### **Questions**

Before you work through the questions below, please create a new file and record your answers there. This will be your homework deliverable.

#### **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? It occurs in the webserver.
2. What are the different parts of an HTTP request? The three parts of an http request is the request line, body and the header.
3. Which part of an HTTP request is optional? The body is the optional part of an http request.
4. What are the three parts of an HTTP response? The three parts of an HTTP response are the status line, body and header
5. Which number class of status codes represents errors? The staus class for errors is 400-500.
6. What are the two most common request methods that a security professional will encounter? The two most common request are GET and Post.
7. Which type of HTTP request method is used for sending data? The HTTP request method for sending data is the POST.
8. Which part of an HTTP request contains the data being sent to the server? The part of the HTTP request that contains the data being sent to the server is the Body.
9. In which part of an HTTP response does the browser receive the web code to generate and style a web page? The body of the response is what contains the web code to generate the style of the web page.

#### **Using curl**

Answer the following questions about curl:

1. What are the advantages of using curl over the browser? BThe advantage of using curl over browser is that is a very flexible command that can do things more complex than a browser can.
2. Which curl option is used to change the request method?

The option to customise a curl request is -X.

1. Which curl option is used to set request headers? The curl option to set a request header -H.
2. Which curl option is used to view the response header? The curl option to view only the response header is -I.
3. Which request method might an attacker use to figure out which HTTP requests an HTTP server will accept?   
   The request method used is -X OPTIONS to view the request types the http server will accept.

#### **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:

Which response header sends a cookie to the client?  
  
 HTTP/1.1 200 OK

Content-type: text/html

1. Set-Cookie: cart=Bob  
   Set-cookie

Which request header will continue the client's session?  
  
 GET /cart HTTP/1.1

Host: www.example.org

1. Cookie: cart=Bob  
   Cookie

#### **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? Upgrade-Insecure-Requests: 1
3. Does the request have a user session associated with it? No
4. What kind of data is being sent from this request body? A username and 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]

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 with it? SessionID=5
4. What kind of content is likely to be in the [page content] response body? The response would include Content-Type: text/html; charset=UTF-8.
5. 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**

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

#### **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-Compose
2. What kind of file format is required for us to deploy a container set? YAMEL

#### **Databases**

1. Which type of SQL query would we use to see all of the information within a table called customers?SELECT \* FROM customerts
2. 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 INTO
3. Why would we never run DELETE FROM <table-name>; by itself? Because it will delete everything in that table.