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# Web Application Security

## Use Burp and cewl to enumerate users on the Mutillidae site

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Part 2 - 18 March 2016

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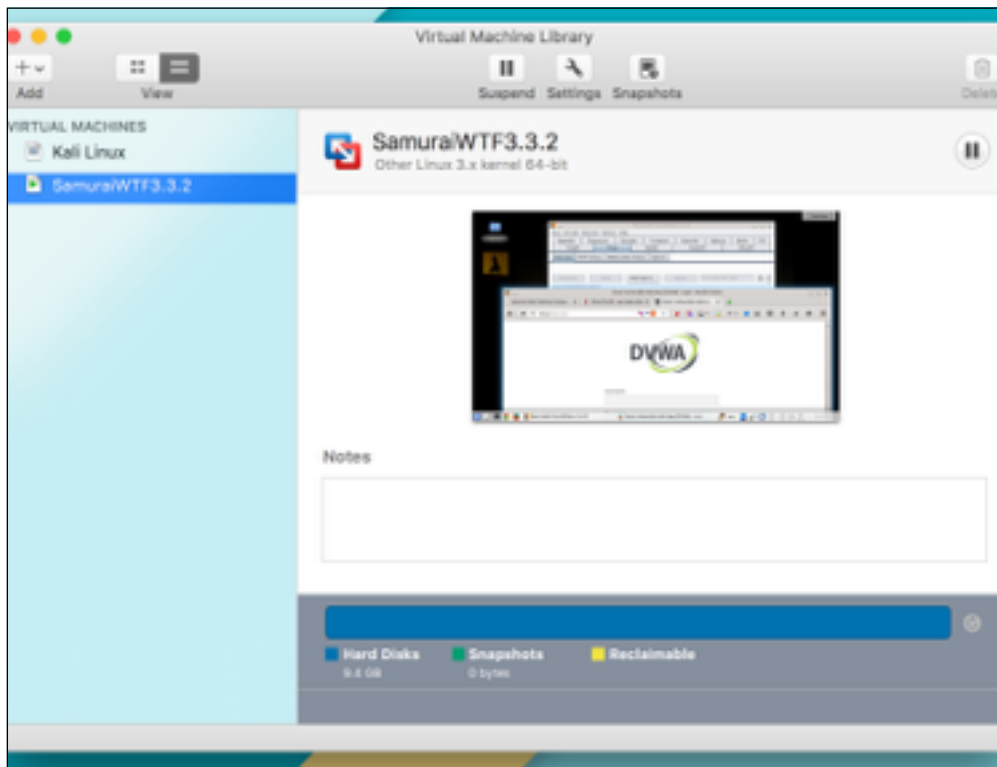


# Setup

## Open Your Vm Fusion

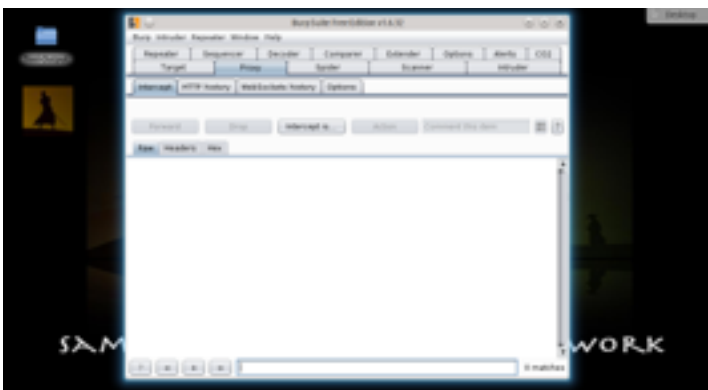
Instructions:

1. On Your Host Computer, Go To
2. Applications --> All Program --> VM Fusion
3. Select Samjuri.wtf and Boot the Vm

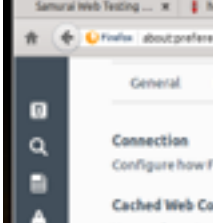


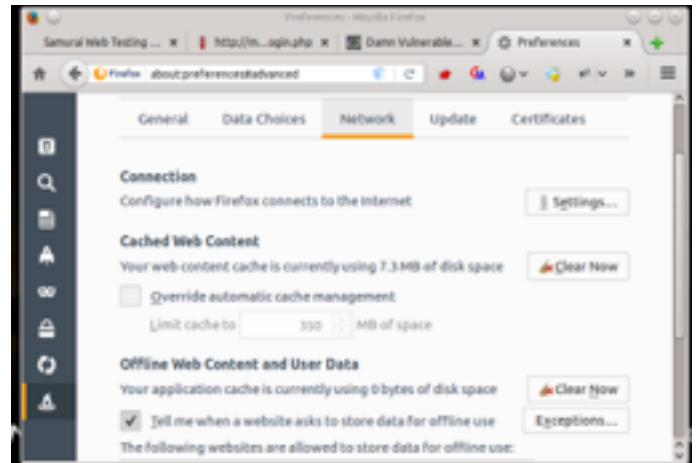
Open the following

1. Burp Free Suite
2. Firefox



## Firefox Setup

1. Switch to Firefox
  2. Go to options
  3. Click
    1. Advanced
    2. Network tab
    3. Settings
- 
- The screenshot shows the Firefox 'about:preferences#network' page. The 'Advanced' tab is selected in the left sidebar. Under the 'Connection' section, the 'Use a system proxy' checkbox is checked. The 'Use a proxy for' dropdown is set to 'All'. The 'Manual proxy configuration' section is visible, showing 'HTTP Proxy' set to 'localhost' and 'Port' set to '8080'. The 'SSL Proxy' is set to 'Auto'.
4. When opened, check Manual Proxy Configuration.
  5. Make sure the Http Proxy is **localhost**
  6. Make sure the Port is **8080**



