Implementing Cybersecurity Principles

Introduction and/or Background

Nerdify Enterprises wants to begin marketing Security as a Service (SaaS) to businesses who have customer data to secure - starting with their dental office, Smiles for Miles. As a member of the Nerdify team, you need to spend some time brushing up on your security.

Objectives

In this lab the student will:

- Define the principles of Cybersecurity
- Implement principles of Cybersecurity to secure a browser

Equipment/Supplies Needed

- Microsoft Edge (Included in Windows 10/11 installation)
- Windows 10 Virtual Machine or your personal PC
    - If you use Microsoft Edge on your personal PC, you may not want to change the settings. In this case, use a virtual machine.
- Microsoft Word or Google Docs
- "Five Pillars of Information Security" Interactive HERE

Assignment

Define the principles of cybersecurity

1. Review the "Five Pillars of Information Security" interactive linked in the Equipment/Supplies section.

2. In a word document, identify and describe the three elements of the CIA Triad.

3. Describe why each of the three principles are important.

4. Describe a security mechanism that could be used for each of the three elements. *For example: A backup generator could be used to ensure availability of devices in the case of a power outage.*

5. For each of the following scenarios, identify which principle of the CIA triad has be violated:

Principle Violated	**Scenario**
	When Clint leaves the room, Wade unplugs his router so he doesn't have WiFi access.
	Pepper uses a cleverly placed USB device with a keylogger to capture Tony's online banking password.
	Wanda rewrites the magnetic strip on a gift card to modify the amount from $10 to $100.
	Peter is attempting to work on his Financial Aid application online, when the website crashes and he is unable to turn in his documents by the midnight deadline.
	Mary's doctor pulls up her medical records, but her allergy to lactose is no longer included in her patient file.
	While Master Wong is away, Stephen manages to steal a book of ancient texts from the Kamar-Taj library.

6. Another pillar of Information Security relates to Authentication. Give three examples of forms of authentication. For example: a username and password.

7. The final of the Five pillars of Information Security relates to Non-repudiation. To "repute" something means to deny a message's validity; Non-repudiation would be assurance that the message was valid and that cannot be disputed.

   A great real-world example of this comes from USPS Certified Mail. Read the article and answer the following questions regarding non-repudiation and this type of mailing service: https://www.postgrid.com/what-is-certified-mail/

   a. How does USPS Certified Mail provide proof that the message was sent? What kind of information is included in this proof?
   b. How does USPS Certified Mail provide proof that the message was successfully delivered? What kind of information is included in this proof?
   c. List three examples of when Certified Mail is used.
   d. Can Certified Mail be delivered without a signature?
   e. How does Certified Mail relate to the principle of non-repudiation?

Implement principles of cybersecurity to secure a browser

1. Open Microsoft Edge via the search or start menu.

2. In the top right corner of the browser window, click the three dots that indicate a menu is available. Click the settings gear icon.

3. Click the "Privacy, search, and services" label on the left side. Review the options in the right panel and choose one of these features to support Confidentiality, such as Tracking Prevention, Privacy, or Personalization & Advertising. Change applicable settings and take a screenshot.

4. Scroll down the same "Privacy, search, and services" menu and find the Security section. Click Manage Certificates and click the Trusted Root Certification Authorities, which are provided to support Integrity. Choose a certificate that has not expired and click the View button. Review the Certificate Information and take a screenshot that shows who issued the certificate and when it expires.

5. A common issue among end users is remembering passwords. Passwords that are simple are less secure, and passwords that are complex and hard to remember. It's not uncommon for users to get locked out of websites as they've forgotten their password or had too many unsuccessful attempts to login.

   Return to the three dots menu in the top right corner of the browser windows and click "Extensions", then click the link to Open Microsoft Edge Add-ons website. In the search bar, type "bitwarden" and click enter. Click the Get button to install the free Bitwarden Password Manager to support Availability of your websites that require a login. In the popup window, click Add Extension.

6. Read the introduction page and answer the following questions:
   a. Your vault contains the URL and which other two pieces of information for each website?
   b. Aside from Login information, what other three types of vault items can Bitwarden store?
   c. What keyboard shortcut autofills login information to a website?

Reflection

1. Take some time to research and review the browser Brave. What security features does Brave have?

2. Would you recommend Edge or Brave to your client, Smiles for Miles? Why?

Rubric

Criteria	Points
Criteria #1: Correct answers to question 2	2 points
Criteria #2: Correct answers to question 3	3 points
Criteria #3: Correct answer to question 4	3 points
Criteria #4: Correct answers to questions 5	18 points - 3 points each
Criteria #5: Correct answer to question 6	4 points
Criteria #6: Correct answers to question 7	30 points - 6 points each
Criteria #7: Screenshot(s) of browser confidentiality settings	5 points
Criteria #8: Screenshot(s) of browser integrity settings	5 points
Criteria #9: Screenshot(s) of browser availability settings	5 points
Criteria #10 Correct answers to question 6	15 points - 5 points each
Criteria #11: Submitted answers to reflection question 1	5 points
Criteria #12: Submitted answers to reflection question 2	5 points