CS602 – Spring 2022

Homework 6

Due date: Sunday, April 10, 2022, 11:59pm

Instructions:

- For each day of late submission, 10 points will be deducted.
- After two days, no more submission is allowed.
- You must submit through Canvas.
- Keep this file intact, copy your solution codes from your IDE and paste at the bottom of the file under 'Answer'. Submit this word document with your codes. Do not change the format of the file to pdf or .rar or anything else.

Reminder: **Academic Integrity** policy is strictly implemented on all your submissions.

Learning Objectives:

- Differentiate between connection oriented and connectionless programming in Java

Write a multicasting java program where a single message (a string like "Hello! Multicasting.") is broadcast to a multicast group. Your program should receive it and print it. Also get the following:

1) Get the IP address of the multicast group and print it.
2) Get the port number and print it.
3) Get the length of the message sent and print it.

Remember that you are sending message to a multicast group. The receiver should be started first and be ready to receive message. Then run the sender.

Name your classes as: MulticastReceiver and MulticastSender.

Answer:

<paste code here for MulticastReceiver.java>

```
package multicast;

import java.io.*;
import java.net.*;

public class MulticastReceiver {

public static final String IP_ADDRESS = "228.5.6.7";
public static final int PORT_NUMBER = 1200;
MulticastSocket socket;
DatagramPacket packet;
InetAddress address;
```

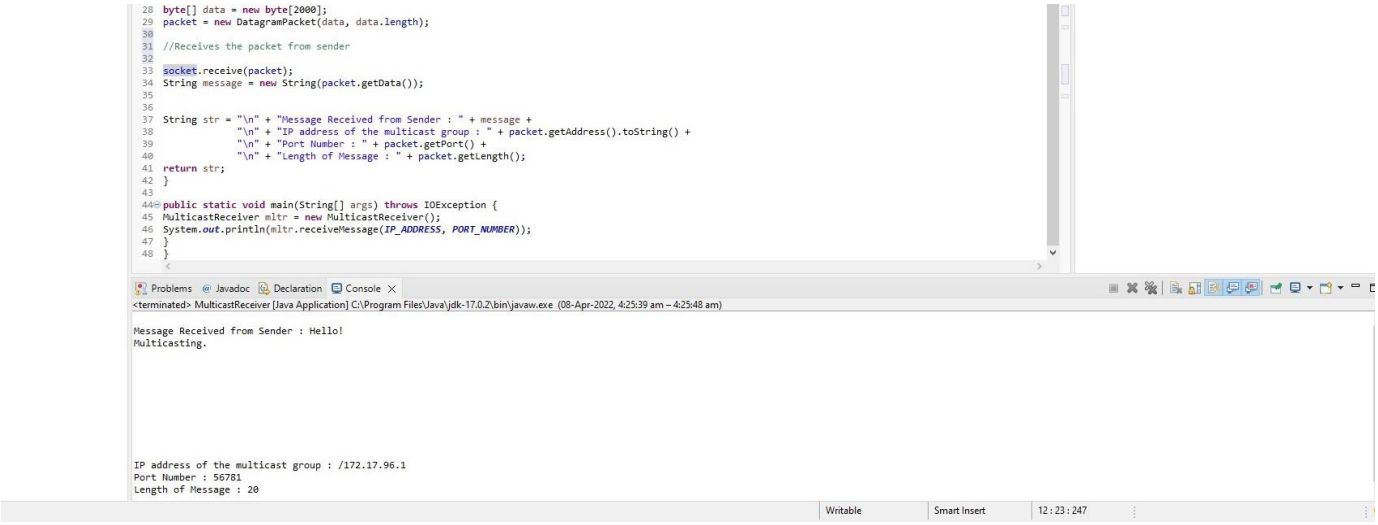
```
private String receiveMessage(String ip, int port) throws IOException
{
address = InetAddress.getByName(IP_ADDRESS);
socket = new MulticastSocket(port);

NetworkInterface netIf = NetworkInterface.getByName("bge0");
InetSocketAddress group = new InetSocketAddress(address, PORT_NUMBER);

//join a Multicast group

socket.joinGroup(group, netIf);

byte[] data = new byte[2000];
packet = new DatagramPacket(data, data.length);

//Receives the packet from sender

socket.receive(packet);
String message = new String(packet.getData());


String str = "\n" + "Message Received from Sender : " + message +
"\n" + "IP address of the multicast group : " + packet.getAddress().toString()
+
"\n" + "Port Number : " + packet.getPort() +
"\n" + "Length of Message : " + packet.getLength();
return str;
}

public static void main(String[] args) throws IOException {
MulticastReceiver mltr = new MulticastReceiver();
System.out.println(mltr.receiveMessage(IP_ADDRESS, PORT_NUMBER));
}
}
```

<paste code here for MulticastSender.java>

```
package multicast;

import java.io.*;
import java.net.*;

public class MulticastSender {

public static final String IP_ADDRESS = "228.5.6.7";
public static final int PORT_NUMBER = 1200;
MulticastSocket socket;
DatagramPacket packet;
InetAddress address;


public void sendMessage(String ip, int port, String message) throws
```

```
IOException {

address = InetAddress.getByName(IP_ADDRESS);
socket = new MulticastSocket();

NetworkInterface netIf = NetworkInterface.getByName("bge0");
InetSocketAddress group = new InetSocketAddress(address, PORT_NUMBER);

//join a Multicast group

socket.joinGroup(group, netIf);


byte[] byteBuffer=message.getBytes();

packet = new DatagramPacket(byteBuffer, message.length(), address,port);

//Sends the packet

socket.send(packet);
}


public static void main(String[] args) throws IOException {
MulticastSender mlts=new MulticastSender();
mlts.sendMessage(IP_ADDRESS, PORT_NUMBER, "Hello! Multicasting.");
}
}
```

Screenshot of output:



Submitted By: Parth Panara
Guided By: Pro. Raihan Siddique
Reference: CS602 Class notes of Multicasting by Pro. Raihan Siddique