Cyber Security Workshop 2015
Cross Site Scripting(XSS)

KU Security Researchers

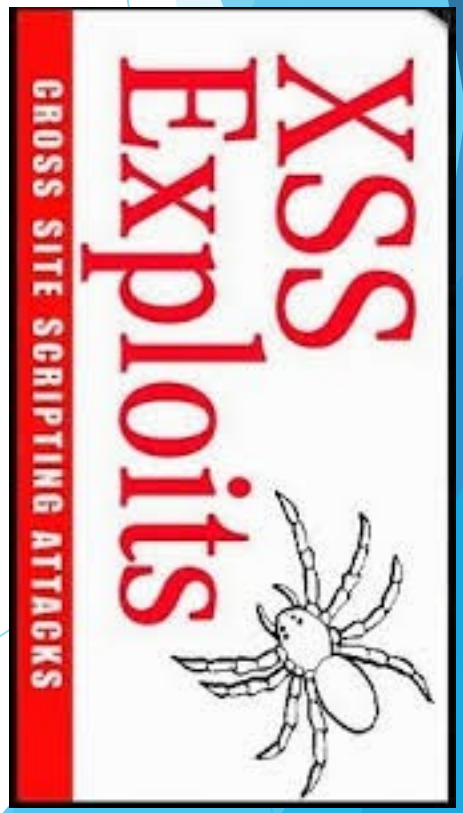
What is XSS?

How it works?

How is it done?

Detect if you are vulnerable?

Prevention



What is XSS?

- Type of injection in which malicious scripts are injected into the site
- this occurs when data is included to dynamic content without validation
- Not only server is vulnerable but, the user of the web application are vulnerable
- Attacker could retrieve cookies, session tokens, other sensitive information from the user’s browser, false advertising, changing uses contents, phishing attacks
- Types:
  - Reflected XSS / Non-Persistent
  - Stored XSS / Persistent
  - DOM Bases XSS

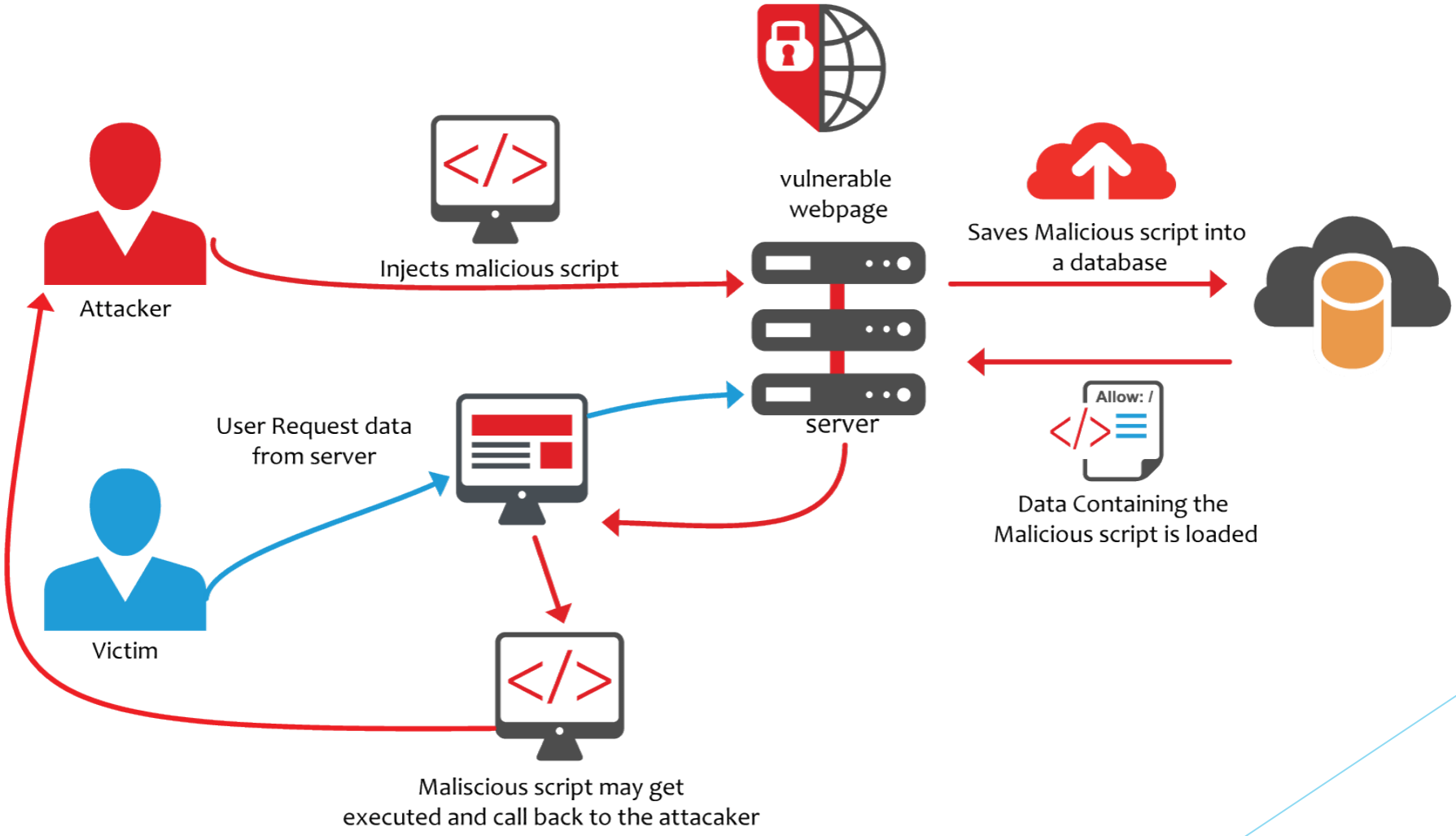
Where untrusted data is used

Data Persistence	XSS	Server	Client
	Stored	Stored Server XSS	Stored Client XSS
	Reflected	Reflected Server XSS	Reflected Client XSS

- DOM Based XSS is a subset of Client XSS (where the data source is from the DOM only)
- Stored vs. Reflected only affects the likelihood of successful attack, not the nature of vulnerability or the most effective defense

Src: https://www.owasp.org/images/c/c6/Server-XSS_vs_Client-XSS_Chart.jpg

How does it work?



How its done?

- Reflected XSS
  - Injected script is directly reflected off the webserver

We will be using DVWA to test the vulnerabilities…

Demo…

How its done? Contd...

- Stored XSS
  - The malicious script is stored in the database permanently on the target servers, like in database

Demo...

Advanced XSS

- Encode XSS script with different encoding methods say, Base64

Detect if you are vulnerable

- Developer should review detailed manual of the input and output handles in the code, where HTTP request are likely to occur.
- See is form validations are done in the client side or server side

Prevention

- Never insert untrusted data except in allowed locations
- Never accept JS code from untrusted source
- HTML/CSS/URL escape before inserting untrusted data into HTML elements
- Output encoding before inserting into HTML elements
  - Htmlspecialchars(), htmlentities()

Src: https://www.owasp.org/index.php/XSS_%28Cross_Site_Scripting%29_Prevention_Cheat_Sh
RULE_.230_-_Never_Insert_Untrusted_Data_Except_in_Allowed_Locations