Sri Lanka Institute of Information Technology



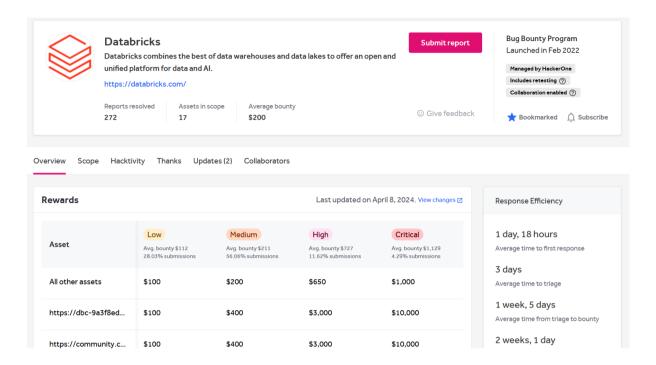
WEB SECURITY (IE2062)

BUG BOUNTY
REPORT 5

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B.Sc. (Hons) in Information Technology Specializing in cyber security

Overview of the website



With a single analytics platform that speeds up the process of converting data into insights, Databricks.com is at the forefront of innovation in both data analytics and AI. Databricks helps businesses to easily manage and analyze large datasets at scale, gaining insightful knowledge and facilitating well-informed decision-making. It does this by utilizing cutting-edge technologies like Apache Spark and Delta Lake. Databricks offers a collaborative environment in which data scientists, engineers, and analysts may work together effectively, from data engineering to machine learning model development and deployment. Databricks helps businesses get the most out of their data while remaining flexible and dependable. It does this by providing features like integrated security, automated cluster management, and strong visualization capabilities. Databricks is a reliable partner for businesses in a range of sectors, and it plays a significant role in influencing how data-driven innovation develops in the future.

Scope

• InScope

academy.databricks.com	Domain	In scope	— Critical	§ Eligible	Aug 24, 2023	0 (0%)
demo.cloud.databricks.com	Domain	In scope	— Critical	§ Eligible	Aug 24, 2023	1 (0%)
docs.databricks.com	Domain	In scope	— Critical	S Eligible	Aug 24, 2023	1 (0%)
help.databricks.com	Domain	In scope	— Critical	§ Eligible	Aug 24, 2023	0 (0%)
partners.databricks.com	Domain	In scope	— Critical	S Eligible	Aug 24, 2023	0 (0%)
support.databricks.com	Domain	In scope	— Critical	§ Eligible	Aug 24, 2023	0 (0%)
advocates.databricks.com	Domain	In scope	Critical	S Eligible	Oct 17, 2023	0 (0%)
labs.databricks.com	Domain	In scope	— Critical	§ Eligible	Oct 17, 2023	0 (0%)
All other assets	Other	In scope	— Critical	S Ineligible	Sep 21, 2023	2 (1%)
kb.databricks.com	Domain	In scope	— Critical	§ Eligible	Aug 24, 2023	0 (0%)
marketplace.databricks.com	Domain	In scope	— Critical	S Eligible	Oct 17, 2023	0 (0%)
accounts.cloud.databricks.com	Domain	In scope	— Critical	S Eligible	Aug 24, 2023	4 (1%)
community.databricks.com	Domain	In scope	Critical	S Eligible	Oct 17, 2023	0 (0%)
https://community.cloud.databricks.com/ Register for Demo Accounts Documentation: • For information on using Databricks, please visit https://	URL	In scope	Critical	§ Eligible	Oct 20, 2023	0 (0%)
docs.databricks.com/.						
docs.databricks.com/. customer-academy.databricks.com	Domain	In scope	Critical	S Eligible	Oct 17, 2023	0 (0%)
	Domain URL	In scope	Critical	S EligibleS Eligible	Oct 17, 2023 Apr 8, 2024	0 (0%)

• OutScope

forums.databricks.com	Domain	Out of scope	None	S Ineligible	Feb 1, 2022	0 (0%)
feedback.databricks.com	Domain	Out of scope	None	S Ineligible	Feb 1, 2022	0 (0%)
go.databricks.com	Domain	Out of scope	None	S Ineligible	Feb 1, 2022	0 (0%)
*.cloud.databricks.com	Wildcard	Out of scope	• None	S Ineligible	May 15, 2023	0 (0%)
*.azuredatabricks.net	Wildcard	Out of scope	None	S Ineligible	May 15, 2023	0 (0%)
Other subdomains of *.azuredatabricks.net and other 'o' parameters	Other	Out of scope	• None	S Ineligible	Feb 1, 2022	0 (0%)
https://databricks-prod- cloudfront.cloud.databricks.com/public/*	Wildcard	Out of scope	None	S Ineligible	May 10, 2023	0 (0%)

Information Gathering

Security researchers and ethical hackers must first gather data through bug bounty programs in order to identify vulnerabilities in a target system or application. This step's objective is to learn as much as you can about the target, including its technologies, architecture, known vulnerabilities, and potential weak points. Open-source intelligence gathering (OSINT), network scanning, fingerprinting, and asset enumeration are typically required to give a complete view of the target's attack surface.

