

## CS 408 – Computer Networks – Fall 2023 – In-Lab Assignment (B)

- No collaboration is allowed. You are not allowed to ask and get help from your classmates. Any such activity will directly result in failure in this lab.
- All cell phones must be totally switched off.
- Any type of online communication via email, DM, Whatsapp, etc. with another human being will be treated as plagiarism.
- IP-sharing is strictly prohibited, you should connect to SU-NET using your own SU account credentials only.

### Your Task

Your task in this lab is to develop a *Chat Client* via Graphical User Interface (GUI). IP and port number will be taken as inputs from the user GUI via text boxes. Moreover, the user will enter his/her email address (e.g. [fkerem@sabanciuniv.edu](mailto:fkerem@sabanciuniv.edu)) and full name without Turkish characters (e.g. “Faik Kerem Ors”) in the other text boxes. In addition to these four text boxes, there will be only one “connect button” and a rich text box to show the message received from server. There will not be any other boxes or buttons on the GUI.

When user clicks to “Connect” button, the client should connect to the server using server’s IP and port number. Server’s IP and port number will be written on the board by your TAs during the lab. You do not need to do anything for the server part. You will only implement the client part.

After the connection is established, the scenario that you will implement is as follows:

- 1) Write the connection status (fail, success) in the rich text box (hint: use try-catch).
- 2) Before you (client) get any message from the server, send your email address and full name (that was entered via text box before connection) to the server in the same message. Please put a space between your email address and full name in the form of *Email\_Address FullName* (e.g. fkerem@sabanciuniv.edu Faik Kerem Ors)

**Caution:** Include domain name (@sabanciuniv.edu) in your email address, it’s required.

**Caution:** You should send your full name correctly, but without any Turkish letters. If you send a nickname or something other than your full name, the server may raise an error or a deduction policy can be applied on your grade!

- 3) After that, the server will send you a response message. You have to show this response message in the rich text box. The response message will include a token (an integer value) and you have to parse it.
- 4) Use digits of the incoming integer (token) in a circular (modular) manner to shift (by adding the shift amount to the ascii value of the characters) the characters in your email address that you entered via the GUI. Then, sum up the ascii values of each character in the shifted string and send the resulting integer value to the server together with your full name (e.g. *resulting\_integer Faik Kerem Ors*). **Note that all calculations in this part should be done automatically inside the code, you should NOT calculate the shift**

operations manually. Also, you have to get the email address from the text box, it should NOT be hardcoded inside the code. We may test your program with another email and it should work.

**Example:**

```
Token:9115 - Mail: fkerem@sabanciuniv.edu

f - shifted by 9 - resulting char: o - its ascii value: 111
k - shifted by 1 - resulting char: l - its ascii value: 108
e - shifted by 1 - resulting char: f - its ascii value: 102
r - shifted by 5 - resulting char: w - its ascii value: 119
e - shifted by 9 - resulting char: n - its ascii value: 110
m - shifted by 1 - resulting char: n - its ascii value: 110
@ - shifted by 1 - resulting char: A - its ascii value: 65
s - shifted by 5 - resulting char: x - its ascii value: 120
a - shifted by 9 - resulting char: j - its ascii value: 106
b - shifted by 1 - resulting char: c - its ascii value: 99
a - shifted by 1 - resulting char: b - its ascii value: 98
n - shifted by 5 - resulting char: s - its ascii value: 115
c - shifted by 9 - resulting char: l - its ascii value: 108
i - shifted by 1 - resulting char: j - its ascii value: 106
u - shifted by 1 - resulting char: v - its ascii value: 118
n - shifted by 5 - resulting char: s - its ascii value: 115
i - shifted by 9 - resulting char: r - its ascii value: 114
v - shifted by 1 - resulting char: w - its ascii value: 119
. - shifted by 1 - resulting char: / - its ascii value: 47
e - shifted by 5 - resulting char: j - its ascii value: 106
d - shifted by 9 - resulting char: m - its ascii value: 109
u - shifted by 1 - resulting char: v - its ascii value: 118
Ascii values sum: 2323
```

- Token: 9115
- String that should be sent to the server: 2323 Faik Kerem OrsOrs

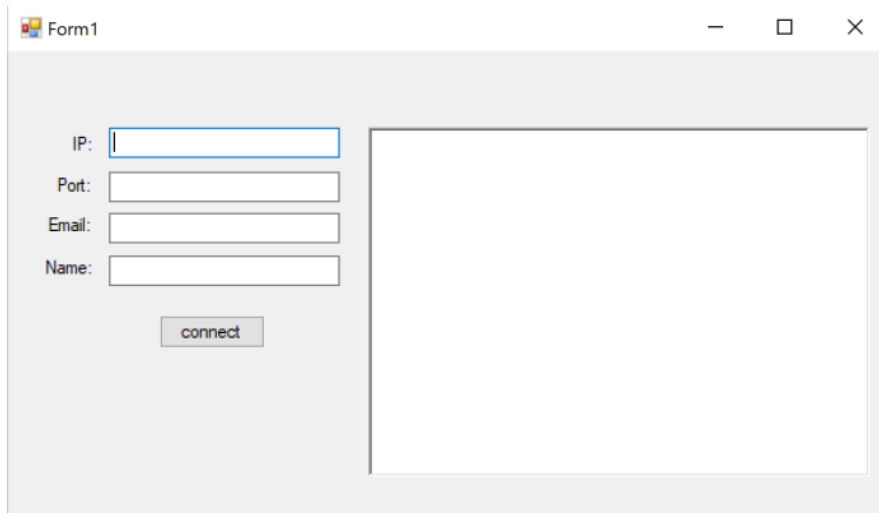
- 5) After sending this message, the server will send you a response message indicating whether your application was successful or not. The socket must be closed automatically after you get this message. You should also print out this success or failure message in the rich text box.

