Threat Hunting

written by Mert SARICA | 1 August 2017

Sometimes, after writing a blog post about a malware, I find myself asking, “How would I detect this if I were in that situation?” and unintentionally a process begins in the background, with this question lingering and waiting to be answered. Once this process is completed and the question is answered, a new blog post emerges, as seen in Figure 1-A. In this current article you are reading, I also sought an answer to the question, “If these malicious individuals are targeting government websites and injecting malicious JavaScript code into the pages, how difficult can it be to detect this in practice?”, following the December 2016 blog post titled “They PWN Houses!”

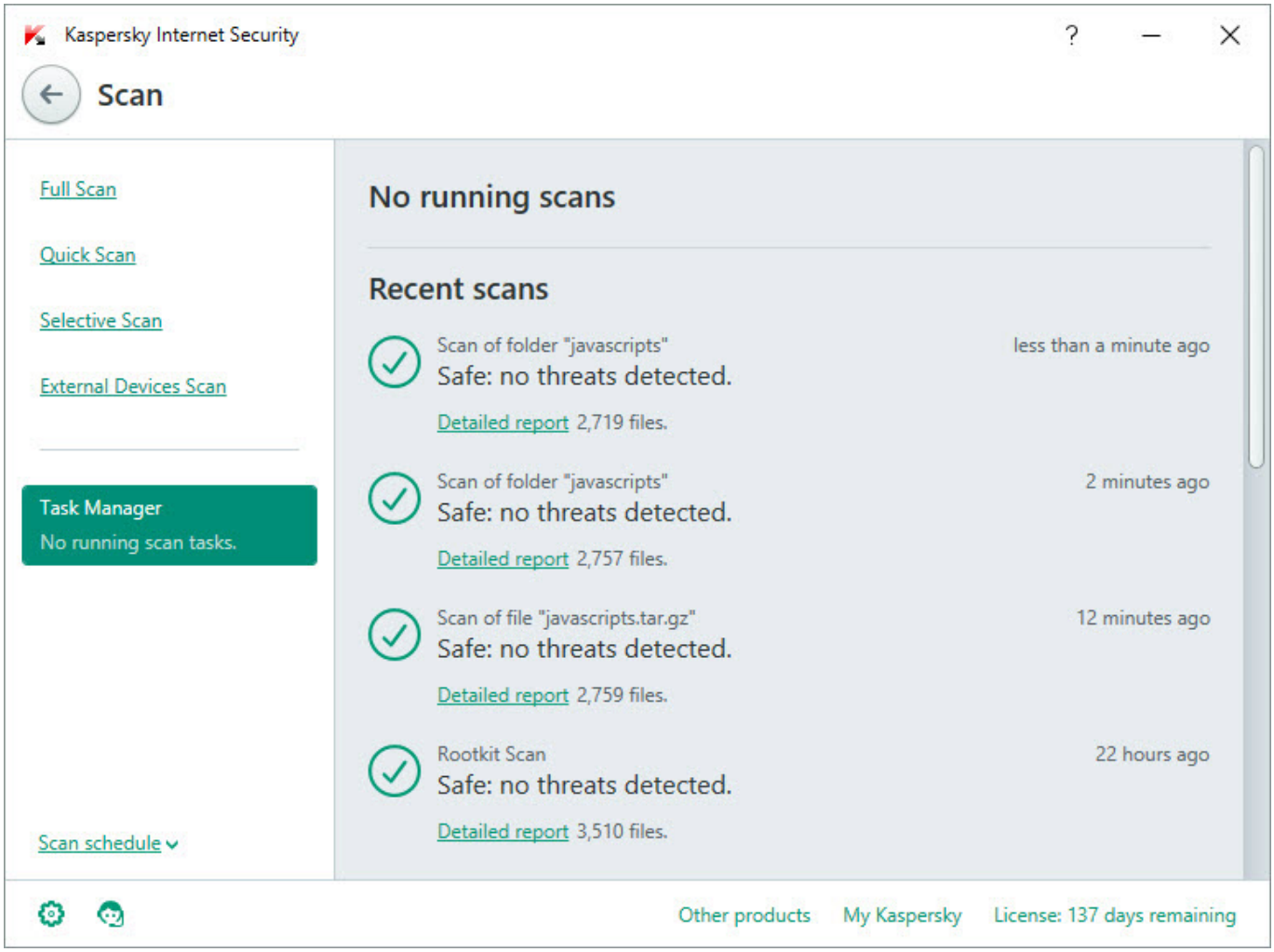
As a first step, I tried to access the domain names of our government websites (with the .gov.tr extension) through search engine APIs such as Google and Bing, but I was unsuccessful due to their existing limitations. While desperately daydreaming about having access to DNS requests made to the OpenDNS service, so that I could extract the list from there, the idea of Roksit, the counterpart of OpenDNS, came to mind. I decided to contact them and ask for support regarding my security research on this matter. Thankfully, once they understood my good intentions, they shared with me a list of government domain names (~8000 in total), although not complete, which I could practically implement the idea in my mind.

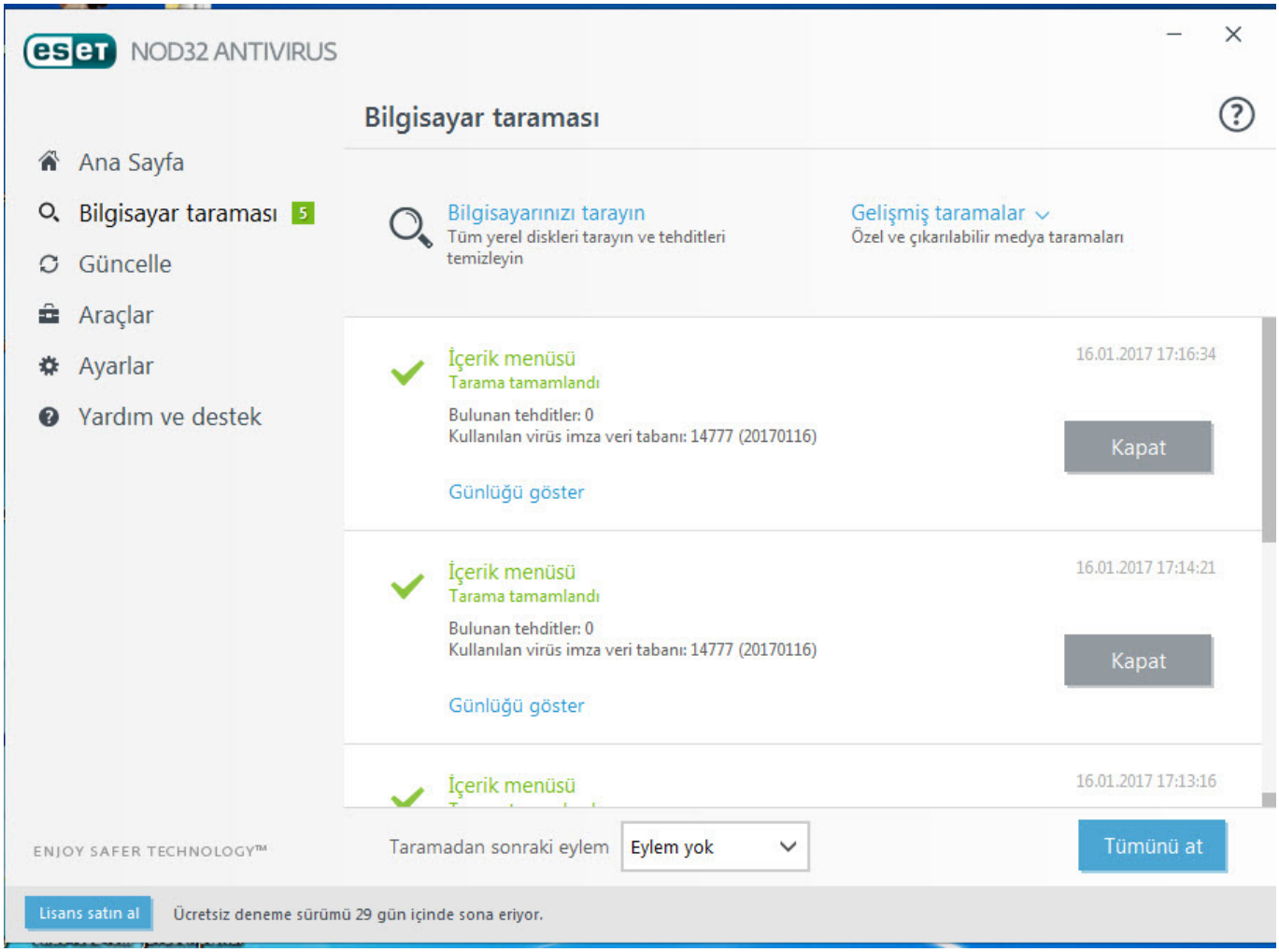
After obtaining the list, without wasting any time, I quickly developed a simple tool called JavaScript Crawler using Python, which crawls through all the websites and detects JavaScript code injected (imported) into the homepage via the current site or any other web address. It saves the detected JavaScript code along with the corresponding web addresses to the disk. Shortly after running this tool, I created a script that downloads all the identified JavaScript files from their respective addresses.

