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Final Project

CChat

Problem

For this project we decided to create a chat that works in a way that the server never saves your information for a long time. This is because once the messages are received by the addressee, the server will lose all data concerning that message. To be safe during the socket communication the messages are being encrypted with a 256 bit key.
If your message can't be received currently, the server will temporarily store it until the user connects again to the server.

Methods and formulas

We have different files containing different functions:

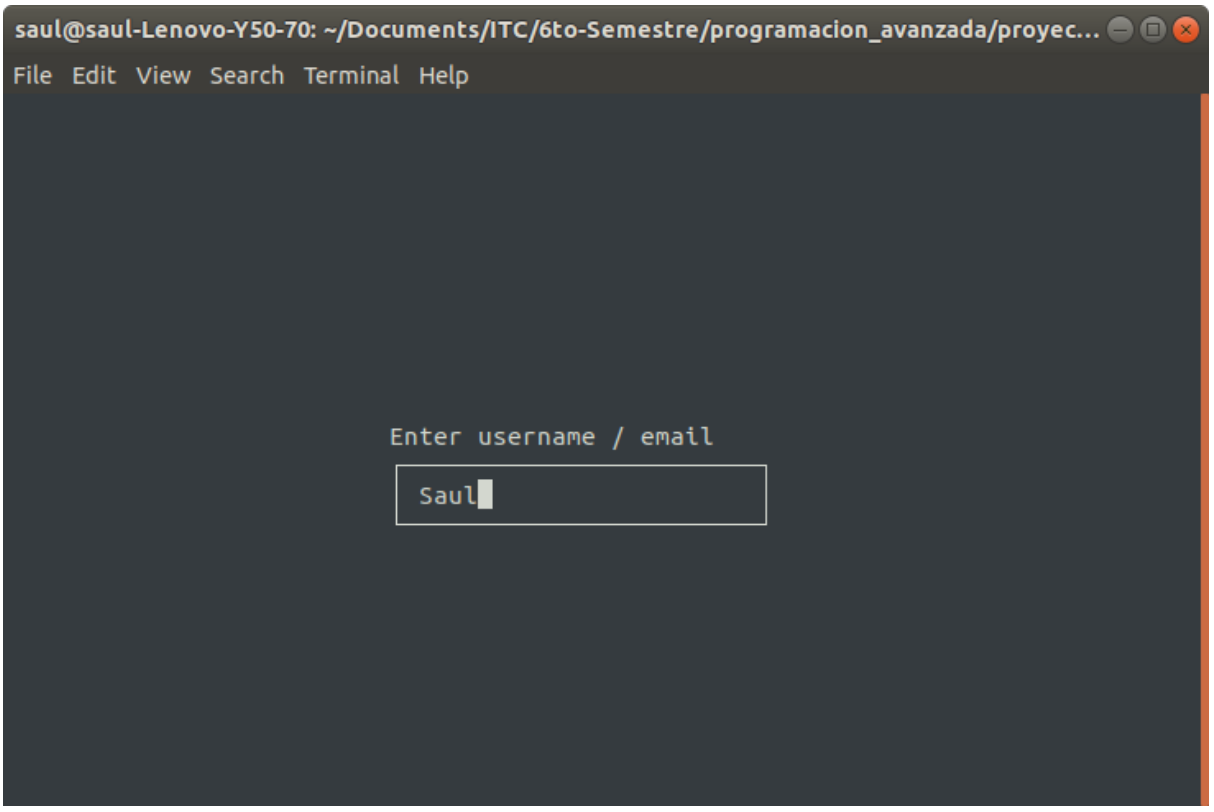
- Client
  - Structs
    - **message_struct**: stores message data
    - **data_struct**: contains the user_id, the connection file descriptor and gui information.
  - Functions
    - **client_write**: is a function called by pthread_create used to handle user input, it also invokes the ncurses methods to display the gui
    - **usage**: tells how the user show start the program
    - **drawScreen:** shows the chat GUI window
    - **getDestination:** on the chat window prompts the user to type the destination username
    - **getMessage:** on the chat window prompts the user to type the message to be sent
- Server
  - Structs:
    - **message_struct**: stores message data
    - **data_struct**: contains the user_id and the connection file descriptor
  - Functions:
    - **waitForConnections**: this function is the one responsible to wait for users to join the server
    - **attentionThread**: this function is called by pthread_create and is responsible for attending each client

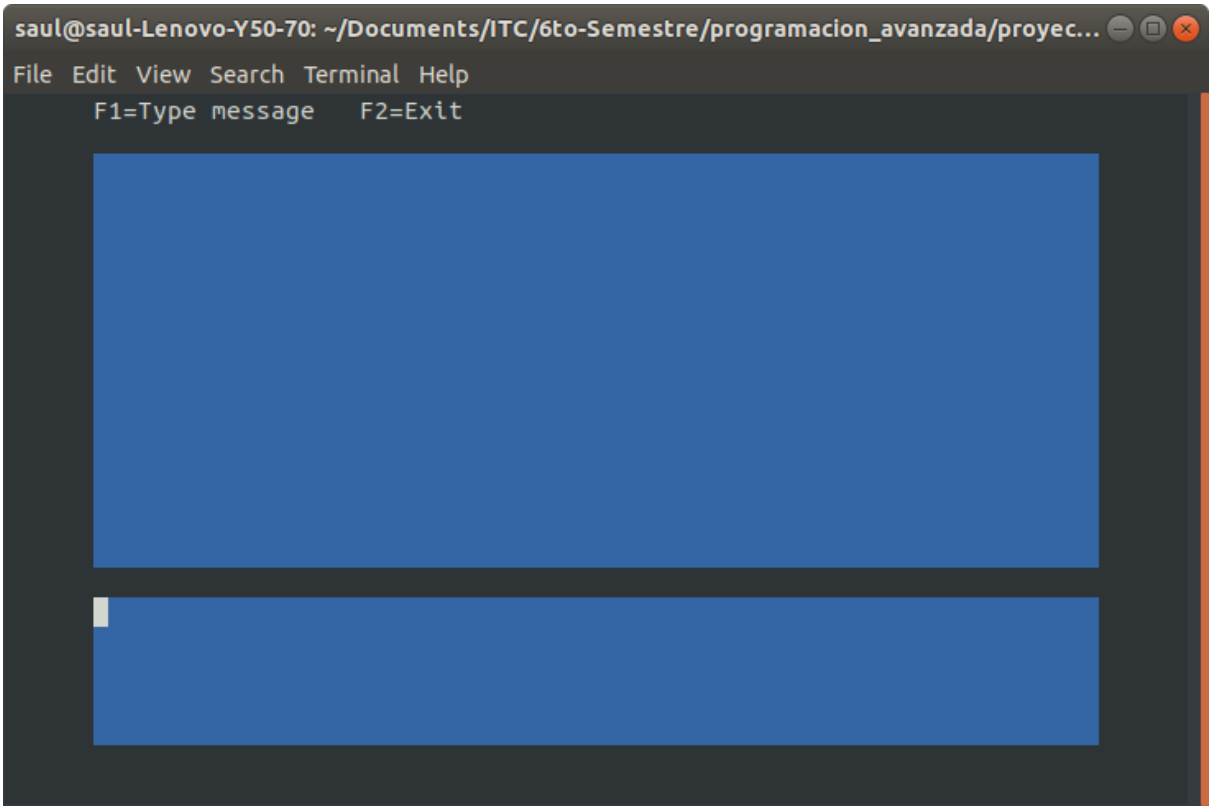
        - **write_store_message**: writes messages in a temporal file
        - **read_stored_messages**: reads the messages stored in the temporal file
        - **delete_msg_from_file**: once a message was read and sent to the appropiate user it is deleted from the temporal file
- Encryption
    - Functions:
        - **encrypt_msg**: encrypts a string
        - **decrypt_msg**: decrypts a string
- Sockets
    - Functions:
        - **printLocalIPs**: shows the local IP address
        - **initServer**: Prepares and opens listening socket, return file descriptor
        - **connectSocket**: opens a socket and connects it to another, return file descriptor
        - **recvString**: receives information from connected socket (through FD)
        - **sendString**: send a message to connected socket (through FD)
- Error
    - **fatalError**: receives error code and proceeds to exit the program

