**Project2Task3Server**

import java.net.\*;  
 import java.io.\*;  
import java.util.Map;  
import java.util.Scanner;  
import java.util.TreeMap;  
// Name: Leo Lin  
// Andrew ID: hungfanl  
  
public class RemoteVariableServerUDP{  
  
 static Map<Integer, Integer> *database* = new TreeMap<>();  
 public static void main(String args[]){  
 DatagramSocket aSocket = null;  
 byte[] buffer = new byte[1000];  
 System.*out*.println("Server started.");  
 int listenPort = 6789;  
 try{  
 aSocket = new DatagramSocket(listenPort);  
 DatagramPacket request = new DatagramPacket(buffer, buffer.length);  
 // Whenever the aSocket receive a request from the client side, it will add it to the sum variable  
 // and return the sum value. It will then print out the sum  
 while(true){  
 // receive a request from the client  
 aSocket.receive(request);  
 // create a DatagramPacket object with the request  
 String requestString = new String(request.getData()).substring(0,request.getLength());  
 // split the passed string into operator, id, and number.  
 String[] operation = requestString.split(",");  
 int operator = Integer.*parseInt*(operation[0]);  
 int id = Integer.*parseInt*(operation[1]);  
 int number = Integer.*parseInt*(operation[2]);  
 // conduct corresponding arithmetic according to the three index  
 int outcome = *arithmetic*(operator, id, number);  
 // return the outcome of calculation to the client  
 byte [] m = String.*valueOf*(outcome).getBytes();  
 DatagramPacket reply = new DatagramPacket(m,  
 m.length, request.getAddress(), request.getPort());  
 // send the reply back to the client  
 System.*out*.println("Returning sum of " + outcome + " to client");  
 aSocket.send(reply);  
 }  
 }catch (SocketException e){System.*out*.println("Socket: " + e.getMessage());  
 }catch (IOException e) {System.*out*.println("IO: " + e.getMessage());  
 }finally {if(aSocket != null) aSocket.close();}  
 }  
  
  
 // Doing corresponding arithmetic according to the user's request  
 public static int arithmetic(int operator, int id, int number){  
 String[] operation = {"Addition", "Subtraction", "Check"};  
 System.*out*.println("The visitor's ID is: " + id);  
 System.*out*.println("Operand: " + operation[operator-1]);  
 if(operator == 1){  
 *database*.put(id, *database*.getOrDefault(id,0) + number);  
 }  
 else if (operator == 2){  
 *database*.put(id, *database*.getOrDefault(id,0) - number);  
 }  
 // return the number after calculation  
 return *database*.get(id);  
 }  
}