Or

1. Click on foxy Proxy Add-on
2. Click Use "Burp settings"

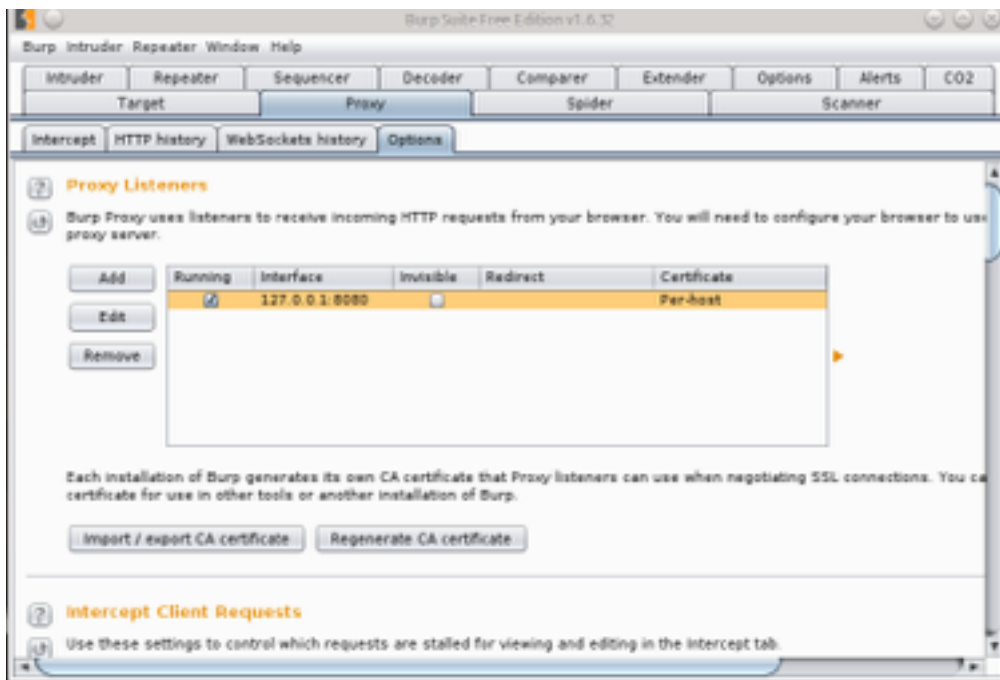


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Visit <http://dvwa/login.php>

## Burp Setup

1. Switch Burp suite
2. Make sure you listening to **localhost:8080**
3. To Check this open Burp Suite and click Proxy -> Options



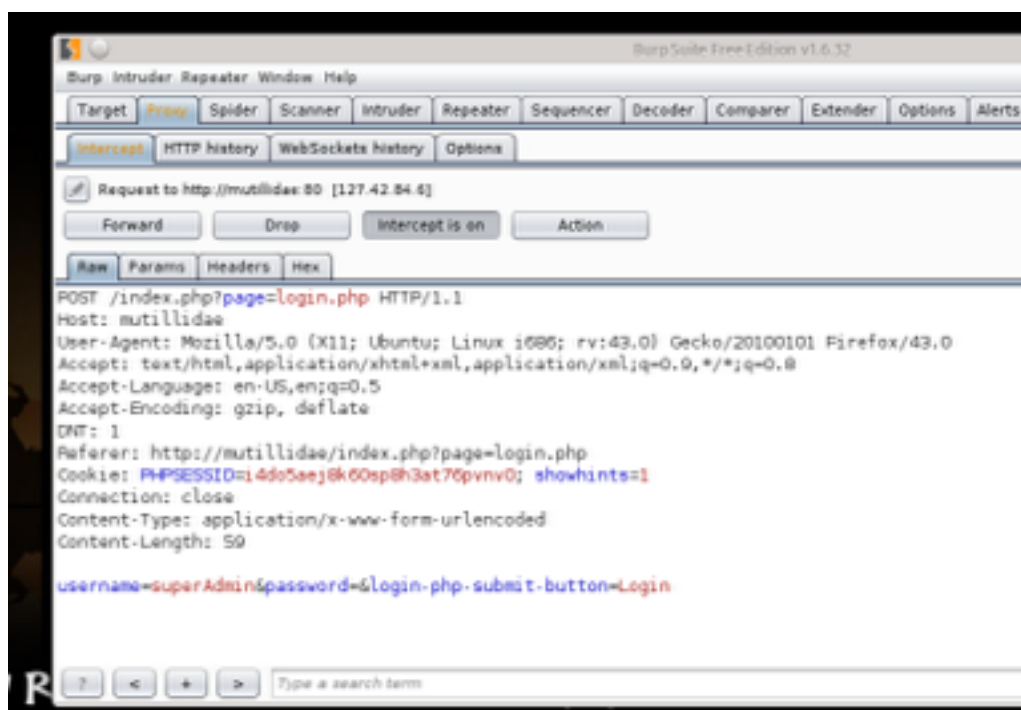
4. Next select Proxy and turn on intercept

## Step 1

Now that we have everything set up with our proxy running and it intercepting .

### Valid account attempt

1. First open up **firefox** and open the following url <http://mutillidae/index.php?page=login.php>
2. Create an account, I created one called **superAdmin** with password **GTIBUDDY123**
3. In **Burp suite** we have set up so we intercepted the request and we can see the request being made in this case **username=superAdmin&Password= GTIBUDDY123**
4. You then want to right click on the send to request and click send to repeater and then click forward.



