



Faculty of Information Technology

Final Exam, 2020/2021(2)

Course (Code) Name: COSC 313 TCP/IP Programming

Instructor: NIZEYIMANA PIERRE CELESTIN

Exam Duration: 1 h30

Group:

Date: xx/01/2022

INSTRUCTIONS:

- This paper comprises 7 questions
- Attempt all questions

TCP/IP Programming Theory / 40 marks

Question 1/ 5 marks

If “dis” and “dout” are respectively the “DataInputStream” and the “DataOutputStream” of a “Chat Server”, explain what is wrong with line 6 in the codes below:

```
while(true) {  
String str1 = dis.readUTF();  
System.out.println ("Client says:" + str1);  
System.out.println ("Type a response to the client....");  
String msg1 = scan.nextLine();  
dout.readUTF(msg1);  
dout.flush();  
}
```

Question2/5 marks

The following are codes of a client requesting “today’s date” from a server and “dis” and “dout” are respectively the “DataInputStream” and the “DataOutputStream”. Reorganize the lines properly on the server side.

Client

```
String str1 = "What is today's date ?";  
dout.writeUTF (str1);  
String str2 = dis.readUTF();  
System.out.println (str2);
```

Server

```
dout.writeUTF(date.toString());  
System.out.println (str1);  
String str1 = dis.readUTF();  
Date date = new Date ();
```

Question 3 / 5 marks

The host below is disconnected from internet, explain why the codes print “8” as output.

```
NetworkInterface add =  
NetworkInterface.getByInetAddress(InetAddress.getLocalHost());  
List<InterfaceAddress> itadd = add.getInterfaceAddresses();  
System.out.println(itadd.get(0).getNetworkPrefixLength());
```

Question 4 / 5 marks

If the last line of the above codes is changed to
System.out.println(itadd.get(0).getAddress());
What would be the output?

11111111111111

Question 5 / 5 marks

The codes below print all the IP v4 addresses that are active on the local host machine.

```
Enumeration<NetworkInterface> netif1 =  
NetworkInterface.getNetworkInterfaces();  
for (NetworkInterface netif2 : Collections.list(netif1)) {  
if(netif2.isUp() && ! netif2.isLoopback())  
for (InterfaceAddress  
Inet:netif2.getInterfaceAddresses())  
if(Inet.getAddress() instanceof Inet4Address)  
System.out.println(Inet.getAddress());}  
Change line4 and line 7 so that the output is:  
“127.255.255.255”
```

Question 6 / 5 marks

Refer to the codes above, which line can you changed so that the codes print both IPv4 and IPV6 that are active. How would you change it?

Question 7 / 5 marks

The codes below are supposed to give the same output as the codes on question 4 above.

```
Enumeration<NetworkInterface> netif1 =  
NetworkInterface.getNetworkInterfaces();  
for (NetworkInterface netif2 : Collections.list(netif1)) {  
if(nwIf.isUp() && !nwIf.isLoopback())  
for(InetAddress inetad : nwIf.getInetAddresses())  
if(inetad instanceof Inet4Address)  
System.out.println(inetad);}
```

But when compiled they give following error message showing on line 5

```
required: array or java.lang.Iterable  
found: Enumeration<InetAddress>
```

Why and how should it be fixed?

Question 8 / 5 marks

The codes below implement an echo server. Explain.

```
while(true) {  
String str1 = dis.readUTF();  
dout.writeUTF(str1);  
dout.flush();}
```