

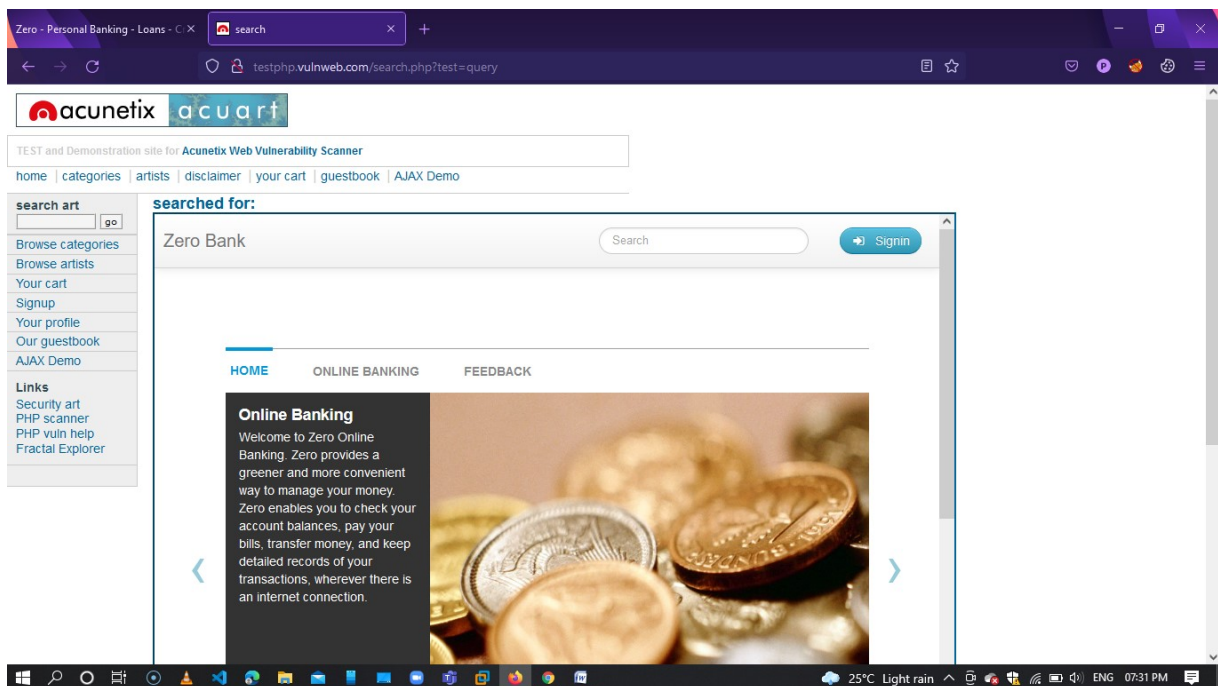
Web Application Major Project

1. Clickjacking Vulnerability:

Clickjacking is an attack that tricks a user into clicking a webpage element which is invisible or disguised as another element. This can cause users to unwittingly download malware, visit malicious web pages, provide credentials or sensitive information, transfer money, or purchase products online.

Steps:

1. Attack points for this vulnerability is input fields.
2. After mentioning the site on iframe html code ,
`<iframe src = "http://zero.webappsecurity.com/" height = "700" width = "900"></iframe>`
3. After injecting this code if the site is loading on other web page then it comes under iframe injection vulnerability.



MITIGATION:

Should use X-Frame-Opt which will automatically protect your website and it will definitely help in detecting and preventing against such attacks.

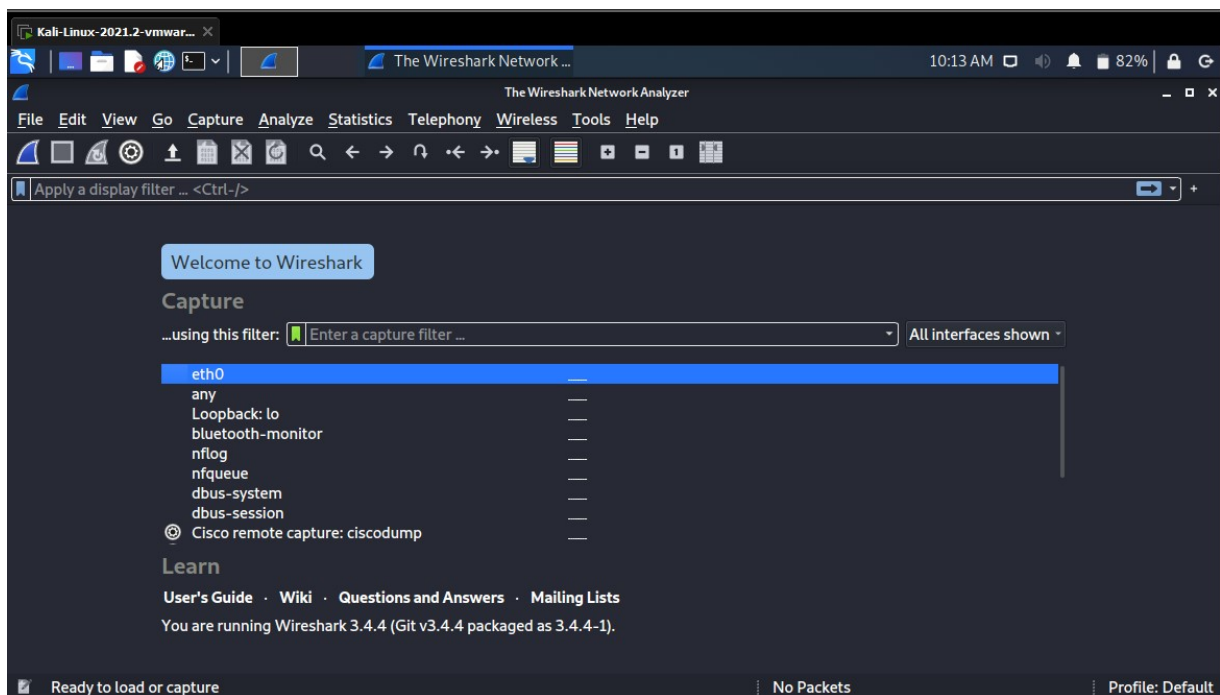
2. Sensitive Data Explosure:

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.

