# WordPress Security

written by Mert SARICA | 2 September 2019

For nearly a decade, I have been conducting research on cybersecurity and continue to write and share what I have learned with all of you. When I look at the feedback I receive from you, it makes me very happy to see that many of you benefit from what I write. Sometimes, there are those who perform minor cyber attacks to my blog, such as a small-scale DoS attack, not with malicious intent but simply to send me a message. There are also instances where I encounter attacks that I cannot fully understand the reason or intention behind, including attempts to access the administrator page. Based on this, in this article, I have decided to share how I detect one of these attacks and provide tips on how WordPress CMS users like myself can secure their blogs.

Lockout	138.204.71.226	21 September, 2018 01:48	Used an invalid username 'MERTSARICAadmin' to try to sign in.	20 November, 2018 01:48	1	21 September, 2018 01:48
Lockout	202.137.154.225	20 September, 2018 20:49	Used an invalid username 'adminMERTSARICA' to try to sign in.	19 November, 2018 20:49	1	20 September, 2018 20:49
Lockout	168.90.143.169	20 September, 2018 20:49	Used an invalid username 'adminMERTSARICA' to try to sign in.	19 November, 2018 20:49	1	20 September, 2018 20:49
Lockout	115.84.91.17	20 September, 2018 20:49	Used an invalid username 'adminMERTSARICA' to try to sign in.	19 November, 2018 20:49	1	20 September, 2018 20:49
Lockout	180.183.247.248	20 September, 2018 19:07	Used an invalid username 'MERTSARICA_admin' to try to sign in.	19 November, 2018 19:07	1	20 September, 2018 19:07
Lockout	143.255.153.156	20 September, 2018 19:07	Used an invalid username 'MERTSARICA_admin' to try to sign in.	19 November, 2018 19:07	1	20 September, 2018 19:07
Lockout	143.255.153.88	20 September, 2018 17:40	Used an invalid username 'adminMERTSARICA' to try to sign in.	19 November, 2018 17:40	1	20 September, 2018 17:40
Lockout	187.190.239.214	20 September, 2018 17:28	Used an invalid username 'adminMERTSARICA' to try to sign in.	19 November, 2018 17:28	2	12 October, 2018 00:48
Lockout	5.133.62.29	20 September, 2018 17:28	Used an invalid username 'adminMERTSARICA' to try to sign in.	19 November, 2018 17:28	1	20 September, 2018 17:28
Lockout		5 September, 2018 15:26	Used an invalid username 'Antalya\'dan selamlar! - Anil Karagenc' to try to sign in.	4 November, 2018 15:26	1	5 September, 2018 15:26
Lockout		5 September, 2018 11:22	Used an invalid username 'Seviliyorsunuz.' to try to sign in.	4 November, 2018 11:22	1	5 September, 2018 11:22
Lockout		31 August, 2018 15:55	Used an invalid username 'hocam cekilis' to try to sign in.	30 October, 2018 15:55	1	31 August, 2018 15:55

First, if we look at the statistical information related to WordPress, it is the most widely used content management system globally, accounting for about 60% of the CMS market. Approximately 33% of all websites on the internet use WordPress, with over 55,000 plugins available. Over the years, the types of

vulnerabilities detected in WordPress have varied, but the most commonly found vulnerability to date is Cross-Site Scripting (XSS). When we examine the WordPress vulnerability database, we can see that more than 15,000 vulnerabilities have been identified in WordPress core code and plugins.

When we consider how WordPress sites are generally hacked, we often find that it is due to insecure hosting services, weak administrator passwords, outdated versions of WordPress, plugins, themes, and the use of pirated themes (Backdoor Hunting) containing backdoors.

Although my wp-admin page, which is used to detect weak administrator passwords, is publicly accessible, I have been using the Duo Two-Factor Authentication plugin for years to implement multi-factor authentication for administrator login. I also utilize the Wordfence Security plugin to automatically block IP addresses involved in brute-force attacks, as well as to detect and report potential security vulnerabilities. Additionally, I prefer to use premium themes to avoid themes containing backdoors. To avoid dealing with insecure hosting services, I have been using a VPS for many years.