Once the JavaScript files were downloaded, I scanned them using security software such as ClamAV, ESET NOD32, and Kaspersky Internet Security Suite. Fortunately, I did not come across any malicious files during the scanning process.

```
================================================
JavaScript Crawler v1.0 [https://www.mertsarica.com]
================================================
[+] Crawling...
[*] Connecting to: http://atam.gov.tr
[+] 1. Script tag: http://ajax.googleapis.com/ajax/libs/jquery/1/jquery.min.js
[+] 1. Script tag: http://www.atam.gov.tr/wp-content/themes/v1/js/slider.js
[+] 1. Script tag: http://code.jquery.com/ui/1.10.3/jquery-ui.js
[+] 1. Script tag: http://www.atam.gov.tr/wp-includes/js/jquery/jquery.js?ver=1.7.2
[+] 1. Script tag: http://www.atam.gov.tr/wp-content/plugins/media-element-html5-video-and-audio-player/mediaelement/mediaelement-and-player.min.js?ver=2.1.3
[+] 1. Script tag: http://www.atam.gov.tr/wp-includes/js/tw-sack.js?ver=1.6.1
[+] 1. Script tag: http://www.atam.gov.tr/wp-content/plugins/contact-form-7/includes/js/jquery.form.js?ver=3.09
[+] 1. Script tag: http://www.atam.gov.tr/wp-content/plugins/contact-form-7/includes/js/scripts.js?ver=3.2
[+] 1. Script tag: http://www.atam.gov.tr/wp-content/plugins/lightbox-plus/js/jquery.colorbox.1.3.32.js?ver=1.3.32
[*] Connecting to: http://atasehir.gov.tr
[*] Connecting to: http://atasehirtarim.gov.tr
[*] Connection error: <urlopen error [Errno -3] Temporary failure in name resolution>
[*] Connecting to: http://atatm.gov.tr
[*] Connection error: <urlopen error [Errno -2] Name or service not known>
[*] Connecting to: http://ataturkcocukyuvasi-shcek.gov.tr
[*] Connection error: <urlopen error [Errno -3] Temporary failure in name resolution>
[*] Connecting to: http://ataturkhavalimani.gov.tr
[+] 1. Script tag: http://ataturkhavalimani.gov.tr/wp-content/themes/airportthememobile/js/contentslider.js
[+] 1. Script tag: http://ataturkhavalimani.gov.tr/wp-content/themes/airportthememobile/js/css3-multi-column.js
[+] 1. Script tag: http://ataturkhavalimani.gov.tr/wp-content/themes/airportthememobile/js/config.js
[+] 1. Script tag: http://ataturkhavalimani.gov.tr/wp-content/themes/airportthememobile/js/jquery.jcarousel.min.js?v=14480
[+] 1. Script tag: http://ataturkhavalimani.gov.tr/wp-content/themes/airportthememobile/js/jssor.slider.min.js
[+] 1. Script tag: http://ataturkhavalimani.gov.tr/wp-content/themes/airportthememobile/js/slideItFeatured.js
[*] Connecting to: http://ataturkyuksekkurum.gov.tr
[*] Connection error: <urlopen error [Errno -5] No address associated with hostname>
[*] Connecting to: http://atb.gov.tr
[*] Connection error: <urlopen error [Errno -3] Temporary failure in name resolution>
[*] Connecting to: http://athgm.gov.tr
[*] Connection error: <urlopen error timed out>
[*] Connecting to: http://atk.gov.tr
[*] Connection error: <urlopen error timed out>
[*] Connecting to: http://atkaracalar.gov.tr
```

