4.6 Assignment: Supporting Server-side Code Execution

Hide Assignment Information

Instructions

Estimated Effort Required: 6-8 hours

Learning Outcome: Students will understand how web-servers integrate scripting functionality by extending their HTTP server to permit PHP scripting.

Assignment Goal: You will produce an HTTP server capable of executing PHP scripts.

Preface: The following words should be interpreted as per RFC 2119 for this assignment: must, must not, required, shall, shall not, should, should not, recommended, may, and optional.

Description:

In this assignment, you will add scripting capabilities to your HTTP servers so that users of your server may write PHP scripts that can deliver dynamic content to clients accessing the server. Your server will permit clients to provide input both in the URL and in the body of a POST request.

Requirements

1. Python is recommended for its extensive string parsing libraries.
    a. You may use any programming language..
    b. The instructor may not be able to assist with specific programming errors if languages other than C, C++, PHP, Java, or Python are chosen.
2. You must not use any libraries built for parsing HTTP requests. You may use traditional string parsing libraries and functionality.
    a. If you have questions about whether a library is permissible, please ask.
3. Your server may be named whatever you wish.
4. Your server should have exactly two command line arguments:
    a. The IP address to listen on.
    b. The port to listen on.
5. Your server internals must use php-cgi at the command line to execute server-side code.
6. The input to a PHP script via a GET request will be provided via the url, as is standard in HTTP requests.
7. The input to a PHP script provided via a POST request will be provided in the body of the HTTP request, as is standard in HTTP requests.
8. Your server must ensure that $_GET and $_POST arrays are correctly populated. Doing this is poorly documented and is what students have traditionally had the hardest time with.
    a. For $_GET, please see the “hard way” in this response. https://stackoverflow.com/questions/942976/how-to-pass-get-and-post-data-to-the-php-executable
    b. For $_POST, please see: https://stackoverflow.com/questions/4030147/how-to-pass-post-data-to-the-php-cgi
9. The output of any script execution should be returned as the body of a 200 response.

10. If the script throws an exception, a 500-response code should be returned.
11. Your code must be documented(commented) using the following guidelines.
    a. https://medium.freecodecamp.org/code-comments-the-good-the-bad-and-the-ugly-be9cc65fbf83
12. Your code must execute on Ubuntu 18.04.

Deliverables

1. A zip file that...
    a. Must include a readme text file which provides:
        i. Instructions on how to install any additional dependencies your code may have, including compilers/interpreters and development environments that are necessary to run your code.
        ii. Instructions for how to compile your code
        iii. Instructions on how to execute your code
    b. Should include a script that can be run to install any additional dependencies your code may have, if applicable.
    c. May include a script that can be used to compile your code, if applicable.
    d. Must include your source code

Due Date

Feb 17, 2020 11:55 PM

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