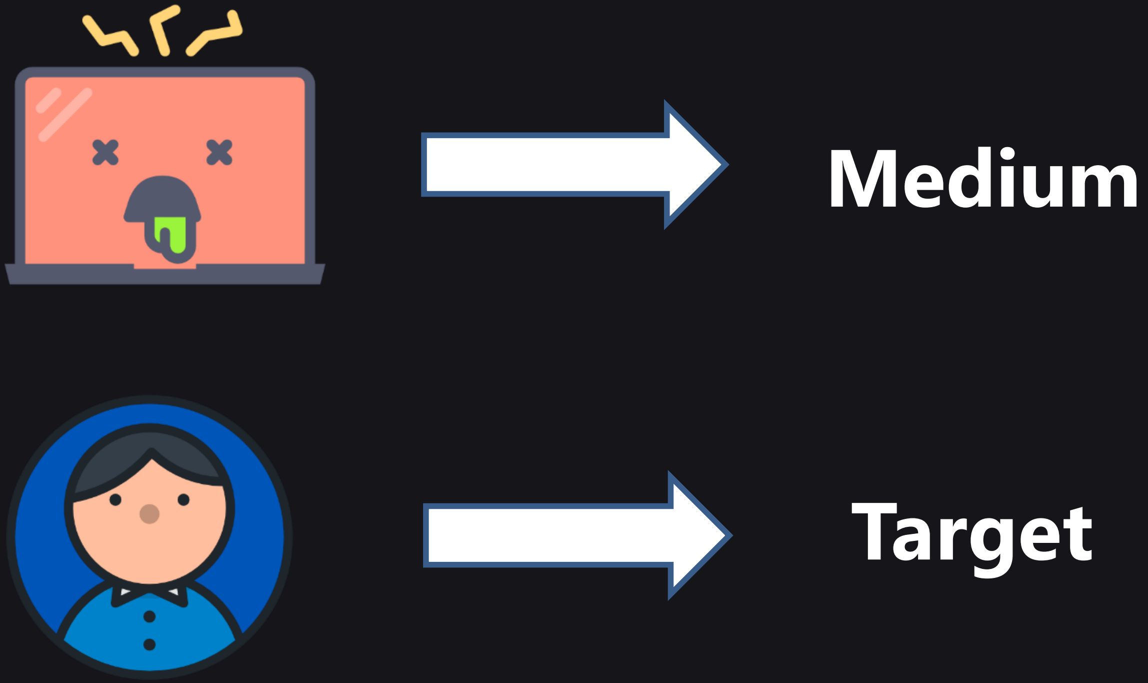
MISC

Cross-Site Scripting (XSS)

accenture

WHAT IS CROSS-SITE SCRIPTING

- Form of code injection (Typically JavaScript)
- Vulnerable web applications are used to exploit users



Medium

Target

HOW DOES XSS WORK?

1. Websites and web apps have multiple channels to take user input

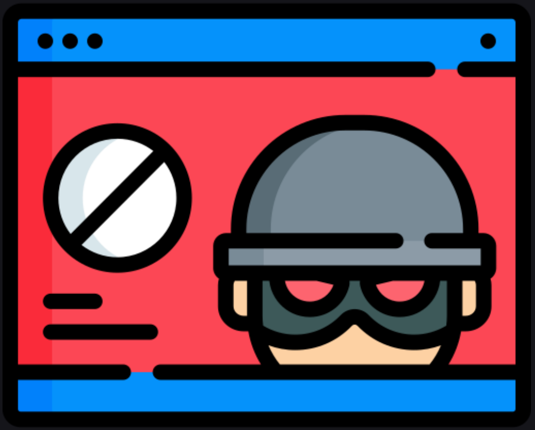
2. Vulnerable web apps do not process user inputs securely

