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 based architecture
```

2. What are the parts of an HTTP request?

```
Request line, Headers, and Message Body
```

3. Which part of an HTTP request is optional?

```
Message Body
```

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

```
Status Line, Headers, and Message Body
```

5. Which number class of status codes represents errors?

```
400 class
```

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

```
GET and 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?

```
curl can provide detailed logs and be used in automation without user
interaction
```

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?

```
-V
```

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

```
OPTIONS
```

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
```

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

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

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: 1
```

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

```
No
```

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

```
Login credentials
```

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
```

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

```
Page configuration details
```

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

```
Strict-Transport-Security: max-age=31536000; includeSubDomains
```

Monoliths and Microservices

26. What are the individual components of microservices called?

```
Services
```

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

```
API
```

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

```
Load Balancer Technology
```

Deploy and Test a Container Set

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

```
Docker
```

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

```
.yml Yaml format
```

Databases

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

```
SELECT column_name 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 table_name (column_x, column_y) VALUES (value_1, value_2);
```

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

```
It will delete the entire table if there is no select statement
```

Optional Additional Challenge Activity: The Cookie Jar

Question 1: Did you see any obvious confirmation of a login? (Y/N)

```
[Enter answer here]
```

Question 2: How many items exist in this file?

```
[Enter answer here]
```

Question 3: Is it obvious that you can access the dashboard? (Y/N)

```
[Enter answer here]
```

Question 4: Look through the output where `Dashboard` is highlighted. Does any of the wording on this page seem familiar? (Y/N) If so, you should be successfully logged in to your Editor's dashboard.

```
[Enter answer here]
```

Question 5: What happens this time?

```
[Enter answer here]
```