Access Web Apps with Burp Suite

Cybersecurity

Web Vulnerabilities Day 1

Today’s Objectives

By the end of class, you will be able to:

- □ Configure Burp Suite and Foxy Proxy.
- □ Use Burp Repeater to modify and replay requests.
- □ Use Burp Intruder to script a series of requests.

OWASP
[The Open Web Application Security Project]

The OWASP Top 10 is an annual list of the year’s most significant vulnerabilities.

The OWASP Top 10

Injection: Users "trick" an application into executing commands/code

Broken Authentication: A user's identity is compromised

Sensitive Data Exposure: A user's data is improperly secure (e.g., weak or no encryption is used; etc.)

XML External Entities: A user is able to upload a malicious XML file

Broken Access Control: A user is able to access unauthorized resources

The OWASP Top 10

Security Misconfigurations: Use of weak or default passwords; default scripts; error messages; etc.

Cross-Site Scripting (XSS): A user is able to insert malicious JavaScript into a web page.

Insecure Deserialization: Exploitation of the process by which an application converts a byte stream into an object within the application runtime.

Components with Known Vulnerabilities: Using insecure libraries, components, etc.

Insufficient Logging/Monitoring: Failure to keep adequate logs makes it difficult to detect a breach after it's occurred.

DVWA (Damn Vulnerable Web Application) is an intentionally vulnerable web application, specifically designed to facilitate the study of OWASP Top 10.

Activity: Getting Familiar with OWASP

In this exercise you will research the categories of vulnerabilities featured in the OWASP Top 10.

Activities/Stu_OWASP/README

Suggested Time:
15 Minutes

Launching DVWA // Configuring Burp Suite

Introduction to Burp Suite

Burp Suite is a collection of tools used to test web applications.

Detecting vulnerabilities while testing web applications involves:

- Determining how servers process user-submitted data
  (to see if you can send a shell command to the server, or if it "cleans" user submissions first)
- Sending large numbers of requests over and over
  (to brute-force a login form)
- Encoding/Decoding data in URLs
  (to send a complicated exploit through a URL)

Burp Suite Tools

Of the nine tools featured in Burp Suite, we'll focus on the following four:

