

Intro to Cookies and Authentication

Andrew Benson – CrashCourse 2014 - ScottyLabs

Overview

- What are cookies
- What are cookies used for
- How are cookies sent between computers
- Cookie Manipulation
- Hashing
- Writing a web server that defends against cookie manipulation

What are HTTP/web/browser cookies?

- “a small piece of data sent from a website and stored in a user's web browser while the user is browsing that website” – Wikipedia
- Up to 4KB, but usually way smaller
- Servers send you cookies, your browser sends them back
- Often represents “state”

Example cookie from Wikipedia:

mediaWiki.user.sessionId=P3kjMWM0ER6tUzafXRFWMXjWZOnMYQVV



What can you do with cookies?

- Login and Authentication
- Shopping carts
- Ad-tracking
- Store temporary user preferences
- Store data quickly if it's not worth pinging a database

How are cookies sent? Usually through HTTP

GET / HTTP/1.1

Host: en.wikipedia.org

...

Cookie: GeoIP=US:Pittsburgh:40.4439:-79.9561:v4;uls-previous-languages=["en"];mediaWiki.user.sessionId=P3kjMWM0ER6tUzafXRFWMXjWZOnMYQVV

...



Client Computer



Wikipedia Server

HTTP/1.1 200 OK

...

Set-Cookie: GeoIP=US:Pittsburgh:40.4439:-79.9561:v4

Set-Cookie: uls-previous-languages=["en"];

Set-Cookie: mediaWiki.user.sessionId=P3kjMWM0ER6tUzafXRFWMXjWZOnMYQVV

...

Examples of Manipulating Cookies

JavaScript API

- document.cookie
- What more do you want?

Ex:

```
console.log(document.cookie); // prints JavaScript-accessible cookies  
document.cookie = "KEY=VALUE"; // creates or replaces the cookie  
                                with key KEY and value VALUE
```

But you should just use the web developer tools usually...

Hashing

- “one-way” function that converts something into a long string of characters, from which it is (in theory) impossible to get the original string

Ex)

```
hashlib.sha256("bacon").hexdigest()  
='9cca0703342e24806a9f64e08c053dca7f2cd90f10529af8ea872afb0a  
0c77d4'
```


Next on the schedule

6 PM

WEH 5415 Dinner

6:30 PM

WEH 5302 [Intro to Web Security](#) | Ryan Flood

WEH 5403 [Intro to HTML/CSS](#) | Oscar Bezi

WEH 5409 [Advanced Unity](#) | Alex Moser