Hacknet, IRL Hacking, and You

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ITC-499 Web Systems

Report Summary

- Attempted to build a website that used a version of the Steam game Hacknet to teach users the importance of cybersecurity
  - Website is completely non-functional
- Tried to use JavaScript to make a pared-down version of the game
- Build a database to record all necessary information for each user (username, password, an integer to track progress through the game, etc)

Project Milestones/Timeline

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9

Adjust table row

Red: Research time
Green: Web Development time (HTML/CSS, PHP, JavaScript)
Blue: SQL Database Coding
Orange: Debugging

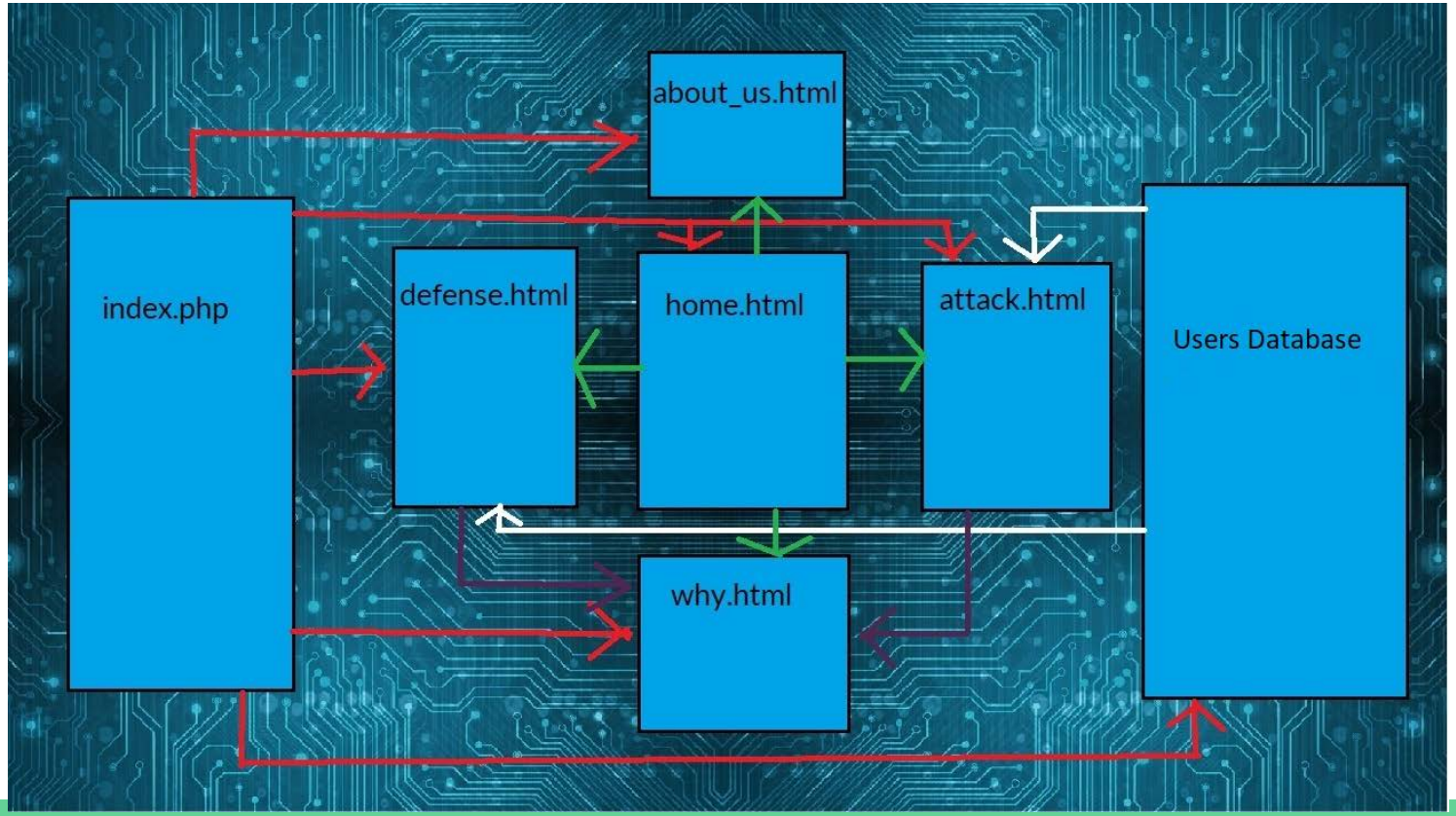
System Requirements

- System must have two functioning games (one for hacking and one for cybersecurity)
- System must have properly formatted webpages
- System must have a SQL database that is referenced properly
- System should allow new users to make new accounts, and for old users to be able to reset their progress and start over if desired
- System should be easy to navigate
- System should be aesthetically appealing

