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CYBER SKYLINE

The National Cyber League
A Community Where Cybersecurity Is a Passion

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NCL Fall 2023 Individual Game Scouting Report

Dear Samuel Kadima,

Thank you for participating in the National Cyber League (NCL) 2023 Fall 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 Fall Season had 9,770 students/players and 588 faculty/coaches from more than 520 two- and four-year schools & 280 high schools across all 50 U.S. states registered to play. The Individual Game Capture the Flag (CTF) event took place from October 20 through October 22. The Team Game CTF event took place from November 3 through November 5. 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/AW1GVKX62Q1R

Congratulations for your participation in the NCL 2023 Fall Individual 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



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NATIONAL CYBER LEAGUE SCORE CARD

NCL 2023 FALL INDIVIDUAL GAME

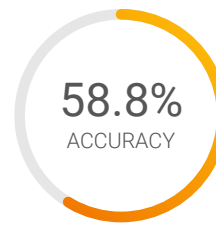
YOUR TOP CATEGORIES

NATIONAL RANK
1540TH PLACE
OUT OF 7879
PERCENTILE
81ST

**SCANNING &
RECONNAISSANCE**
87TH PERCENTILE

**PASSWORD
CRACKING**
84TH PERCENTILE

**OPEN SOURCE
INTELLIGENCE**
79TH PERCENTILE



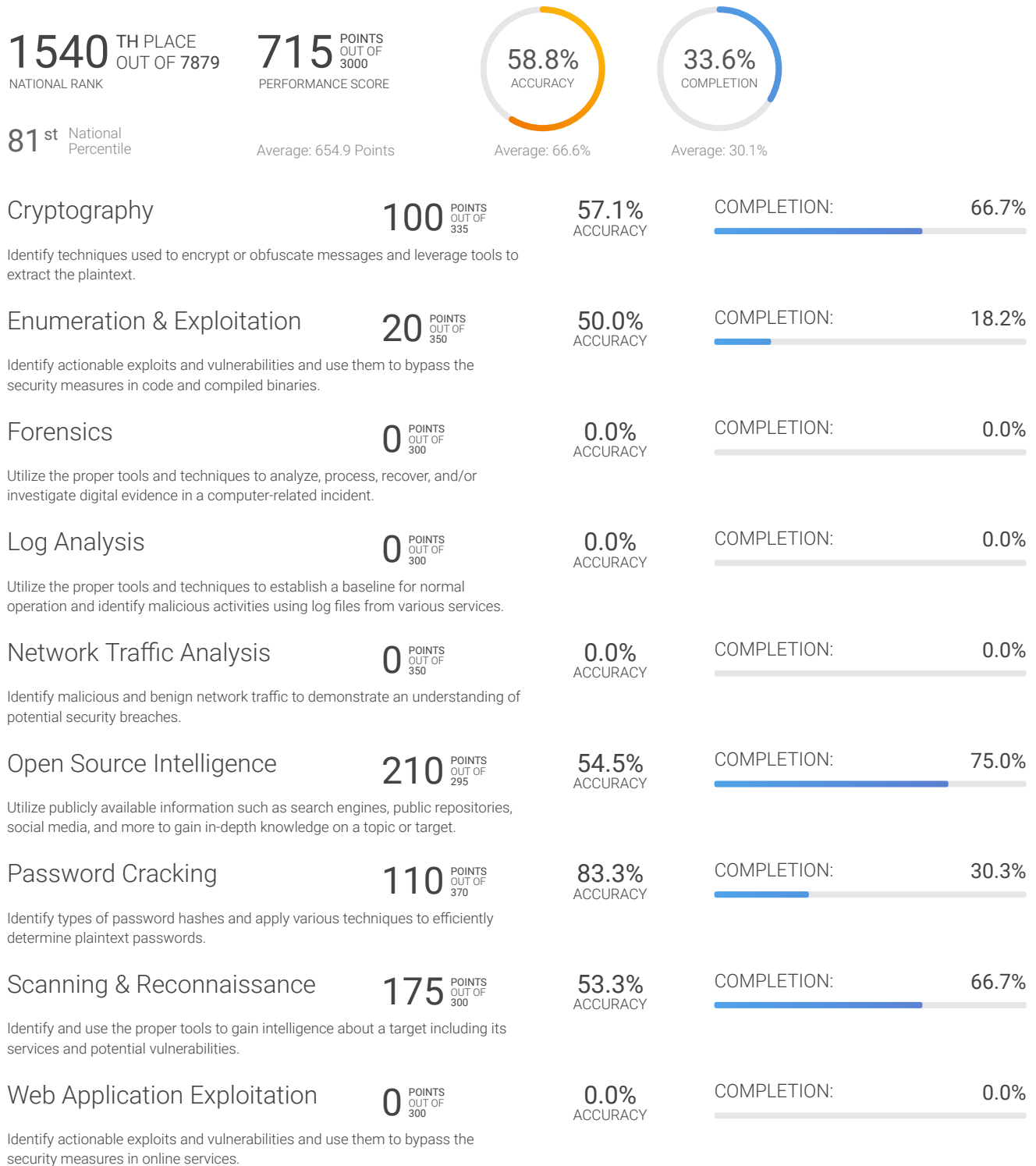
Average: 66.6%

[cyberskyline.com/report](https://cyberskyline.com/report/AW1GVKX62Q1R)
ID: AW1GVKX62Q1R



NCL Fall 2023 Individual Game

The NCL Individual Game is designed for student players nationwide to compete in realtime in the categories listed below. The Individual Game evaluates the technical cybersecurity skills of the individual, without the assistance of others.



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





Cryptography Module

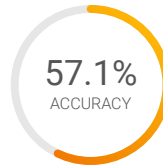
Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

1805 TH PLACE
OUT OF 7879
NATIONAL RANK

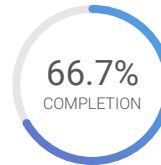
100 POINTS
OUT OF 335
PERFORMANCE SCORE

78th National
Percentile

Average: 90.5 Points



Average: 78.4%



Average: 59.4%

TOP NICE WORKROLES

Security Control Assessor
Secure Software Assessor
Exploitation Analyst
Cyber Operator
Security Architect

Bases (Easy)

30 POINTS
OUT OF 30

50.0%
ACCURACY

COMPLETION: **100.0%**

Obtain plaintext from messages encoded with common number bases

Shift (Easy)

30 POINTS
OUT OF 30

66.7%
ACCURACY

COMPLETION: **100.0%**

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

Earl (Easy)

40 POINTS
OUT OF 40

75.0%
ACCURACY

COMPLETION: **100.0%**

Obtain plaintext from messages encoded URL encoding

Rulebreaker (Medium)

0 POINTS
OUT OF 60

0.0%
ACCURACY

COMPLETION: **0.0%**

Decipher a classic book cipher and find its source material

Encrypted Flag (Hard)

0 POINTS
OUT OF 75

0.0%
ACCURACY

COMPLETION: **0.0%**

Recover the plaintext of an image that was encrypted with AES

Zoomers (Hard)

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Perform cryptanalysis and break a custom homophonic cipher





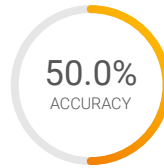
Enumeration & Exploitation Module

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

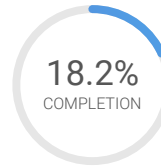
1695 TH PLACE
OUT OF 7879
NATIONAL RANK

20 POINTS
OUT OF 350
PERFORMANCE SCORE

Average: 81.7 Points



Average: 56.1%



Average: 34.1%

TOP NICE WORKROLES

Cyber Operator
Target Developer
Exploitation Analyst
Software Developer
Systems Security Analyst

79th National
Percentile

Everywhere (Easy)

Analyze JavaScript source code to extract an insecurely stored authentication secret

10 POINTS
OUT OF 80

33.3%
ACCURACY

COMPLETION: **50.0%**

UDP Hijack (Medium)

