

REPORT ON

ZERO BANK WEB APPLICATION

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1) SECURITY MISCONFIGURATION

Security misconfiguration vulnerabilities could occur if a component is susceptible to attack due to an insecure configuration. Security misconfiguration can happen at any level of an application stack, including the platform, web server, application server, database, framework, and custom code.

---SENSITIVE DATA EXPOSURE WITH ERROR MESSAGES

Improper handling of errors can introduce a variety of security problems for a web site. The most common problem is when detailed internal error messages such as stack traces, database dumps, and error codes are displayed to the user (hacker). These messages reveal implementation details that should never be revealed.

Vulnerability:

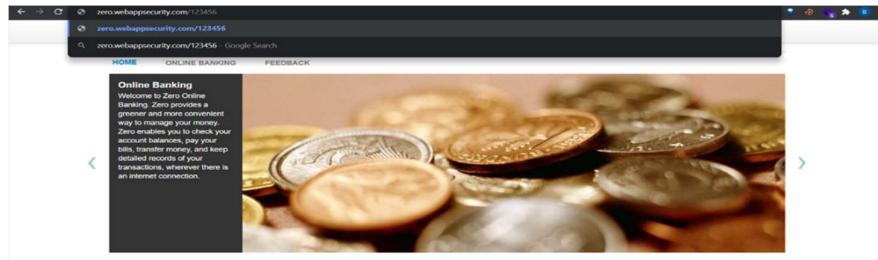
The Apache Tomcat server and its version is exposed to the user.

Steps to reproduce:

- a) Open <http://zero.webappsecurity.com/> website.
- b) Append any invalid subdomain to the above URL.

Mitigation:

- a) Hide server details from the users.
- b) use standard exception handling architecture for entire application to prevent unwanted leakage of information to attackers.



2) CLICKJACKING VULNERABILITY

Clickjacking (classified as a user interface redress attack or UI redressing) is a malicious technique of tricking a user into clicking on something different from what the user perceives, thus potentially revealing confidential information or allowing others to take control of their computer while clicking on seemingly innocuous objects, including web pages.

Vulnerability:

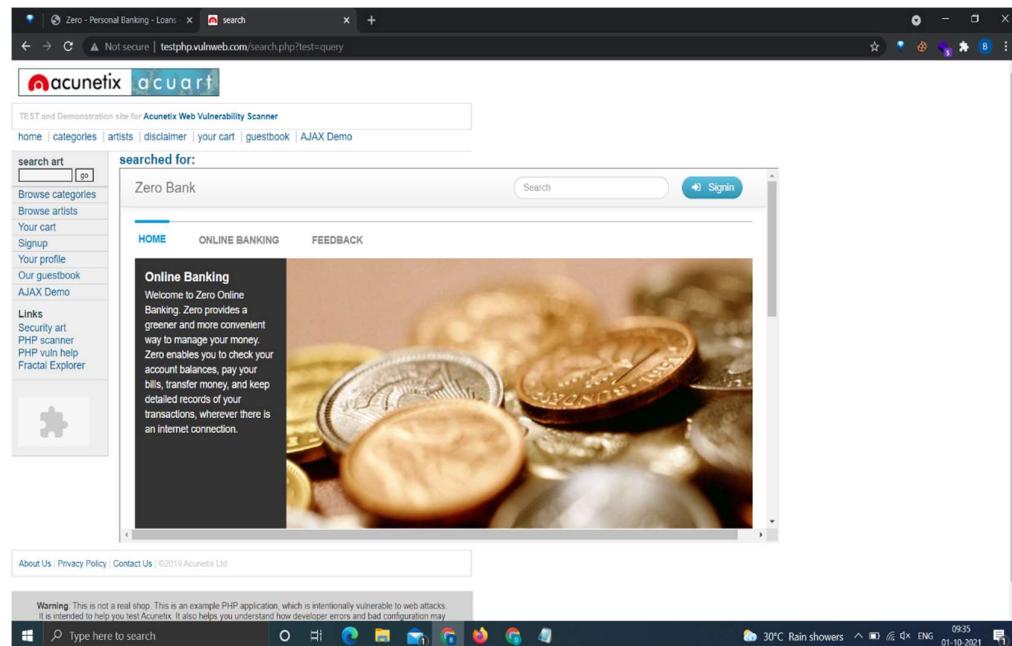
Allows Frame Injection attacks where other websites having the Frame Injection vulnerability can host Zero Bank application.

Steps to reproduce:

- a) login to the website <http://zero.webappsecurity.com/>
- b) open <http://testphp.vulnweb.com/login.php>
- c) paste the iframe injection (<iframe src="http://zero.webappsecurity.com/" width="1000" height="500"></iframe>) to the input field of testphp.vulnweb.com website
- d) zero.webappsecurity.com website would be reflected in phpvulnweb.com

Mitigation:

- a) **Client-side methods** – the most common is called Frame Busting. Client-side methods can be effective in some cases, but are considered not to be a best practice, because they can be easily bypassed.
- b) **Server-side methods** – the most common is X-Frame-Options. Server-side methods are recommended by security experts as an effective way to defend against clickjacking.



3) BROKEN AUTHENTICATION AND SESSION MANAGEMENT

Mitigation:

- a) Credentials should be protected: User authentication credentials should be protected when stored using hashing or encryption.
- b) Do not expose session ID in the URL: Session IDs should not be exposed in the URL (e.g., URL rewriting).
- c) Session IDs should timeout: User sessions or authentication tokens should be properly invalidated during logout.
- d) Recreate session IDs: Session IDs should be recreated after successful login.
- e) Do not send credentials over unencrypted connections: Passwords, session IDs, and other credentials should not be sent over unencrypted connections.
- f) Password length: Minimum password length should be at least eight (8) characters long. Combining this length with complexity makes a password difficult to guess using a brute force attack.
- g) Password complexity: Passwords should be a combination of alphanumeric characters.
- h) Username/Password Enumeration: Authentication failure responses should not indicate which part of the authentication data was incorrect. For example, instead of "Invalid username" or "Invalid password", just use "Invalid username and/or password" for both. Error responses must be truly identical in both display and source code.
- i) Protection against brute force login: Enforce account disabling after an established number of invalid login attempts (e.g., five attempts is common). The account must be disabled for a period of time sufficient to discourage brute force guessing of credentials, but not so long as to allow for a denial-of-service attack to be performed.

4) SESSION HIJACKING

Session hijacking is a technique used to take control of another user's session and gain unauthorized access to data or resources.

Vulnerability:

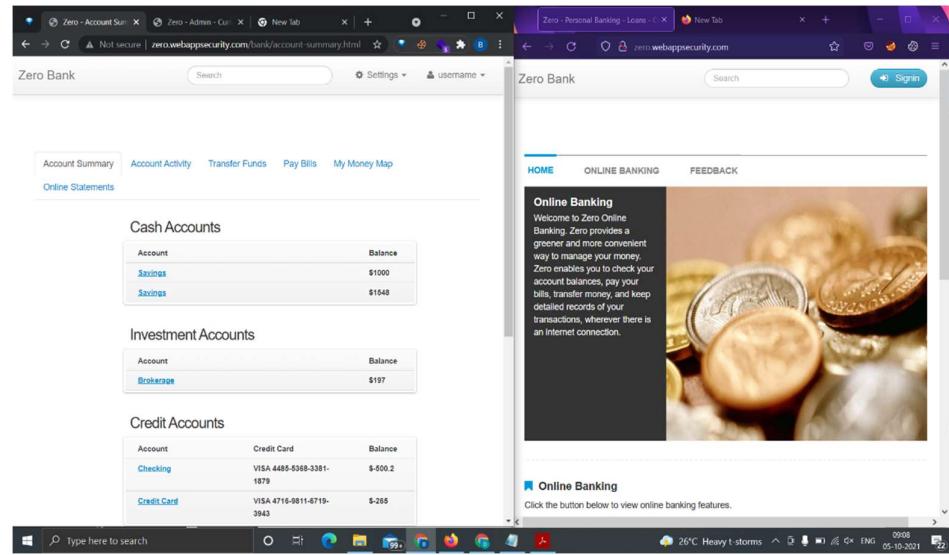
Session Hijacking is possible.

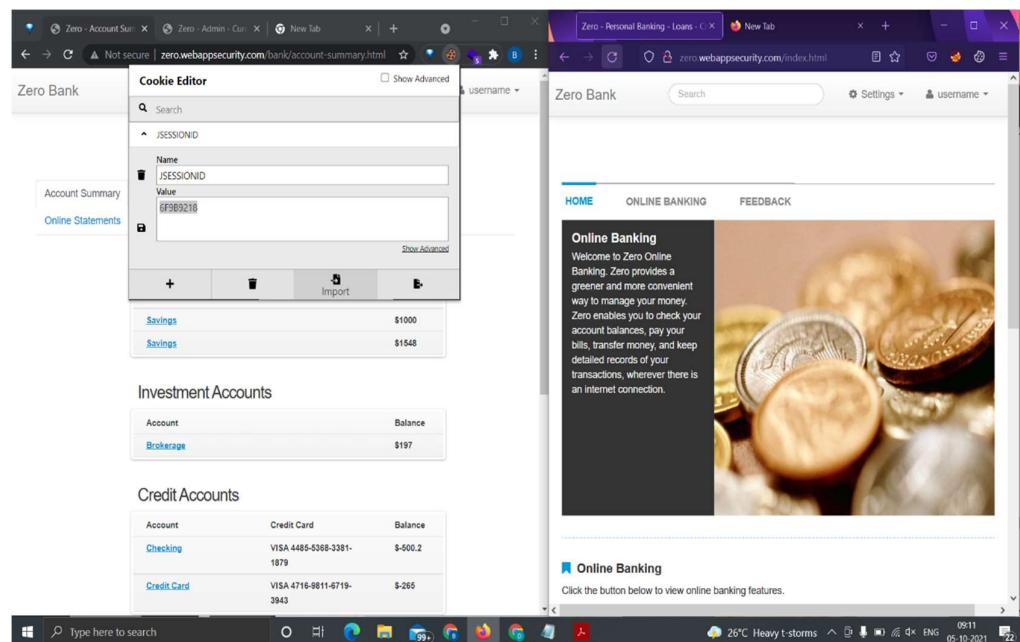
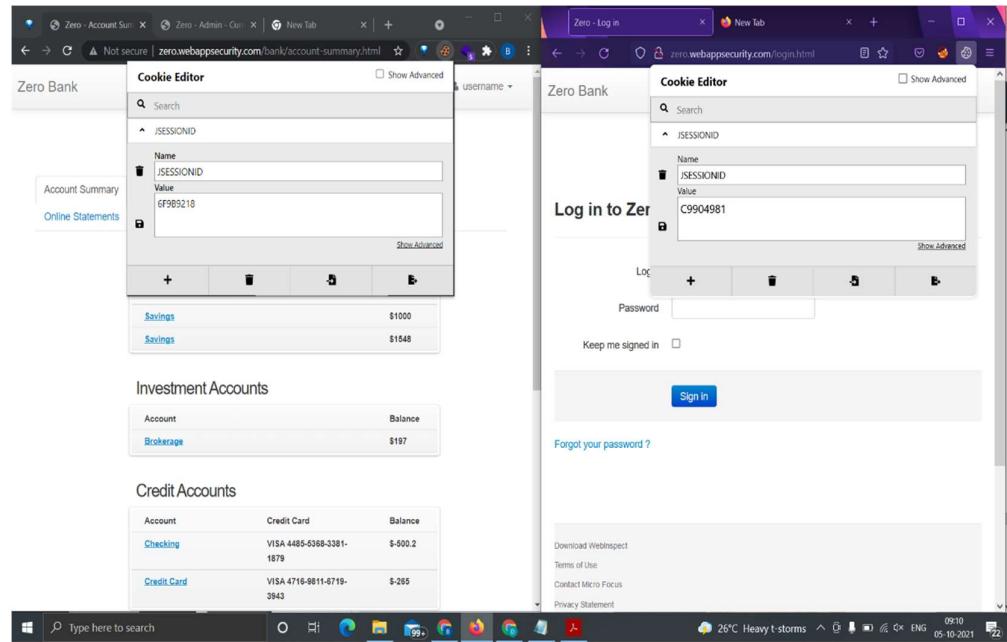
Steps to reproduce:

- a) Install Cookie Editor extension in two different browsers.
- b) Open <http://zero.webappsecurity.com/login.html> in two different browsers.
- c) Login using “username” and “password” as credentials in one of the browsers.
- d) Check the JSESSIONID in both the browsers.
- e) Copy the JSESSIONID from the browser where you logged in and paste it in the non logged in browser.
- f) Save the session ID and refresh the page. 7. We get access to the same account in other browser without login.

Mitigation:

- a) Use HTTPS.
- b) Have proper Session Management.
- c) Have HTTP only enabled.





5) SESSION FIXATION

Session fixation is a vulnerability where the session ids remain same before and after login.

Zero Bank

Log in to ZeroBank

Login

Password

Keep me signed in

Sign in

Forgot your password ?

Cookie Editor

Search

JSESSIONID

Name	JSESSIONID
Value	6A74B54D

Show Advanced

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Zero Bank

HOME ONLINE BANKING FEEDBACK

Online Banking
Welcome to Zero Online Banking. Zero provides a greener and more convenient way to manage your money. Zero enables you to check your account balances, pay your bills, transfer money, and keep detailed records of your transactions, wherever there is an internet connection.

Online Banking
Click the button below to view online banking features.
[More Services](#)

Checking Account Activity
Use Zero to view the most up-to-date listings of your deposits, withdrawals, interest payments, and a number of other useful transactions.

