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?

   Client-server architecture. Requests are made from the client to the server then back to the client

2. What are the different parts of an HTTP request?

   Request line/header/body

3. Which part of an HTTP request is optional?

   Request body

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

   Status line, response headers/body

5. Which number class of status codes represents errors?

   400 & 500

6. What are the two most common request methods that a security professional will encounter?

   Post & get

7. Which type of HTTP request method is used for sending data?

   Post

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

   The request body

9. 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:

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

    Curl can be repeated, automated & edited while being used

11. Which curl option is used to change the request method?

    curl -x

12. Which curl option is used to set 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 which HTTP requests an HTTP server will accept?

    get or 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:

Which response header sends a cookie to the client?

HTTP/1.1 200 OK
Content-type: text/html

15. Set-Cookie: cart=Bob

    set-cookie send cookie to client

Which request header will continue the client's session?

GET /cart HTTP/1.1
Host: www.example.org

16. Cookie: cart=Bob

    cookie will save/continue the client's sessions

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

17. What is the request method?

    Post

18. Which header expresses the client's preference for an encrypted response?

    Content-Type: application/x-www-form-urlencoded

19. Does the request have a user session associated with it?

    No

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

    Login attempt

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

22. What web server is handling this HTTP response?

    Apache

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

    Yes, cookie sessionID=5

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

    text/web code

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

    Strict transport security or XSS protection

Monoliths and Microservices

Answer the following questions about 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?

    an API service

28. 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:

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

    Docker, docker-compose

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

    .yaml, .yml

Databases

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

    Select *from customers

32. 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, INSERT INTO [columns] VALUES [values]

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

    This will recursively delete all values in the selected rows and deletes all tables