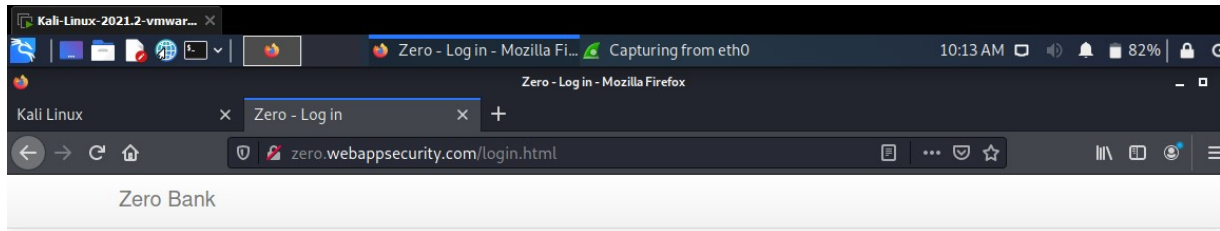
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Steps:

1. open kali, choose the default tool wireshark and run it
2. open browser and try to login to the application
3. turn off the wireshark
4. get the ip address of the server and filter the request
5. choose the request which is having protocol http
6. select follow and tcp stream



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Log in to ZeroBank

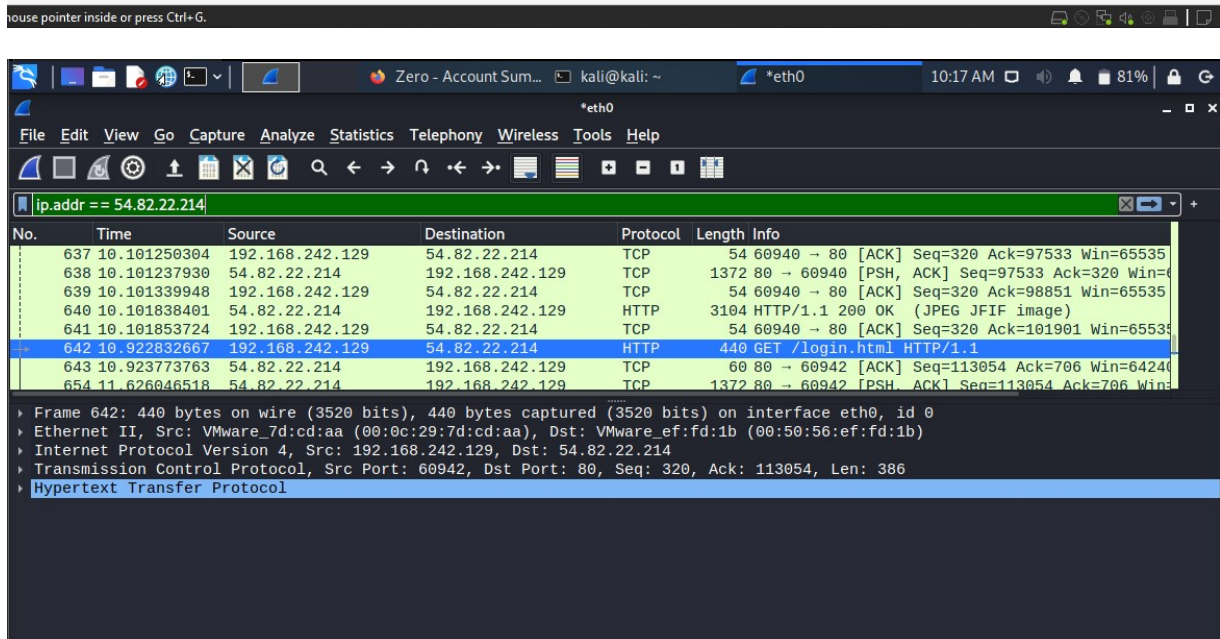
Login

Password

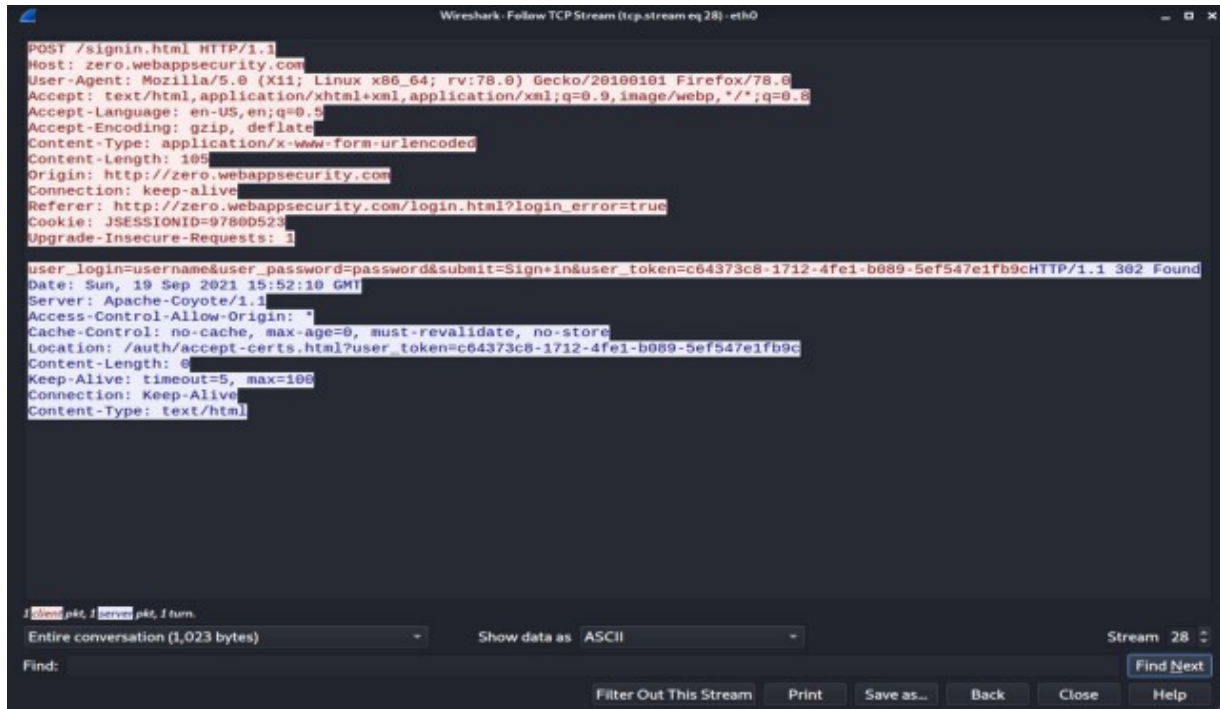
☐ Keep me signed in

[View Saved Logins](#)

[Forgot your password ?](#)



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MITIGATION:

- 1.upgrade to https current version
- 2.Encrypt data during transport and at rest.
- 3.Minimize data surface area.
- 4.Use the latest encryption algorithms.
- 5.Disable autocomplete on forms that collect data.
- 6.Disable caching on forms that collect data.

3. Secure flag is disabled:

Secure flag encrypts the session id so that in back-end if someone captures it, it will be in an encrypted format.

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The screenshot shows a web application titled "Zero Bank" with a navigation bar containing "Account Summary", "Account Activity", "Transfer Funds", "Pay Bills", "My Money Map", and "Online Statements". The main content area displays "Cash Accounts", "Investment Accounts", "Credit Accounts", and "Loan Accounts". A "Cookie Editor" overlay is visible on the right, showing a cookie named "JSESSIONID" with a value of "9C7DF3D9". The cookie settings include Domain: "zero.webappsecurity.com", Path: "/", Same Site: "No Restriction", and checkboxes for "Host Only", "Session", "Secure", and "Http Only".

Account	Credit Card	Balance
Checking	VISA 4485-5368-3381-1879	\$-500.2
Credit Card	VISA 4716-9811-6719-3943	\$-265

4. Session id is weak:

