Cybersecurity

Project 1 Technical Brief

Make a copy of this document before you begin. Place your answers below each question. This completed document will be your deliverable for Project 1. Submit it through Canvas when you're finished with the project at the end of the week.

Your Web Application

Enter the URL for the web application that you created:

`https://josephayehankrahsecurityresume.azurewebsites.net/`

Paste screenshots of your website created (Be sure to include your blog posts):

Chrome File Edit View History Bookmarks Profiles Tab Window Help Mon Sep 30 7:57 PM

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JOSEPH ANKRAH'S CYBER BLOG

Send Email

Hello World, I'm Joseph!

A resourceful team player offering a dynamic personality and an extensive background working in a professional office in the educational industry. Aptitude in maintaining composure, positive attitude and focus during stressful times. Willingness to learn on and off the job in the ever progressing tech industry. Eager to join forces with a multi-faceted and progressive organization.

Blog Posts

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Blog Posts

Security Risks of AI technology

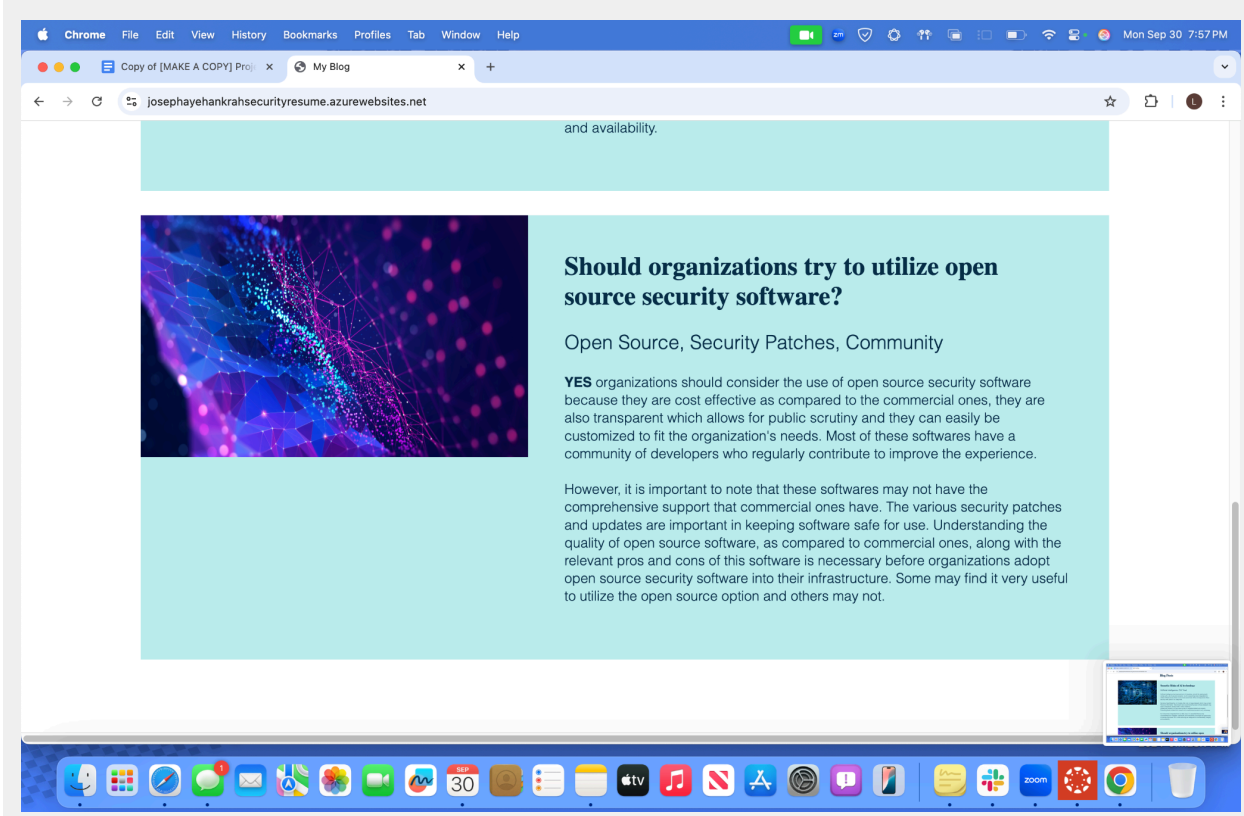
Artificial intelligence, CIA Triad

Artificial intelligence has improved a lot of industries, but with its rapid growth comes with a lot of security concerns. As AI is becoming more integrated into critical infrastructures, there is ever more awareness of the consequences these security risks pose to our daily lives.

Sensitive Data Breaches: AI models often rely on large datasets which may contain Personal Information. Data breach and unauthorized access to these datasets may lead to data theft, identity theft or other violations.
Intellectual Property: AI may have access to valuable intellectual property. Protecting these models from breach and unauthorized access is very necessary.

As AI becomes integrated into our daily lives, it is essential that security vulnerabilities are mitigated. Individuals and businesses must have the opportunity to harness the power of AI, while ensuring we safeguard its confidentiality, integrity and availability.

Should organizations try to utilize open



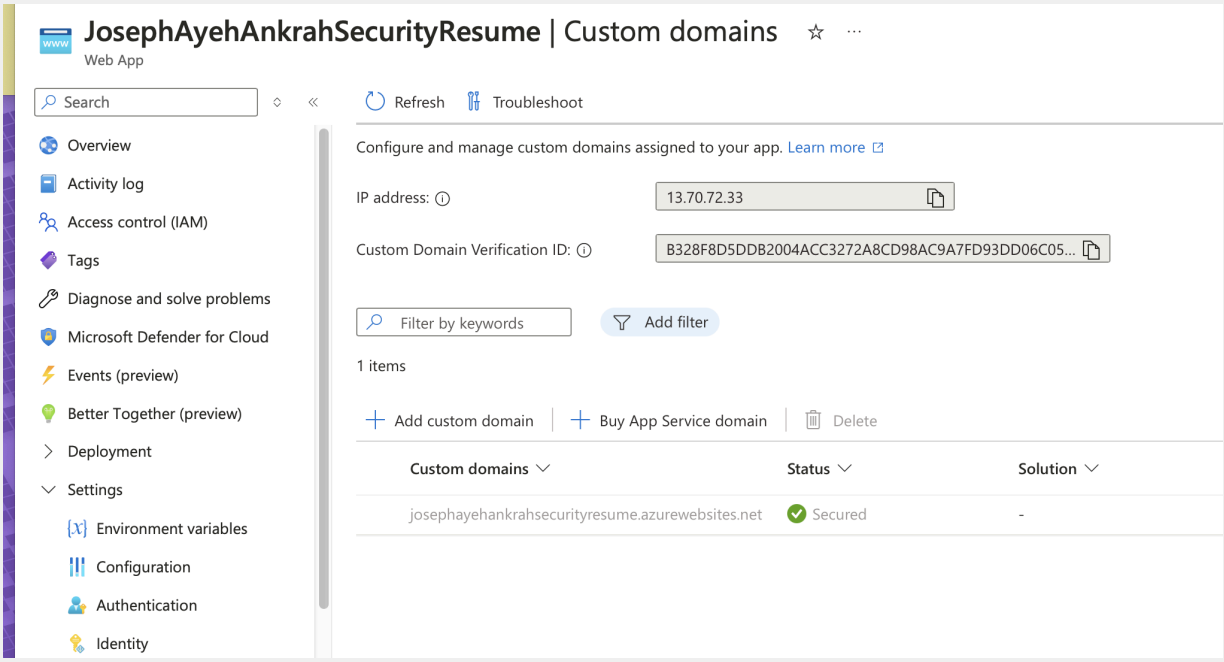
Day 1 Questions

General Questions

1. What option did you select for your domain (Azure free domain, GoDaddy domain)?

```
Azure Free Domain
```

2. What is your domain name?




```
josephayehankrahsecurityresume.azurewebsites.net
```

Networking Questions

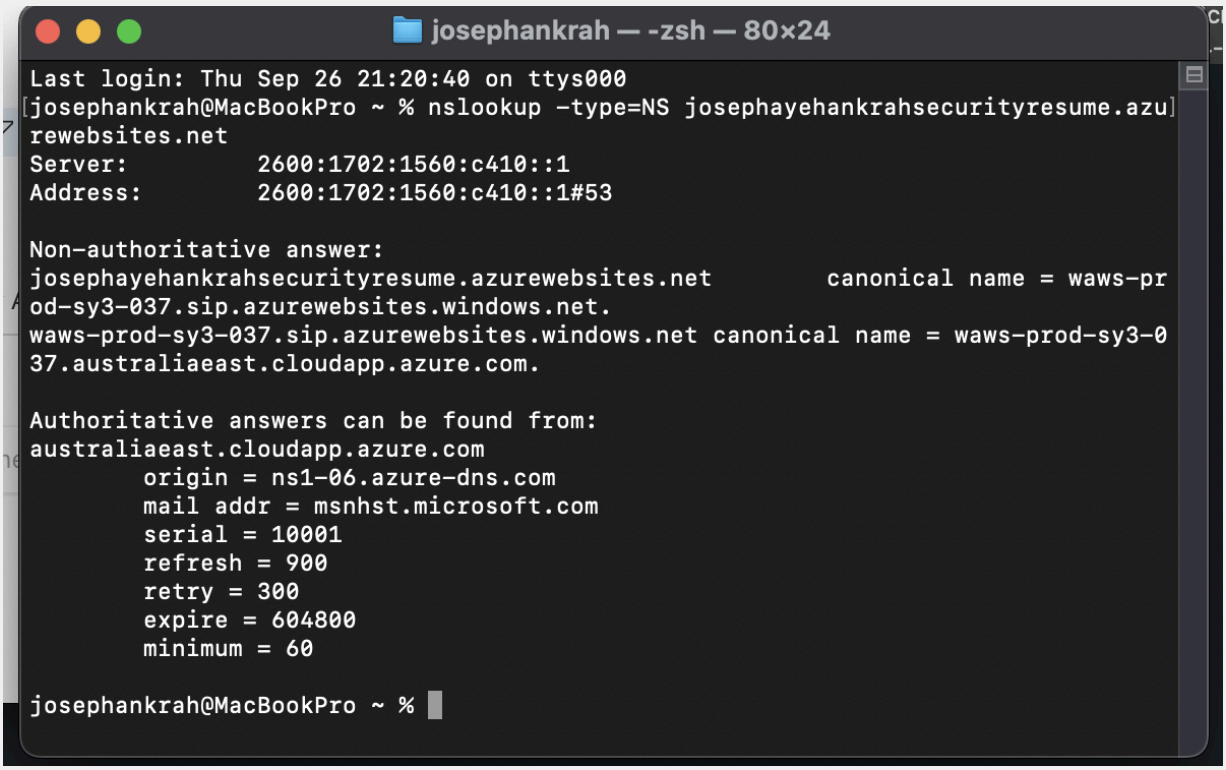
1. What is the IP address of your webpage?

```
13.70.72.33
```

2. What is the location (city, state, country) of your IP address?

```
Sydney, New South Wales, Australia
```

3. Run a DNS lookup on your website. What does the NS record show?



No NS records available for my website but the parent domain “australiaeast.cloudapp.azure.com“ has an NS record which is ns1-06.azure-dns.com

Web Development Questions

1. When creating your web app, you selected a runtime stack. What was it? Does it work on the front end or the back end?

PHP8.2 - works on backend

2. Inside the `/var/www/html` directory, there was another directory called assets. Explain what was inside that directory.

CSS files and images for the web app. CSS defines the design and outline of the webpage.

3. Consider your response to the above question. Does this work with the front end or back end?

```
Front end because the HTML outlines the webpage, the CSS designs the layout.
```

Day 2 Questions

Cloud Questions

1. What is a cloud tenant?

```
A cloud tenant is an instance of a cloud service that is dedicated to a
specific customer or organization without a cloud service provider's
platform.
```

2. Why would an access policy be important on a key vault?

```
It contains very sensitive and secret keys, certificates and information
that may affect a company. Access policies would ensure only the right
people are able to access it
```

3. Within the key vault, what are the differences between keys, secrets, and certificates?

```
Keys are used to access resources on a system
Certificates are used to verify and authenticate validity of a Website or a
resource and also used to encrypt traffic between a client and a server
Secrets are information or data that are sensitive and need to be protected.
```

Cryptography Questions

1. What are the advantages of a self-signed certificate?

```
1. It is cost effective
2. Quick and easy to set up and implement
3. You have full control of the certificate.
```

2. What are the disadvantages of a self-signed certificate?

```
Most browsers and applications may not trust self signed certificates
They do not provide the same level of security as the commercially issued
ones.
Since it is not comparably secure, it is prone to Man-in-the-middle attacks
```

3. What is a wildcard certificate?

```
It is a certificate that can be use to secure multiple domains under the
same root domain
```

4. When binding a certificate to your website, Azure only provides TLS versions 1.0, 1.1, and 1.2. Explain why SSL 3.0 isn't provided.

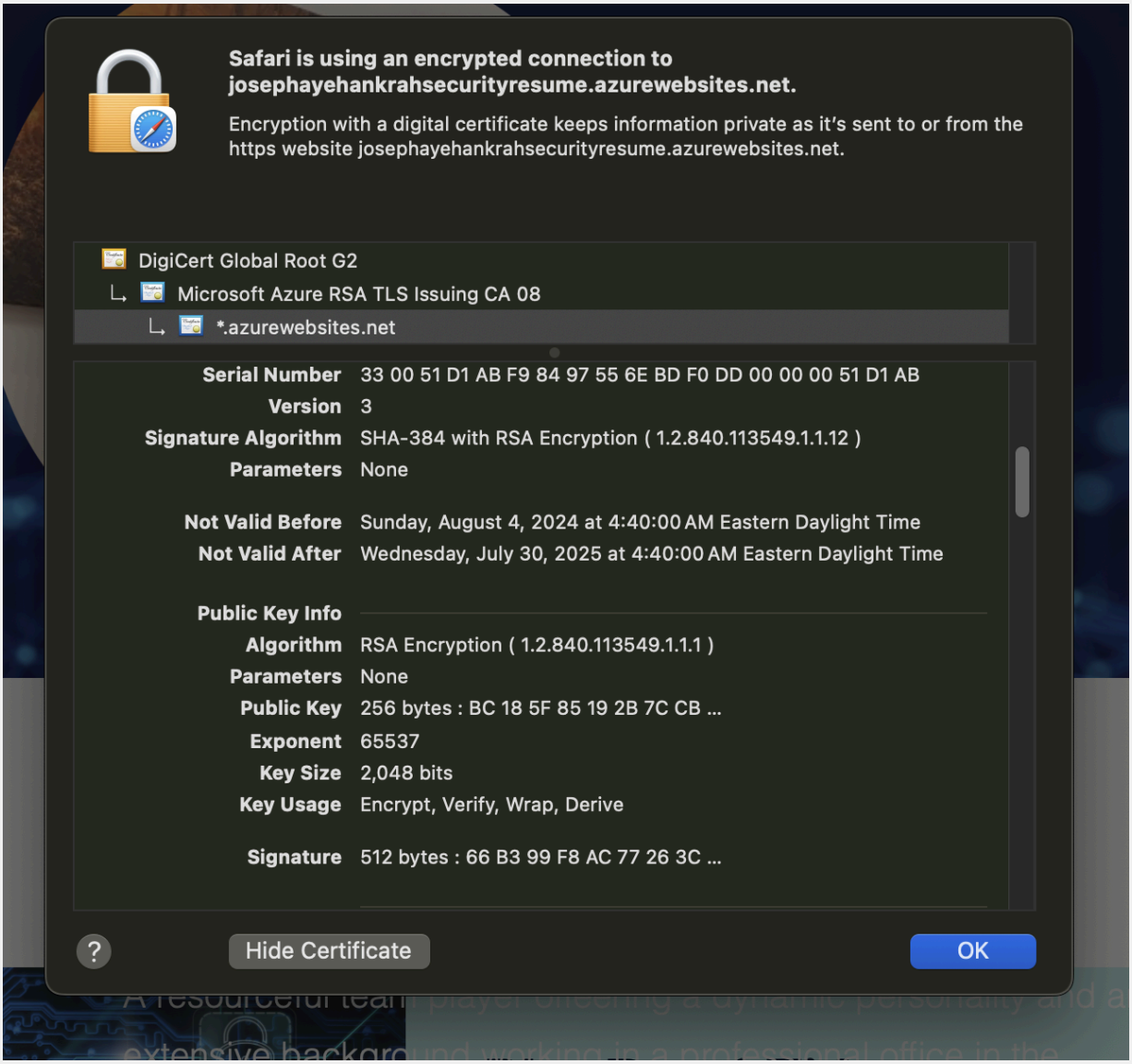
```
Azure does not use SSL 3.0 because of its known security vulnerabilities.
POODLE (PAdding oracle attack) and BEAST (Bleichenbacher's block cypher
attack) can be used by an attacker to decrypt encrypted traffic over SSL 3.0
```

5. After completing the Day 2 activities, view your SSL certificate and answer the following questions:

    a. Is your browser returning an error for your SSL certificate? Why or why not?

```
No because the browser recognises the certificate as valid because it
recognized the certificate provider in the root certificate store.
```

    b. What is the validity of your certificate (date range)?




```
Valid from August 4, 2024 through July 30, 2025
```

c. Do you have an intermediate certificate? If so, what is it?

```
Microsoft Azure RSA TLS Issuing CA 08 from Microsoft
```

d. Do you have a root certificate? If so, what is it?

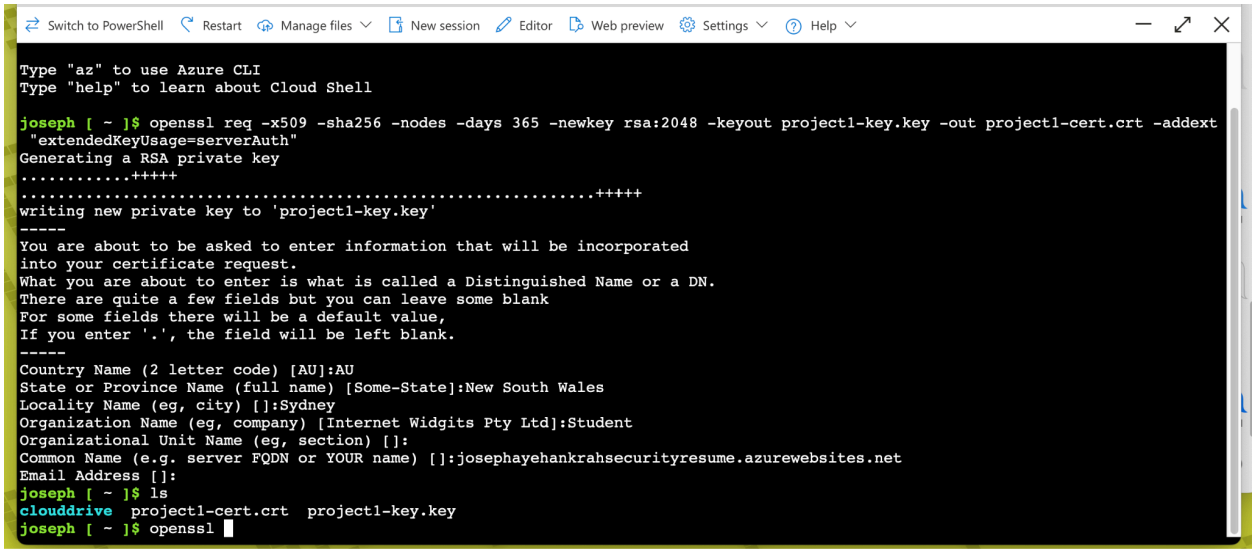
```
DigiCert Global Root G2. from DigiCert Inc
```

e. Does your browser have the root certificate in its root store?

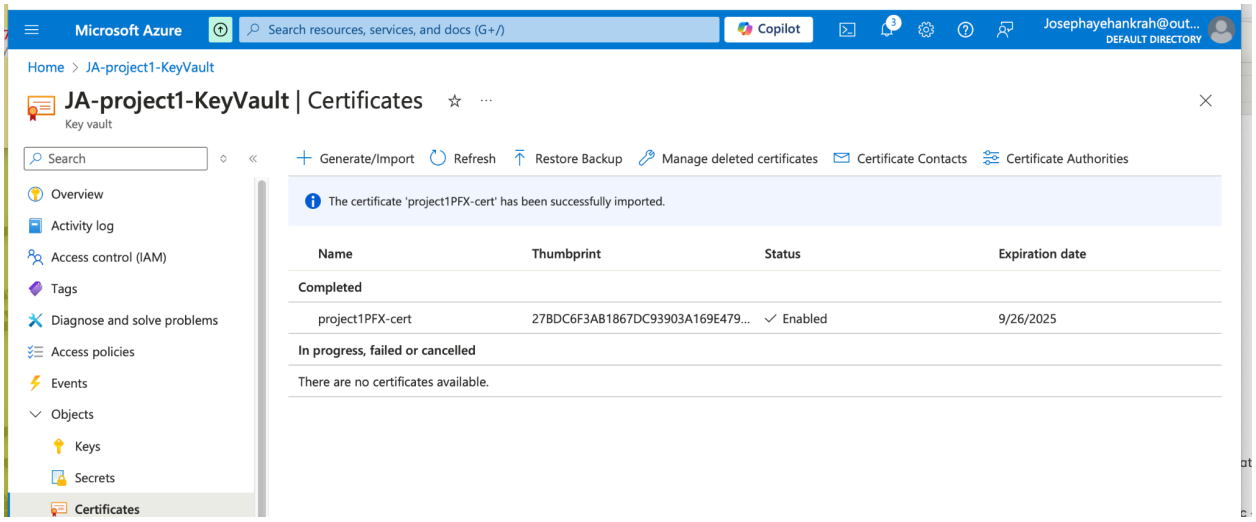
```
Yes it does.
```

f. List one other root CA in your browser's root store.

```
GTS Root R1.
```



Creation of the self-signed SSL certificate



Uploading and adding the self-signed SSL certificate to Azure key vault

Day 3 Questions

Cloud Security Questions

1. What are the similarities and differences between Azure Web Application Gateway and Azure Front Door?

```
They are both load balancing and traffic management services that azure
offers
They are similar in a way that they both manage traffic flow, they
distribute traffic across multiple backend servers to improve system
performance. They also integrate well with Azure services such Azure App
services and Virtual machines.

The difference is mainly on how they are individually used. Azure Web App
Gateway is primarily used with web apps while the azure front door is good
for both web apps and also content delivery networks.
```

2. What is SSL offloading? What are its benefits?

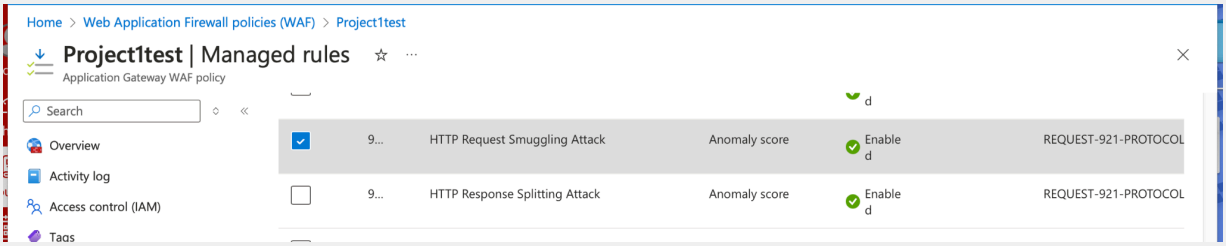
```
It is a technique that is used to improve the performance and security of
web applications by offloading processor intensive tasks of SSL or TLS (
encryption and decryption) to a hardware or software module.

It allows for the web server to focus on serving web content which massively
reduces server load.
```

3. What OSI layer does a WAF work on?

```
It works at the 7th layer of the model. It inspects HTTP/HTTPS traffic and
filters the unwanted packets.
```

4. Select one of the WAF managed rules (e.g., directory traversal, SQL injection, etc.), and define it.



HTTP request smuggling attack: it is an attack that injects malicious requests by exploiting the vulnerabilities in a web server and application. It confuses the web server and application to expose data or to behave in an undesired way.

5. Consider the rule that you selected. Could your website (as it is currently designed) be impacted by this vulnerability if Front Door wasn't enabled? Why or why not?

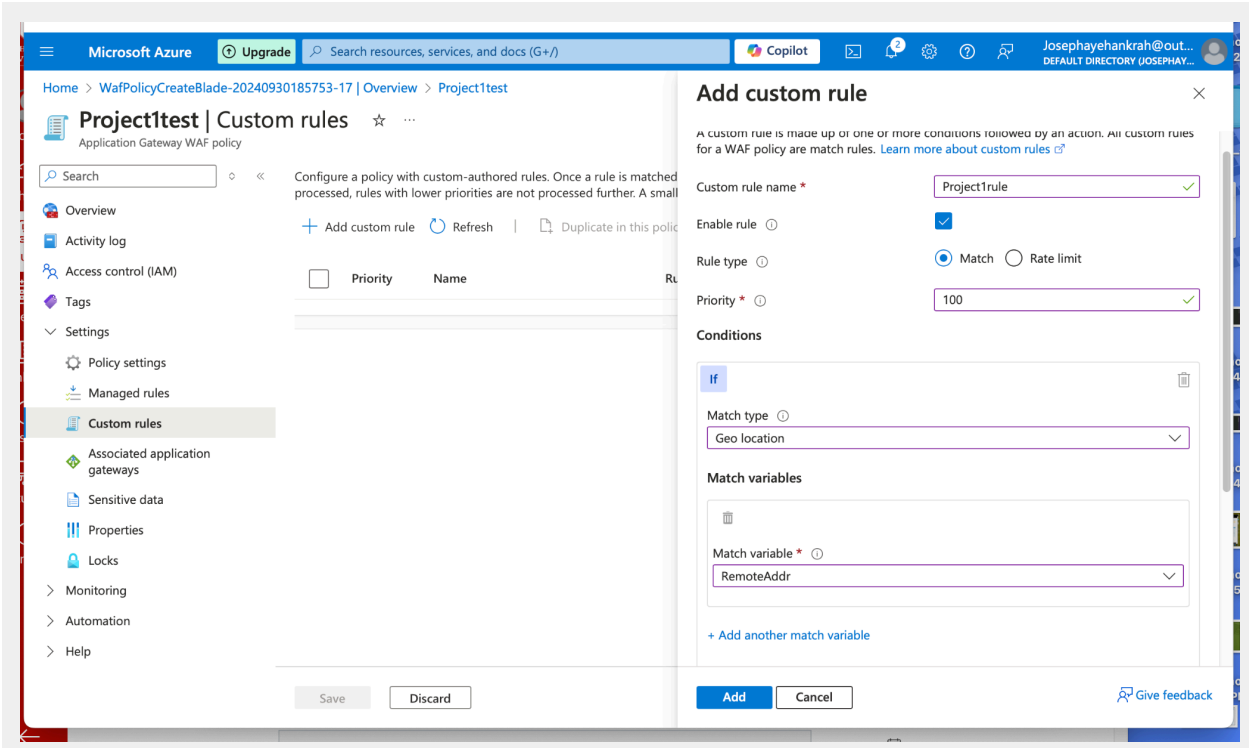
Yes it could be impacted by this attack because the web app has not been hardened against such attacks. After that security rules have been configured to allow public http traffic, any attacker could exploit that.

