

waph-sanipidr

WAPH-Web Application Programming and hacking

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Short-bio : I have very interested in web programming and ethical hacking .



Hackathon Overview:

- In the hackathon 1, I learned about keeping websites safe from attacks like cross-site scripting (XSS), which are common and can cause big problems. We discussed about the OWASP Top Vulnerabilities, which are like a list of the most important things to watch out for. One big thing is making

sure any information people put into a website is checked carefully, so bad stuff can't get in. And when the website shows information back to people, it needs to be done in a safe way, so bad code can't sneak in. We looked at real examples of what can go wrong when websites aren't protected well, which showed me why it's so important to take security seriously.

Repository Information

Repository's URL: <https://github.com/sanipidr/waph-sanipidr/tree/main/Hackathon1>

Hackathon-1: Cross-Site Scripting Attacks and Defenses

Task 1: Attack

Level-0 - URL: <http://waph-hackathon.eastus.cloudapp.azure.com/xss/level0/echo.php>
 -Attacking Script:

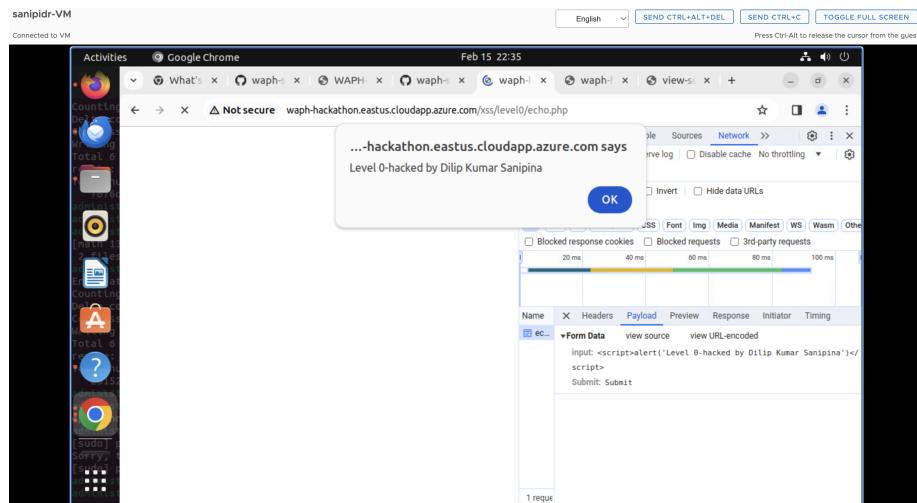


Figure 1: Level-0

Level-1 - URL: <http://waph-hackathon.eastus.cloudapp.azure.com/xss/level1/echo.php>
 -Attacking Script: ?input=

Level-2 - URL: <http://waph-hackathon.eastus.cloudapp.azure.com/xss/level2/echo.php>

- The website's HTTP request doesn't include input fields or path variables. Instead, it's connected to a simple HTML form. This form lets people submit offensive scripts directly, which opens the door for injecting harmful code into the website.