Earlier it was becoming time taking process for validating each authentication checks so they come up with session id format. With every request an session id should hit server so that server will validate an authenticated user.

This screenshot is identical to the one above, showing the "Zero Bank" web application interface with the "Cookie Editor" overlay. The cookie details are: Name: "JSESSIONID", Value: "9C7DF3D9", Domain: "zero.webappsecurity.com", Path: "/", Same Site: "No Restriction", and checkboxes for "Host Only", "Session", "Secure", and "Http Only".

Account	Credit Card	Balance
Checking	VISA 4485-5368-3381-1879	\$-500.2
Credit Card	VISA 4716-9811-6719-3943	\$-265

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Mitigation:

A strong session id should be generated by server so that no-one can form the format of session created by server.

5. No Strong Password Policy:

As the application has username as username and password as password that mean the server is accepting default username and passwords. And username and password itself server is disclosing in hint section.

The screenshot shows the 'Log in to ZeroBank' login page. It features a 'Login' text input field and a 'Password' text input field. A 'Keep me signed in' checkbox is located below the password field. A blue 'Sign in' button is positioned at the bottom of the form. A security warning dialog box is overlaid on the password field, stating: 'This connection is not secure. Logins entered here could be compromised. Learn More'. Below the warning, there is a 'View Saved Logins' link. To the right of the password field, a hint text reads 'Login/Password - username/password'.

6. 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.

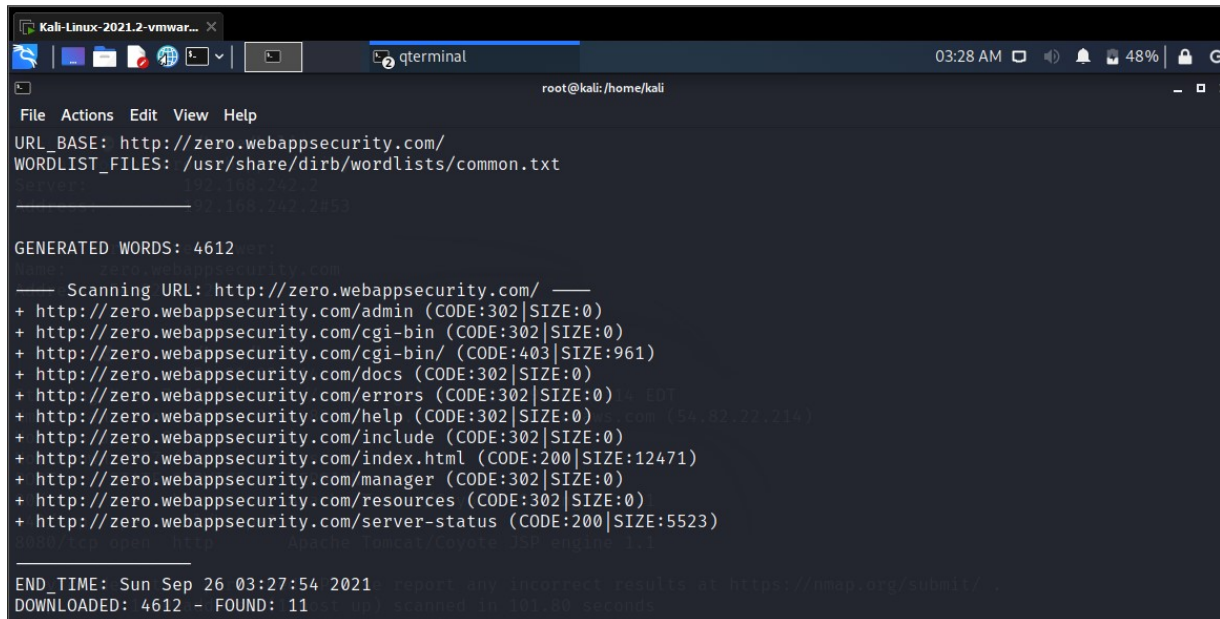
DIRECTORY LISTING

A directory listing is inappropriately exposed, yielding potentially sensitive information to attackers. A directory listing provides an attacker with the complete index of all the resources located inside of the directory.