Transfer Funds
Use Zero to safely and securely transfer funds between accounts. There is no hold placed on online money transfers, so your funds are available when you need them.

My Money Map
Use Zero to set up and monitor your personalized money map. A money map is an easy-to-use online tool that helps you manage your finances efficiently. With

6) SESSION ID NOT UPDATED AFTER LOG OUT

Session id should expire/update post-logout. if it remains valid/same after logout the attacker can impersonate the legitimate user and hijacks the session.

The screenshot shows a web browser window with a cookie editor overlay. The cookie editor is titled 'Cookie Editor' and has a search bar. It lists a single cookie named 'JSESSIONID' with a value of 'E3F8ECC2'. The background page is a 'Zero Bank' account summary interface. It displays four main sections: 'Cash Accounts' (Account: Savings, Balance: \$197), 'Investment Accounts' (Account: Brokerage, Balance: \$197), 'Credit Accounts' (Account: Checking, Balance: \$400.2; Account: Credit Card, Balance: \$265), and 'Loan Accounts' (Account: Loan, Balance: \$700). The URL in the address bar is 'Not secure | zero.webappsecurity.com/bank/account-summary.html'.

The screenshot shows a web browser window with a cookie editor overlay. The cookie editor is titled 'Cookie Editor' and has a search bar. It lists a single cookie named 'JSESSIONID' with a value of 'E3F8ECC2'. The background page is a 'Zero Bank' homepage. It features a 'HOME' button, 'ONLINE BANKING', and 'FEEDBACK' buttons. A sidebar on the left contains an 'Online Banking' section with a welcome message about managing money online. Below the sidebar are three service cards: 'Online Banking' (button to view banking features), 'Checking Account Activity' (button to view up-to-date transaction lists), 'Transfer Funds' (button to safely transfer funds between accounts), and 'My Money Map' (button to set up and monitor a personalized money map). The URL in the address bar is 'Not secure | zero.webappsecurity.com/index.html'.

7) MISSING SECURE FLAG

The attacker can grab the cookie and impersonate the legitimate user. To overcome this limitation secure flag come into the picture.

The screenshot shows a web browser window with the URL zero.webappsecurity.com/index.html. The page title is "Zero Bank". The main content area displays a "Online Banking" section with a welcome message and a background image of coins. On the right side, a "Cookie Editor" dialog box is open, showing a single cookie entry for "JSESSIONID" with the value "E3FBEC2". The cookie editor interface includes fields for Name, Value, Domain, Path, Expiration, and checkboxes for Host Only, Session, Secure, and Http Only.

8) SESSION ID SHOULD BE RANDOM VALUE

Session id should not be in user understandable form. It should be a value which isn't easily understood.

The screenshot shows a web browser window with the URL zero.webappsecurity.com/index.html. The main content area displays a "Online Banking" section with a welcome message and a background image of coins. On the right side, a "Cookie Editor" dialog box is open, showing a single cookie entry for "JSESSIONID" with the value "D0B0734". The cookie editor interface includes fields for Name, Value, Domain, Path, Expiration, and checkboxes for Host Only, Session, Secure, and Http Only.

9) No Account Lockout Policy

The account lockout policy “locks” the user's account after a defined number of failed password attempts. The account lockout prevents the user from logging onto the network for a period of time even if the correct password is entered.

Vulnerability:

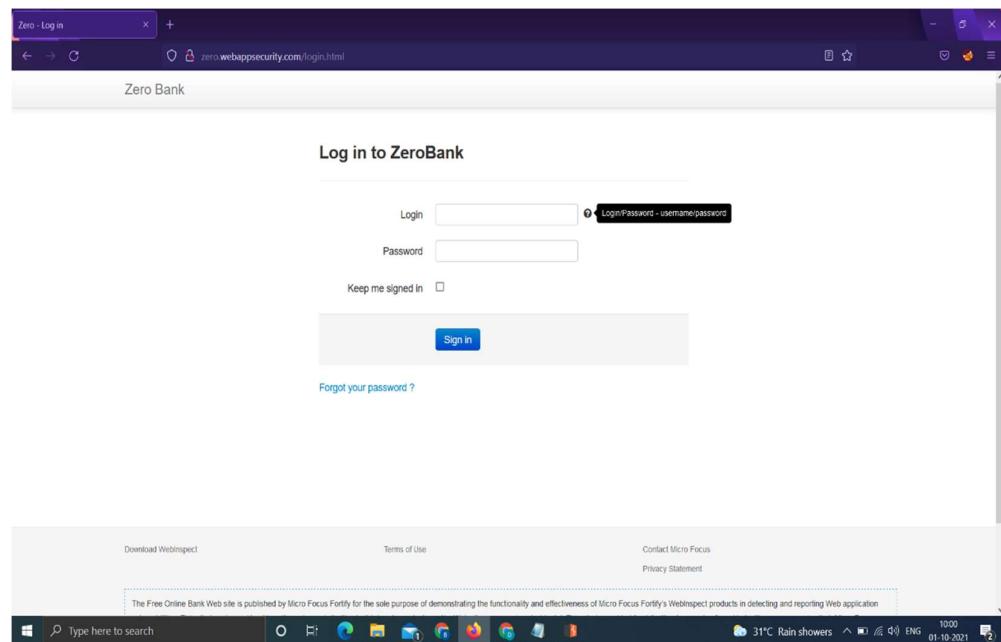
There is no Account Lockout Policy, so the attacker can bruteforce credentials to gain access.

Steps to reproduce:

- a) Go to <http://zero.webappsecurity.com/login.html> .
- b) Try different passwords for the Login “username”.
- c) The server doesn't lock the system after multiple tries to login with wrong credentials

Mitigation:

Implement Account Lockout Policy after 6-7 times of trying wrong credentials.



10) CLEARTEXT SUBMISSION OF PASSWORD

Vulnerability:

The client side website doesn't validate the password and accepts null password.

Steps to reproduce:

- a) Open <http://zero.webappsecurity.com/login.html> .
- b) Type username only.
- c) Click Login.

Mitigation:

Client side validation must be done.

A screenshot of a web browser displaying a login form for 'Zero Bank'. The URL in the address bar is 'Not secure | zero.webappsecurity.com/login.html?login_error=true'. The page title is 'Zero Bank'. The main heading is 'Troubles entering the site?'. A red error message box contains the text 'Login and/or password are wrong.' Below the message are two input fields: 'Login' containing 'silent_chora' and 'Password' which is empty. There is a 'Keep me signed in' checkbox followed by a 'Sign in' button. At the bottom left, there is a link 'Forgot your password ?'. The footer of the page includes links for 'Download WebInspect', 'Terms of Use', 'Contact Micro Focus', and 'Privacy Statement'.

11) CROSS SITE REQUEST FORGERY VULNERABILITY

Cross-site request forgery (also known as CSRF) is a web security vulnerability that allows an attacker to induce users to perform actions that they do not intend to perform.

Vulnerability:

Cross site request forgery vulnerability.

Steps to reproduce:

- a) Open <http://zero.webappsecurity.com/login.html>
- b) Type “username” and “password” as credentials and login.
- c) Go to the “Add New Payee” tab.
- d) Turn on Burp.
- e) Type in the details and catch the request in the BurpSuit.
- f) Right click on the request -> Engagement Tools -> Generate CSRF PoC.
- g) Change the “values” for input and then click “Test in Browser”.
- h) We find that Payee’s details are taken from the manipulated Burp Suite request.

Mitigation:

- a) Use Anti-CSRF token with Same Origin Policy.
- b) A strict subdomain and path level referrer header validation can be used in these cases for mitigating CSRF on login forms to an extent.

zero.websappsecurity.com/bank/pay-bills.html

Zero Bank

Account Summary Account Activity Transfer Funds Pay Bills My Money Map Online Statements

Pay Saved Payee Add New Payee Purchase Foreign Currency

Who are you paying?

Payee Name RAHUL

Payee Address Sharma

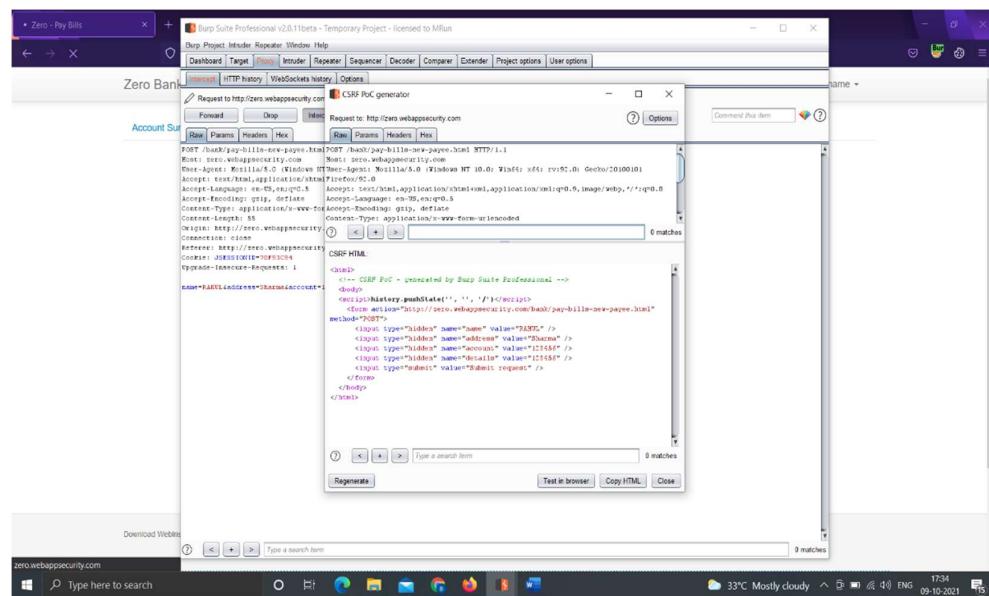
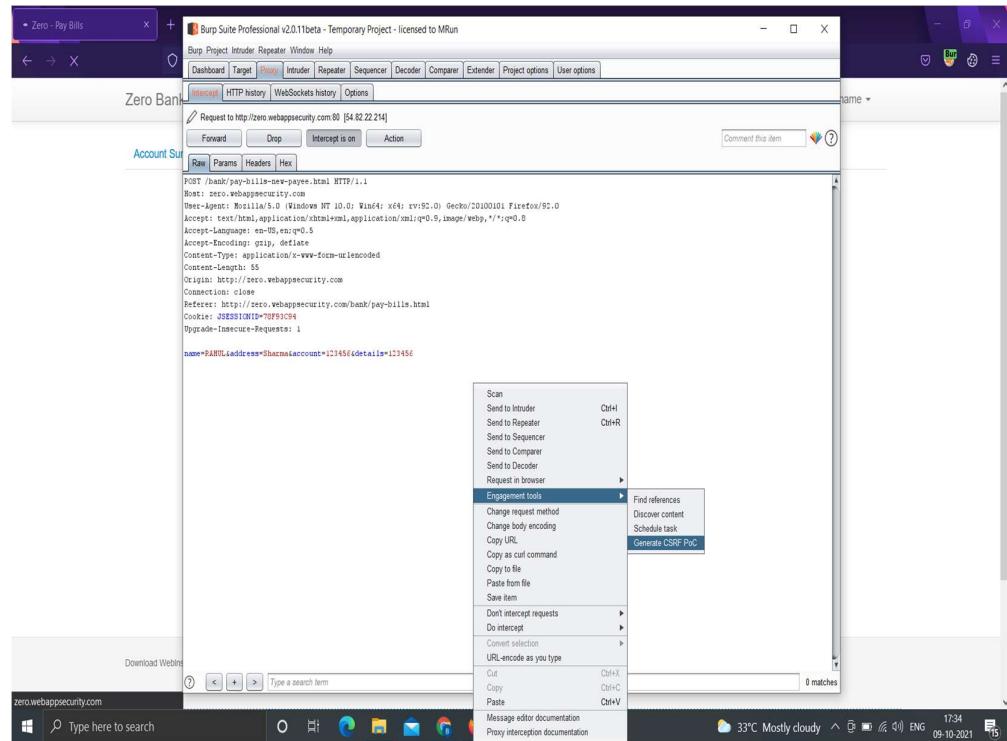
Account 123456

