Name: Uttkarsh Raj

Module: Functional Programming

Student ID: 210785869

Directions to run and compile the code :

Step 1 => To run/compile the code, open the project folder using VS code.

Step 2 => Then go into the main project directory by using the command '*cd haskell-individual-project*'

Step 3 => Then to build the project run the command '*stack build*'

Step 4 => Now after the project is built, run the command '*stack run*' to execute the code and its output.

Note: This project will run concurrently.

Functioning of the project (Design Justification) :

=> The App has 4 modules including (main.hs)

- **UserInfo.hs** = Module which contains User Information
- **OutputProcess.hs** = Module which contains output generation process
- **Datatypes.hs** = Module which contains the User and Message datatype

=> In this project I have implemented a Haskell project that is using thread and concurrent computation.

=> In this app at random intervals, the thread is selecting one of the other users randomly and then sends a random message to that user.

=> After the app is executed, I am making sure that every user is receiving the message and the total count of all the message is coming to '*100*'

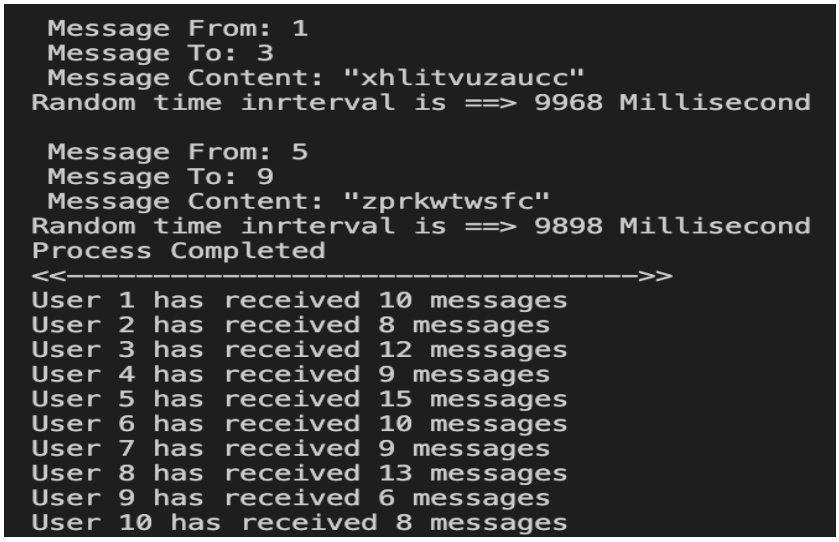

Fig. 1

- In the above screengrab (Fig. 1) it can be seen that:

=> Message from receiver(random user)

=> Message to sender (random user)

=> Message Content

=> Random Time interval

- The reasons I choose, why to use MVar:

=> It can be empty

=> It also helped me to synchronise patterns between threads

=> It functions to allow one-way communication between threads.

Issues Faced:

While doing the setup initially, I was facing the issue of a Haskell Compiler on my MacBook Pro with the M1 chip.

It was throwing the error regarding '*arch -x86_64*' missing. It was due to some update issue of Apple which then came out as a bug for M1 users for compiling haskell.

The command I ran to fix the issue is given below:

'*arch -x86_64 /bin/bash curl --proto '=https' --tlsv1.2 -sSf https://get-ghcup.haskell.org | sh*'

After this command, the issue got fixed.