Perform a session hijacking exploit by analyzing a custom network protocol

0 POINTS
OUT OF 80

0.0%
ACCURACY

COMPLETION: **0.0%**

Throne (Medium)

Analyze an obfuscated PowerShell malware using scheduled tasks

10 POINTS
OUT OF 90

100.0%
ACCURACY

COMPLETION: **25.0%**

Hacktivate (Hard)

Reverse engineer a compiled software program with anti-tamper features

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

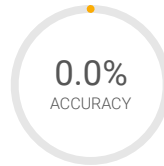
Forensics Module

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

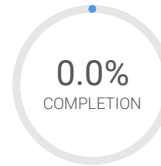
N/A
NATIONAL RANK

0 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 66.4 Points



Average: 40.3%



Average: 27.9%

TOP NICE WORKROLES

Cyber Defense Forensics
Analyst
Cyber Crime Investigator
Cyber Defense Incident
Responder
Cyber Defense Analyst

Run (Easy)

Extract hidden files within an image using tools like binwalk

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Download Manager (Medium)

Perform binary data carving on a download manager's metadata file

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Redacted (Hard)

Programmatically un-blur text in an image to reveal redacted information

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**





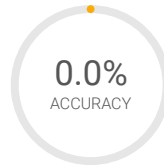
Log Analysis Module

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

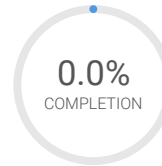
1877TH PLACE
OUT OF 7879
NATIONAL RANK

0 POINTS
OUT OF
300
PERFORMANCE SCORE

Average: 53.7 Points



Average: 36.9%



Average: 19.3%

TOP NICE WORKROLES

Cyber Defense Analyst
Systems Security Analyst
All-Source Analyst
Cyber Defense Forensics
Analyst
Data Analyst

Attempt (Easy)

0 POINTS
OUT OF
100

0.0%
ACCURACY

COMPLETION: 0.0%

Analyze Windows event logs to build a timeline of a malware attack

Oddity (Medium)

0 POINTS
OUT OF
100

0.0%
ACCURACY

COMPLETION: 0.0%

Analyze a log file encoded with bencode to conduct statistical analysis of network requests

What the C (Hard)

0 POINTS
OUT OF
100

0.0%
ACCURACY

COMPLETION: 0.0%

Develop a custom method for parsing a non-standard binary log file and conduct statistical analysis

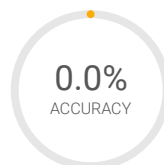
Network Traffic Analysis Module

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

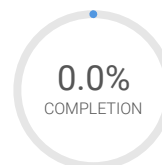
N/A
NATIONAL RANK

0 POINTS
OUT OF
350
PERFORMANCE SCORE

Average: 100.5 Points



Average: 54.3%



Average: 37.5%

TOP NICE WORKROLES

Cyber Defense Analyst
All-Source Analyst
Cyber Defense Incident
Responder
Target Network Analyst
Cyber Operator

Pong (Easy)

0 POINTS
OUT OF
80

0.0%
ACCURACY

COMPLETION: 0.0%

Extract ICMP information from a packet capture

HTTPS (Medium)

0 POINTS
OUT OF
100

0.0%
ACCURACY

COMPLETION: 0.0%

Decrypt and analyze an intercepted TLS packet capture

Cracking (Medium)

0 POINTS
OUT OF
70

0.0%
ACCURACY

COMPLETION: 0.0%

Analyze a WPA-encrypted network and perform a wordlist attack on the password

Extraction (Hard)

0 POINTS
OUT OF
100

0.0%
ACCURACY

COMPLETION: 0.0%

Recover data that was covertly exfiltrated in TCP sequence numbers





Open Source Intelligence Module

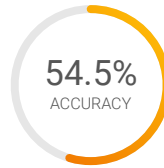
Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

1686 TH PLACE
OUT OF 7879
NATIONAL RANK

210 POINTS
OUT OF 295
PERFORMANCE SCORE

79th National
Percentile

Average: 166.1 Points



Average: 70.7%



Average: 61.9%

TOP NICE WORKROLES

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

Rules of Conduct (Easy)