## Invalid login attempt

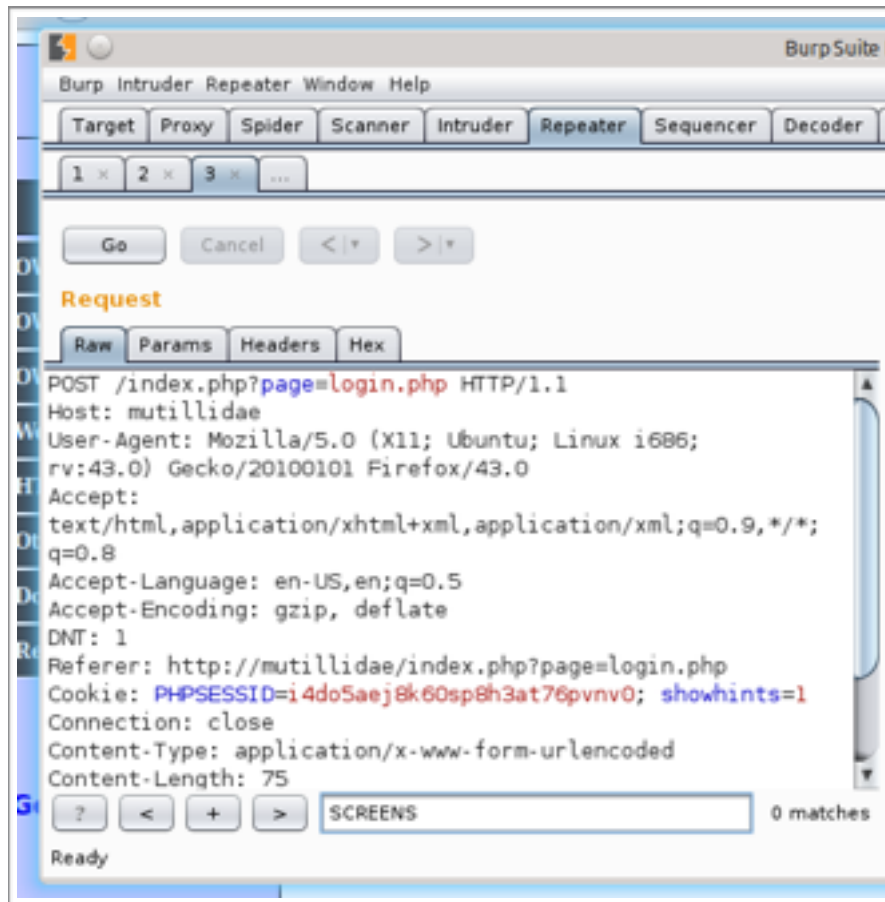
1. First open up **firefox** and open the following url <http://mutillidae/index.php?page=login.php>
2. On this page we will want to intercept a invalid login attempt to base our http request on.
3. In Burp suite we have incepted the request and we can see the request being made in this case **username=RobrtGabriel&Password=robertGABRIEL**
4. You then want to right click on the request and click send to repeater and then click forward.



5. If you switch back to firefox you will see that it say account not found. This is a bad thing, as it tells us the amount isn't there.

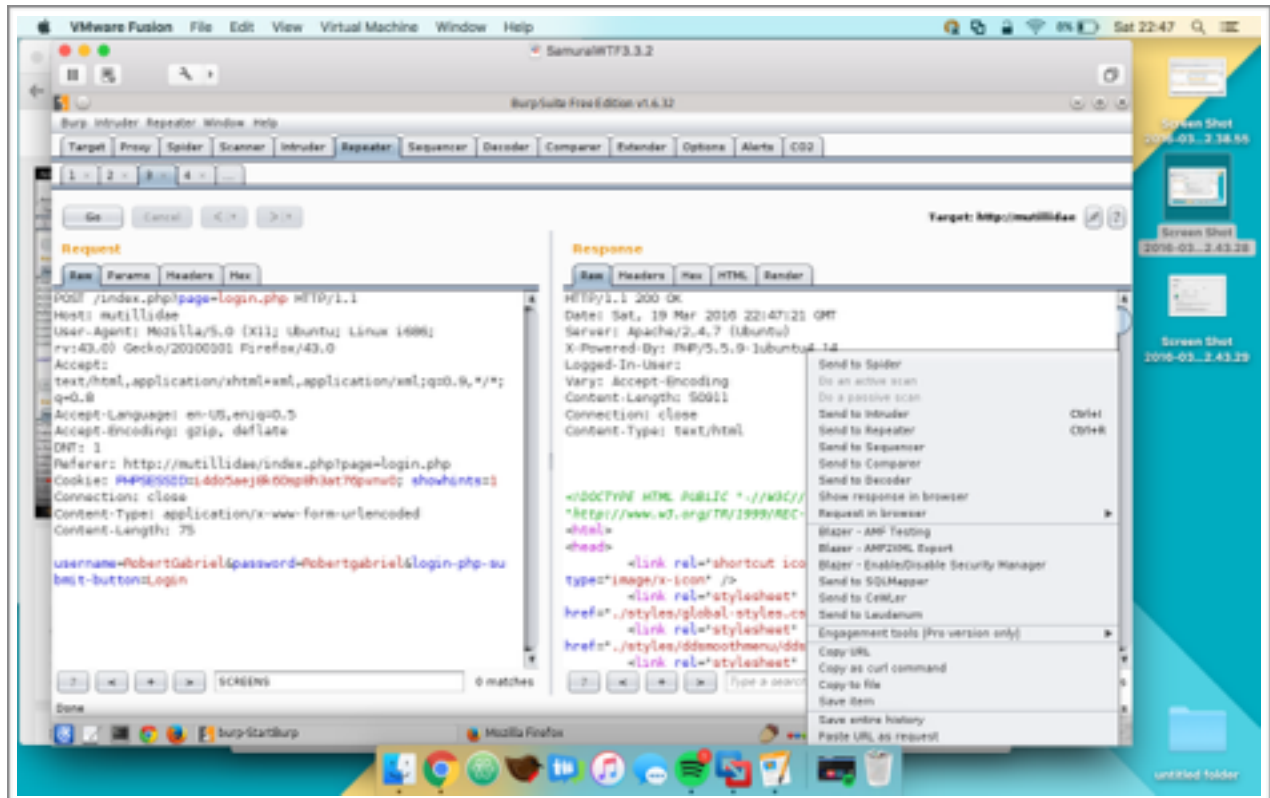


- Next Go back to Burp Suite and click on repeater. We need to check that its still working working, do this by clicking Go, this is because .net or newer systems will put in a type of hash to stop hash repeats

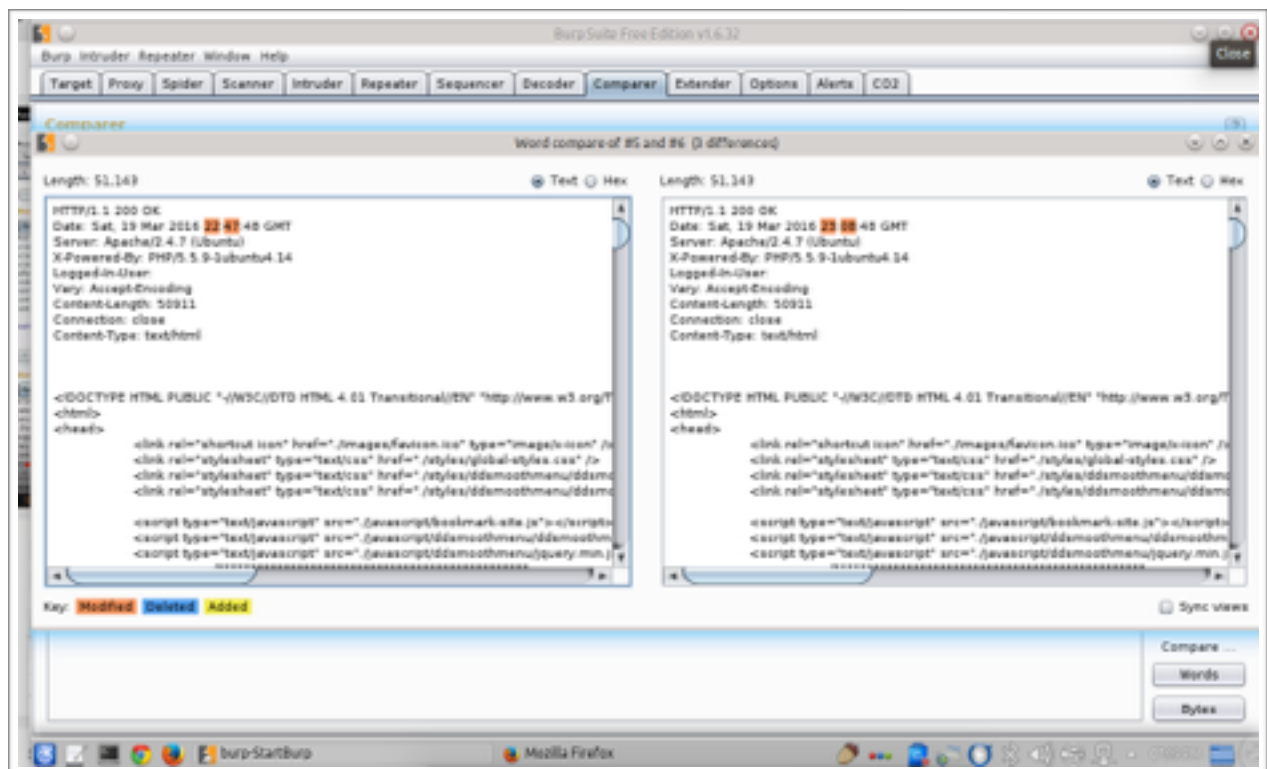


## Comparing

So now go to the repeater tab and click go on both the valid and invalid requests. This will send the responses on the right hand side. Right click and send to to compare

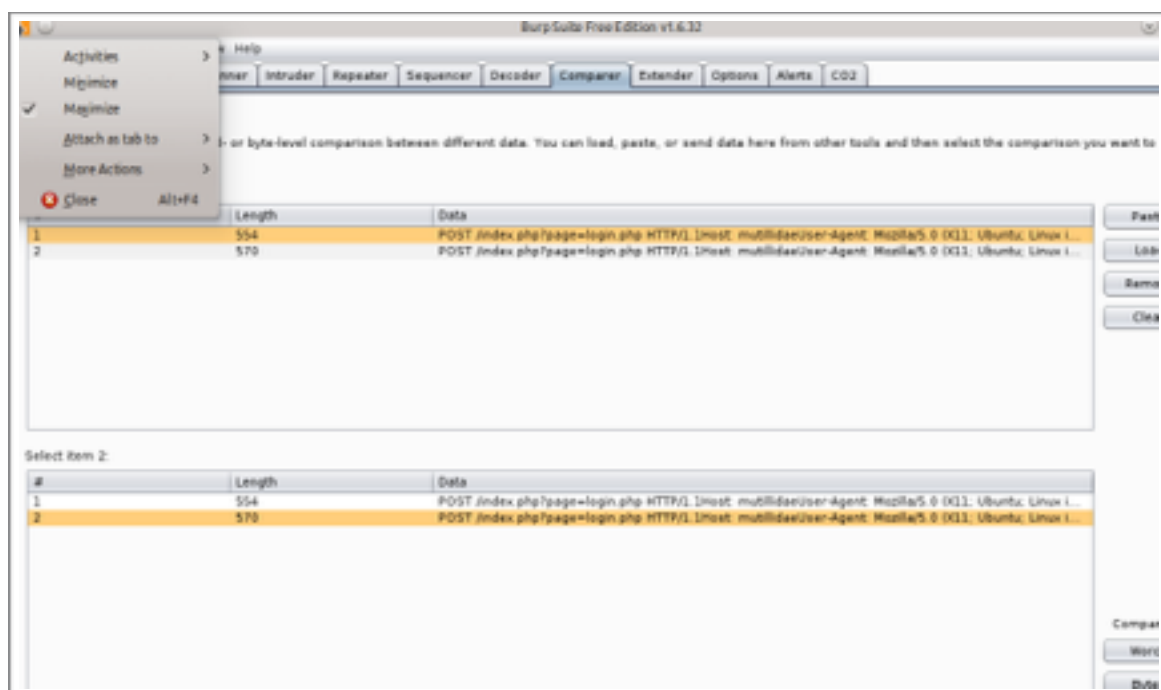






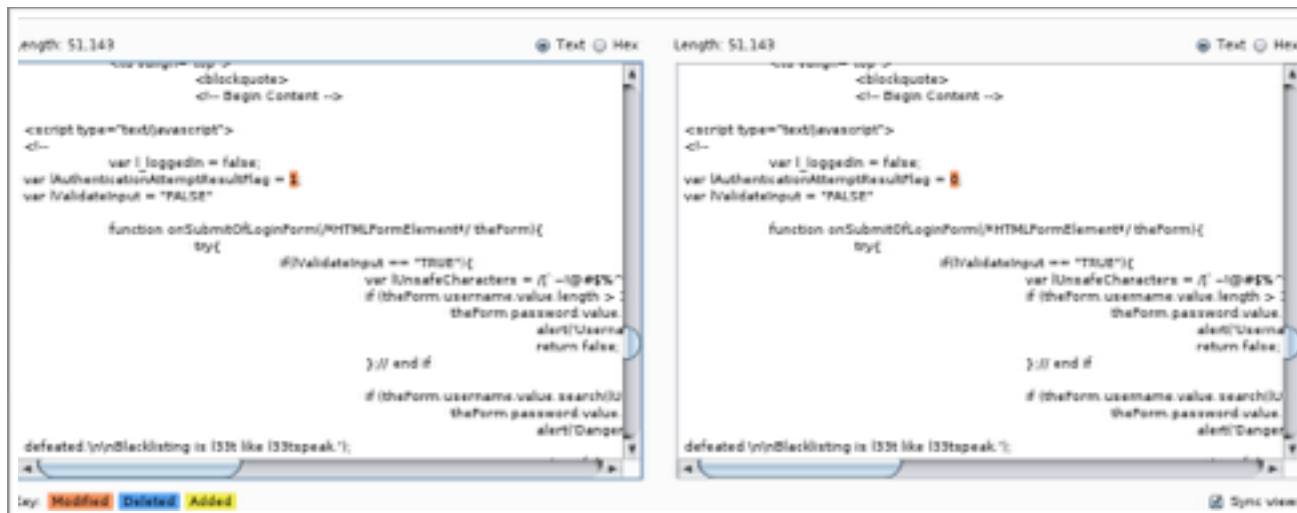
So now that we have sent both the valid and invalid request to the compare tab.

You want to click the compare words button on the bottom right.

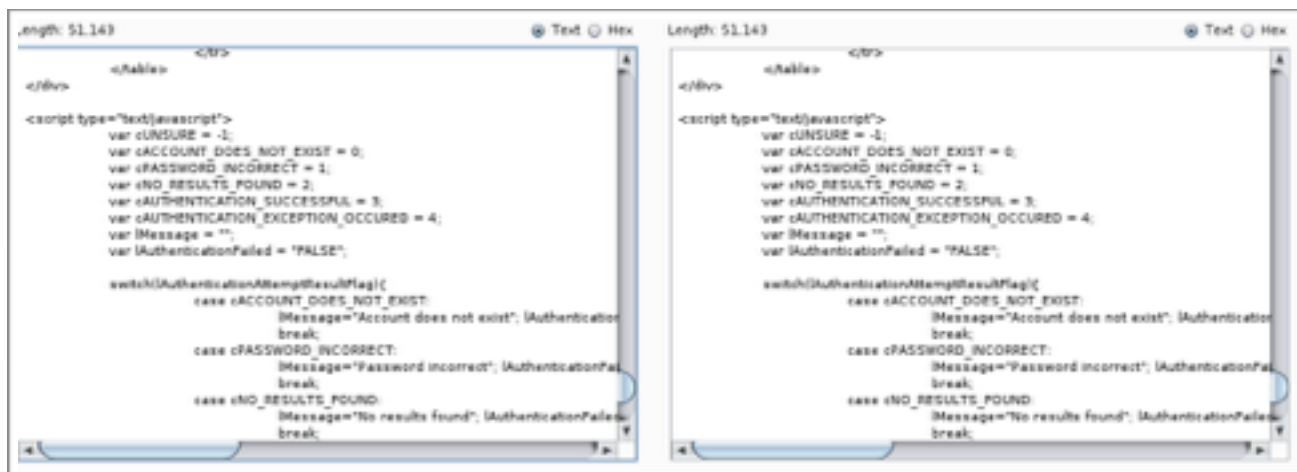


We know we want to compare the files and look for differences in the responses.

