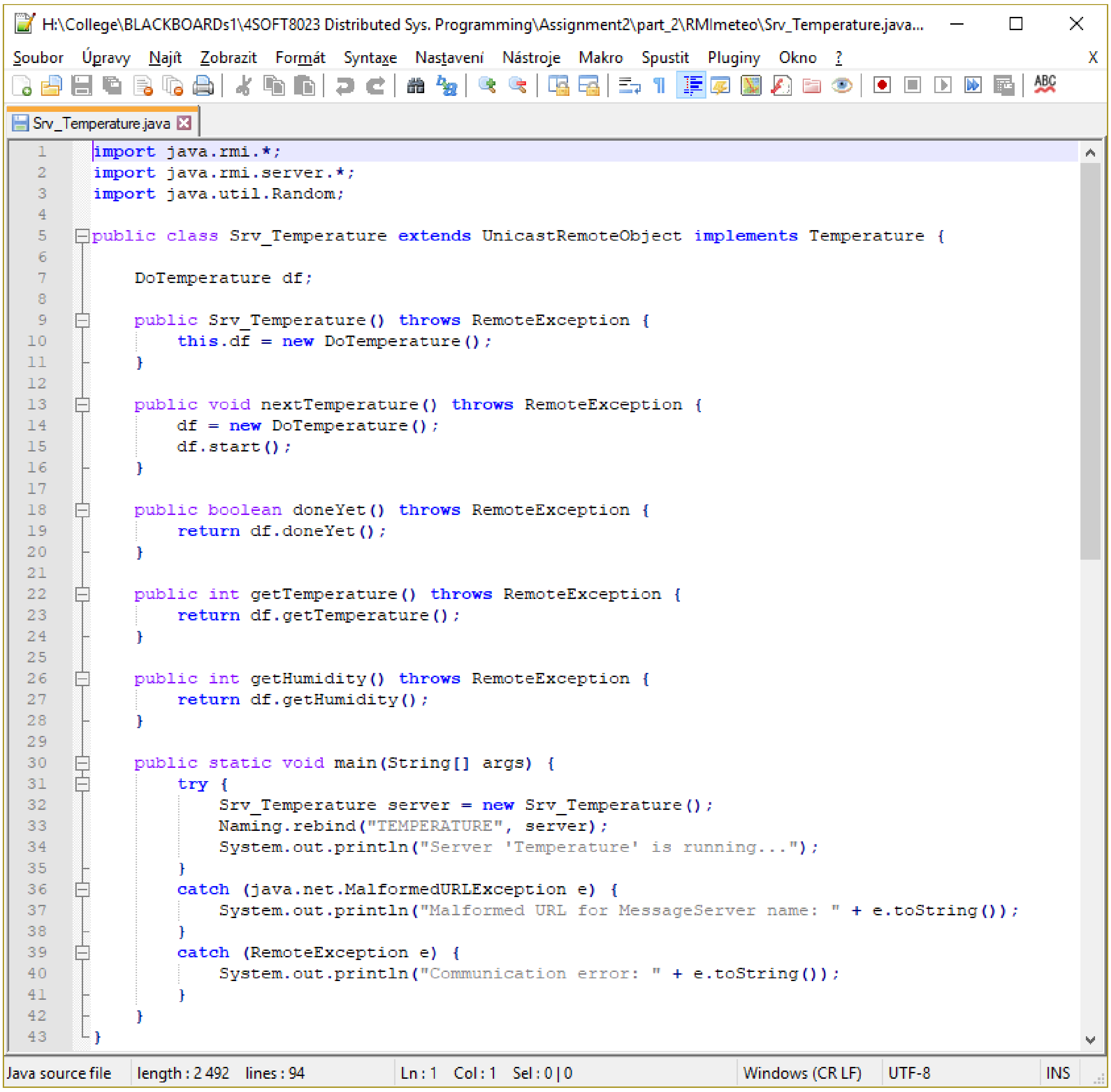
## CloudCover interface



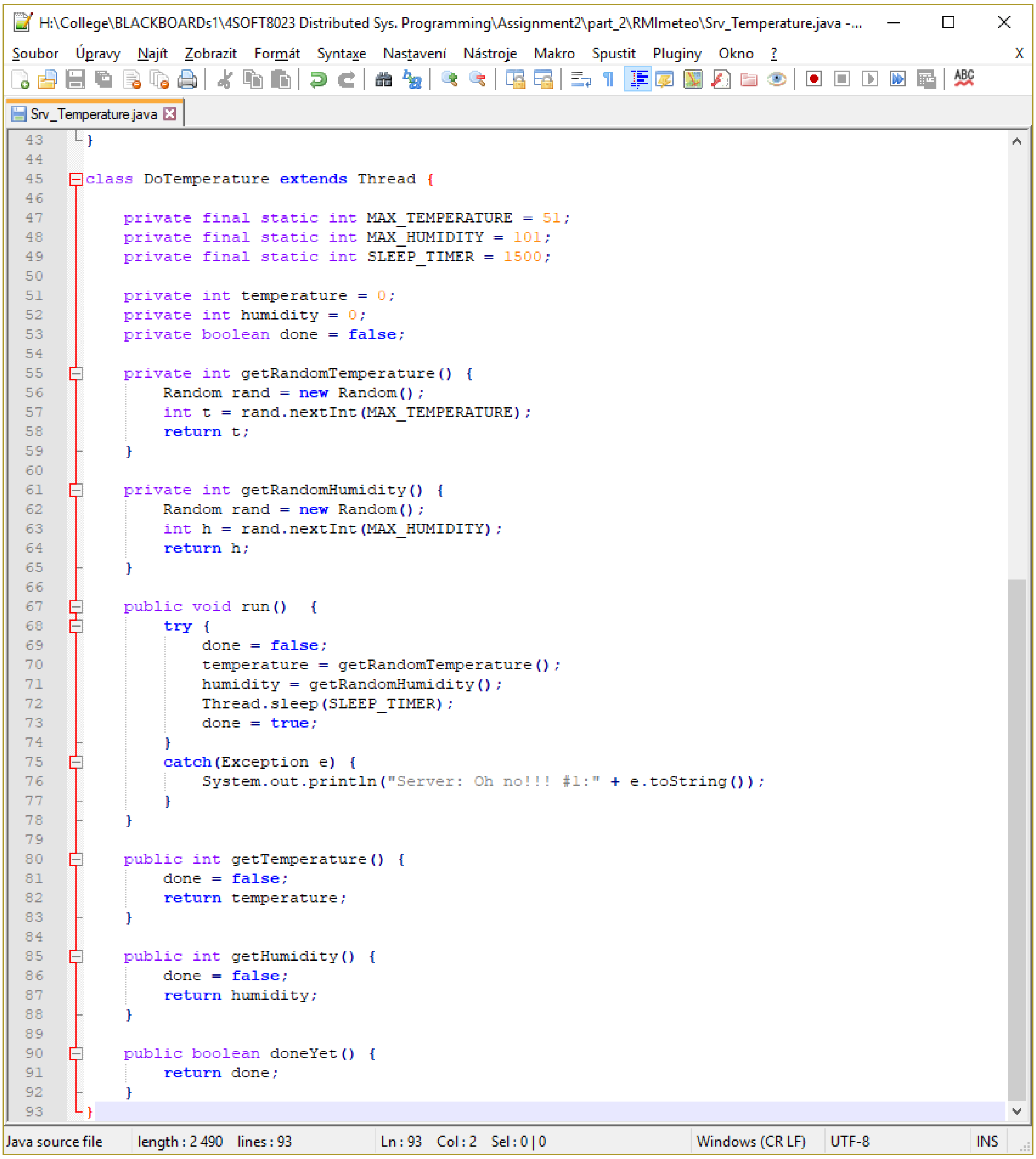
H:\College\BLACKBOARDs1\4SOFT8023 Distributed Sys. Programming\Assignment2\part_2\RMI...
Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení Nástroje Makro Spustit Pluginy Okno ?
Temperature.java
CloudCover.java
length : 241 lines : 9 Ln : 1 Col : 1 Sel : 0 | 0 Windows (CR LF) UTF-8 INS

```java
import java.rmi.*;

public interface CloudCover extends Remote {

    public void nextCloudCover() throws RemoteException;
    public boolean doneYet() throws RemoteException;
    public int getCloudCover() throws RemoteException;
}