Software Programming Tools

- Notepad++
- XAMPP
- MySQL
- Apache Webserver*

Web System Design



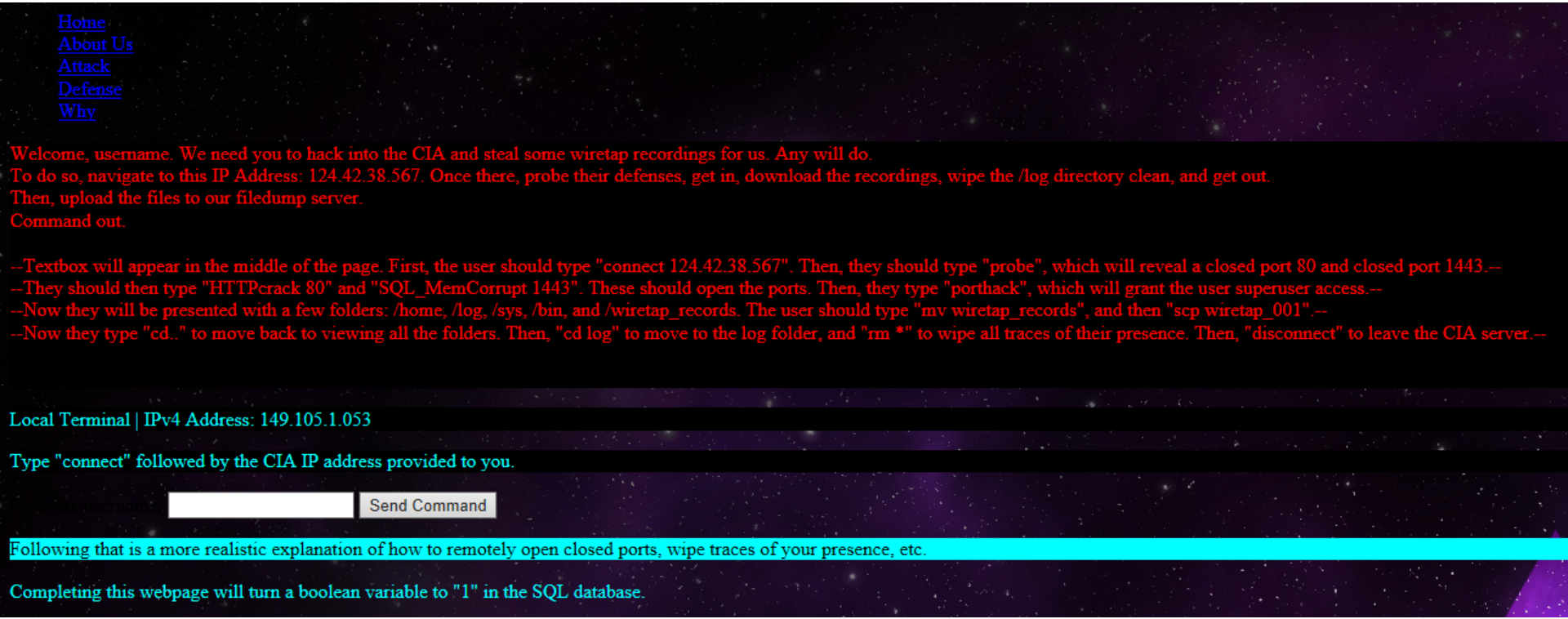
Data Table

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0013 seconds.)