1. First thing we notice is the different flag numbers



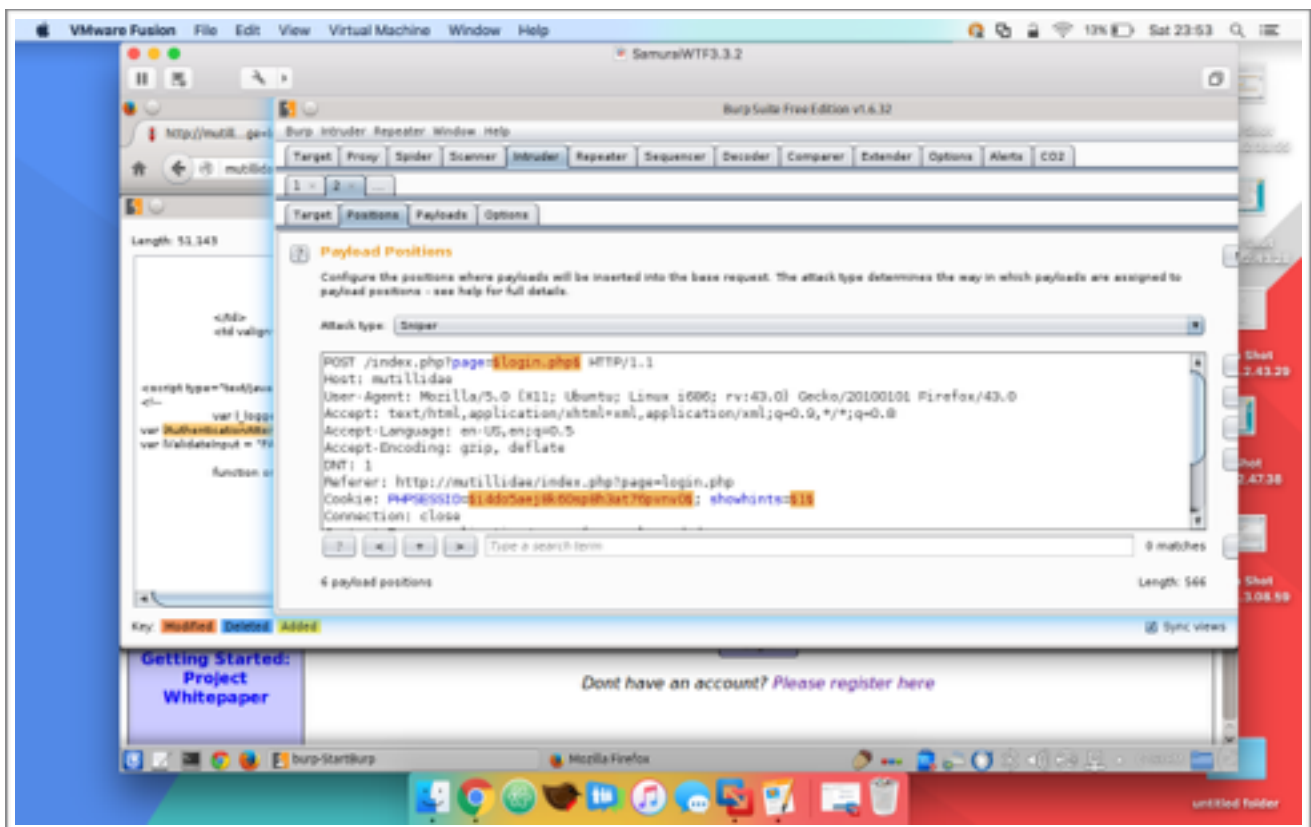
2. Second thing is the error messages if we look one of the responses for **account does not exist**. We discover by searching that term is that the response is used in a javascript switch statement to display a message. So 1 will display account not found. It injects the message into the page after wards.



Next we have to take and remember the variable `!AuthenticationAttemptResultFlag`.

Next to back to the repeater and send the reponce to the intruder for **`!AuthenticationAttemptResultFlag = 1`**

Here you see all the items are highlighted , clear this by clicking on the right.



Next highlight the username variable and add it by clicking on the right side button add. Also add a fake password input.



Next click on the payload tab, we will need to get a list of usernames for the payload. Where going to do this using a tool called **cewl**.

**It will scrap usernames from the site to make our list, in which to try multply access attempts on.**

**Remember to Turn off FoxyProxy.**

First open up the command line.

Enter the following, we are setting the following

1. **depth** = 1 the amount of links we need follow from the base url we set.
2. **min-word-length** = 4 , the current default is two short of 3, so 4 is better. (Did this betraying to see what was the shortest username I could create with.)
3. **—write, to write the results to a file .**
4. **—verbose** flag will show us what is happening while we are working.

```
root@samuraiwtf:/home/samurai# cewl --verbose --depth=1 --min_word_length=4 --count -w results.txt http://127.0.0.1/index.php?page=view-someones-blog.php
```