One day in July 2018, while checking the security dashboard of my Wordfence plugin, I noticed that the most blocked IP addresses were from Turkey, indicating attempts of brute-force attacks on my administrator page. When I checked the whois information of these IP addresses, I discovered that the majority of them were associated with a hosting service provider called iDealhosting. Intrigued by this, I decided to closely monitor the attacks originating from these IP addresses on my blog as part of a security investigation.



## Top 5 IPs Blocked

IP	Country	Block Count
185.86.164.100	▼ TR	14
185.85.238.244	▼ TR	14
185.86.164.103	▼ TR	14
185.86.164.108	▼ TR	13
185.86.164.101	▼ TR	13

Update Blocked IPs

## Top 5 Countries Blocked

Country	Total IPs Blocked	Total IPs Blocked Block Count	
<b>▼</b> TR	120	220	
■ FR	1	13	
₩ GB	1	4	
■ UA	1	2	

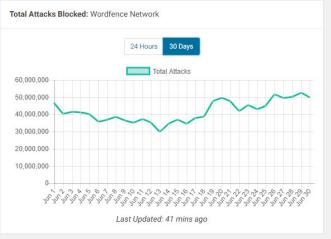
**Update Blocked Countries** 

# Top 5 Failed Logins

Username	Login Attempts	Existing User
admin	7	Yes

**Update Login Security Options** 

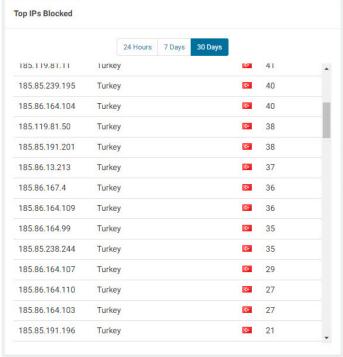


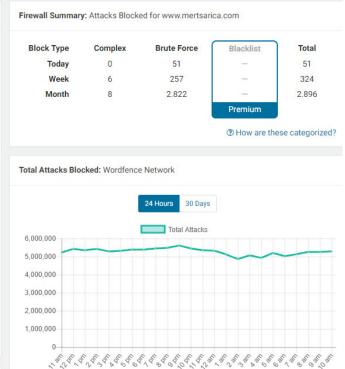


#### Top IPs Blocked 7 Days 24 Hours 30 Days IΡ Country **Block Count** 194.6.231.251 Ukraine 48 Turkey 185.85.239.110 C+ 40 5.101.40.93 Russian Federation 34 185.86.164.100 Turkey C+ 31 185.86.164.98 Turkey C\* 30 185.85.238.244 Turkey C+ 29 185.85.190.132 Turkey Ç\* 28 C+ 185,119,81,11 Turkey 27 185.86.164.99 C+ Turkey 27 Turkey 185.85.191.201 C+ 26 Show more

		156400		
	24 Hours 7 Days	30 Days		
185.85.191.201	Turkey	C.	3	
185.85.239.195	Turkey	C+	3	
185.86.164.110	Turkey	C.	3	
185.86.164.108	Turkey	C+	3	
185.86.164.107	Turkey	C+	2	
185.119.81.11	Turkey	C.	2	
185.86.164.103	Turkey	C+	2	
185.85.239.110	Turkey	C+	2	
185.86.164.109	Turkey	C.	2	
185.86.164.101	Turkey	C+	2	
185.86.164.100	Turkey	C+	2	
185.119.81.50	Turkey	C+	2	
185.86.13.213	Turkey	C+	1	
185.86.164.106	Turkey	C+	1	

When I checked the security dashboard again in October, I noticed that the brute-force attacks were still ongoing from 22 IP addresses. As a security researcher, one of the first questions that came to mind was whether this was a targeted attack attempt on my blog. One of the easiest ways to determine this was to learn the passwords used in the brute-force attacks. Therefore, without wasting any time, I got to work on it.