Since it enables ethical hackers to identify potential points of entry and focus their search for system security flaws, efficient information gathering is the cornerstone of a successful bug hunting operation.

Subdomains for Hunting

The process of listing sub-domains for one or more domains is called sub-domain enumeration. This is a critical stage in the reconnaissance process. Finding vulnerabilities is made more likely by sub-domain enumeration, which can identify several domains and sub-domains that are part of a security assessment.

Seen through cryptic, abandoned sub-domains, programs may have dangerous bugs.

The same weaknesses are frequently found throughout numerous domains and applications within a single organization.

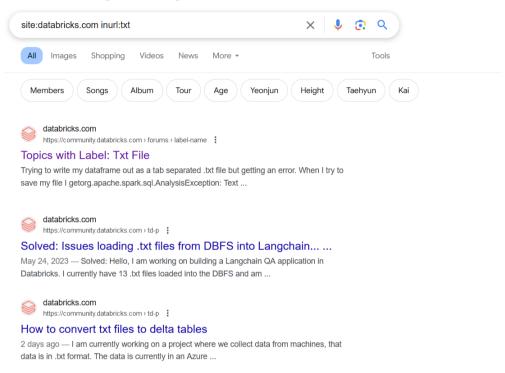
Knockpy

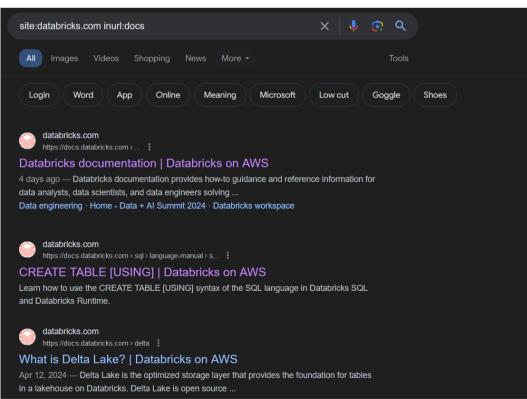
Knockpy is the name of a Python utility for subdomain reconnaissance. Mainly, passive DNS approaches are meant to be used for subdomain listing. With the use of multiple DNS data sources, Knockpy helps find subdomains associated with a given domain.



Google Dorking

The practice of using specific queries and sophisticated search operators on the Google search engine to locate confidential information, configuration flaws, or publicly accessible resources that are not often indexed in ordinary search results is known as "Google Dorking," sometimes known as "Google Hacking."





• Dnsdumpster

Block addresses, emails, domain names, and other kinds of DNS-related data can be gathered using an online passive scanning tool called DNSdumpster.

Result of databricks.com



DNS Servers		
nsi.databricks.com. ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	205.251.197.6	AMAZON-02 United States
ns2.databricks.com. ② → ⊃ 本 ♠ ◎ ♦	205.251.192.124	AMAZON-02 United States
ns3.databricks.com. ② → ⊃ 本 ♠ ③ ♦	205.251.198.201	AMAZON-02 United States
ns4.databricks.com. ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	205.251.195.219	AMAZON-02 United States
MX Records ** This is where email for the doma:		
10 aspmx.l.google.com.	172.253.115.26	G00GLE United States
20 alt1.aspmx.l.google.com. ∰ 攻 ◈	209.85.202.26	G00GLE United States
20 alt2.aspmx.l.google.com. ∰ 女 ❖ ❖	64.233.184.27	G00GLE United States
30 aspmx2.googlemail.com. ∰ 攻 ◈ ﴿	209.85.202.27	GOOGLE United States
30 aspmx3.googlemail.com.	64.233.184.27	G00GLE United States
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30 aspmx5.googlemail.com. ∷ ≺ ◆ ♦	142.250.153.26	G00GLE United States