MITIGATION:

1. Configure your web server to prevent directory listings for all paths beneath the web root;
2. Place into each directory a default file (such as index. html) that the web server will display instead of returning a directory listing.

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```
Kali-Linux-2021.2-vmwar... x
qterminal
root@kali: /home/kali

File Actions Edit View Help
URL_BASE: http://zero.webappsecurity.com/
WORDLIST_FILES: /usr/share/dirb/wordlists/common.txt

----- 195.242.2453

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/help (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: Sun Sep 26 03:27:54 2021
DOWNLOADED: 4612 - FOUND: 11
```

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.

MITIGATION:

1. use standard exception handling architecture for entire application to prevent from unwanted leakage of information to attackers.
2. ensure that secure paths that have multiple outcomes return similar or identical error messages

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UNWANTED SERVICES RINNING:

When unwanted ports or services are in open state then it can be an gateway to attackers as they can easily attack on old versions and also easily get access of server by it.

MITIGATION:

- 1.The unwanted ports and services should not be in open state
- 2.Maintain the new versions for each port as it is difficult to attack on new versions rather than old one

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```
Kali Linux 2021.2-vmwar... x
qtterminal
root@kali: /home/kali

File Actions Edit View Help
(root@kali)~[/home/kali]
# nslookup zero.webappsecurity.com
Server:      192.168.242.2
Address:     192.168.242.2#53

Non-authoritative answer:
Name:   zero.webappsecurity.com
Address: 54.82.22.214

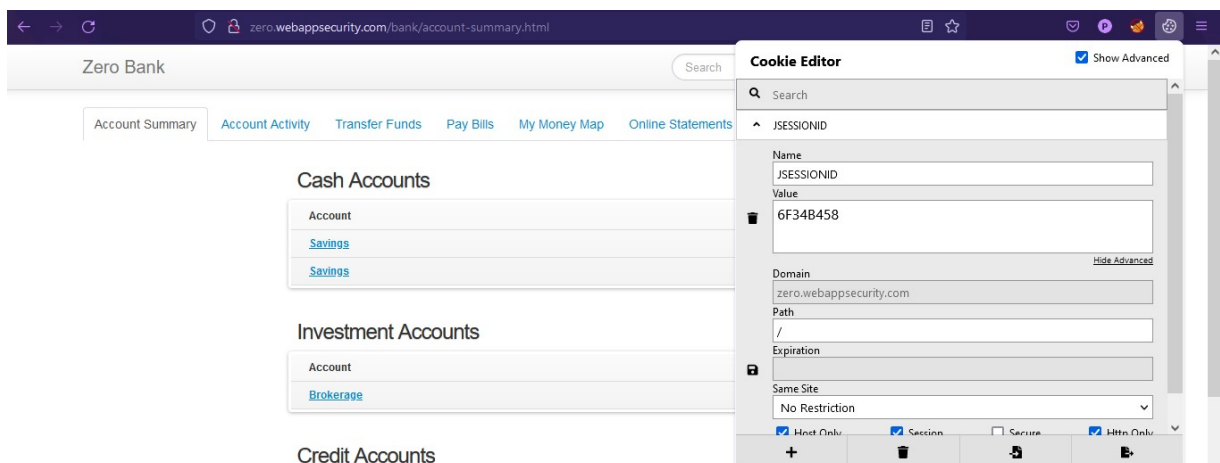
TCP:  TIME=0.000s, Sep 26 03:10:12, 2021
URL:  NAME= http://zero.webappsecurity.com/
(root@kali)~[/home/kali] cd wordlists/common.txt
# nmap -sS -sV 54.82.22.214
Starting Nmap 7.91 ( https://nmap.org ) at 2021-09-26 03:14 EDT
Nmap scan report for ec2-54-82-22-214.compute-1.amazonaws.com (54.82.22.214)
Host is up (0.021s latency).
Not shown: 997 filtered ports
PORT      STATE SERVICE      VERSION
80/tcp    open  http         Apache Tomcat/Coyote JSP engine 1.1
443/tcp   open  ssl/https?
8080/tcp   open  http         Apache Tomcat/Coyote JSP engine 1.1

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 101.80 seconds
```

7. SESSION REPLAY VULNERABILITY :

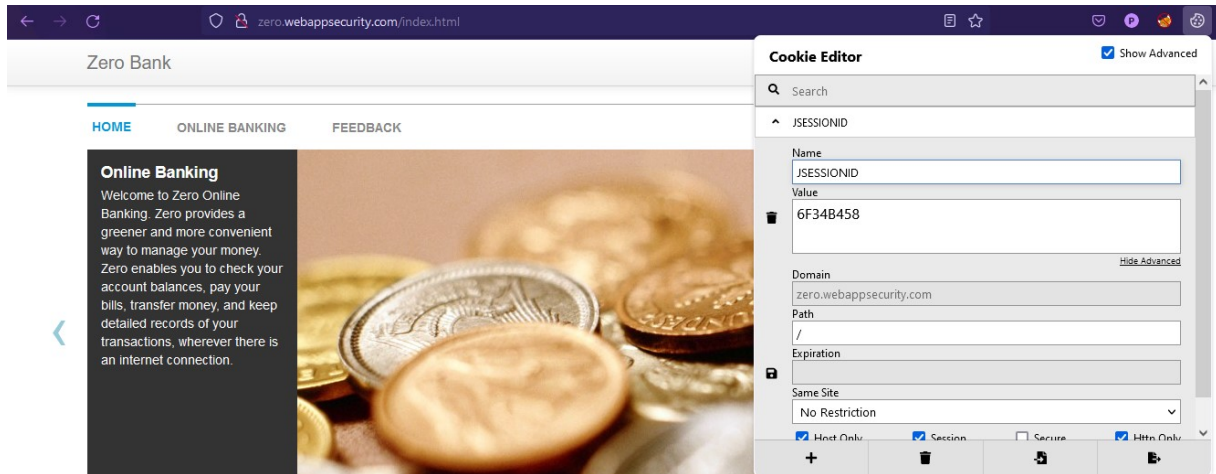
When the session id before log-out and after log-out is same then it is session replay vulnerability and by this you can easily log-in due to this vulnerability.

