Use of Free and Open Source Labs to Support Cybersecurity Education

Chris Simpson,

Director National University Center for Cybersecurity

Agenda

- Background
- Examples of free labs and how we use them
- Tracking Objectives
- Sharing Objectives

Background

- Hands on labs are a critical component of any cybersecurity program and a requirement to become an NSA/DHS Center of Academic Excellence
- Several ways to deliver lab content
  - Develop and deploy labs on internal or outsourced infrastructure
  - Utilize labs from external lab providers
  - Utilize free grant resourced labs
  - Use free and open source labs
- Managing an internal lab environment is expensive

Goal

- Build a database that provides information on labs and learning outcomes, KST, KU’s, and competencies associated with those labs.

Challenges of Running an Internal Lab

- Help Desk
  - Academic vs Technical issues
  - Hours of operation
    - Student complete school work in the evening and on weekends
  - ”Ticket Management”
- Admin access to systems
- Developing lab content
- Cost

Finding Outsourced Labs

- “Word of Mouth”
- Textbook Vendors
- Vendor booths
- Google

Challenges of Free Labs

- Downtime
- Support
- Updates
- No single vendor provides everything you need
- Publicly available answers
- Course coverage of lab content
- Faculty preparation
- Vendor lab changes

Free/Freemium Providers

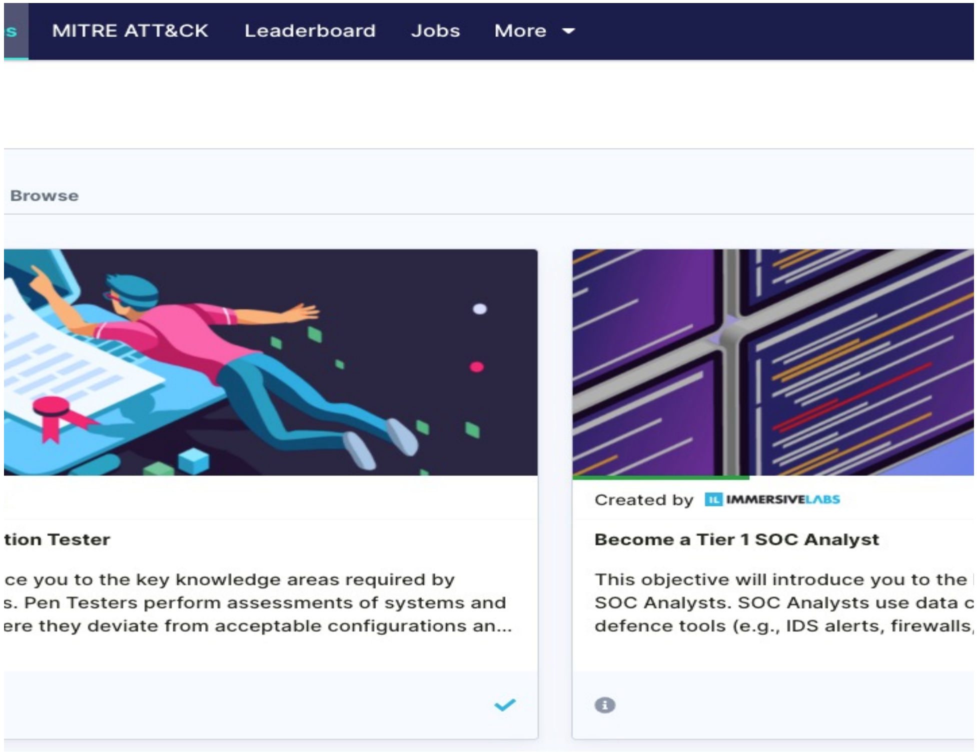
- Not an official endorsement from National University

Providers
(No particular order)

- Immersive Labs (Free)
- NICE Challenge (Free)
- Over the Wire (Free)
- PicoCTF (Free)
- Hack The Box (Freemium)
- TryHackMe.com (Freemium)
- Blue Team Labs (Freemium)

Immersive Labs Digital Cyber Academy

- Available to students, Veterans, and Neurodivergent community
- Question based, virtual machine based and scenario based labs



tion Tester

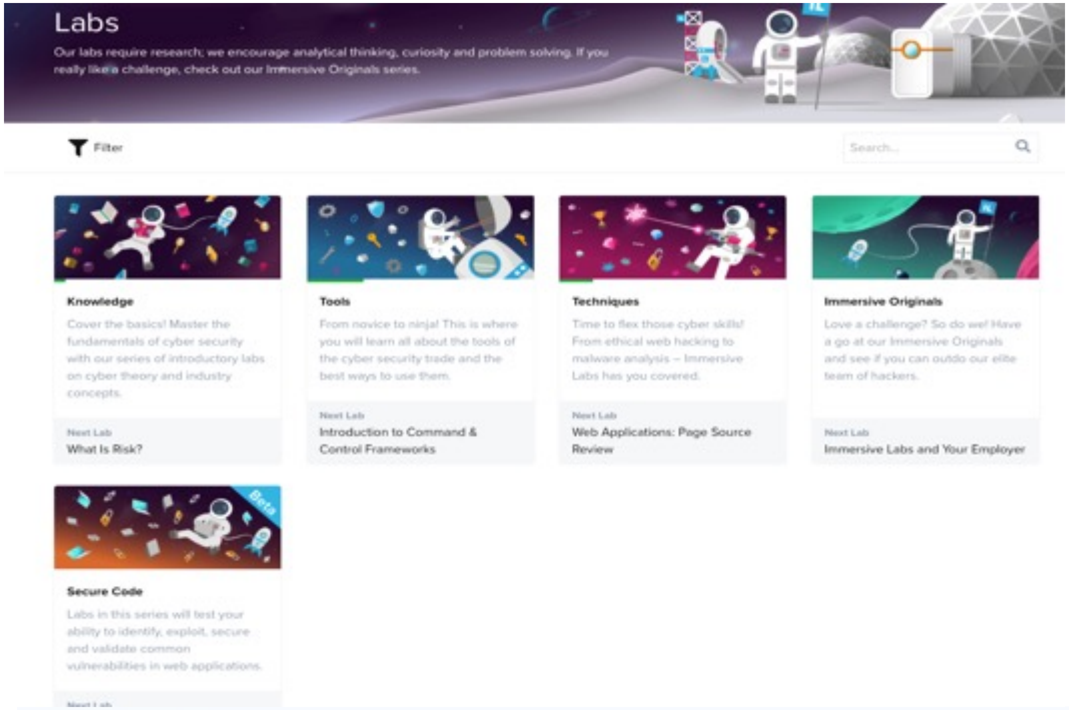
ce you to the key knowledge areas required by s. Pen Testers perform assessments of systems and ere they deviate from acceptable configurations an...

Become a Tier 1 SOC Analyst

This objective will introduce you to the SOC Analysts. SOC Analysts use data c defence tools (e.g., IDS alerts, firewalls,

Immersive Labs

- Badging
- Large variety of topics
- Novice to “Ninja”
- Knowledge + Hands on
- Rankings



Labs

Our labs require research; we encourage analytical thinking, curiosity and problem solving. If you really like a challenge, check out our Immersive Originals series.

Knowledge

Cover the basics! Master the fundamentals of cyber security with our series of introductory labs on cyber theory and industry concepts.

Next Lab
What Is Risk?

Tools

From novice to ninja! This is where you will learn all about the tools of the cyber security trade and the best ways to use them.

Next Lab
Introduction to Command & Control Frameworks

Techniques

Time to flex those cyber skills! From ethical web hacking to malware analysis – Immersive Labs has you covered.

Next Lab
Web Applications: Page Source Review

Immersive Originals

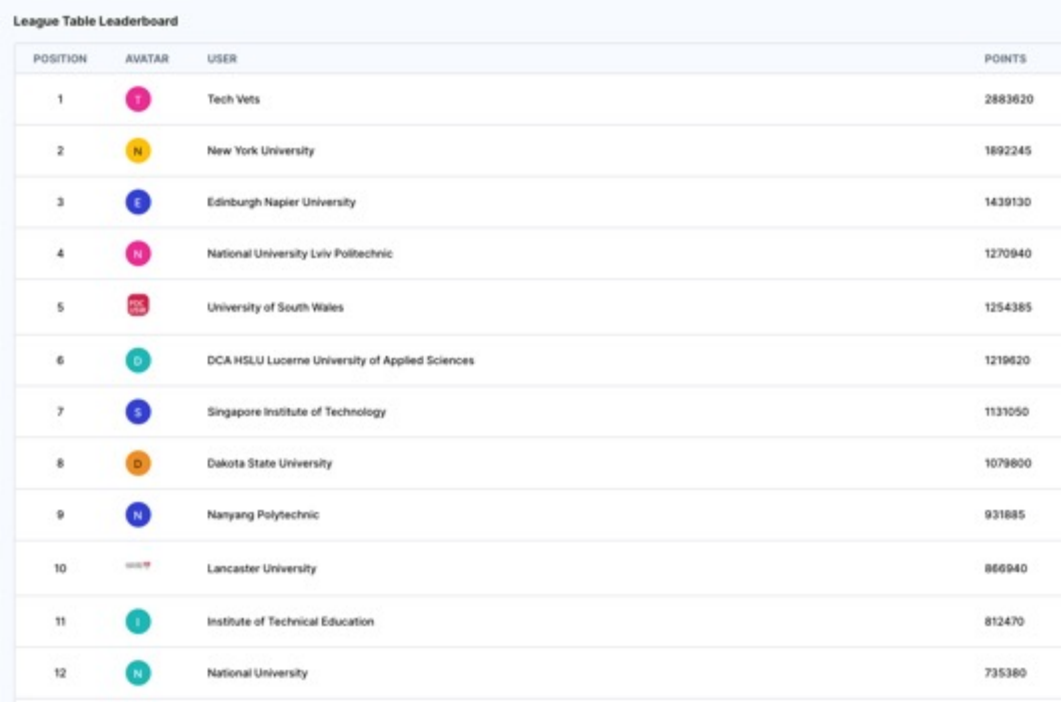
Love a challenge? So do we! Have a go at our Immersive Originals and see if you can outdo our elite team of hackers.

Next Lab
Immersive Labs and Your Employer

Secure Code

Labs in this series will test your ability to identify, exploit, secure and validate common vulnerabilities in web applications.

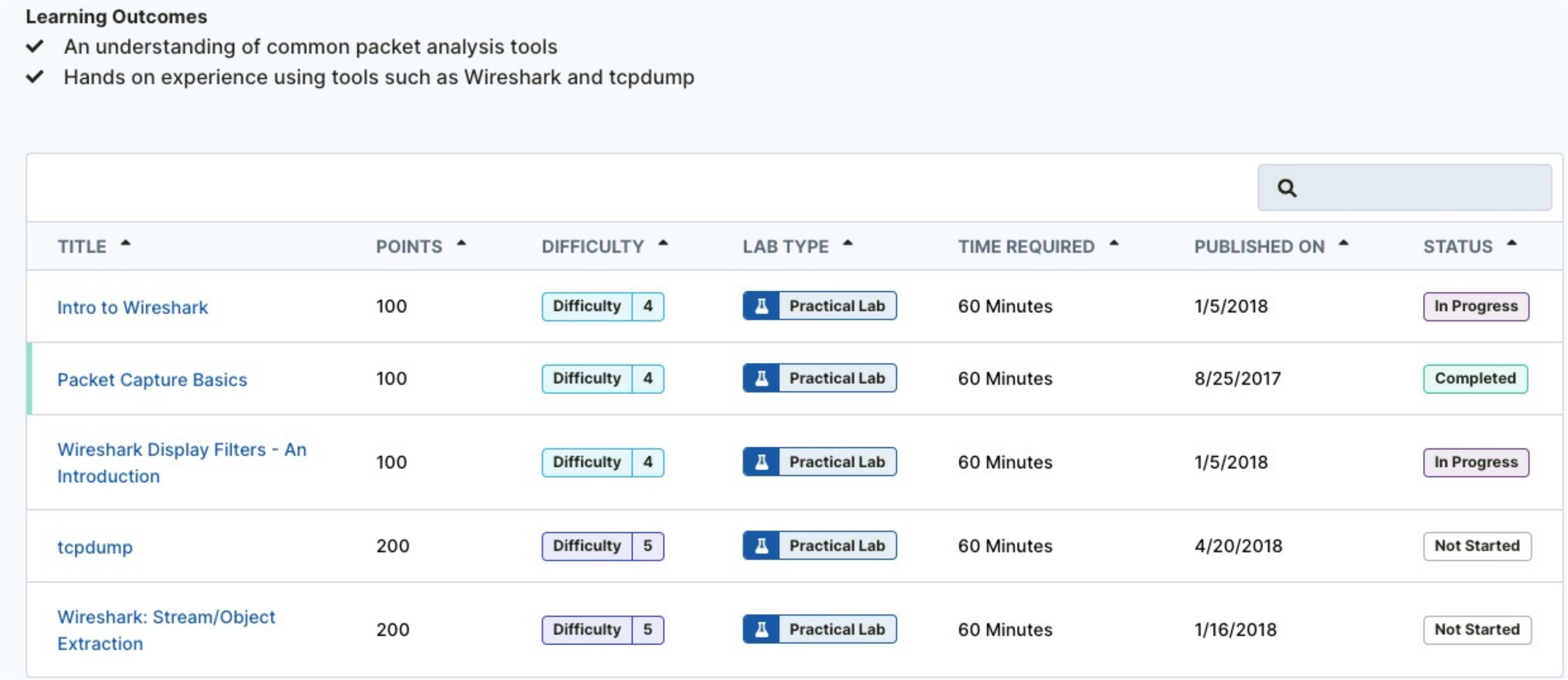
Next Lab



League Table Leaderboard

POSITION	AVATAR	USER	POINTS
1	T	Tech Vets	2883620
2	N	New York University	1892245
3	E	Edinburgh Napier University	1439130
4	N	National University Lviv Politechnic	1270940
5		University of South Wales	1254385
6	D	DCA HSLU Lucerne University of Applied Sciences	1219620
7	S	Singapore Institute of Technology	1131050
8	D	Dakota State University	1079800
9	N	Nanyang Polytechnic	931885
10		Lancaster University	866940
11	I	Institute of Technical Education	812470
12	N	National University	735380

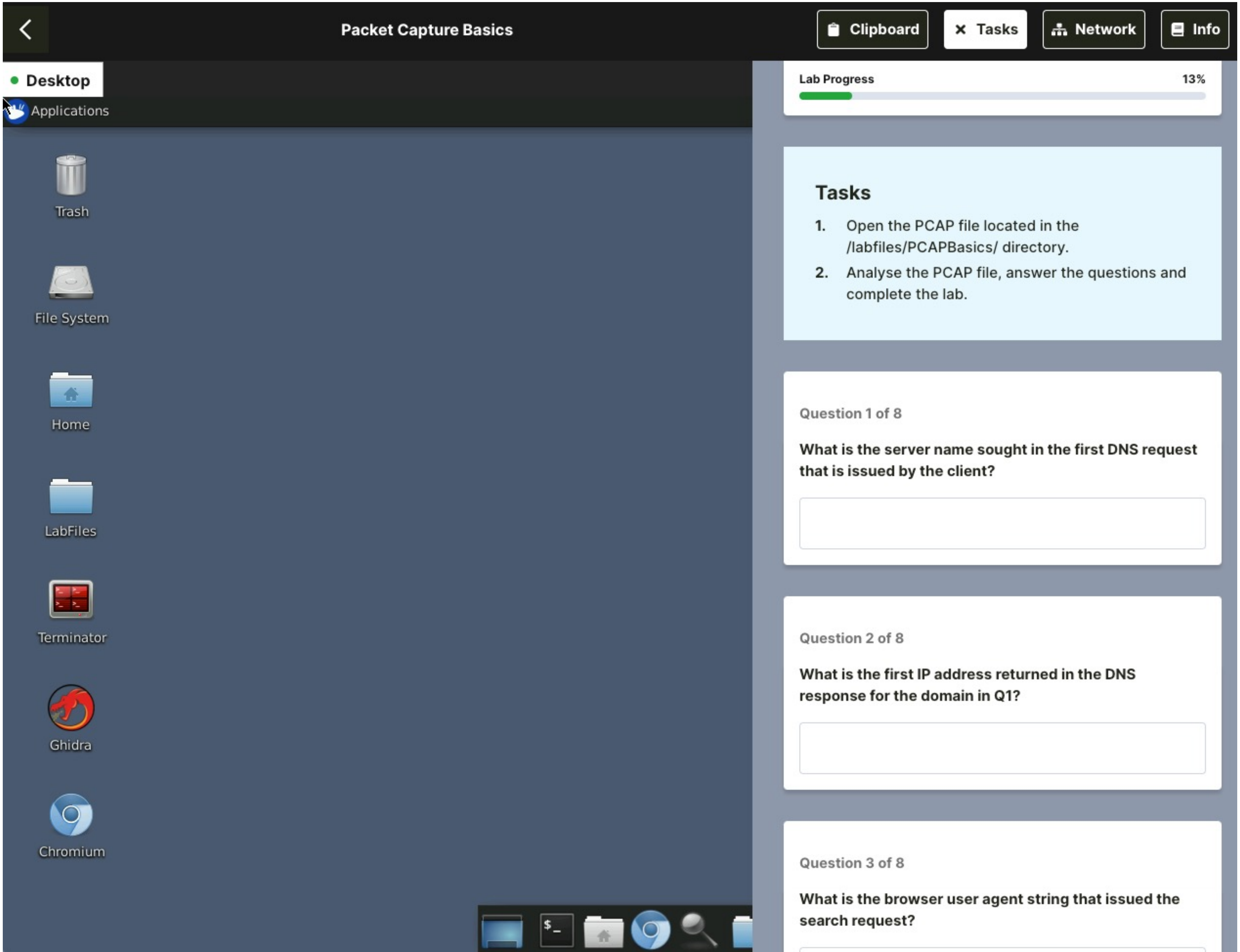
Different difficulty Levels



Learning Outcomes

- ✓ An understanding of common packet analysis tools
- ✓ Hands on experience using tools such as Wireshark and tcpdump

TITLE	POINTS	DIFFICULTY	LAB TYPE	TIME REQUIRED	PUBLISHED ON	STATUS
Intro to Wireshark	100	Difficulty 4	Practical Lab	60 Minutes	1/5/2018	In Progress
Packet Capture Basics	100	Difficulty 4	Practical Lab	60 Minutes	8/25/2017	Completed
Wireshark Display Filters - An Introduction	100	Difficulty 4	Practical Lab	60 Minutes	1/5/2018	In Progress
tcpdump	200	Difficulty 5	Practical Lab	60 Minutes	4/20/2018	Not Started
Wireshark: Stream/Object Extraction	200	Difficulty 5	Practical Lab	60 Minutes	1/16/2018	Not Started



Lab Progress 13%

Tasks

1. Open the PCAP file located in the /labfiles/PCAPBasics/ directory.
2. Analyse the PCAP file, answer the questions and complete the lab.

Question 1 of 8

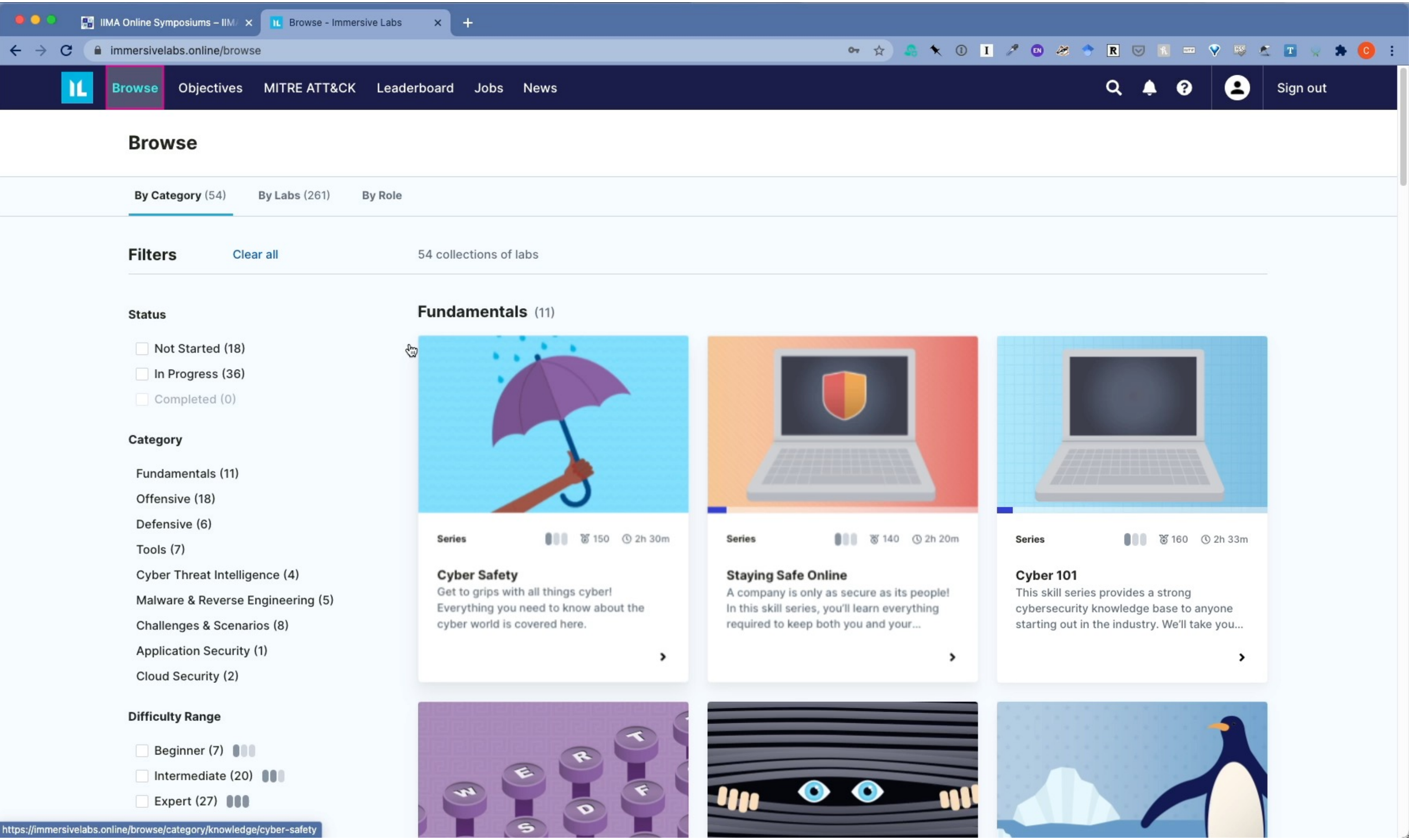
What is the server name sought in the first DNS request that is issued by the client?

Question 2 of 8

What is the first IP address returned in the DNS response for the domain in Q1?

Question 3 of 8

What is the browser user agent string that issued the search request?



IIMA Online Symposiums – IIM/ ×

Browse - Immersive Labs ×

immersivelabs.online/browse

Browse | Objectives | MITRE ATT&CK | Leaderboard | Jobs | News | Sign out

Browse

By Category (54) | By Labs (261) | By Role

Filters Clear all

54 collections of labs

Status

- □ Not Started (18)
- □ In Progress (36)
- □ Completed (0)

Category

- Fundamentals (11)
- Offensive (18)
- Defensive (6)
- Tools (7)
- Cyber Threat Intelligence (4)
- Malware & Reverse Engineering (5)
- Challenges & Scenarios (8)
- Application Security (1)
- Cloud Security (2)

Difficulty Range

- □ Beginner (7)
- □ Intermediate (20)
- □ Expert (27)

Fundamentals (11)

Series 150 2h 30m

Cyber Safety

Get to grips with all things cyber! Everything you need to know about the cyber world is covered here.

Series 140 2h 20m

Staying Safe Online

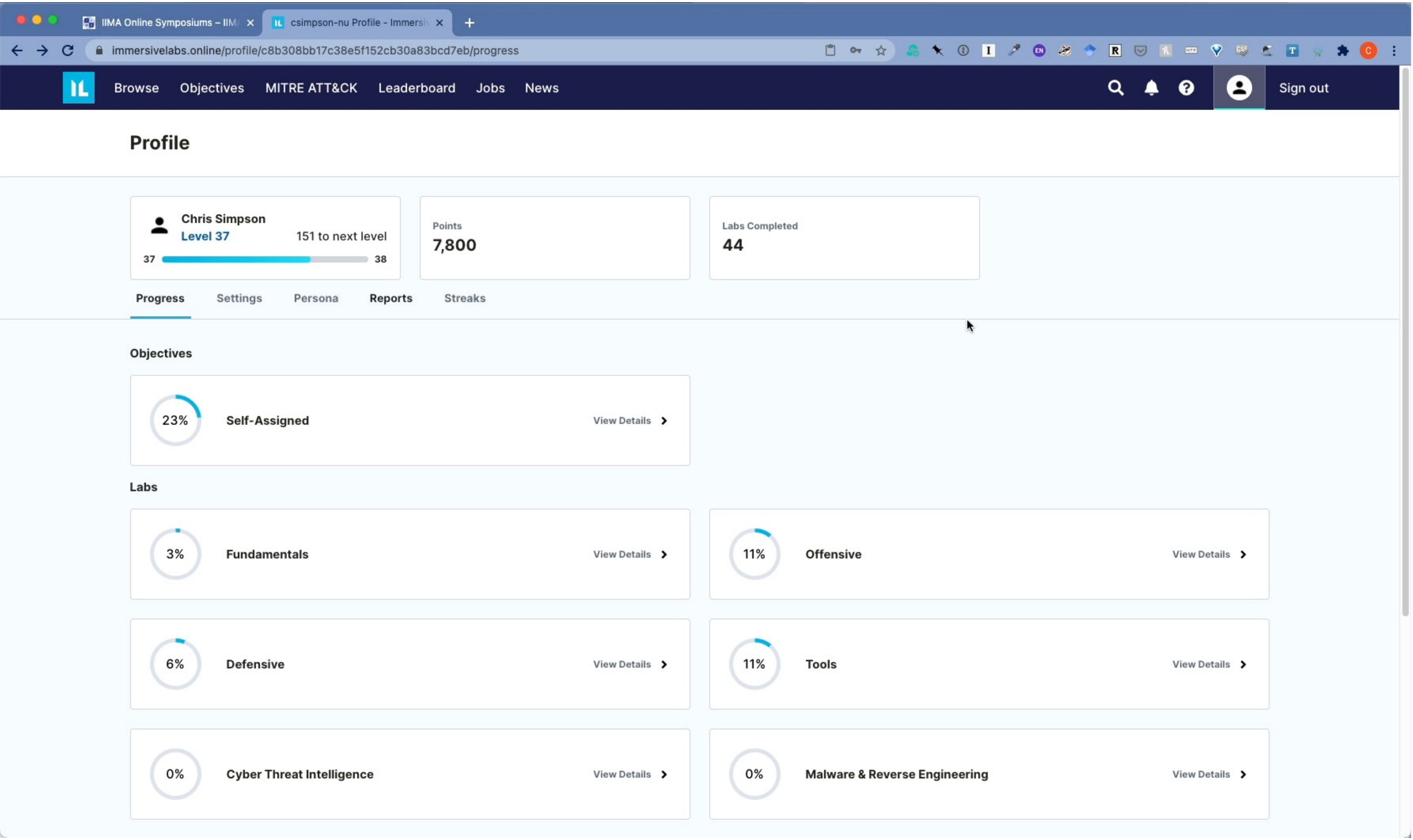
A company is only as secure as its people! In this skill series, you'll learn everything required to keep both you and your...

Series 160 2h 33m

Cyber 101

This skill series provides a strong cybersecurity knowledge base to anyone starting out in the industry. We'll take you...

https://immersivelabs.online/browse/category/knowledge/cyber-safety



IIMA Online Symposiums – IIM
csimpson-nu Profile - Immersi
immersivelabs.online/profile/c8b308bb17c38e5f152cb30a83bcd7eb/progress
Browse
Objectives
MITRE ATT&CK
Leaderboard
Jobs
News
Sign out

Profile

Chris Simpson
Level 37
151 to next level
37 38

Points
7,800

Labs Completed
44

Progress · Settings · Persona · Reports · Streaks

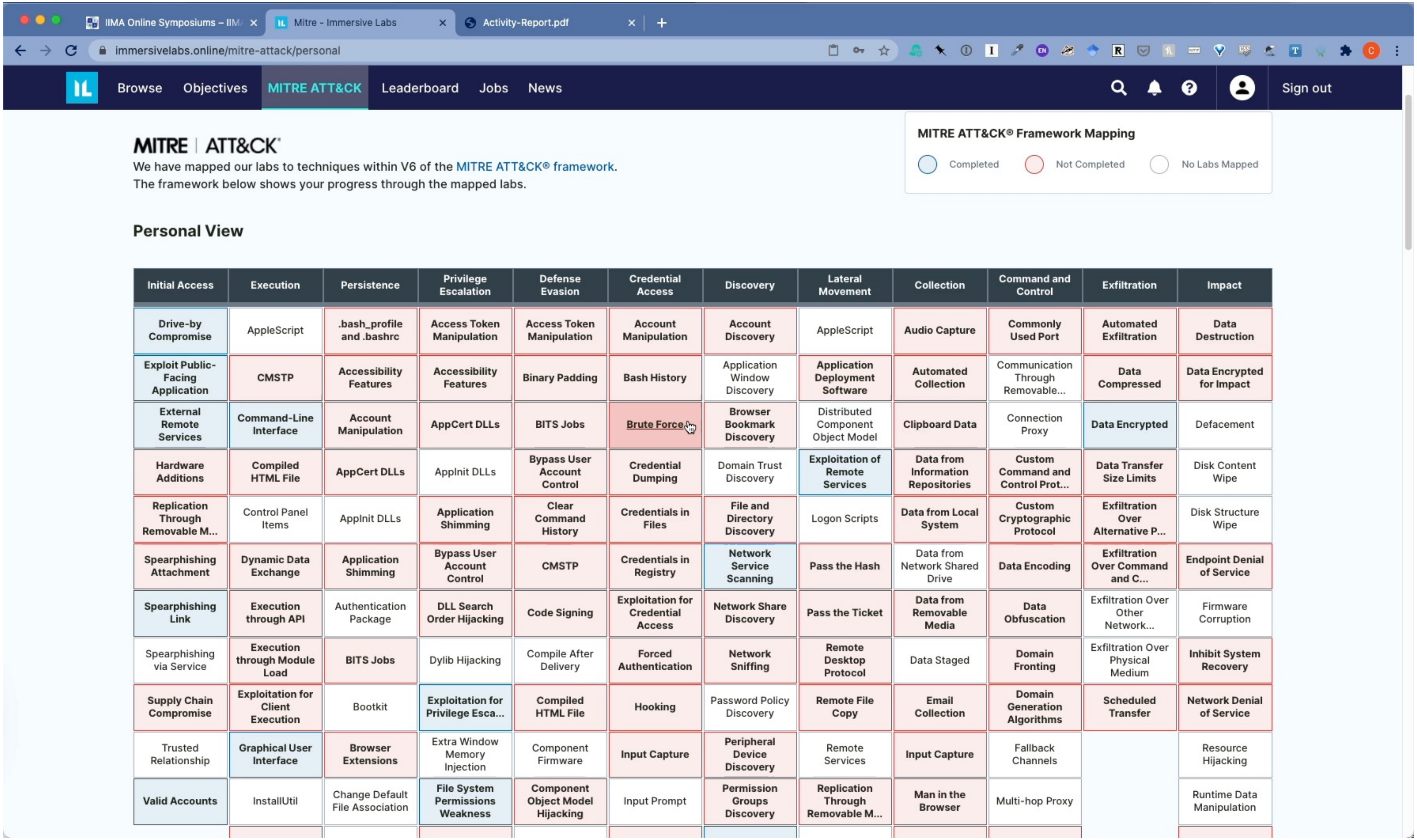
Objectives

23%	Self-Assigned	View Details ›

Labs

3%	Fundamentals	View Details ›
11%	Offensive	View Details ›
6%	Defensive	View Details ›
11%	Tools	View Details ›
0%	Cyber Threat Intelligence	View Details ›
0%	Malware & Reverse Engineering	View Details ›

Reporting



MITRE | ATT&CK®

We have mapped our labs to techniques within V6 of the MITRE ATT&CK® framework.
The framework below shows your progress through the mapped labs.

MITRE ATT&CK® Framework Mapping

○ Completed ○ Not Completed ○ No Labs Mapped

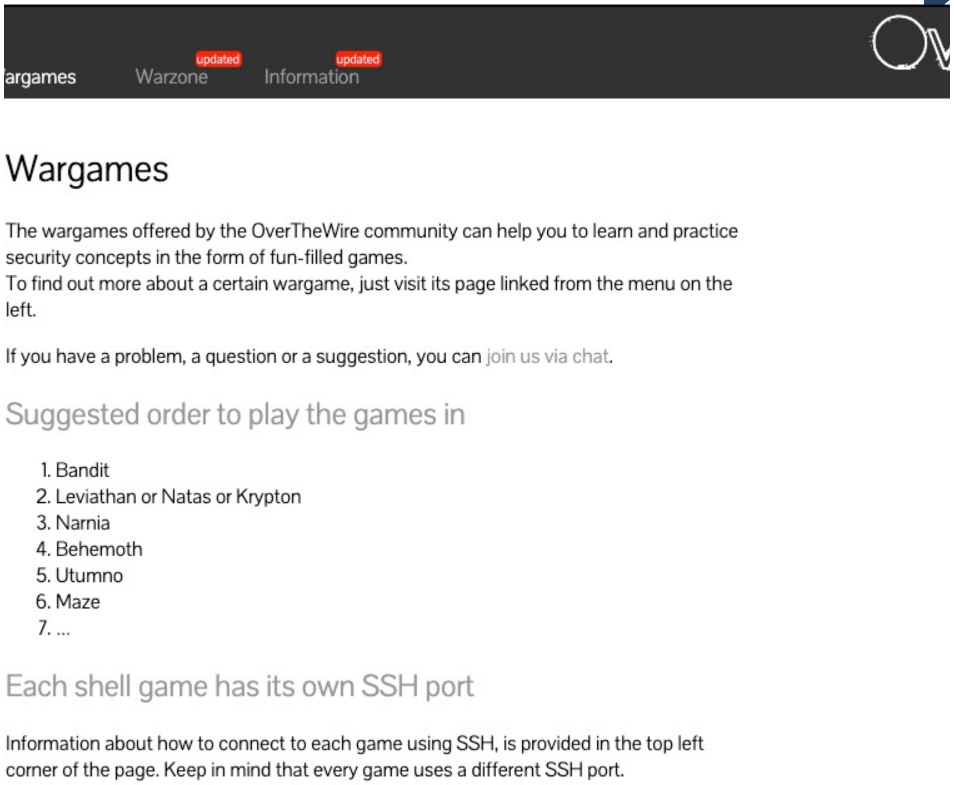
Personal View

Initial Access	Execution	Persistence	Privilege Escalation	Defense Evasion	Credential Access	Discovery	Lateral Movement	Collection	Command and Control	Exfiltration	Impact
Drive-by Compromise	AppleScript	.bash_profile and .bashrc	Access Token Manipulation	Access Token Manipulation	Account Manipulation	Account Discovery	AppleScript	Audio Capture	Commonly Used Port	Automated Exfiltration	Data Destruction
Exploit Public-Facing Application	CMSTP	Accessibility Features	Accessibility Features	Binary Padding	Bash History	Application Window Discovery	Application Deployment Software	Automated Collection	Communication Through Removable...	Data Compressed	Data Encrypted for Impact
External Remote Services	Command-Line Interface	Account Manipulation	AppCert DLLs	BITS Jobs	Brute Force	Browser Bookmark Discovery	Distributed Component Object Model	Clipboard Data	Connection Proxy	Data Encrypted	Defacement
Hardware Additions	Compiled HTML File	AppCert DLLs	AppInit DLLs	Bypass User Account Control	Credential Dumping	Domain Trust Discovery	Exploitation of Remote Services	Data from Information Repositories	Custom Command and Control Prot...	Data Transfer Size Limits	Disk Content Wipe
Replication Through Removable M...	Control Panel Items	AppInit DLLs	Application Shimming	Clear Command History	Credentials in Files	File and Directory Discovery	Logon Scripts	Data from Local System	Custom Cryptographic Protocol	Exfiltration Over Alternative P...	Disk Structure Wipe
Spearphishing Attachment	Dynamic Data Exchange	Application Shimming	Bypass User Account Control	CMSTP	Credentials in Registry	Network Service Scanning	Pass the Hash	Data from Network Shared Drive	Data Encoding	Exfiltration Over Command and C...	Endpoint Denial of Service
Spearphishing Link	Execution through API	Authentication Package	DLL Search Order Hijacking	Code Signing	Exploitation for Credential Access	Network Share Discovery	Pass the Ticket	Data from Removable Media	Data Obfuscation	Exfiltration Over Other Network...	Firmware Corruption
Spearphishing via Service	Execution through Module Load	BITS Jobs	Dylib Hijacking	Compile After Delivery	Forced Authentication	Network Sniffing	Remote Desktop Protocol	Data Staged	Domain Fronting	Exfiltration Over Physical Medium	Inhibit System Recovery
Supply Chain Compromise	Exploitation for Client Execution	Bootkit	Exploitation for Privilege Esca...	Compiled HTML File	Hooking	Password Policy Discovery	Remote File Copy	Email Collection	Domain Generation Algorithms	Scheduled Transfer	Network Denial of Service
Trusted Relationship	Graphical User Interface	Browser Extensions	Extra Window Memory Injection	Component Firmware	Input Capture	Peripheral Device Discovery	Remote Services	Input Capture	Fallback Channels		Resource Hijacking
Valid Accounts	InstallUtil	Change Default File Association	File System Permissions Weakness	Component Object Model Hijacking	Input Prompt	Permission Groups Discovery	Replication Through Removable M...	Man in the Browser	Multi-hop Proxy		Runtime Data Manipulation

Mapping to Mitre Att&ck

Over the Wire

- Community built labs
- Different games and levels
- Command line based
- Bandit great for learning Linux
- Under the Wire for PowerShell



Wargames

The wargames offered by the OverTheWire community can help you to learn and practice security concepts in the form of fun-filled games.
To find out more about a certain wargame, just visit its page linked from the menu on the left.

