Assignments 〉 1.9 Assignment 1: Building an HTTP Client

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▼ Hide Assignment Information

Instructions

Estimated Effort Required: 3-6 hours

Learning Outcome: Students will gain an understanding of how to make HTTP requests and parse HTTP responses programatically.

Assignment Goal: You will produce a script or program which must print a list of all EXTERNAL references in the HTML response to an HTTP/S request.

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:

This assignment is focused on client-side programming. This will be one of very few assignments that will be focused on the client-side of web application security. You will be building a small HTTP client similar to the one demonstrated in the lecture videos. Where that HTTP client printed all of the JavaScript references in a website, your HTTP client will print all of the **external** references in a website. An external reference, also defined below, is one that does not reside on the host (to the best of your knowledge) being accessed in the HTTP request.

In this assignment, you will learn basic concepts related to making HTTP requests and parsing HTTP responses without using pre-made libraries for the task. This is not a 'real world' assignment. In the real world, you would be encouraged to use these libraries for many reasons. We will be using this understanding as a starting point for looking at the relationship between HTTP and security issues in HTTP servers. You will learn the basics of treating HTTP requests/responses as strings, which will be the basis of the next three assignments in which you construct your own web-server using only sockets and string parsing functions.

This assignment will also service as a mechanism to determine if you are ready to take this course.

Requirements:

1. 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.
    b. Even though urllib was demonstrated in the lecture videos for the week, you may not use it on this assignment.
3. You may name your HTTP client whatever you wish.
4. Your HTTP client must accept exactly one command line argument: the URL of the resource being requested. This must include whether the resource is HTTP or HTTPS. For example, both *python3 ref.py http://www.rit.edu* AND *python3 ref.py https://www.rit.edu* are valid.
5. The output of your script/program must take usability into consideration when printing output. The output must only include each external reference on the site and a count of the number of unique external references.
6. You must not have duplicate external references.
7. A unique reference is defined as one residing on a different host.
    a. If you are making a request to www.rit.edu and there is a reference to www.rit.edu/files/example.js, that is not an external reference.

    b. If you are making a request to www.rit.edu and there is a reference to csec.rit.edu/files/example.jpeg, that is an external reference.

8. 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
9. 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 (if necessary) your code. Be sure to provide the specific command used 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, not just the executable.

0.8 Assignment Rubric

DUE: 1/20/2020 @ 11:55 PM

Due Date

Jan 20, 2020 11:55 PM

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