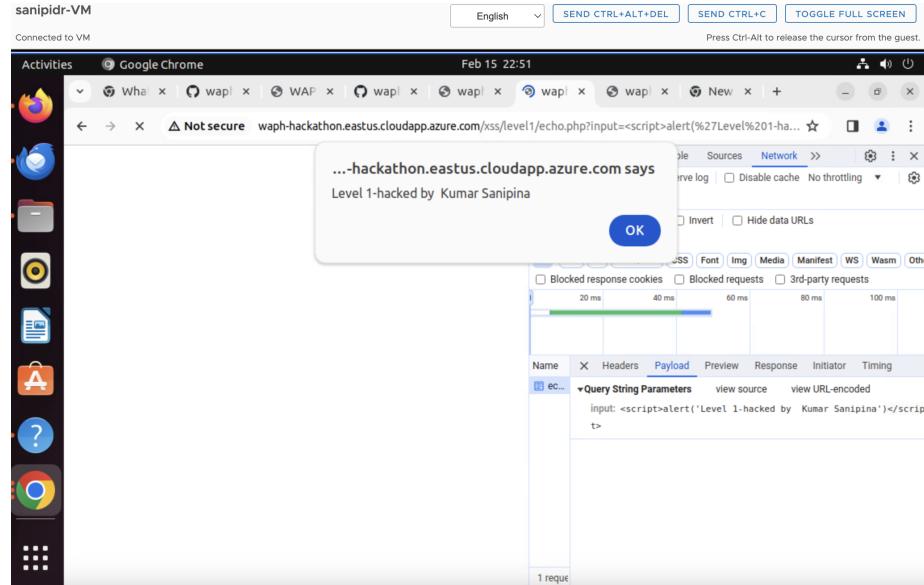


Figure 2: Level-1

-Attacking Script: ?input=

Guess Source Code: - source code: Guessing source code

```
if (!isset($_POST['input'])){
    die("{\"error\": \"please provide the 'input' field in a Http POST Request\"}");
}
echo $_POST['input'];
```

Level-3

- URL: http://waph-hackathon.eastus.cloudapp.azure.com/xss/level3/echo.php
- At level-3, the web application filters out the `<script>` tag that's directly entered through the input. However, attackers can still break their harmful code into smaller parts to bypass this filter and successfully carry out an XSS attack.

-Attacking Script: ?input= <scr

ipt> Guess Source Code: - source code: Guessing source code

```
$input = echo $_POST['input'];
$input=str_replace(['<script>', '</Script>'], '', $input)
```

Level-4

- URL: http://waph-hackathon.eastus.cloudapp.azure.com/xss/level/echo.php
- At level-4 filtering, direct