```

Server Dealing with temperature and humidity

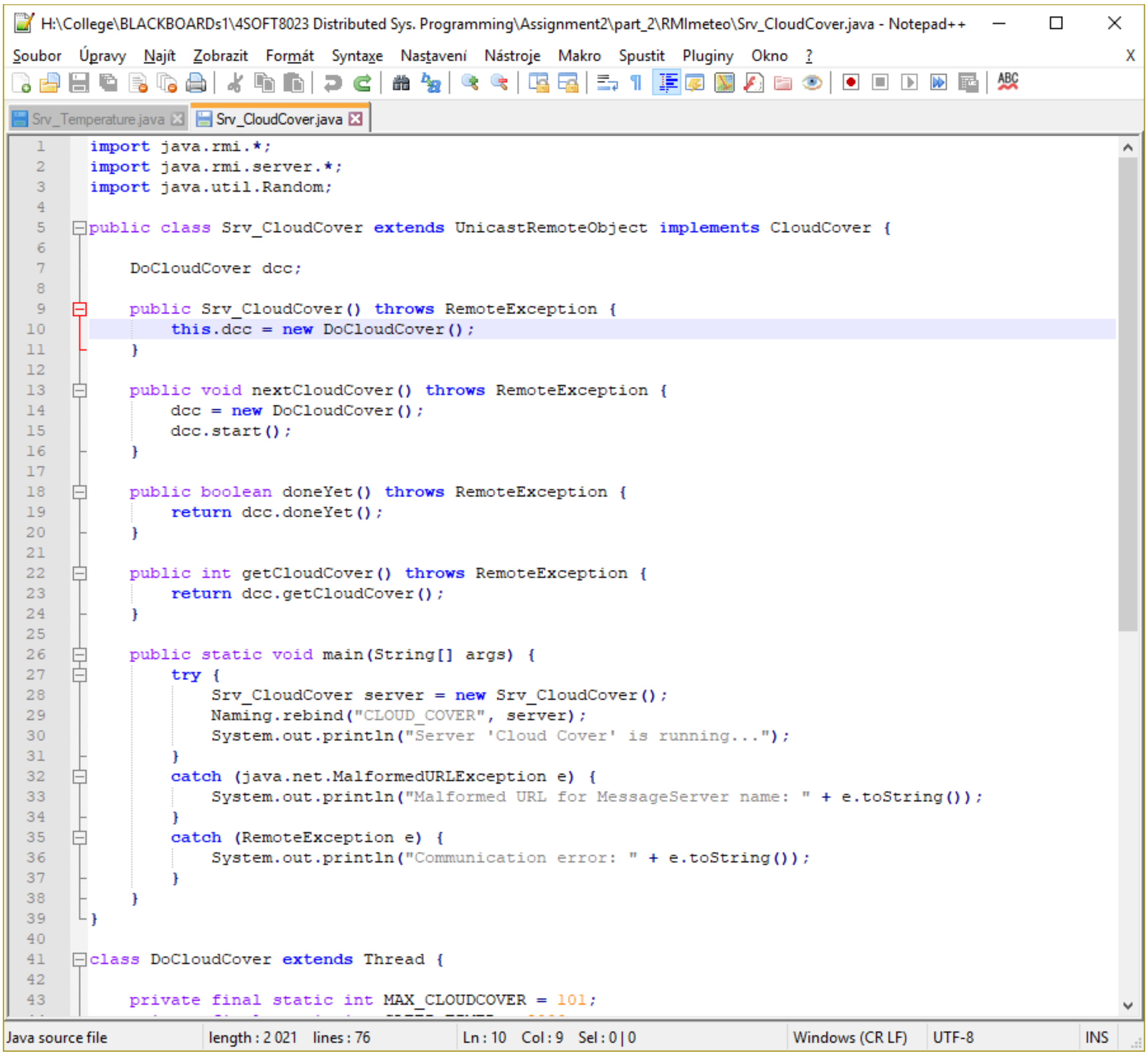

H:\College\BLACKBOARDs1\4SOFT8023 Distributed Sys. Programming\Assignment2\part_2\RMImeteo\Srv_Temperature.java...
Soubor
Úpravy
Najít
Zobrazit
Formát
Syntaxe
Nastavení
Nástroje
Makro
Spustit
Pluginy
Okno
?
X
Srv_Temperature.java

```java
import java.rmi.*;
import java.rmi.server.*;
import java.util.Random;

public class Srv_Temperature extends UnicastRemoteObject implements Temperature {

    DoTemperature df;

    public Srv_Temperature() throws RemoteException {
        this.df = new DoTemperature();
    }

    public void nextTemperature() throws RemoteException {
        df = new DoTemperature();
        df.start();
    }

    public boolean doneYet() throws RemoteException {
        return df.doneYet();
    }

    public int getTemperature() throws RemoteException {
        return df.getTemperature();
    }

    public int getHumidity() throws RemoteException {
        return df.getHumidity();
    }

    public static void main(String[] args) {
        try {
            Srv_Temperature server = new Srv_Temperature();
            Naming.rebind("TEMPERATURE", server);
            System.out.println("Server 'Temperature' is running...");
        }
        catch (java.net.MalformedURLException e) {
            System.out.println("Malformed URL for MessageServer name: " + e.toString());
        }
        catch (RemoteException e) {
            System.out.println("Communication error: " + e.toString());
        }
    }
}
```