15 POINTS
OUT OF 15

100.0%
ACCURACY

COMPLETION: **100.0%**

Introductory challenge on acceptable conduct during NCL

PGP Lookup (Easy)

0 POINTS
OUT OF 45

0.0%
ACCURACY

COMPLETION: **0.0%**

Query details of PGP public encryption keys shared online

Undersea (Easy)

70 POINTS
OUT OF 70

70.0%
ACCURACY

COMPLETION: **100.0%**

Conduct open-source target research on a public works project

Certificates (Medium)

45 POINTS
OUT OF 45

42.9%
ACCURACY

COMPLETION: **100.0%**

Query Certificate Transparency tools to audit historic TLS certificates

Electrified (Medium)

70 POINTS
OUT OF 70

57.1%
ACCURACY

COMPLETION: **100.0%**

Identify openly available information on EV charging infrastructure

Liber8tion v. Lawyers (Hard)

10 POINTS
OUT OF 50

16.7%
ACCURACY

COMPLETION: **25.0%**

Identify location of image through reverse image lookup and access publicly available government databases



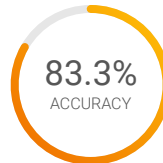


Password Cracking Module

Identify types of password hashes and apply various techniques to efficiently determine plaintext passwords.

1262 ND PLACE
OUT OF 7879
NATIONAL RANK

110 POINTS
OUT OF 370
PERFORMANCE SCORE



Average: 87.0%



Average: 31.1%

84th National
Percentile

Average: 109.9 Points

Hashing (Easy)

20 POINTS
OUT OF 20

80.0%
ACCURACY

COMPLETION: **100.0%**

Generate password hashes for MD5, SHA1, SHA256, and SHA512

Rockyou (Easy)

45 POINTS
OUT OF 45

75.0%
ACCURACY

COMPLETION: **100.0%**

Crack MD5 password hashes for password found in the rockyou breach

Windows (Easy)

45 POINTS
OUT OF 45

100.0%
ACCURACY

COMPLETION: **100.0%**

Crack Windows NTLM password hashes using rainbow tables

Flag Format (Medium)

0 POINTS
OUT OF 60

0.0%
ACCURACY

COMPLETION: **0.0%**

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

Cities (Medium)

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Build a wordlist to crack passwords not found in common wordlists

Red Carpet (Hard)

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Build a wordlist to crack passwords not found in common wordlists and augment with rules for special characters





Scanning & Reconnaissance Module

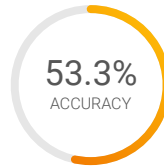
Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

1097 TH PLACE
OUT OF 7879
NATIONAL RANK

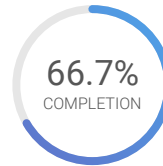
87th National
Percentile

175 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 158.3 Points



Average: 60.7%



Average: 59.5%

TOP NICE WORKROLES

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

Scan (Easy)

100 POINTS
OUT OF 100

50.0%
ACCURACY

COMPLETION: **100.0%**

Scan a remote host for open ports and identify running services

Masscan (Medium)

75 POINTS
OUT OF 100

55.6%
ACCURACY

COMPLETION: **83.3%**

Analyze the results of a large scale Internet scan from the masscan tool

Message (Hard)

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Capture network traffic sent to a server using tools such as tcpdump

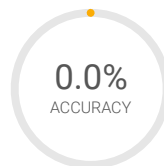
Web Application Exploitation Module

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

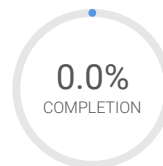
N/A
NATIONAL RANK

0 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 69.1 Points



Average: 39.9%



Average: 26.1%

TOP NICE WORKROLES

Cyber Operator
Software Developer
Exploitation Analyst
Systems Security Analyst
Database Administrator

Witter (Easy)

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

De-obfuscate client side JavaScript code and exploit a social media service

Login (Medium)

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Conduct SQL injection against an authentication service to sign in as admin

Cryptographic Lottery (Hard)

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

Exploit a Hash-Based Message Authentication Code using an MD5 length extension attack