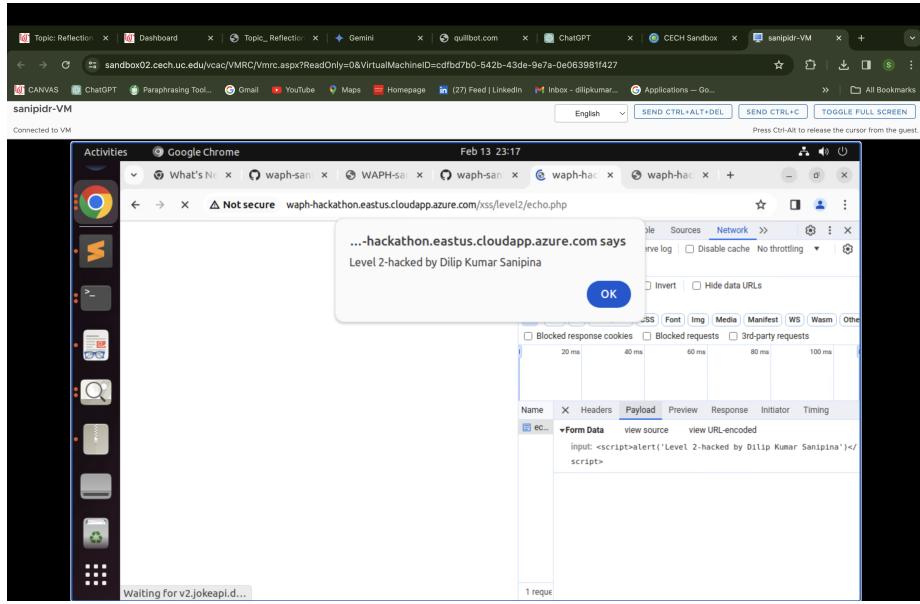


Figure 3: Level-2

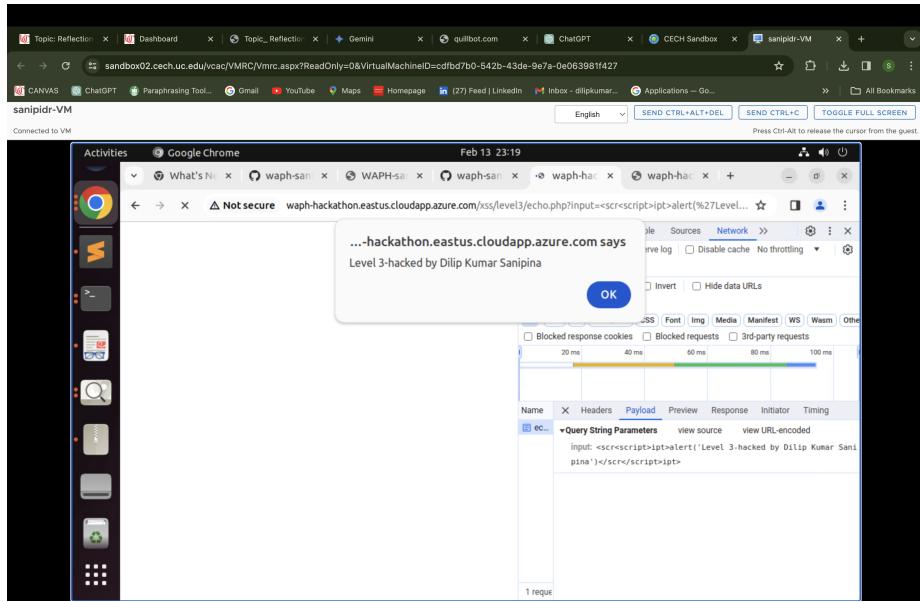


Figure 4: Level-3

tags are blocked. Instead, attackers exploit the onload() function of the body tag to execute XSS scripts. They combine their script with this function, triggering malicious actions once the page finishes loading. This bypasses filtering and underscores the need for robust security practices to mitigate XSS vulnerabilities effectively.

-Attacking Script: ?input=

hacked

Guess Source Code: - source code: Guessing source code

```
$input = $_GET['input']
if (preg_match('/<script\b[^>]*>(.*)?</script>/is',$input)) {
    exit('{"error": "No \'script\' is Allowed!"}');
}
else
    echo($input);
```

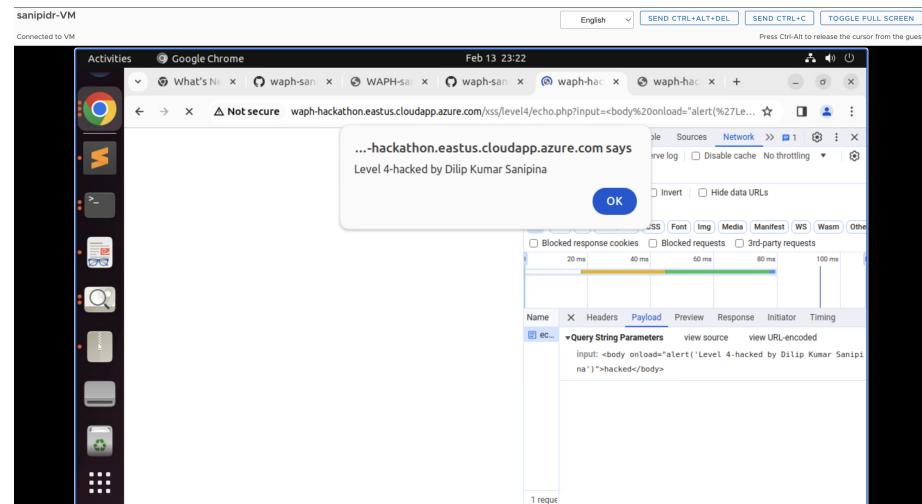


Figure 5: Level-4

Level-5

- URL: <http://waph-hackathon.eastus.cloudapp.azure.com/xss/level5/echo.php>
- At level-5 security, both the tag and the alert() function are filtered out to prevent XSS attacks. To overcome these restrictions and still trigger a popup alert, attackers use a clever combination of encoding techniques and the onload() method with the body tag. This indirect approach allows them to execute JavaScript code despite the filters in place, highlighting the need for robust security measures to counter such tactics effectively.

