Computer Networks

Assignment 3

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**Question 1**

Consider two processes client and server communicate across a network. The client sends a message to the server in the request and the server responds with the same message. Write a Socket program for the above-mentioned scenario.

**#include <arpa/inet.h>**

**#include <netinet/in.h>**

**#include <stdio.h>**

**#include <stdlib.h>**

**#include <string.h>**

**#include <sys/socket.h>**

**#include <unistd.h>**

**#define PORT 8090**

**int main()**

**{**

**struct sockaddr\_in address;**

**int sock = 0, valread;**

**struct sockaddr\_in serv\_addr;**

**char str[100];**

**printf("\nInput the string:");**

**scanf("%[^\n]s", str);**

**char buffer[1024] = {0};**

**if ((sock = socket(AF\_INET, SOCK\_STREAM, 0)) < 0)**

**{**

**printf("\n Socket creation error \n");**

**return -1;**

**}**

**memset(&serv\_addr, '0', sizeof(serv\_addr));**

**serv\_addr.sin\_family = AF\_INET;**

**serv\_addr.sin\_port = htons(PORT);**

**if (inet\_pton(AF\_INET, "127.0.0.1", &serv\_addr.sin\_addr) <= 0)**

**{**

**printf("\nAddress not supported \n");**

**return -1;**

**}**

**if (connect(sock, (struct sockaddr \*)&serv\_addr, sizeof(serv\_addr)) < 0)**

**{**

**printf("\nConnection Failed \n");**

**return -1;**

**}**

**int l = strlen(str);**

**send(sock, str, sizeof(str), 0);**

**valread = read(sock, str, l);**

**printf("%s\n", str);**

**return 0;**

**}**

**Question 2**

The message entered in the client is sent to the server and the server encodes the message and returns it to the client. Encoding is done by replacing a character with the character next to it. (i.e.) an as b, b as c…z as a

**// client**

**import java.io.\*;**

**import java.net.\*;**

**import java.util.\*;**

**class ClientFive**

**{**

**public**

**static void main(String[] arga) throws Exception**

**{**

**Socket cs = new Socket("localhost", 8888);**

**DataInputStream in = new DataInputStream(cs.getInputStream());**

**PrintStream out = new PrintStream(cs.getOutputStream());**

**BufferedReader stdin = new BufferedReader(new InputStreamReader(System.in));**

**String s;**

**while (true)**

**{**

**System.out.print("Client : ");**

**s = stdin.readLine();**

**out.println(s);**

**s = in.readLine();**

**System.out.print("Server : " + s + "n");**

**if (s.equalsIgnoreCase("BYE"))**

**break;**

**}**

**out.close();**

**in.close();**

**cs.close();**

**stdin.close();**

**}**

**}**

**// Server**

**import java.io.\*;**

**import java.net.\*;**

**import java.util.\*;**

**class ServerFive**

**{**

**public**

**static void main(String[] arga) throws Exception**

**{**

**ServerSocket ss = new ServerSocket(8888);**

**Socket cs = ss.accept();**

**DataInputStream in = new DataInputStream(cs.getInputStream());**

**PrintStream out = new PrintStream(cs.getOutputStream());**

**BufferedReader stdin = new BufferedReader(new InputStreamReader(System.in));**

**String s;**

**while (true)**

**{**

**s = in.readLine();**

**if (s.equalsIgnoreCase("END"))**

**{**

**out.println("BYE");**

**break;**

**}**

**String s1 = "";**

**for (char c : s.toCharArray())**

**{**

**int x = (int)c;**

**if (x >= 65 && x <= 90)**

**{**

**x = (((x + 1) - 65) % 26) + 65;**

**s1 += Character.toString((char)x);**

**}**

**else if (x >= 97 && x <= 122)**

**{**

**x = (((x + 1) - 97) % 26) + 97;**

**s1 += Character.toString((char)x);**

**}**

**else**

**{**

**s1 += c;**

**}**

**}**

**System.out.print("Client : " + s + "n");**

**out.println(s1);**

**}**

**cs.close();**

**ss.close();**

**in.close();**

**out.close();**

**}**

**}**