BEFORE LOG-OUT:



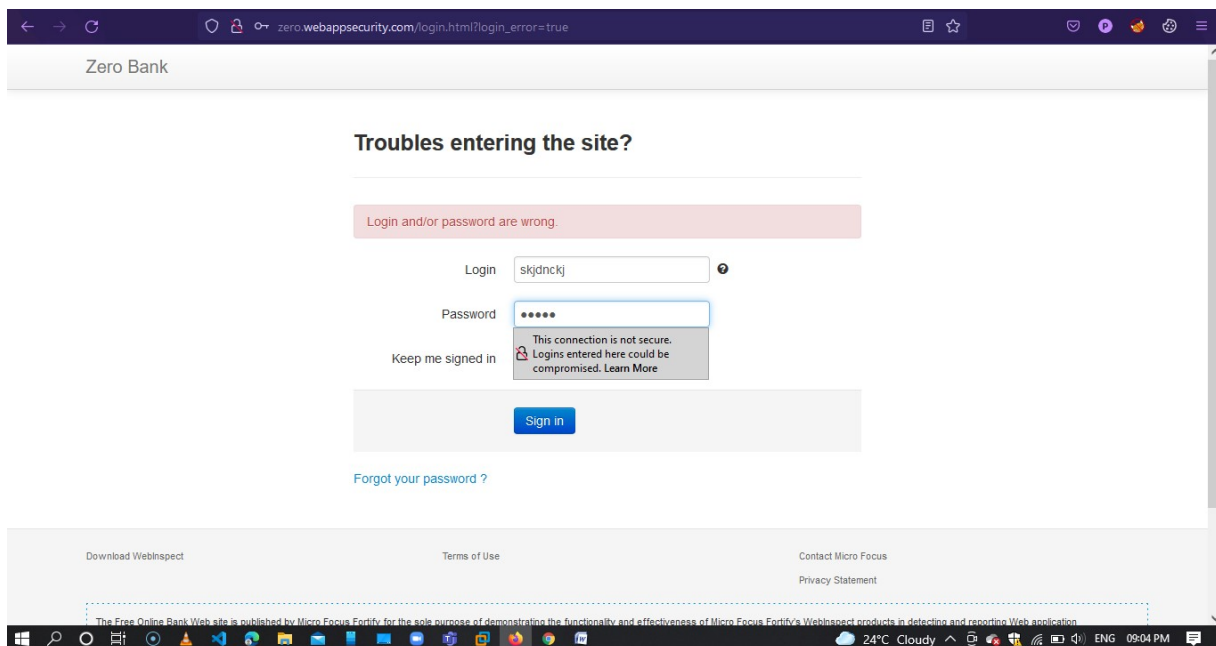
AFTER LOG-OUT:

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8. NO ACCOUNT LOCK-OUT POLICY:

Account lockout policies are used by administrators to lock out an account when someone tries to log on unsuccessfully several times in a row.



9. INSECURE COMPONENT:

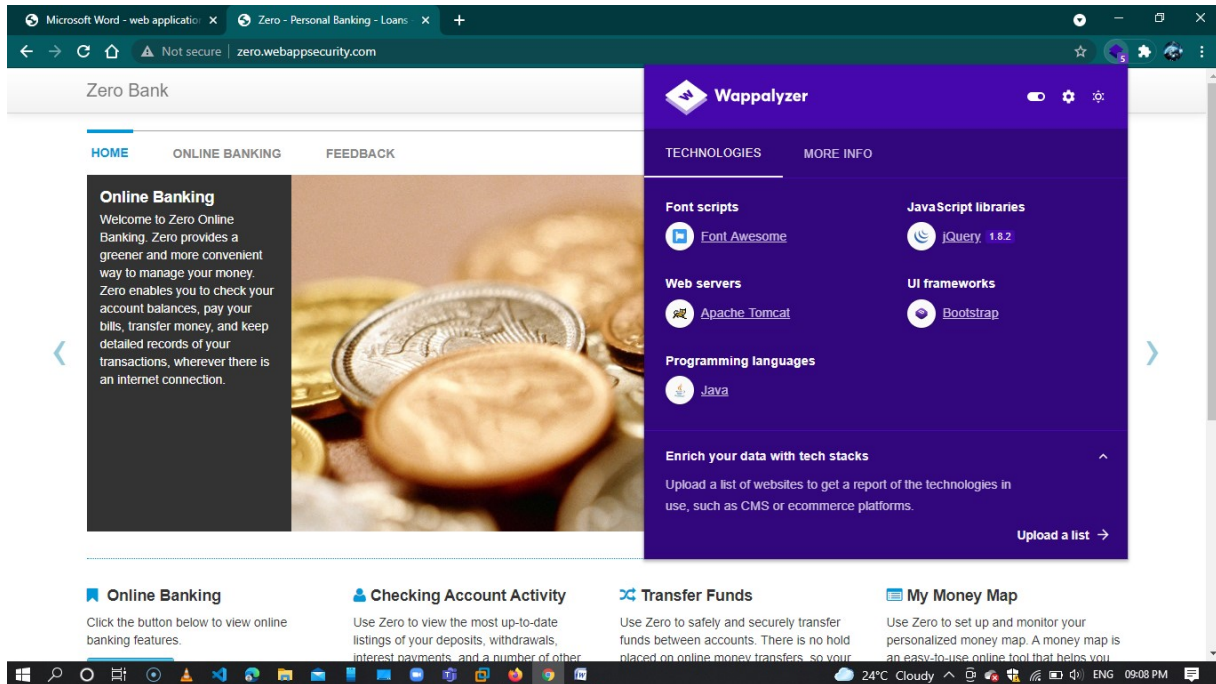
Some vulnerable components (e.g., framework libraries) can be identified and exploited with automated tools, expanding the threat agent pool beyond targeted attackers to include chaotic actors.