After you get the success message from the server (see the images below), the steps that you should follow are:

- 1) Check whether your full name is in the successful attempts table (Webpage will be indicated by your TAs).
- 2) Do not forget to submit your application (whole project folder) to the assignment “In-lab Exercise B” in a zip file on SuCourse+. (Name your zip file as "yourSuNetusername\_lastname\_othersnames.zip")

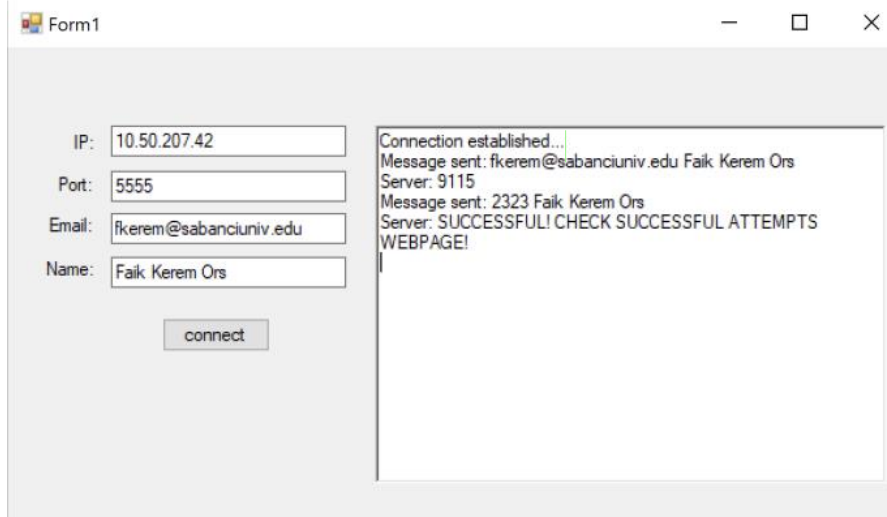
Please follow the steps carefully and verify whether your attempt was successful (check your name on the successful attempts webpage). Also, do not forget to submit your client application. Otherwise, we cannot grade your work!

### Initial state of the GUI



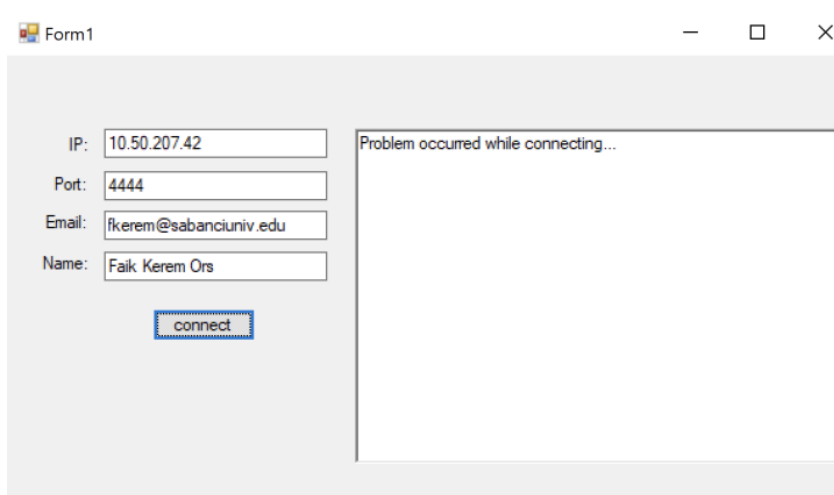
The image shows a Windows-style window titled "Form1" with standard minimize, maximize, and close buttons. The window contains a form with four input fields on the left, each with a label: "IP:", "Port:", "Email:", and "Name:". Below these fields is a "connect" button. To the right of the input fields is a large, empty rectangular text area.

After connecting:



The image shows the same "Form1" window after a successful connection. The input fields are now populated with the following text: "IP: 10.50.207.42", "Port: 5555", "Email: fkerem@sabanciuniv.edu", and "Name: Faik Kerem Ors". The "connect" button remains below the fields. The large text area on the right now displays the following text: "Connection established...", "Message sent: fkerem@sabanciuniv.edu Faik Kerem Ors", "Server: 9115", "Message sent: 2323 Faik Kerem Ors", "Server: SUCCESSFUL! CHECK SUCCESSFUL ATTEMPTS", "WEBPAGE!", and a cursor at the end of the line.

IP or port number is wrong:



The screenshot shows a Windows application window titled "Form1". On the left side, there are four text input fields with labels: "IP:" containing "10.50.207.42", "Port:" containing "4444", "Email:" containing "fkerem@sabanciuniv.edu", and "Name:" containing "Faik Kerem Ors". Below these fields is a button labeled "connect". On the right side of the window is a large text area containing the message "Problem occurred while connecting...".