#### **CSpencer**

HW 14

12/22/2020

#### **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?  
     
   The HTTP request and response occur in Client-Server Architecture.
2. What are the different parts of an HTTP request?  
     
   - Request line (method)   
   - Header  
    - Request body
3. Which part of an HTTP request is optional?

Request body

1. What are the three parts of an HTTP response?  
     
   Status line  
   Header  
   Body
2. Which number class of status codes represents errors?  
     
   400 - client side  
   500 - server side
3. What are the two most common request methods that a security professional will encounter?  
     
   Post  
   Get
4. Which type of HTTP request method is used for sending data?  
     
   Post
5. Which part of an HTTP request contains the data being sent to the server?  
     
   Request line
6. 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?  
     
   Ensures web servers don’t leak sensitive data through HTTP responses  
   Verify servers only respond to certain types of requests  
   Help find vulnerabilities on a server
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?

#### **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:

15. Which response header sends a cookie to the client?  
  
 GET /cart HTTP/1.1

Host: [www.example.org](http://www.example.org)  
Cookie: cart=Bob

16. Which request header will continue the client's session?  
  
 HTTP/1.1 200 OK

Content-type: text/html  
Set-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?  
     
   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?

Login credentials (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 - Successful

1. What web server is handling this HTTP response?  
     
   Apache
2. Does this response have a user session associated to it?  
     
   Yes. SessionID = 5
3. What kind of content is likely to be in the [page content] response body?

Text and html

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

X-Content-Type: NoSniff

X-Frame-Options: DENY  
X-XSS-Protection: 1; mode=block

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#### **Monoliths and Microservices**

Answer the following questions about monoliths and microservices:

1. What are the individual components of microservices called?  
     
   Front-end server  
   Back-end server  
   API  
   Database
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?  
     
   Containerization

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

#### **Databases**

1. Which type of SQL query would we use to see all of the information within a table called customers?  
     
   SELECT \* FROM customers
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?  
     
   A delete statement without conditions could delete the entire table.