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CYBER SKYLINE

The National Cyber League
A Community Where Cybersecurity Is a Passion

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NCL Spring 2023 Team Game Scouting Report

Dear Thaddeus Thomas (Team "IveBeenPwned"),

Thank you for participating in the National Cyber League (NCL) 2023 Spring Season! Our goal is to prepare the next generation of cybersecurity professionals, and your participation is helping achieve that goal.

The NCL was founded in May 2011 to provide an ongoing virtual training ground for collegiate students to develop, practice, and validate their cybersecurity skills in preparation for further learning, industry certifications, and career readiness. The NCL scenario-based challenges were designed around performance-based exam objectives of CompTIA certifications and are aligned to the National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework published by the National Institute of Standards and Technology (NIST).

As you look to a future career in cybersecurity, we hope you find this report to be valuable in both validating skills and identifying areas for improvement across the nine NCL skills categories. You can use this NCL Scouting Report to:

- Validate your skills to employers in any job application or professional portfolio;
- Show case your achievements and strengths by including the Score Card view of your performance as part of your résumé or simply sharing the validation link so that others may view the detailed version of this report.

The NCL 2023 Spring Season had 7,820 students/players and 533 faculty/coaches from more than 450 two- and four-year schools & 250 high schools across all 50 U.S. states registered to play. The Individual Game Capture the Flag (CTF) event took place from March 31 through April 2. The Team Game CTF event took place from April 14 through April 16. The games were conducted in real-time for students across the country.

NCL is powered by Cyber Skyline's cloud-based skills evaluation platform. Cyber Skyline hosted the scenario-driven cybersecurity challenges for players to compete and track their progress in real-time.

To validate this report, please access: cyberskyline.com/report/BD7H6T6G7LP9

Congratulations for your participation in the NCL 2023 Spring Team Game! We hope you will continue to develop your knowledge and skills and make meaningful contributions as part of the Information Security workforce!

Dr. David Zeichick
NCL Commissioner

NATIONAL CYBER LEAGUE SCORE CARD
NCL 2023 SPRING TEAM GAME

NATIONAL RANK
83RD **PLACE**
OUT OF 3593

PERCENTILE
98TH

YOUR TOP CATEGORIES

WEB APPLICATION EXPLOITATION		
100TH PERCENTILE		
	LOG ANALYSIS	
	99TH PERCENTILE	
		CRYPTOGRAPHY
		98TH PERCENTILE

61.6%
ACCURACY
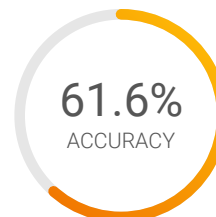
Average: 61.7%

cyberskyline.com/report
ID: BD7H6T6G7LP9

Learn more at nationalcyberleague.org | Get in touch with us via info@nationalcyberleague.org

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NCL Spring 2023 Team Game

The NCL Team Game is designed for student players nationwide to compete in realtime in the categories listed below. The Team Game promotes camaraderie and evaluates the collective technical cybersecurity skills of the team members.

83 RD PLACE
OUT OF 3593
NATIONAL RANK

98th National Percentile

1940 POINTS OUT OF 3000
PERFORMANCE SCORE

Average: 834.7 Points

61.6% ACCURACY

Average: 61.7%

76.6% COMPLETION

Average: 35.9%

Cryptography

205 POINTS OUT OF 355

90.0% ACCURACY

COMPLETION: **75.0%**

Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

Enumeration & Exploitation

110 POINTS OUT OF 300

66.7% ACCURACY

COMPLETION: **66.7%**

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in code and compiled binaries.

Forensics

135 POINTS OUT OF 300

17.4% ACCURACY

COMPLETION: **44.4%**

Utilize the proper tools and techniques to analyze, process, recover, and/or investigate digital evidence in a computer-related incident.

Log Analysis

300 POINTS OUT OF 300

71.4% ACCURACY

COMPLETION: **100.0%**

Utilize the proper tools and techniques to establish a baseline for normal operation and identify malicious activities using log files from various services.

Network Traffic Analysis

170 POINTS OUT OF 365

52.6% ACCURACY

COMPLETION: **58.8%**

Identify malicious and benign network traffic to demonstrate an understanding of potential security breaches.