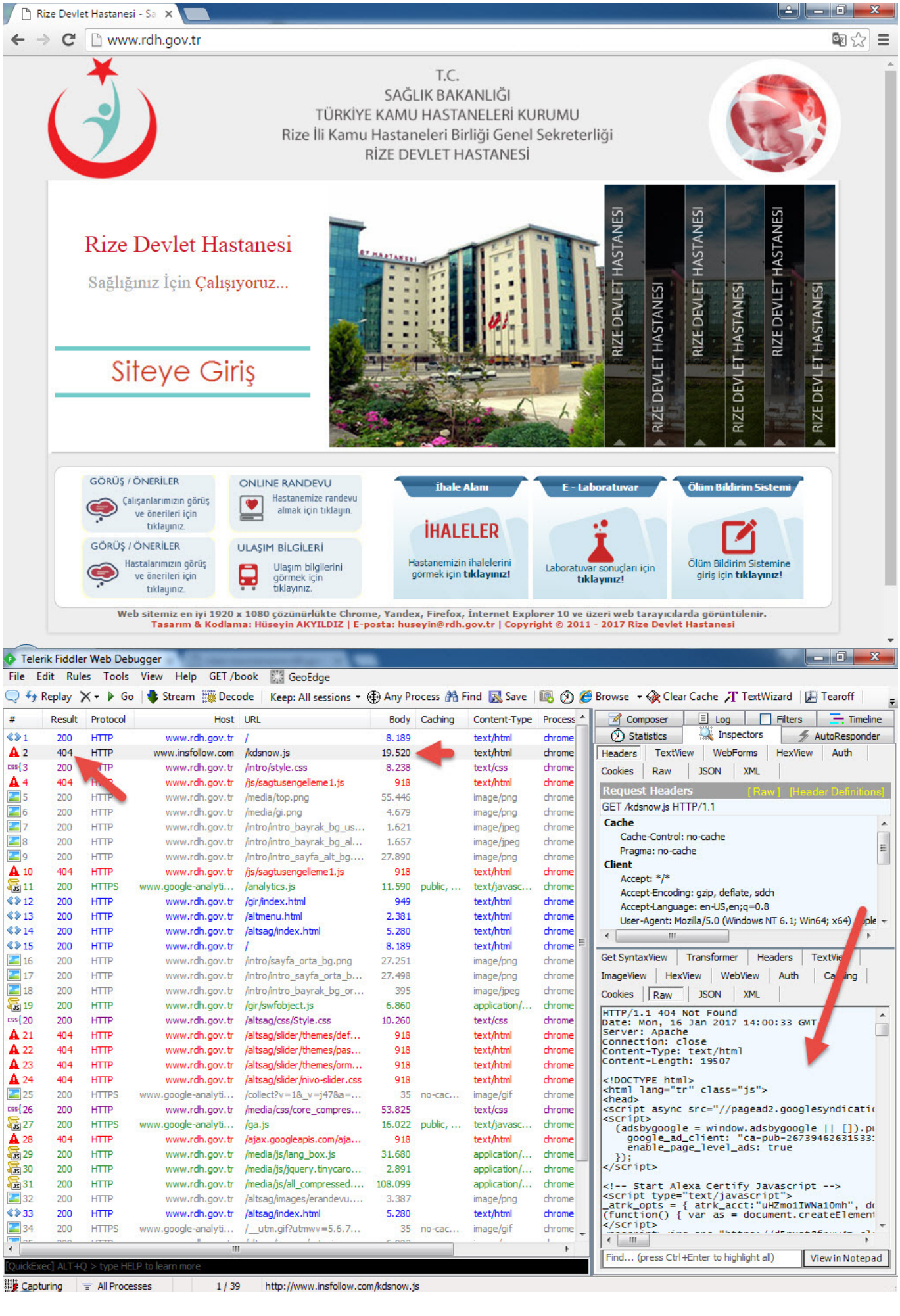
```
/root/javascripts/jquery.quicksand.js.2: OK
/root/javascripts/easing.1.3.min.js: OK
/root/javascripts/sliderjquery.flexslider-min.js: OK
/root/javascripts/jquery.fancybox.js.1: OK
/root/javascripts/interstitial.js: OK
/root/javascripts/jquery.simplemodal.1.4.1.min.js: OK
/root/javascripts/js_XjZh1hVfCgvAIxhmmB6Go8TUMPOipra-2vkC-oWXARQ.js.1: OK
/root/javascripts/TouchScrollExtender.js: OK
/root/javascripts/jquery.touchSwipe.min.js.7: OK
/root/javascripts/jquery.js.40: OK
/root/javascripts/cta-javascript.js.1: OK
/root/javascripts/jquery.min.js.1: OK
/root/javascripts/highslide-with-gallery.js.9: OK
/root/javascripts/jquery-1.8.3.min.js.1: OK
/root/javascripts/MyriadPro-Regular.font.js: OK
/root/javascripts/jquery.placeholder.min.js.1: OK
/root/javascripts/flowplayer.min.js: OK
/root/javascripts/jquery.js.20: OK
/root/javascripts/bootstrap-hover-dropdown.js.2: OK
/root/javascripts/scripts.js: OK
/root/javascripts/jquery.fancybox.pack.js.3: OK
/root/javascripts/jquery.js.35: OK
/root/javascripts/script.js.14: OK
/root/javascripts/js.8: OK
/root/javascripts/jssor.slider.mini.js: OK
/root/javascripts/mootools-core.js: OK
/root/javascripts/respond.min.js.12: OK
/root/javascripts/jquery.easing.1.2.js.3: OK
/root/javascripts/selectBox.js.1: OK
/root/javascripts/jquery.nivo.slider.pack.js.8: OK
/root/javascripts/lightbox.js.5: OK
/root/javascripts/sangarResponsiveClass.js: OK
/root/javascripts/html5.js.5: OK
/root/javascripts/easing.js: OK
/root/javascripts/jquery.formatCurrency-1.4.0.min.js: OK
/root/javascripts/sangarSlider.js: OK
/root/javascripts/pgt_rssscroller.js: OK
/root/javascripts/bootstrap.min.js.53: OK
/root/javascripts/owl.carousel.min.js.3: OK
/root/javascripts/R8Y5xHryEeS1SQoORWfmyA.js: OK
/root/javascripts/download.sh: OK
/root/javascripts/jquery.min.js.25: OK
/root/javascripts/all.js: OK
/root/javascripts/engine.mootools.js.4: OK
/root/javascripts/TouchScrollExtender.js.1: OK
/root/javascripts/jquery.themepunch.plugins.min.js.1: OK
/root/javascripts/mergen-core.min.js: OK
/root/javascripts/rp.js.2: OK
/root/javascripts/plugins-extra.js: OK
/root/javascripts/atrk.js: OK
/root/javascripts/yui_combo.php?rollup%2F3.17.2%2Fyui-moodlesimple.js&amp;rollup%2F1455265854%2Fmcore-debug.js: OK
/root/javascripts/jquery.jplayer.min.js: OK
/root/javascripts/jquery.jcarousel.min.js: OK
/root/javascripts/snowstorm.js: OK
/root/javascripts/swfobject.js.5: OK
/root/javascripts/jquery.easing.1.2.js: OK
/root/javascripts/touchSlider.plugin.js: OK
/root/javascripts/jquery.mcustomscrollbar.js: OK
/root/javascripts/jquery.validate.js.1: OK
/root/javascripts/html5.min.js.2: OK

----------- SCAN SUMMARY -----------
Known viruses: 5403271
Engine version: 0.99.2
Scanned directories: 1
Scanned files: 2761
Infected files: 0
Data scanned: 200.23 MB
Data read: 104.07 MB (ratio 1.92:1)
Time: 146.844 sec (2 m 26 s)
root@ubuntu:~/javascripts#
```

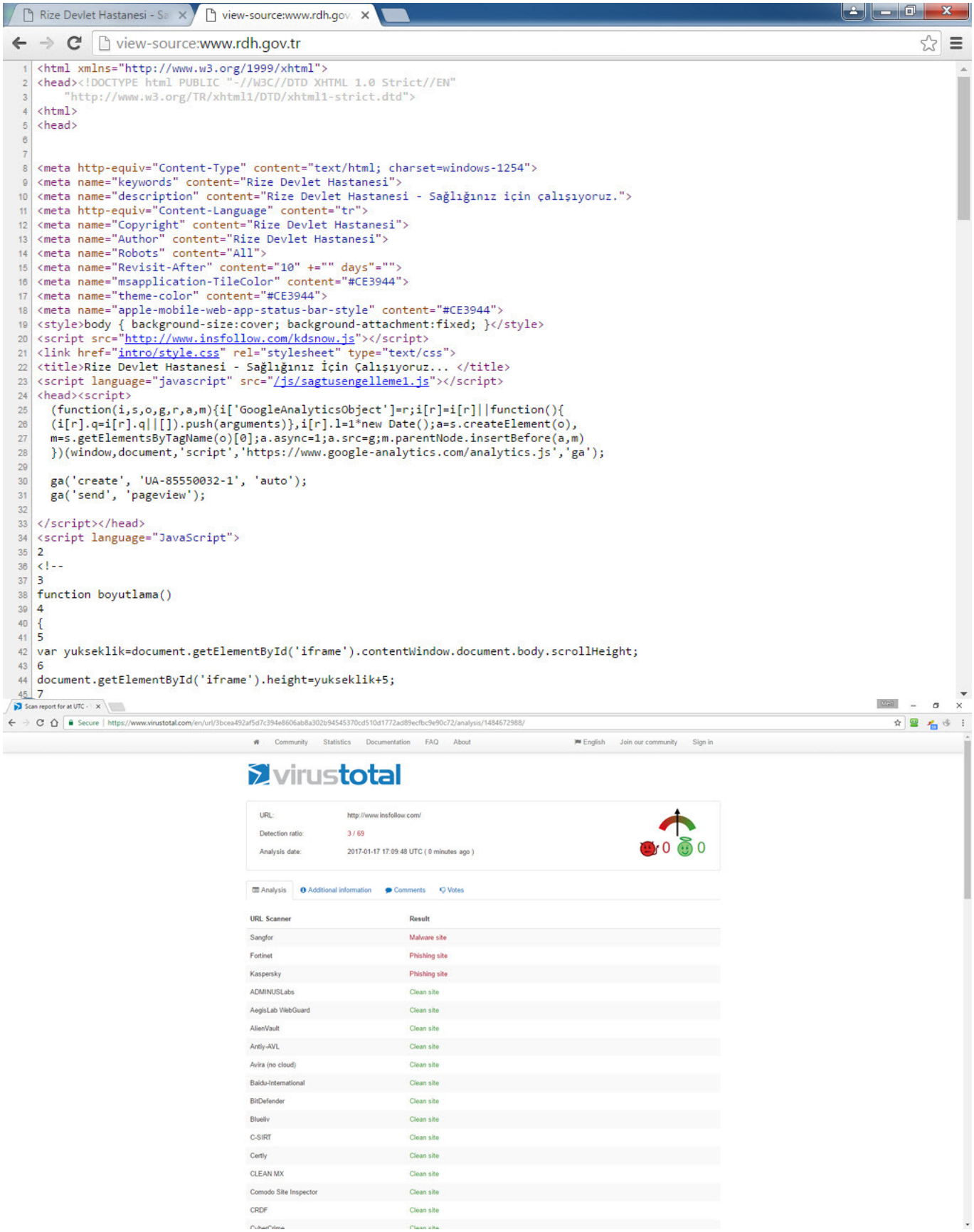

Kaspersky Internet Security
Scan
Full Scan
Quick Scan
Selective Scan
External Devices Scan
Task Manager
No running scan tasks.
Scan schedule
No running scans
Recent scans
Scan of folder "javascripts"
less than a minute ago
Safe: no threats detected.
Detailed report 2,719 files.
Scan of folder "javascripts"
2 minutes ago
Safe: no threats detected.
Detailed report 2,757 files.
Scan of file "javascripts.tar.gz"
12 minutes ago
Safe: no threats detected.
Detailed report 2,759 files.
Rootkit Scan
22 hours ago
Safe: no threats detected.
Detailed report 3,510 files.
Other products
My Kaspersky
License: 137 days remaining



Then, I used the sort tool to arrange the web addresses of the JavaScript files listed in the log file, and filtered out well-known addresses like ajax.googleapis.com. Among the remaining addresses, one domain caught my attention: insfollow.com. When I checked which government website this domain was detected on, I found that it belonged to Rize State Hospital. I visited the website and examined its source code, where I easily identified the insfollow.com domain and the injected JavaScript file.

