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**CYBER SKYLINE**

The National Cyber League  
A Community Where Cybersecurity Is a Passion

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## NCL Spring 2023 Individual Game Scouting Report

Dear Nicholas Malamud,

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/3LK2CWRTFCNG](https://cyberskyline.com/report/3LK2CWRTFCNG)



Based on the the performance detailed in this NCL Scouting Report, you have earned **9 hours** of Continuing Education Units (CEUs) as approved by CompTIA. You can learn more about the NCL - CompTIA alignment via [nationalcyberleague.org/comptia](https://nationalcyberleague.org/comptia).

Congratulations for your participation in the NCL 2023 Spring 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 SPRING INDIVIDUAL GAME

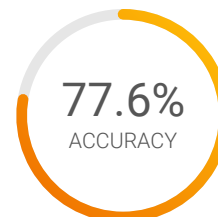
#### YOUR TOP CATEGORIES

**NATIONAL RANK**  
**204TH PLACE**  
**OUT OF 6273**  
**PERCENTILE**  
**97TH**

**SCANNING &  
RECONNAISSANCE**  
**100TH PERCENTILE**

**NETWORK TRAFFIC  
ANALYSIS**  
**99TH PERCENTILE**

**LOG ANALYSIS**  
**96TH PERCENTILE**



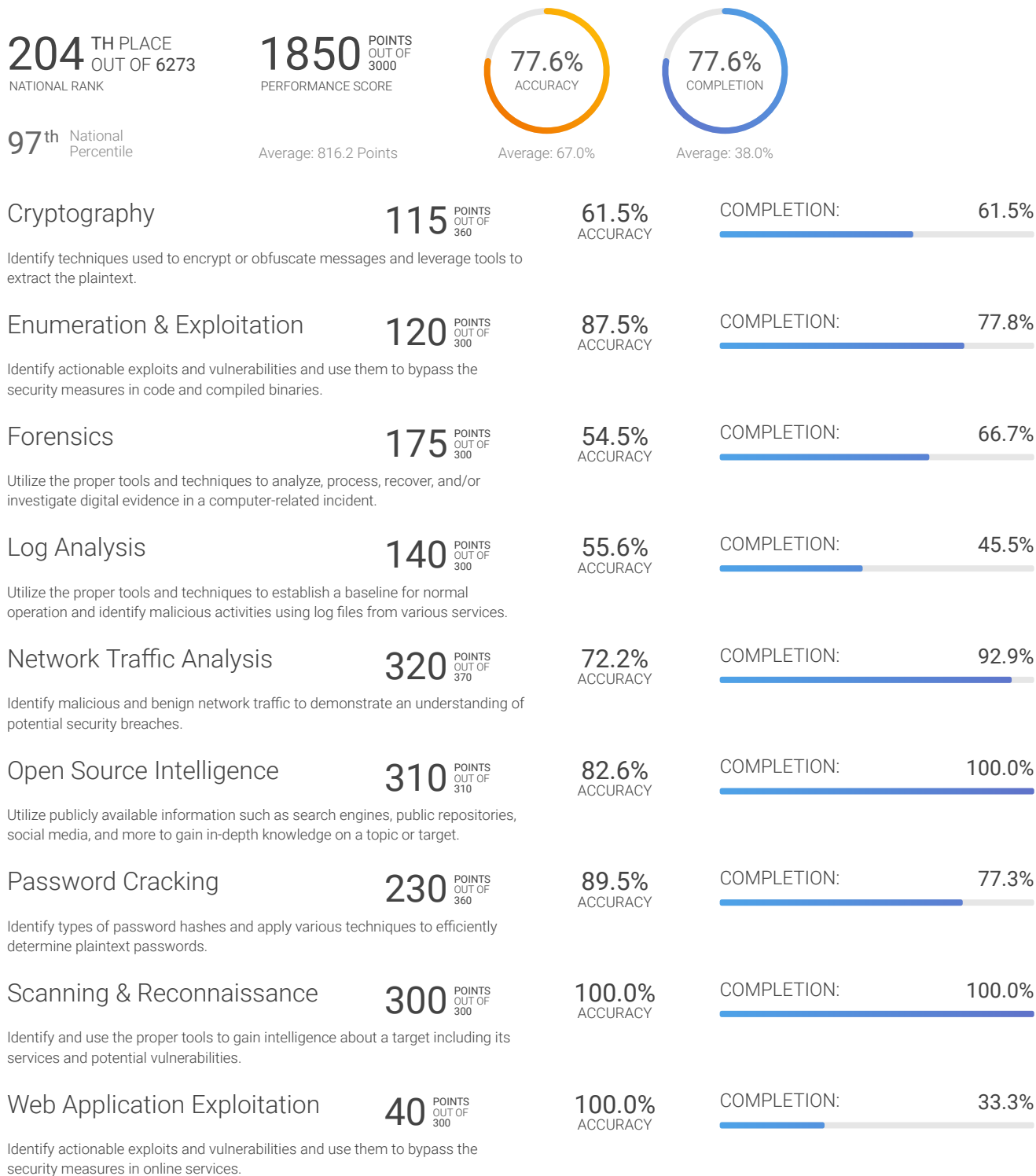
Average: 67.0%

[cyberskyline.com/report](https://cyberskyline.com/report/3LK2CWRTFCNG)  
ID: 3LK2CWRTFCNG



## NCL Spring 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

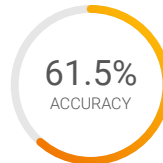
Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

**977** TH PLACE  
OUT OF 6273  
NATIONAL RANK

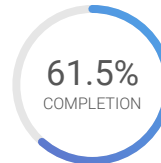
**115** POINTS  
OUT OF 360  
PERFORMANCE SCORE

**85<sup>th</sup>** National  
Percentile

Average: 115.0 Points



Average: 77.2%



Average: 52.7%

### 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 (Medium)

**25** POINTS  
OUT OF 25

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Obtain the plaintext of a message using charcode encoding

### Rolling (Medium)

**30** POINTS  
OUT OF 30