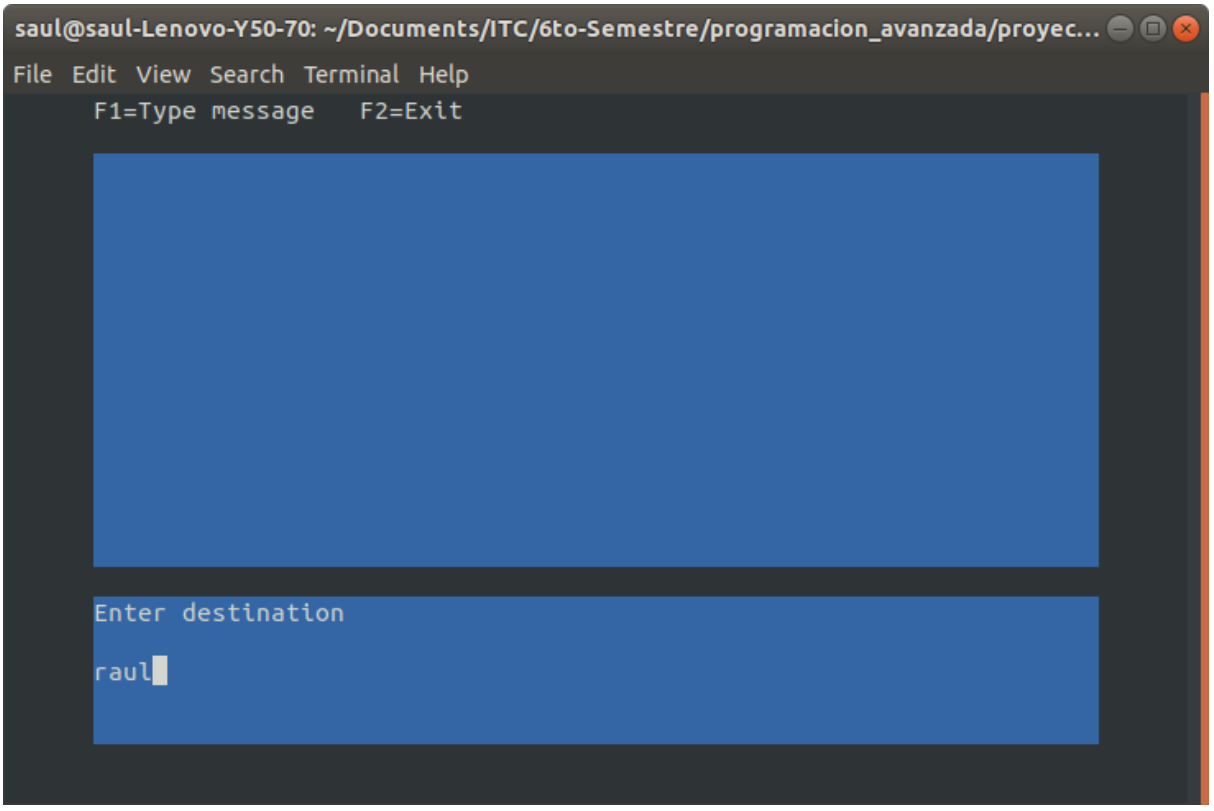
Instructions

1. Go to the project directory
2. Compile the program using “make”
3. Create 2 instances of the terminal:
    a. Server
        i. Run the server: ./server
    b. Client
        i. Run the client: ./client {server_ip} 8989
4. you will be asked for a username to configure your session, save changes by pressing “enter” key
5. Once inside the client program you will be able to send messages by pressing “F1” key, then you will be prompted to write the username of the destinatary, press enter and you will be asked to write your message. Write your message, press enter and you will have had sent your message successfully.
6. You can exit the program by pressing “F2” key

Screenshots






saul@saul-Lenovo-Y50-70: ~/Documents/ITC/6to-Semestre/programacion_avanzada/proyec...
File Edit View Search Terminal Help
F1=Type message F2=Exit
Enter destination
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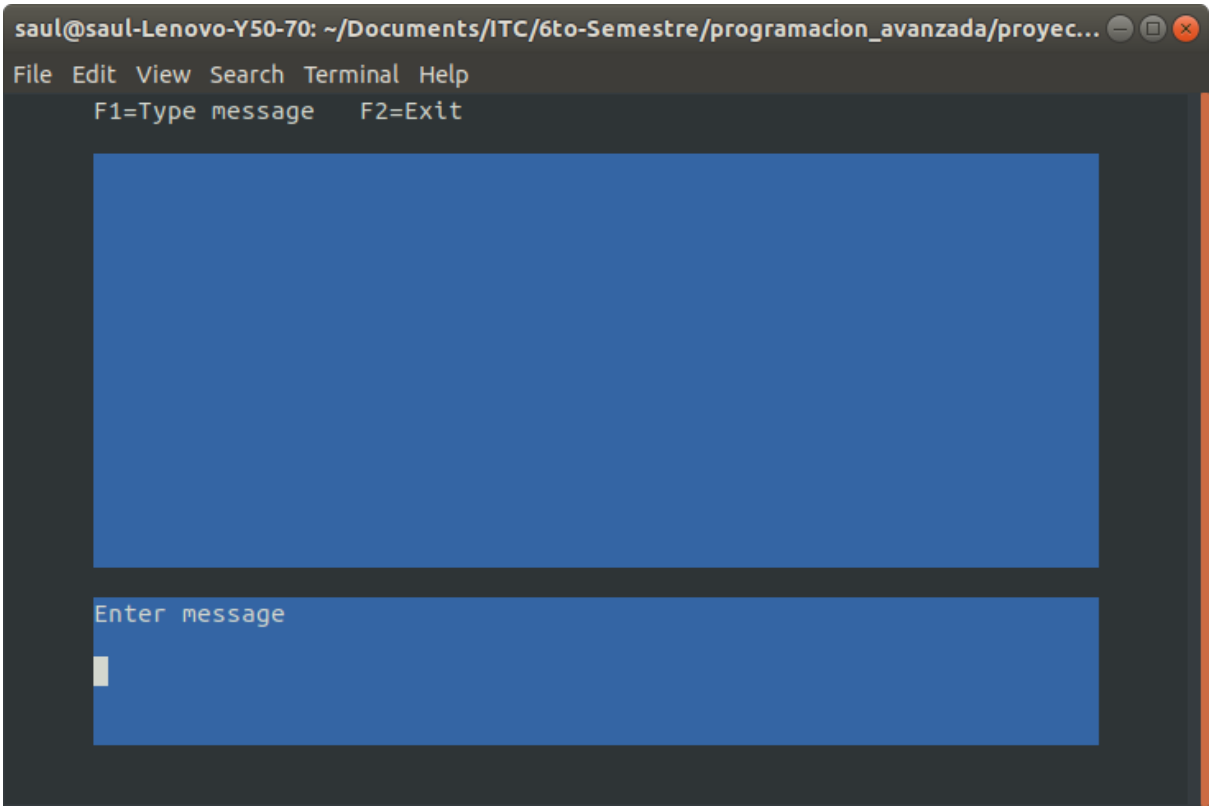
saul@saul-Lenovo-Y50-70: ~/Documents/ITC/6to-Semestre/programacion_avanzada/proyec...
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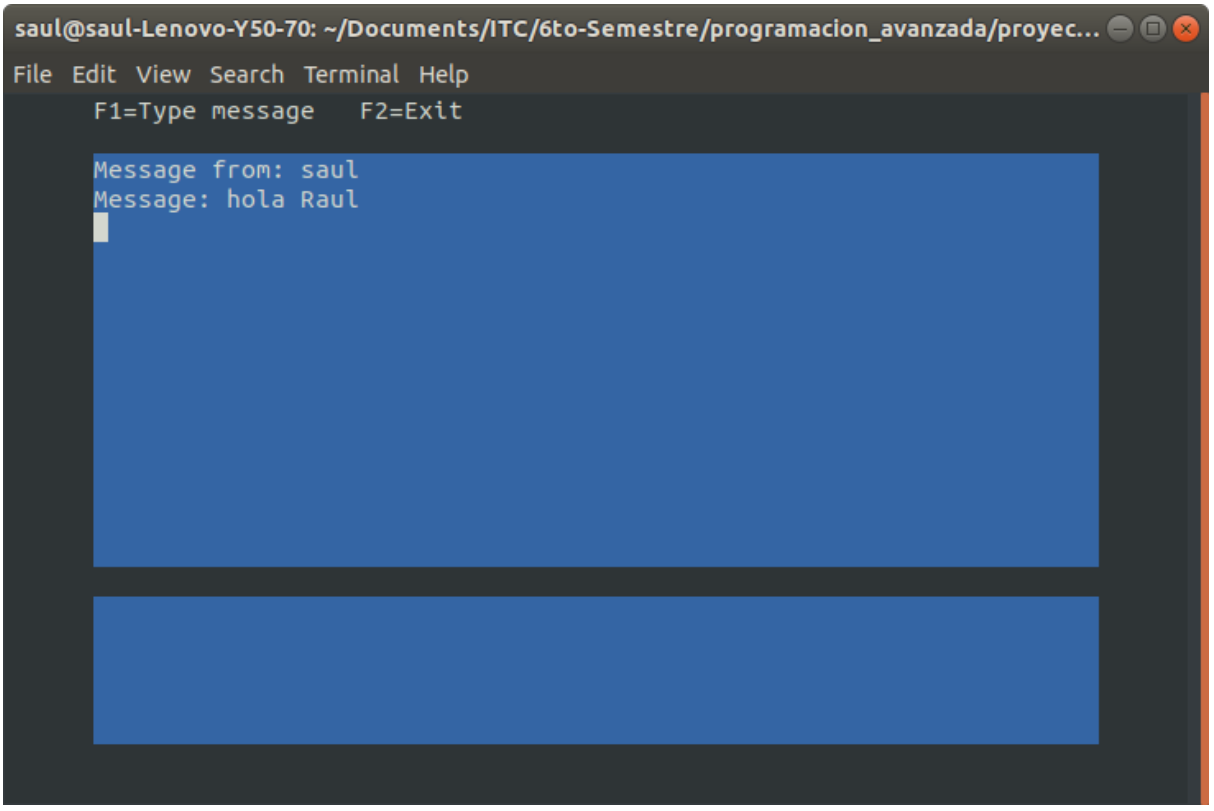

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