TXT Records ** Find more hosts in Sender Policy Framework (SPF) configurations
"apple-domain-verification=jh4LRdliC3G9wlP9"
atlassian-domain-verification=KBIYenY+QDuW3QhHZRt3trOUgZ/yXfRj2BD/fQepYqA9g8qx+oJwB+8fIZkNJrH6"
"canva-site-verification=2l7_ShHZm7F-Q0ShTy5hqA"
"google-site-verification=CVfiIwM2qpYK4b61vYcqWMUu8DzDhxvZxGGVokHquQM"
"google-site-verification=J5YtoGIhmtgXH_A6WtyQ2mWlUXlt3f2ymAeFTCIcP1w"
"google-site-verification=Mz-gfy-kKbkIGQheIJxCPll0nLkA0tkTDEwbAH_s8d4"
google-site-verification=R0vF6Z0WLyTz\WNxtjARZGw41c8zNfy5RhXBXMZ0BrE"
"miro-verification=5e410ddb8413e73fdf25e4ad3deb064907204e5f"
"nintex.64c1819b4e57291a7f904476"
"notion-domain-verification=d45IdPnit8pNazTZ1HGLQU4EG72RvUZ5YJ6RsKPLcmx"
"onetrust-domain-verification=efb0112bd8cd4d55991f8e6eeac5a51c"
"paloaltonetworks-site-verification=9f31ffd6077e61249b758df50dc58caff3db97d42002d32e86e61eaaab6e95c4"
"paloaltonetworks-site-verification=a102812dbbc018f8d873987c331f2704ef305519fa1538352fe22419da2cc421"
"uber-domain-verification=d7c8e42f-e5f3-4d58-8f74-175cb796484f"
"V=spf1 include:_spf.google.com include:amazonses.com include:sendgrid.net ~all"

databricks.com ∰ ② ☆ ◈ HTTP: Varnish	151.101.194.228	FASTLY United States
HTTP TECH: Varnish		
dev01.databricks.com !!! ② ☆ ◆	23.185.0.2	FASTLY United States
staging1.databricks.com Ⅲ ② ☆ ◆	208.113.241.38 dp-bedb5d68ff.dreamhostps.com	DREAMHOST-AS United States
nsi.databricks.com ∰ ② ☆ ◎ ﴿	205.251.197.6 ns-1286.awsdns-32.org	AMAZON-02 United States
ns2.databricks.com Ⅲ ② ☆ ③ ❖	205.251.192.124 ns-124.awsdns-15.com	AMAZON-02 United States
ns3.databricks.com Ⅲ ② ☆ ◎ ❖	205.251.198.201 ns-1737.awsdns-25.co.uk	AMAZON-02 United States
ns4.databricks.com ∰ ② 攻 ③ ﴿	205.251.195.219 ns-987.awsdns-59.net	AMAZON-02 United States
supporthub-qa.databricks.com ∰ ② 	20.188.95.25	MICROSOFT-CORP-MSN-AS-BLOCK United States
supporthub-azure-qa.databricks.com ∰	52.149.197.228	MICROSOFT-CORP-MSN-AS-BLOCK United States
microsites-qa.databricks.com ∰ ② 爻 ۞ ﴿ HTTP: Pantheon HTTP TECH: Varnish	23.185.0.4	FASTLY United States
sparkhub.databricks.com ## ②	23.185.0.2	FASTLY United States

DNSrecon

For DNS enumeration and reconnaissance, an open-source tool named DNSRecon is utilized. The purpose of gathering information is to assist with penetration testing and security evaluations by providing details on DNS servers, domains, subdomains, and DNS records.

Nslookup

The command-line tool NSLOOKUP (Name Server Lookup) can be used to query the Domain Name System (DNS) using an IP address or domain name.

```
[/home/tharusha]
   nslookup databricks.com
Server:
               192.168.1.1
               192.168.1.1#53
Address:
Non-authoritative answer:
Name: databricks.com
Address: 151.101.194.228
Name: databricks.com
Address: 151.101.130.228
      databricks.com
Address: 151.101.2.228
Name: databricks.com
Address: 151.101.66.228
Name:
      databricks.com
Address: 2a04:4e42:600::740
Name: databricks.com
Address: 2a04:4e42:200::740
Name: databricks.com
Address: 2a04:4e42:e00::740
Name:
      databricks.com
Address: 2a04:4e42:400::740
Name: databricks.com
Address: 2a04:4e42::740
Name: databricks.com
Address: 2a04:4e42:800::740
Name: databricks.com
Address: 2a04:4e42:a00::740
Name: databricks.com
Address: 2a04:4e42:c00::740
```

Whatweb

A web application's technology stack can be discovered with this open-source research tool. It analyzes HTTP answers from a target web server to collect further information about the web server, web framework, programming language, content management system (CMS), JavaScript libraries, and other technologies that the target site may be utilizing.

