# Practical Part

**Task 1:** Develop two applications within one solution – a client and a server using TCP sockets. The server receives and executes commands from the client. The server should be a console application. The client application should be developed using WPF technology, with commands assigned to buttons and menu items. Exchange of strings in the application should be done using UTF-8 encoding. Ensure the possibility of entering client commands from the command line of the application (text box for entering commands).

Commands to be developed:

1. date – returns the date and time on the server.
2. host\_name – returns the name of the computer on which the server is running.
3. pwd – returns the full path of the App\_Files folder of the application.
4. list – the client receives a list of file names stored on the server in the App\_Files folder of the project, with the file names separated by the string "\r\n".
5. mul num1 num2 – the server returns a string containing two floating-point numbers and the product of these numbers.
6. sum num1 num2 – the server returns a string containing two floating-point numbers and the sum of these numbers.
7. solve a b c – the server returns three numbers a, b, c, and the computed roots of the quadratic equation a \* x^2 + b \* x + c = 0. If there are no real roots, return a, b, c, and the string "no roots".
8. shutdown – shuts down the server, and the server sends a message about the shutdown to the email address step.programmer@gmail.com.
9. rename oldName newName – renames a file in the App\_Files folder on the server.
10. upload fileName – the client selects a file and sends it to the server. First, the string "\r\nLength fileSizeInBytes\r\n" is sent, followed by the file bytes, then the string "\r\nOk\r\n". The file is saved in the App\_Files folder, and the server notifies about the upload to step.programmer@gmail.com.
11. download fileName – the server sends the requested file from the App\_Files folder to the client: the string "Ok fileSizeInBytes\r\n" is sent, followed by the file bytes, then the string "\r\nOk\r\n". If the file is not found on the server, send the string "Not found\r\n". The server notifies about the operation and its completion to step.programmer@gmail.com.
12. delete fileName – the server deletes the file from the App\_Files folder and sends the string "\r\nOk\r\n" if the file exists on the server, or "Not found\r\n" if the file is not found on the server. The server notifies about the operation and its completion to step.programmer@gmail.com.

**Task 2**: Create a chat application – implement the client in WPF technology, and ensure the display of all chat users in the client window.