-Attacking Script: ?input=

hacked

- Guess Source Code:
- source code: Guessing source code

```
$input = GET['input'] if(preg_match('/< script[^>]* > (.*)? < script > /is',data) || stripos(data'alert')! == false) exit("error" : "No script is allowed!"); else echo($input);
```

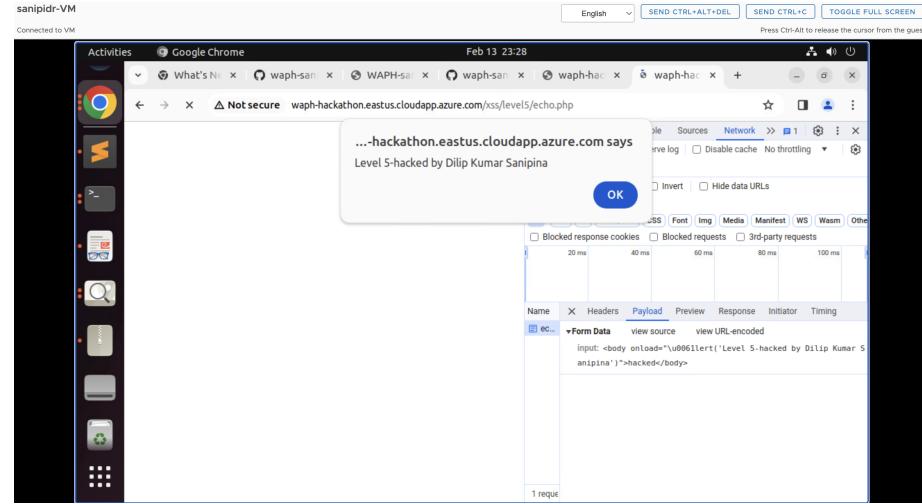


Figure 6: Level-5

Level-6

- URL: http://waph-hackathon.eastus.cloudapp.azure.com/xss/level6/echo.php
- In Level-6, the approach involves using `htmlentities()` to transform user input into HTML entities, making it display as plain text on the webpage. However, JavaScript event listeners such as `onclick()` are set up to detect key presses within the input field. This setup allows for the execution of JavaScript code, including triggering alerts, while still keeping the user input safely displayed as text. This strategy ensures security by preventing direct execution of JavaScript code from user input while enabling desired interactivity through event listeners.

Attacking Script: ?input=

hacked

Guess Source Code: - source code: Guessing source code

```
echo htmlentities($_REQUEST('input')) ;
```