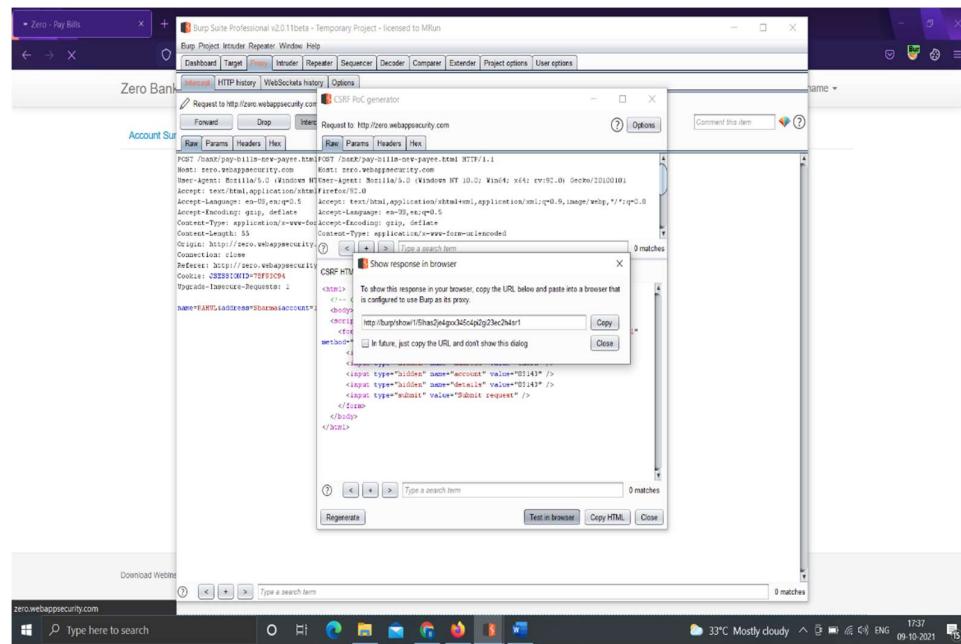
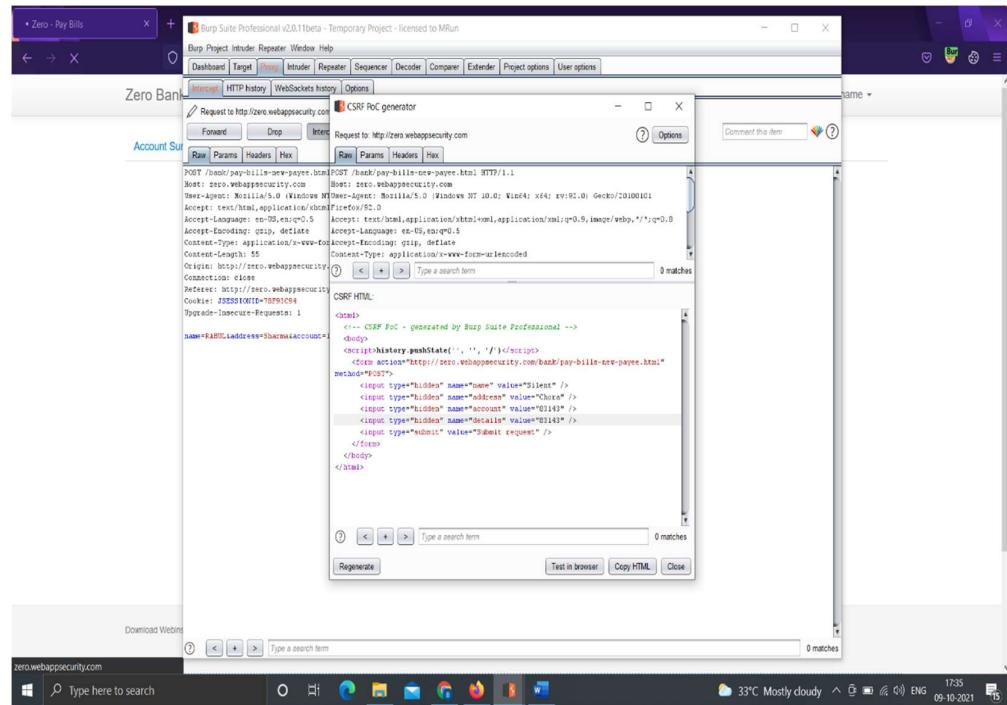
Payee Details 123456

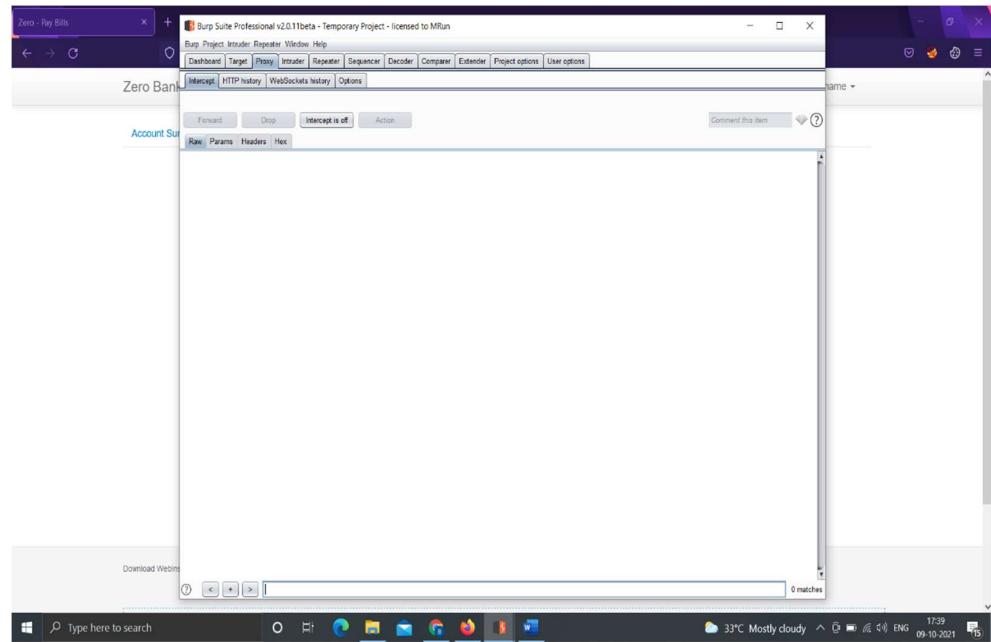
Add

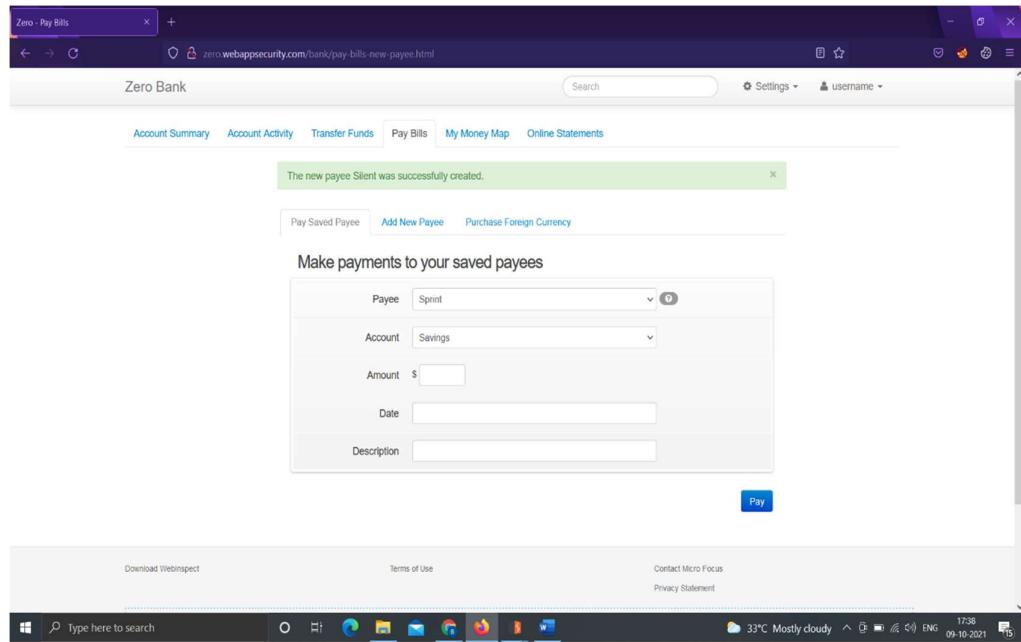
```

POST /bank/pay-bills-new-payee.html HTTP/1.1
Host: zero.websappsecurity.com
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/91.0.4453.102 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Content-Type: application/x-www-form-urlencoded
Content-Length: 53
Origin: http://zero.websappsecurity.com
Connection: close
Referer: http://zero.websappsecurity.com/bank/pay-bills.html
Cookie: JSESSIONID=47093C94
Upgrade-Insecure-Requests: 1
name=RAHUL&address=Sharma&account=123456&details=123456
  
```









12) SENSITIVE INFORMATION LEAKED THROUGH WAPPALYZER

Some vulnerable components (e.g., framework libraries) can be identified and exploited with automated tools, expanding the threat agent pool beyond targeted attackers to include chaotic actors.

Vulnerability:

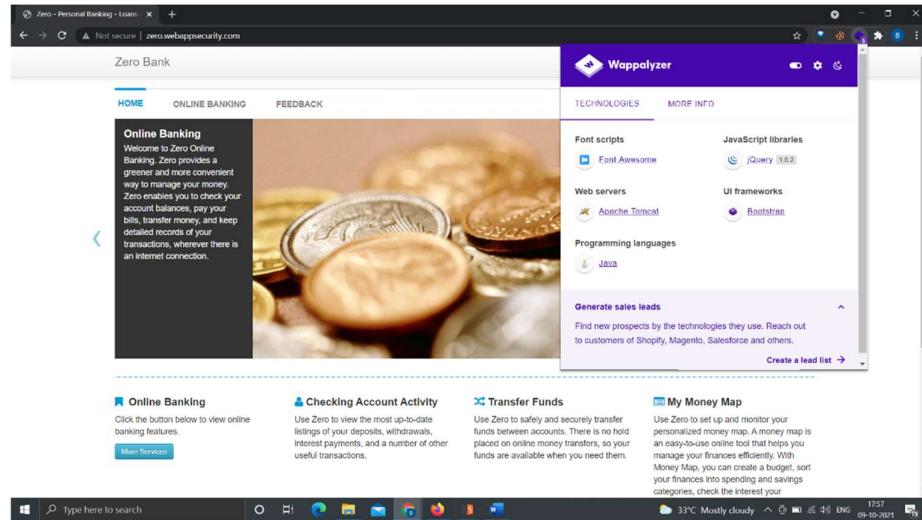
Sensitive data regarding various technologies used and their version number are exposed to the user.

Steps to reproduce:

- Install Wappalyzer on your browser.
- Open <http://zero.webappsecurity.com/> on your browser.
- Run the Wappalyzer extension.

Mitigation:

- a) Manual updates
- b) Using HDIV (hard working diligent idealistic valiant)
- c) Make sure that the wappalyzer doesn't detect the technologies used.



13) UNVALIDATED DIRECTS AND FORWARDS

Unvalidated redirects and forwards are possible when a web application accepts untrusted input that could cause the web application to redirect the request to a URL contained within untrusted input. By modifying untrusted URL input to a malicious site, an attacker may successfully launch a phishing scam and steal user credentials.

Vulnerability:

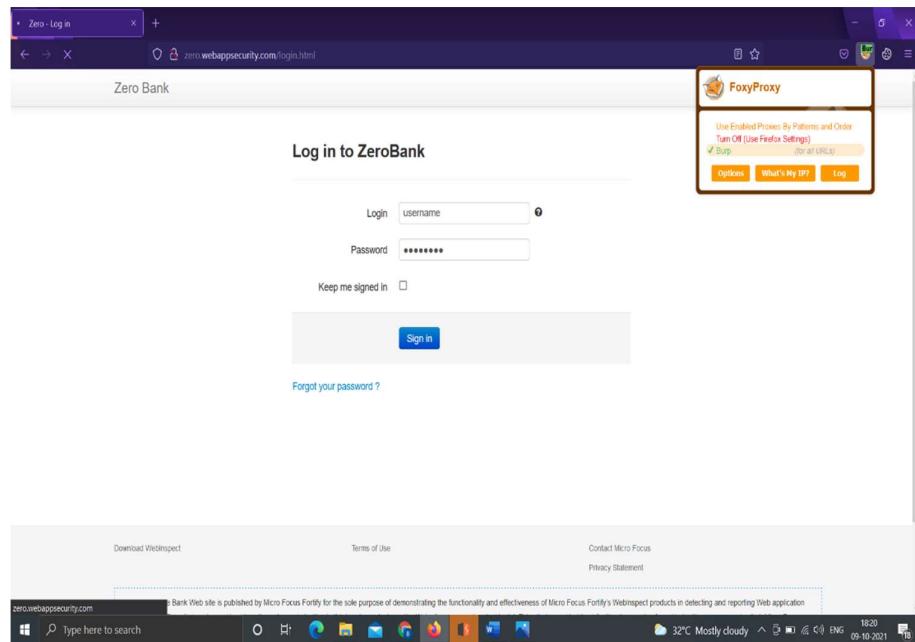
- a) The Zero bank application doesn't validate the redirects and forwards.
- b) Cross origin resource sharing vulnerability.