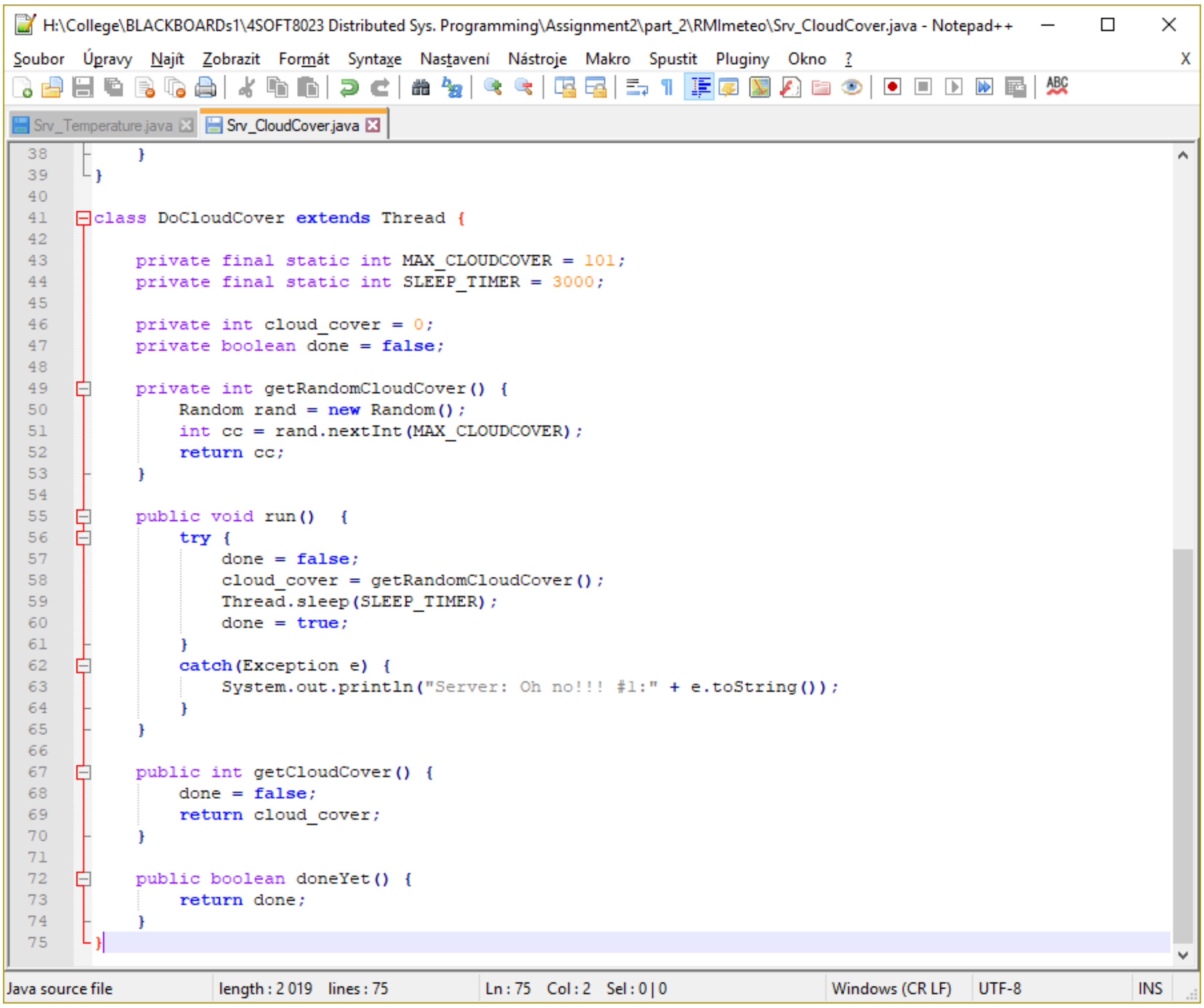

H:\College\BLACKBOARDs1\4SOFT8023 Distributed Sys. Programming\Assignment2\part_2\RMImeteo\Srv_Temperature.java -...
Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení Nástroje Makro Spustit Pluginy Okno ?
Srv_Temperature.java
Java source file length : 2 490 lines : 93 Ln : 93 Col : 2 Sel : 0 | 0 Windows (CR LF) UTF-8 INS

```java
}

class DoTemperature extends Thread {

    private final static int MAX_TEMPERATURE = 51;
    private final static int MAX_HUMIDITY = 101;
    private final static int SLEEP_TIMER = 1500;

    private int temperature = 0;
    private int humidity = 0;
    private boolean done = false;

    private int getRandomTemperature() {
        Random rand = new Random();
        int t = rand.nextInt(MAX_TEMPERATURE);
        return t;
    }

    private int getRandomHumidity() {
        Random rand = new Random();
        int h = rand.nextInt(MAX_HUMIDITY);
        return h;
    }

    public void run()  {
        try {
            done = false;
            temperature = getRandomTemperature();
            humidity = getRandomHumidity();
            Thread.sleep(SLEEP_TIMER);
            done = true;
        }
        catch(Exception e) {
            System.out.println("Server: Oh no!!! #1:" + e.toString());
        }
    }

    public int getTemperature() {
        done = false;
        return temperature;
    }

    public int getHumidity() {
        done = false;
        return humidity;
    }

    public boolean doneYet() {
        return done;
    }
}
```

The server which dealing with cloud coverage



```java
import java.rmi.*;
import java.rmi.server.*;
import java.util.Random;

public class Srv_CloudCover extends UnicastRemoteObject implements CloudCover {

    DoCloudCover dcc;

    public Srv_CloudCover() throws RemoteException {
        this.dcc = new DoCloudCover();
    }

    public void nextCloudCover() throws RemoteException {
        dcc = new DoCloudCover();
        dcc.start();
    }