**40.0%**  
ACCURACY

COMPLETION: **66.7%**

Analyze the cryptographic weakness of a ECB encrypted image

### PGP (Medium)

**0** POINTS  
OUT OF 75

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

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

### AES (Hard)

**0** POINTS  
OUT OF 75

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Decrypt an AES encrypted message by exploiting an insecure key generation

### Steg (Hard)

**0** POINTS  
OUT OF 75

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Recover the plaintext of a message that was hidden using LSB steganography





## Enumeration & Exploitation Module

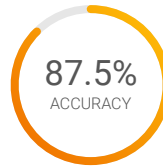
Identify actionable exploits and vulnerabilities and use them to bypass the security measures in code and compiled binaries.

**446** TH PLACE  
OUT OF 6273  
NATIONAL RANK

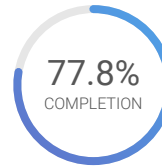
**93<sup>rd</sup>** National  
Percentile

**120** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 98.8 Points



Average: 53.9%



Average: 58.8%

### TOP NICE WORKROLES

Cyber Operator  
Target Developer  
Exploitation Analyst  
Software Developer  
Systems Security Analyst

### Dropper (Easy)

Analyze the behavior of a PowerShell malware that schedules system events for persistence

**100** POINTS  
OUT OF 100

**85.7%**  
ACCURACY

COMPLETION: **100.0%**

### Ground floor (Medium)

Analyze raw x64 assembly instructions to find a vulnerability in a validation check function

**20** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **50.0%**

### Memfrob (Hard)

Analyze and exploit a compiled C binary by leveraging a buffer overflow and ROP chains

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

## Forensics Module

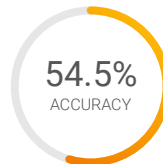
Utilize the proper tools and techniques to analyze, process, recover, and/or investigate digital evidence in a computer-related incident.