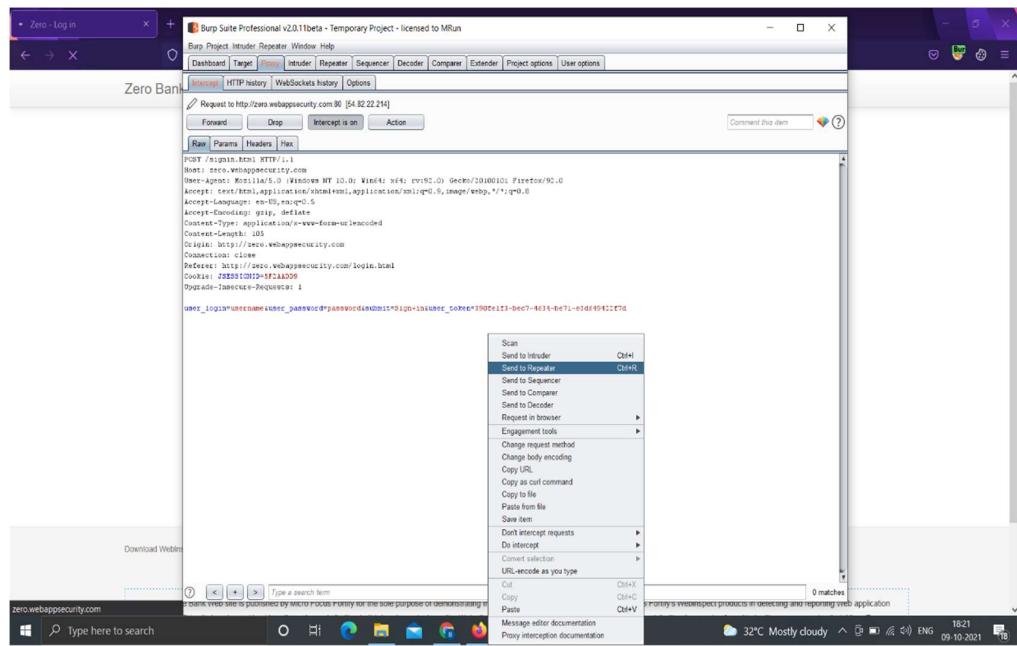
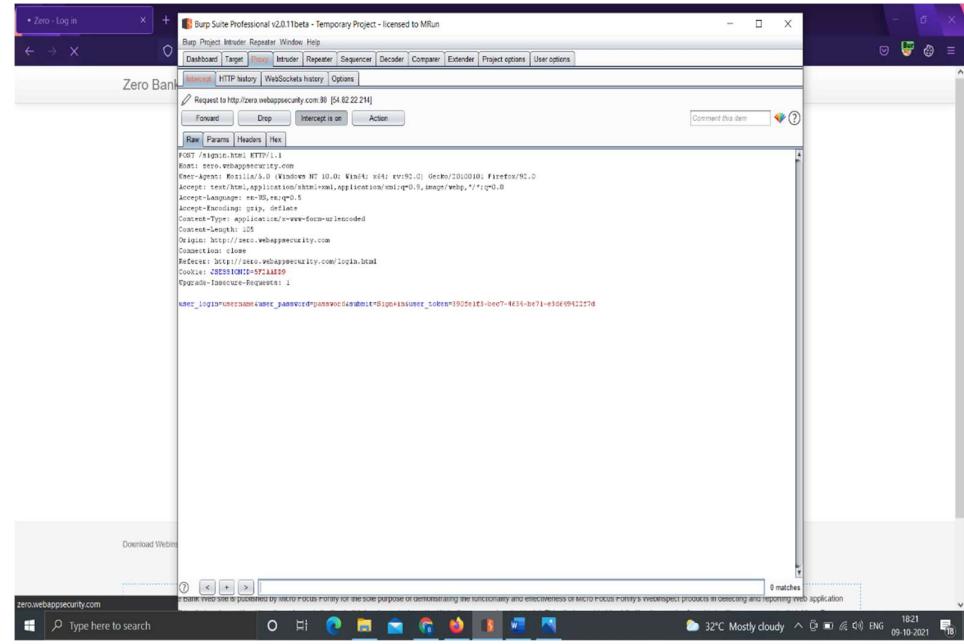
Steps to reproduce:

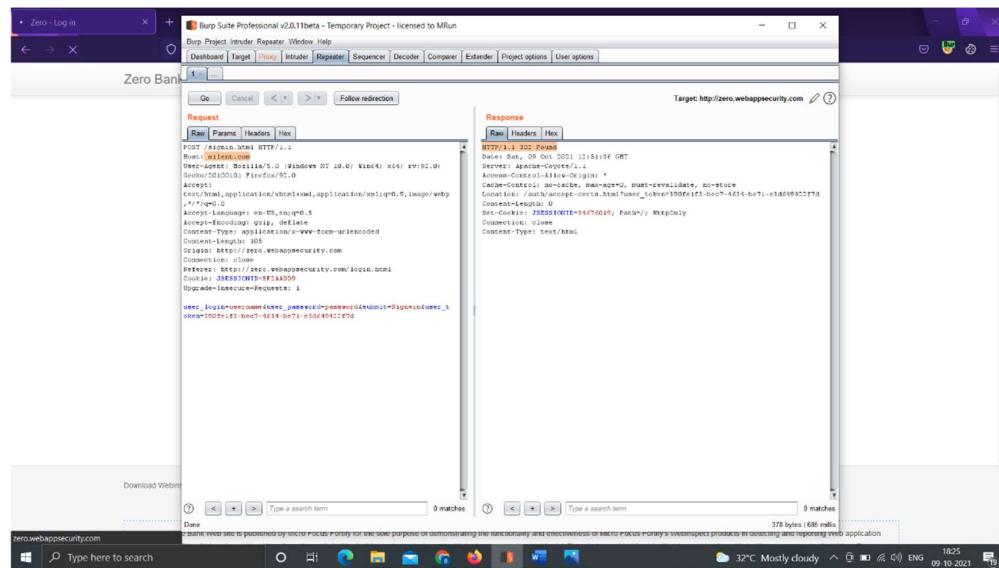
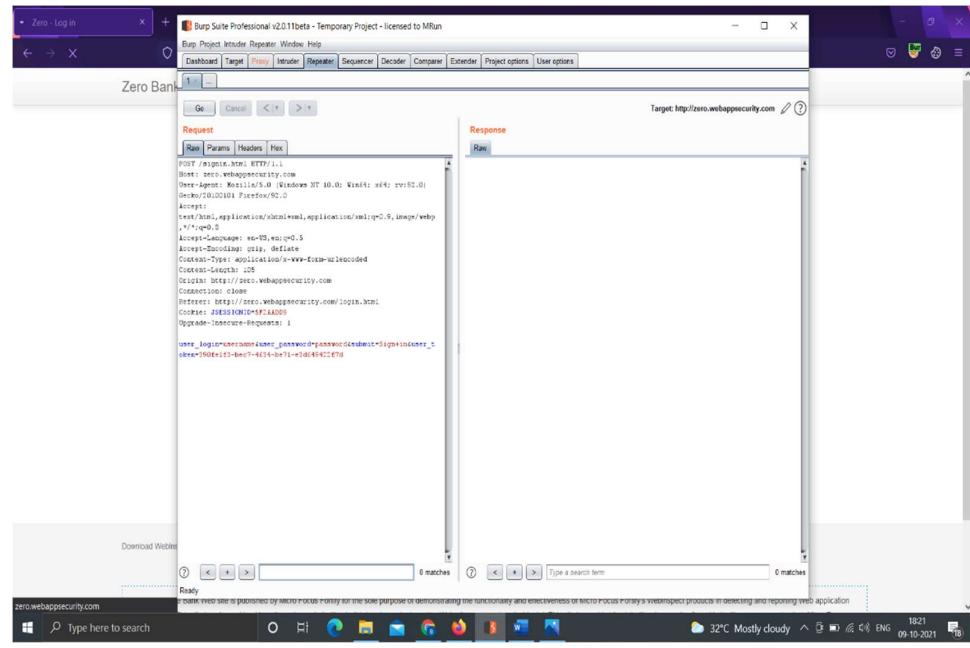
- a) Go to <http://zero.webappsecurity.com/forgot-password.html> .
- b) Turn on burp in the browser.
- c) Type email and record the request in Burpsuit using intercept in on mode.
- d) Send the request to repeater, forward and turn on intercept.
- e) Go to Request tab and change the Host, Origin and Referer of the request and send the request.
- f) The request will be accepted by the server, hence the vulnerability.

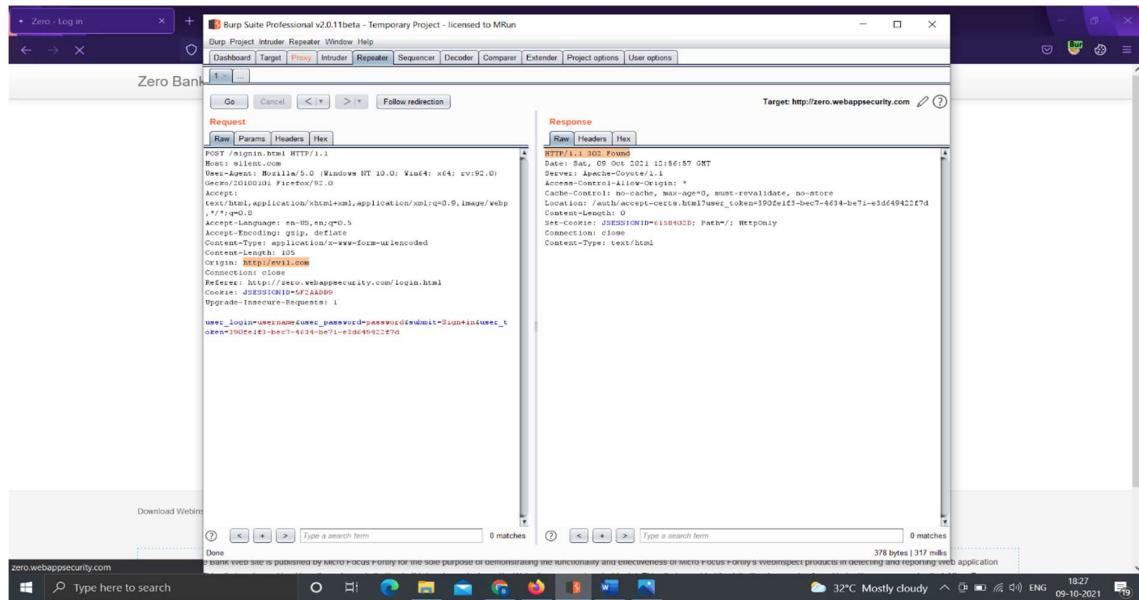
Mitigation:

- a) Simply avoid using redirects and forwards.
- b) If used, do not allow the URL as user input for the destination.
- c) Where possible, have the user provide short name, ID or token which is mapped server-side to a full target URL.
- d) Use the same origin policy.









14) **Valid Username/Password is provided in the hint of the Sign In Page**

Vulnerability:

Allows the user to sign in successfully using the credentials given in the hint.

Steps to reproduce:

- Open <http://zero.webappsecurity.com/login.html>.
- Hover the mouse over the hint symbol(?) next to the Login text area.
- Type “username” for login and “password” for password and hit Sign In.
- You have signed in successfully.

Mitigation:

Make the hint credentials an invalid credential.

Zero - Log in

Not secure | zero.webappsecurity.com/login.html

Zero Bank

Log in to ZeroBank

Login LoginPassword - username/password

Password

Keep me signed in

[Forgot your password ?](#)

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Type here to search

32°C Mostly cloudy 18:38 09-10-2021

Zero - Personal Banking - Loans | Zero - Admin - Users | New Tab

Not secure | zero.webappsecurity.com/admin/users.html

Zero Bank

Users

Name	Password	SSN
Leeroy Jenkins	VIZ10AWT8VL	536-48-3769
Stephen Bowen	OTZ07BXM0BE	607-58-7435
Linus Moran	FK0045XA7T1	247-54-1719
Nero Chan	TXJ77CQ0E1	578-13-3713
Kadeem Higgins	MFC500QE7VO	449-20-3206
Quinn Burks	HW297ZUM3NK	008-70-6738
Davis Thompson	RGD78SHB0TG	574-56-1932
Lester Keller	EIJ79NL70TP	330-58-4012

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Type here to search

26°C 08:59 05-10-2021

The screenshot shows a web browser window for 'Zero - Personal Banking - Loans' with an open tab for 'Zero - Admin - Currencies'. The URL is zero.webappsecurity.com/admin/currencies.html. The page title is 'Currencies'. On the left, there's a sidebar with links for 'Home', 'Users', and 'Currencies' (which is highlighted with a blue bar). The main content area displays a table of currency data:

ID	Country	Name
AUD	Australia	dollar
CAD	Canada	dollar
CHF	Switzerland	franc
CNY	China	yuan
DKK	Denmark	krone
EUR	Eurozone	euro
GBP	Great Britain	pound
HKD	Hong Kong	dollar
JPY	Japan	yen
MXN	Mexico	peso
NOK	Norway	krone
NZD	New Zealand	dollar
SEK	Sweden	krona
SGD	Singapore	dollar
THB	Thailand	baht

At the bottom of the table, there are three buttons: '1234' (blue), 'silent chora' (blue), and 'Silent World' (gray). A 'Search' input field and a 'Signin' button are at the top right. A 'Add Currency' button is located at the bottom right.