If you have a problem, a question or a suggestion, you can join us via chat.

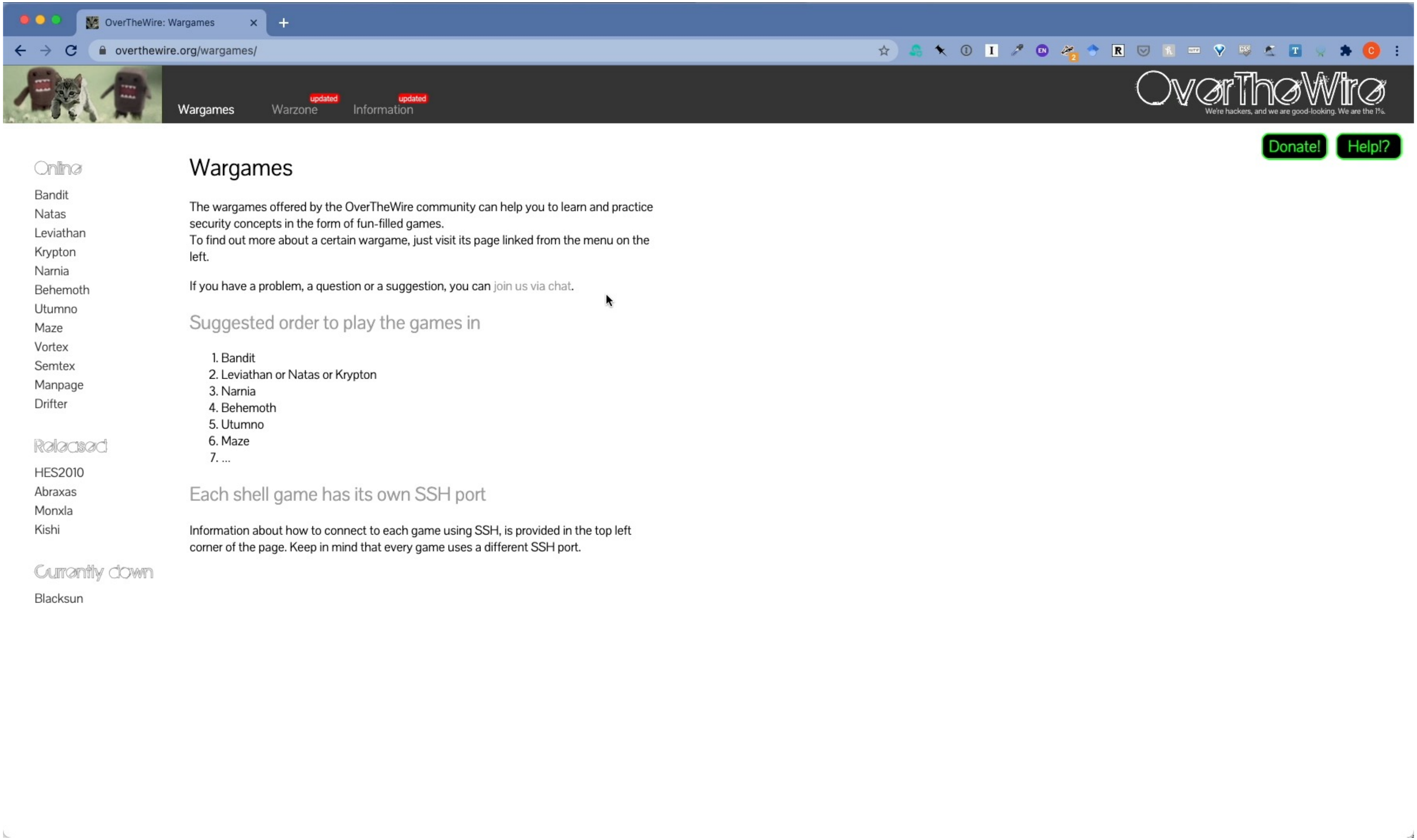
Suggested order to play the games in

1. Bandit
2. Leviathan or Natas or Krypton
3. Narnia
4. Behemoth
5. Utumno
6. Maze
7. ...

Each shell game has its own SSH port

Information about how to connect to each game using SSH, is provided in the top left corner of the page. Keep in mind that every game uses a different SSH port.

Over the Wire



OverTheWire: Wargames

overthewire.org/wargames/

Online

- Bandit
- Natas
- Leviathan
- Krypton
- Narnia
- Behemoth
- Utumno
- Maze
- Vortex
- Semtex
- Manpage
- Drifter

Released

- HES2010
- Abraxas
- Monxla
- Kishi

Currently down

- Blacksun

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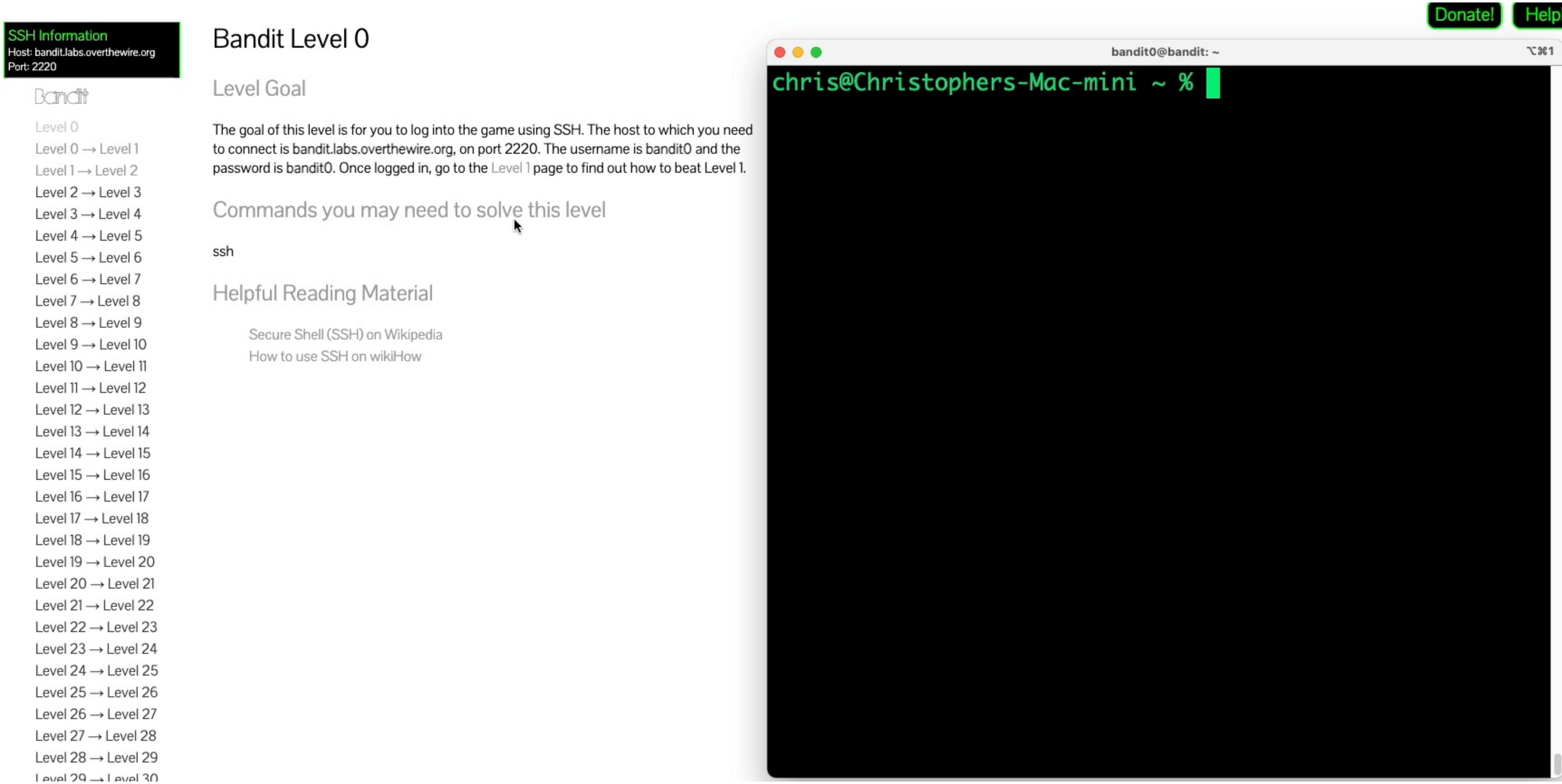


SSH Information
Host: bandit.labs.overthewire.org
Port: 2220

Bandit

- Level 0
- Level 0 → Level 1
- Level 1 → Level 2
- Level 2 → Level 3
- Level 3 → Level 4
- Level 4 → Level 5
- Level 5 → Level 6
- Level 6 → Level 7
- Level 7 → Level 8
- Level 8 → Level 9
- Level 9 → Level 10
- Level 10 → Level 11
- Level 11 → Level 12
- Level 12 → Level 13
- Level 13 → Level 14
- Level 14 → Level 15
- Level 15 → Level 16
- Level 16 → Level 17
- Level 17 → Level 18
- Level 18 → Level 19
- Level 19 → Level 20
- Level 20 → Level 21
- Level 21 → Level 22
- Level 22 → Level 23
- Level 23 → Level 24
- Level 24 → Level 25
- Level 25 → Level 26
- Level 26 → Level 27
- Level 27 → Level 28
- Level 28 → Level 29
- Level 29 → Level 30

Bandit Level 0

Level Goal

The goal of this level is for you to log into the game using SSH. The host to which you need to connect is bandit.labs.overthewire.org, on port 2220. The username is bandit0 and the password is bandit0. Once logged in, go to the Level 1 page to find out how to beat Level 1.

Commands you may need to solve this level

ssh

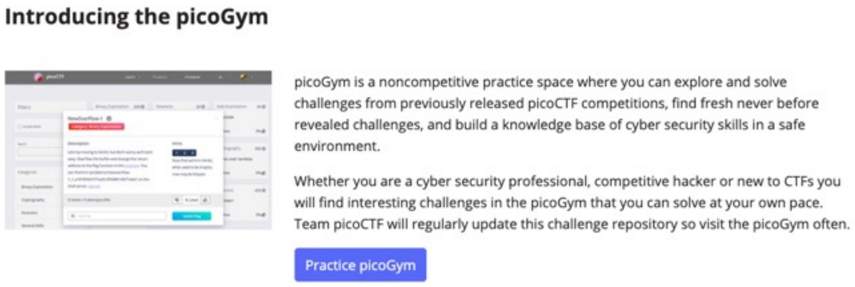
Helpful Reading Material

- Secure Shell (SSH) on Wikipedia
- How to use SSH on wikiHow

bandit0@bandit: ~

```
chris@Christophers-Mac-mini ~ %
```

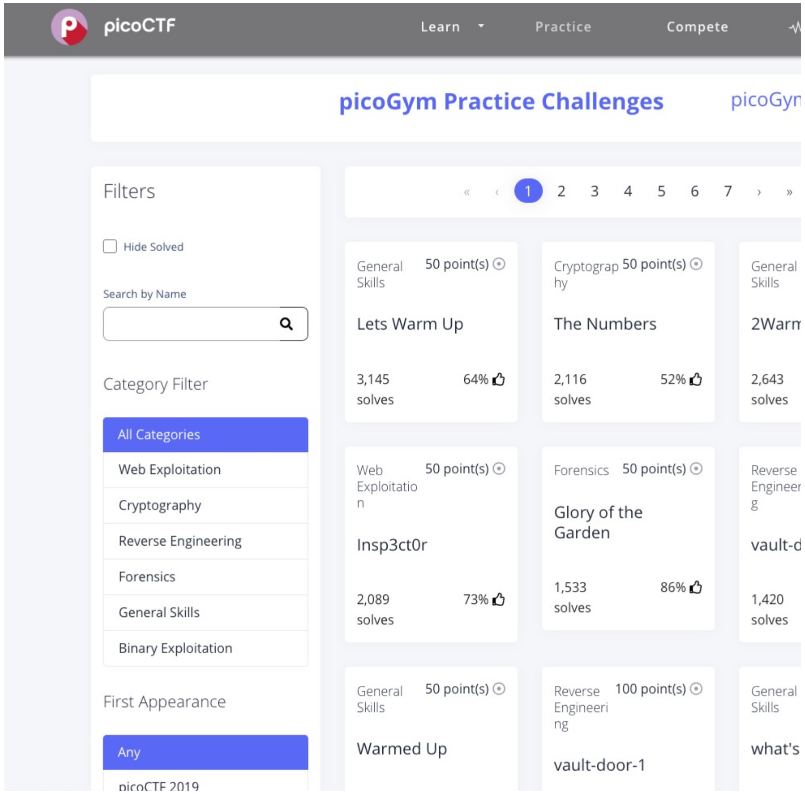
Bandit Demo



Introducing the picoGym

picoGym is a noncompetitive practice space where you can explore and solve challenges from previously released picoCTF competitions, find fresh never before revealed challenges, and build a knowledge base of cyber security skills in a safe environment.

Whether you are a cyber security professional, competitive hacker or new to CTFs you will find interesting challenges in the picoGym that you can solve at your own pace. Team picoCTF will regularly update this challenge repository so visit the picoGym often.



picoGym Practice Challenges

Filters

☐ Hide Solved

Search by Name

Category Filter

- All Categories
- Web Exploitation
- Cryptography
- Reverse Engineering
- Forensics
- General Skills
- Binary Exploitation

First Appearance

- Any
- picoCTF 2019

General Skills · 50 point(s)
Lets Warm Up
3,145 solves · 64%

Cryptography · 50 point(s)
The Numbers
2,116 solves · 52%

General Skills
2Warm
2,643 solves

Web Exploitation · 50 point(s)
Insp3ct0r
2,089 solves · 73%

Forensics · 50 point(s)
Glory of the Garden
1,533 solves · 86%

Reverse Engineering
vault-d
1,420 solves

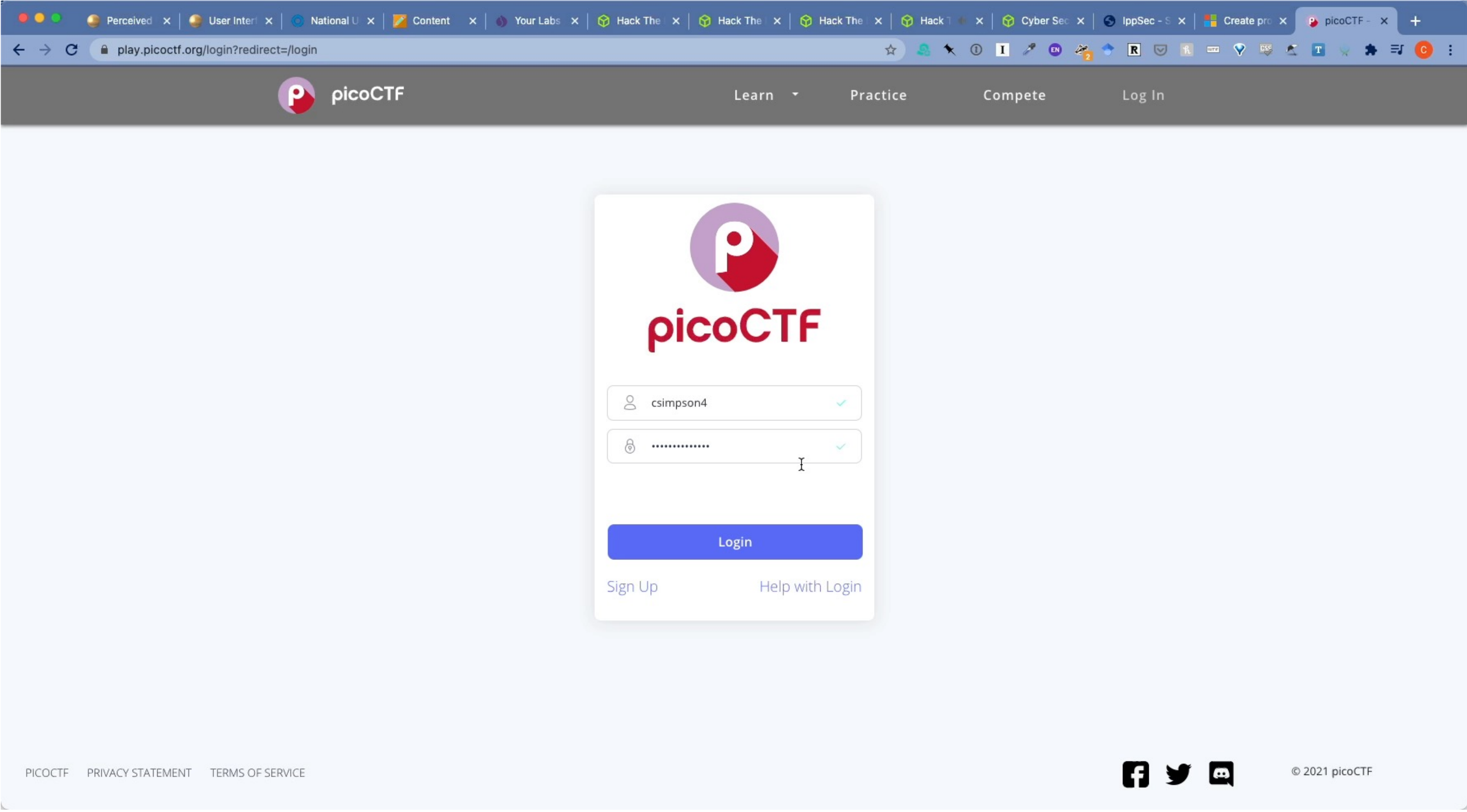
General Skills · 50 point(s)
Warmed Up

Reverse Engineering · 100 point(s)
vault-door-1

General Skills
what's

PicoCTF

- Designed by Carnegie Mellon
- Designed for high school students
- Great for anyone new to cybersecurity



