Analyzing Vulnerabilities - Workshop

SoftUni Team

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Have a Questions?

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#Cyber_Security

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Understanding Vulnerabilities

Understanding Vulnerabilities

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- **Vulnerabilities** on their core, are poorly written code
- The better you are with coding, the more you can understand everything
- They are core concept in cyber security
- On one hand side they must be **mitigated** / **patched**, on other they must be exploited
- Vulnerabilities can arise from literally everywhere! Never think like "**there is no way that is going to work**", guess what, it is a way! Try it out!

Do not Overcomplicate Things!

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- Yes, indeed there are twisted vulnerabilities, but as beginners, start understanding the basic ones
- In this workshop we will examine the following **vulnerabilities**:
  - SQL Injection
  - Cross Site Scripting (**XSS**)
  - OS Command Injection
  - Directory Traversal
  - Access Control
  - File Upload

Understanding SQL Injection

- SQL injection is vulnerability, allowing user to interfere with the database engine, corrupting and modifying queries
- There are many types of **SQL injections**, but for simplicity we will focus on the very basic ones
- Lab Link:
  - *https://portswigger.net/web-security/sql-injection/lab-retrieve-hidden-data*

Understanding XSS

- XSS is vulnerability, allowing user to inject and execute custom javascript
- This attack can be weaponized as client-side attacks
- There are three types of **XSS**, reflected, stored and **DOM** based
- Lab Link:
  - *https://portswigger.net/web-security/cross-site-scripting/reflected/lab-html-context-nothing-encoded*

Understanding OS Command Injection

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- OS Command Injection is vulnerability, allowing user to inject custom OS commands
- This attack can be weaponized mainly for C2
- Lab Link:
  - *https://portswigger.net/web-security/os-command-injection/lab-simple*

Understanding Directory Traversal

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- Directory Traversal is vulnerability, allowing user to read local files stored on the operational system (OS)
- Even though this looks similar to LFI (Local File Inclusion), the difference is that LFI can execute files, while DT can only read
- Lab Link:
  - *https://portswigger.net/web-security/file-path-traversal/lab-simple*

Understanding Access Control Vulnerabilities

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- Access Control vulnerabilities, are type of vulnerabilities that allows an attacker to view and interact with resources, that initially he was missing permissions for
- In other words, access and work with resources, by bypassing access control restrictions
- Lab Link:
  - *https://portswigger.net/web-security/access-control/lab-unprotected-admin-functionality*

Understanding File Upload Vulnerabilities

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- File Upload vulnerabilities, allows an attacker to upload (and execute in best case for the pentester) malicious files, most oftenly for obtaining C2
- The problem here is that there is no system for validating the uploaded files
- Lab Link:
  - *https://portswigger.net/web-security/file-upload/lab-file-upload-remote-code-execution-via-web-shell-upload*

Code Reviewing Exploits

Pluck CMS 4.7.13 – File Upload RCE (Remote Code Execution) (Authenticated)

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- This exploit (*https://www.exploit-db.com/exploits/49909*) is performing the following actions:
  - Authenticating
  - Uploading File
  - Executing the File
- Let's examine it

Summary

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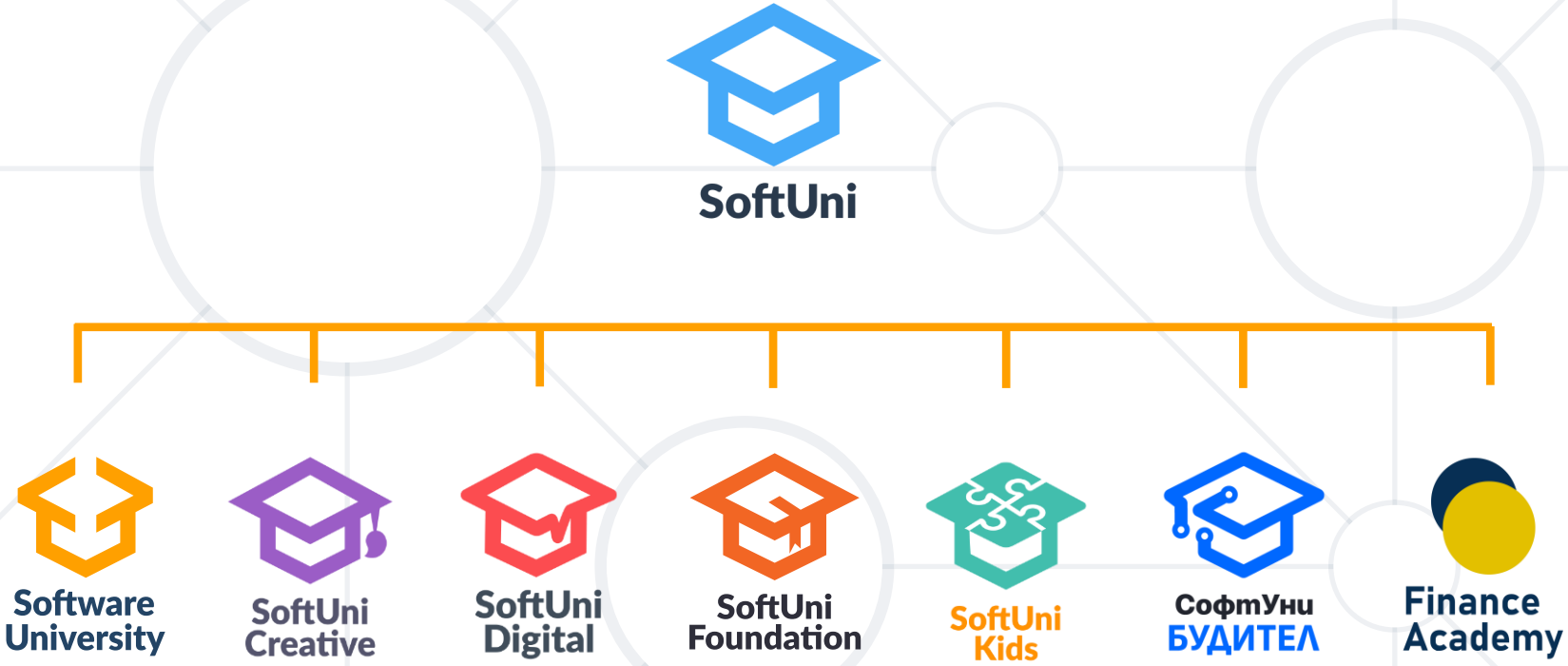
- Understanding Vulnerabilities
  - Understanding SQL Injection
  - Understanding XSS
  - Understanding OS Command Injection
  - Understanding Directory Traversal
  - Understanding Access Control Vulnerabilities
  - Understanding File Upload Vulnerabilities
- Code Reviewing Exploits

Questions?



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