When we run it we get the following:

```
response code 200
Javascript redirect found index.php?page=home.php#popupNotificationCode=HPW0
Relative URL found, adding domain to make http://ninja.dev/index.php?page=home.php#popupNotificationCode=HPW0
Attribute text found:
Webpwnized Twitter Channel Webpwnized Twitter Channel Webpwnized YouTube Channel OWASP Go Back Help Me! Whitepaper: Introduction to OWASP Mutillidae II Web
Pen Test Training Environment Click here to see the primary goal of this page. (Additional vulnerabilities will exist on a page) Help me with page documenta
tion/vulnerabilities.php
Offsite link, not following: https://www.sans.org/reading-room/whitepapers/application/introduction-owasp-mutillidae-ii-web-pen-test-training-environment-3
380
Offsite link, not following: http://sourceforge.net/projects/mutillidae/files/mutillidae-project/
Offsite link, not following: https://www.owasp.org/index.php/Top_Ten
Offsite link, not following: https://addons.mozilla.org/en-US/firefox/collections/jdruin/pro-web-developer-qs-pack/
Offsite link, not following: http://samurai.inguardians.com/
Offsite link, not following: https://www.sans.org/reading-room/whitepapers/application/introduction-owasp-mutillidae-ii-web-pen-test-training-environment-3
380
Offsite link, not following: https://twitter.com/webpwnized
Offsite link, not following: https://www.youtube.com/user/webpwnized
Offsite link, not following: https://www.owasp.org
Visiting: http://mutillidae./includes/popup-help-context-generator.php?pagename=view-someones-blog.php referred from http://mutillidae/index.php?page=vie
w-someones-blog.php, got response code 200
Attribute text found:

Visiting: http://mutillidae./index.php?page=add-to-your-blog.php referred from http://mutillidae/index.php?page=view-someones-blog.php, got response code 2
00
Javascript redirect found index.php?page=home.php#popupNotificationCode=HPW0
Relative URL found, adding domain to make http://ninja.dev/index.php?page=home.php#popupNotificationCode=HPW0
Attribute text found:
Webpwnized Twitter Channel Webpwnized Twitter Channel Webpwnized YouTube Channel OWASP Go Back Help Me! Expand Hints Whitepaper: Introduction to OWASP Muti
llidae II Web Pen Test Training Environment Click here to see the primary goal of this page. (Additional vulnerabilities will exist on a page) Help me with a
page add-to-your-blog.php Click to open this section Click to open SQL Injection (SQLi) hint in new tab Click to open Cross-site Scripting (XSS) hint in new
tab Click to open HTML Injection (HTMLi) hint in new tab Click to open JavaScript Validation Bypass hint in new tab Click to open Cross-site Request Forgery
(CSRF) hint in new tab Click to open Method Tampering hint in new tab Click to open Application Log Injection hint in new tab

words found
root@samuraiwtf:/home/samurai#
```

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Next we need to view the words we got.

Do this by opening up the file we wrote, unlike the video are files are saved in /opt/samurai/cewl. Then we run cat results.txt

```
root@samuraiwtf:/home/samurai# cat results.txt
```

This was in the results, I then removed all defy not user names.

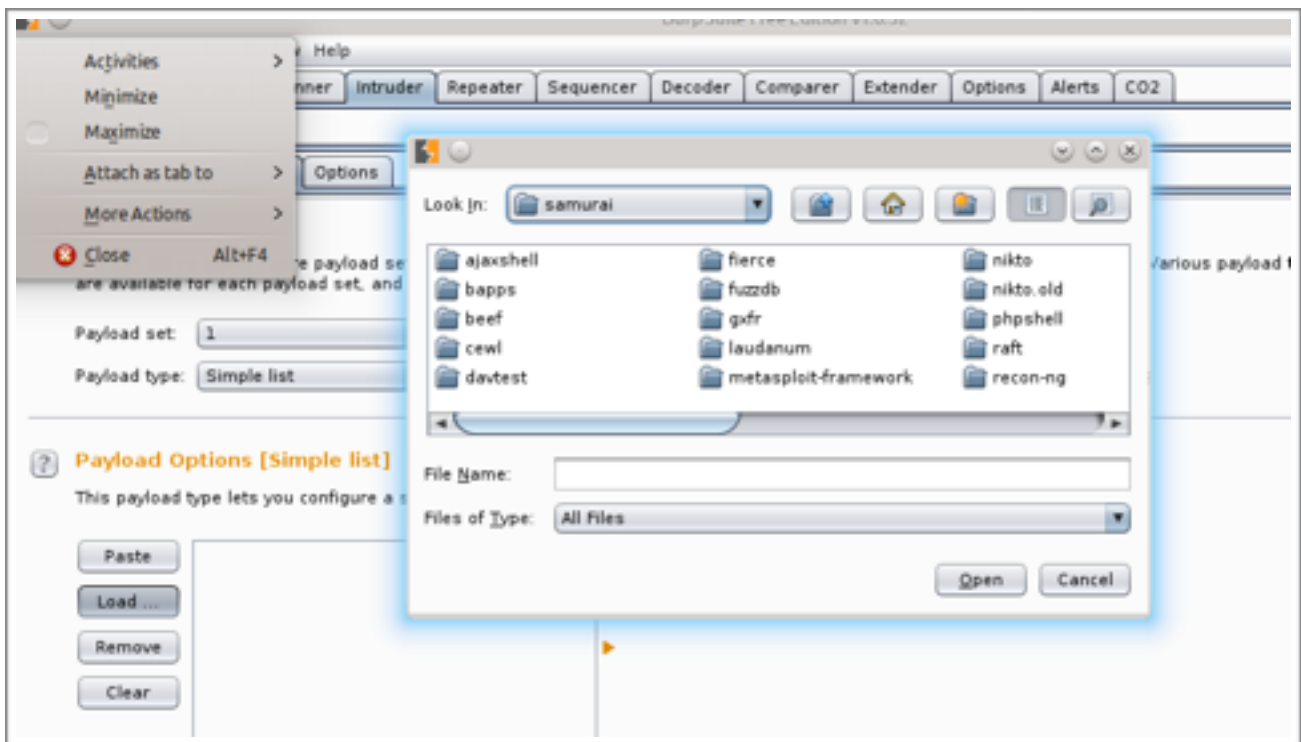
```
nbobby, 1
njim, 1
nsamurai, 1
nbryce, 1
triggered, 1
injecting, 1
njeremy, 1
nadrian, 1
ENTIRE, 1
COPIED, 1
TYPED, 1
reasons, 1
pollusion, 1
thinks, 1
pass, 1
tricked, 1
bogus, 1
submits, 1
observe, 1
properly, 1
Reverse, 1
Netcat, 1
lYouTubeFrameCode2852515, 1
```

I then removed the , 1 . This was the depth of the text was found at, 1 being one link off. To do that I i did the following command

```
zmievski
samurai@samuraiwtf:/opt/samurai/cewl$ cat results2.txt | cut -d, -f1 | sort | tee results2.txt.sorted
```

This gave me the final list of what is needed.