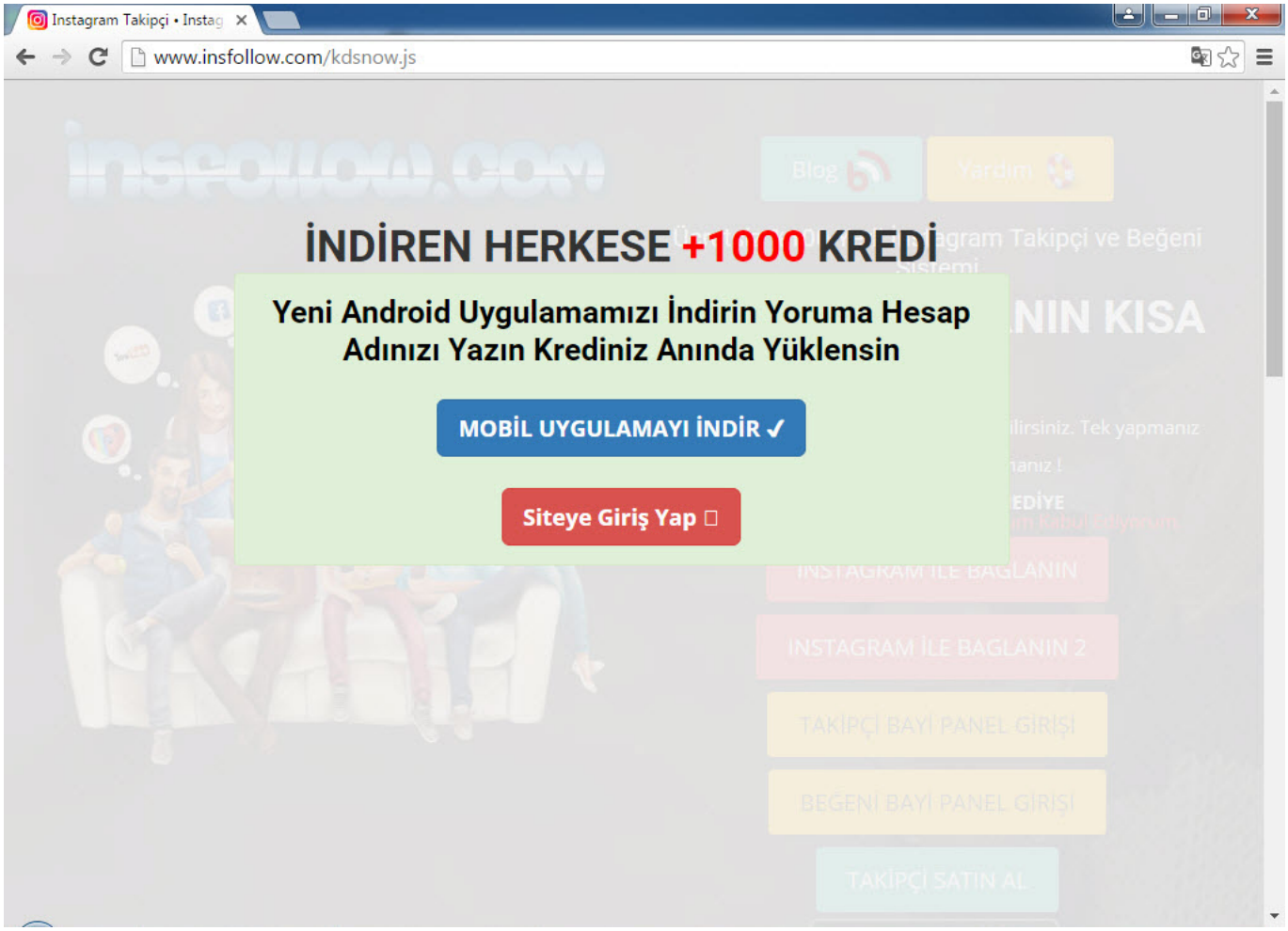
To gather more information, I submitted the insfollow.com address to VirusTotal, and it revealed that three security software detected it as a phishing site.

