# Week 14 Web Development

#### HTTP Requests and Responses

Answer the following questions about the HTTP request and response process.

1. What type of architecture does the HTTP request and response process occur in? client/server architecture
2. What are the different parts of an HTTP request?

Request line, a request header, and a request body.

1. Which part of an HTTP request is optional?

The request body.

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

A status line, a response header, and usually a response body.

1. Which number class of status codes represents errors? 400s and 500s
2. What are the two most common request methods that a security professional will encounter? Post/Put
3. Which type of HTTP request method is used for sending data? Post/put
4. Which part of an HTTP request contains the data being sent to the server? body
5. In which part of an HTTP response does the browser receive the web code to generate and style a web page? Response body

#### Using curl

Answer the following questions about **curl**:

1. What are the advantages of using **curl** over the browser?
2. Which **curl** option is used to change the request method? -X
3. Which **curl** option is used to set request headers? -H
4. Which **curl** option is used to view the response header? --head
5. Which request method might an attacker use to figure out which HTTP requests an HTTP server will accept? -X OPTIONS \*

#### Sessions and Cookies

Recall that HTTP servers need to be able to recognize clients from one another. They do this through sessions and cookies.

Answer the following questions about sessions and cookies:

1. Which response header sends a cookie to the client? Set-Cookie
2. HTTP/1.1 200 OK
3. Content-type: text/html
4. Set-Cookie: cart=Bob
5. Which request header will continue the client's session? Cookie
6. GET /cart HTTP/1.1
7. Host: www.example.org
8. Cookie: cart=Bob

#### Example HTTP Requests and Responses

Look through the following example HTTP request and response and answer the following questions:

**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

1. What is the request method? Post
2. Which header expresses the client's preference for an encrypted response? Accept-Encoding
3. Does the request have a user session associated with it? yes
4. What kind of data is being sent from this request body? Username and Password in clear text

**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]

1. What is the response status code? 200
2. What web server is handling this HTTP response? Apache
3. Does this response have a user session associated to it? Yes
4. What kind of content is likely to be in the [page content] response body? The site page
5. If your class covered security headers, what security request headers have been included? X-Content-Type, X-Frame-Options, X-XSS-Protection

#### Monoliths and Microservices

Answer the following questions about monoliths and microservices:

1. What are the individual components of microservices called? Services
2. What is a service that writes to a database and communicates to other services? Apis
3. What type of underlying technology allows for microservices to become scalable and have redundancy? Load balancing

#### Deploying and Testing a Container Set

Answer the following questions about multi-container deployment:

1. What tool can be used to deploy multiple containers at once?

Docker

1. What kind of file format is required for us to deploy a container set?

yaml

#### Databases

1. Which type of SQL query would we use to see all of the information within a table called **customers**?

Select \* from customers;

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

Insert <values> into <table>

1. Why would we never run **DELETE FROM <table-name>;** by itself?

It would delete all the records in the table