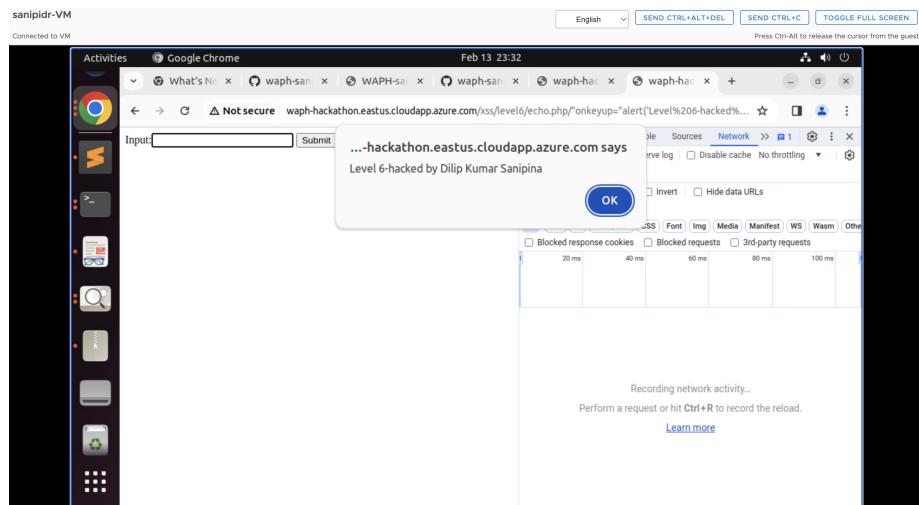


Figure 7: level-6

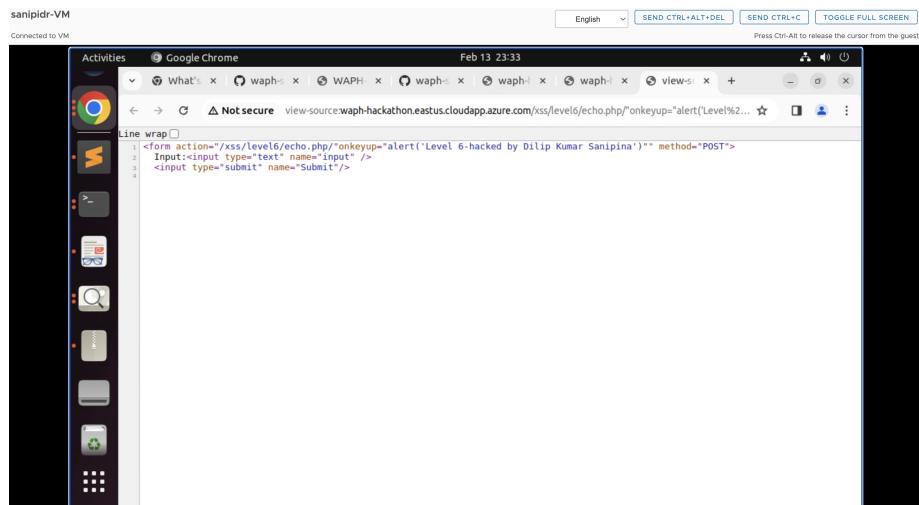


Figure 8: level-6

Task 2 -Defense

echo.php - In the echo.php file in lab2, I've implemented input validation. Now, if you try to submit a request without providing any input, the system will prompt you with an alert asking you to enter data into the input field. This validation ensures that users cannot submit empty requests and encourages them to provide the necessary input for the operation to proceed smoothly.

source code:

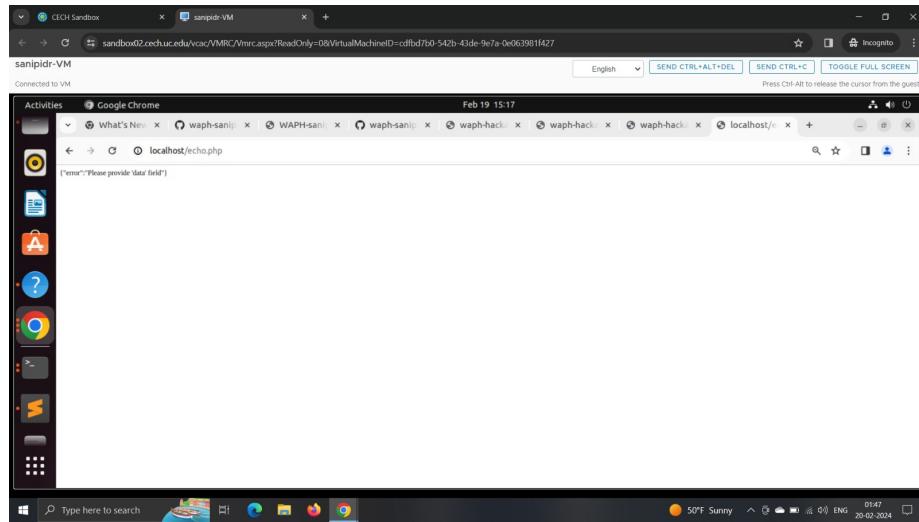


Figure 9: echo.php

Current front end prototype

- In this code, we've implemented input validation to ensure that both the GET and POST method forms include mandatory input. If a user tries to submit the form without providing any input, the system will prompt a message saying "Please give some input." This ensures that users cannot proceed without entering necessary data, maintaining the functionality and integrity of the system.
- Following the input validation, I've implemented output encoding by defining an "encode text" function. This function encodes the output before printing it to the screen. Additionally, we display both the encoded and decoded messages. To ensure ongoing validation, I've added console alerts every time a user submits a request. This approach enhances security by encoding output to prevent XSS attacks and provides real-time validation feedback through console alerts.