Open Source Intelligence

350 POINTS OUT OF 350

50.0% ACCURACY

COMPLETION: **100.0%**

Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

Password Cracking

210 POINTS OUT OF 330

93.3% ACCURACY

COMPLETION: **82.4%**

Try your hand at cracking these passwords.

Scanning & Reconnaissance

230 POINTS OUT OF 300

100.0% ACCURACY

COMPLETION: **70.0%**

Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

Web Application Exploitation

130 POINTS OUT OF 300

100.0% ACCURACY

COMPLETION: **50.0%**

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in online services.

Note: Survey module (100 points) was excluded from this report.
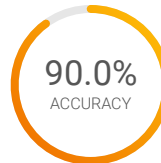
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Cryptography Module

Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

94 TH PLACE OUT OF **3593**
NATIONAL RANK

98th National Percentile

205 POINTS OUT OF **355**
PERFORMANCE SCORE

Average: 114.5 Points

90.0% ACCURACY
Average: 65.8%

75.0% COMPLETION
Average: 50.8%

TOP NICE WORKROLES
Security Control Assessor
Secure Software Assessor
Exploitation Analyst
Cyber Operator
Security Architect

Decoding 1 (Easy)	**30** POINTS OUT OF 30	100.0% ACCURACY	COMPLETION:	100.0%

Obtain plaintext from messages encoded with common number bases

Decoding 2 (Easy)	**30** POINTS OUT OF 30	100.0% ACCURACY	COMPLETION:	100.0%

Analyze and obtain the plaintext for a message encrypted with a shift cipher

Decoding 3 (Easy)	**30** POINTS OUT OF 30	50.0% ACCURACY	COMPLETION:	100.0%

Obtain the plaintext of a message using a keypad cipher

Decoding 4 (Medium)	**0** POINTS OUT OF 50	0.0% ACCURACY	COMPLETION:	0.0%

Decrypt an AES encrypted message with a known password

PGP (Medium)	**50** POINTS OUT OF 50	100.0% ACCURACY	COMPLETION:	100.0%

Decrypt a PGP message and encrypt a PGP message using provided keys

Beep Boop (Medium)	**65** POINTS OUT OF 65	100.0% ACCURACY	COMPLETION:	100.0%

Analyze an audio file and decode a message that is encoded with dual-tone multi-frequency signaling

AutoCrypt (Hard)	**0** POINTS OUT OF 100	0.0% ACCURACY	COMPLETION:	0.0%

Analyze a cryptographic scheme and find the vulnerability in an autokey cipher to decrypt the message

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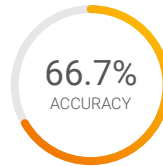CYBER SKYLINE

Enumeration & Exploitation Module

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in code and compiled binaries.

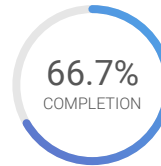**157** TH PLACE OUT OF **3593**
NATIONAL RANK

96th National Percentile

110 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 75.7 Points

66.7% ACCURACY

Average: 56.9%

66.7% COMPLETION

Average: 46.4%

TOP NICE WORKROLES
Cyber Operator
Target Developer
Exploitation Analyst
Software Developer
Systems Security Analyst

Shinny Stone (Easy)
100 POINTS OUT OF 100 | **100.0%** ACCURACY | COMPLETION: 100.0%

Analyze Ruby source code to decrypt a message that was encrypted using AES

Vault (Medium)
10 POINTS OUT OF 100 | **50.0%** ACCURACY | COMPLETION: 50.0%

Extract and analyze a compiled Python file from a macOS mach-o binary

Crypto Coincidence (Hard)
0 POINTS OUT OF 100 | **0.0%** ACCURACY | COMPLETION: 0.0%

Analyze a compiled C binary and bypass its custom encryption and packing

Forensics Module

Utilize the proper tools and techniques to analyze, process, recover, and/or investigate digital evidence in a computer-related incident.

