Assignment 7 (Prog)

System Programming 2013

Introduction

- In this assignment, we will provide you a simple web server, you need to modify it to accept CGI requests.

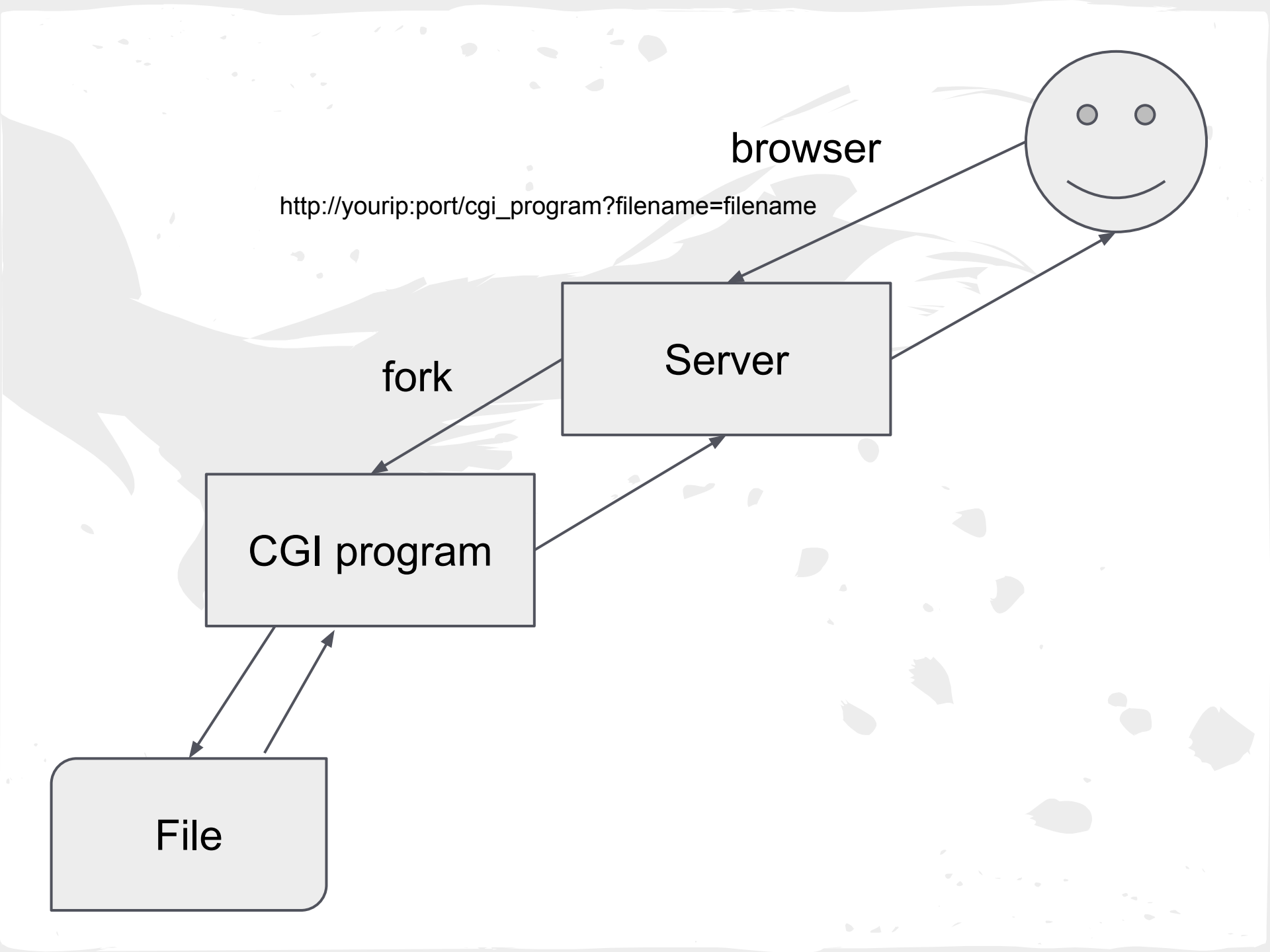
Introduction

- CGI program reads from STDIN and writes its result to STDOUT.

- You should write simple CGI programs
  - Read a filename
  - Write the content of the file if the file is accessible
  - Output appropriate error message and exit with a non-zero return code if the file is not accessible

Introduction

- The user can send the request to the web server via a URL
  - **http://yourip:port/**cgi_program**?filename=**filename
- Your server should properly write HTTP header to the client


browser
http://yourip:port/cgi_program?filename=filename
Server
fork
CGI program
File

Your jobs

- If cgi_program or filename doesn't match the condition, notify the client by HTTP status code "400 Bad Request".

- Your child process should pass the CGI-program output to let the parent process add HTTP header, and output the result to the client.

Your jobs

- When a user requests a CGI program which does NOT exist, notify the client by HTTP status code "404 Not Found"

- If the child process closes pipes before the parent write queries to its child. The server should notify the client by HTTP status code "500 Internal Server Error"

Your jobs

- If the child process terminates abnormally. the server notifies the client by HTTP status code "500 Internal Server Error"

- If the URL is:

  http://your_ip:port/info

  fork a child process and it sends SIGUSR1 signal to the server process to show the child processes' information

DEMO!

Not judged by a judge system.

Note

- All output/error messages above do not need to be strictly as the same as described in the spec.
- However, when you demo, it should be easy to identify which message corresponds to which case.
- Feel free to add more functionality or make the output look better!!!

Note

- It would be beneficial to output some debug messages to console, so you can know what the server is doing better.
- To demo that you returned the correct HTTP status code, you can use inspector in Chrome or Firefox (ctrl+shift+i, Network) to show the status code.
- It's encouraged to handle as many exception cases as you can.

How can I get full scores

1. I/O multiplexing (2 points)
2. Multi-process (2 points)
3. Show process info (3 points)
4. Detect the limits on cgi_program / filename (1 point)
5. Detect the CGI program which close the pipe before the server writes to it (2 points)
6. Detect the CGI program when it terminates abnormally (2 points)
7. Detect the CGI program when it exits with a non-zero exit code (2 points)

Submission

Course website: http://www.csie.ntu.edu.tw/~pjcheng/course/sp2013/

Submit your program before **01/14 23:59**

Demo time will be announced afterwards.

Resubmission

Assignment 3 (prog 2) second chance!

Deadline: **01/05 23:59 (hard deadline)**
Penalty: max(ori, new*0.8)

Upload it to Ceiba!

Question

Ptt2: SysProgram

or

TA time: 15:00 - 17:00 Fri. @217

or

Write an e-mail (Prefix your e-mail title with [SP])

時丕勳 r02922059@csie.ntu.edu.tw

施亭屹 r02922038@ntu.edu.tw

Check if your question has been asked in P2 before you come or email!