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Wafw00f

An open-source program called Wafw00f is used to identify and fingerprint Web application firewalls (WAFs). Web application firewalls (WAFs), security solutions, defend against SQL injection, cross-site scripting (XSS), and other attacks.

We can see that Cloudflare WAF is protecting databricks.com.



• Using nmap, open port enumeration

Open port enumeration is a method for locating and classifying the open network ports on a target machine or network using the Nmap (Network Mapper) program. Nmap is an effective open-source tool for network scanning and host discovery that provides extensive information on the services and statuses that are running on various ports. This process involves sending specially made packets to a target system and analyzing the responses in order to determine which ports are open and what services are using them.

Nmap is a popular tool for network administrators and security specialists to assess system security, identify potential security flaws, and enhance network configurations due to its abundance of features and versatility. It's a helpful tool for enhancing security and computer network administration in general.

• Using Nikto to scan for vulnerabilities

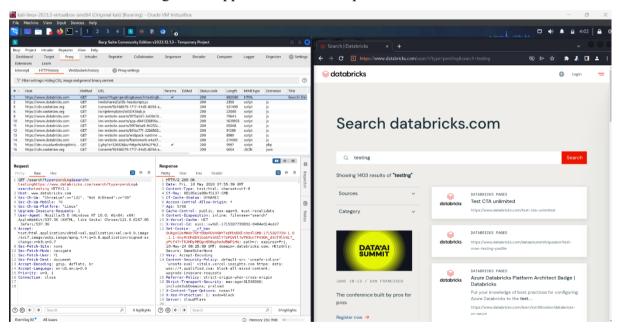
One method to check for vulnerabilities in Kali Linux is to use the powerful open-source tool Nikto web scanner, which is part of the popular operating system for penetration testing and ethical hacking. Nikto is specifically designed to identify and assess server and web application vulnerabilities.

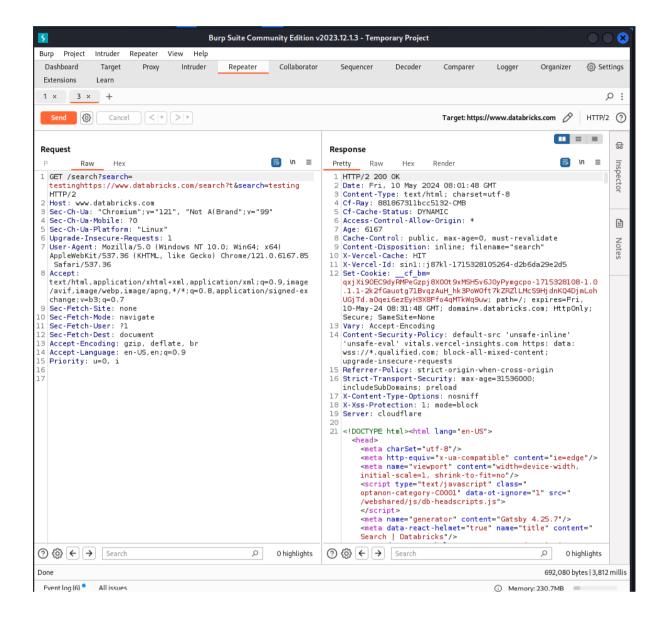
When checking target web servers for known vulnerabilities, common security issues, and misconfigurations, Nikto can be used from the Kali Linux command line. Nikto searches for issues including outdated software, possibly unsafe scripts, security headers, and other online

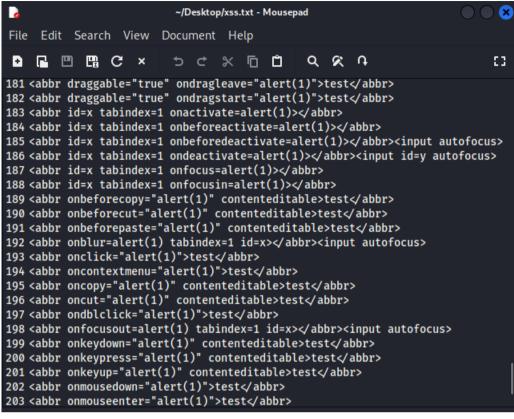
vulnerabilities. It helps ethical hackers and security professionals understand and reduce such threats by providing comprehensive information on the vulnerabilities discovered.