**322** ND PLACE  
OUT OF 6273  
NATIONAL RANK

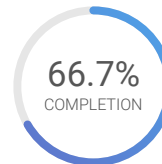
**95<sup>th</sup>** National  
Percentile

**175** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 128.7 Points



Average: 57.4%



Average: 43.4%

### TOP NICE WORKROLES

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

### Lost (Easy)

Recover files from the recycling bin of a Windows filesystem

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Fruit (Medium)

Recover configuration data from a macOS plist file

**75** POINTS  
OUT OF 100

**44.4%**  
ACCURACY

COMPLETION: **80.0%**

### Headless (Hard)

Identify the file type of the corrupted file and repair its magic bytes

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**





## Log Analysis Module

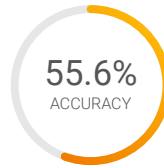
Utilize the proper tools and techniques to establish a baseline for normal operation and identify malicious activities using log files from various services.

**289** TH PLACE  
OUT OF 6273  
NATIONAL RANK

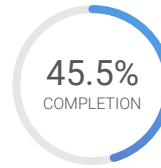
**140** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 65.6 Points

**96**<sup>th</sup> National  
Percentile



Average: 37.6%



Average: 32.9%

### TOP NICE WORKROLES

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

### Web (Easy)

Analyze a web server log and identify traffic patterns

**40** POINTS  
OUT OF 100

**60.0%**  
ACCURACY

COMPLETION: **60.0%**

### Email Compromise (Medium)

Analyze Office 365 & DNS logs to identify a phishing email compromise

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

### Fraud (Hard)

Analyze a payment log to identify what account had fraudulent purchases

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**



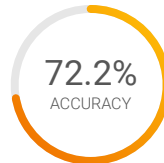


## Network Traffic Analysis Module

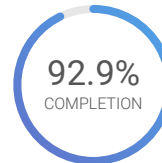
Identify malicious and benign network traffic to demonstrate an understanding of potential security breaches.

**106<sup>TH</sup>** PLACE  
OUT OF 6273  
NATIONAL RANK

**320** POINTS  
OUT OF 370  
PERFORMANCE SCORE



Average: 52.4%



Average: 46.9%

### TOP NICE WORKROLES

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

**99<sup>th</sup>** National  
Percentile

Average: 133.0 Points

### Information (Easy)

**100** POINTS  
OUT OF 100

**80.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze a network packet capture of WHOIS queries to obtain information on a domain

### Hidden (Medium)

**20** POINTS  
OUT OF 70

**100.0%**  
ACCURACY

COMPLETION: **66.7%**

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

### Scan (Medium)

**100** POINTS  
OUT OF 100

**50.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze a network packet capture to identify open ports on the target server and the type of nmap scan

### Ponder (Hard)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze a network packet capture to extract data stolen through DNS based data exfiltration





## Open Source Intelligence Module

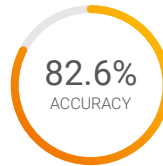
Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

**601** ST PLACE  
OUT OF 6273  
NATIONAL RANK

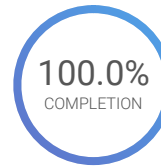
**310** POINTS  
OUT OF 310  
PERFORMANCE SCORE

**91<sup>st</sup>** National  
Percentile

Average: 215.7 Points



Average: 80.0%



Average: 75.8%

### 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

### Waypoints (Easy)

**50** POINTS  
OUT OF 50

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify openly available information on navigation waypoints

### Document (Medium)

**50** POINTS  
OUT OF 50

**55.6%**  
ACCURACY

COMPLETION: **100.0%**

Extract the fields from the machine-readable zone of a passport

### Esoteric (Medium)

**50** POINTS  
OUT OF 50

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the esoteric alphabet used to hide a secret message

