#### **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?

* **HTTP request and response processes occur in the Client-Server Architecture**

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

* **The different parts of an HTTP request are the Request Line, Request Headers, and Request Body**

1. Which part of an HTTP request is optional?

* **The Request Body of the HTTP is optional**

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

* **Three parts of the HTTP response are the Headers, Status Line, and Body**

1. Which number class of status codes represents errors?

* **The 400 range represents status code errors**

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

* **The two most common request methods that a security professional will encounter are the GET and POST**

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

* **The POST request is the request method to send data**

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

* **The Request Body is the HTTP request that contains data being sent to the server**

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

* **The Response Body is the part of the HTTP that the browser receives the web code to generate and style a web page**

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#### **Using curl**

Answer the following questions about curl:

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

* **Curl is widely used because of its ability to be flexible and complete complex tasks. For example, you can use Curl for things like user authentication, HTTP post, SSL connections, proxy support, FTP uploads, and more! You can also do simple things with Curl, such as download web pages and web images. https://blog.pair.com/2018/01/26/curl-description-basic-use-cases/**

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

* **The -X is the Curl option to change the request method**

1. Which curl option is used to set request headers?

* **The -H is the Curl option to set request headers**

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

* **The -l is the Curl option to view the response header**

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

* **An attacker would use the Options method to figure out which HTTP request 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:

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

Content-type: text/html

1. Set-Cookie: cart=Bob

* **Set-Cookies HTTP/1.1 200 OK**
* **Content-type: text/html Set-Cookie: cart=Bob**

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

Host: www.example.org

1. Cookie: cart=Bob

* **GET /Cart HTTP/1.1**
* **Host:**[**www.example.org**](http://www.example.org)
* **Cookie: cart=Bob**
* **‘Connection: keep-alive’**

#### **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**

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

* **Upgrade-Insecure-Request: 1**

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

* **No it does not**

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

* **The data being sent from this request are Login Credentials**

**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**

1. What webserver is handling this HTTP response?

* **Apache Webserver**

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

* **Yes, the user SessionID=5**

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

* **It is the page configuration**

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

* **Strict-Transport-Security: max-age=31536000; includeSubDomains**

#### **Monoliths and Microservices**

Answer the following questions about monoliths and microservices:

1. What are the individual components of microservices called?

* **The individual components of microservices are called Services**

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

* **API’s are the services that write to a database and communicate to other services**

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

* **Load Balancer Technology allows for microservers to become scalable and to have redundancy**

#### **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?

* **A Docker can be used to deploy multiple containers at once**

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

* **A YAML (.yml) format is required to deploy a container set**

#### **Databases**

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

* **The SQL query “SELECT column\_name FROM customers” would be used to see all of the information within a table**

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.)

* **The SQL query “INSERT INTO table\_name (column\_1, column\_2, column\_3) VALUES (value\_1, value\_2, value\_3); would be used to enter new data into a table**

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

* **We would never run DELETE FROM <table-name> by itself because it would delete the whole table**