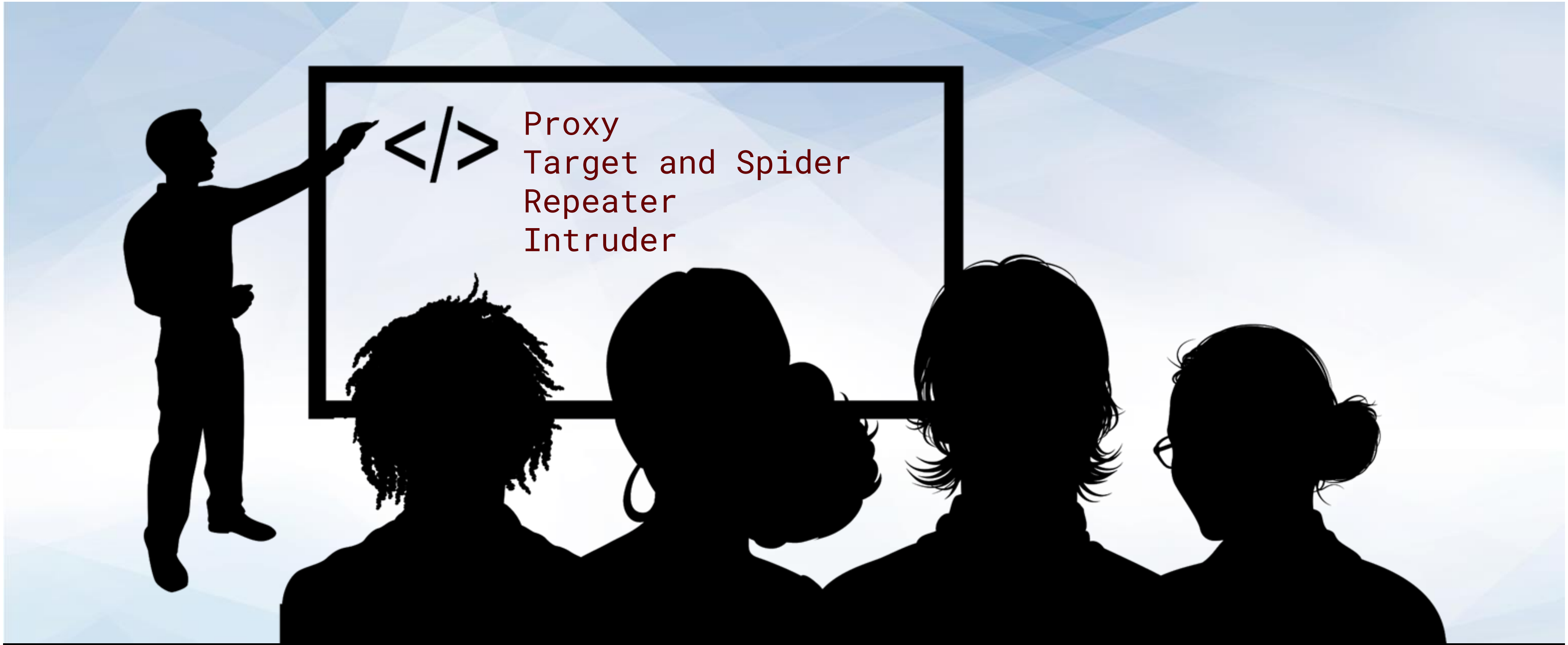
- HTTP Proxy: Intercepts requests from the browsers
- Spider: Generates maps of the files and folder of a given site.
- Repeater: Edit and re-send a given request, with different parameters each time.
- Intruder: Script resending of requests

Activity: Validating Installs

In this exercise you will verify and launch your Burp Suite configuration and lab set-up.

Activities/Stu_Setting_Up/README

Suggested Time:
7



Proxy
Target and Spider
Repeater
Intruder

Instructor Demonstration

A Tour of Burp Suite

Activity: Site Maps and Spider

In this exercise you will enumerate the files and folders in DVWA with Burp’s Target and Spider tools.

Activities/Stu_Site_Enumeration/README

Suggested Time:
12

Replaying Requests with Repeater

Cookies and Sessions

Cookies can be used to modify a wbe applications behavior by changing user preferences, etc.

- HTTP is stateless: Servers can’t “remember” old requests.
- Cookies and sessions allow servers to circumvent this limitation.
- Cookies store information about the user’s web application instance in the browser.
- Sessions store information about the user’s web application instance on the server.

Cookies

Cookies are set by the server via the Set-Cookie response header.

Cookies are stored in the browser. That means: on the client machine. That means: not the server.

Example use cases for cookies:

- Setting the user’s preferred color scheme, language, or font.
- Storing the user’s shopping cart items.
- “Remembering” a user after login.

Sessions

Sessions are managed by the server.

Cookies and sessions solve the same conceptual problem (allowing web applications to persist information across request).

As a rule of thumb, sessions are often used for:

- Persisting more sensitive data
- Remembering a user’s authentication status.
- Storing sensitive information required by the application on the server instead of sending it on the network all the way to the client.

Fuzzing with Repeater

Pentesting requires testing how a server responds to different kinds of requests to different pages.

- Often testers will send the same request repeatedly, but change just one or two pieces at a time.
- Fuzzing is the process of changing the value of a parameter over a series of requests.
- Fuzzing is used to identify potential vulnerabilities in targets.
- Repeater and Intruder are common fuzzing tools.

Activity: Replaying Requests with Repeater

In this exercise you will use Burp Repeater to resend requests with different parameters and manipulate cookies to change an application’s behavior.