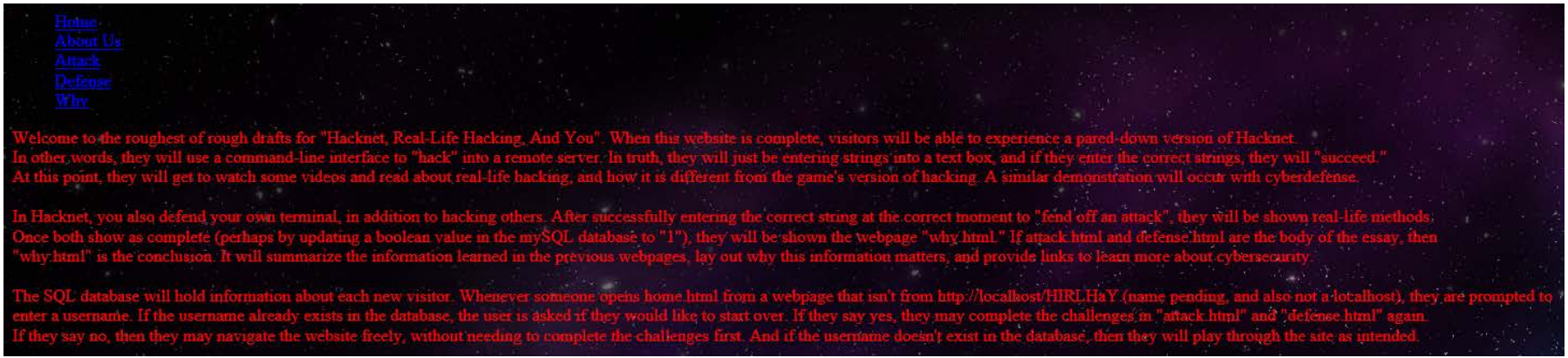
```
SELECT * FROM `users`
```

Id	Username	PASSWORD	Created_At	ProgressInt

“Implementation and Testing”: attack.html

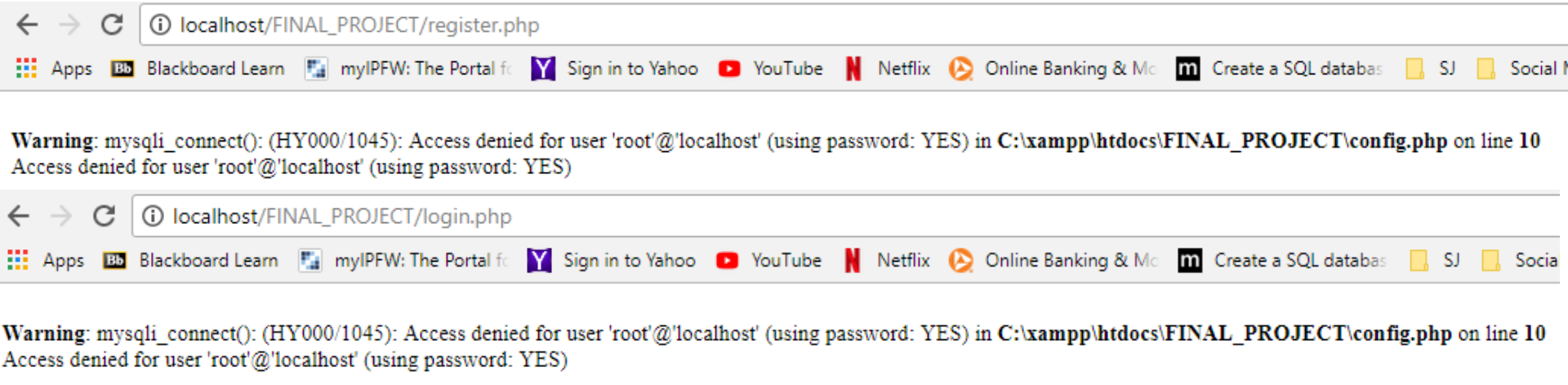