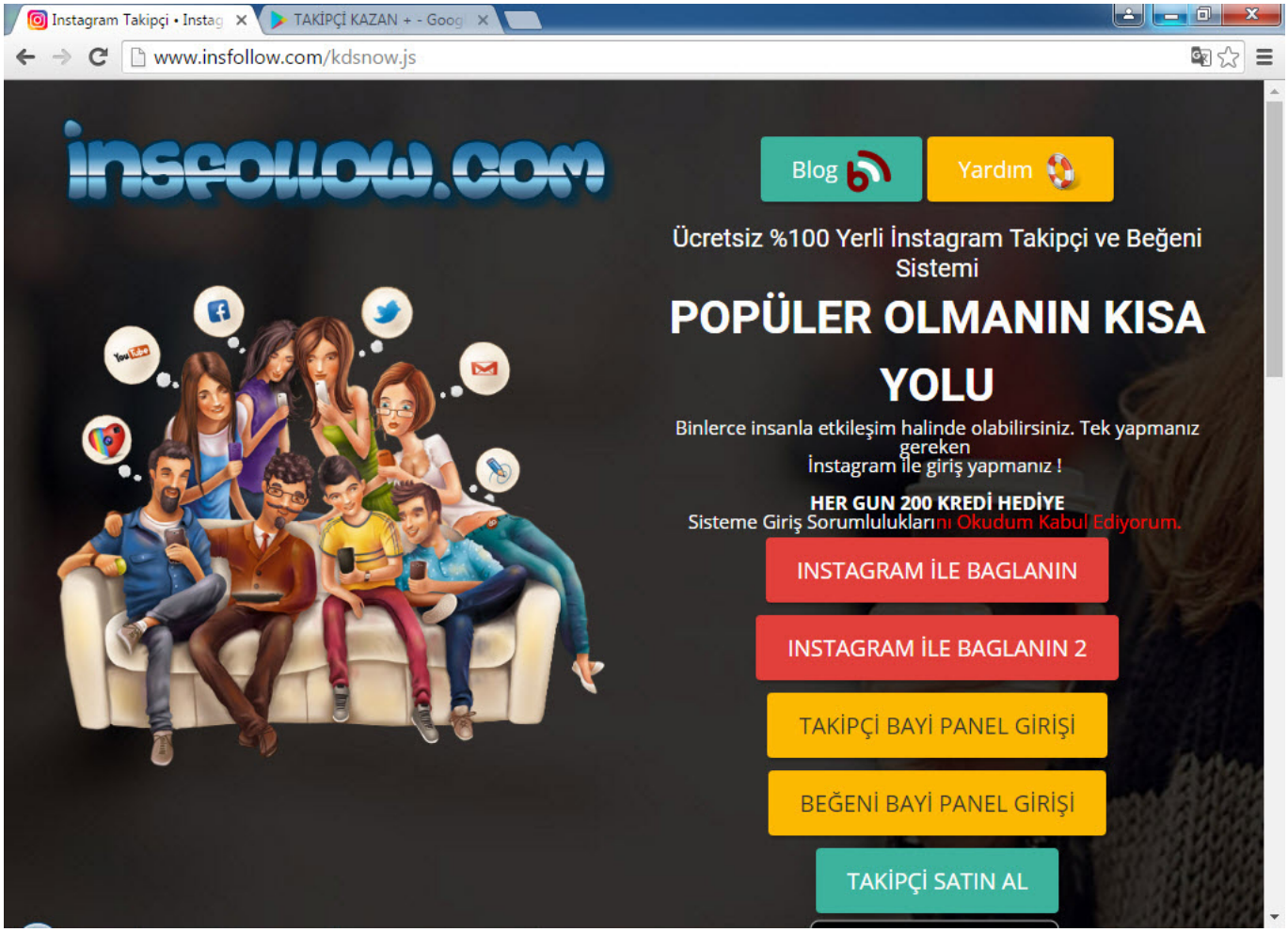

Rize Devlet Hastanesi - Sa
www.rdh.gov.tr
T.C.
SAĞLIK BAKANLIĞI
TÜRKİYE KAMU HASTANELERİ KURUMU
Rize İli Kamu Hastaneleri Birliği Genel Sekreterliği
RİZE DEVLET HASTANESİ
Rize Devlet Hastanesi
Sağlığınız İçin Çalışıyoruz...
Siteye Giriş
RIZE DEVLET HASTANESI
GÖRÜŞ / ÖNERİLER
Çalışanlarımızın görüş ve önerileri için tıklayınız.
ONLINE RANDEVU
Hastanemize randevu almak için tıklayın.
GÖRÜŞ / ÖNERİLER
Hastalarımızın görüş ve önerileri için tıklayınız.
ULAŞIM BİLGİLERİ
Ulaşım bilgilerini görmek için tıklayınız.
İhale Alanı
İHALELER
Hastanemizin ihalelerini görmek için tıklayınız!
E - Laboratuvar
Laboratuvar sonuçları için tıklayınız!
Ölüm Bildirim Sistemi
Ölüm Bildirim Sistemine giriş için tıklayınız!
Web sitemiz en iyi 1920 x 1080 çözünürlükte Chrome, Yandex, Firefox, İnternet Explorer 10 ve üzeri web tarayıcılarda görüntülenir.
Tasarım & Kodlama: Hüseyin AKYILDIZ | E-posta: huseyin@rdh.gov.tr | Copyright © 2011 - 2017 Rize Devlet Hastanesi
Telerik Fiddler Web Debugger
File Edit Rules Tools View Help GET /book GeoEdge
Replay Go Stream Decode Keep: All sessions Any Process Find Save Browse Clear Cache TextWizard Tearoff
Result Protocol Host URL Body Caching Content-Type Process
1 200 HTTP www.rdh.gov.tr / 8.189 text/html chrome
2 404 HTTP www.insfollow.com /kdsnow.js 19.520 text/html chrome
3 200 HTTP www.rdh.gov.tr /intro/style.css 8.238 text/css chrome
4 404 HTTP www.rdh.gov.tr /js/sagtusengelleme1.js 918 text/html chrome
5 200 HTTP www.rdh.gov.tr /media/top.png 55.446 image/png chrome
6 200 HTTP www.rdh.gov.tr /media/gi.png 4.679 image/png chrome
7 200 HTTP www.rdh.gov.tr /intro/intro_bayrak_bg_us... 1.621 image/jpeg chrome
8 200 HTTP www.rdh.gov.tr /intro/intro_bayrak_bg_al... 1.657 image/jpeg chrome
9 200 HTTP www.rdh.gov.tr /intro/intro_sayfa_alt_bg.... 27.890 image/png chrome
10 404 HTTP www.rdh.gov.tr /js/sagtusengelleme1.js 918 text/html chrome
11 200 HTTPS www.google-analyti... /analytics.js 11.590 public, ... text/javasc... chrome
12 200 HTTP www.rdh.gov.tr /gir/index.html 949 text/html chrome
13 200 HTTP www.rdh.gov.tr /altmenu.html 2.381 text/html chrome
14 200 HTTP www.rdh.gov.tr /altsag/index.html 5.280 text/html chrome
15 200 HTTP www.rdh.gov.tr / 8.189 text/html chrome
16 200 HTTP www.rdh.gov.tr /intro/sayfa_orta_bg.png 27.251 image/png chrome
17 200 HTTP www.rdh.gov.tr /intro/intro_sayfa_orta_b... 27.498 image/png chrome
18 200 HTTP www.rdh.gov.tr /intro/intro_bayrak_bg_or... 395 image/jpeg chrome
19 200 HTTP www.rdh.gov.tr /gir/swfobject.js 6.860 application/... chrome
20 200 HTTP www.rdh.gov.tr /altsag/css/Style.css 10.260 text/css chrome
21 404 HTTP www.rdh.gov.tr /altsag/slider/themes/def... 918 text/html chrome
22 404 HTTP www.rdh.gov.tr /altsag/slider/themes/pas... 918 text/html chrome
23 404 HTTP www.rdh.gov.tr /altsag/slider/themes/orm... 918 text/html chrome
24 404 HTTP www.rdh.gov.tr /altsag/slider/nivo-slider.css 918 text/html chrome
25 200 HTTPS www.google-analyti... /collect?v=1&_v=j47&a=... 35 no-cac... image/gif chrome
26 200 HTTP www.rdh.gov.tr /media/css/core_compres... 53.825 text/css chrome
27 200 HTTPS www.google-analyti... /ga.js 16.022 public, ... text/javasc... chrome
28 404 HTTP www.rdh.gov.tr /ajax.googleapis.com/aja... 918 text/html chrome
29 200 HTTP www.rdh.gov.tr /media/js/lang_box.js 31.680 application/... chrome
30 200 HTTP www.rdh.gov.tr /media/js/jquery.tinycaro... 2.891 application/... chrome
31 200 HTTP www.rdh.gov.tr /media/js/all_compressed.... 108.099 application/... chrome
32 200 HTTP www.rdh.gov.tr /altsag/images/erandevu.... 3.387 image/png chrome
33 200 HTTP www.rdh.gov.tr /altsag/index.html 5.280 text/html chrome
34 200 HTTPS www.google-analyti... /__utm.gif?utmwv=5.6.7... 35 no-cac... image/gif chrome
Composer Log Filters Timeline
Statistics Inspectors AutoResponder
Headers TextView WebForms HexView Auth
Cookies Raw JSON XML
Request Headers [Raw] [Header Definitions]
GET /kdsnow.js HTTP/1.1
Cache
Cache-Control: no-cache
Pragma: no-cache
Client
Accept: */*
Accept-Encoding: gzip, deflate, sdch
Accept-Language: en-US,en;q=0.8
User-Agent: Mozilla/5.0 (Windows NT 6.1; Win64; x64)
Get SyntaxView Transformer Headers TextVie
ImageView HexView WebView Auth Ca ing
Cookies Raw JSON XML
HTTP/1.1 404 Not Found
Date: Mon, 16 Jan 2017 14:00:33 GMT
Server: Apache
Connection: close
Content-Type: text/html
Content-Length: 19507
<!DOCTYPE html>
<html lang="tr" class="js">
<head>
<script async src="//pagead2.googlesyndicati
<script>
(adsbygoogle = window.adsbygoogle || []).pu
google_ad_client: "ca-pub-26739462631533
enable_page_level_ads: true
});
</script>
<!-- Start Alexa Certify Javascript -->
<script type="text/javascript">
_atrk_opts = { atrk_acct:"uHZmo1IWNa10mh", d
(function() { var as = document.createElement
</script>
Find... (press Ctrl+Enter to highlight all) View in Notepad
[QuickExec] ALT+Q > type HELP to learn more
Capturing All Processes 1 / 39 http://www.insfollow.com/kdsnow.js