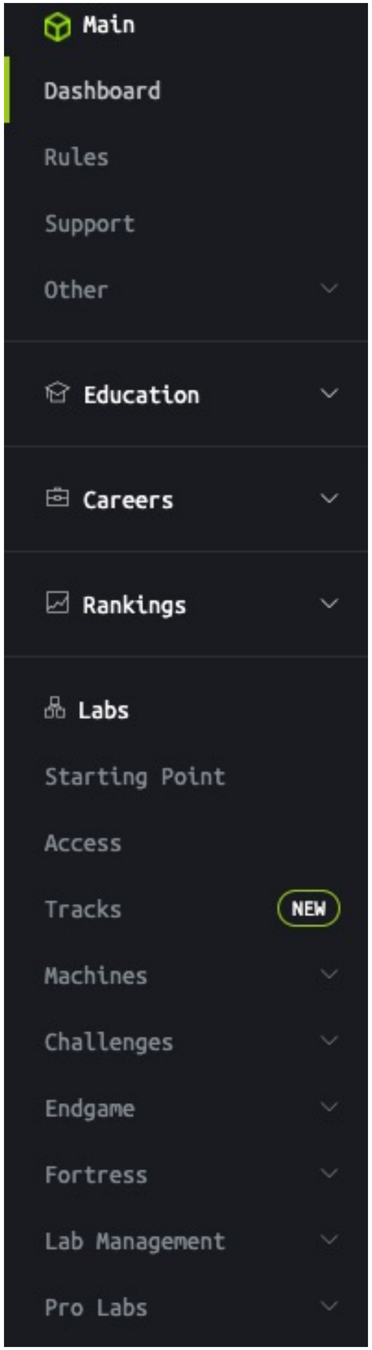
play.picoctf.org/login?redirect=/login

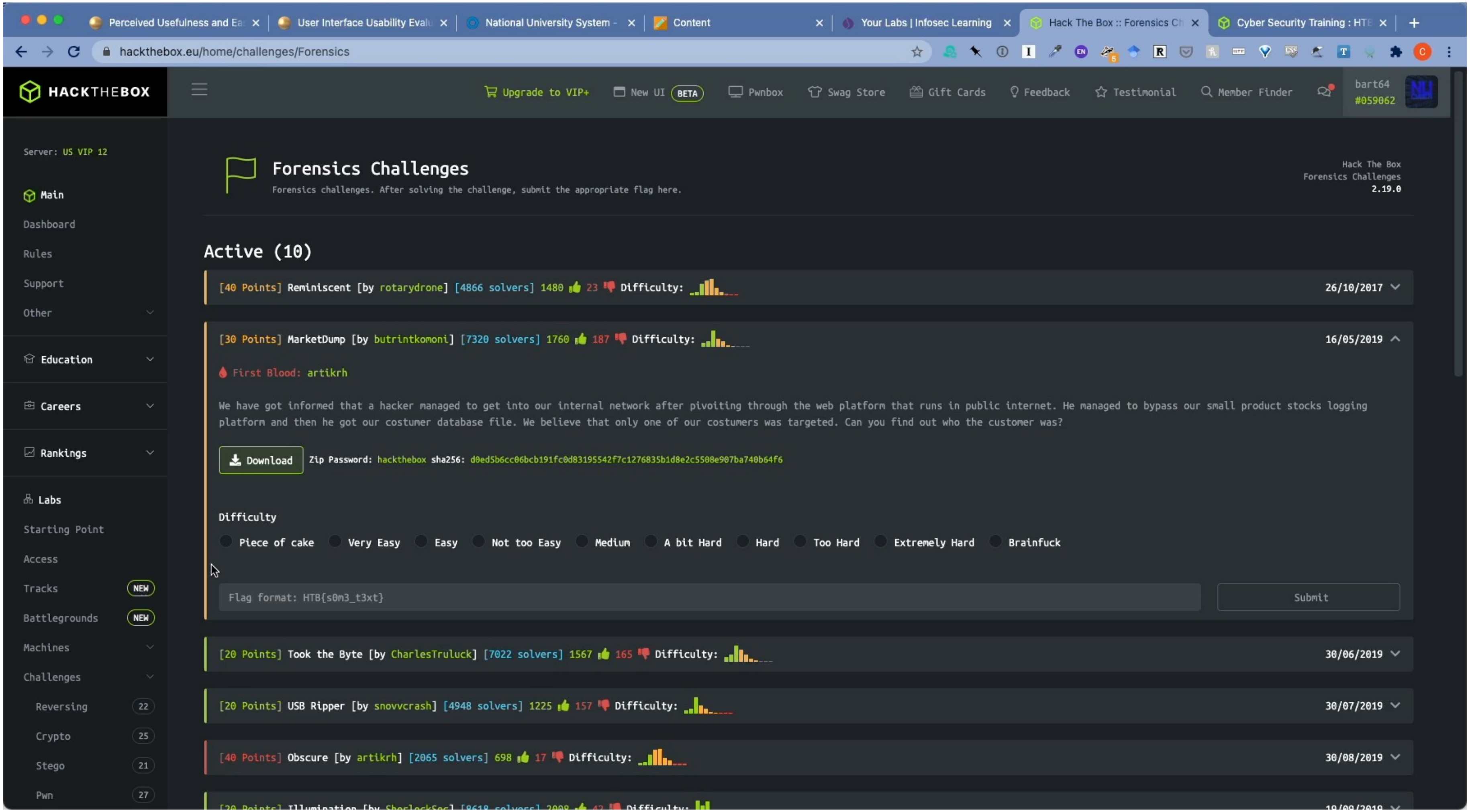
csimpson4

••••••••••••••

Hack the Box

- Freemium model
- Vulnerable hosts
  - Active
  - Retired
- Challenges
- Scenarios
- ”Hack” into hosts
- Linux and Windows
- Difficulty ratings
- Ranking system
- Active and Retired Machines
- Can share answers for retired machines
- Set of challenges
- Beginner to expert





Forensics Challenges

Forensics challenges. After solving the challenge, submit the appropriate flag here.

Hack The Box
Forensics Challenges
2.19.0

Active (10)

[40 Points] Reminiscent [by rotarydrone] [4866 solvers] 1480 👍 23 👎 Difficulty: — 26/10/2017

[30 Points] MarketDump [by butrintkomoni] [7320 solvers] 1760 👍 187 👎 Difficulty: — 16/05/2019

First Blood: artikrh

We have got informed that a hacker managed to get into our internal network after pivoiting through the web platform that runs in public internet. He managed to bypass our small product stocks logging platform and then he got our costumer database file. We believe that only one of our costumers was targeted. Can you find out who the customer was?

Download Zip Password: hackthebox sha256: d0ed5b6cc06bcb191fc0d83195542f7c1276835b1d8e2c5508e907ba740b64f6

Difficulty

○ Piece of cake ○ Very Easy ○ Easy ○ Not too Easy ○ Medium ○ A bit Hard ○ Hard ○ Too Hard ○ Extremely Hard ○ Brainfuck

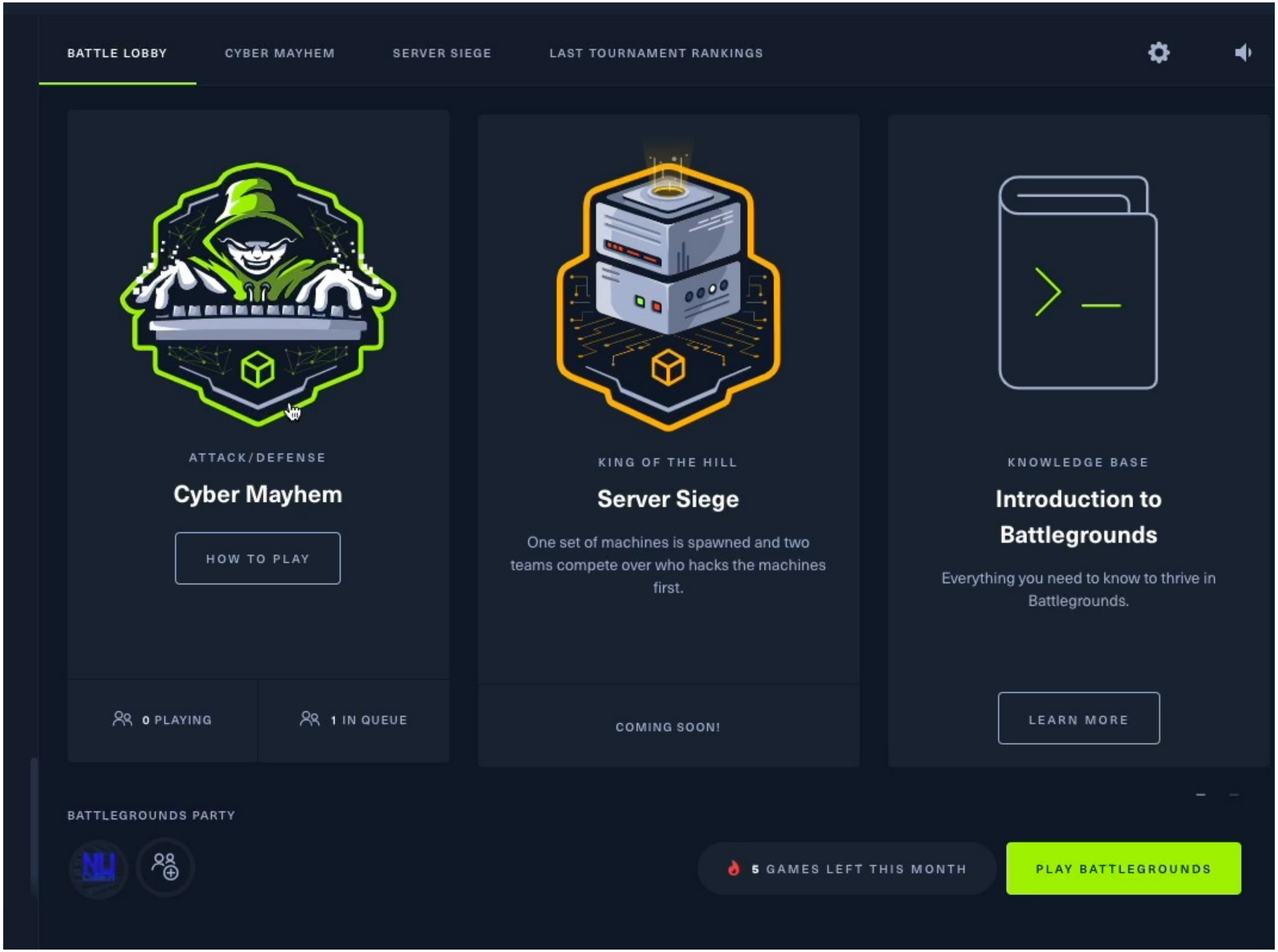
Flag format: HTB{s0m3_t3xt} Submit

[20 Points] Took the Byte [by CharlesTruluck] [7022 solvers] 1567 👍 165 👎 Difficulty: — 30/06/2019

[20 Points] USB Ripper [by snovvcrash] [4948 solvers] 1225 👍 157 👎 Difficulty: — 30/07/2019

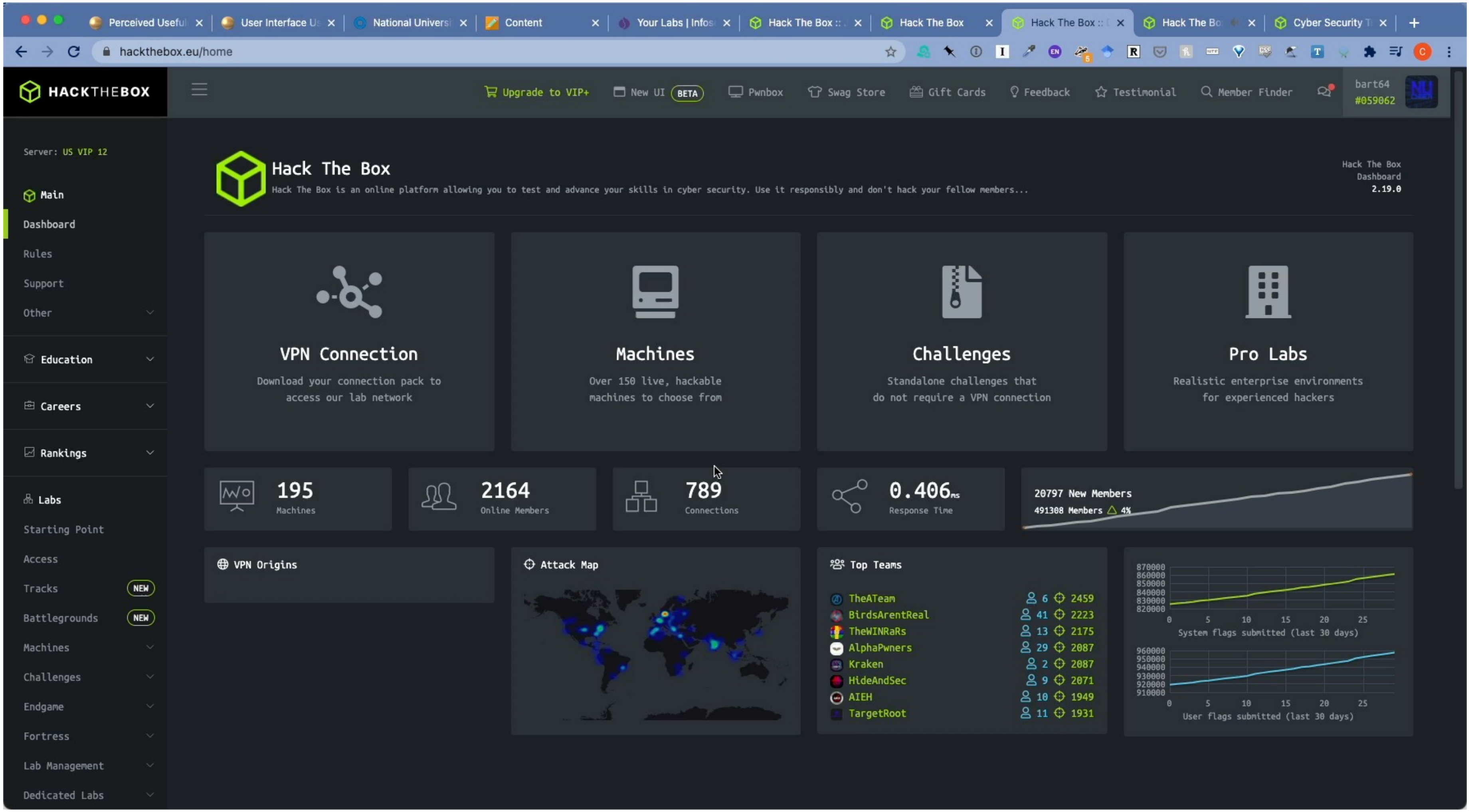
[40 Points] Obscure [by artikrh] [2065 solvers] 698 👍 17 👎 Difficulty: — 30/08/2019

[20 Points] Illumination [by SherlockSec] [8618 solvers] 2008 👍 42 👎 Difficulty: 19/09/2019



One set of machines is spawned and two teams compete over who hacks the machines first.

Everything you need to know to thrive in Battlegrounds.



Hack The Box

Hack The Box is an online platform allowing you to test and advance your skills in cyber security. Use it responsibly and don't hack your fellow members...

Hack The Box
Dashboard
2.19.0

VPN Connection
Download your connection pack to access our lab network

Machines
Over 150 live, hackable machines to choose from

Challenges
Standalone challenges that do not require a VPN connection

Pro Labs
Realistic enterprise environments for experienced hackers

195 Machines

2164 Online Members

789 Connections

0.406ms Response Time

20797 New Members
491308 Members △ 4%

VPN Origins

Attack Map

Top Teams

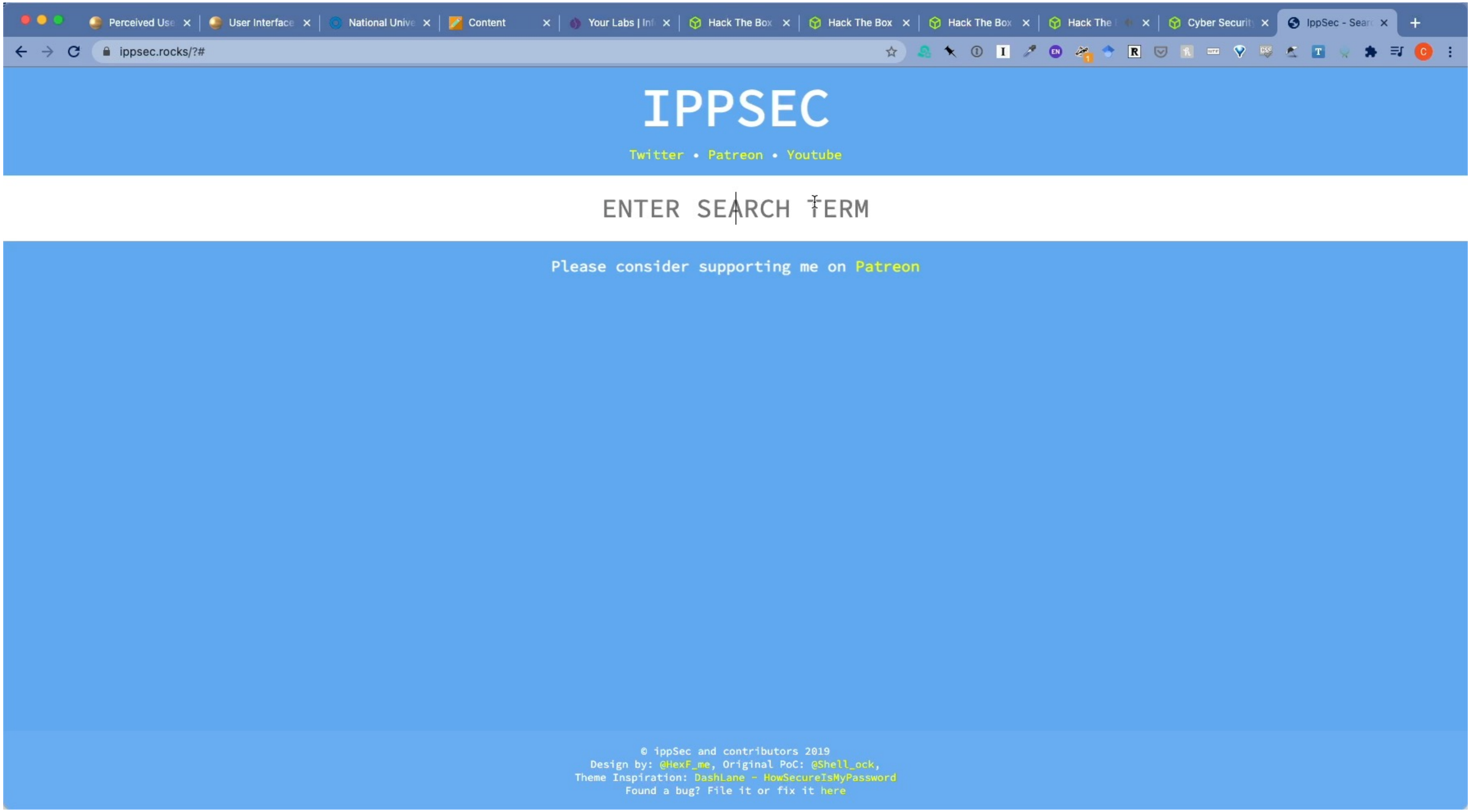
TheATeam	6	2459
BirdsArentReal	41	2223
TheWINRaRs	13	2175
AlphaPwners	29	2087
Kraken	2	2087
HideAndSec	9	2071
AIEH	10	1949
TargetRoot	11	1931

