

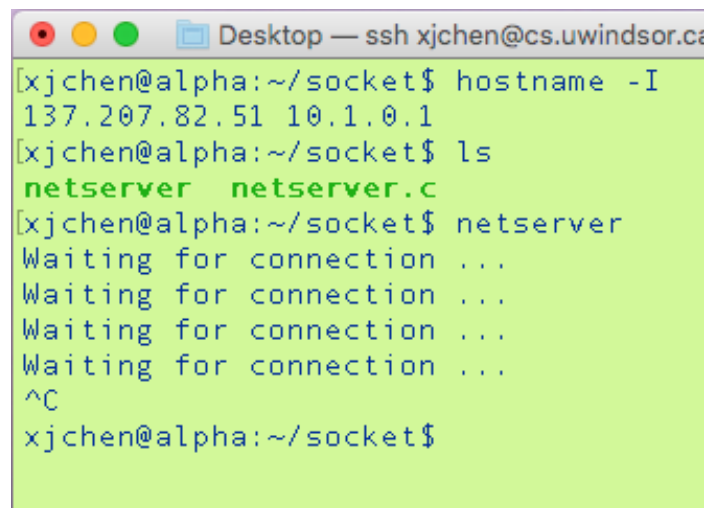
Assignment 5 - Socket

Use socket to write a client/server application. Once the client is connected to the server, it can get data from the server periodically.

- The server and client programs can be run on different machines.
- The server program is started first, waiting for client to connect.
- When the server program is terminated with CTRL-C, the client program is also terminated.
- When the client program is terminated with CTRL-C, the server program will wait for the next connection from client.
- The server program randomly generates a number 0, 1, or 2 periodically using alarm signals: each time alarm is triggered, this number is refreshed. This number is then transmitted to the client periodically.
- The client program keeps receiving data 0, 1, or 2 from the server and displays different shapes on the screen according to the received number.

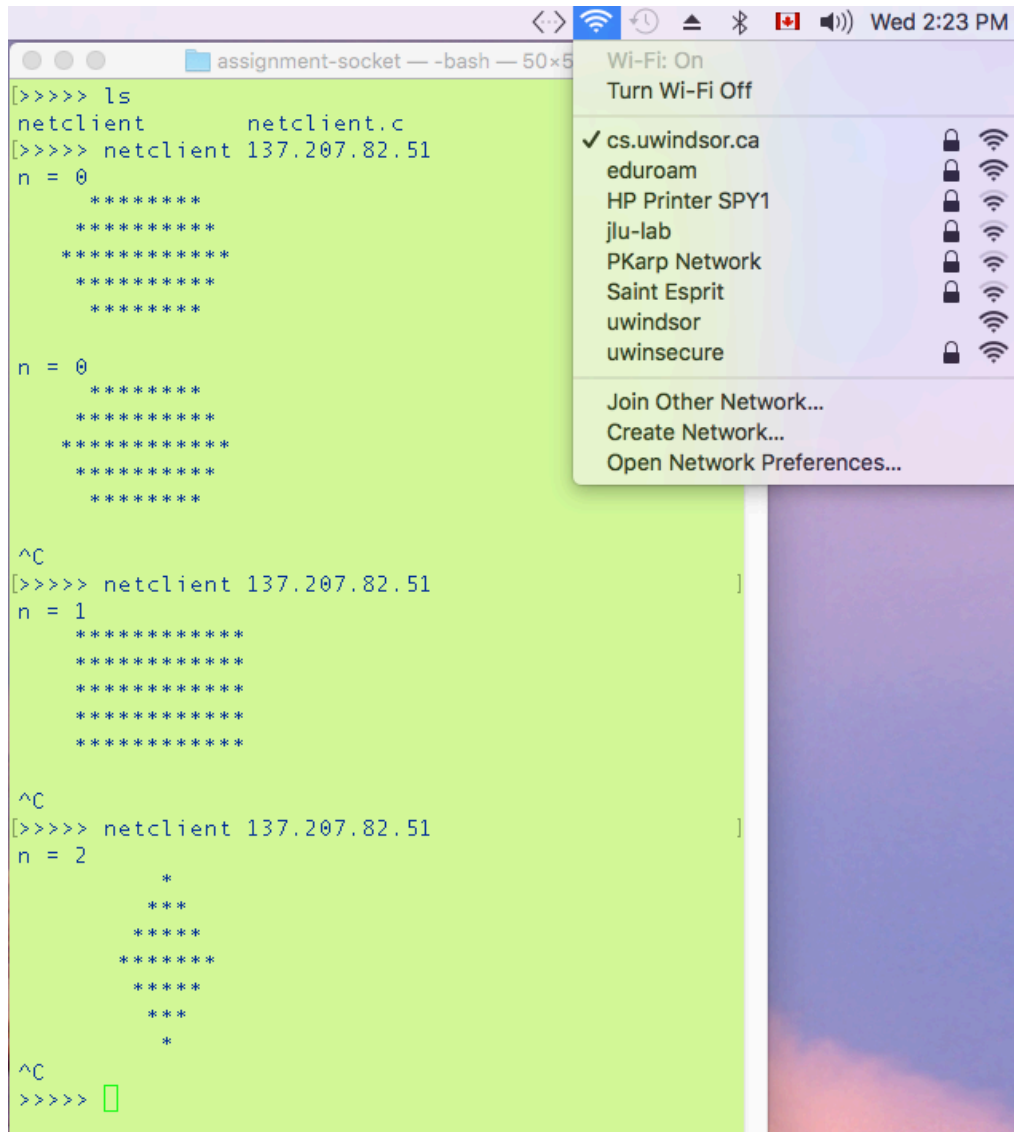
Sample run:

server program - executed on CS server (alpha)

A terminal window titled "Desktop — ssh xjchen@cs.uwindsor.ca" showing the execution of the netserver program. The user xjchen@alpha is in the directory ~/socket. They run 'hostname -I' which outputs '137.207.82.51 10.1.0.1'. Then they run 'ls' which shows 'netserver netserver.c'. Finally, they run 'netserver', which outputs 'Waiting for connection ...' four times. The process is then terminated with a Ctrl-C (^C), returning the prompt 'xjchen@alpha:~/socket\$'.

```
[xjchen@alpha:~/socket$ hostname -I
137.207.82.51 10.1.0.1
[xjchen@alpha:~/socket$ ls
netserver netserver.c
[xjchen@alpha:~/socket$ netserver
Waiting for connection ...
Waiting for connection ...
Waiting for connection ...
Waiting for connection ...
^C
xjchen@alpha:~/socket$
```

client program - executed on a local machine with wifi connection: cs.uwindsor.ca



The screenshot shows a macOS desktop environment. In the foreground, a terminal window titled "assignment-socket — -bash — 50x5" is open. The terminal output shows the execution of a program named "netclient". The user runs "ls" and "netclient netclient.c". Then, they run "netclient 137.207.82.51" three times. Each time, the program prints "n = 0", "n = 1", and "n = 2" respectively, followed by a series of asterisks. The program is interrupted by the user pressing Ctrl-C (^C) after each run. A Wi-Fi menu is open on the right side of the screen, showing "Wi-Fi: On" and a list of available networks: "cs.uwindsor.ca" (selected), "eduroam", "HP Printer SPY1", "jlu-lab", "PKarp Network", "Saint Esprit", "uwindsor", and "uwinsecure". The menu also includes options to "Join Other Network...", "Create Network...", and "Open Network Preferences...". The system status bar at the top right shows the date and time as "Wed 2:23 PM".

```
[>>>> ls
netclient      netclient.c
[>>>> netclient 137.207.82.51
n = 0
*****
*****
*****
*****
*****

n = 0
*****
*****
*****
*****
*****

^C
[>>>> netclient 137.207.82.51
n = 1
*****
*****
*****
*****
*****

^C
[>>>> netclient 137.207.82.51
n = 2
*
**
***
****
*****
*****
*****
**
*

^C
>>>> 
```