141 ST PLACE OUT OF **3593**
NATIONAL RANK

97th National Percentile

135 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 96.9 Points

17.4% ACCURACY

Average: 59.1%

44.4% COMPLETION
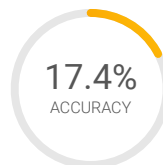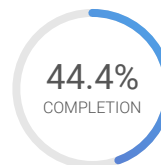
Average: 34.2%

TOP NICE WORKROLES
Cyber Defense Forensics Analyst
Cyber Crime Investigator
Cyber Defense Incident Responder
Cyber Defense Analyst

Stacked (Easy)
100 POINTS OUT OF 100 | **100.0%** ACCURACY | COMPLETION: 100.0%

Find and extract hidden files within an image using tools like binwalk

Hidden (Medium)
35 POINTS OUT OF 100 | **9.5%** ACCURACY | COMPLETION: 50.0%

Extract hidden information from a macOS .DS_STORE file

Memory (Hard)
0 POINTS OUT OF 100 | **0.0%** ACCURACY | COMPLETION: 0.0%

Analyze a Linux memory dump using tools like Volatility to extract encryption keys from a Vim buffer and decrypt an in-memory encrypted file

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Log Analysis Module

Utilize the proper tools and techniques to establish a baseline for normal operation and identify malicious activities using log files from various services.

47 TH PLACE OUT OF 3593
NATIONAL RANK

99th National Percentile

300 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 138.2 Points

71.4% ACCURACY

Average: 57.5%

100.0% COMPLETION
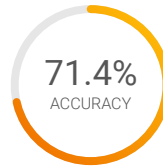
Average: 51.2%

TOP NICE WORKROLES
Cyber Defense Analyst
Systems Security Analyst
All-Source Analyst
Cyber Defense Forensics Analyst
Data Analyst

PGP (Easy)
100 POINTS OUT OF 100 — **100.0%** ACCURACY — COMPLETION: 100.0%

Analyze clear-signed documents to verify their authenticity using PGP keys

Iptables (Medium)
100 POINTS OUT OF 100 — **50.0%** ACCURACY — COMPLETION: 100.0%

Analyze a iptables log file to identify network traffic patterns

Flight Record (Hard)
100 POINTS OUT OF 100 — **88.9%** ACCURACY — COMPLETION: 100.0%

Parse a binary encoded drone flight record file and extract its fields
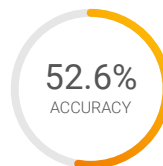
Network Traffic Analysis Module

Identify malicious and benign network traffic to demonstrate an understanding of potential security breaches.
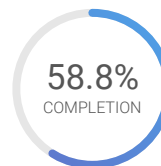
241 ST PLACE OUT OF 3593
NATIONAL RANK

94th National Percentile

170 POINTS OUT OF 365
PERFORMANCE SCORE

Average: 151.3 Points

52.6% ACCURACY

Average: 45.4%

58.8% COMPLETION

Average: 48.8%

TOP NICE WORKROLES
Cyber Defense Analyst
All-Source Analyst
Cyber Defense Incident Responder
Target Network Analyst
Cyber Operator

Attack (Easy)
100 POINTS OUT OF 100 — **71.4%** ACCURACY — COMPLETION: 100.0%

Analyze a network packet capture to identify an ARP spoofing attack

Chunked (Easy)
25 POINTS OUT OF 65 — **50.0%** ACCURACY — COMPLETION: 66.7%

Analyze a wireless network packet capture to extract information from the broadcast packets

Lighting (Medium)
45 POINTS OUT OF 100 — **37.5%** ACCURACY — COMPLETION: 50.0%

Analyze a network packet capture to identify the IOT protocol and decode its communications

Covert Exfiltration (Hard)
0 POINTS OUT OF 100 — **0.0%** ACCURACY — COMPLETION: 0.0%

Reassemble a multi-part HTTP file download from a network packet capture

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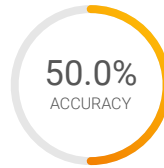**CYBER SKYLINE**

Open Source Intelligence Module

Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

193 RD PLACE
OUT OF **3593**
NATIONAL RANK

95th National Percentile

350 POINTS
OUT OF 350
PERFORMANCE SCORE

Average: 224.6 Points

50.0% ACCURACY

Average: 67.1%

100.0% COMPLETION

Average: 79.9%

TOP NICE WORKROLES
Systems Security Analyst
Target Developer
System Administrator
Research & Development Specialist
Cyber Intel Planner