System flags submitted (last 30 days)

User flags submitted (last 30 days)

Videos and Tutorials

- Twitch.TV
  - https://www.twitch.tv/r00k_infosec/
- YouTube - Ippsec
- https://www.youtube.com/channel/UCa6eh7gCkpPo5XXUDfygQQA



IPPSEC

Twitter • Patreon • Youtube

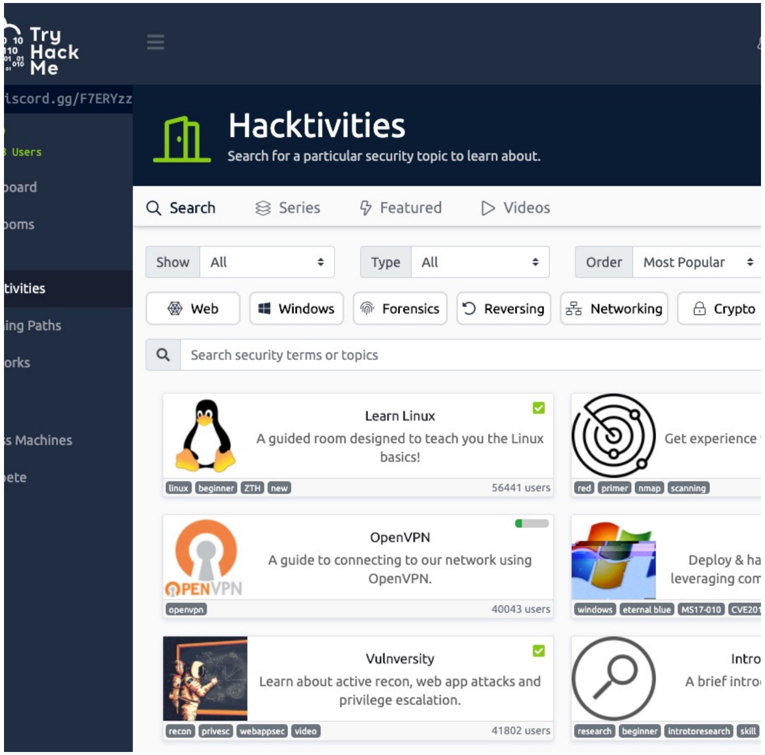
ENTER SEARCH TERM

Please consider supporting me on Patreon

© ippSec and contributors 2019
Design by: @HexF_me, Original PoC: @Shell_ock,
Theme Inspiration: DashLane - HowSecureIsMyPassword
Found a bug? File it or fix it here

TryHackMe

- Community Built
- Variety of topics
- Room Concept
- East to build your own VM and upload
- Clone and customize rooms



Hacktivities

Search for a particular security topic to learn about.

Learn Linux

A guided room designed to teach you the Linux basics!

56441 users

Get experience

OpenVPN

A guide to connecting to our network using OpenVPN.

40043 users

Deploy & ha
leveraging com

Vulnversity

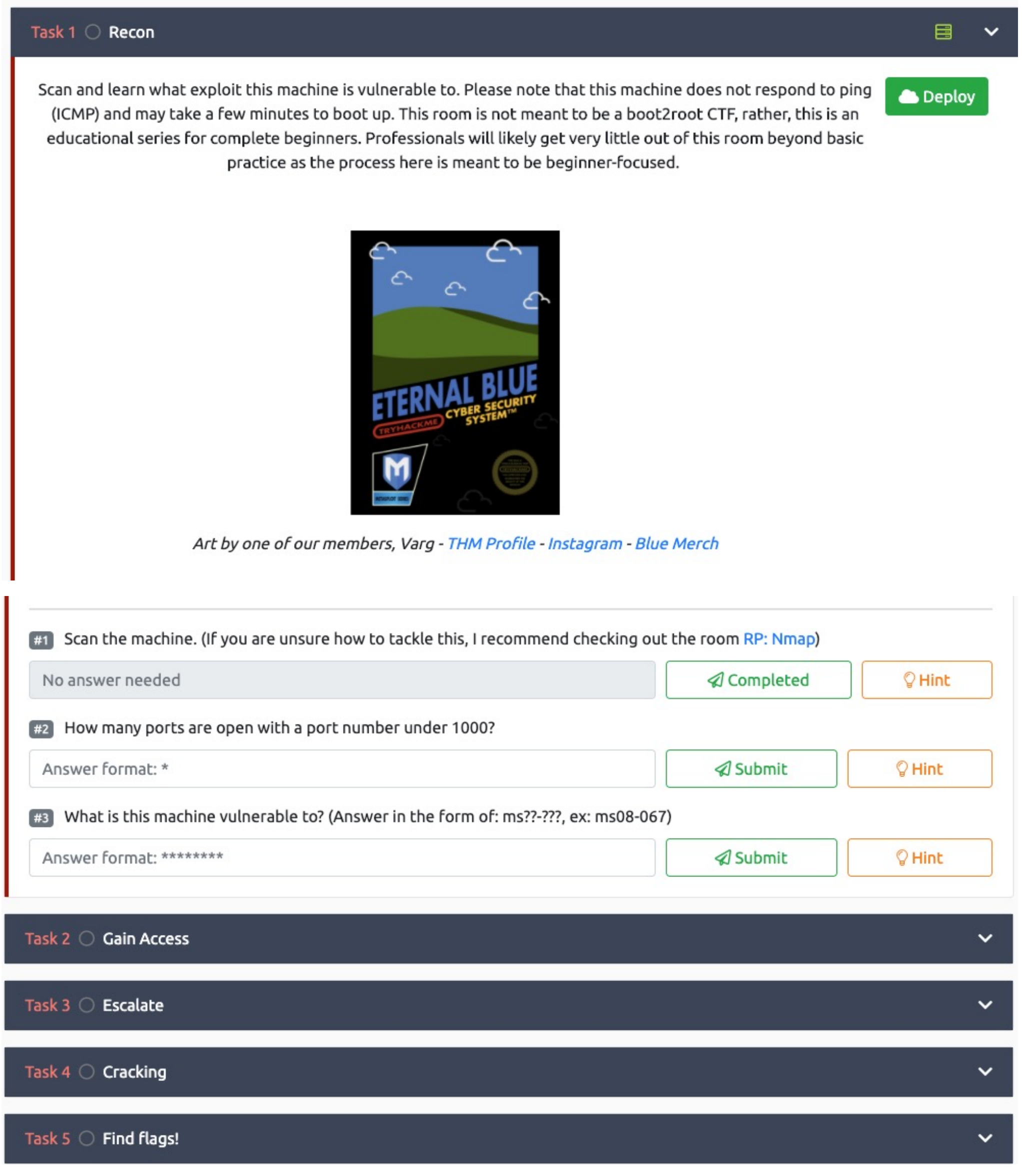
Learn about active recon, web app attacks and privilege escalation.

41802 users

Intro

A brief intro

TryHackMe



Task 1 ○ Recon

Scan and learn what exploit this machine is vulnerable to. Please note that this machine does not respond to ping (ICMP) and may take a few minutes to boot up. This room is not meant to be a boot2root CTF, rather, this is an educational series for complete beginners. Professionals will likely get very little out of this room beyond basic practice as the process here is meant to be beginner-focused.

Art by one of our members, Varg - THM Profile - Instagram - Blue Merch

#1 Scan the machine. (If you are unsure how to tackle this, I recommend checking out the room RP: Nmap)

No answer needed

#2 How many ports are open with a port number under 1000?

Answer format: *

#3 What is this machine vulnerable to? (Answer in the form of: ms??-???, ex: ms08-067)

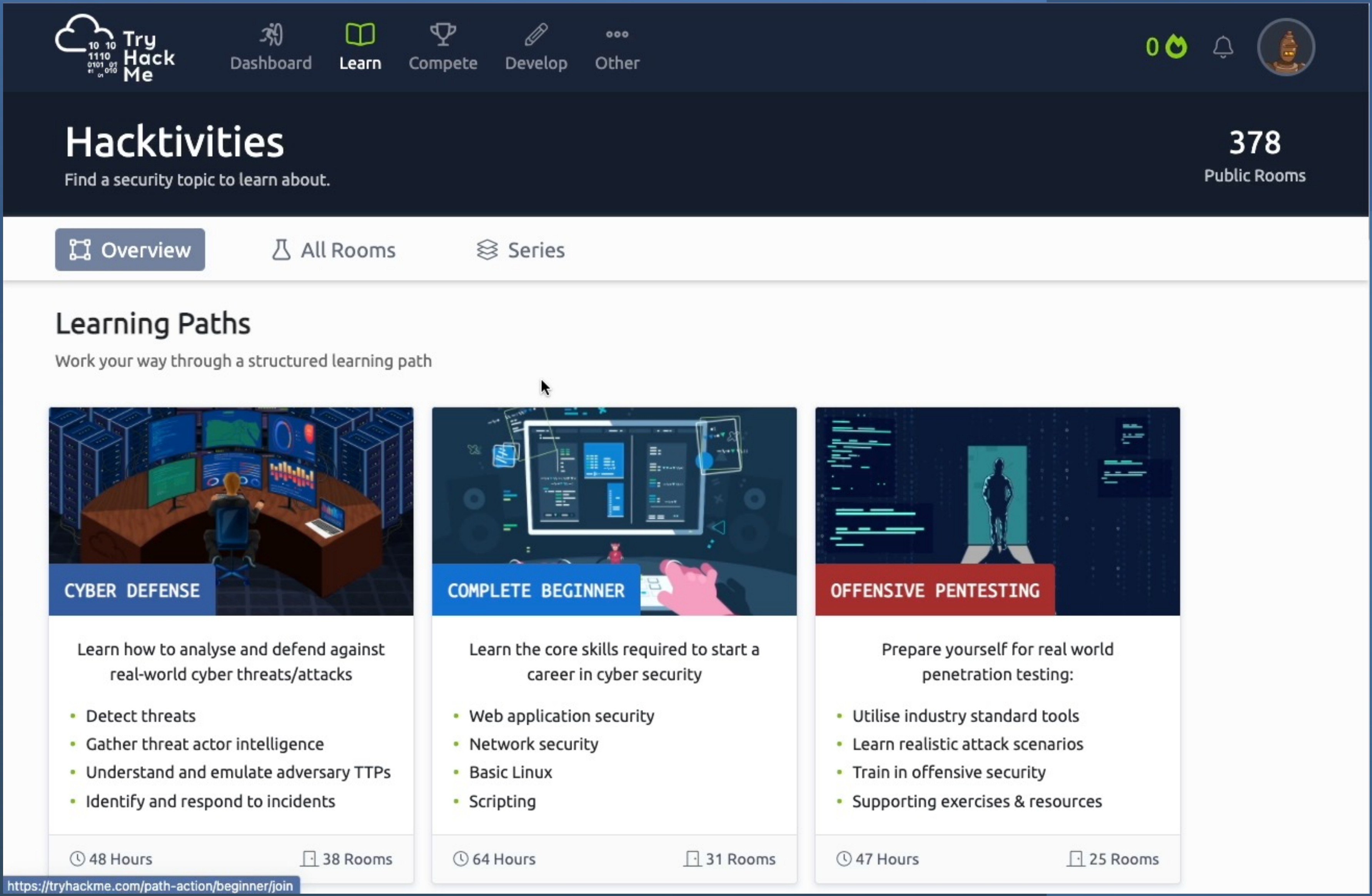
Answer format: ********

Task 2 ○ Gain Access

Task 3 ○ Escalate

Task 4 ○ Cracking

Task 5 ○ Find flags!



Hacktivities

Find a security topic to learn about.

378 Public Rooms

Learning Paths

Work your way through a structured learning path

CYBER DEFENSE

Learn how to analyse and defend against real-world cyber threats/attacks

- Detect threats
- Gather threat actor intelligence
- Understand and emulate adversary TTPs
- Identify and respond to incidents

48 Hours 38 Rooms

COMPLETE BEGINNER

Learn the core skills required to start a career in cyber security

- Web application security
- Network security
- Basic Linux
- Scripting

64 Hours 31 Rooms

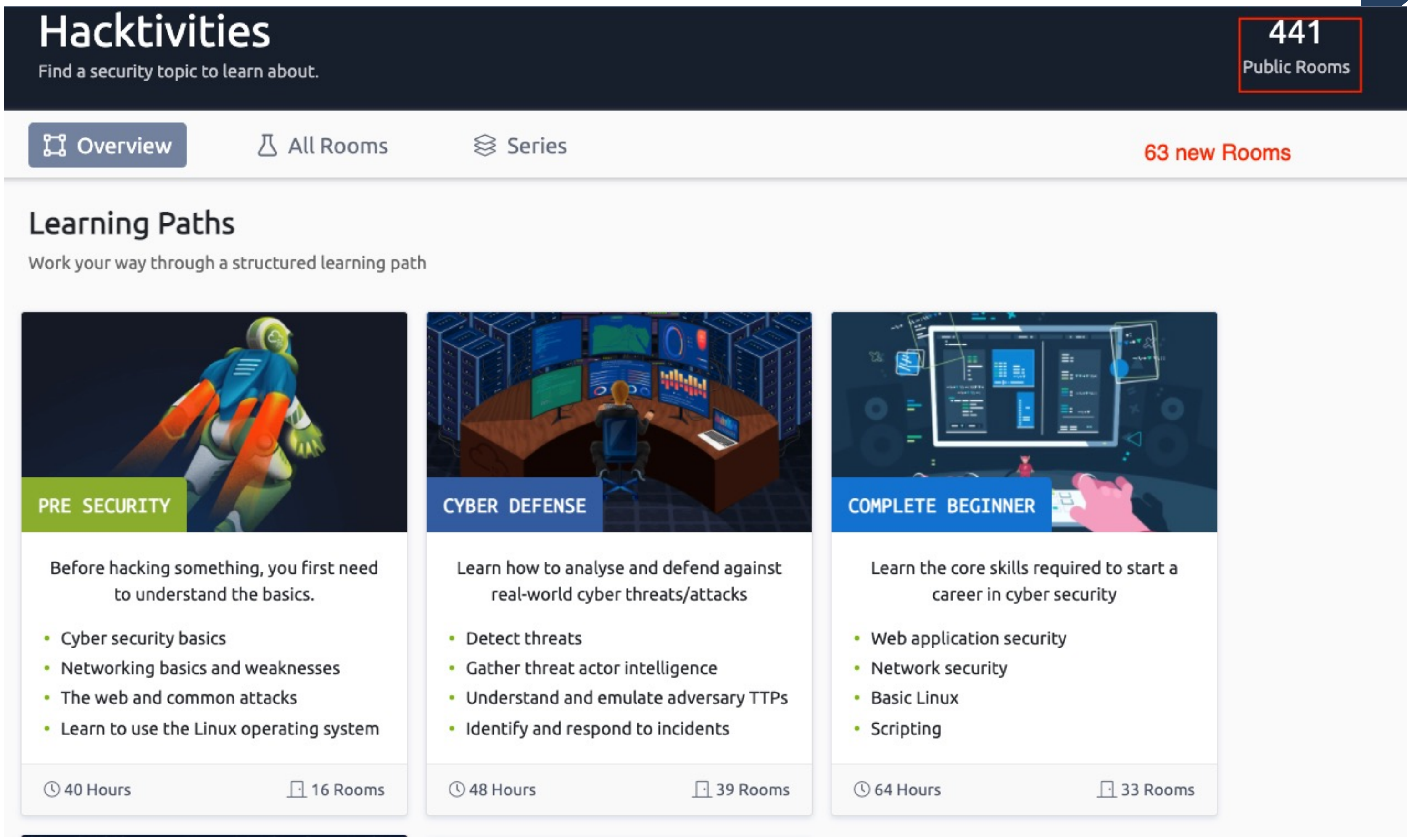
OFFENSIVE PENTESTING

Prepare yourself for real world penetration testing:

- Utilise industry standard tools
- Learn realistic attack scenarios
- Train in offensive security
- Supporting exercises & resources

47 Hours 25 Rooms

Pre Security



Hacktivities

Find a security topic to learn about.

441
Public Rooms

Overview | All Rooms | Series

63 new Rooms

Learning Paths

Work your way through a structured learning path

PRE SECURITY

Before hacking something, you first need to understand the basics.