Email Share

# IP Tools Decimal IP Calculator ASN Information CIDR/Netmask What's your IP IP Geo-location Lookup IPWHOIS Lookup

# WHOIS IP Lookup Tool

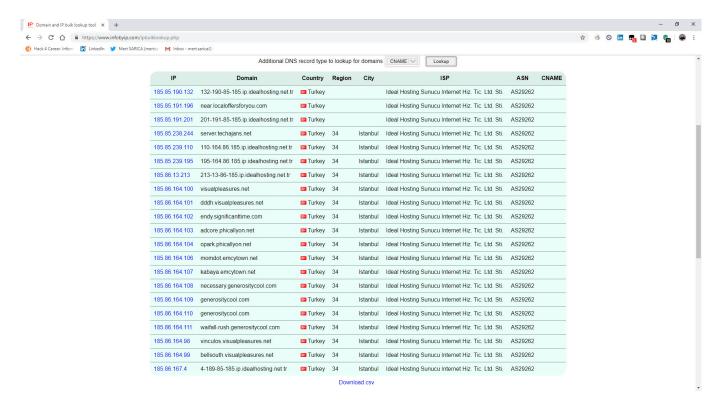
The IPWHOIS Lookup tool finds contact information for the owner of a specified IP address.

Enter a host name or an IP address:

185.86.13.213 Go »

Related Tools: DNS Traversal Traceroute Vector Trace Ping WHOIS Lookup

```
Source: whois.ripe.net
          IP Address: 185.86.13.213
% This is the RIPE Database query service.
% The objects are in RPSL format
% The RIPE Database is subject to Terms and Conditions.
% See http://www.ripe.net/db/support/db-terms-conditions.pdf
% Note: this output has been filtered.
        To receive output for a database update, use the "-B" flag.
% Information related to '185.86.13.0 - 185.86.13.255'
% Abuse contact for '185.86.13.0 - 185.86.13.255' is 'abuse@idealhosting.net.tr'
inetnum:
                 185.86.13.0 - 185.86.13.255
netname:
                 iDeal-Net
descr:
                 IDEAL HOSTING SUNUCU INTERNET HIZM. TIC. LTD. STI
remarks:
                 http://www.idealhosting.net.tr
country:
                 ORG-IHSI2-RIPE
org:
admin-c:
                 T01964-RIPE
                 FY267-RIPE
tech-c:
status:
                 LIR-PARTITIONED PA
mnt-by:
mnt-lower:
                 IDEALHOSTING-MNTNER
                 IDEALHOSTING-MNTNER
remarks:
                Abuse & intrusion reports should be sent to: abuse@idealhosting.net.tr
remarks:
remarks:
remarks:
                 2016-10-28T08:45:52Z
created:
last-modified:
                 2016-10-28T08:45:52Z
source:
                 RIPE
organisation:
                 ORG-IHSI2-RIPE
org-name:
                 IDEAL HOSTING SUNUCU INTERNET HIZM. TIC. LTD. STI
org-type:
                 Other
                 Agaoglu 212 MyOffice K.19 D.314-315-316 Gunesli, Bagcilar / ?STANBUL
address:
                +902127060300
IH1624-RIPE
phone:
abuse-c:
```