So now with me having the final list, Go over to burp suite and load our sorted file into the payload



There might look like theres repeats but theres captain letters.

You can define one or more payload sets. The number of payload sets depends on the are available for each payload set, and each payload type can be customized in differen

Payload set:  Payload count: 4,527

Payload type:  Request count: 4,527

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**? Payload Options [Simple list]**

This payload type lets you configure a simple list of strings that are used as payloads.

Because  
become  
beef  
Beef  
BeeF  
been  
before  
began  
Began

Next go to the payload processing, as we are going to write a rule.

Where going to pick modify case and choice lower case as we are not sure if the site changes it to upper or lower or not at all but normally is lower.

2

Remove Clear Add Add from list ... [Pro version only]

being  
believe  
below  
Benson  
heSmart

Enter a new item

**Payload Processing**

You can define rules to perform var

Enabled	Rule
---------	------

**Add payload processing rule**

? Enter the details of the payload processing rule.

Modify case

To lower case

OK Cancel

Next go to the options menu.

Then go to the grep - extract tab and choose add. If you remember the pattern or error message code from earlier where going to use this here. Add a new exact option and carefully highlight the one. burp will auto create the regular expression.

As you can see below it has the pattern, very handy for sql swell.



From [ lAuthenticationAttemptResultFlag = ] to [;\nvar \nvalidateInput]



Now lets start the attack

1. Go to intruder
2. Click on start attack

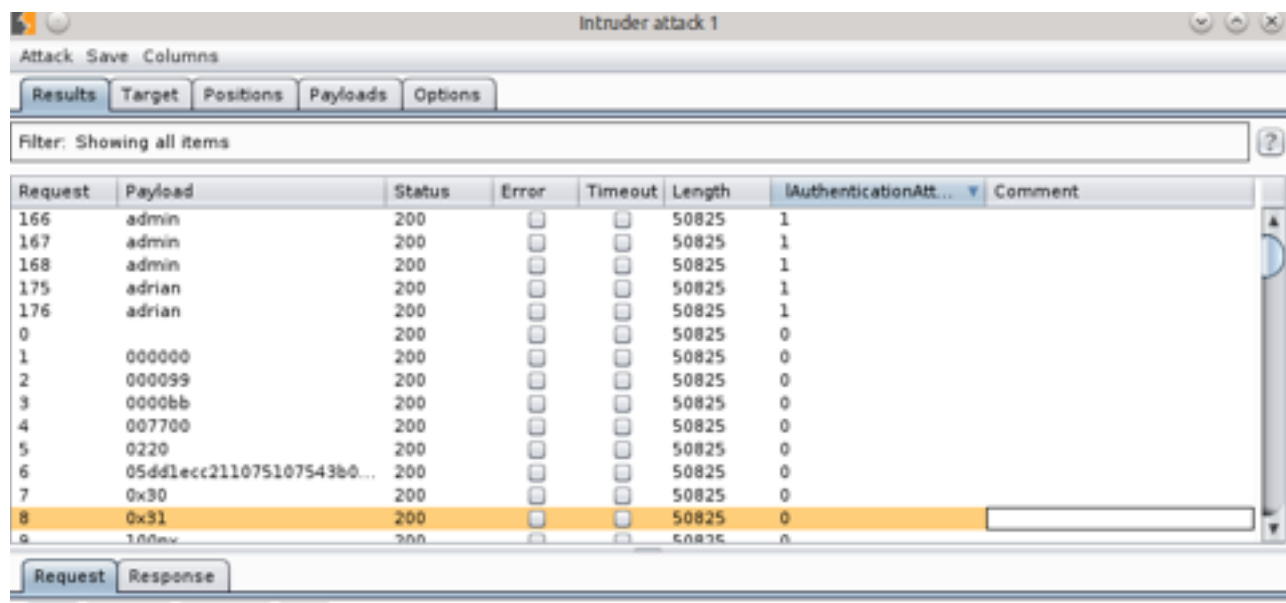
You will see it try everything from the payload list.

Its important to note is it responds.

The list of responds with 1 mean they are real accounts.

1	000000	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	000099	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	0000bb	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	007700	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	0220	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	05dd1ecc211075107543b0...	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	0x30	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	0x31	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0
1	100000	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0

This then is an example of more accounts that are real



The screenshot shows the 'Intruder attack 1' window with the 'Results' tab selected. The table displays the following data:

Request	Payload	Status	Error	Timeout	Length	AuthenticationAtt...	Comment
166	admin	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	1	
167	admin	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	1	
168	admin	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	1	
175	adrian	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	1	
176	adrian	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	1	
0		200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
1	000000	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
2	000099	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
3	0000bb	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
4	007700	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
5	0220	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
6	05dd1ecc211075107543b0...	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
7	0x30	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
8	0x31	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	
9	100000	200	<input type="checkbox"/>	<input type="checkbox"/>	50825	0	

---

Then what is left is to brute force using the list of real usernames. THIS TOOK 3 DAYS.....  
I hope I get full marks for this.

List of all real accounts

Request	Payload
3467	samurai
3466	samurai
2093	kevin
2061	john
2050	jeremy
2049	jeremy
2031	james
176	adrian
175	adrian
168	admin
167	admin
166	admin

Then I tired it with all uppercase

166	ADMIN
167	ADMIN
168	ADMIN
175	ADRIAN
176	ADRIAN
2031	JAMES
2049	JEREMY
2050	JEREMY
2061	JOHN
2093	KEVIN
3466	SAMURAI
3467	SAMURAI

These are the active accounts , so we can brute force passwords on.