15) DIRECTORY LISTING USING DIRB TOOL

A Directory listing is a type of web page that lists file and directories that exist on web server.

```
File Edit View Go Help
File Actions Edit View Help
[ root@kali ~ ]# dirb http://zero.webappsecurity.com/
[ root@kali ~ ]# DIRB v2.22
By The Dark Raver

START_TIME: Mon Oct 4 23:05:25 2021
URL_BASE: http://zero.webappsecurity.com/
WORDLIST_FILES: /usr/share/dirb/wordlists/common.txt

GENERATED WORDS: 4612
--- Scanning URL: http://zero.webappsecurity.com/ ---
+ http://zero.webappsecurity.com/admin (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/cgi-bin (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/cgi-bin/ (CODE:403|SIZE:961)
+ http://zero.webappsecurity.com/docs (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/errors (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/favicon (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/include (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/index.html (CODE:200|SIZE:12471)
+ http://zero.webappsecurity.com/manager (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/resources (CODE:302|SIZE:0)
+ http://zero.webappsecurity.com/server-status (CODE:200|SIZE:5523)

END TIME: Mon Oct 4 23:25:54 2021
DOWNLOADED: 4612 - FOUND: 11
[ root@kali ~ ]#
```

16) EXPOSES THE ERROR LOG FILES

Vulnerability:

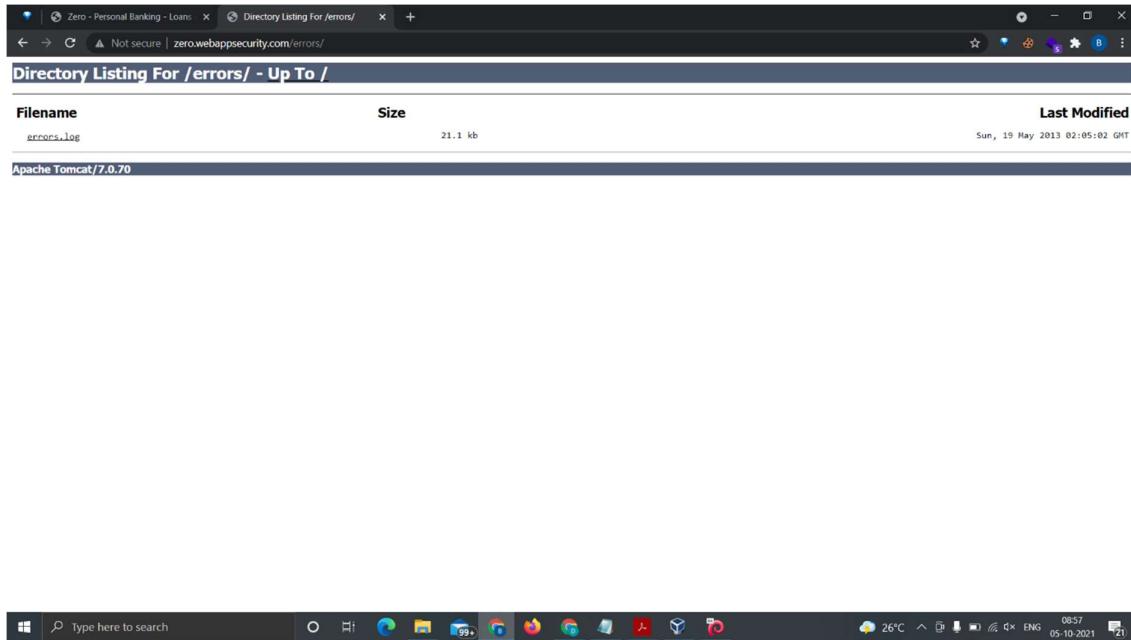
The error logs are displayed to the unauthorised users.

Steps to reproduce:

- a) Go to <http://zero.webappsecurity.com/errors/>
- b) Click on the error log file (errors.log).

Mitigation:

Allow users to access error log files only after authentication.



```

Tue Jan 22 09:11:32 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [Suspendisse] and password [Hunc].
Tue Jan 22 09:31:20 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [pede] and password [Donec].
Tue Jan 22 10:49:37 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [magna.] and password [eget].
Tue Jan 22 11:55:56 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [sed] and password [risus].
Tue Jan 22 13:45:58 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [Aliquam] and password [Morbi].
Tue Jan 22 14:55:38 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [eu] and password [arcu].
Tue Jan 22 16:12:29 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [Morbi] and password [non].
Tue Jan 22 18:51:40 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [tellus] and password [parturient].
Tue Jan 22 18:55:01 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [enim.] and password [vitae].
Tue Jan 22 18:57:25 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [sapien.] and password [laoreet].
Tue Jan 22 21:26:20 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [leo.] and password [amet].
Tue Jan 22 22:26:38 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [commode] and password [natoque].
Wed Jan 23 01:11:37 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [vitae.] and password [vel].
Wed Jan 23 03:15:20 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [Suspendisse] and password [Proin].
Wed Jan 23 05:39:52 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [ipsum.] and password [Praesent].
Wed Jan 23 07:02:30 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [enim.] and password [non].
Wed Jan 23 08:28:32 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [at] and password [enim.]
Wed Jan 23 10:08:34 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [felis.] and password [id].
Wed Jan 23 11:30:53 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [laoreet] and password [tum].
Wed Jan 23 13:10:43 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [consequat.] and password [ut].
Wed Jan 23 13:53:08 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [lectus.] and password [aliquet.]
Wed Jan 23 14:53:44 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [scelerisque] and password [Aenean].
Wed Jan 23 16:05:12 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [Integer] and password [nec].
Wed Jan 23 17:21:20 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [sed] and password [risus].
Wed Jan 23 19:20:30 EST 2013 [ERROR] [local 10.5.157.10] [com.zero.bank.auth.UserAuthenticator.authenticate(UserAuthenticator.java:51)] - Not possible to authenticate a user with login [laoreet] and password [ut].

```

17) EXPOSING THE APACHE SERVER DETAILS AND ALSO ITS DOCUMENTATION

Vulnerability:

Users can find the version of Apache Tomcat and exploit the system.

Steps to reproduce:

Go to <http://zero.webappsecurity.com/docs/>

Mitigation:

Allow users to access docs subdirectory only after authentication.

Links

- Docs Home
- FAQ
- User Comments

User Guide

- 1) Introduction
- 2) Setup
- 3) First webapp
- 4) Deployer
- 5) Manager
- 6) Realms and AAA
- 7) Security Manager
- 8) JNDI Resources
- 9) JDBC DataSources
- 10) Classloading
- 11) JSPs
- 12) SSL/TLS
- 13) SSI
- 14) CGI
- 15) Proxy Support
- 16) MBean Descriptor
- 17) Default Servlet
- 18) Clustering
- 19) Load Balancer
- 20) Connectors
- 21) Monitoring and Management
- 22) Logging
- 23) APR/Native
- 24) Virtual Hosting
- 25) Advanced IO
- 26) Additional Components
- 27) Maxenote
- 28) Session Considerations

Introduction

This is the top-level entry point of the documentation bundle for the **Apache Tomcat** Servlet/JSP container. Apache Tomcat version 7.0 implements the Servlet 3.0 and JavaServer Pages 2.2 specifications from the [Java Community Process](#), and includes many additional features that make it a useful platform for developing and deploying web applications and web services.

Select one of the links from the navigation menu (to the left) to drill down to the more detailed documentation that is available. Each available manual is described in more detail below.

Apache Tomcat User Guide

The following documents will assist you in downloading, installing Apache Tomcat 7, and using many of the Apache Tomcat features.

1. [Introduction](#) - A brief, high level, overview of Apache Tomcat.
2. [Setup](#) - How to install and run Apache Tomcat on a variety of platforms.
3. [First web application](#) - An introduction to the concepts of a *web application* as defined in the Servlet Specification. Covers basic organization of your web application source tree, the structure of a web application archive, and an introduction to the web application deployment descriptor (`/WEB-INF/web.xml`).
4. [Deployer](#) - Operating the Apache Tomcat Deployer to deploy, precompile, and validate web applications.
5. [Manager](#) - Operating the **Manager** web app to deploy, undeploy, and redeploy applications while Apache Tomcat is running.
6. [Realms and Access Control](#) - Description of how to configure *Realms* (databases of users, passwords, and their associated roles) for use in web applications that utilize *Container Managed Security*.
7. [Security Manager](#) - Configuring and using a Java Security Manager to support fine-grained control over the behavior of your web applications.
8. [JNDI Resources](#) - Configuring standard and custom resources in the JNDI naming context that is provided to each web application.
9. [JDBC DataSource](#) - Configuring a JNDI DataSource with a DB connection pool. Examples for many popular databases.
10. [Classloading](#) - Information about class loading in Apache Tomcat, including where to place your application classes so that they are visible.
11. [JSPs](#) - Information about JSP configuration, as well as the JSP compiler usage.
12. [SSL/TLS](#) - Installing and configuring SSL/TLS support so that your Apache Tomcat will serve requests using the `https` protocol.
13. [SSI](#) - Using Server Side Includes in Apache Tomcat.
14. [CGI](#) - Using CGIs with Apache Tomcat.
15. [Proxy Support](#) - Configuring Apache Tomcat to run behind a proxy server (or a web server functioning as a proxy server).
16. [MBean Descriptor](#) - Configuring MBean descriptors files for custom components.
17. [Default Servlet](#) - Configuring the default servlet and customizing directory listings.
18. [Apache Tomcat Clustering](#) - Enable session replication in a Apache Tomcat environment.
19. [Balaceview](#) - Configuring, using, and extending the load balancer application.

18) EXPOSING THE SERVER STATUS AND IT'S DETAILS

Vulnerability:

Exposes the Server type, version, type of connections, Server's history and technologies used along with their versions

Steps to reproduce:

- a) Open <http://zero.webappsecurity.com/server-status>
- b) Open Wappalyzer extension.

Mitigation:

Allow users to access server status only after authentication.

The screenshot shows a browser window with the Apache Status page at zero.webappsecurity.com/server-status. The page displays server status information, including the Apache version (2.2.22), build date (Jan 28 2012), and current time (Friday, 18-Jan-2013 14:55:36 GMT). It also shows the scoreboard key and a list of processes. To the right, the Wappalyzer extension is active, showing technologies detected on the page: Font scripts (Font Awesome), JavaScript libraries (jQuery 1.8.2), Web servers (Apache, Tomcat), UI frameworks (Bootstrap), and Programming languages (Java).

This screenshot shows the same Apache Status page but with a much longer list of processes listed under the PID Key section. The list consists of numerous entries for process ID 11740, each showing its state as 'in state: -' with various flags like '|', 'x', and 'K'. The scoreboard key and other status information remain the same.

19) ADMIN ACCESS WITHOUT AUTHENTICATION AND DISCLOSES USER CREDENTIALS

Vulnerability:

Users are given admin access without authentication and sensitive data of other users are exposed.

Steps to reproduce:

- a) Open <http://zero.webappsecurity.com/admin/>
- b) Go to the Users tab.

Name	Password	SSN
Leeroy Jenkins	VIZ10AWTBVL	536-48-3769
Stephen Bowen	OTZ07BXM0BE	607-58-7435
Linus Moran	FK004SXATTI	247-54-1719
Nero Chan	TXJ77CQ0E1	578-13-3713
Kadeem Higgins	MFC500QE7VO	449-20-3206
Quinn Burks	HW297ZUM3NK	008-70-6738
Davis Thompson	RGD78SHBGTG	574-56-1932
Lester Keller	EU79NLT0TP	330-58-4012

20) ADMIN ACCESS WITHOUT AUTHENTICATION AND ALLOWS ANYONE TO ADD CURRENCIES

Vulnerability:

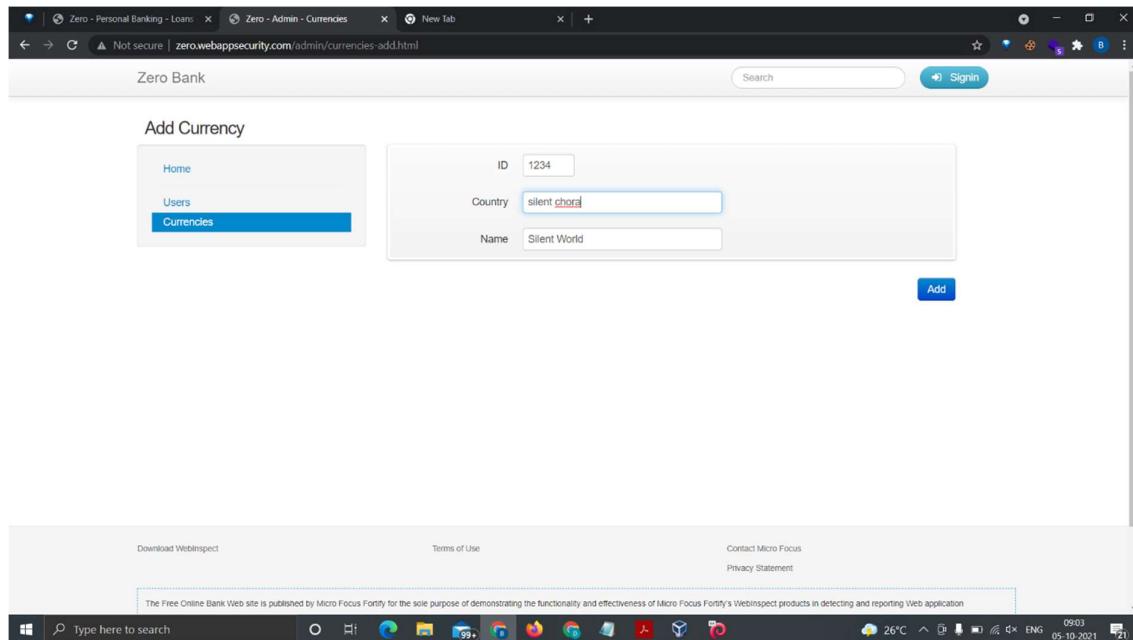
Admin access is given to any user and he/she can add currencies and doesn't check the currency details for its authenticity.