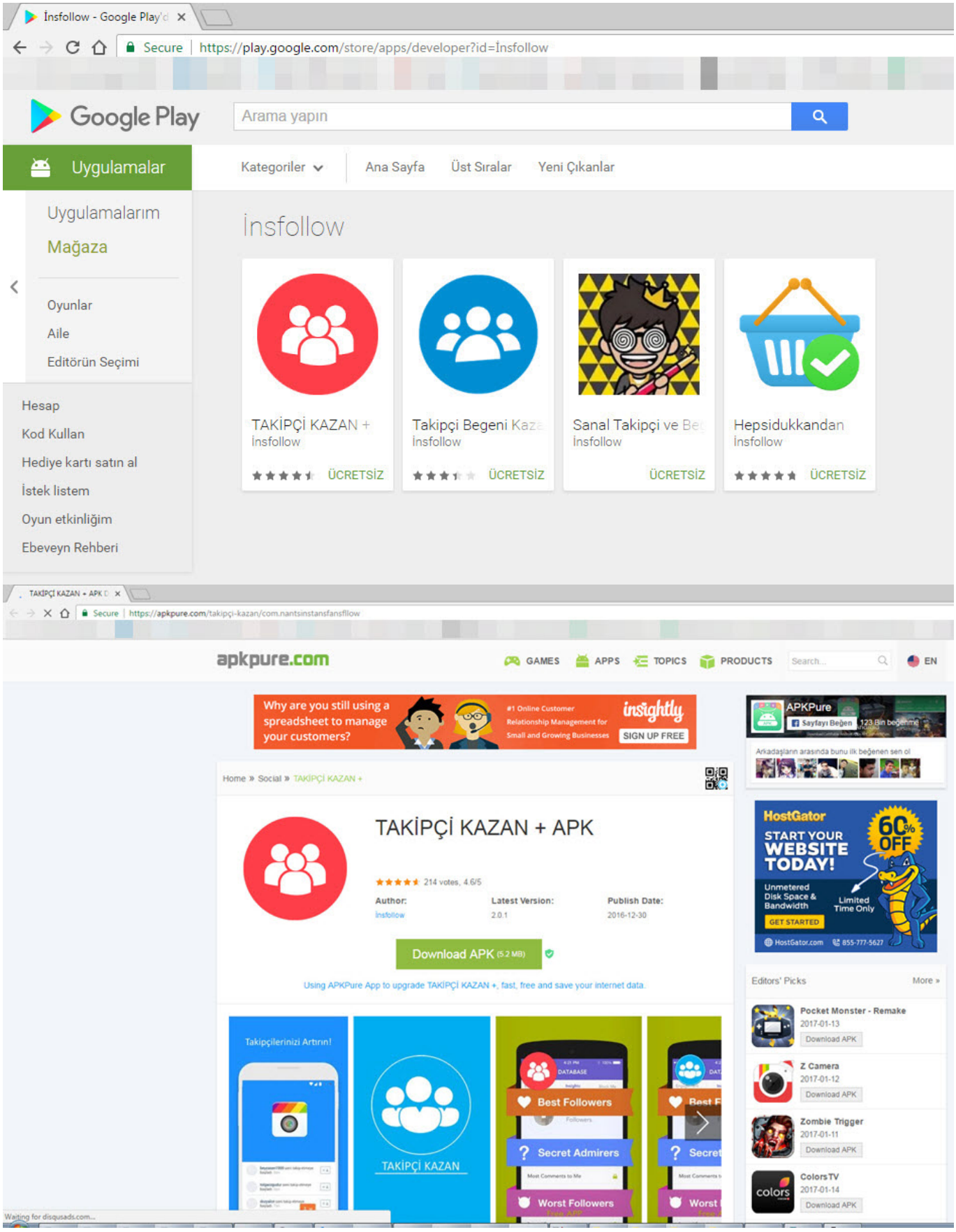
When I visited http://www.insfollow.com, I discovered that it was a website created with the purpose of selling Instagram followers, indicating that it operated under the guise of providing such services. However, based on my previous analysis of malicious websites and JavaScript codes involved in

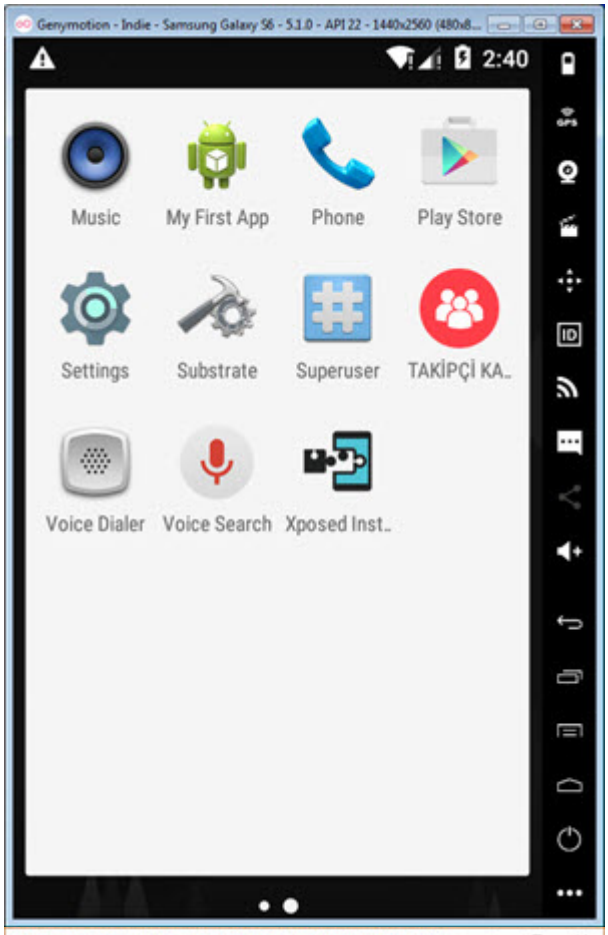
stealing social media and network passwords (such as Token Thieves and Social Network Thieves), I decided to continue my research.

