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Lab Topic: Network Socket Programming (Lab #: 7)

Question #1:

What is the first line of the python script that starts with #! doing? Where in ECPE 170 have you seen this before?

Answer:

The #! is a “shebang” that defines where the interpreter is located. In this python script, the interpreter path is at #!/usr/bin/env python3. Its going to use this python interpreter to run the program.

Question #2:

Document the HTTP request and the server response when you manually download the HTML file at <http://spaceref.com> via Netcat.

(By "document", you should provide the full *client request* and a partial *server response* (top 40-50 lines is sufficient for me to tell if you downloaded the right file). The script utility can make this capture easy for you - see below.)

Answer:

```
netcat -C www.spaceref.com 80
```

GET / HTTP/1.1

Host: spaceref.com

Connection: close

HTTP/1.1 200 OK

Date: Sat, 19 Mar 2022 18:02:00 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

33df

```
<!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>
```

```
<script type='text/javascript'>

    googletag.cmd.push(function() {

        googletag.defineSlot('/1017648/FullBanner', [468, 60],
            'div-gpt-ad-1380219597036-0').addService(googletag.pubads());
            googletag.defineSlot('/1017648/HalfPageAd', [300, 600],
            'div-gpt-ad-1380219597036-1').addService(googletag.pubads());

        googletag.defineSlot('/1017648/Large_Leaderboard', [970, 90],
            'div-gpt-ad-1485098226474-0').addService(googletag.pubads());

        googletag.defineSlot('/1017648/Leaderboard', [728, 90],
            'div-gpt-ad-1380219597036-3').addService(googletag.pubads());
            googletag.defineSlot('/1017648/MediumRectangle', [300, 250],
            'div-gpt-ad-1380219597036-4').addService(googletag.pubads());

        googletag.defineSlot('/1017648/Skyscraper', [120, 600],
            'div-gpt-ad-1380219597036-5').addService(googletag.pubads());

        googletag.defineSlot('/1017648/300by100_SR_banner', [300, 100],
            'div-gpt-ad-1459520066155-0').addService(googletag.pubads());

        googletag.pubads().enableSingleRequest();
        googletag.enableServices();
```

});

Question #3:

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

Answer:

```
netcat -C neverssl.com 80
```

GET / HTTP/1.1

Host: neverssl.com

Connection: close

HTTP/1.1 200 OK

Content-Type: text/html

Content-Length: 3961

Connection: close

Date: Sat, 19 Mar 2022 11:26:17 GMT

Last-Modified: Thu, 04 Nov 2021 18:27:33 GMT

ETag: "41f0211ff315bbd7e2b6dc2e98143935"

Accept-Ranges: bytes

Server: AmazonS3

Vary: Accept-Encoding

Cache-Control: public, max-age=86400

X-Cache: Hit from cloudfront

Via: 1.1 c20831c51415172b5e09631b0a5bbb1e.cloudfront.net (CloudFront)

X-Amz-Cf-Pop: LAX50-C1

X-Amz-Cf-Id: dAzaD4VpGly4zUjiVnQxWbDglv2cBwdWUSIGUm7de-IaPCB4RyMaJA==

Age: 24518

<html>

<head>

<title>NeverSSL - Connecting ... </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;  
}  
  
.notice {  
background-color: red;  
color: white;  
padding: 10px 0 10px 0;  
font-size: 1.25em;  
animation: flash 4s infinite;  
}  
  
@keyframes flash {  
0% {  
background-color: red;  
}  
50% {
```

```
background-color: #AA0000;  
}  
  
0% {  
background-color: red;  
}  
  
}  
  
<!-- CSS from Mark Webster  
  
https://gist.github.com/markcwebster/9bdf30655cdd5279bad13993ac87c85d-->  
</style>  
  
  

```

'yawn', 'poem', 'song', 'joke', 'verse', 'kiss',
'sunrise',
'sunset', 'eclipse', 'moon', 'rainbow', 'rain',
'plan',
'play', 'chart', 'birds', 'stars', 'pathway',
'secret',
'treasure', 'melody', 'magic', 'spell', 'light',
'morning'];

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:

```
netcat -C spaceref.com 80
```

```
GET /img/logo_320red.png HTTP/1.1
```

```
Host: spaceref.com
```

```
Connection: close
```

```
HTTP/1.1 200 OK
```

```
Date: Sat, 19 Mar 2022 19:29:00 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
```

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Question #4:

Answer: