



Cybersecurity

Project 1 Technical Brief

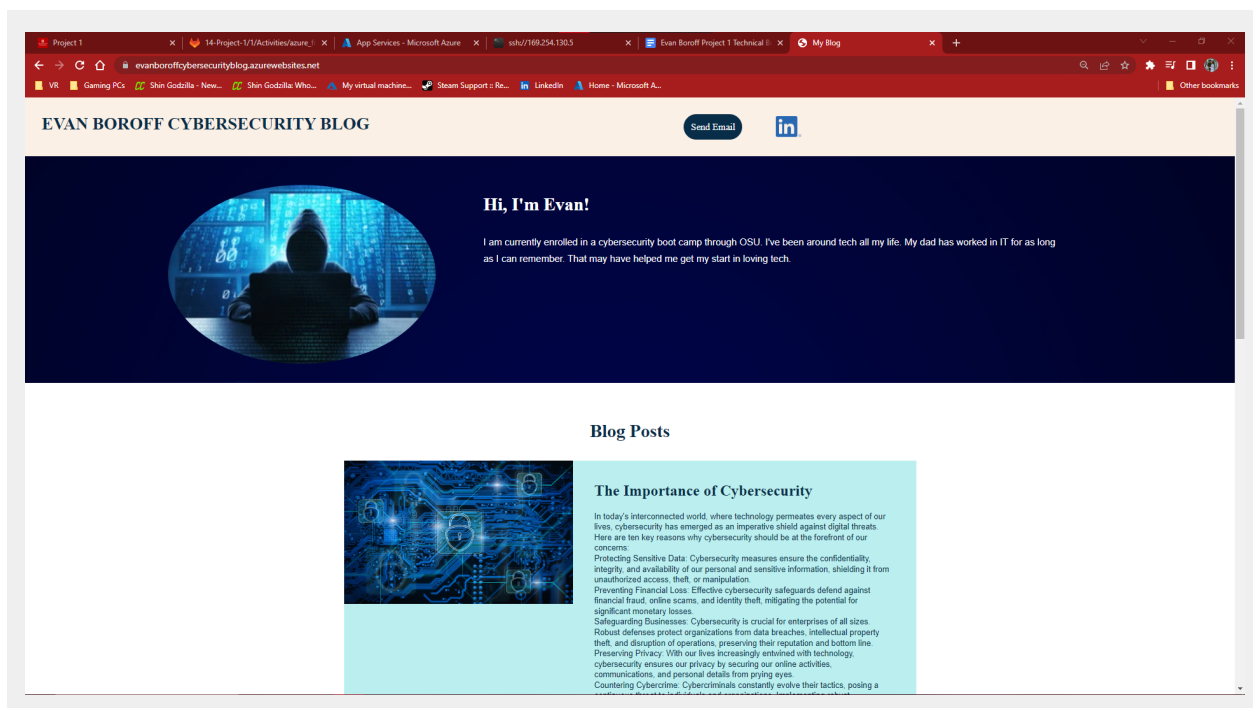
Make a copy of this document before you begin. Place your answers below each question. This completed document will be your deliverable for Project 1. Submit it through Canvas when you're finished with the project at the end of the week.


Your Web Application

Enter the URL for the web application that you created:

evanboroffcybersecurityblog.azurewebsites.net

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



	<p>continuous threat to individuals and organizations. Implementing robust cybersecurity measures helps combat the growing menace of hacking, ransomware, and other malicious activities.</p> <p>Ensuring National Security: Cyberattacks targeting critical infrastructure, government institutions, or military systems can have severe repercussions. Strong cybersecurity defenses are essential to protect a nation's security and stability.</p> <p>Fostering Trust: Cybersecurity builds trust in the digital ecosystem. When individuals and businesses feel confident in the security of their online interactions, they are more likely to engage in e-commerce, digital transactions, and collaborative endeavors.</p> <p>Defending Against Espionage: Cyber espionage, whether carried out by state-sponsored actors or corporate rivals, poses a significant threat to national interests and commercial competitiveness. Robust cybersecurity measures can help thwart these attacks.</p> <p>Enhancing Resilience: Cybersecurity is not just about prevention but also about preparedness. By implementing comprehensive incident response plans and backup strategies, organizations can swiftly recover from cyber incidents and minimize damage.</p> <p>Empowering Innovation: Robust cybersecurity measures foster an environment that encourages innovation and technological advancement. When individuals and businesses feel secure, they are more likely to embrace emerging technologies and explore new possibilities.</p> <p>In conclusion, cybersecurity is an essential aspect of our digital lives. It protects our personal information, preserves our privacy, and ensures the smooth functioning of businesses and nations. By investing in robust cybersecurity measures, we can navigate the digital landscape with confidence and embrace the limitless potential of our interconnected world.</p>
	<h3>The Art of Cryptography: Securing Our Digital World</h3> <p>In today's interconnected world, where data flows through networks and privacy is of utmost importance, cryptography emerges as a vital tool in safeguarding our digital lives. Let's delve into the fascinating world of cryptography and its significance.</p> <p>Cryptography, derived from the Greek words "kryptos" (hidden) and "graphein" (to write), is the science of encoding and decoding information to ensure confidentiality, integrity, and authenticity.</p> <p>Encryption lies at the heart of cryptography, where plaintext messages are transformed into ciphertext using mathematical algorithms. This process ensures that unauthorized individuals cannot access the sensitive information.</p> <p>Symmetric and asymmetric cryptography are the two main types of cryptographic systems. Symmetric encryption relies on a shared secret key, while asymmetric encryption uses a pair of keys: a public key for encryption and a private key for decryption.</p> <p>The security of modern cryptographic systems is based on the difficulty of solving complex mathematical problems. Prime factorization, discrete logarithms, and elliptic curve cryptography are among the mathematical concepts employed in encryption algorithms.</p> <p>Cryptography not only provides confidentiality but also guarantees data integrity. Hash functions play a pivotal role in this aspect, as they generate fixed-length</p>
	<p>"digests" that can verify if data has been tampered with.</p> <p>The concept of digital signatures is another critical application of cryptography. By using public key cryptography, individuals can sign their digital documents, providing assurance of authenticity and non-repudiation.</p> <p>Cryptography is employed not only in securing communication channels but also in various other areas. It ensures secure online transactions, protects sensitive personal information, and facilitates secure remote access to networks.</p> <p>Quantum cryptography, an emerging field, aims to harness the laws of quantum mechanics to create unbreakable cryptographic systems. Quantum key distribution, for example, enables the secure exchange of encryption keys using quantum properties.</p> <p>While cryptography provides a robust defense against most attacks, it is not infallible. Cryptanalysis, the study of breaking cryptographic systems, continues to push the boundaries of security, necessitating constant innovation in encryption algorithms.</p> <p>As our reliance on digital systems grows, the significance of cryptography cannot be overstated. It empowers individuals, organizations, and governments to maintain privacy, protect sensitive information, and foster trust in the digital realm.</p> <p>In conclusion, cryptography is the cornerstone of modern cybersecurity, ensuring that our digital interactions remain secure. By leveraging mathematical principles and innovative techniques, cryptography plays a pivotal role in safeguarding our data and preserving the integrity of our digital world.</p>

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?

EvanBoroffCyberSecurityBlog

Networking Questions

1. What is the IP address of your webpage?

20.205.69.80

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

Hong Kong

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

```
evan [ ~ ]$ nslookup https://evanboroffcybersecurityblog.azurewebsites.net/  
Server:         168.63.129.16  
Address:        168.63.129.16#53  
  
** server can't find https://evanboroffcybersecurityblog.azurewebsites.net/: NXDOMAIN
```

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?

PHP 8.2 works backend

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

Two directories called “css” and “images.”

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

Frontend

Day 2 Questions

Cloud Questions

1. What is a cloud tenant?

The sharing of computing resources in a private or public environment that is isolated from other users and kept secret.

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

It determines whether a given security principal, namely a user, application or user group, can perform different operations on Key Vault secrets, keys, and certificates.

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

Keys: Supports multiple key types and algorithms, and enables the use of software-protected and HSM-protected keys.

Secrets: Provides secure storage of secrets, such as passwords and database connection strings.

Certificates: Supports certificates, which are built on top of keys and secrets and add an automated renewal feature.

Cryptography Questions

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

They are simple to modify or customize.

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

They do not provide any trust value.

3. What is a wildcard certificate?

A single certificate with a wildcard character in the domain name field.

This allows the certificate to secure multiple sub domain names pertaining to the same base 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.

To protect users from vulnerability.

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 error is returning. We are using a trusted certificate by Microsoft.

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

March 9, 2023 at 10:05:55 PM to March 3, 2024 at 10:05:55 PM

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

Yes, Microsoft Azure TLS Issuing CA 02

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

Yes, *.azurewebsites.net

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

Yes.

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

Microsoft Azure TLS Issuing CA 02

Day 3 Questions

Cloud Security Questions

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

Both are layer 7, or HTTP/HTTPS, load balancers.

Front Door is non-regional and Application Gateway is regional.

2. A feature of the Web Application Gateway and Front Door is “SSL Offloading.” What is SSL offloading? What are its benefits?

SSL offloading is the removal of the SSL based encryption from incoming traffic that a web server receives to relieve it from decryption of data.

3. What OSI layer does a WAF work on?

Layer 7, Application

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

Directory Traversal - A web security vulnerability that allows an attacker to read arbitrary files on the server that is running an application.

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?

No, because my website requires a certificate read for every user looking to access the website.

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?

No, because, while the user may be in Canada, who's to say that the user isn't using a VPN to access sites that aren't accessible in Canada?

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

a. Azure Front Door enabled

✔ Azure Front Door is enabled for your web app. Configure your Front Door at the link below. To remove Front Door from this web app, you must remove app service from the Front Door's origins or the classic Front Door's backend.

Name ↑↓	Type ↑↓	Endpoint name ↑↓	Origin group name ↑↓
project1-FrontDoor	Azure Front Door Premium	Project1-FD-bbdmdzcbcbgjak.z0...	Red-Team

b. A WAF custom rule

Priority	Name	Rule type	Action	Status
100	Project1rule	Match	⌛ Block	✔ Enabled

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**