Rules of Conduct (Easy)	**25** POINTS OUT OF 25	**100.0%** ACCURACY	COMPLETION:	100.0%
Introductory challenge on acceptable conduct during NCL				
Network Info (Easy)	**50** POINTS OUT OF 50	**66.7%** ACCURACY	COMPLETION:	100.0%
Extract WiFi network information out of a QR code				
Message in Stone (Medium)	**75** POINTS OUT OF 75	**100.0%** ACCURACY	COMPLETION:	100.0%
Identify the ancient esoteric alphabet used to hide a secret message				
Restaurant WiFi (Medium)	**100** POINTS OUT OF 100	**18.2%** ACCURACY	COMPLETION:	100.0%
Identify the guest WiFi password using openly available information				
Vantage Point (Hard)	**100** POINTS OUT OF 100	**40.0%** ACCURACY	COMPLETION:	100.0%
Geolocate a photo without GPS metadata				

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Password Cracking Module

Try your hand at cracking these passwords.

122 ND PLACE
OUT OF **3593**
NATIONAL RANK

97th National
Percentile

210 POINTS
OUT OF
330
PERFORMANCE SCORE

Average: 111.1 Points

93.3%
ACCURACY

Average: 85.8%

82.4%
COMPLETION
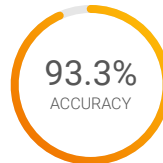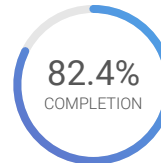
Average: 47.0%

TOP NICE WORKROLES
Cyber Operator
Exploitation Analyst
Systems Security Analyst
Cyber Defense Incident
Responder
Cyber Crime Investigator

Cracking 1 (Easy)

Crack MD5 password hashes

30 POINTS OUT OF 30 | **100.0%** ACCURACY | COMPLETION: **100.0%**

Cracking 2 (Easy)

Crack Windows NTLM password hashes using rainbow tables

30 POINTS OUT OF 30 | **75.0%** ACCURACY | COMPLETION: **100.0%**

Cracking 3 (Medium)

Build a wordlist or pattern config to crack password hashes of a known pattern

45 POINTS OUT OF 45 | **100.0%** ACCURACY | COMPLETION: **100.0%**

Cracking 4 (Hard)

Crack salted MD5 password hashes

75 POINTS OUT OF 75 | **100.0%** ACCURACY | COMPLETION: **100.0%**

Cracking 5 (Hard)

Build a wordlist to crack salted passwords not found in common wordlists

30 POINTS OUT OF 150 | **100.0%** ACCURACY | COMPLETION: **40.0%**

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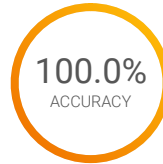
Scanning & Reconnaissance Module

Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

114 TH PLACE OUT OF 3593
NATIONAL RANK

97th National Percentile

230 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 129.1 Points

100.0% ACCURACY

Average: 90.5%

70.0% COMPLETION

Average: 46.7%

TOP NICE WORKROLES
Vulnerability Assessment Analyst
Target Network Analyst
Cyber Operations Planner
Target Developer
Security Control Assessor

Docker (Easy)	60 POINTS OUT OF 100	100.0% ACCURACY	COMPLETION:	60.0%

Extract metadata information from a Docker container image

Call to Action (Medium)	100 POINTS OUT OF 100	100.0% ACCURACY	COMPLETION:	100.0%

Scan and extract information data from a Redis database

Database (Hard)	70 POINTS OUT OF 100	100.0% ACCURACY	COMPLETION:	66.7%

Scan and extract information data from a MongoDB database
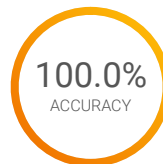
Web Application Exploitation Module

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in online services.

26 TH PLACE OUT OF 3593
NATIONAL RANK

100th National Percentile

130 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 47.9 Points

100.0% ACCURACY

Average: 58.1%

50.0% COMPLETION

Average: 24.2%

TOP NICE WORKROLES
Cyber Operator
Software Developer
Exploitation Analyst
Systems Security Analyst
Database Administrator

Never Winter Bank (Easy)	100 POINTS OUT OF 100	100.0% ACCURACY	COMPLETION:	100.0%

Exploit a bug in the parseInt function of older JavaScript web runtimes

WebAuthn (Medium)	0 POINTS OUT OF 100	0.0% ACCURACY	COMPLETION:	0.0%

Exploit an improperly configured WebAuthn login scheme

File Server v2 (Hard)	30 POINTS OUT OF 100	100.0% ACCURACY	COMPLETION:	50.0%

Exploit a race condition to download a restricted file during server operations