

### 3<sup>rd</sup> Programming Assignment

Goal: To test the student's proficiency in systems programming concepts including but not limited to file I/O, network sockets, GUI toolkits, and process execution.

Write a client-server system in C. The server does the following:

1. scan a machine to check for the following services:
  - a. tcp port 21 (ftp)
  - b. tcp port 22 (ssh)
  - c. tcp port 23 (telnet)
  - d. tcp port 25 (smtp)
  - e. tcp port 79 (finger)
  - f. tcp port 80 (http)
  - g. tcp port 110 (pop3)
  - h. tcp port 143 (imap2)
  - i. tcp port 161 (snmp)
  - j. tcp port 194 (irc)
  - k. tcp port 220 (imap3)
  - l. tcp port 443 (https)

The client does the following:

2. provide a GUI for the server. If the server is not running, the client executes the server.
3. ability to save the output to a text file. There are two save options. The first option saves into a new file. The second option appends to an existing file. The filename will be provided by the user. Each line of the output file will have the following output:

```
the_machine_name:port_scanned:status
```

e.g.

```
10.1.2.3:21:success
penoy.admu.edu.ph:22:success
pusit.admu.edu.ph:80:failed
```

Notes:

1. Program must be compiled with the -Wall and -Werror flags.
2. Program must abide by the class' coding standards.
3. Name of the primary source file must be "portscan.c".
4. All the files must be tarred and compressed. The file name must be "<family nameA>-<family name B>.tar.gz". For example, chua-yu.tar.gz.
5. Only maximum total bonus of 10 points can be attained.
6. No bonus will be given if the program breaks or ends abnormally - regardless of the options or early bird submission.
7. Late submission will be deducted 10 points for each day (Sundays and Holidays Included).
8. Final submissions must be emailed to the instructor (Mr. Yu for CS 159.3 B and Mr. Chua for CS 159.3 A).
9. Students should not edit or create a new tar.gz file in penoy. If in the case of undelivered mail, the date of last creation the the tar.gz file will be used as the basis of the project submission.
10. GUI must not stop responding to user input.
11. The client and server are configurable. The user can specify at what port the server will run and the port the client will connect. The server gets the port number via a command-line argument.

Grading:

20% Both programs compiles, links and executes properly

30% Server program successfully port scans

20% Client program successfully saves output to a file

15% Client program successfully implements a user interface (choose one: curses, Motif, GTK, Qt)

10% Includes the Man pages and a working Makefile

5% Both programs follow proper coding and documentation standards

8% BONUS: the program can scan udp ports e.g. port 53 (nameserver)

8% BONUS: the program can scan ports given the starting IP address and the ending IP address.

8% EARLY Submission

2% BONUS: the client implements a decent/logical/usable user interface.

Deadline: March 13, 2002 (Wednesday), 1200

Early Submission Deadline: March 6, 2002 (Wednesday), 1200