Cybersecurity

Module 12 Challenge Submission File

Web Development

Make a copy of this document to work in, and then respond to each question below the prompt. Save and submit this completed file as your Challenge deliverable.

HTTP Requests and Responses

1. What type of architecture does the HTTP request and response process occur in?

```
Client-Server Model
```

2. What are the parts of an HTTP request?

```
1.request line
2. Header
3. White space
4. Request body
```

3. Which part of an HTTP request is optional?

```
Request body
```

4. What are the three parts of an HTTP response?

```
Status line
Headers
Response Body
```

5. Which number class of status codes represents errors?

```
400s & 500s
```

6. What are the two most common request methods a security professional encounters?

```
Get & Post
```

7. Which type of HTTP request method is used to send data?

```
Post
```

8. Which part of an HTTP request contains the data being sent to the server?

```
Request body
```

9. In which part of an HTTP response does the browser receive the web code to generate and style a webpage?

```
Response Body
```

Using curl

10. What are the advantages of using `curl` over the browser?

```
It can be used in the command line, without a GUI.
```

11. Which `curl` option changes the request method?

```
-X
```

12. Which `curl` option sets request headers?

```
-H
```

13. Which `curl` option is used to view the response header?

```
-I
```

14. Which request method might an attacker use to figure out what HTTP requests an HTTP server will accept?

```
The OPTIONS request method
```

Sessions and Cookies

15. Which response header sends a cookie to the client?

```
HTTP/1.1 200 OK
Content-type: text/html
Set-Cookie: cart=Bob

Set-Cookie
```

16. Which request header will continue the client's session?

```
GET /cart HTTP/1.1
Host: www.example.org
Cookie: cart=Bob

Cookie
```

Example HTTP Requests and Responses

Use the following sample HTTP request and response to answer the questions in this section:

HTTP Request

```
POST /login.php HTTP/1.1
Host: example.com
Accept-Encoding: gzip, deflate, br
Connection: keep-alive
Content-Type: application/x-www-form-urlencoded
```

Content-Length: 34
Upgrade-Insecure-Requests: 1
User-Agent: Mozilla/5.0 (Linux; Android 6.0; Nexus 5 Build/MRA58N) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/80.0.3987.132 Mobile Safari/537.36

username=Barbara&password=password

17. What is the request method?

POST

18. Which header expresses the client's preference for an encrypted response?

Upgrade-Insecure-Requests

19. Does the request have a user session associated with it?

No, there is no "Cookie" in the request headers

20. What kind of data is being sent from this request body?

Login Information

HTTP Response

HTTP/1.1 200 OK
Date: Mon, 16 Mar 2020 17:05:43 GMT
Last-Modified: Sat, 01 Feb 2020 00:00:00 GMT
Content-Encoding: gzip
Expires: Fri, 01 May 2020 00:00:00 GMT
Server: Apache
Set-Cookie: SessionID=5
Content-Type: text/html; charset=UTF-8
Strict-Transport-Security: max-age=31536000; includeSubDomains
X-Content-Type: NoSniff
X-Frame-Options: DENY
X-XSS-Protection: 1; mode=block

[page content]

21. What is the response status code?

```
200 OK
```

22. What web server is handling this HTTP response?

```
Apache
```

23. Does this response have a user session associated with it?

```
Yes, it is denoted in the Set-Cookie header.
```

24. What kind of content is likely to be in the [page content] response body?

```
The website the client request was asking for
```

25. If your class covered security headers, what security request headers have been included?

```
X-XSS-Protection
X-Frame-Options
X-Content-Type
Strict-Transport-Security
```

Monoliths and Microservices

26. What are the individual components of microservices called?

```
Containers
```

27. What is a service that writes to a database and communicates to other services?

```
MySQL
```

28. What type of underlying technology allows for microservices to become scalable and have redundancy?

```
Container Platform
```

Deploy and Test a Container Set

29. What tool can you use to deploy multiple containers at once?

```
Docker Compose
```

30. What kind of file format is required to deploy a container set?

```
.yml
YAML files
```

Databases

31. Which type of SQL query would you use to view all the information in a table called `customers`?

```
SELECT * FROM customers;
```

32. Which type of SQL query would you use to enter new data into a table? (You don't need a full query, just the first part of the statement.)

```
INSERT INTO
```

33. Why would you never run `DELETE FROM <table-name>;` by itself?

```
It would delete the entire table and all its data, and it may be hard to
recover that data.
```