



# 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?

process occurs in a client-server architecture.

2. What are the parts of an HTTP request?

Request Line, Request Headers, and Request Body.

3. Which part of an HTTP request is optional?

Request Body: This part is optional and typically used for sending data, such as form data, in POST requests.

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

Status Line, Response Headers, and Response Body.

5. Which number class of status codes represents errors?

Status codes in the 400 class represent errors in HTTP responses. Ex: 400, 401, 403, 404.

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 method is commonly used to send data in an HTTP request.

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

The data being sent to the server in an HTTP request is typically included in the request body.

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

The response body of an HTTP response contains the actual web code

## Using curl

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

Command-Line Control, No Graphical Interface, Scripting and Automation and Customization.

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

`curl -X`

12. Which `curl` option sets request headers?

`curl -H`

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

```
curl -i
```

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

the HTTP 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
```

the "Set-Cookie" header.

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

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

the "Cookie" header.

## 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?

The request method is POST. POST /login.php HTTP/1.1

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?

username=Barbara&password=password. These fields are typically used for user authentication during a login process.

## 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. indicates that the request was successful

22. What web server is handling this HTTP response?

Apache

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

Yes, Set-Cookie: SessionID=5.

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

the HTML and text that makes up the webpage.

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

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

data service or a database service.

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

containerization and orchestration technologies. Docker for containerization and Kubernetes for orchestration.

## 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?

using Docker Compose, you'll need to create a Docker Compose file (usually named `docker-compose.yml`).

## 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 table_name (column1, column2, column3, ...) VALUES (value1, value2, value3, ...);
```

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

because it deletes all rows in the specified table without any conditions. This can result in the loss of all data in the table, which is typically not the intended action.

## Optional Additional Challenge Activity: The Cookie Jar

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

No

**Question 2:** How many items exist in this file?

4 in ryancookies.txt file

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

Not initially.

**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.

we can see all occurrences of the word `Dashboard` within the returned response body, showing us a successfully returned `index.php` session.

**Question 5:** What happens this time?

You need a higher level of permission. Sorry, you are not allowed to list users. warning page.