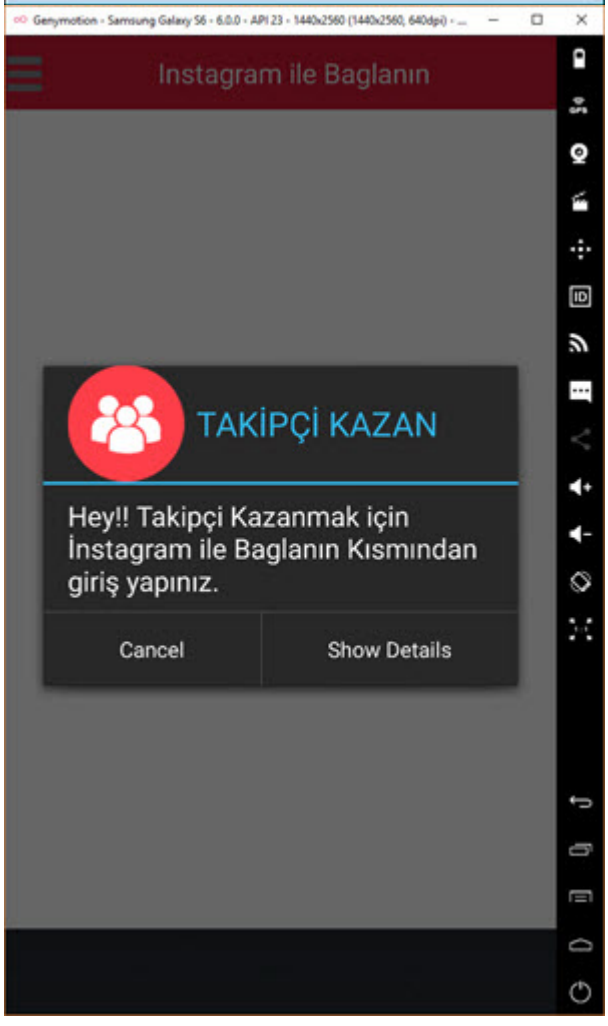




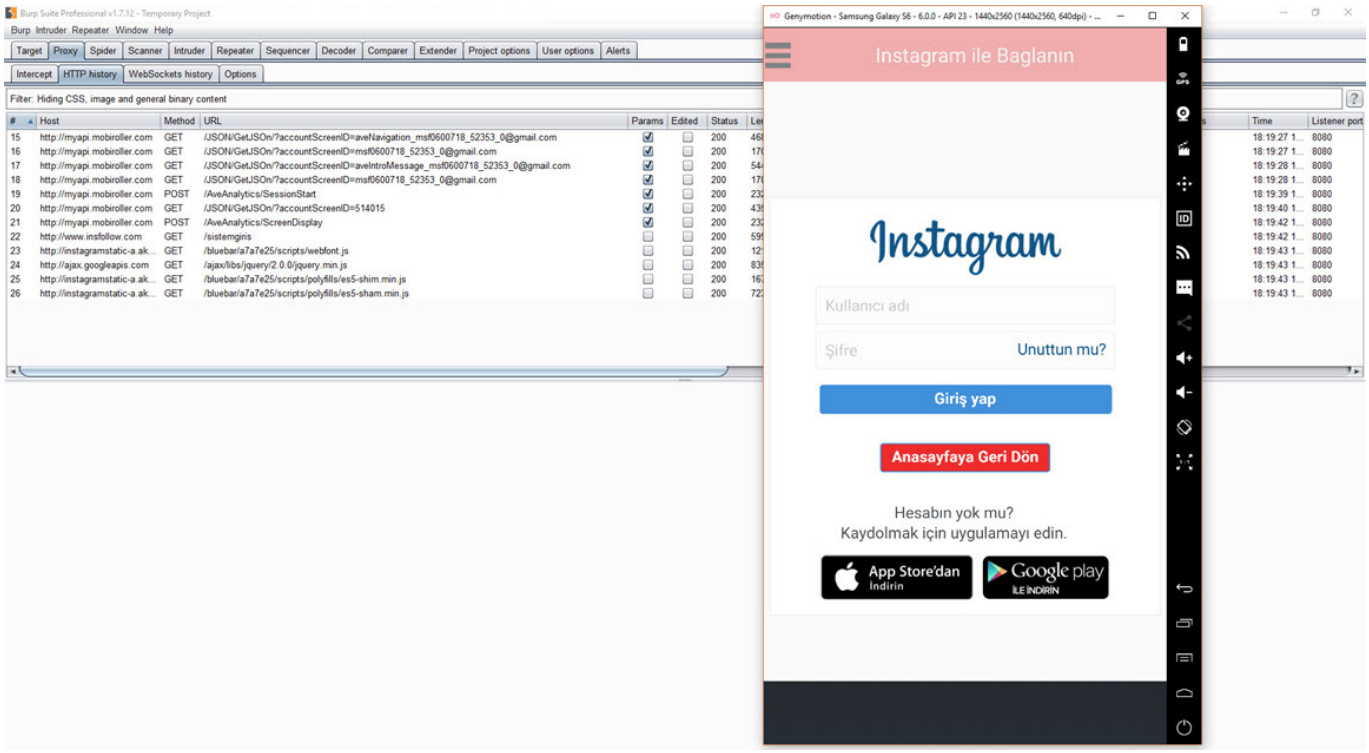
First, I downloaded the advertised “Takipçi Kazan” mobile application from the website and ran it on the Genymotion emulator. In the pop-up message window, it instructed me to log in to the application with an Instagram account. Therefore, I created a new Instagram account specifically for this purpose, knowing that I could safely expose its password.


İnsfollow - Google Play'
Secure | https://play.google.com/store/apps/developer?id=İnsfollow
Google Play
Arama yapın
Uygulamalar
Kategoriler
Ana Sayfa
Üst Sıralar
Yeni Çıkanlar
Uygulamalarım
Mağaza
Oyunlar
Aile
Editörün Seçimi
Hesap
Kod Kullan
Hediye kartı satın al
İstek listem
Oyun etkinliğim
Ebeveyn Rehberi
İnsfollow
TAKİPÇİ KAZAN +
İnsfollow
ÜCRETSİZ
Takipçi Begeni Kaz
İnsfollow
ÜCRETSİZ
Sanal Takipçi ve Be
İnsfollow
ÜCRETSİZ
Hepsidukkandan
İnsfollow
ÜCRETSİZ
TAKİPÇİ KAZAN + APK
Secure | https://apkpure.com/takipçi-kazan/com.nantsinstansfansfllow
apkpure.com
GAMES
APPS
TOPICS
PRODUCTS
Search...
EN
Why are you still using a spreadsheet to manage your customers?
insightly
SIGN UP FREE
Home » Social » TAKİPÇİ KAZAN +
TAKİPÇİ KAZAN + APK
214 votes, 4.6/5
Author:
İnsfollow
Latest Version:
2.0.1
Publish Date:
2016-12-30
Download APK (5.2 MB)
Using APKPure App to upgrade TAKİPÇİ KAZAN +, fast, free and save your internet data.
Takipçilerinizi Artırın!
TAKİPÇİ KAZAN
Best Followers
Secret Admirers
Worst Followers
APKPure
Sayfayı Beğen 123 Bin beğenmiş
Arkadaşların arasında bunu ilk beğenen sen ol
HostGator
START YOUR WEBSITE TODAY!
60% OFF
Unmetered Disk Space & Bandwidth
Limited Time Only
GET STARTED
HostGator.com 855-777-5627
Editors' Picks
More »
Pocket Monster - Remake
2017-01-13
Download APK
Z Camera
2017-01-12
Download APK
Zombie Trigger
2017-01-11
Download APK
ColorsTV
2017-01-14
Download APK
Waiting for disqusads.com...


Genymotion - Indie - Samsung Galaxy S6 - 5.1.0 - API 22 - 1440x2560
2:40
Music
My First App
Phone
Play Store
Settings
Substrate
Superuser
TAKİPÇİ KA..
Voice Dialer
Voice Search
Xposed Inst..