3. Malicious instructions (scripts) can be passed

4. The vulnerable application processes these scripts

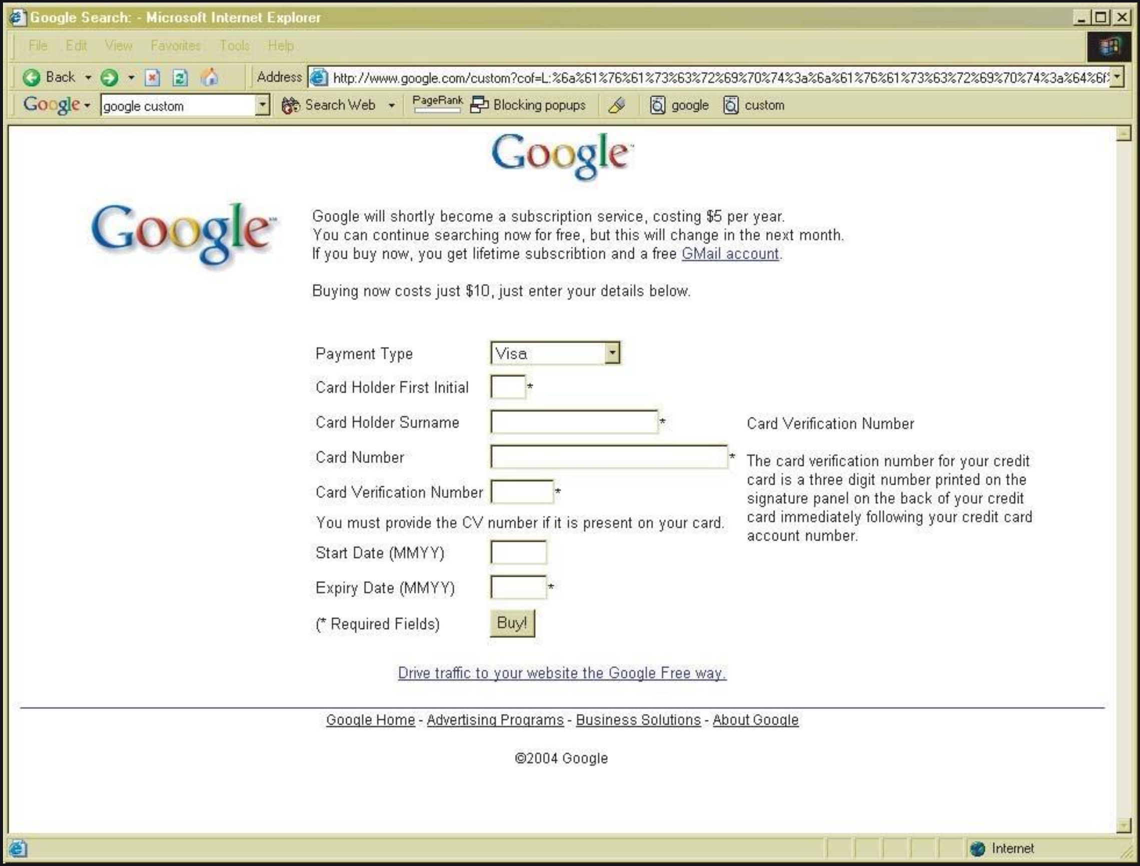
WHAT DAMAGE CAN XSS DO?

- Taking ownership of user accounts – session hijacking, stealing credentials
- Defacing websites
- Injecting Malwares
- Inducing user action – Make it look the victim has done it
- Exploiting Any Trust Relations



AN IMAGE TO RUB IT IN

Classic Google XSS vulnerability which allowed to inject a trojan



http://www.google.com/custom?cof=L:%6a%61%76%61%73%63%72%69%70%74%3a%6a%61%76%61%73%63%72%69%70%74%3a%64%6f

Google

Google will shortly become a subscription service, costing $5 per year.
You can continue searching now for free, but this will change in the next month.
If you buy now, you get lifetime subscribtion and a free GMail account.

Buying now costs just $10, just enter your details below.

Payment Type: Visa

Card Holder First Initial *

Card Holder Surname *

Card Number *

Card Verification Number *

You must provide the CV number if it is present on your card.

Start Date (MMYY)

Expiry Date (MMYY) *

(* Required Fields) Buy!

Card Verification Number

The card verification number for your credit card is a three digit number printed on the signature panel on the back of your credit card immediately following your credit card account number.

Drive traffic to your website the Google Free way.