- Cyber security basics
- Networking basics and weaknesses
- The web and common attacks
- Learn to use the Linux operating system

40 Hours | 16 Rooms

CYBER DEFENSE

Learn how to analyse and defend against real-world cyber threats/attacks

- Detect threats
- Gather threat actor intelligence
- Understand and emulate adversary TTPs
- Identify and respond to incidents

48 Hours | 39 Rooms

COMPLETE BEGINNER

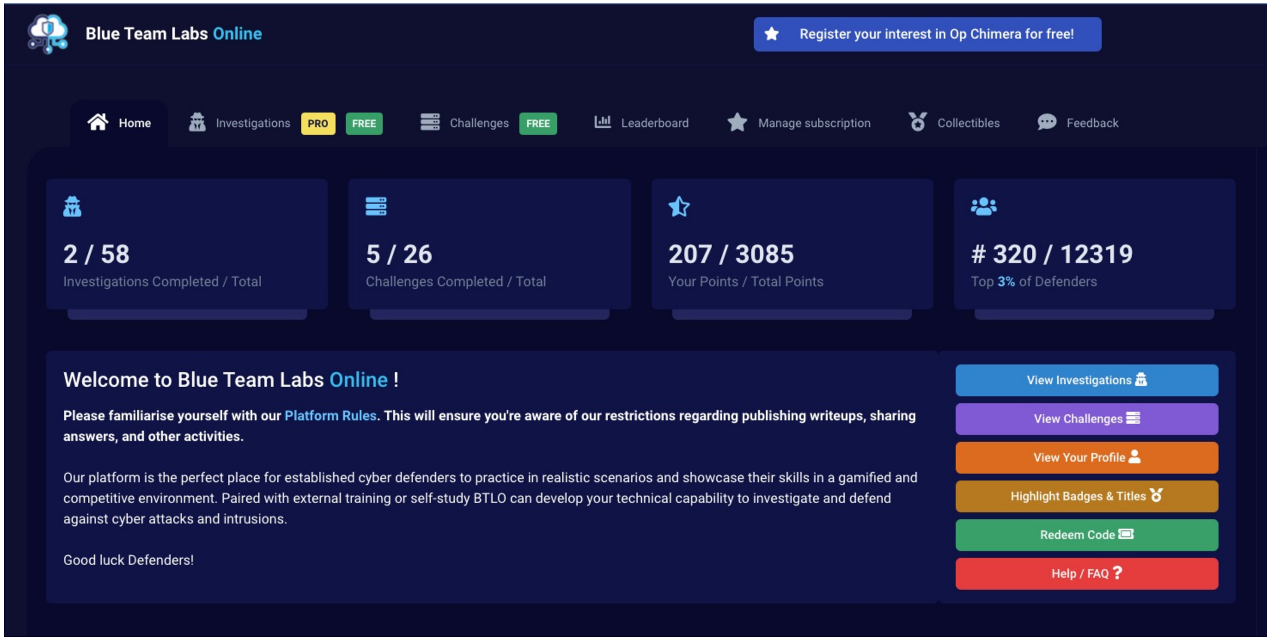
Learn the core skills required to start a career in cyber security

- Web application security
- Network security
- Basic Linux
- Scripting

64 Hours | 33 Rooms

Blue Team Labs (Hack the Box for Blue Teams)

- Community Built
- Variety of topics
- Room Concept
- Ranks and badges
- Deploys VM's



2 / 58
Investigations Completed / Total

5 / 26
Challenges Completed / Total

207 / 3085
Your Points / Total Points

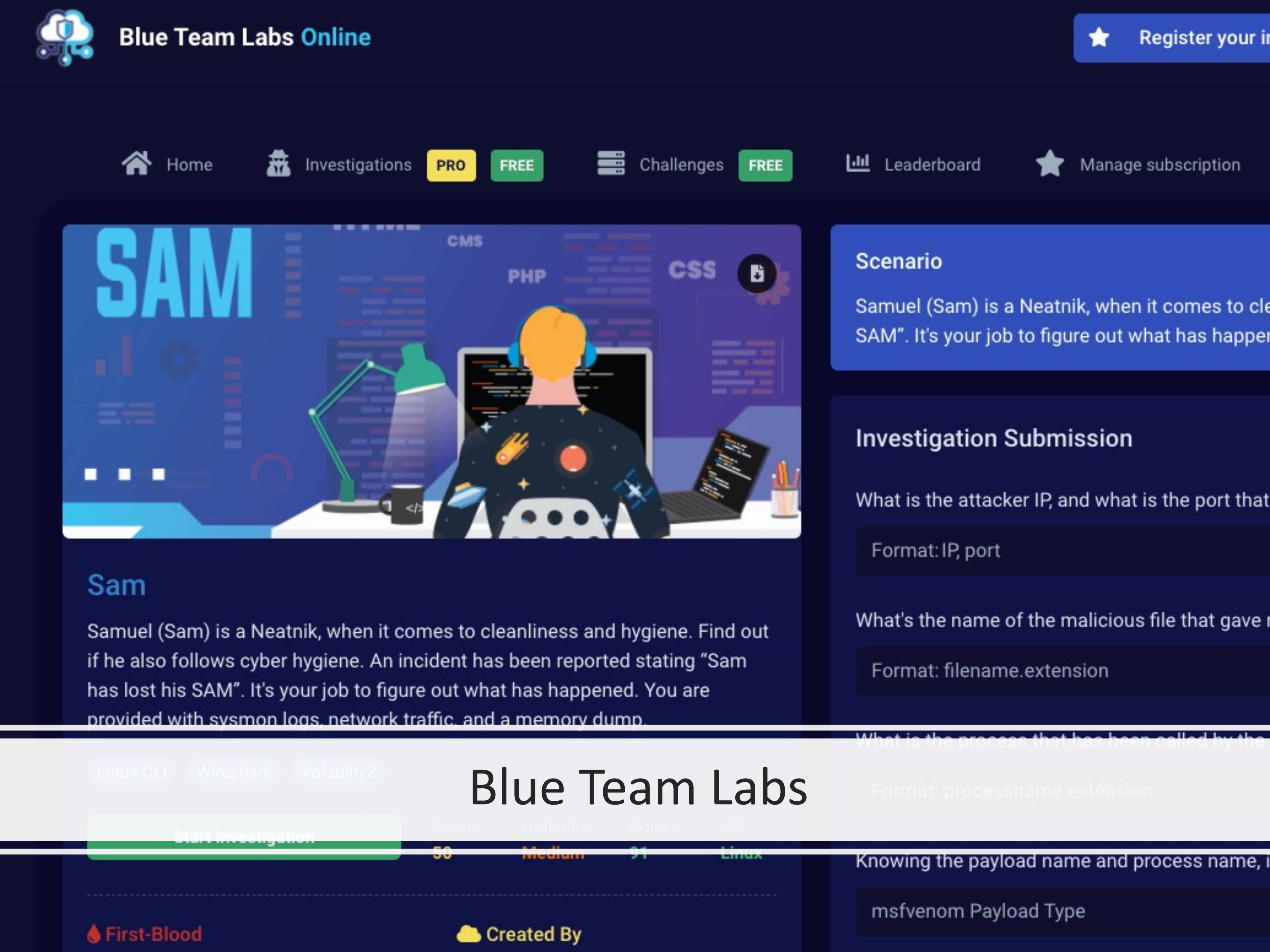
320 / 12319
Top 3% of Defenders

Welcome to Blue Team Labs Online !

Please familiarise yourself with our Platform Rules. This will ensure you're aware of our restrictions regarding publishing writeups, sharing answers, and other activities.

Our platform is the perfect place for established cyber defenders to practice in realistic scenarios and showcase their skills in a gamified and competitive environment. Paired with external training or self-study BTLO can develop your technical capability to investigate and defend against cyber attacks and intrusions.

Good luck Defenders!



Blue Team Labs

Blue Team Labs Online

★ Register your i

Home | Investigations PRO FREE | Challenges FREE | Leaderboard | ★ Manage subscription

Sam

Samuel (Sam) is a Neatnik, when it comes to cleanliness and hygiene. Find out if he also follows cyber hygiene. An incident has been reported stating "Sam has lost his SAM". It's your job to figure out what has happened. You are provided with sysmon logs, network traffic, and a memory dump.

Linux CLI | Wireshark | Volatility2

Start Investigation

Points	Difficulty	Solves	OS
50	Medium	91	Linux

First-Blood | Created By

Scenario

Samuel (Sam) is a Neatnik, when it comes to cle
SAM". It's your job to figure out what has happen

Investigation Submission

What is the attacker IP, and what is the port that

Format: IP, port

What's the name of the malicious file that gave

Format: filename.extension

What is the process that has been called by the

Format: processname.extension

Knowing the payload name and process name, i

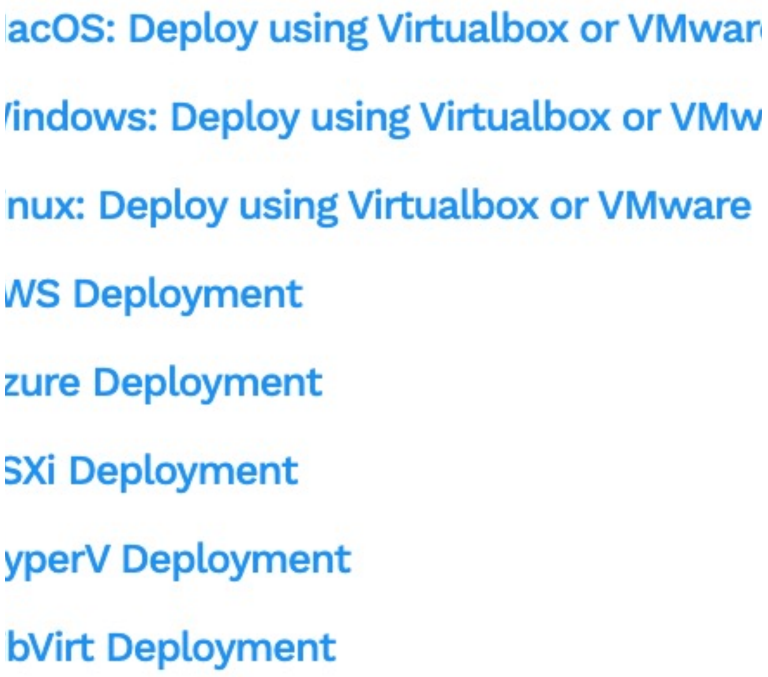
msfvenom Payload Type

Deploy in the Cloud

- Use Devops tools to deploy labs in the cloud
- Examples
  - Detection Lab
  - Mordor
  - CyberRange

Detection Lab

- “DetectionLab is a repository containing a variety of Packer, Vagrant, Powershell, Ansible, and Terraform scripts that allow you to automate the process of bringing an ActiveDirectory environment online complete with logging and security tooling using a variety of different platforms.
- https://www.detectionlab.network/



acOS: Deploy using Virtualbox or VMwar

/indows: Deploy using Virtualbox or VMw

nux: Deploy using Virtualbox or VMware

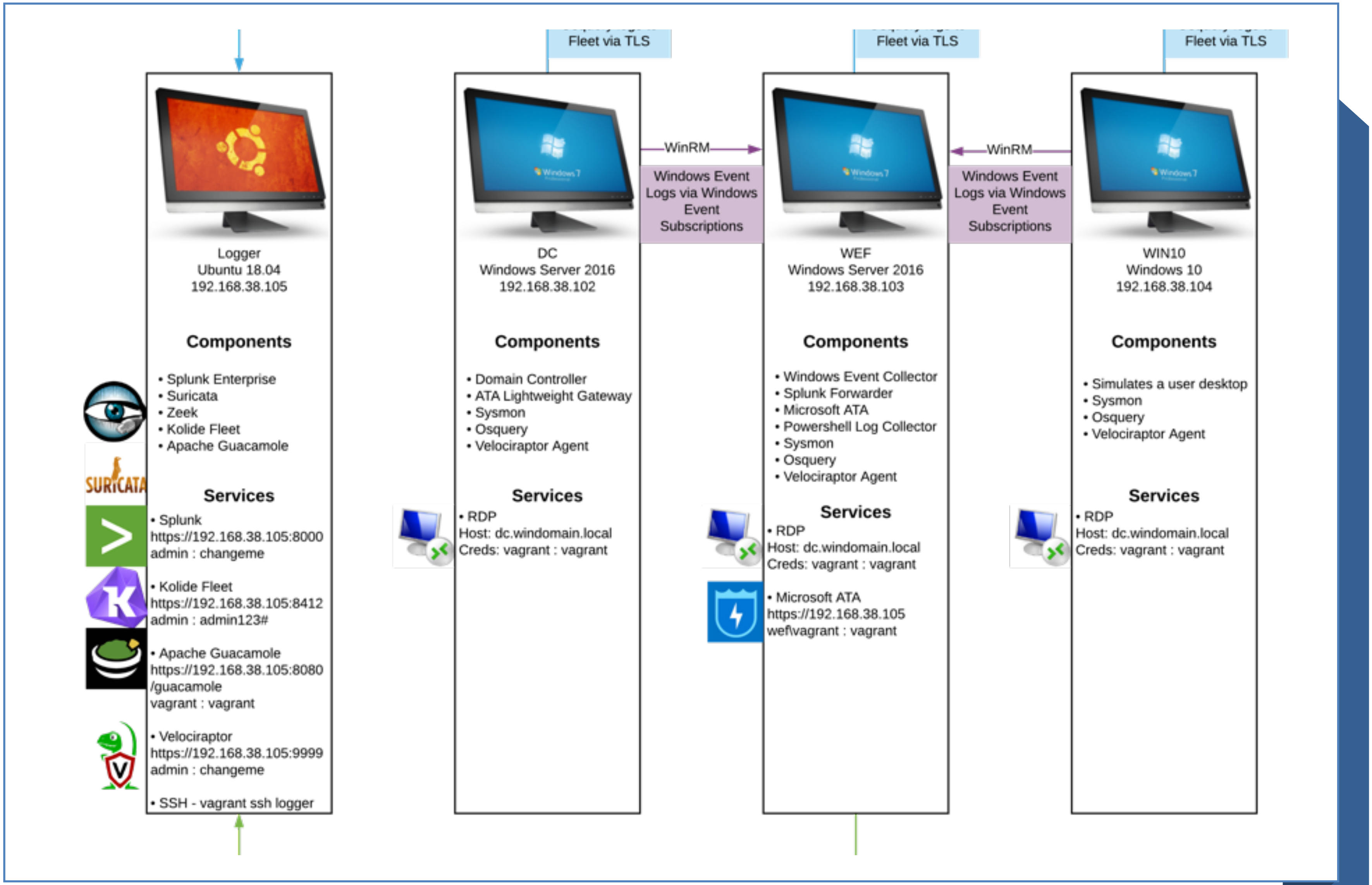
WS Deployment

zure Deployment

SXi Deployment

yperV Deployment

bVirt Deployment



Fleet via TLS

Fleet via TLS

Fleet via TLS

WinRM

Windows Event Logs via Windows Event Subscriptions

WinRM

Windows Event Logs via Windows Event Subscriptions

Logger
Ubuntu 18.04
192.168.38.105

Components

- Splunk Enterprise
- Suricata
- Zeek
- Kolide Fleet
- Apache Guacamole

Services

- Splunk
https://192.168.38.105:8000
admin : changeme
- Kolide Fleet
https://192.168.38.105:8412
admin : admin123#
- Apache Guacamole
https://192.168.38.105:8080
/guacamole
vagrant : vagrant
- Velociraptor
https://192.168.38.105:9999
admin : changeme
- SSH - vagrant ssh logger

DC
Windows Server 2016
192.168.38.102

Components

- Domain Controller
- ATA Lightweight Gateway
- Sysmon
- Osquery
- Velociraptor Agent

Services

- RDP
Host: dc.windomain.local
Creds: vagrant : vagrant

WEF
Windows Server 2016
192.168.38.103

Components

- Windows Event Collector
- Splunk Forwarder
- Microsoft ATA
- Powershell Log Collector
- Sysmon
- Osquery
- Velociraptor Agent

Services

- RDP
Host: dc.windomain.local
Creds: vagrant : vagrant
- Microsoft ATA
https://192.168.38.105
wef\vagrant : vagrant

WIN10
Windows 10
192.168.38.104

Components

- Simulates a user desktop
- Sysmon
- Osquery
- Velociraptor Agent

Services

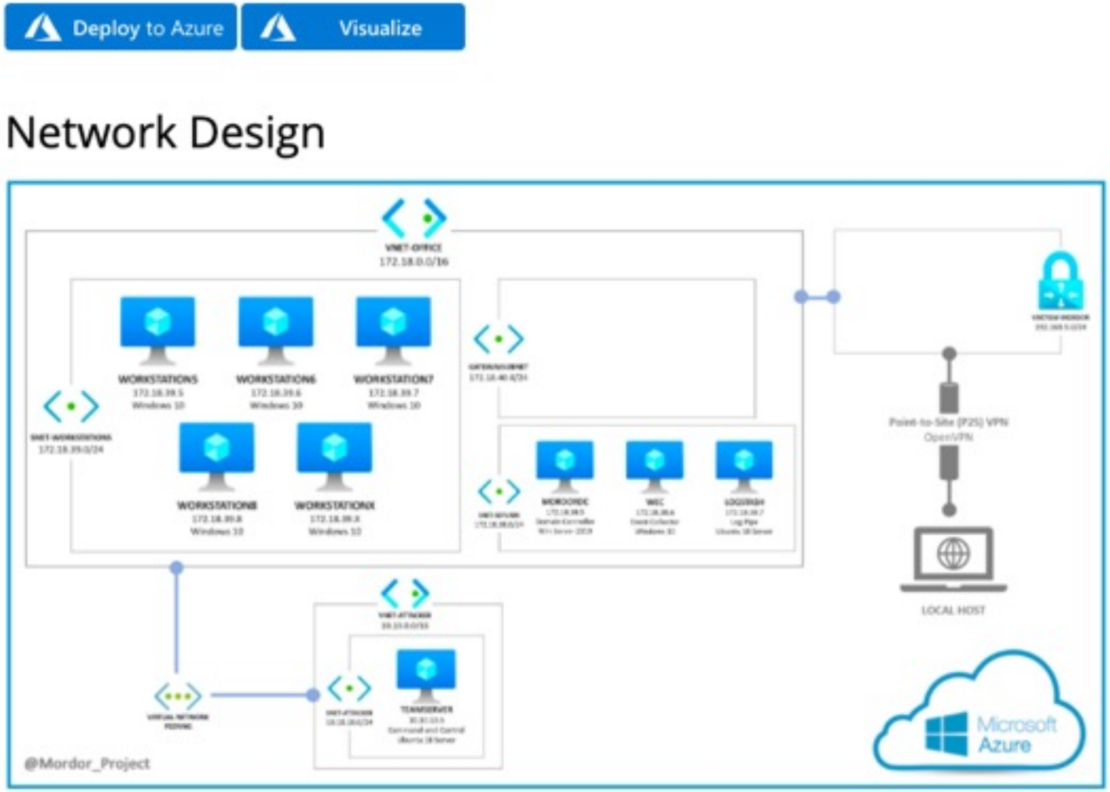
- RDP
Host: dc.windomain.local
Creds: vagrant : vagrant

Project Mordor

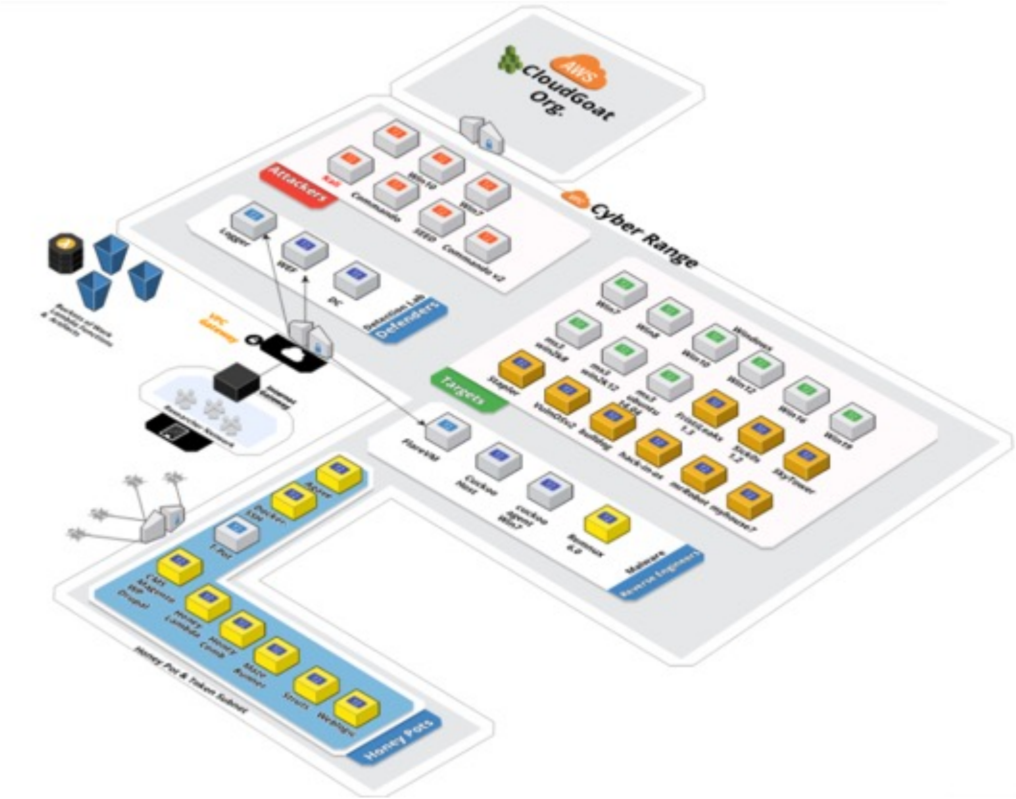
- The Mordor project provides pre-recorded security events generated by simulated adversarial techniques in the form of JavaScript Object Notation (JSON) files for easy consumption.
- The pre-recorded data is categorized by platforms, adversary groups, tactics and techniques defined by the Mitre ATT&CK Framework.
- The pre-recorded data represents not only specific known malicious events but additional context/events that occur around it.
- https://mordordatasets.com/introduction.html

Template for Azure deployment

Project Mordor



Network Design



Cyber Range

- This project provides a bootstrap framework for a complete offensive, defensive, reverse engineering, & security intelligence tooling in a private research lab using the AWS Cloud.

