



# 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?

The HTTP request and response process occur in a client-server architecture.

2. What are the parts of an HTTP request?

Request, Headers, Body

3. Which part of an HTTP request is optional?

The body is optional

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

Status, Headers, Body

5. Which number class of status codes represents errors?

HTTP's 400 status codes indicate client errors (400-499 range). Server transmits these codes to signal client mistakes or inability to fulfill requests, like "400 Bad Request" and "404 Not Found"

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

Post and Get

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 contains the informations of the webpage

## Using curl

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

Curl allows for command-line automation, scripting, and easy integration into various workflows.

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

The `-X` option

12. Which `curl` option sets request headers?

The `-H` option

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

The -i option

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

the OPTIONS 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-Cookies header send a cookie with the name CART

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

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

A cookie named CART with the name BOB allows the server to identify the user session.

## 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 user session provide

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

username=Barbara&password=password

## 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?

```
HTTP/1.1 200 OK
```

22. What web server is handling this HTTP response?

```
Server: Apache
```

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

```
Set-Cookie: SessionID=5
```

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

[page content] likely contains HTML, indicated by "Content-Type: text/html; charset=UTF-8" in the response.

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

```
Strict-Transport-Security: max-age=31536000; includeSubDomains  
X-Content-Type: NoSniff  
X-Frame-Options: DENY  
X-XSS-Protection: 1; mode=block
```

## Monoliths and Microservices

26. What are the individual components of microservices called?

Services: The core of microservices, housing business logic.  
APIs: Facilitate communication between microservices.

Databases: Store application data.

Schedulers: Control service execution and interaction.

Monitoring: Ensure proper functioning and collect data for analysis.

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

A service writing to a database and communicating with others is commonly known as a "API (application programming interface)"

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

Containerization with container orchestration

## 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?

Docker compose file, YAML format/ file

## 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-name> VALUES

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

It would delete all rows in the specific table

## 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]