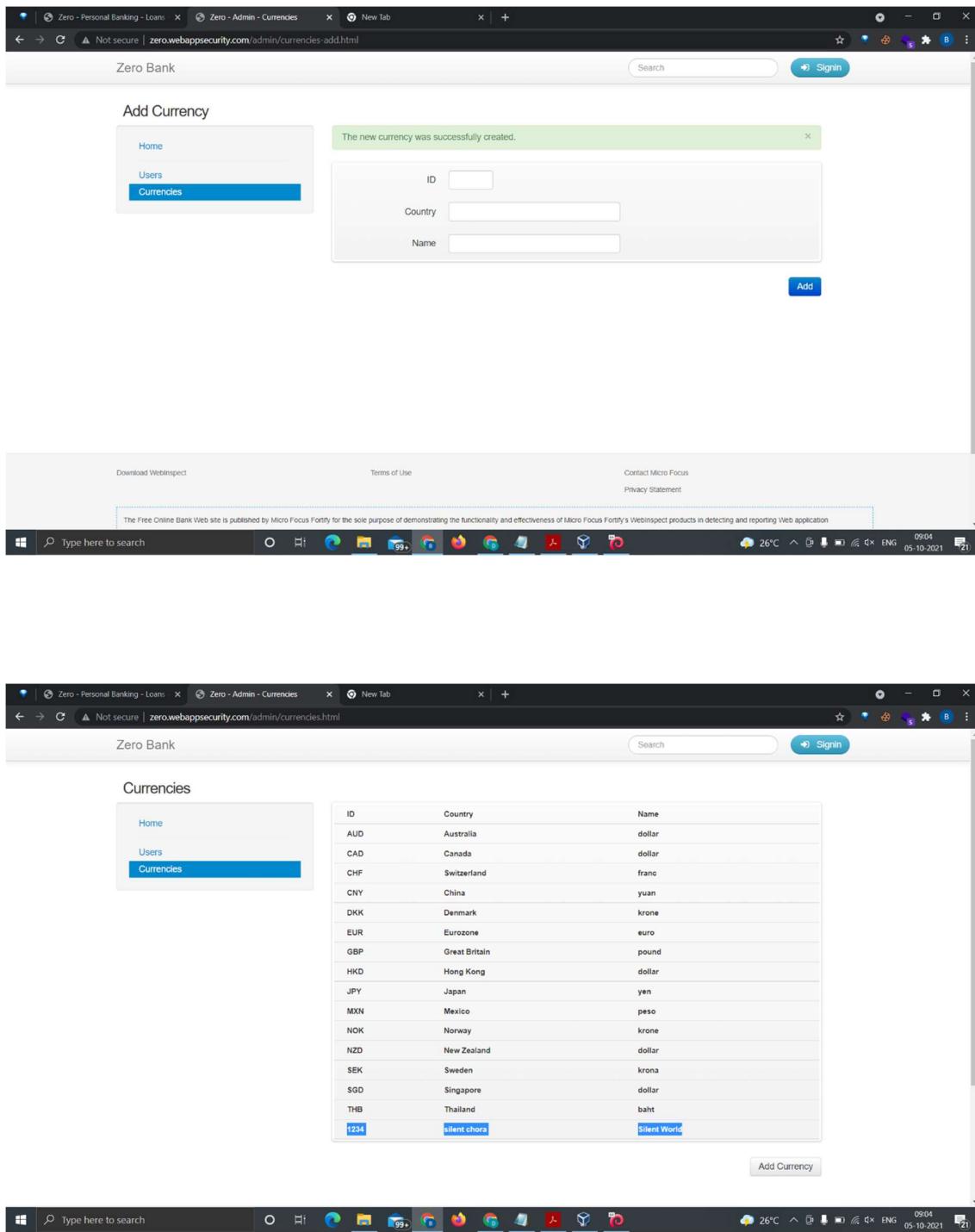
Steps to reproduce:

- a) Open <http://zero.webappsecurity.com/admin/>
- b) Go to Currencies
- c) Type values for ID, Country, Name
- d) Click Add.

Mitigation:

Before accessing admin pages, the website must authenticate the user based on his/her credentials which have Administrator privileges.





21) UNWANTED SERVICES RUNNING ON THE SERVER

In the server level, no open ports and version details should be given.

Kali-Linux-2021.2-virtualbox-amd64 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

terminal

root@kali:~# nmap -sV -sS -O -p zero.webappsecurity.com

Starting Nmap 7.91 (https://nmap.org) at 2021-10-09 11:52 EDT

Nmap scan report for zero.webappsecurity.com (54.82.22.214)

Host is up (0.16s latency).

rDNS record for 54.82.22.214: ec2-54-82-22-214.compute-1.amazonaws.com

Not shown: 997 filtered ports

PORT	STATE	SERVICE	VERSION
80/tcp	open	tcpwrapped	
443/tcp	open	ssl/https?	
8080/tcp	open	tcpwrapped	

Warning: OSScan results may be unreliable because we could not find at least 1 open and 1 closed port

Device type: bridge

Running: Oracle Virtualbox

OS CPE: cpe:/o:oracle:virtualbox

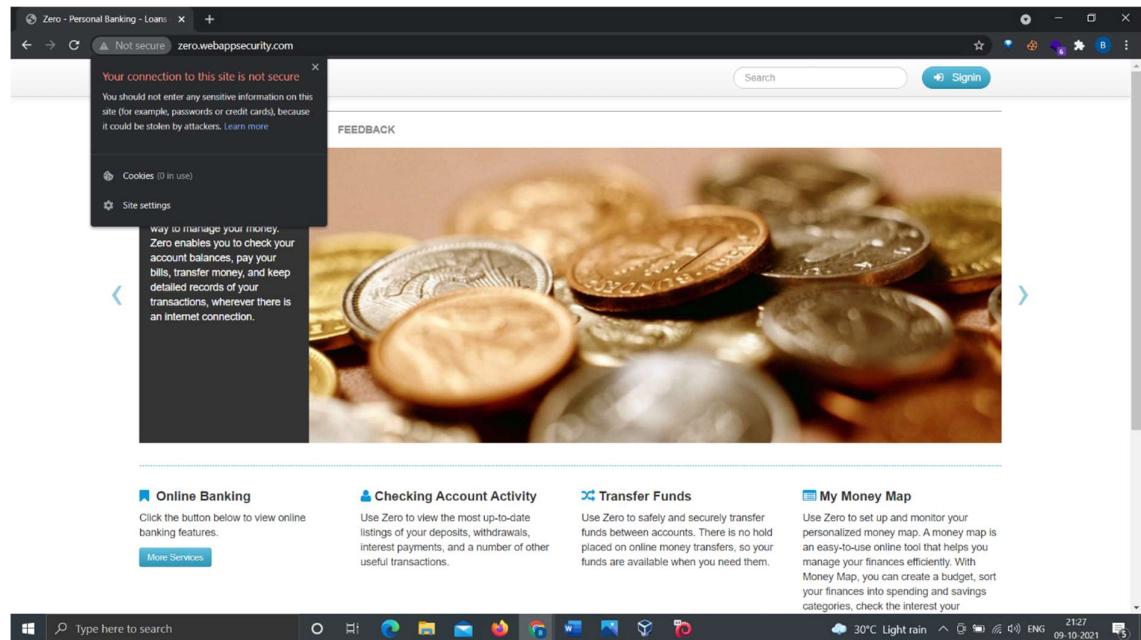
OS details: Oracle Virtualbox

OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .

Nmap done: 1 IP address (1 host up) scanned in 69.85 seconds

#

22) SECURELESS HTTP



23) CHECKING FOR SENSITIVE DATA EXPOSURE USING THE TOOL WIRESHARK

Vulnerability:

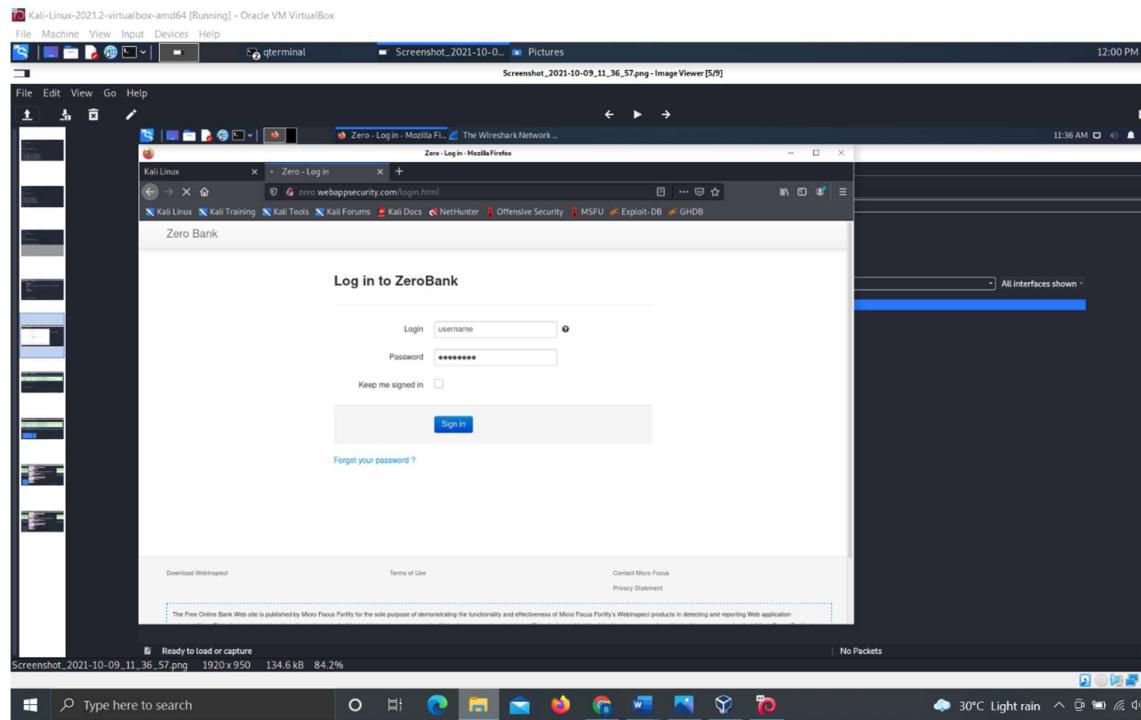
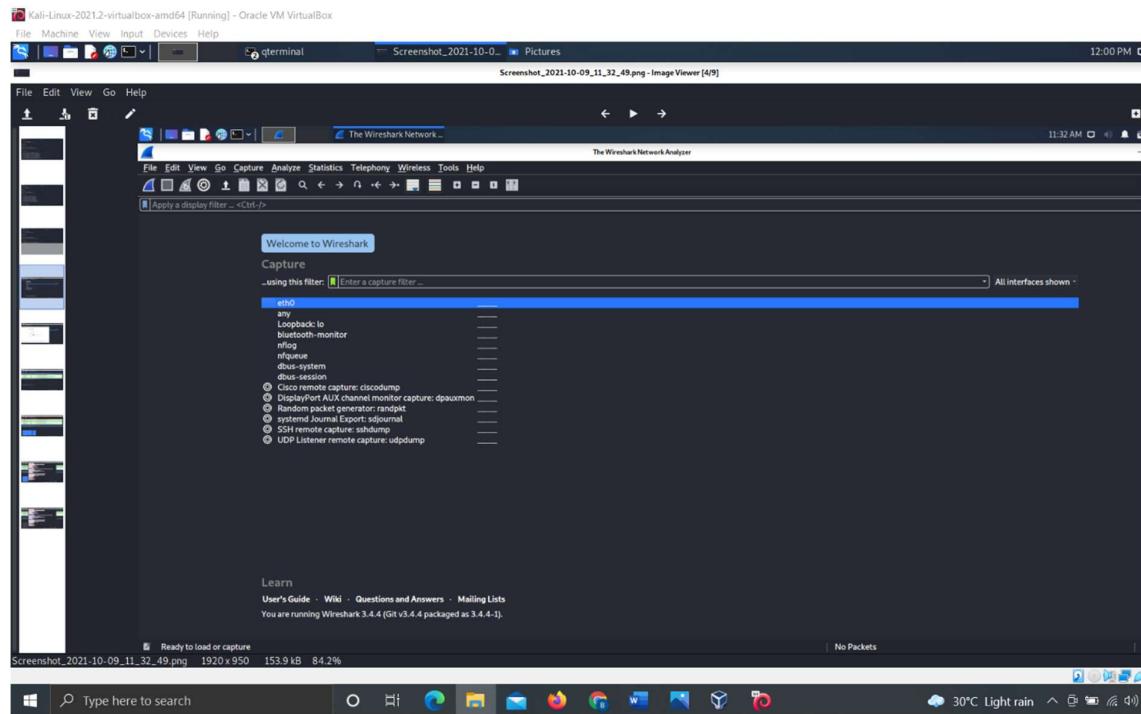
Sensitive data exposure occurs when an application, company, or other entity inadvertently exposes personal data. ... This might be a result of a multitude of things such as weak encryption, no encryption, software flaws, or when someone mistakenly uploads data to an incorrect database.

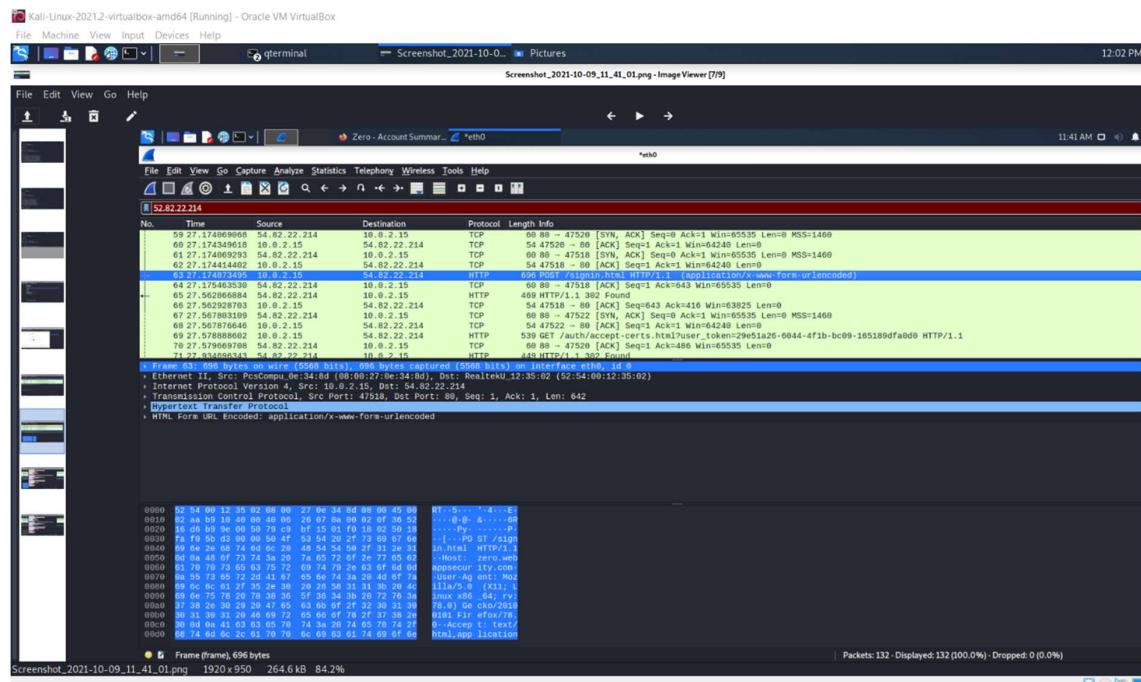
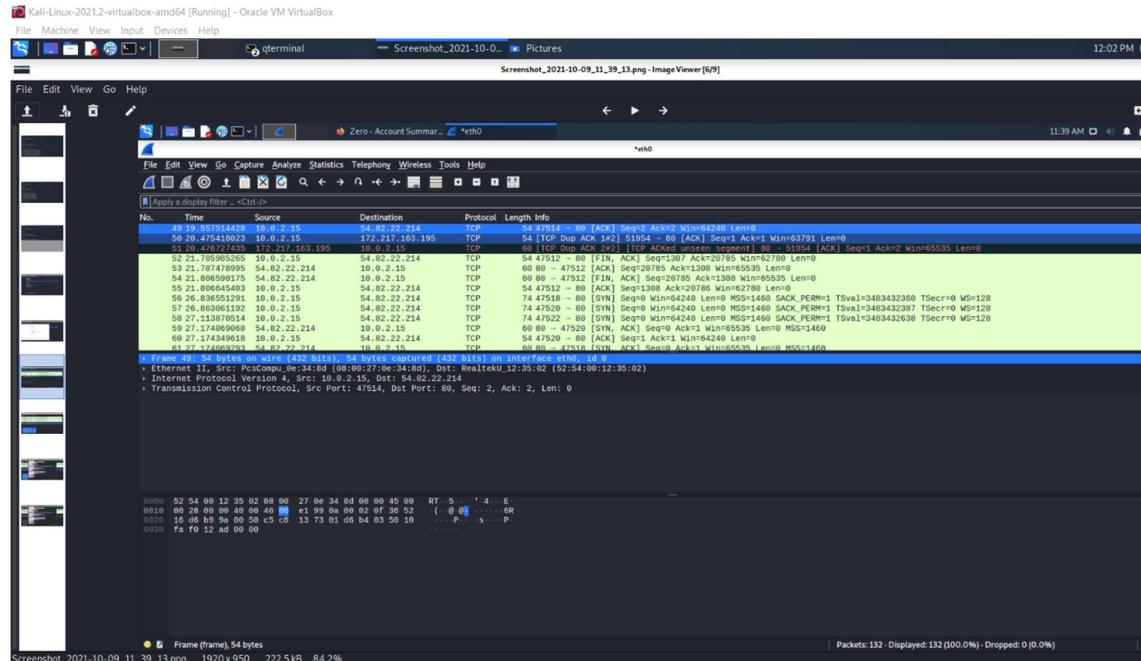
Steps to reproduce:

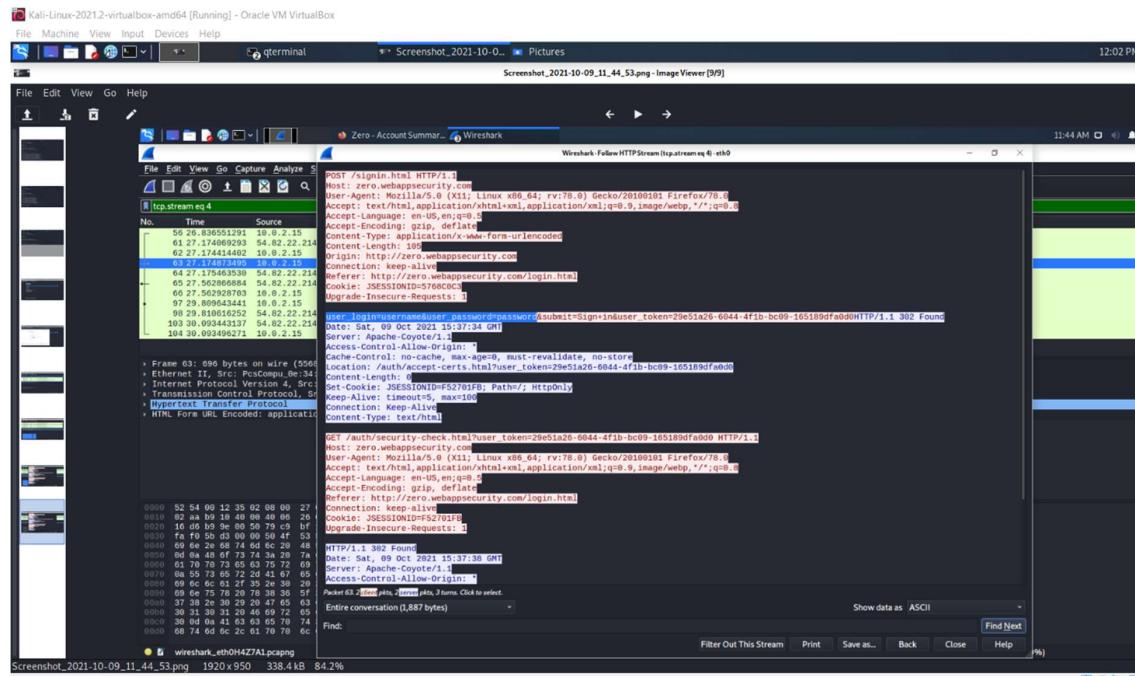
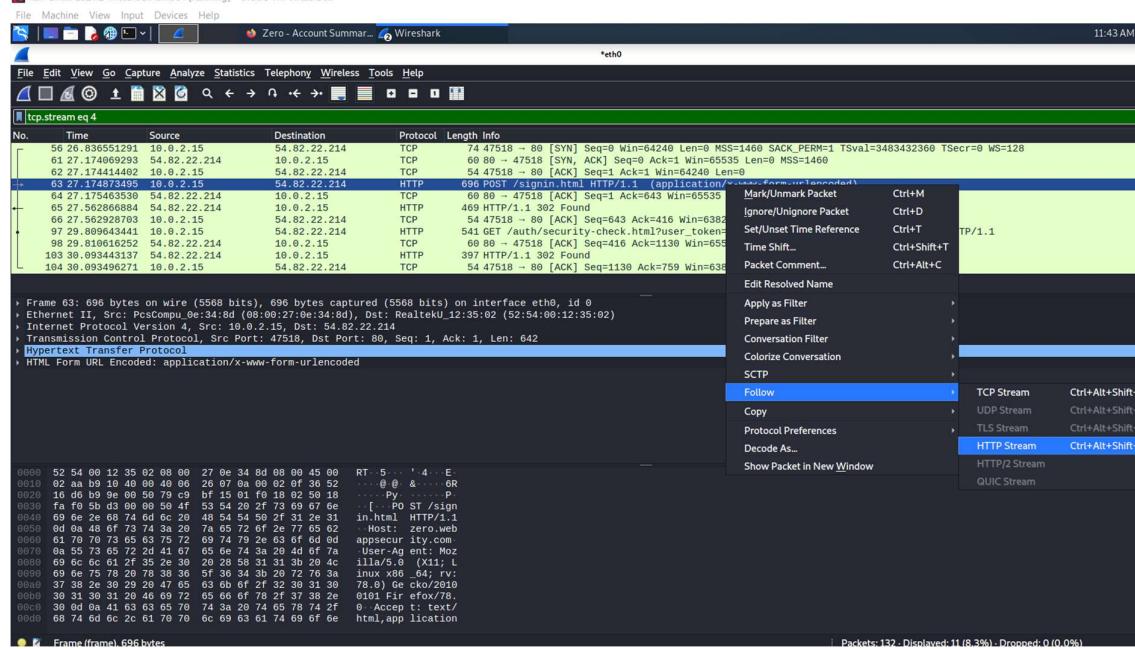
- a) open kali, choose the default tool wireshark and run it
- b) open browser and try to login to the application
- c) turn off the wireshark
- d) get the ip address of the server and filter the request
- e) choose the request which is having protocol http
- f) select follow and tcp stream

Mitigation:

- a) upgrade to https current version
- b) Encrypt data during transport and at rest.
- c) Minimize data surface area.
- d) Use the latest encryption algorithms.
- e) Disable autocomplete on forms that collect data.
- f) Disable caching on forms that collect data.







24) SQL INJECTION

Vulnerability:

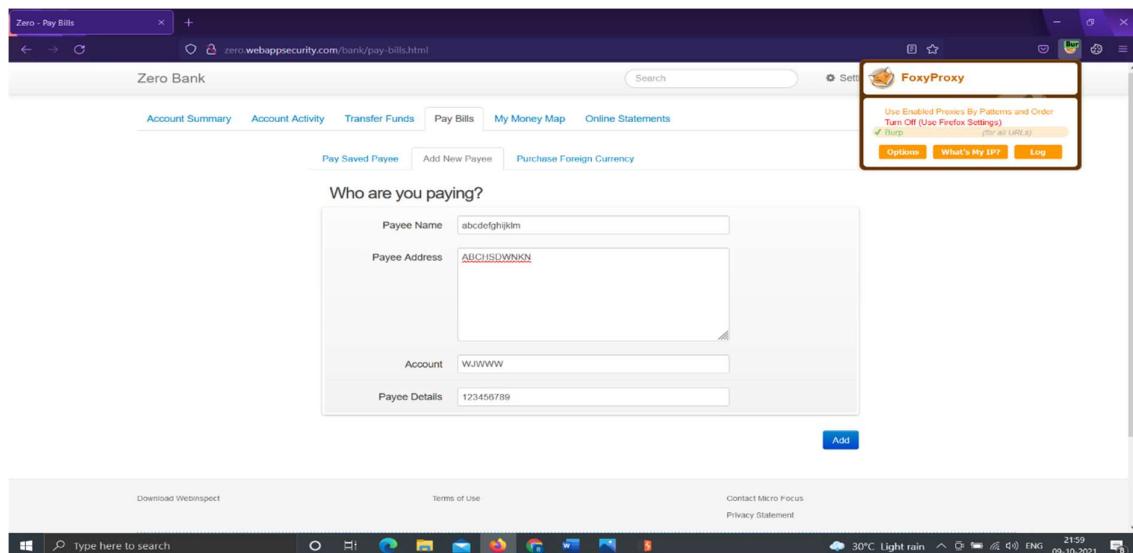
SQL injection is a web security vulnerability that allows an attacker to interfere with the queries that an application makes to its database. It generally allows an attacker to view data that they are not normally able to retrieve. This might include data belonging to other users, or any other data that the application itself is able to access. In many cases, an attacker can modify or delete this data, causing persistent changes to the application's content or behaviour.

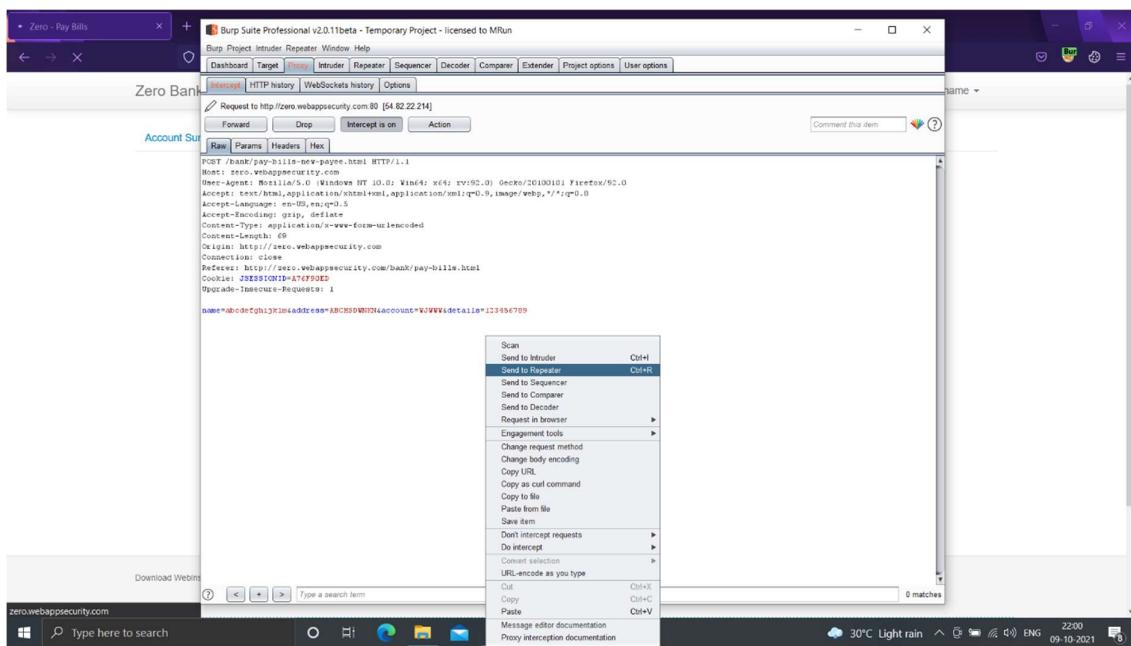
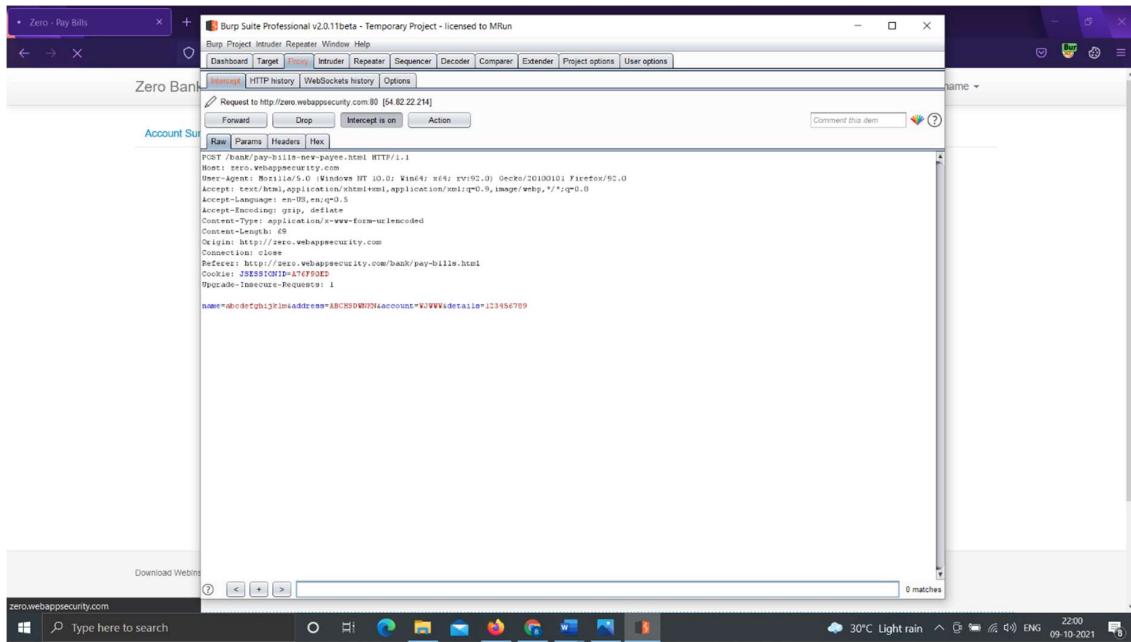
Steps to reproduce:

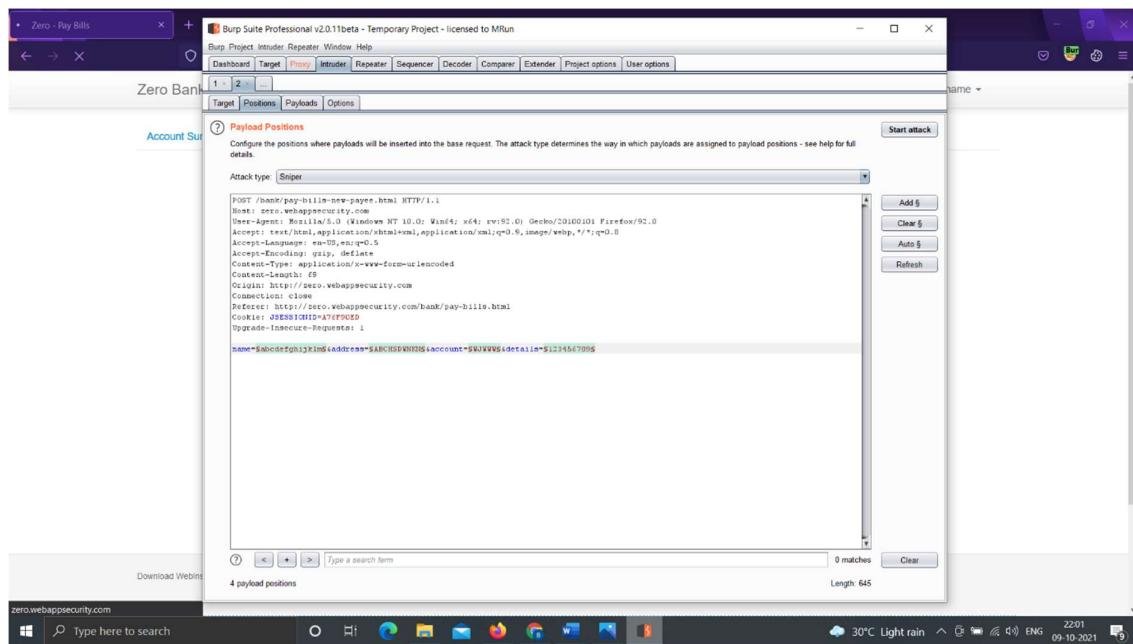
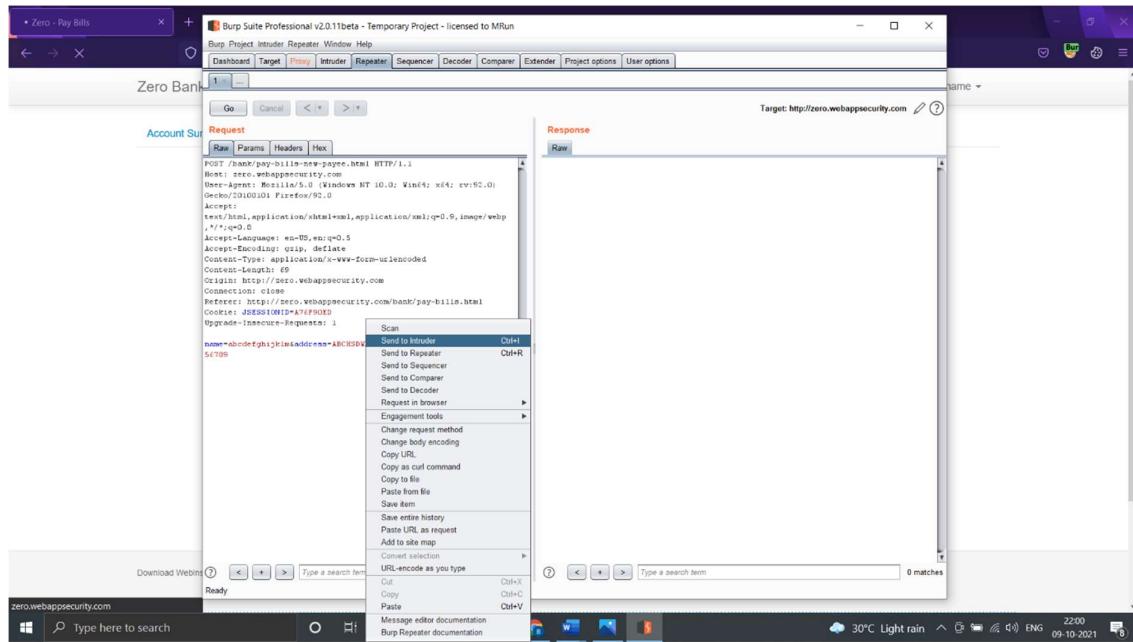
- a) Capture the payee page request using burp
- b) Send the request to repeater then intruder
- c) Add positions and payload
- d) Choose fuzzing SQL injection
- e) Start attack
- f) Copy the response url and give it in browser

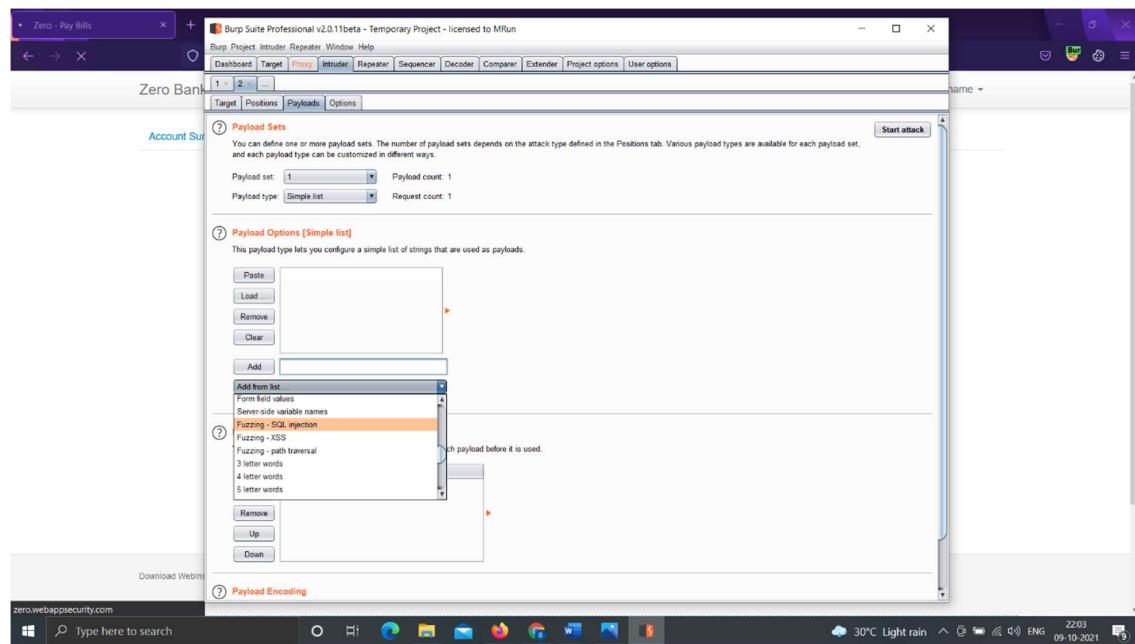
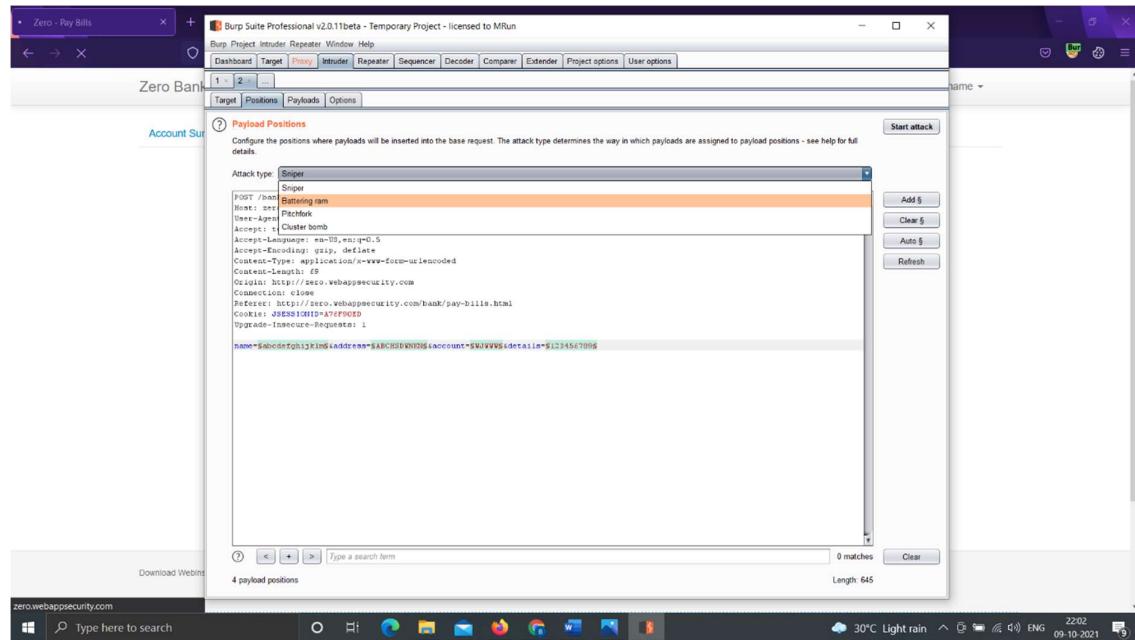
Mitigation:

- a) Input validation or sanitization
- b) Stored procedure and parameterised procedure.









The screenshot shows the Burp Suite Professional interface. A context menu is open over a selected item in the list, with the following options visible:

- Scan
- Send to Intruder
- Send to Repeater
- Send to Sequencer
- Send to Comparer
- Send to Decoder
- Show response in browser
- Request in browser
 - In original session
 - In current browser session
- Engagement tools
- Copy URL
- Copy as curl command
- Copy to file
- Save item
- Convert selection
 - Out
 - Copy
 - Paste

The main interface shows an intruder attack configuration with a payload set of 1 and a simple list payload type. The payload is defined as "x or 'a' = 'a". The request list shows a POST request to "/bank/pay-bills-new-page.html" with various headers and parameters. The status bar at the bottom indicates "30°C Light rain" and "ENG 22:15 09-10-2021".

Zero - Pay Bills X Zero - Pay Bills X +

zero.webappsecurity.com/bank/pay_bills_new_payee.html

Zero Bank

Account Summary Account Activity Transfer Funds Pay Bills My Money Map Online Statements

The new payee 'a' or 'a' = 'a' was successfully created.

Pay Saved Payee Add New Payee Purchase Foreign Currency

Make payments to your saved payees

Payee: Sprint

Account: Savings

Amount: \$

Date:

Description:

Pay

Download Webinspect Terms of Use Contact Micro Focus Privacy Statement

Type here to search

Windows Start button Taskbar icons Weather (30°C Light rain) Date (09-10-2021) Time (22:21)