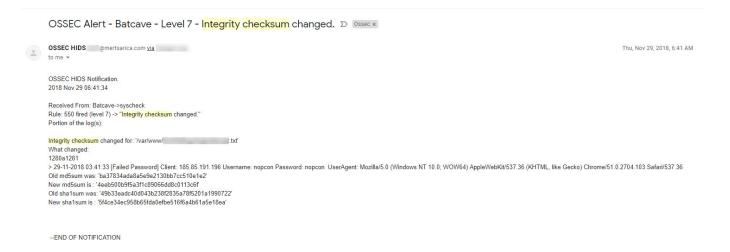


First, I prepared a PHP code that records failed login attempts to the wp-login.php file, along with the passwords, and saves them to disk. Then, to stay informed about any changes in the recorded file in real-time, I made a small definition in OSSEC HIDS.

```
* Filters the login page errors.
        @since 3.6.0
        @param object $errors WP Error object.
@param string $redirect_to Redirect destination URL.
      */ '
Serrors = apply_filters( 'wp_login_errors', Serrors, Sredirect_to );
      // Clear any stale cookies.
if ( $reauth )
    wp_clear_auth_cookie();
      login_header(__('Log In'), '', $errors);
      if ( isset($_POST['log']) )
Suser_login = ( 'incorrect_password' == $errors-yet_error_code() || 'empty_password' == $errors-yet_error_code() ) ? esc_attr(wp_unslash($_POST['log'])) : '';
$rememberme = i empty($_POST['rememberme']);
      } else {
Saria_describedby_error = '';
      <label for="user_login"><?php _e( 'Username or Email Address' ); ?>dr />
<input type="text" name="log" id="user_login"<?php echo Saria_describedby_error; ?> class="input" value="<?php echo esc_attr( Suser_login ); ?>" size="20" /></label>
             <label for="user_pass"><?php _e( 'Password' ); ?><br />
<input type="password" name="pwd" id="user_pass"<?php echo $aria_describedby_error; ?> class="input" value="" size="20" /></label>

/**
         Fires following the 'Password' field in the login form
       * @since 2.1.0
        _action( 'login_form');
       ?>
class="forgetmenot">clabel for="rememberme"><input name="rememberme" type="checkbox" id="rememberme" value="forever" <?php checked( $rememberme ); ?> /> <?php esc_html_e( 'Remember Me' ); ?></label>$
collass="submit">
     endif; ?> <input type="hidden" name="testcookie" value="1" />
```

When I examined the recorded failed username and password attempts throughout the end of October and the month of November, I discovered that the attempted usernames and passwords consisted of words found in my blog posts rather than ordinary dictionary words. This information indicated to me that it was indeed a targeted attack attempt.