MITIGATION:

1. manual updates
2. using HDIV (hard working diligent idealistic valiant)

CHECKING FOR THE VULNERABILITY USING WAPPALYSER

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10. 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.

1. Host header injection- where host is not validated, leads to this vulnerability.
2. cross origin resource sharing vulnerability (COSR) -where origin and referrer are not validated, leads to this vulnerability.

Steps:

1. capture the login request using burp suite
2. send the request to repeater
3. click on go and follow direction
4. change the values of host, origin, referrer to evil.com
5. if the error messages are not given then the website is vulnerable to this vulnerability

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The image displays two screenshots of the Burp Suite Professional v2.0.11beta interface, showing the details of an HTTP request and response for a web application security project.

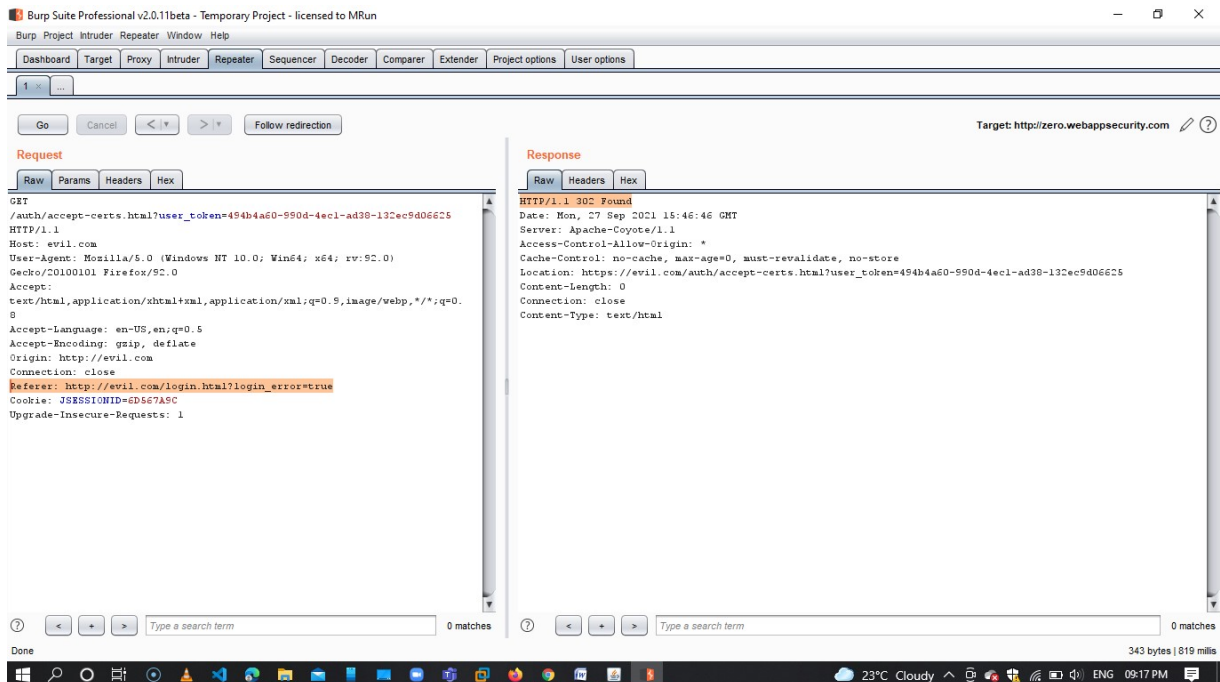
Top Screenshot:

- Target:** http://zero.webappsecurity.com
- Request:**
 - Method: GET
 - URL: /auth/accept-certs.html?user_token=494b4a60-990d-4ec1-ad38-132ec9d06625
 - Host: evil.com
 - User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0)
 - Gecko/20100101 Firefox/92.0
 - 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
 - Origin: http://evil.com
 - Connection: close
 - Referer: http://evil.com/login.html?login_error=true
 - Cookie: JSESSIONID=ED5E7A9C
 - Upgrade-Insecure-Requests: 1
- Response:**
 - Status: HTTP/1.1 302 Found
 - Date: Mon, 27 Sep 2021 15:46:46 GMT
 - Server: Apache-Coyote/1.1
 - Access-Control-Allow-Origin: *
 - Cache-Control: no-cache, max-age=0, must-revalidate, no-store
 - Location: https://evil.com/auth/accept-certs.html?user_token=494b4a60-990d-4ec1-ad38-132ec9d06625
 - Content-Length: 0
 - Connection: close
 - Content-Type: text/html

Bottom Screenshot:

- Target:** http://zero.webappsecurity.com
- Request:**
 - Method: GET
 - URL: /auth/accept-certs.html?user_token=494b4a60-990d-4ec1-ad38-132ec9d06625
 - Host: evil.com
 - User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:92.0)
 - Gecko/20100101 Firefox/92.0
 - 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
 - Origin: http://evil.com
 - Connection: close
 - Referer: http://evil.com/login.html?login_error=true
 - Cookie: JSESSIONID=ED5E7A9C
 - Upgrade-Insecure-Requests: 1
- Response:**
 - Status: HTTP/1.1 302 Found
 - Date: Mon, 27 Sep 2021 15:46:46 GMT
 - Server: Apache-Coyote/1.1
 - Access-Control-Allow-Origin: *
 - Cache-Control: no-cache, max-age=0, must-revalidate, no-store
 - Location: https://evil.com/auth/accept-certs.html?user_token=494b4a60-990d-4ec1-ad38-132ec9d06625
 - Content-Length: 0
 - Connection: close
 - Content-Type: text/html