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TYPES OF XSS

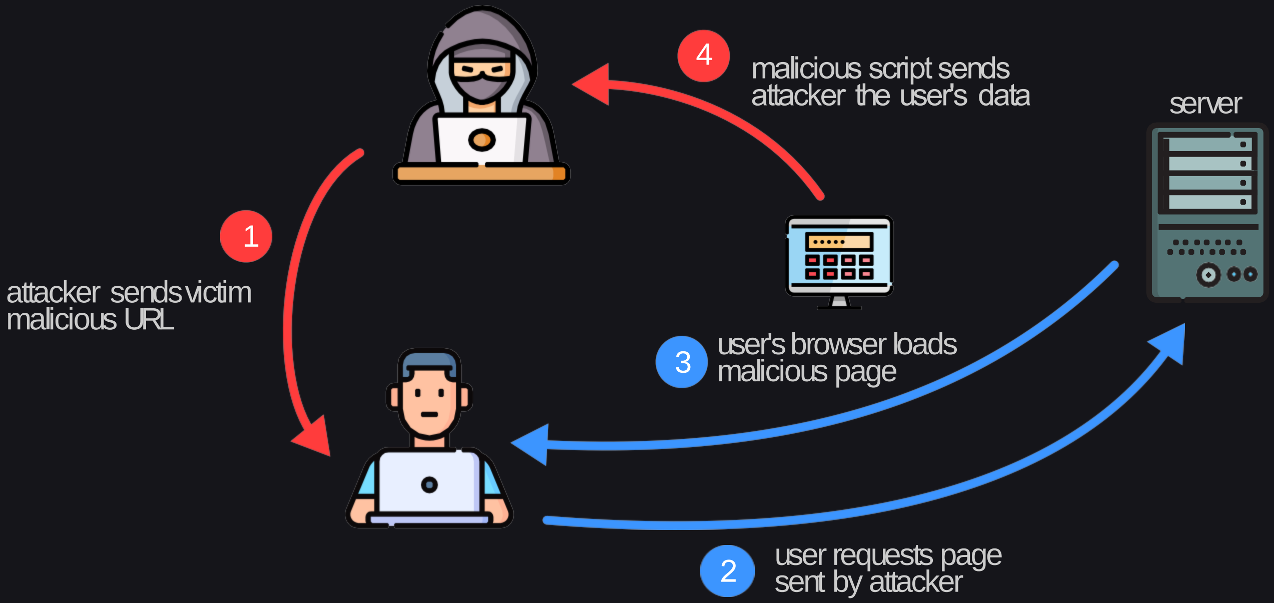
There are three main types of XSS

1. Reflected XSS
2. Stored XSS
3. DOM Based XSS

Reflected and stored XSS is still very common. In fact XSS is responsible over 70% of web vulnerabilities!!

REFLECTED XSS

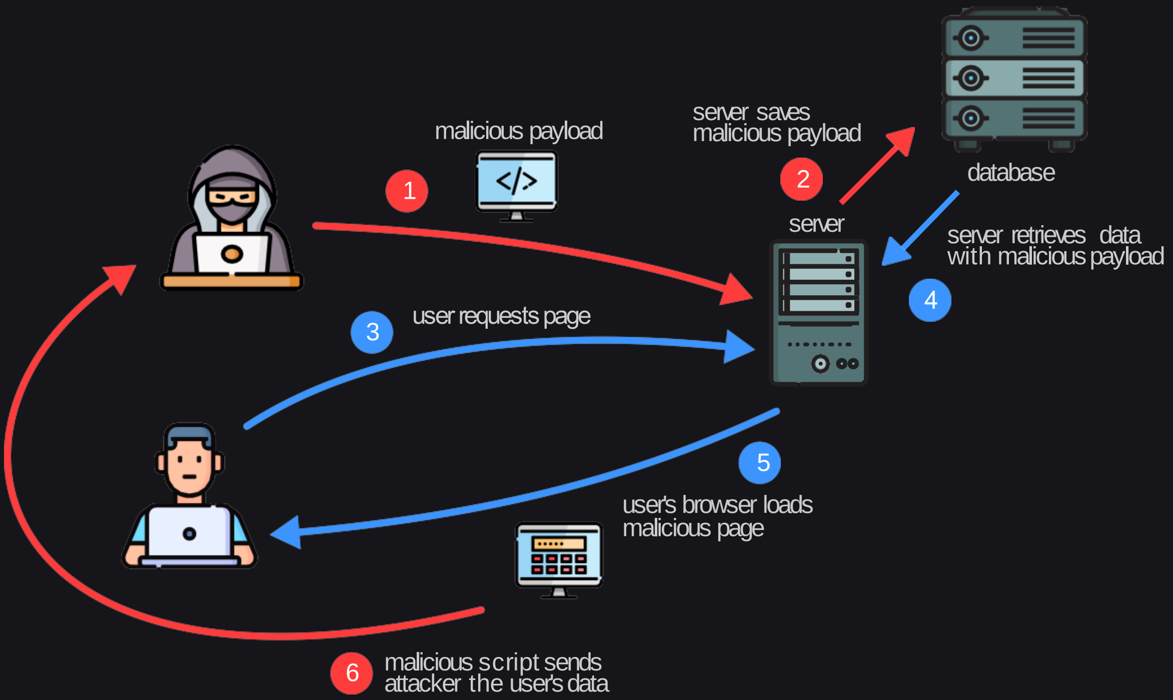
- Occurs when unsanitised user input is displayed in the webpage


4
malicious script sends attacker the user's data
server
1
attacker sends victim malicious URL
3
user's browser loads malicious page
2
user requests page sent by attacker