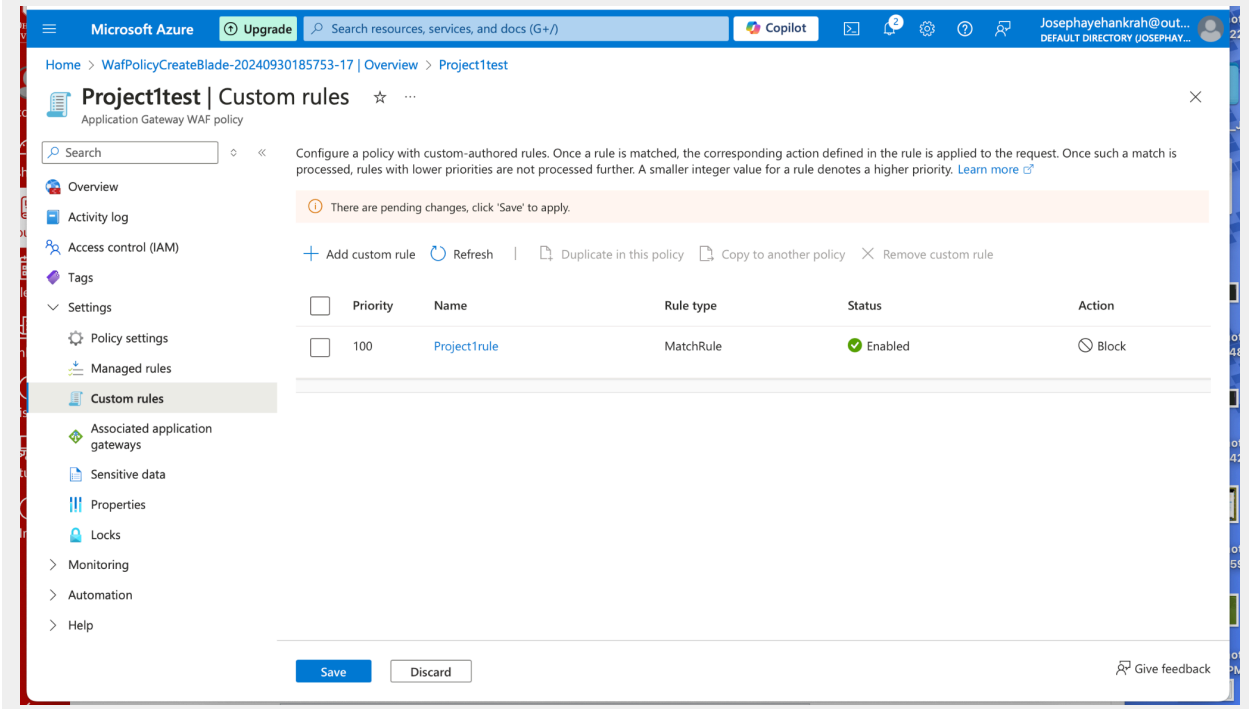
6. Hypothetically, say that you create a custom WAF rule to block all traffic from Canada. Does that mean that anyone who resides in Canada would not be able to access your website? Why or why not?

Yes. It means that no one with a Canadian IP address can access my website because the rule blocks all traffic from Canada unless the person uses a vpn to access the website.

7. Include screenshots below to demonstrate that your web app has the following:

    a. A WAF custom rule





Disclaimer on Future Charges

Please type “**YES**” after one of the following options:

- ***Maintaining website after project conclusion****: I am aware that I am responsible for any charges that I incur by maintaining my website. I have reviewed the guidance for minimizing costs and monitoring Azure charges.*

- ***Disabling website after project conclusion****: I am aware that I am responsible for deleting all of my project resources as soon as I have gathered all of my web application screen shots and completed this document.*

YES