Web Application Major Project



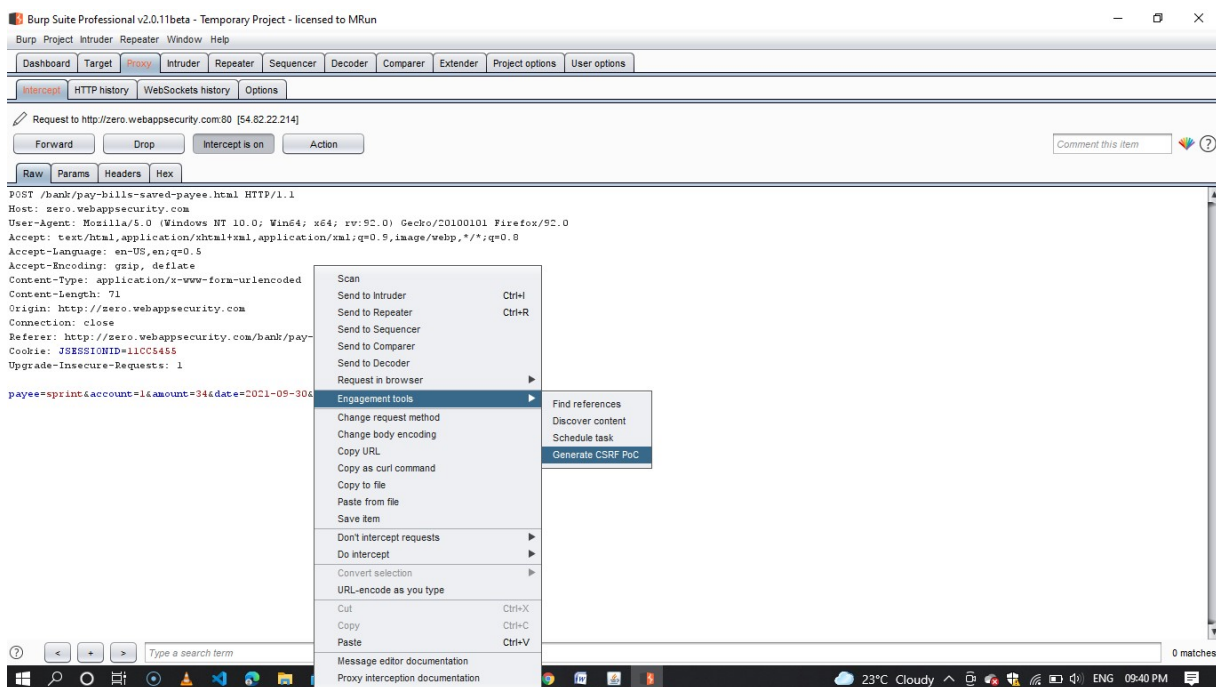
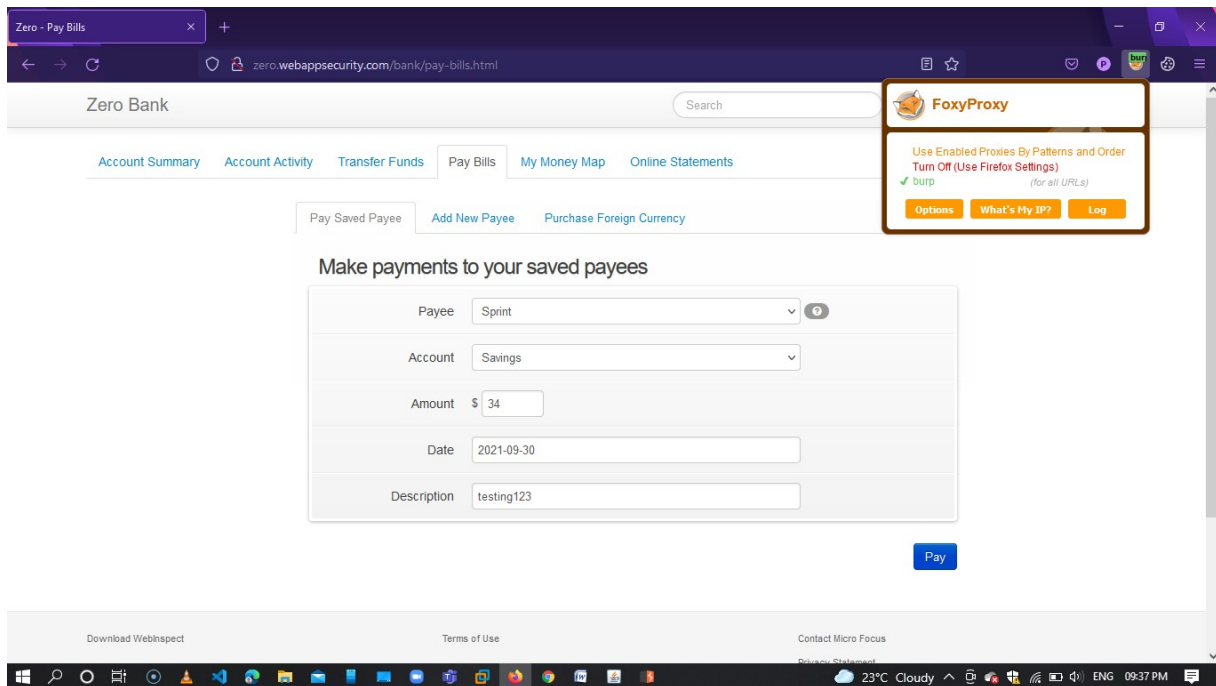
11. CROSS SITE REQUEST FORGERY:

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.