“Implementation and Testing”: defense & home.html

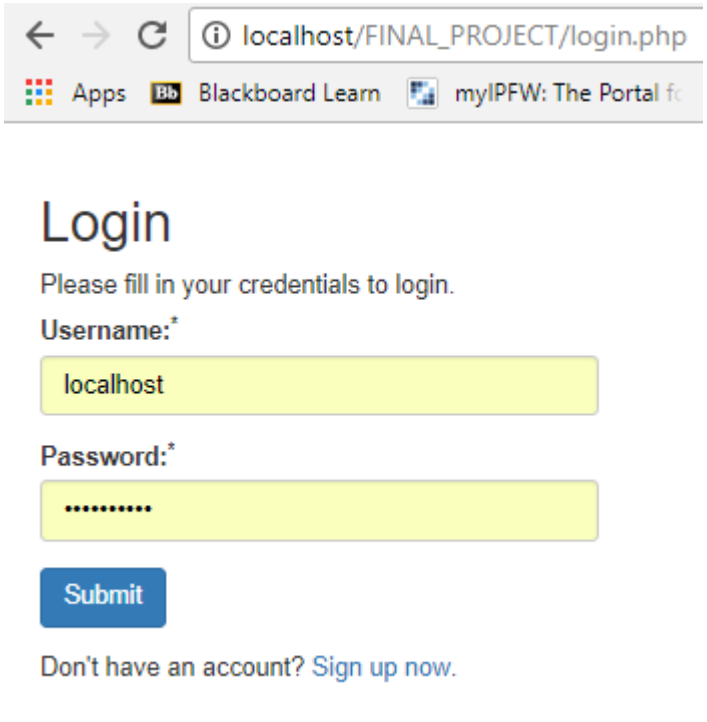


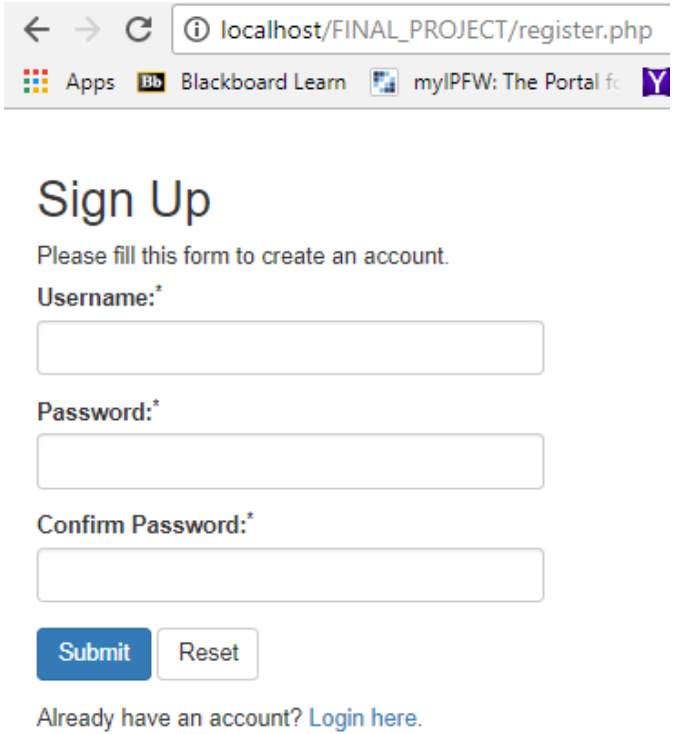
“Implementation and Testing”: About_Us & why.html

