Networks Lab - Assignment - 8

Name: Hardik Aggarwal
Roll No : 18CS10021

Name: Sriyash Poddar
Roll No : 18CS30040

Documentation

Most Parts of Documentation is included in the Code Files itself in the form of comments. But Here is a brief structure of the code as well -

File peer.h - Contains all the header files, variables, constants , data structures and utility functions that are used throughout the program

We have maintained a structure user_info which maps the usernames of the peers to their corresponding ports and is known beforehand to all the peers.

We also maintain two maps - fdMap , which maps the username of a peer to the corresponding file descriptor of the connection.

We keep Maximum connections allowed to 5.

File peer.cpp - Contains all the necessary functions and protocol algorithms for the solution.

A brief overview of protocol/algorithm we implemented is :-

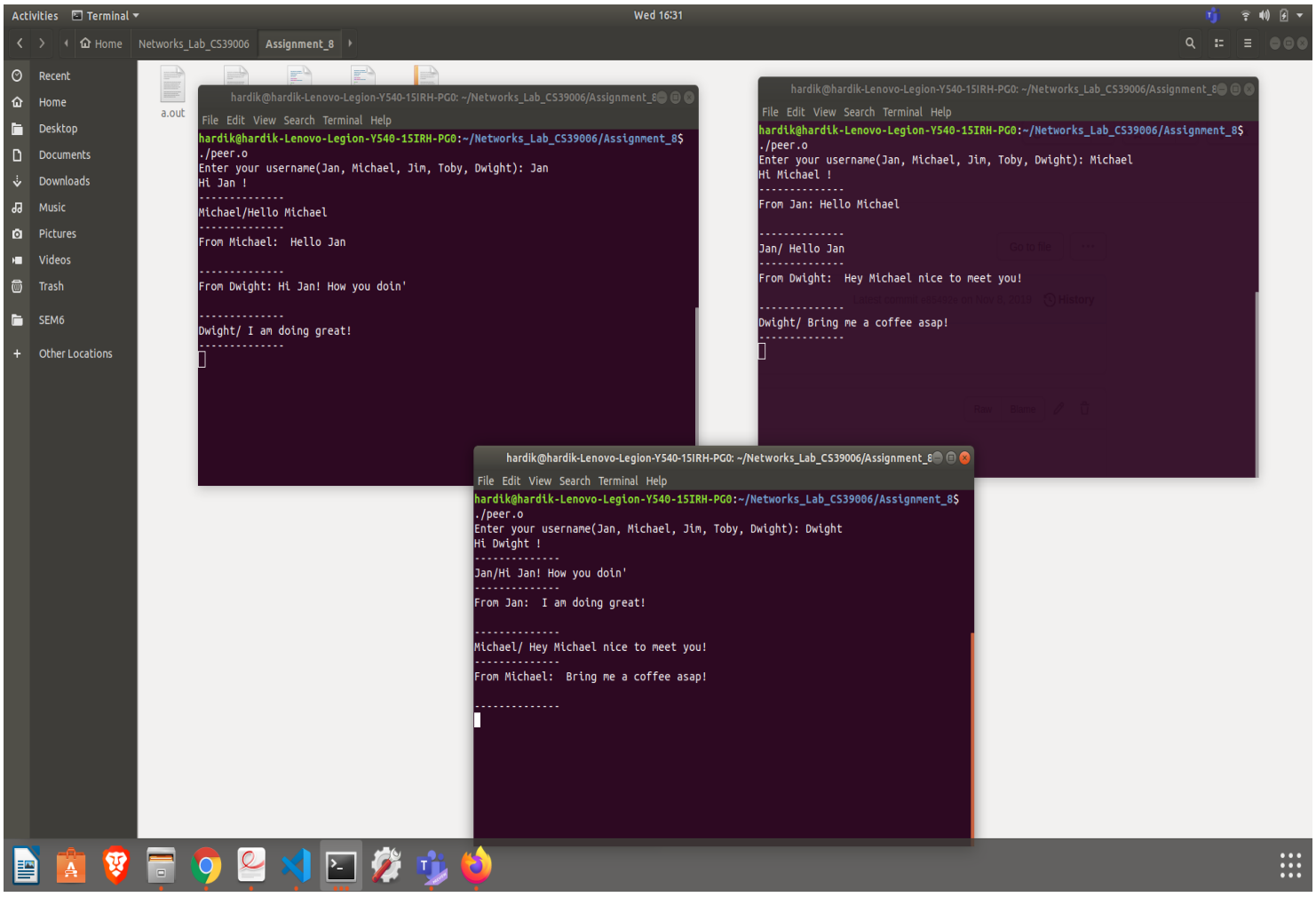
- Take the username
- Create a new socket and bind to it using the address 127.0.0.1 and port defined in user_info table.
- Initialize the read_set, write_set with zero and put all the available fds into it.
- Use select sys_call to get a list of all the activated fds.
- If the STDIN_FILENO is activated, i.e a new message request is made
    - If a connection is not established yet create a new connection
- Send the message to the peer
- If a new connection request is incoming then accept the request.
- For each peer we have established the connection with, check if the connection fd is activated.
- If timeout has happened close the fd and print timeout.