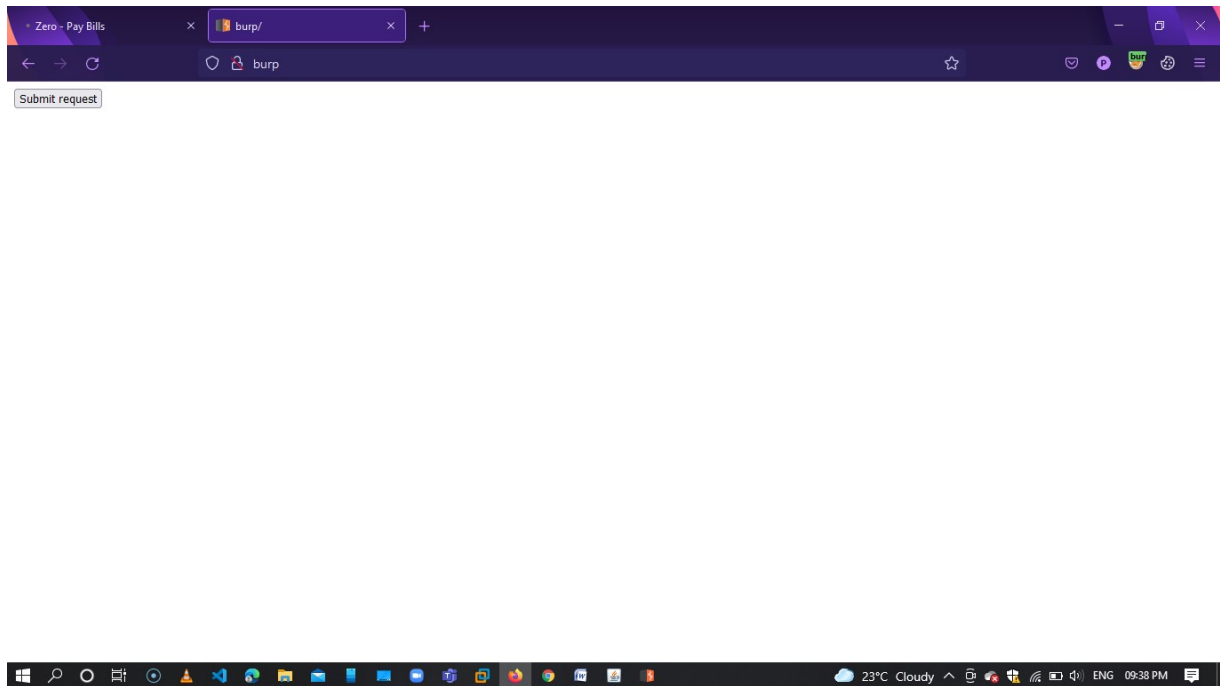
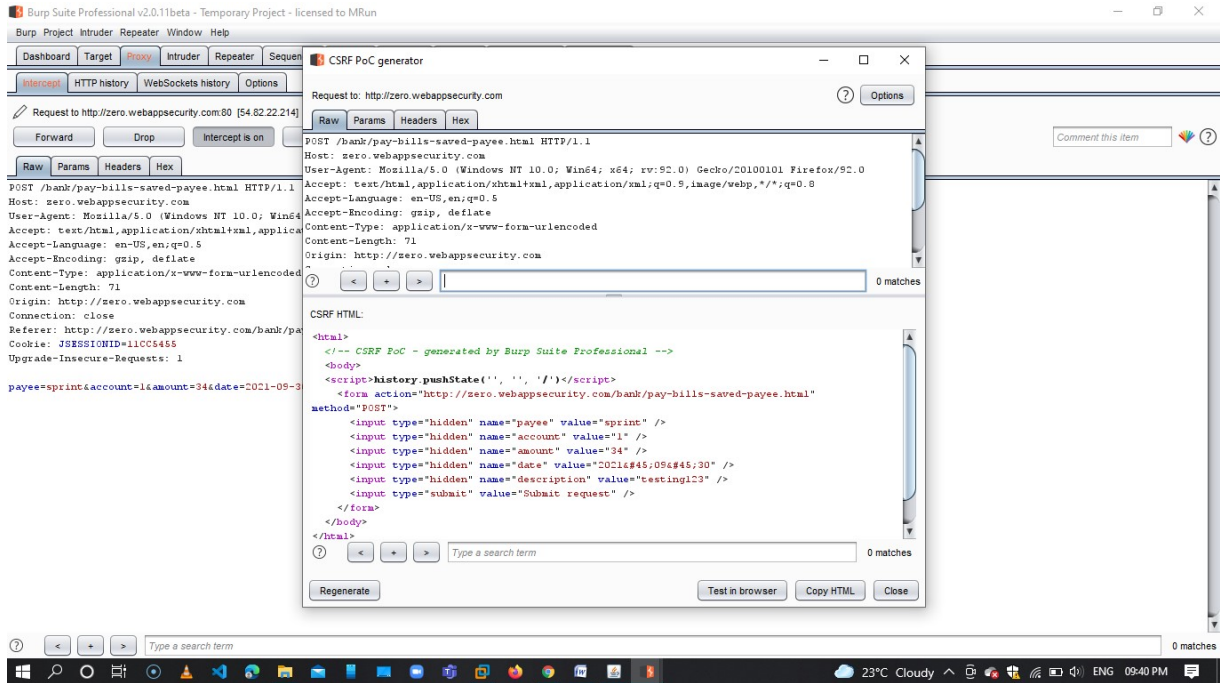
Steps:

1. login to the application
2. check for the attack point
3. capture the request using burp suite
4. send the captured request to engagement tools and generate CSRF poc
5. turn off intercept
6. change the values
7. copy the url and test in browser
8. submit request

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