System Programming Programming hw1

TA: 簡瑋德、陳奕先、邵楚荏

IRLAB

Outline

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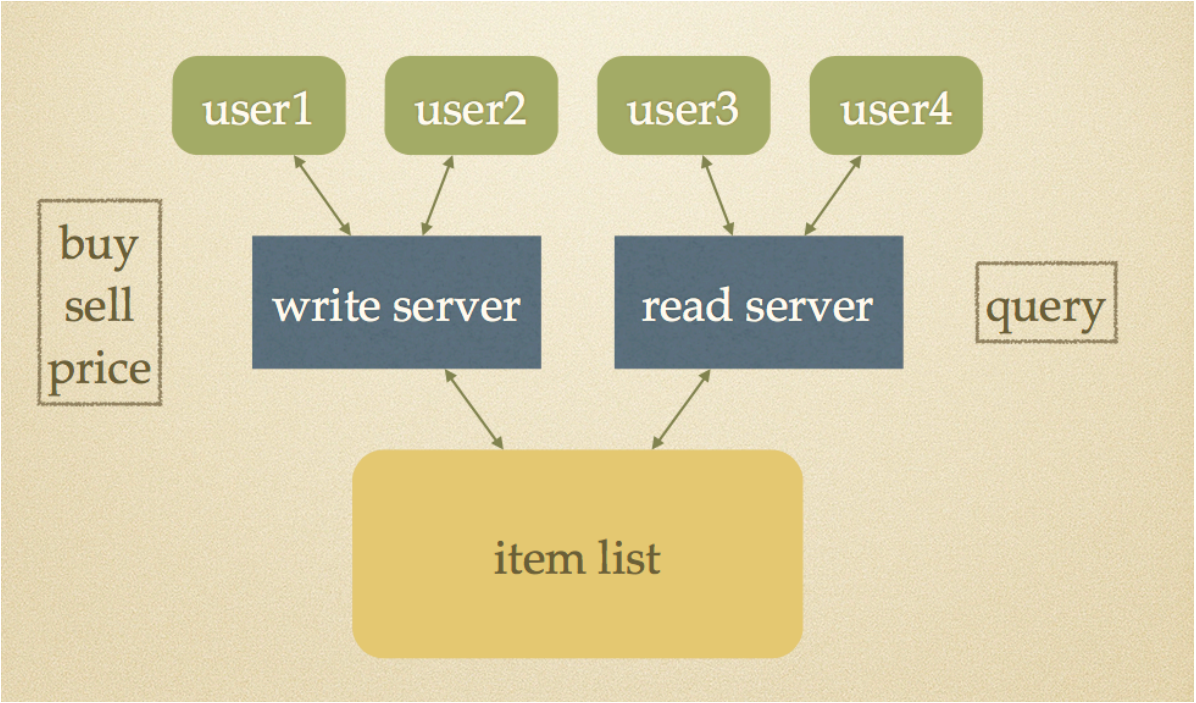
Goal

- This assignment is designed for you to …
  - Get familiar with Linux system call select() and advisory file lock technique.
  - Have a basic understanding in Server & Client interaction.
  - Compile and run program on UNIX-like environment.

Problem Description

- Given a simple server, you have to modify it to a bidding system supporting I/O Multiplexing and content protection.
- There are four operations you should implement on the bidding system :
  - Query
  - Buy
  - Sell
  - Change price

Bidding System Structure



Sample server execution

- Decompress the sample code :
  - $ tar –xzvf sp_hw1_code.tar.gz
- Compile the program :
  - $ make
- Run the sample system :
  - (Server side) : $ ./[server_name] [port]
  - (Client side) : $ telnet [server_address] [port]

Sample server execution

- Server side :

```
r07922044@linux1 [~/sp_hw1] ./read_server 12345

starting on linux1, port 12345, fd 3, maxconn 1024...
getting a new request... fd 4 from 140.112.30.32
```

- Client side:

```
r07922044@linux1 [~/sp_hw1] telnet linux1.csie.org 12345
Trying 140.112.30.32...
Connected to linux1.csie.org.
Escape character is '^]'.
```

Tasks you should do

- Handle multiple requests simultaneously.
  - using select() function to moniter all connection to the server.
- Set file lock to guarantee the correctness when executing some operaions.
  - You may use fcntl() this function to implement advisory file lock.
- Implement a bidding system to handle any reasonable cases and recheck the correctness of your system.

Grading

- Produce the executable files successfully. (1 point)
- read_server returns the details of specific item. (1 point)
- write_server can change item correctly. (1 point)
- Two requests issued to read_server. (1 point)
- Two requests issued to write_server. (1 point)
- Protection on single write_server. (1 point)
- Protection on multi-server. (2 point)

Submission

- Submit SP_HW1_{student id}.tar.gz to CEIBA
  - No other file types allowed!
- The compressed file should include three files in a folder :
  - {student_id}/
    - server.c (as well as other .c files)
    - Makefile
    - readme.txt

Punishment

- You will get NO credits for plagiarism
- Late submission
  - 5% for each day
- Error format
  - wrong file name/format
  - wrong output format

Reminder

- Read the specification file carefully.
- Run and Test your program on CSIE workstation (linux1~linux20).
- If you have any question, please feel free to ask TAs or on our FB group directly.
- Start your home work ASAP !

DEMO

Questions?

TA Information

- ntucsiesp@gmail.com
- FB Group :

https://www.facebook.com/groups/1668614433250602/

- TA hours
  - 10:20 ~ 12:00 Fri.
  - R302 CSIE building