- This project contains vulnerable systems and a toolkit of the most powerful open-source / community edition tools known to Penetration testers, Developers, Malware Analysts, Forensic/Reverse Engineers, ThreatHunters, & more.

Nice Challenge

- Excellent set of challenges
- Mapped to NICE Framework
- Free
- Reservations required

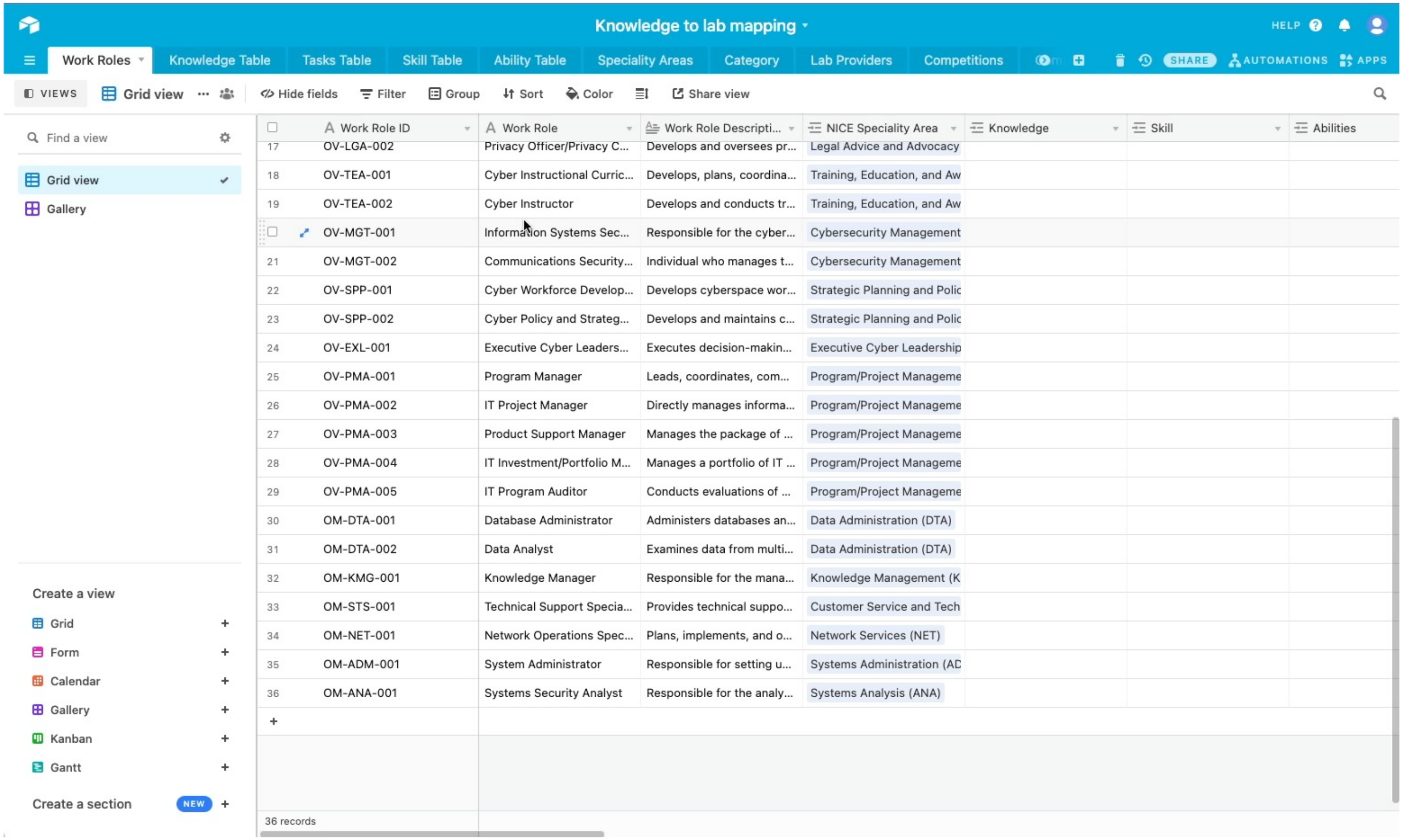
Mapping Labs To Objectives

Build a catalog of labs mapped to the NICE Framework and CAE KU’s

Student project mapping TryHackMe

Using AirTable

Airtable Demo



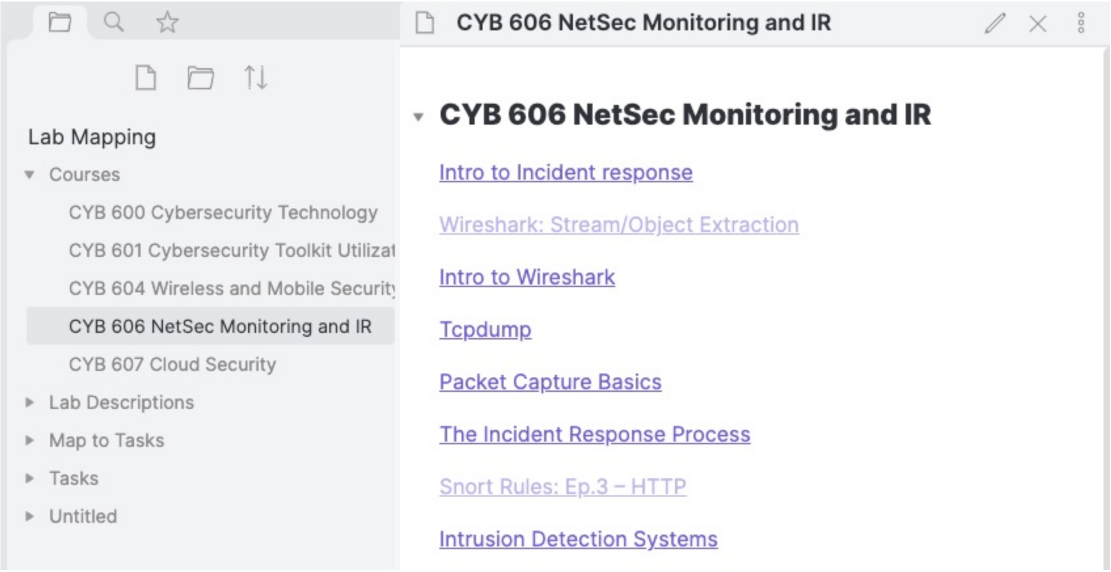
	Work Role ID	Work Role	Work Role Descripti...	NICE Speciality Area	Knowledge	Skill	Abilities
17	OV-LGA-002	Privacy Officer/Privacy C...	Develops and oversees pr...	Legal Advice and Advocacy			
18	OV-TEA-001	Cyber Instructional Curric...	Develops, plans, coordina...	Training, Education, and Aw			
19	OV-TEA-002	Cyber Instructor	Develops and conducts tr...	Training, Education, and Aw			
□	OV-MGT-001	Information Systems Sec...	Responsible for the cyber...	Cybersecurity Management			
21	OV-MGT-002	Communications Security...	Individual who manages t...	Cybersecurity Management			
22	OV-SPP-001	Cyber Workforce Develop...	Develops cyberspace wor...	Strategic Planning and Polic			
23	OV-SPP-002	Cyber Policy and Strateg...	Develops and maintains c...	Strategic Planning and Polic			
24	OV-EXL-001	Executive Cyber Leaders...	Executes decision-makin...	Executive Cyber Leadership			
25	OV-PMA-001	Program Manager	Leads, coordinates, com...	Program/Project Manageme			
26	OV-PMA-002	IT Project Manager	Directly manages informa...	Program/Project Manageme			
27	OV-PMA-003	Product Support Manager	Manages the package of ...	Program/Project Manageme			
28	OV-PMA-004	IT Investment/Portfolio M...	Manages a portfolio of IT ...	Program/Project Manageme			
29	OV-PMA-005	IT Program Auditor	Conducts evaluations of ...	Program/Project Manageme			
30	OM-DTA-001	Database Administrator	Administers databases an...	Data Administration (DTA)			
31	OM-DTA-002	Data Analyst	Examines data from multi...	Data Administration (DTA)			
32	OM-KMG-001	Knowledge Manager	Responsible for the mana...	Knowledge Management (K			
33	OM-STS-001	Technical Support Specia...	Provides technical suppo...	Customer Service and Tech			
34	OM-NET-001	Network Operations Spec...	Plans, implements, and o...	Network Services (NET)			
35	OM-ADM-001	System Administrator	Responsible for setting u...	Systems Administration (AD			
36	OM-ANA-001	Systems Security Analyst	Responsible for the analy...	Systems Analysis (ANA)			

36 records

How do we share?

Obsidian

- Multi platform notetaking app with wiki like capability
- Based on Markdown



Lab Mapping
Courses
CYB 600 Cybersecurity Technology
CYB 601 Cybersecurity Toolkit Utilizat
CYB 604 Wireless and Mobile Security
CYB 606 NetSec Monitoring and IR
CYB 607 Cloud Security
Lab Descriptions
Map to Tasks
Tasks
Untitled
CYB 606 NetSec Monitoring and IR

CYB 606 NetSec Monitoring and IR

Intro to Incident response

Wireshark: Stream/Object Extraction

Intro to Wireshark

Tcpdump

Packet Capture Basics

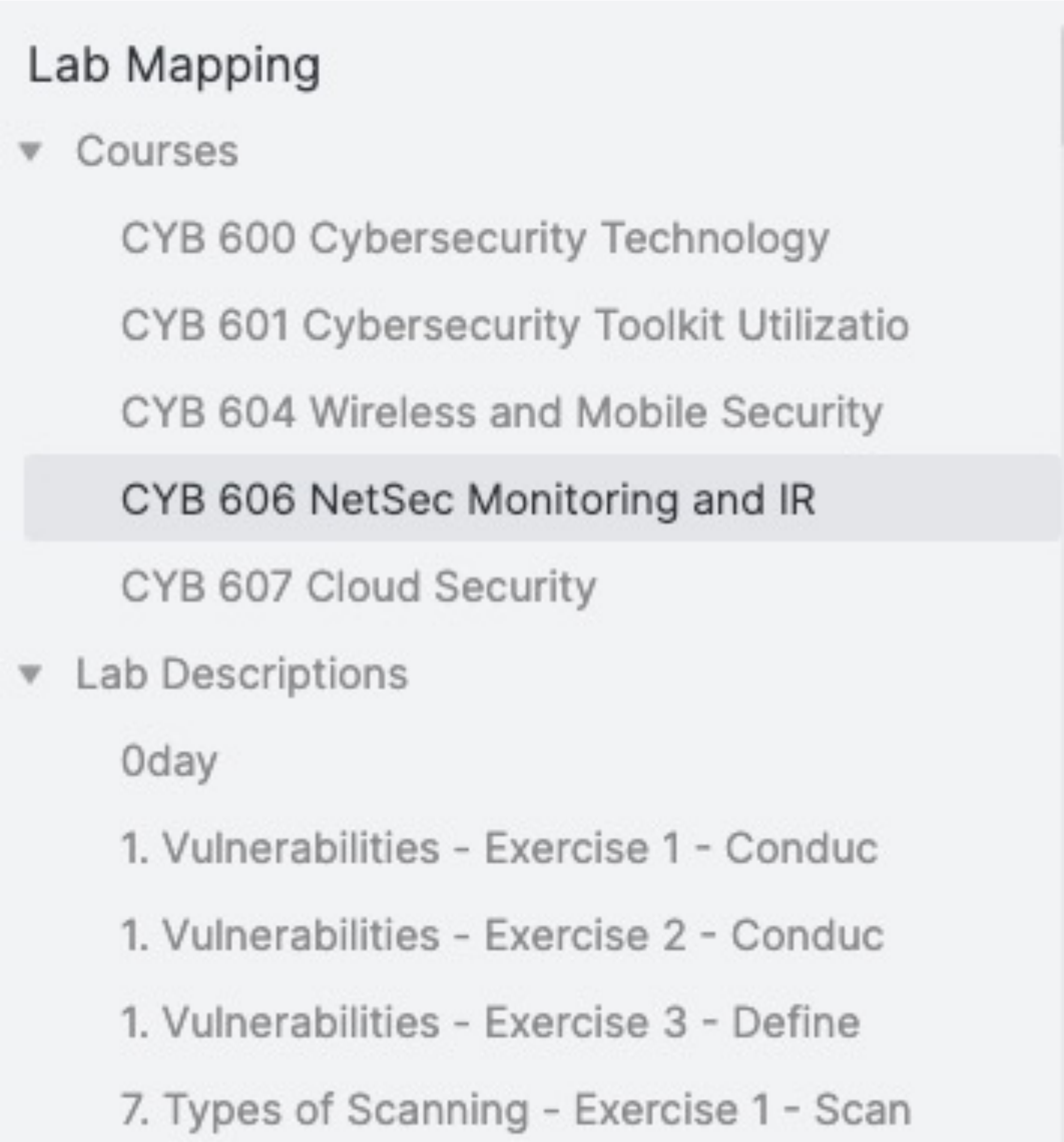
The Incident Response Process

Snort Rules: Ep.3 – HTTP

Intrusion Detection Systems

Workflow

1. Build view in AirTable
2. Export view to CSV
3. Clean up columns
4. Run Python script that creates markdown files for each row
5. Copy to Obsidian



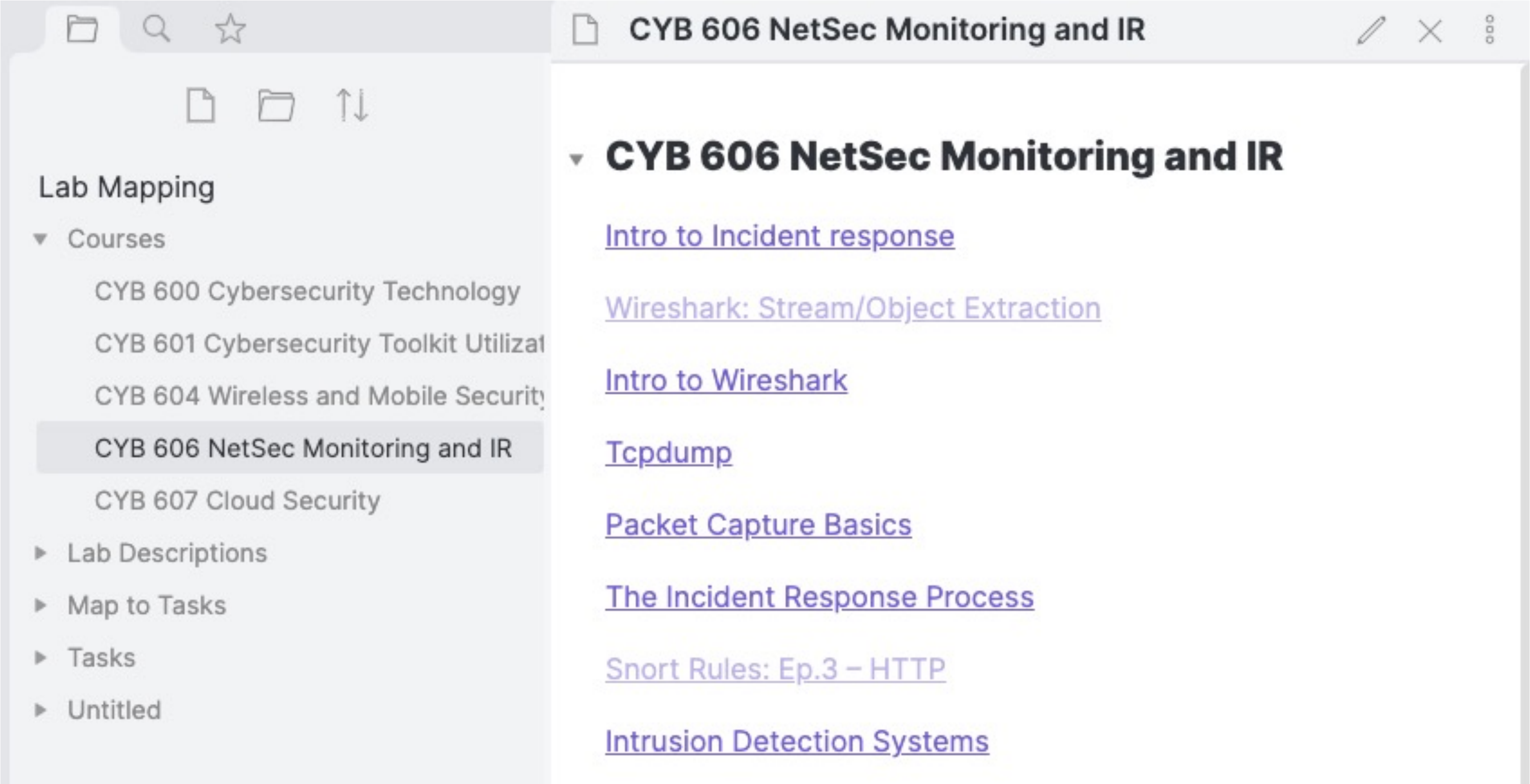
Lab Mapping

▾ Courses

- CYB 600 Cybersecurity Technology
- CYB 601 Cybersecurity Toolkit Utilizatio
- CYB 604 Wireless and Mobile Security
- CYB 606 NetSec Monitoring and IR
- CYB 607 Cloud Security

▾ Lab Descriptions

- 0day
- 1. Vulnerabilities - Exercise 1 - Conduc
- 1. Vulnerabilities - Exercise 2 - Conduc
- 1. Vulnerabilities - Exercise 3 - Define
- 7. Types of Scanning - Exercise 1 - Scan