    public boolean doneYet() throws RemoteException {
        return dcc.doneYet();
    }

    public int getCloudCover() throws RemoteException {
        return dcc.getCloudCover();
    }

    public static void main(String[] args) {
        try {
            Srv_CloudCover server = new Srv_CloudCover();
            Naming.rebind("CLOUD_COVER", server);
            System.out.println("Server 'Cloud Cover' is running...");
        }
        catch (java.net.MalformedURLException e) {
            System.out.println("Malformed URL for MessageServer name: " + e.toString());
        }
        catch (RemoteException e) {
            System.out.println("Communication error: " + e.toString());
        }
    }
}

class DoCloudCover extends Thread {

    private final static int MAX_CLOUDCOVER = 101;
```



H:\College\BLACKBOARDs1\4SOFT8023 Distributed Sys. Programming\Assignment2\part_2\RMImeteo\Srv_CloudCover.java - Notepad++
Soubor Úpravy Najít Zobrazit Formát Syntaxe Nastavení Nástroje Makro Spustit Pluginy Okno ?
Srv_Temperature.java
Srv_CloudCover.java
Java source file
length : 2 019 lines : 75
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Windows (CR LF)
UTF-8
INS

```java
    }
}

class DoCloudCover extends Thread {

    private final static int MAX_CLOUDCOVER = 101;
    private final static int SLEEP_TIMER = 3000;

    private int cloud_cover = 0;
    private boolean done = false;

    private int getRandomCloudCover() {
        Random rand = new Random();
        int cc = rand.nextInt(MAX_CLOUDCOVER);
        return cc;
    }

    public void run()  {
        try {
            done = false;
            cloud_cover = getRandomCloudCover();
            Thread.sleep(SLEEP_TIMER);
            done = true;
        }
        catch(Exception e) {
            System.out.println("Server: Oh no!!! #1:" + e.toString());
        }
    }

    public int getCloudCover() {
        done = false;
        return cloud_cover;
    }

    public boolean doneYet() {
        return done;
    }
}
```