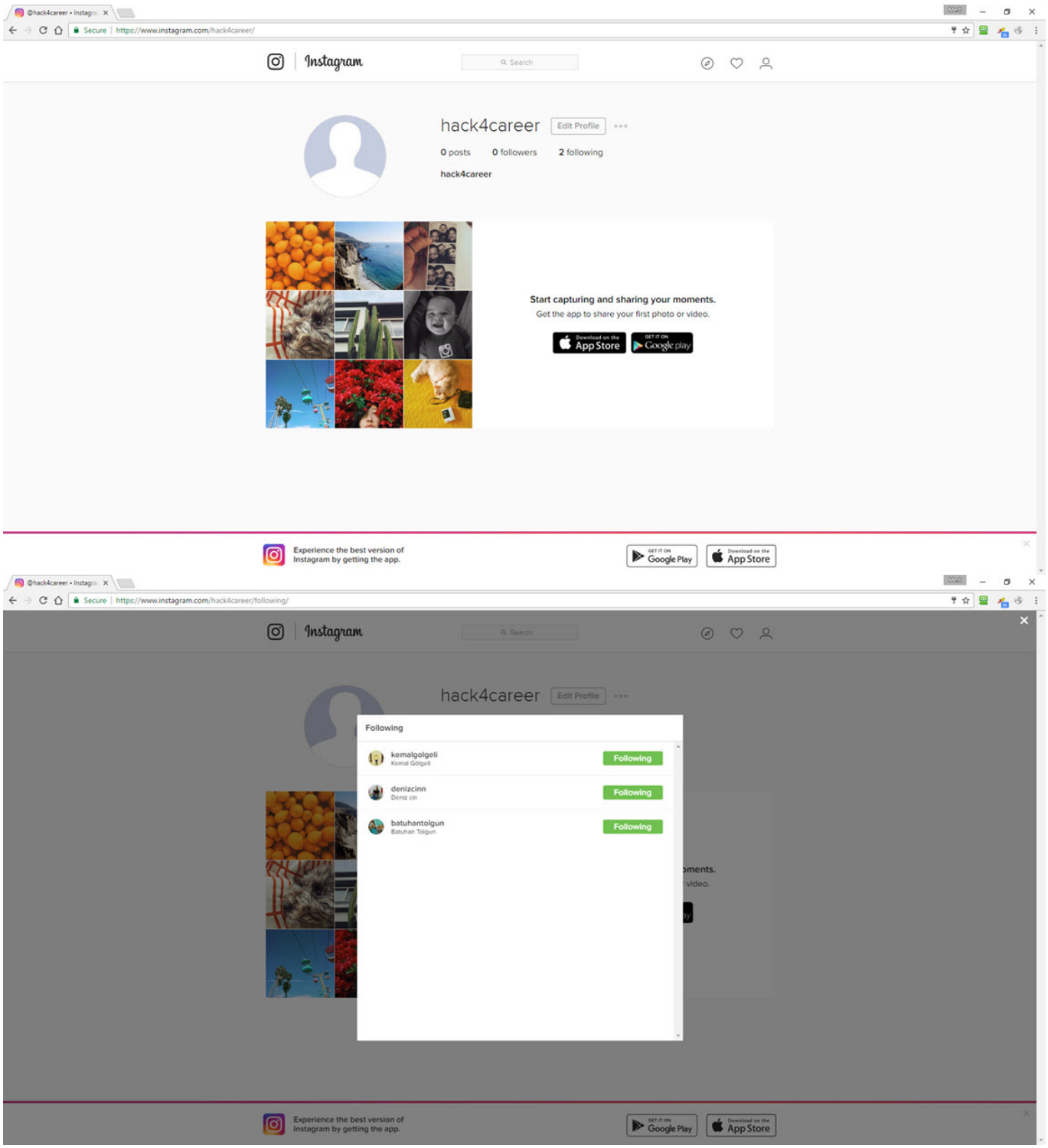

Genymotion - Samsung Galaxy S6 - 6.0.0 - API 23 - 1440x2560
Instagram ile Baglanın
TAKİPÇİ KAZAN
Hey!! Takipçi Kazanmak için İnstagram ile Baglanın Kısmından giriş yapınız.
Cancel
Show Details

When I ran the application, I discovered that it was developed using Mobiroller, as there were requests being made to the URL http://myapi.mobiroller.com in the background. Upon further inspection of the outgoing requests, I was able to easily see the email addresses of the application developer.



To understand the behavior of the “Takipçi Kazan” application, I first entered my incorrect Instagram password. From the error message “Username or password is incorrect!!!” it was clear that the application was capturing and instantly using the entered username and password on Instagram. After entering the correct password, the application redirected me to its information and payment page. When I logged into my Instagram account afterwards, I noticed a rapid increase in the number of accounts I was following. However, it wasn’t long before I was unable to log into my Instagram account, and shortly thereafter, my account was suspended by Instagram.

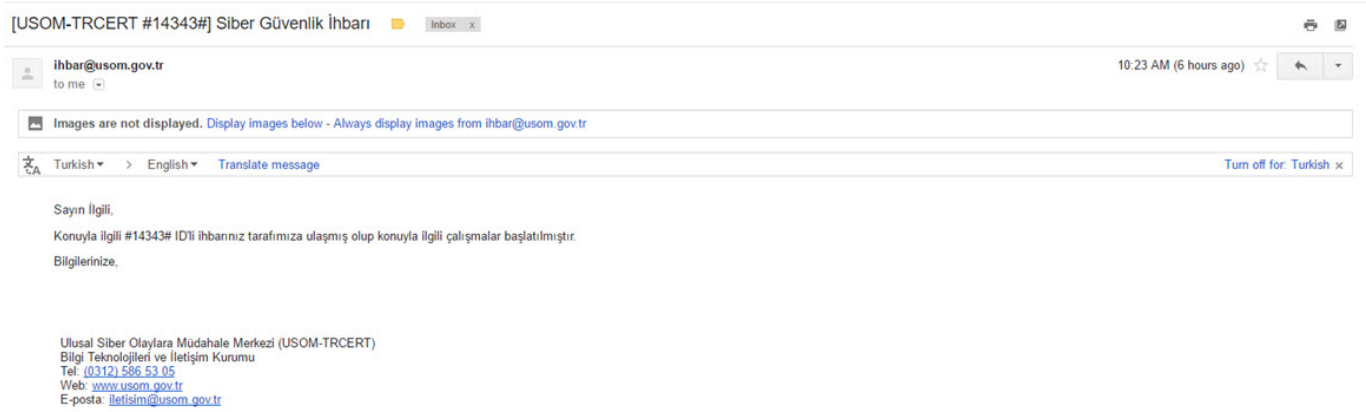
Burp Suite Professional v1.7.12 - Temporary Project
Burp Intruder Repeater Window Help
Target Proxy Spider Scanner Intruder Repeater Sequencer Decoder Comparer Extender Project options User options Alerts
Intercept HTTP history WebSockets history Options
Filter: Hiding CSS, image and general binary content
Request Response
Raw Params Headers Hex
POST /login.php HTTP/1.1
Host: www.insfollow.com
Content-Length: 86
Cache-Control: max-age=0
Origin: http://www.insfollow.com
Upgrade-Insecure-Requests: 1
Content-Type: application/x-www-form-urlencoded
Referer: http://www.insfollow.com/sistemgiris
Accept-Encoding: gzip, deflate
Accept-Language: en-US
X-Requested-With: com.nantsinstansfansfllow
Connection: close
csrfmiddlewaretoken=80626eeff59ee387f9c4b7afd3659fdf67&username=mert&password=dg36rg327g
Genymotion - Samsung Galaxy S6 - 6.0.0 - API 23 - 1440x2560 (1440x2560, 640dpi) - ...
Instagram ile Baglanın
Instagram
Kullanıcı adı
Şifre
Unuttun mu?
Giriş yap
Kullanıcı adı veya şifre yanlış !!!
E-posta Adresinizi veya Hesabınızı Kontrol ediniz Tekrar Deneyiniz !!!
Anasayfaya Geri Dön
Hesabın yok mu?
Kaydolmak için uygulamayı edin.
App Store'dan İndirin
Google play İLE İNDİRİN
Type a search term
0 matches
Filter: Showing all items
GET /home HTTP/1.1
Host: www.insfollow.com
Cache-Control: max-age=0
Upgrade-Insecure-Requests: 1
Referer: http://www.insfollow.com/sistemgiris?error=hata
Accept-Encoding: gzip, deflate
Accept-Language: en-US
Cookie: PHPSESSID=6b3q24nkotuftvbjbpq0ifst6
X-Requested-With: com.nantsinstansfansfllow
Connection: close
İNSFOLLOW.COM - BİLGİLENDİRME
Hoşgeldin Hemen Vip Üyelik alarak istediğiniz kullanıcıya Takipçi ve Beğeni atabilirsiniz. Vip kullanıcılar günlük 500 kredi kazanırlar.
0553
Aktif Kullanıcı Sayısı : 5865
500 Türk Takipçi + Son 3 fotografınıza 200 Begeni 10 TL Hemen al Arkadaşlarını Şaşırt
Kredi Kartı ile Ödeme
9 Fotografınıza 1000 Begeni 49,99 TL
Hemen al Arkadaşlarını Şaşırt
Kredi Kartı ile Ödeme



As a result of this research, I have learned that in addition to the organized groups mentioned in the “They PWN Houses!” article, social media and network thieves who create websites under the guise of follower services also target our government websites. I hope that this individual effort sheds light on the authorized institutions responsible for the security of government websites. I would like to remind social media users to be cautious when using websites and mobile applications that promise followers or likes.

Hope to see you in the following articles.

Note: I would like to express my gratitude to USOM (National Cybersecurity Intervention Center) for initiating an investigation based on my report as a responsible citizen.


[USOM-TRCERT #14343#] Siber Güvenlik İhbarı

Inbox x

ihbar@usom.gov.tr
to me

10:23 AM (6 hours ago)

Images are not displayed. Display images below - Always display images from ihbar@usom.gov.tr

Turkish > English Translate message

Turn off for: Turkish

Sayın İlgili,

Konuyla ilgili #14343# ID'li ihbarınız tarafımıza ulaşmış olup konuyla ilgili çalışmalar başlatılmıştır.

Bilgilerinize,

Ulusal Siber Olaylara Müdahale Merkezi (USOM-TRCERT)
Bilgi Teknolojileri ve İletişim Kurumu
Tel: (0312) 586 53 05
Web: www.usom.gov.tr
E-posta: iletisim@usom.gov.tr

Note: It has been observed that the malicious code mentioned in the blog post was removed from the website of the hospital during the time between my research and writing/publishing the blog post.