atcave:/var #head -n 80 .txt | grep 185.
2018 18:52:08 [Failed Password] Client: 185.86.164.101 Username: admin Password: hedef UserAgent: Mozilla/5.0 (windows NT 10.0; w0w64) Applewebkit/537.36 (kHTML, like Gecko) Chrome/51.0.2704.103 Safari/5 137-10-2018 01:08:40 [Failed Password] Client: 185.86.164.106 Username: admin Password; zaman UserAgent: Mozilla/s.U (Windows NI 10.0; WOW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36 (KHTML) -10-2018 02:16:56 [Failed Password] Client: 185.85.239.110 Username: admin Password: immunity UserAgent: Mozilla/5.0 (Windows NT 10.0; WOW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safar 537.36 909 2018 02:29:39 [Failed Password] Client: 185.85.239.110 Username: admin Password: havayolu Useragent: Mozilla/5.0 (Windows NT 10.0; wow64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safar 37.36 [Pailed Password] Client: 185.86.164.99 Username: admin Password: uluda UserAgent: Mozilla/5.0 (windows NT 10.0; w0w64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/53 16 10-2018 04:03:22 [Failed Password] Client: 185.86.164.106 Username: ertsarica Password: ertsarica UserAgent: Mozilla/5.0 (Windows NT 10.0; WOW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.36
27-10-2018 04:20:38 [Failed Password] Client: 185.86.164.106 Username: tsaric Password: tsaric UserAgent: Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari (.30 de:43:01 [Failed Password] Client: 185.86.167.4 Username: admin Password: nyaca UserAgent: Mozilla/5.0 (Windows NT 10.0; WOW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537 10-2018 06:09:38 [Failed Password] Client: 185.86.164.109 Username: bildi Password: bildi UserAgent: Mozilla/5.0 (Windows NT 10.0; Wow64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/5 -2018 06:49:47 [Failed Password] Client: 185.86.164.108 Username: venli Password; venli UserAgent: Mozilla/5.0 (Windows NT 10.0; wow64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/5 16 16 10-2018 07:02:05 [Failed Password] Client: 185.55.239.195 Username: control Password: control UserAgent: Mozilla/5.0 (Windows NT 10.0; wow64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safa .36 2018 07:06:58 [Failed Password] Client: 185.86.164.107 Username: admin Password: esnas UserAgent: Mozilla/5.0 (windows NT 10.0; wow64) Applewebkit/537.36 (kHTML, like Gecko) Chrome/51.0.2704.103 Safari/5 .30 - 10-2018 07:15:52 [Failed Password] Client: 185.85.191.201 Username: hem Password: hem UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537.3 -10-2018 07:34:13 [Failed Password] Client: 185.86.164.99 Username: venli Password: venli UserAgent: Mozilla/5.0 (Windows NT 10.0; WOW64) Applewebkit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/53 2018 09:25:13 [Failed Password] Client: 185.86.164.100 Username: fatmal Password: fatmal UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) Applewebkit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari 018 09:30:33 [Failed Password] Client: 185.85.238.244 Username: sarica Password: sarica UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 safari 16 2018 09:53:18 [Failed Password] Client: 185.86.13.213 Username: admin Password: ederim UserAgent: Mozilla/5.0 (Windows NT 10.0; WOW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/5 -2018 10:07:53 [Failed Password] Client: 185.86.164.103 username: bankac Password: bankac UserAgent: Mozilla/5.0 (Windows NT 10.0; wow64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari -2018 10:23:36 [Failed Password] Client: 185.86.164.102 username: admin Password: control userAgent: Mozilla/5.0 (Windows NT 10.0; wow64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari 36 -2018 10:36:49 [Failed Password] Client: 185.86.164.104 Username: admin Password: fakt UserAgent: Mozilla/5.0 (windows NT 10.0; w0w64) Applewebkit/537.36 (КИТИL, like Gecko) Chrome/51.0.2704.103 Safari/53 -2018 10:52:28 [Failed Password] Client: 185.85.190.132 username: admin Password: tsari useragent: Mozilla/5.0 (windows NT 10.0; wow64) Applewebxit/537.36 (кнтм., like Gecko) Chrome/51.0.2704.103 safari/5 -10-2018 10:52:28 [Failed password] Client: 185.85.190.132 Username: admin Password: toka UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537-10-2018 11:13:48 [Failed Password] Client: 185.86.164.106 Username: toka Password: toka UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537-10-2018 11:13:48 [Failed Password] Client: 185.86.164.106 Username: toka Password: toka UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537-10-2018 11:13:48 [Failed Password] Client: 185.86.164.106 Username: toka Password: toka UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537-10-2018 11:13:48 [Failed Password] Client: 185.86.164.106 Username: toka Password: toka UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537-10-2018 11:13:48 [Failed Password] Client: 185.86.164.106 Username: toka Password: toka UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) ApplewebKit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/537-10-2018 11:13:48 [Failed Password] Client: 185.86.164.106 UserAgent: Mozilla/508 [Failed Password] Client: 185.86.164.106 [Failed Password] Client: 185.86 1202-10-2018 11:53:24 [Failed Password] Client: 185.86.164.98 Username: merts Password: merts UserAgent: Mozilla/5.0 (Windows NT 10.0; WoW64) Applewebkit/537.36 (KHTML, like Gecko) Chrome/51.0.2704.103 Safari/53

When I revisited the attempted passwords in February 2019, I noticed that this time the passwords being tested were obtained from the database of Rockyou.com, which was hacked in 2009.



cuteako javier natalie password





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#### distributed-password-cracking/passwords.txt at master ... - GitHub®

https://github.com/brannondorsey/distributed-password-cracking/blob/.../passwords.txt karen. mustang. isabel. natalie. cuteako. javier. 789456123. 123654. sarah. bowwow. portugal. laura. 777777. marvin. denise. tigers. volleyball. jasper. rockstar.

