Web security: Lab 2 and Context

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Looking Forward

• **Today:** Introduction to Lab 2 + related concepts
• **Wednesday & Friday:** More web security

• Lab #2 out; due **5/19**
• Final Project Deadline #1 due **Friday**

• **Section this week:** More lab 2 and clickjacking
Same-Origin Policy (Cookies)

- **For cookies:** Only code from same origin can read/write cookies associated with an origin.
  - Can be set via Javascript (`document.cookie=...`) or via `Set-Cookie` header in HTTP response.
  - Can narrow to subdomain/path (e.g., `http://example.com` can set cookie scoped to `http://account.example.com/login`.)
  - **Secure cookie:** send only via HTTPS.
  - **HttpOnly cookie:** can’t access using JavaScript.
Same-Origin Policy (Cookies)

- Browsers automatically include cookies with HTTP requests.
- **First-party cookie**: belongs to top-level domain.
- **Third-party cookie**: belongs to domain of embedded content.

![Diagram showing Same-Origin Policy](image-url)
**XSS: Cross-Site Scripting**

**Idea:** Place user-provided data in the page.
- Makes page more interactive and personal.

**Threat:** Improperly used data can be interpreted as code.

**Solutions?**
- Sanitize/validate input. (e.g., htmlspecialchars())
- Browser detection/prevention.
Server Side Scripts Review

• Before a webpage is sent to you, code is executed by the server
• Can be use to set and read cookies for authentication
• You will need a basic script to receive captured cookies
• We will use PHP
Lab 2
Overview

• Pikachu, Meowth, and Cookies
  – XSS; Today

• Jailbreak
  – SQL Injection; Today if time

• Hack your 4.0!
  – Wednesday or Friday
Lab 2 XSS

- Give the TAs (codered.cs) a link with a XSS vulnerability.
- TAs will ‘visit’ this link, and cookie will be stolen.
- The process of stealing cookie involves sending it to a place you control.
- Save the cookie, read it, and use it to log in
Tools

• Web browser (Firefox or Chrome)
• Cookie editing extension (Firebug for Firefox)
• A php script on homes.cs to capture cookies
• (see lab details)
Lab 2 XSS

Attacker (you) → 1. post malicious form

2. Malicious submission stored

3. submit link to stored submission

4. unintended access; steal cookie

5. Save stolen cookie in browser

6. Login with cookie

homes.cs

codered.cs