“Implementation and Testing”: register & login.php

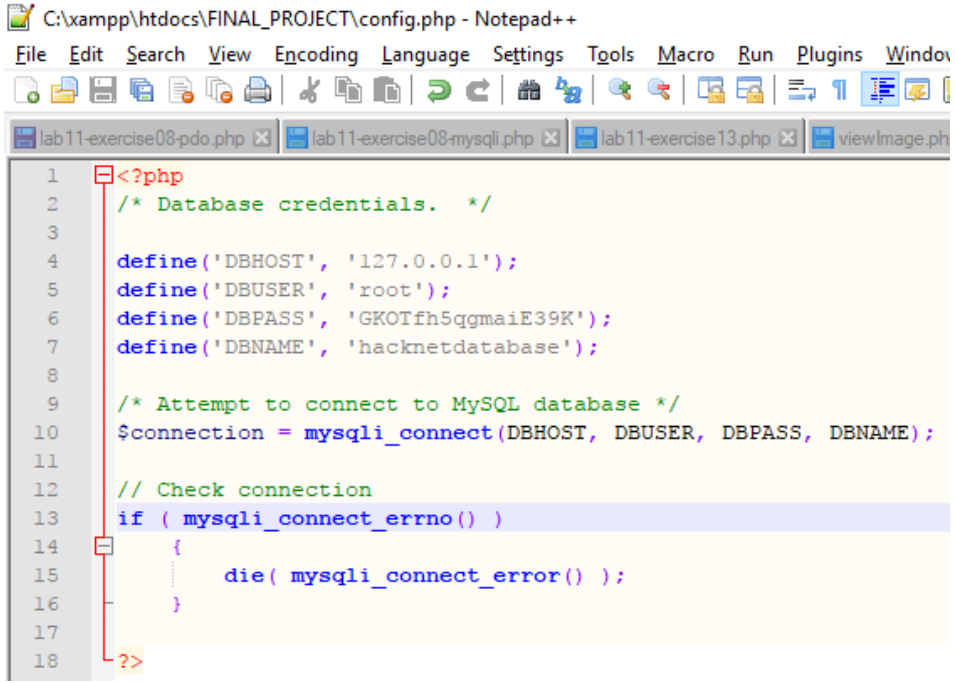


“Implementation and Testing”: register & login.php

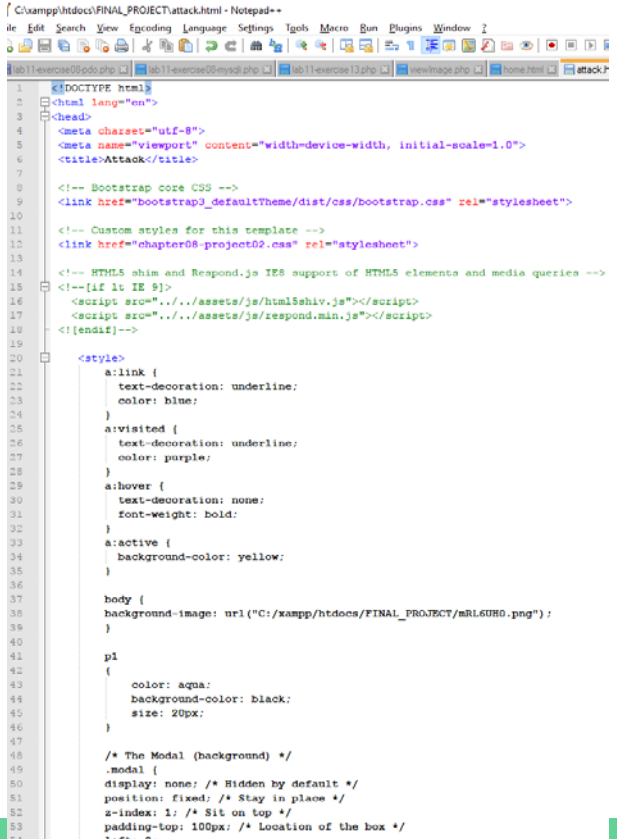




“Implementation and Testing”: config.php code



“Implementation and Testing”: attack.html code



```
        top: 0;
        width: 100%; /* Full width */
        height: 100%; /* Full height */
        overflow: auto; /* Enable scroll if needed */
        background-color: rgb(0,0,0); /* Fallback color */
        background-color: rgba(0,0,0,0.4); /* Black w/ opacity */
        }

        /* Modal Content */
        .modal-content {
            background-color: #fefefe;
            margin: auto;
            padding: 20px;
            border: 1px solid #888;
            width: 80%;
        }

        /* The Close Button */
        .close {
            color: #aaaaaa;
            float: right;
            font-size: 28px;
            font-weight: bold;
        }

        .close:hover,
        .close:focus {
            color: #000;
            text-decoration: none;
            cursor: pointer;
        }
    </style>

</head>

<body>
    <nav>
        <ul>
            <li><a href="http://localhost/FINAL_PROJECT/home.html">Home</a></li>
            <li><a href="http://localhost/FINAL_PROJECT/about_us.html">About Us</a></li>
            <li><a href="http://localhost/FINAL_PROJECT/attack.html">Attack</a></li>
            <li><a href="http://localhost/FINAL_PROJECT/defense.html">Defense</a></li>
            <li><a href="http://localhost/FINAL_PROJECT/why.html">Why</a></li>
        </ul>
    </nav>
    <p style="color:red; background-color: black">Welcome, username.  We need you to hack into the CIA and steal some wiretap recordings for us.  Any will do.<br>
    To do so, navigate to this IP Address: 124.42.38.567.  Once there, probe their defenses, get in, download the recordings, wipe the /log directory clean, and get out.<br>
    Then, upload the files to our filedump server.<br>
    Command out.<br><br>

    --Textbox will appear in the middle of the page.  First, the user should type "connect 124.42.38.567".  Then, they should type "probe", which will reveal a closed port 80 and closed port 1443.--<br>
    --They should then type "HTTPcrack 80" and "SQL_MemCorrupt 1443".  These should open the ports.  Then, they type "porthack", which will grant the user superuser access.--<br>
    --Now they will be presented with a few folders: /home, /log, /sys, /bin, and /wiretap_records.  The user should type "mv wiretap_records", and then "scp wiretap_001".--<br>
    --Now they type "cd.." to move back to viewing all the folders.  Then, "cd log" to move to the log folder, and "rm *" to wipe all traces of their presence.  Then, "disconnect" to leave the CIA server.--<br><br><br>
```

```
    </p>

    <!--Game UI.-->
    <p id="game_attack" style="color:aqua; background-color:black"></p>
    <p id="tutorial_text" style="color:aqua; background-color:black"></p>
    C:\Users\username: <input type="text" id="cmd_prompt" name="cmd_prompt" value="">
    <button id="cmdBtn">Send Command</button>
    <!-- The Modal -->
    <div id="errorModal" class="modal">

      <!-- Modal content -->
        <div class="modal-content">
        <span class="close">&times;</span>