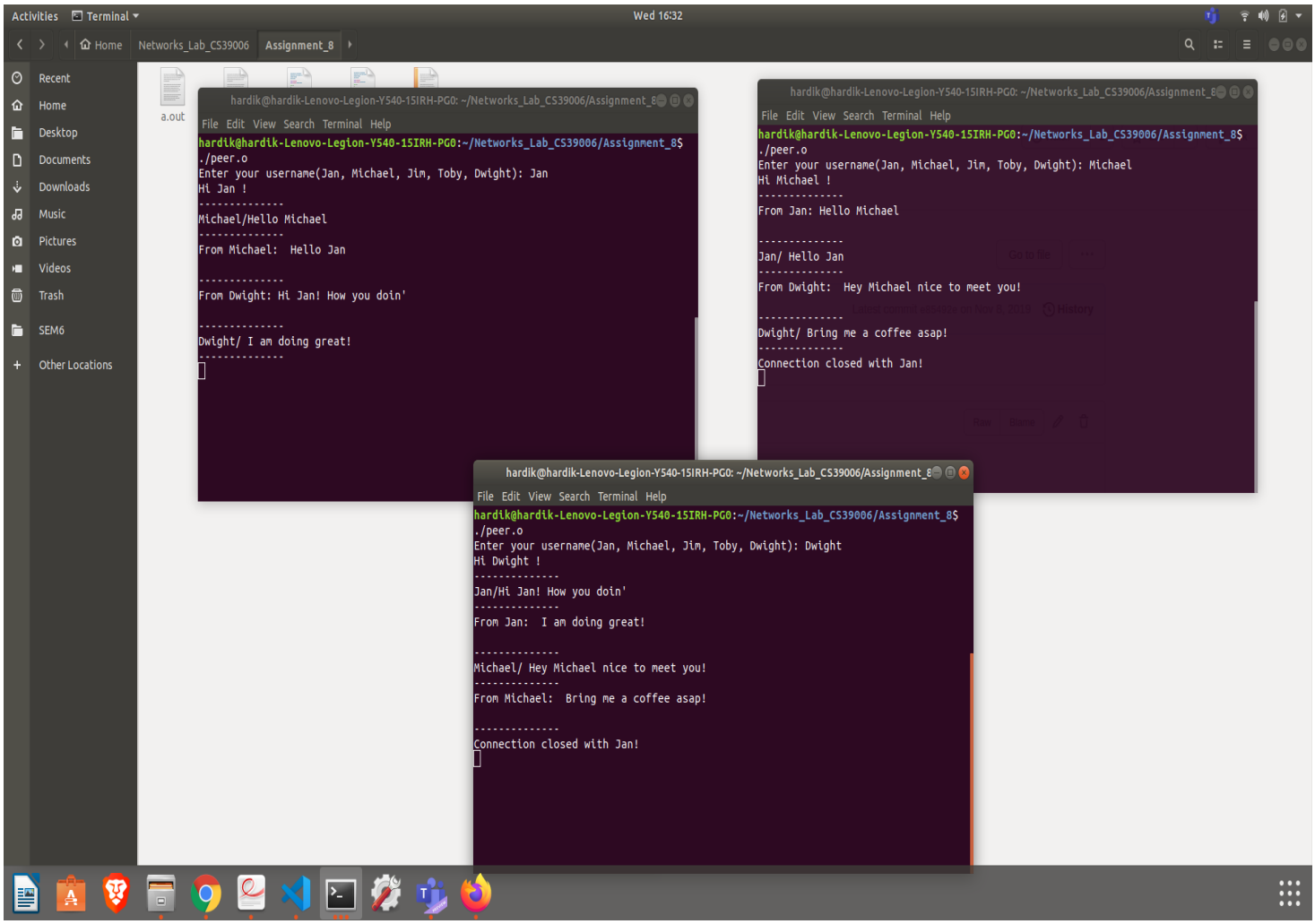
- If a message is outstanding , print the message to stdout.
- Repeat

Compilation and Build Procedure

1. Open the directory and run make.
2. Open the terminals for each unique peer.
3. run ./peer.o
4. Enter the username from the list of options provided.
5. Chat!

Sample Input and Output




Activities
Terminal
Wed 16:32
Home
Networks_Lab_CS39006
Assignment_8
Recent
Home
Desktop
Documents
Downloads
Music
Pictures
Videos
Trash
SEM6
Other Locations
a.out
hardik@hardik-Lenovo-Legion-Y540-15IRH-PG0: ~/Networks_Lab_CS39006/Assignment_8
File Edit View Search Terminal Help
hardik@hardik-Lenovo-Legion-Y540-15IRH-PG0:~/Networks_Lab_CS39006/Assignment_8$
./peer.o
Enter your username(Jan, Michael, Jim, Toby, Dwight): Jan
Hi Jan !
Michael/Hello Michael
From Michael: Hello Jan
From Dwight: Hi Jan! How you doin'
Dwight/ I am doing great!
hardik@hardik-Lenovo-Legion-Y540-15IRH-PG0: ~/Networks_Lab_CS39006/Assignment_8
File Edit View Search Terminal Help
hardik@hardik-Lenovo-Legion-Y540-15IRH-PG0:~/Networks_Lab_CS39006/Assignment_8$
./peer.o
Enter your username(Jan, Michael, Jim, Toby, Dwight): Michael
Hi Michael !
From Jan: Hello Michael
Jan/ Hello Jan
From Dwight: Hey Michael nice to meet you!
Dwight/ Bring me a coffee asap!
Connection closed with Jan!
hardik@hardik-Lenovo-Legion-Y540-15IRH-PG0: ~/Networks_Lab_CS39006/Assignment_8
File Edit View Search Terminal Help
hardik@hardik-Lenovo-Legion-Y540-15IRH-PG0:~/Networks_Lab_CS39006/Assignment_8$
./peer.o
Enter your username(Jan, Michael, Jim, Toby, Dwight): Dwight
Hi Dwight !
Jan/Hi Jan! How you doin'
From Jan: I am doing great!
Michael/ Hey Michael nice to meet you!
From Michael: Bring me a coffee asap!
Connection closed with Jan!