**Operating Systems and Concurrency**

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**Assignment:** Assignment 3

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**FORM A1**

# STUDENT PLAGIARISM DISCLAIMER FORM

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## PLAGIARISM DISCLAIMER

STUDENT NAME: Raphael Salaja

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PROGRAMME: BSc (Hons) in Software Design with Virtual Reality and Gaming

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LECTURER: Thiago Braga Rodrigues

ASSIGNMENT TITLE: Lab 3 Assignment

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DATE SUBMITTED: 25 October 2021

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## Signed:Raphael Salaja

**Dated: 13 October 2021**

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# Question 1

## Single Threaded File Server

## 

### Hello Server

import java.io.InputStream;  
import java.io.OutputStream;  
import java.io.PrintWriter;  
import java.net.ServerSocket;  
import java.net.Socket;  
import java.util.Scanner;  
  
public class HelloServer {  
  
 public static void main(String[] args) throws Exception {  
 Socket socket;  
 ServerSocket serverSocket = new ServerSocket(2001);  
   
 while(true){  
   
 System.*out*.println("Server: Waiting for a connection");  
 socket = serverSocket.accept();  
   
 InputStream in = socket.getInputStream();  
 Scanner scanner = new Scanner(in);  
 OutputStream out = socket.getOutputStream();  
 PrintWriter p = new PrintWriter(out);  
   
 String inputLine = scanner.nextLine();  
   
 //Send string back to client  
 p.println("Hello " + inputLine + " from Hello Server");  
 p.close();  
 }  
 }  
}

### Hello Client

import java.io.InputStream;  
import java.io.OutputStream;  
import java.io.PrintWriter;  
import java.net.InetAddress;  
import java.net.Socket;  
import java.util.Scanner;  
  
public class HelloClient {  
  
 public static void main(String[] args) throws Exception {  
   
 InetAddress inet = InetAddress.*getByName*("192.168.23.49");  
 Socket socket = new Socket(inet, 2000);  
   
 OutputStream out = socket.getOutputStream();  
 PrintWriter p = new PrintWriter(out);  
   
 InputStream in = socket.getInputStream();  
 System.*out*.println("InputStream class: " + in.getClass());  
 Scanner scanner = new Scanner(in);  
   
 p.println("Paul");  
 p.flush();  
   
 String inputLine = scanner.nextLine();  
 System.*out*.println("Client: " + inputLine);  
 }  
}

# Question 2

## ThreadedFileServerApp

import java.net.ServerSocket;  
import java.net.Socket;  
  
public class ThreadedFileServerApp {  
 public static void main(String[] args) throws Exception {  
 System.*out*.println("SERVER READY");  
 ServerSocket server\_socket = new ServerSocket(2001);  
 while (true) {  
 Socket socket = server\_socket.accept();  
 Thread t = new WorkerThread(socket);  
 t.start();  
 }  
 }  
}

## WorkerThread

import java.io.FileInputStream;  
import java.io.InputStream;  
import java.io.OutputStream;  
import java.io.PrintWriter;  
import java.net.ServerSocket;  
import java.net.Socket;  
import java.util.Scanner;  
  
public class WorkerThread extends Thread {  
 Socket socket;  
  
 WorkerThread(Socket socket) {  
 this.socket = socket;  
 }  
  
 public void run() {  
 try {  
 InputStream in = socket.getInputStream();  
 Scanner r = new Scanner(in);  
 OutputStream o = socket.getOutputStream();  
 PrintWriter p = new PrintWriter(o);  
  
 String file\_name;  
 file\_name = r.nextLine();  
 System.*out*.println(getName() + " HANDLING: " + file\_name);  
  
 FileInputStream f\_in = new FileInputStream(file\_name);  
 Scanner f = new Scanner(f\_in);  
  
 String line;  
 while (f.hasNextLine()) {  
 line = f.nextLine();  
 p.println(line);  
 }  
 *sleep*(1500);  
 p.close();  
 System.*out*.println(getName() + " FINISHED HANDLING: " + file\_name);  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 }  
}

## ClientSide

import java.io.OutputStream;  
import java.io.PrintWriter;  
import java.net.InetAddress;  
import java.net.Socket;  
import java.util.Scanner;  
  
public class ClientSide {  
  
 public static void main(String[] args) throws Exception {  
 InetAddress inet = InetAddress.*getLocalHost*();  
  
 Socket s = new Socket(inet, 2001);  
 InputStream in = s.getInputStream();  
 Scanner r = new Scanner(in);  
 OutputStream o = s.getOutputStream();  
 PrintWriter p = new PrintWriter(o);  
  
 p.println("testing.txt");  
 p.flush();  
  
 String line;  
 while (r.hasNextLine()) {  
 line = r.nextLine();  
 System.*out*.println(line);  
 }  
 }  
}