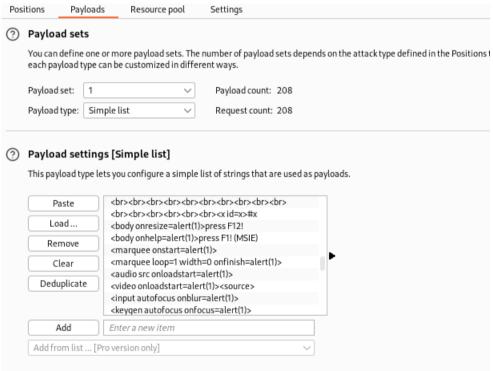
Exploitation

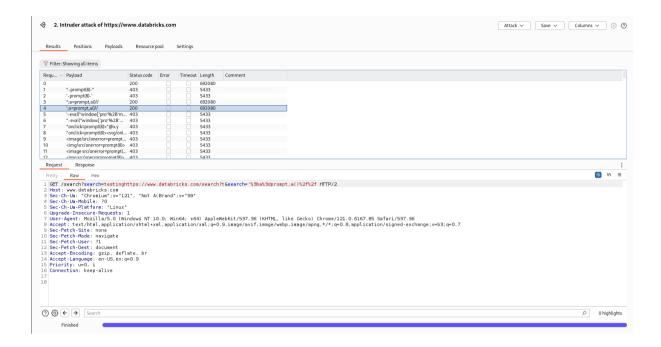
I employed Burpsuite and SQLMAP tools to identify cross-site and SQL injection vulnerabilities in the target web application for the exploitations.











• SQLmap

An open-source penetration testing tool called SQL Map automatically locates and takes advantage of SQL injection vulnerabilities to take over databases.

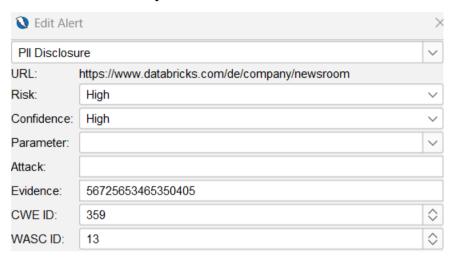
In an attempt to locate any web application injection points, I experimented with various payloads and parameters. I tested this application and discovered that it is not injectable.

Vulnerabilities detect when Scanning

In order to process and find problems and vulnerabilities that are based on the OWASP top 10, I used tool like OWASP ZAP.

OWASP ZAP is a testing tool that may be used to identify potential security gaps in internet applications. OWASP ZAP can be used to find common vulnerabilities such as SQL injection and cross-site scripting (XSS).

1. Vulnerability Title



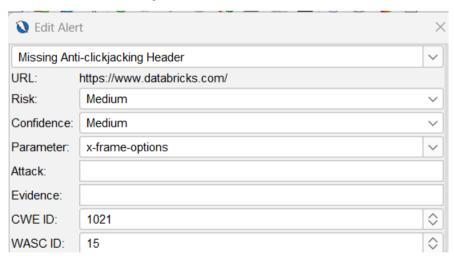
Vulnerability Description

The response contains Personally Identifiable Information, such as CC number, SSN and similar sensitive data.

How to mitigate

Check the response for the potential presence of personally identifiable information (PII), ensure nothing sensitive is leaked by the application.

2. Vulnerability Title



Vulnerability Description

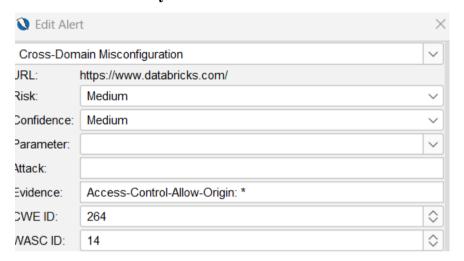
The response does not include either Content-Security-Policy with 'frame-ancestors' directive or X-Frame-Options to protect against 'ClickJacking' attacks.

How to mitigate

Modern Web browsers support the Content-Security-Policy and X-Frame-Options HTTP headers. Ensure one of them is set on all web pages returned by your site/app.

If you expect the page to be framed only by pages on your server (e.g. it's part of a FRAMESET) then you'll want to use SAMEORIGIN, otherwise if you never expect the page to be framed, you should use DENY. Alternatively consider implementing Content Security Policy's "frame-ancestors" directive.

3. Vulnerability Title



Vulnerability Description

Web browser data loading may be possible, due to a Cross Origin Resource Sharing (CORS) misconfiguration on the web serve.

How to mitigate

Ensure that sensitive data is not available in an unauthenticated manner (using IP address white-listing, for instance).

Configure the "Access-Control-Allow-Origin" HTTP header to a more restrictive set of domains, or remove all CORS headers entirely, to allow the web browser to enforce the Same Origin Policy (SOP) in a more restrictive manner.