The screenshot shows a Linux desktop environment with a terminal window and a browser window. The terminal window displays a git commit message:

```

commit 506335dbde86615db337f321fe88e216fb0f17
Author: Sanipdr <sanipdr@sanipdr-VM>
Date:   Fri Feb 22 03:41:00 2024

    Showing 2 changed files with 14 additions and 5 deletions.

diff --git a/index.php b/index.php
--- a/index.php
+++ b/index.php
@@ -61,8 +61,11 @@
     echo "Content-type: text/html\n";
     echo "<html><body>\n";
     echo "      <h1>Front-end Web Development Lab</h1>\n";
@@ -71,7 +74,11 @@
     echo "      <h2>Instructor: Dr.Phu Phung</h2>\n";
     echo "      <h3>Student : Dilip Kumar Sanipina</h3>\n";
     echo "      <form>\n";
@@ -79,7 +83,11 @@
         <input type='text' name='input' value=''/>\n";
         <input type='button' value='OK' />\n";
     </form>\n";
@@ -86,7 +90,11 @@
     <div>\n";
         <p>Current time: " . date("D M d Y H:i:s") . "</p>\n";
         <img alt='Clock icon' />\n";
@@ -93,7 +97,11 @@
     </div>\n";
     <pre>Using the W3Schools template Interaction with forms</pre>\n";
     <pre>Form with an HTTP GET Request</pre>\n";
@@ -98,7 +102,11 @@
     <pre>Your input: <input type='text' name='input' value=''/> <input type='submit' value='Submit' /></pre>\n";
     <pre>Form with an HTTP POST Request</pre>\n";
     <pre>Your input: <input type='text' name='input' value=''/> <input type='submit' value='Submit' /></pre>\n";
@@ -103,7 +107,11 @@
     <pre>Ajax Requests</pre>\n";
     <pre>Your input: <input type='text' name='input' value=''/> <input type='button' value='Get Info' /></pre>\n";
     <pre>Response from server: dilip</pre>\n";
@@ -108,7 +112,11 @@
     <pre>Query just GET</pre> <pre>Query just POST</pre> <pre>Get Info</pre>\n";
     <pre>Experiment with Java script Code</pre>\n";
     <pre>Inlined JavaScript</pre>\n";
@@ -113,7 +117,11 @@
     <pre>Click here to show date</pre>\n";