#### Images for cuteako javier natalie password



→ More images for cuteako javier natalie password

Report images

#### python-pentesting/passwords.txt at master · jmortega/python ... - GitHub®

https://github.com/jmortega/python-pentesting/blob/master/passwords.txt password. iloveyou. princess. 1234567. 12345678. abc123. nicole. daniel .... natalie. cuteako. javier. 789456123. 123654. sarah. bowwow. portugal. laura.

#### Common Passwords - npmo

https://www.npmjs.com/signup/common-passwords •

123456 12345 123456789 password iloveyou princess 1234567 12345678 ... brenda adidas kitten karen mustang isabel natalie cuteako javier 789456123 ...

#### List of most common passwords - PH4.ORG

https://www.ph4.org/pass\_passlist.php •

123456; 12345; 123456789; password; iloveyou; princess; 1234567; rockyou ... natalie; cuteako; javier; 789456123; 123654; sarah; bowwow; portugal; laura ...

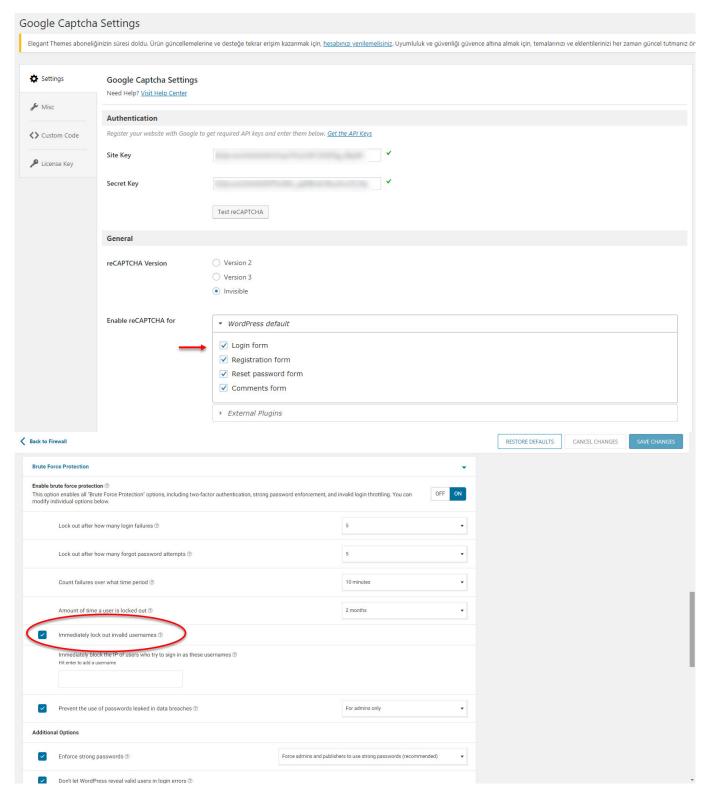
#### 123456 12345 123456789 password iloveyou princess ... - MSU CSE®

www.cse.msu.edu/~cse231/PracticeOfComputingUsingPython/.../Password.../rockyou.txt 123456 12345 123456789 password iloveyou princess 1234567 rockyou ... brenda adidas kitten karen mustang isabel natalie cuteako javier 789456123 ...

#### Openwall's list

www.openwall.com/passwords/wordlists/password-2011.lst ▼

After completing my research, I decided to tighten the security controls that I had previously relaxed. Firstly, I enabled the Google Captcha plugin for the administrator page. This added an additional layer of protection against automated login attempts. Additionally, in the Brute Force Protection section of Wordfence's Firewall settings, I configured it to automatically block IP addresses that made failed username attempts. These measures helped strengthen the security of my website.



As a result of this research, I sadly learned that someone has been attempting to hack my blog for months. For WordPress CMS users like myself, I strongly recommend installing and properly configuring the Google Captcha, Duo Two-Factor Authentication, and Wordfence Security plugins. Additionally, I highly recommend closely monitoring your systems with OSSEC HIDS to detect any suspicious activities. Taking these precautions is crucial to enhance the security of your WordPress website.

Hope to see you in the following articles.