        <p>Incorrect input.  Check spacing, capitalization, and spelling.</p>
        </div>

    </div>

    <!--The game is here.-->
    <script>
    var startString = "Local Terminal | IPv4 Address: 149.105.1.053";
    var startPrompt = "Type \"connect\" followed by the CIA IP address provided to you.";
    document.getElementById("game_attack").innerHTML = startString;
    document.getElementById("tutorial_text").innerHTML = startPrompt;
    <!-- An integer that records the user's progress in the attack game. -->
    var progress = 0;

    // Get the modal
    var modal = document.getElementById('errorModal');

    //Get the modal button
    var btn = document.getElementById("cmdBtn");

    // Get the <span> element that closes the modal
    var span = document.getElementsByClassName("close")[0];

    // When the user clicks the button, open the modal
    btn.onclick = function() {
    modal.style.display = "block";
}

    // When the user clicks on <span> (x), close the modal
    span.onclick = function() {
    modal.style.display = "none";
}

    // When the user clicks anywhere outside of the modal, close it
    window.onclick = function(event) {
    if (event.target == modal) {
        modal.style.display = "none";
    }
}

    btn.onClick = function()
    {
    if (document.getElementById(cmd_prompt).value!="connect 124.42.38.567")
    { modal.style.display = "block";}
    else if (document.getElementById(cmd_prompt).value=="connect 124.42.38.567")
    {
        document.getElementById("game_attack").innerHTML = "Remote Server | IPv4 Address: 124.42.38.567";
        document.getElementById("tutorial_text").innerHTML = "Type \"probe\" to scout the server's defenses.";
        progress = 1;
    }
    }
    </script>

    <p style="color: black; background-color: cyan">Following that is a more realistic explanation of how to remotely open closed ports, wipe traces of your presence, etc.</p>
    <p style="color: cyan">Completing this webpage will turn a boolean variable to "1" in the SQL database.</p>
</body>
```

Lessons Learned

- Process of creating a web site is laborious and time-consuming
- Any task will be at least twice as complex as initially believed
- Procrastination should be kept to a minimum, if not avoided outright
  - Can ask for help sooner that way
- Always be social and make friends in class who can explain things to you
  - A partner would have been invaluable for this project.

Conclusion

- Thought project would teach me more about cybersecurity
- Project actually helped me learn a great deal about:
  - Teamwork (or the lack thereof)
  - Web Systems (and the design thereof)
- Hopefully, will utilize lessons learned in the future
  - Start projects sooner; use free time to dabble in any ongoing projects

References

- Hosting, SiteGround. Web. “How to Create Database with PhpMyAdmin Tutorial.” SiteGround, 12 Mar 2014. Web. Retrieved 05 December 2017. <https://www.siteground.com/tutorials/phpmyadmin/>
- HTML5, CSS, JavaScript, PHP Tutorial. (N.D.). Retrieved 9 December 2017. <https://www.w3schools.com/>
- Various questions and answers (various dates). Retrieved 9 December 2017. <https://stackoverflow.com/questions >
- Php.net. “PHP: mysqli_connect - Manual”. (N.D.). Web. Retrieved 9 December 2017. <http://php.net/manual/en/function.mysqli-connect.php>