Slide Credit: Joseph

STORED XSS

- Occurs when a web app saves user input to a database and renders it later to users (e.g. blog post)



malicious payload
1
server saves malicious payload
2
database
server
server retrieves data with malicious payload
4
3
user requests page
5
user's browser loads malicious page
6
malicious script sends attacker the user's data

Slide Credit: Joseph

DOM BASED XSS (SELF XSS)

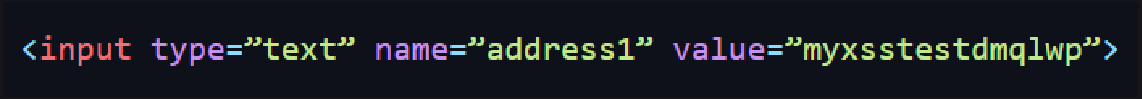
- The script is run inside victim’s browser
- Requires a lot of social engineering to convince the victim
- Usually a not a vulnerability anymore as modern browsers have built-in protection against running ‘outside’ scripts

HACK STEPS

1. Choose an unique arbitrary string that does not appear anywhere within the target (‘mytestxssdsdf’)
2. Submit the string at every parameter of the target
3. Monitor applications responses for every appearance of this string
4. Test HTTP request Methods (GET and POST)
5. In addition to standard request parameters, test instances where application processes HTTP request headers. (‘Referer’ and ‘User-Agent’ are useful ones)

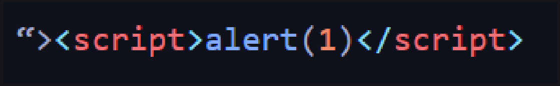
TESTING REFLECTIONS

Example 1: A Tag attribute value



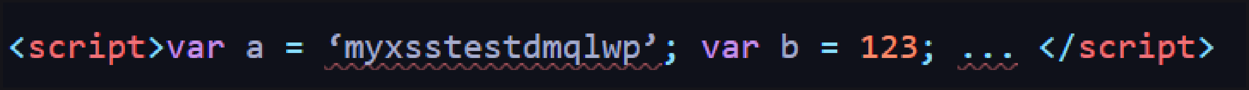
```
<input type=”text” name=”address1” value=”myxsstestdmqlwp”>
```

Exploit:



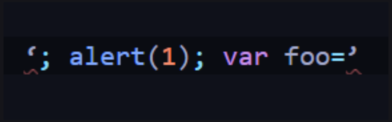
```
“><script>alert(1)</script>
```

Example 2: A JavaScript String



```
<script>var a = ‘myxsstestdmqlwp’; var b = 123; ... </script>
```

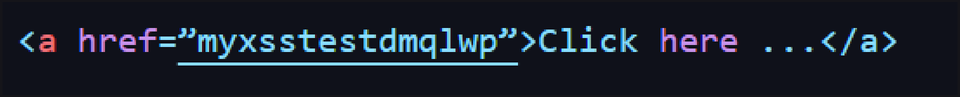
Exploit:



```
‘; alert(1); var foo=’
```

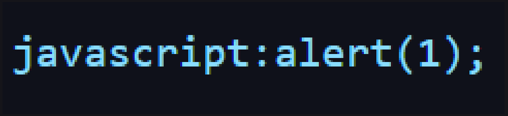
TESTING FOR REFLECTIONS

Example 3: An attribute containing URL

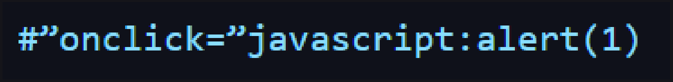


```
<a href=”myxsstestdmqlwp”>Click here ...</a>
```

Exploits:



```
javascript:alert(1);
```



```
#”onclick=”javascript:alert(1)
```

HANDY TOOLS

- XSS Polyglots https://github.com/0xsobky/HackVault/wiki/Unleashing-an-Ultimate-XSS-Polyglot

- Firefox / Chrome Developer Tools (Watch the following video): https://www.youtube.com/watch?v=FTeE3OrTNoA

- Burp Suite (Video by legendary Jason Haddix himself!): https://www.youtube.com/watch?v=h2duGBZLEek&t=2072s

EPIC RESOURCES

- The Web Application Hackers Handbook (Chapter 12)
- PortSwigger Web Academy (Free)

PLACES TO PRACTICE WITHOUT GETTING ARRESTED

- MISC CTF
- Google Firing Range
- Google XSS Game (https://xss-game.appspot.com/)
- Pentesterlab (Worth your money. No I don’t get any money)

THANK YOU!

Please ask any questions you have in the chat!