Lab Report

ECPE 170 – Computer Systems and Networks – Spring 2021

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Lab Topic: Network Socket Programming (Basic) (Lab #: 8)

Question #1:
What is first line of the python script that starts with #! doing? Where in ECPE 170 have you seen this before?
Answer:
It is setting the interpreter to use for python. I've seen the same during bash scripting

Question #2:
Document the HTTP request and the server response when you manually download the HTML file at http://spaceref.com via Netcat.
Answer:

```
GET / HTTP/1.1
Host: www.spaceref.com
Connection: close

HTTP/1.1 200 OK
Date: Sun, 21 Mar 2021 15:56:54 GMT
Server: Apache/2.2.22 (Ubuntu)
X-Powered-By: PHP/5.3.10-1ubuntu3.13
Vary: Accept-Encoding
Connection: close
Transfer-Encoding: chunked
Content-Type: text/html

3326
<!DOCTYPE html>
<html lang="en">
<head>
    <title>SpaceRef</title>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />

    <!-- description -->
    <meta name="generator" content="JetBrains PhpStorm/Intercat/Movable
Type Pro" />
    <META NAME="description" content="SpaceRef is a space news and
reference site. This includes space exploration and missions, a space
calendar of events, interactive space news and a space directory and search
engine.">
    <META NAME="keywords" content="space,space exploration,nasa
watch,astrobiology,mars,space search engine">
    <META NAME="subject" CONTENT="Science:Space">

    <!-- scripts -->
    <script type="text/javascript">var _sf_startpt=(new Date()).getTime()</
script>
    <script src="js/main.js" type="text/javascript"></script>
    <!--[if lt IE 9]>
    <script src="js/html5shiv.js"></script>
    <![endif]-->

    <meta http-equiv="Content-Script-Type" content="text/javascript" />

    <!-- styles -->
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
    <link href="css/bootstrap-mod.css" rel="stylesheet">
    <link href="css/bootstrap-responsive.css" rel="stylesheet">
    <link rel="alternate" type="application/atom+xml" title="Atom"
href="http://feeds.feedburner.com/spaceref/jext">
    <link rel="apple-touch-icon"
href="http://images.spaceref.com/logos/apple-touch-icon.png" />
    <link rel="icon" type="http://spaceref.com/ico"
href="http://spaceref.com/favicon.ico">

    <script type='text/javascript'>
        var googletag = googletag || {};
        googletag.cmd = googletag.cmd || [];
        (function() {
            var gads = document.createElement('script');
            gads.async = true;
            gads.type = 'text/javascript';
            var useSSL = 'https:' == document.location.protocol;
            gads.src = (useSSL ? 'https:' : 'http:') +
                    '//www.googletagservices.com/tag/js/gpt.js';
            var node = document.getElementsByTagName('script')[0];
            node.parentNode.insertBefore(gads, node);
        })();
    </script>
```

Question #3:
Document the HTTP request and the server response when you manually download the HTML file at http://neverssl.com/ via Netcat

Answer:

```
GET / HTTP/1.1
Host: www.neverssl.com
Connection: close

HTTP/1.1 200 OK
Content-Type: text/html
Content-Length: 2536
Connection: close
Last-Modified: Thu, 19 Nov 2020 22:29:21 GMT
Accept-Ranges: bytes
Server: AmazonS3
Date: Sun, 21 Mar 2021 04:31:11 GMT
ETag: "e8bb9152091d61caa9d69fed8c4aebc6"
Vary: Accept-Encoding
X-Cache: Hit from cloudfront
Via: 1.1 1d57d3cbfc5a5b868b460784e4cd7888.cloudfront.net (CloudFront)
X-Amz-Cf-Pop: SIN52-C3
X-Amz-Cf-Id: MiQBO8d3kIi-M_0ewmIriBGS_QWdJhSotOAD8b1_SM04piaoVLm_3g==
Age: 42911

<html>
    <head>
        <title>NeverSSL - helping you get online</title>

        <style>
```

```
        body {
             font-family: Montserrat, helvetica, arial, sans-serif;
             font-size: 16x;
             color: #444444;
             margin: 0;
        }
        h2 {
            font-weight: 700;
            font-size: 1.6em;
            margin-top: 30px;
        }
        p {
            line-height: 1.6em;
        }
        .container {
            max-width: 650px;
            margin: 20px auto 20px auto;
            padding-left: 15px;
            padding-right: 15px
        }
        .header {
            background-color: #42C0FD;
            color: #FFFFFF;
            padding: 10px 0 10px 0;
            font-size: 2.2em;
        }
        <!-- CSS from Mark Webster
https://gist.github.com/markcwebster/9bdf30655cdd5279bad13993ac87c85d -->
        </style>
    </head>
    <body>

    <div class="header">
        <div class="container">
        <h1>NeverSSL</h1>
        </div>
    </div>

    <div class="content">
    <div class="container">

    <h2>What?</h2>
    <p>This website is for when you try to open Facebook, Google, Amazon,
etc
    on a wifi network, and nothing happens. Type "http://neverssl.com"
    into your browser's url bar, and you'll be able to log on.</p>

    <h2>How?</h2>
    <p>neverssl.com will never use SSL (also known as TLS). No
    encryption, no strong authentication, no <a

href="https://en.wikipedia.org/wiki/HTTP_Strict_Transport_Security">HSTS</
a>,
    no HTTP/2.0, just plain old unencrypted HTTP and forever stuck in the
```

```
dark
    ages of internet security.</p>

    <h2>Why?</h2>
    <p>Normally, that's a bad idea. You should always use SSL and secure
    encryption when possible. In fact, it's such a bad idea that most
websites
    are now using https by default.</p>

    <p>And that's great, but it also means that if you're relying on
    poorly-behaved wifi networks, it can be hard to get online.  Secure
    browsers and websites using https make it impossible for those wifi
    networks to send you to a login or payment page. Basically, those
networks
    can't tap into your connection just like attackers can't. Modern
browsers
    are so good that they can remember when a website supports encryption
and
    even if you type in the website name, they'll use https.</p>

    <p>And if the network never redirects you to this page, well as you can
    see, you're not missing much.</p>

    </div>
    </div>

    </body>
</html>
```

Question #4:
Document the HTTP request and the server response when you manually download the PNG image file at http://spaceref.com/img/logo_320red.png via Netcat
Note: Is there a good reason why it doesn't make sense to include the server response (at least, the data portion) in your lab report? On a related note, if your Terminal window hangs during this step, at least you'll know why!
Answer:

```
GET /img/logo_320red.png HTTP/1.1
Host: www.neverssl.com
Connection: close

HTTP/1.1 200 OK
Date: Sun, 21 Mar 2021 16:18:34 GMT
Server: Apache/2.2.22 (Ubuntu)
Last-Modified: Fri, 06 May 2016 14:21:30 GMT
ETag: "12434f-c74-5322d2cd8a159"
Accept-Ranges: bytes
Content-Length: 3188
Connection: close
Content-Type: image/png
```

The terminal tries to print the binary contents of the image file and ends up printing out junk.