### Greek (Medium)

**70** POINTS  
OUT OF 70

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the location of a photograph using reverse image search

### Numbers (Hard)

**75** POINTS  
OUT OF 75

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the scheme of a set of numbers without a well known format





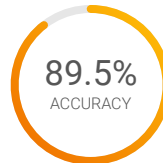
## Password Cracking Module

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

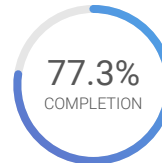
**412** TH PLACE  
OUT OF 6273  
NATIONAL RANK

**230** POINTS  
OUT OF 360  
PERFORMANCE SCORE

Average: 133.2 Points



Average: 87.3%



Average: 45.5%

### TOP NICE WORKROLES

Cyber Operator  
Exploitation Analyst  
Systems Security Analyst  
Cyber Defense Incident  
Responder  
Cyber Crime Investigator

### Hashing (Easy)

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Generate password hashes for MD5, SHA1, and SHA256

### Cracking 1 (Easy)

**45** POINTS  
OUT OF 45

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Crack MD5 password hashes

### Cracking 2 (Easy)

**45** POINTS  
OUT OF 45

**75.0%**  
ACCURACY

COMPLETION: **100.0%**

Crack Windows NTLM password hashes using rainbow tables

### Cracking 3 (Medium)

**45** POINTS  
OUT OF 45

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

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

### Cracking 4 (Hard)

**45** POINTS  
OUT OF 45

**75.0%**  
ACCURACY

COMPLETION: **100.0%**

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

### Cracking 5 (Hard)

**20** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **40.0%**

Build a wordlist to crack passwords not found in common wordlists

### PDF (Medium)

**0** POINTS  
OUT OF 50

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Crack the password for a protected PDF file







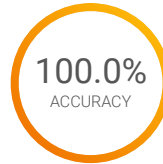
## Scanning & Reconnaissance Module

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

9<sup>TH</sup> PLACE  
OUT OF 6273  
NATIONAL RANK

300 POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 111.6 Points



Average: 70.1%



Average: 43.7%

### TOP NICE WORKROLES

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

100<sup>th</sup> National  
Percentile

### Ports (Easy)

100 POINTS  
OUT OF 100

100.0%  
ACCURACY

COMPLETION: 100.0%

Scan a remote host for open ports and identify running services

### Who (Medium)

100 POINTS  
OUT OF 100

100.0%  
ACCURACY

COMPLETION: 100.0%

Enumerate the possible domains on a WHOIS server to extract information

### Metadata (Hard)

100 POINTS  
OUT OF 100

100.0%  
ACCURACY

COMPLETION: 100.0%

Scan an AWS EC2 Metadata Service to extract information about the instance

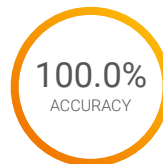
## Web Application Exploitation Module

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

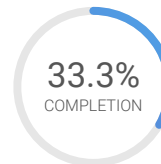
316<sup>TH</sup> PLACE  
OUT OF 6273  
NATIONAL RANK

40 POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 33.0 Points



Average: 39.7%



Average: 20.0%

### TOP NICE WORKROLES

Cyber Operator  
Software Developer  
Exploitation Analyst  
Systems Security Analyst  
Database Administrator

95<sup>th</sup> National  
Percentile

### Shopping (Easy)

10 POINTS  
OUT OF 100

100.0%  
ACCURACY

COMPLETION: 50.0%

Exploit an implicit type conversion vulnerability in an express application

### Attack Portal (Medium)

30 POINTS  
OUT OF 100

100.0%  
ACCURACY

COMPLETION: 50.0%

Manipulate a web form to inject extra JSON fields to override a server-side check

### File Server (Hard)

0 POINTS  
OUT OF 100

0.0%  
ACCURACY

COMPLETION: 0.0%

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