```

Figure 10: Git commit

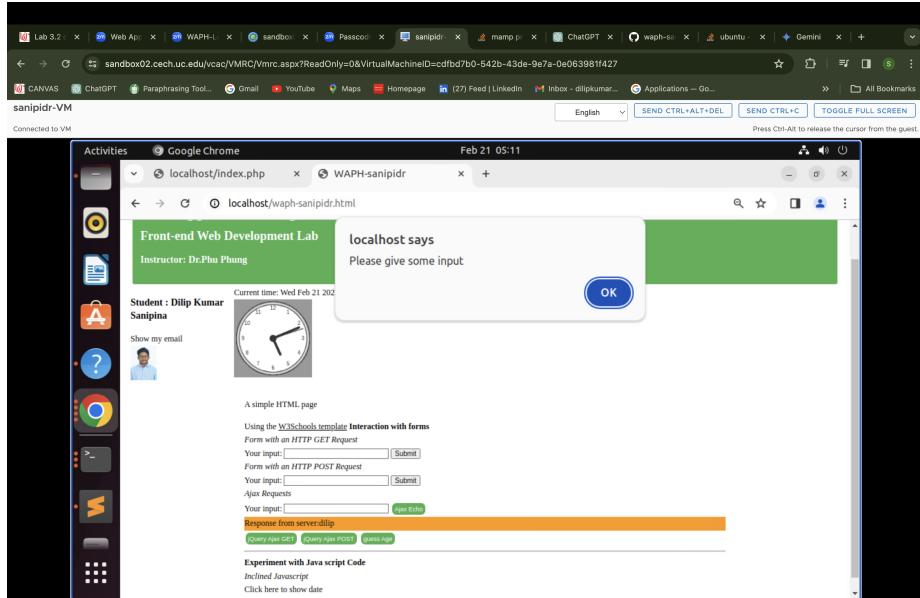


Figure 11: Input Validation

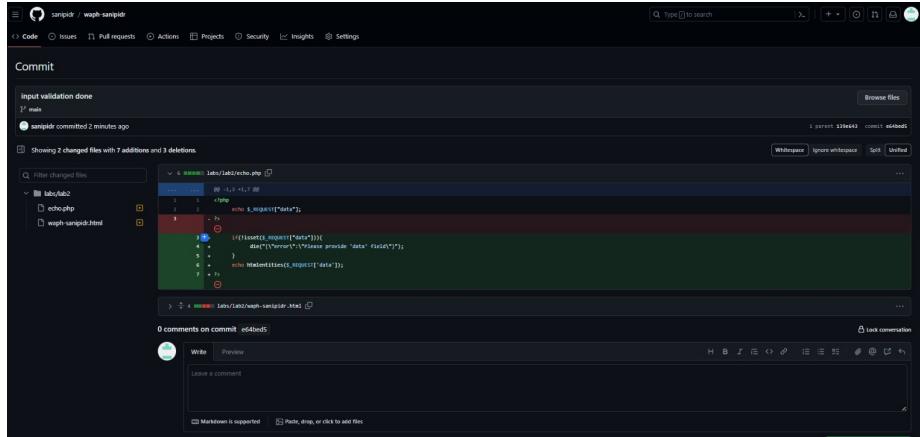


Figure 12: Git commit

The screenshot shows the 'waph-sanipdr.html' file in Sublime Text. The code includes a function 'jQueryAjax' that sends an encoded POST request to 'echo_2.php'. The response is then decoded and printed to the browser. The file also contains a 'jQueryAjaxPost' function.

```

document.getElementById("response").innerHTML="Response from server:" + xhttp.responseText;
}
xhttp.open("GET", "echo.php?data=" + input, true);
xhttp.send();
document.getElementById("data").value="";
}

function jQueryAjax() {
    var input = $("#data").val();
    var encodedInput = jquery.param({data: input});
    if (!input) {
        alert("Please give some input");
        return;
    }
    $.get("echo_2.php?data=" + encodedInput,
        function(result) {
            var encodedVal = encodeURIComponent(result);
            var decodeVal = decodeURIComponent(encodedVal);
            $("#response").html("Response from server:" + decodeVal);
            console.log("Encoded result:", encodedVal);
            console.log("Decoded result:", decodeVal);
        }
    );
    $("#data").val("");
}

function jQueryAjaxPost() {
}

```

Figure 13: encoded input

sanipidr-VM

Connected to VM

Activities Google Chrome Feb 22 04:04

Showing 1 changed file with 7 additions and 2 deletions.

```

00 -83,13 +83,18 @@ <h3>Student : Dilip Kumar Sanipidr</h3>
83   83
84   84     function jQueryAjax() {
85   85       var input = $("#data").val();
86 + 86     var encoded_input = jquery.param({data: input});
87   87     if (!input) {
88   88       alert("Please give some input");
89   89       return;
90   90     }
91 - 91     $.get("echo_2.php?data=" + input,
92 + 92     $.get("echo_2.php?data=" + encoded_input,
93 + 93     function(result) {
94 + 94       $("#response").html("Response from server:" + result);
95 + 95       var encodedval = decodeURIComponent(result);
96 + 96       var decodeval = encodeURIComponent(encodedval);
97 + 97       $("#response").html("Response from server:" + decodeval);
98 + 98       console.log("Encoded result:", encodedval);
99 + 99       console.log("Decoded result:", decodeval);
100 - 100     });
101   101     $("#data").val("");

```

0 comments on commit 1592924

Please sign in to comment.

Figure 14: encoded_github_commit