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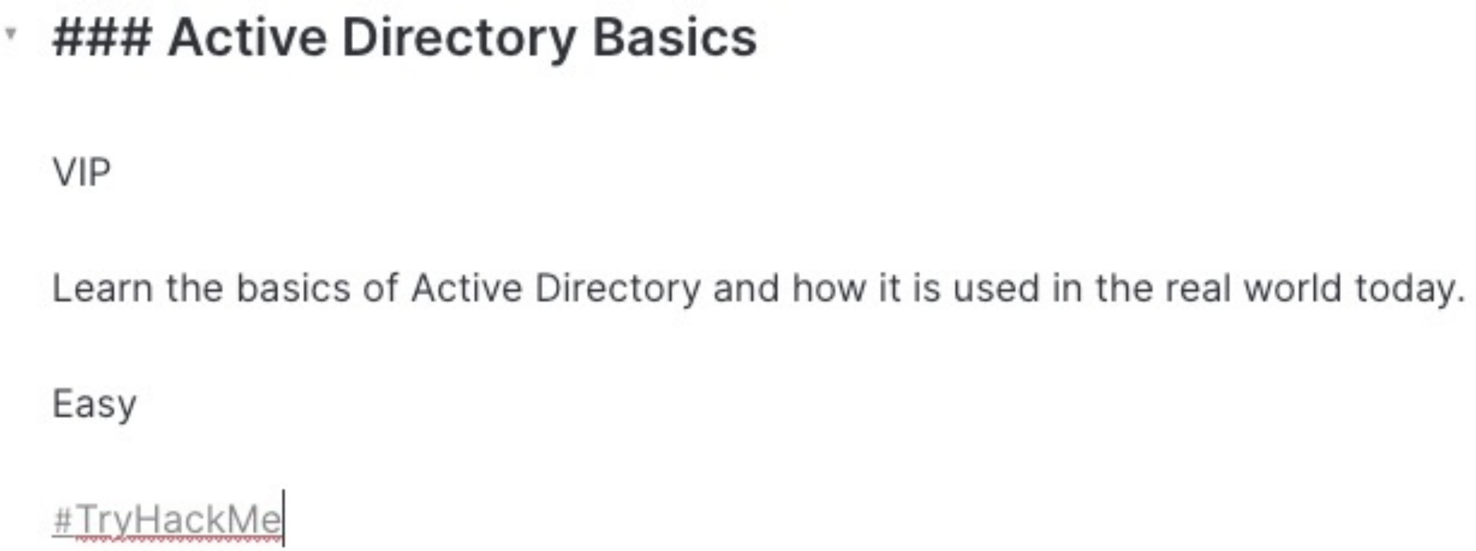
Intrusion Detection Systems

Course Page



Active Directory Basics

VIP

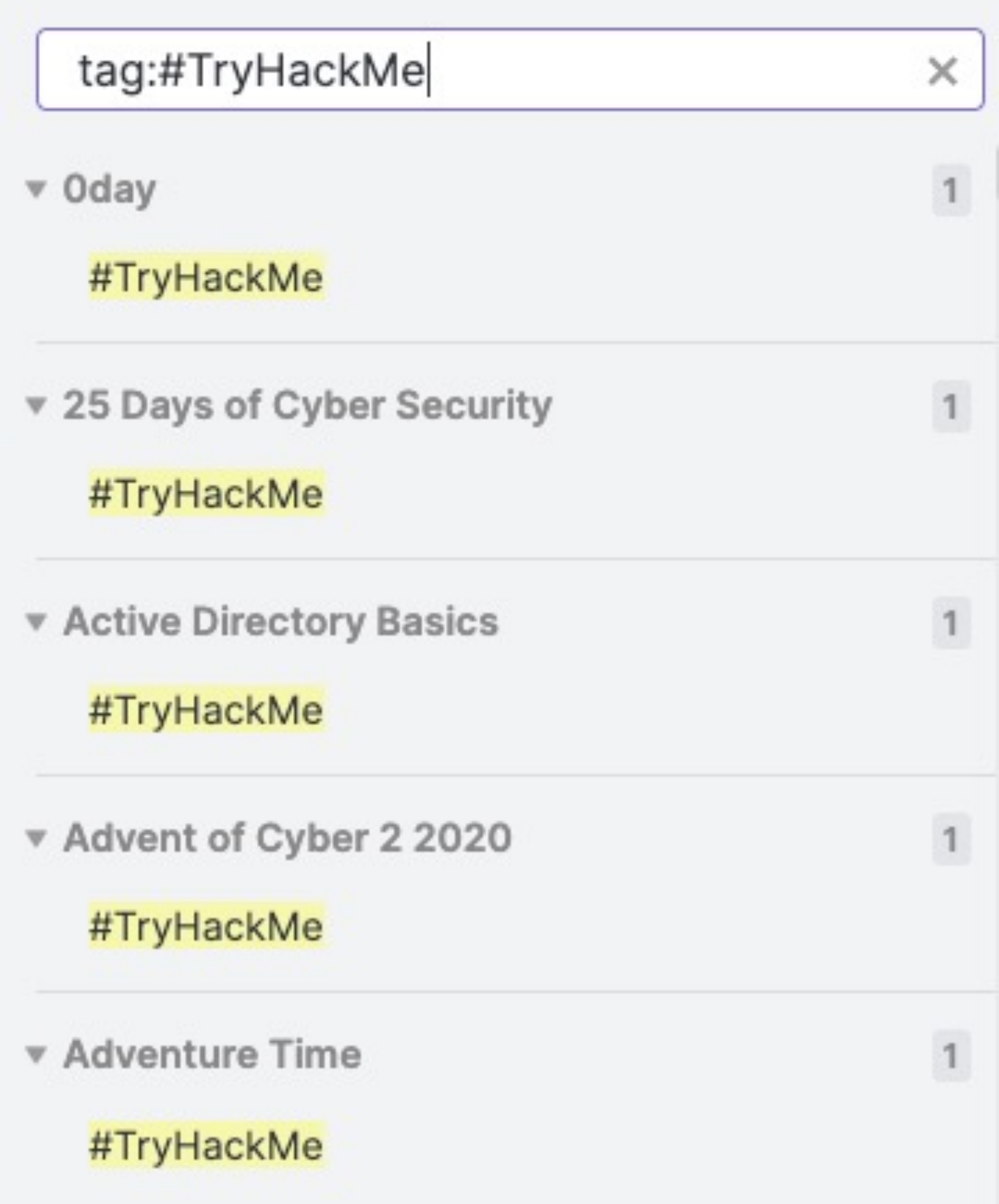
Learn the basics of Active Directory and how it is used in the real world today.

Easy

#TryHackMe

Lab Page

Tags



tag:#TryHackMe

▾ 0day 1

#TryHackMe

▾ 25 Days of Cyber Security 1

#TryHackMe

▾ Active Directory Basics 1

#TryHackMe

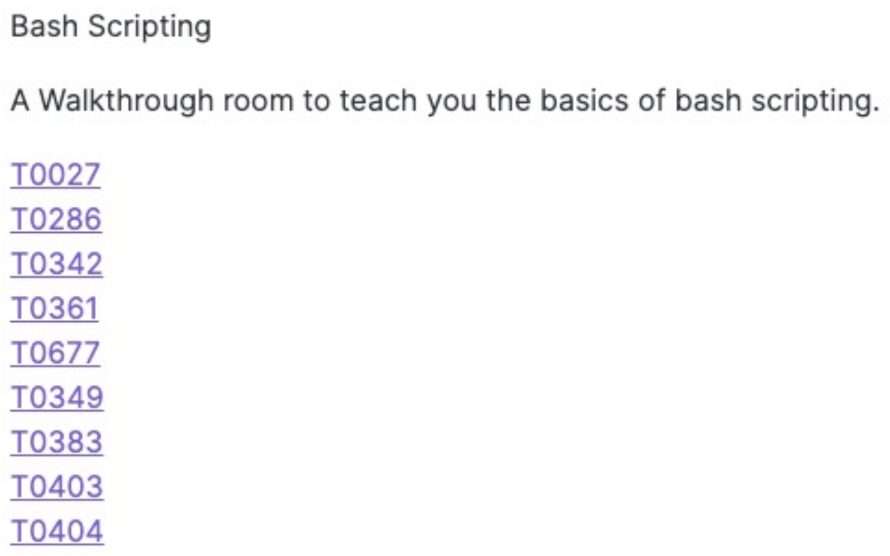
▾ Advent of Cyber 2 2020 1

#TryHackMe

▾ Adventure Time 1

#TryHackMe

Labs to Tasks



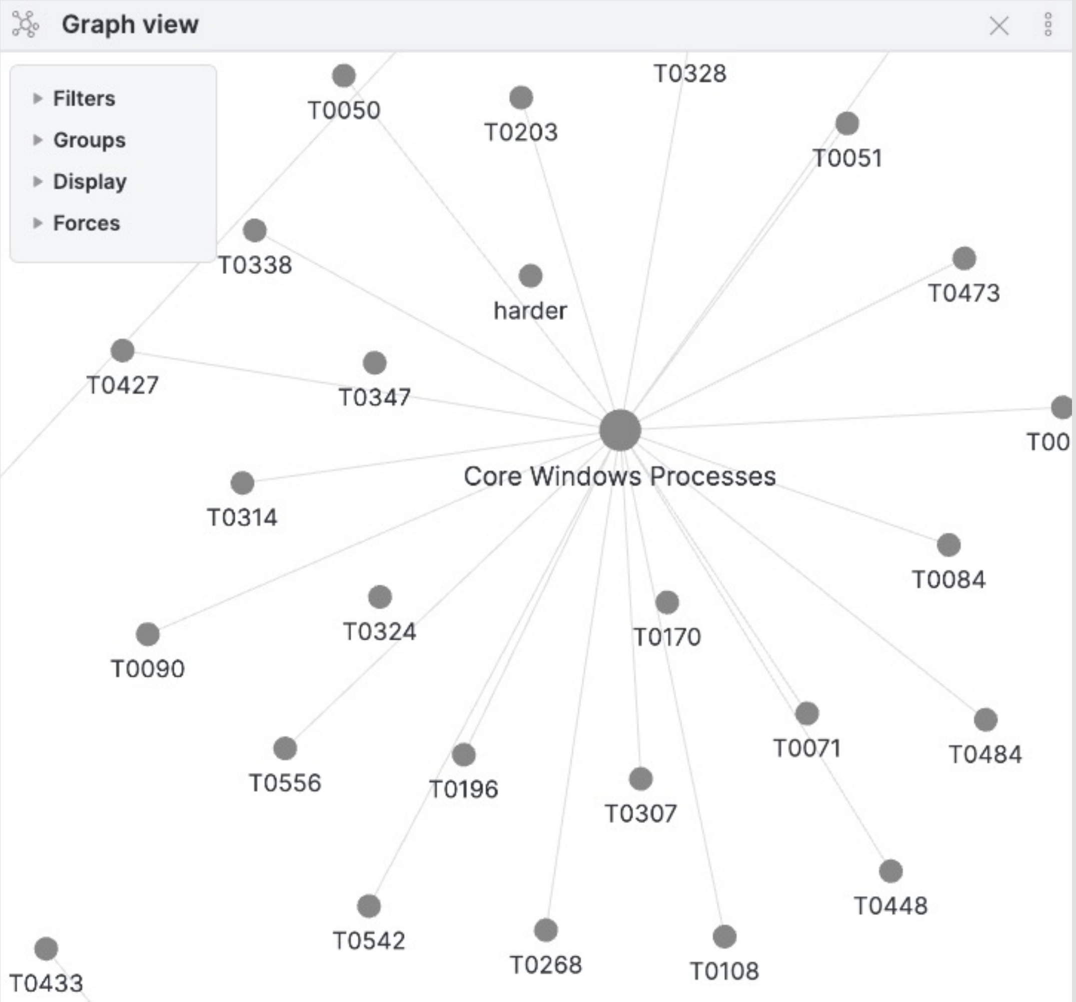
Bash Scripting

A Walkthrough room to teach you the basics of bash scripting.

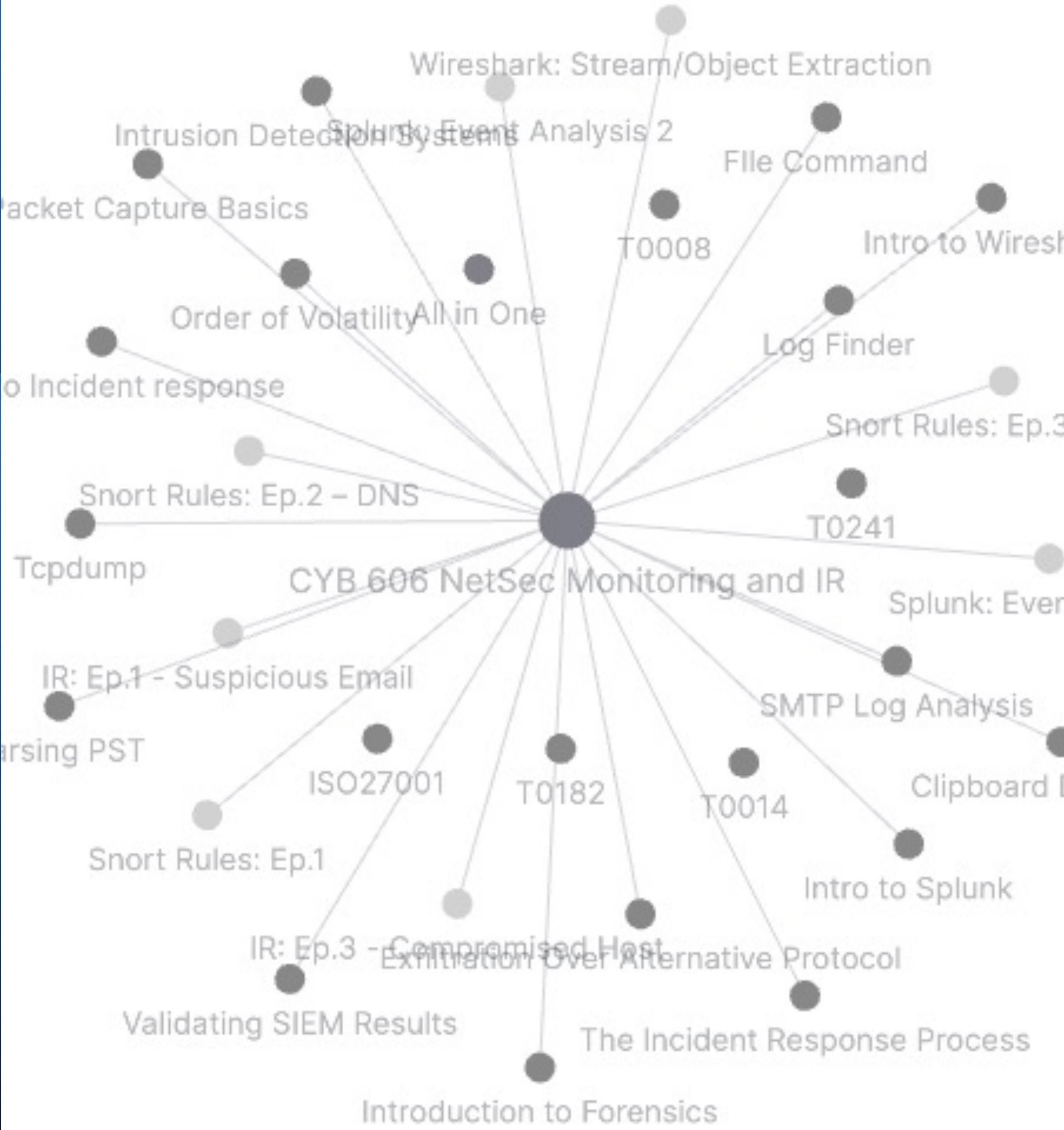
T0027
T0286
T0342
T0361
T0677
T0349
T0383
T0403
T0404

- Links go to tasks

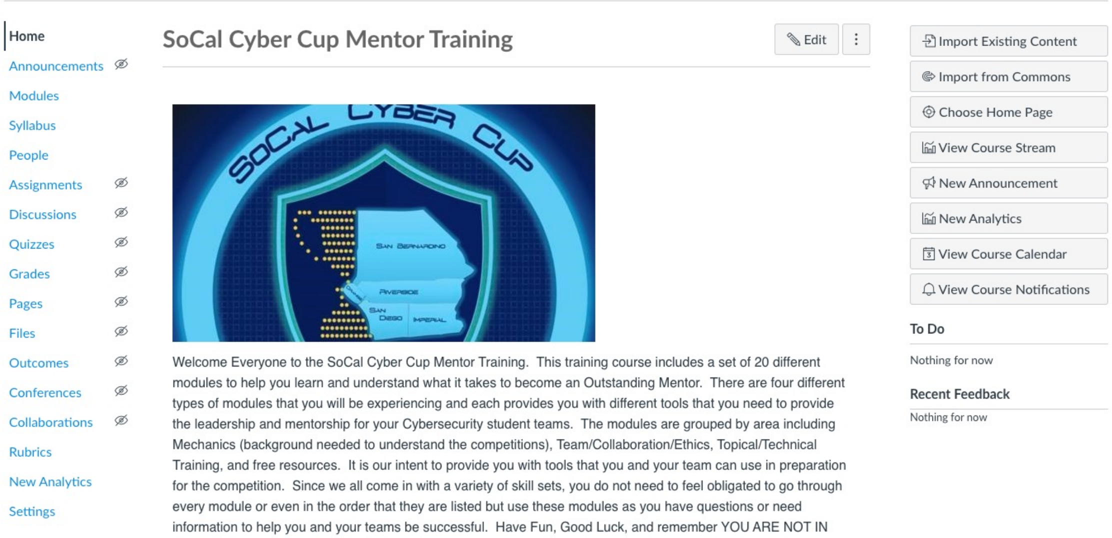
Visualization



Visualization



Cyber Competition Coach and Mentor Training



SoCal Cyber Cup Mentor Training

Welcome Everyone to the SoCal Cyber Cup Mentor Training. This training course includes a set of 20 different modules to help you learn and understand what it takes to become an Outstanding Mentor. There are four different types of modules that you will be experiencing and each provides you with different tools that you need to provide the leadership and mentorship for your Cybersecurity student teams. The modules are grouped by area including Mechanics (background needed to understand the competitions), Team/Collaboration/Ethics, Topical/Technical Training, and free resources. It is our intent to provide you with tools that you and your team can use in preparation for the competition. Since we all come in with a variety of skill sets, you do not need to feel obligated to go through every module or even in the order that they are listed but use these modules as you have questions or need information to help you and your teams be successful. Have Fun, Good Luck, and remember YOU ARE NOT IN

Questions?
Volunteer to help?

Email: csimpson@nu.edu

Links

- https://www.immersivelabs.com/digital-cyber-academies/
- https://overthewire.org/wargames/
- https://underthewire.tech/
- https://www.hackthebox.eu/
- https://www.picoctf.org/
- https://tryhackme.com/
- https://www.youtube.com/channel/UCa6eh7gCkpPo5XXUDfygQQA
- https://www.twitch.tv/r00k_infosec/
- https://www.detectionlab.network/
- https://mordordatasets.com/introduction.html
- https://medium.com/aws-cyber-range
- https://clark.center/home
- https://github.com/carnal0wnage/weirdAAL
- https://github.com/RhinoSecurityLabs/cloudgoat
- https://rhinosecuritylabs.com/aws/assume-worst-aws-assume-role-enumeration/
- https://obsidian.md/