Activities/Stu_Repeater_and_Cookies/Solved/README

Suggested Time:

16

Burp Intruder

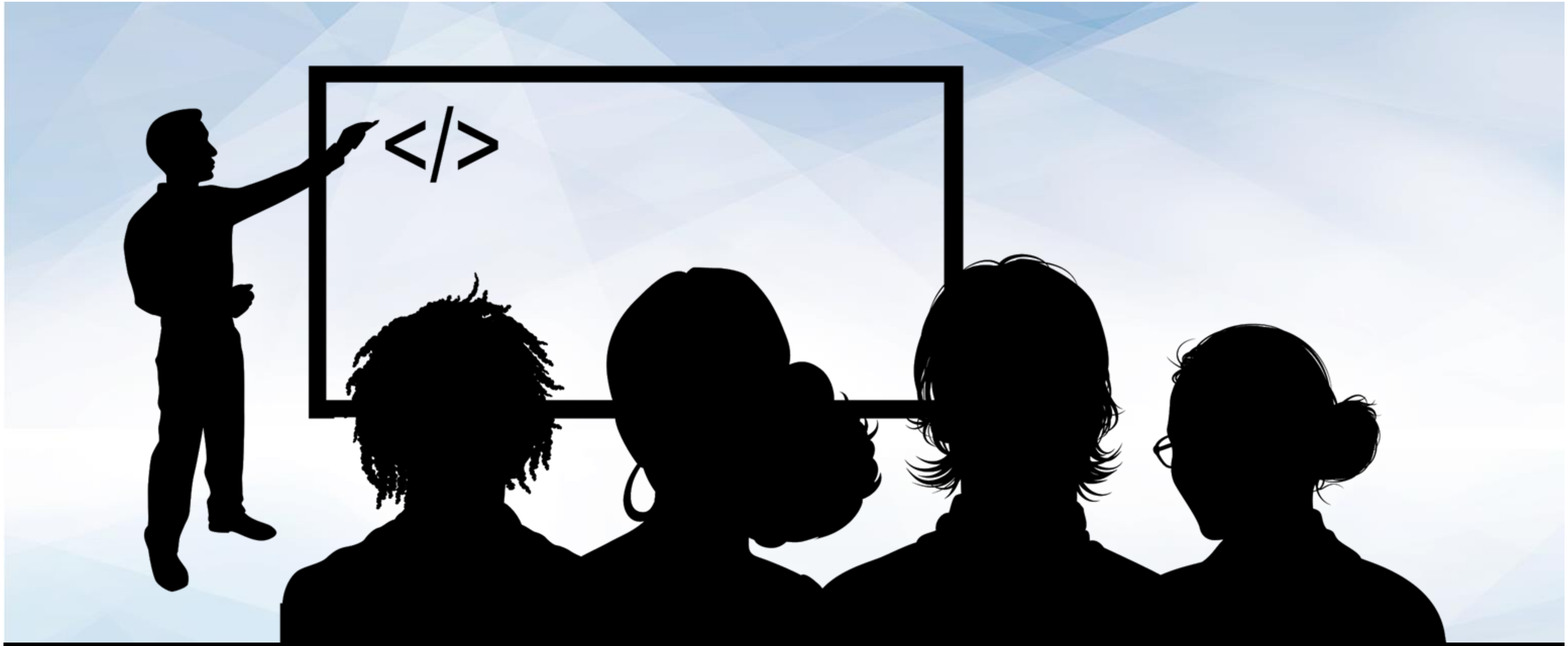
Burp Intruder is the tool used to send a large number of requests programmatically. In the following demo, we'll look at:

01 Intruder's Target Pane

02 The Positions Tab

03 Payloads

04 Analyzing Results



Instructor Demonstration

Activity: Brute Force Intrusion

In this exercise you will practice scripting request replays with Burp Intruder and launching brute-force attacks against weak login logic.

Activities/Stu_Login_Brute_Force/README

Suggested Time:
20

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