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**CYBER SKYLINE**

The National Cyber League  
A Community Where Cybersecurity Is a Passion

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# NCL Fall 2022 Individual Game Scouting Report

Dear Ryan Kleffman,

Thank you for participating in the National Cyber League (NCL) 2022 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 2022 Fall Season had 7,690 students/players and 475 faculty/coaches from more than 470 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 October 21 through October 23. The Team Game CTF event took place from November 4 through November 6. 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/WGG9CNH9UP2B](https://cyberskyline.com/report/WGG9CNH9UP2B)



Based on the the performance detailed in this NCL Scouting Report, you have earned **6 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 2022 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!

David Zeichick  
NCL Commissioner



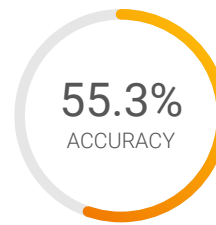
POWERED BY  
**CYBER SKYLINE**

## NATIONAL CYBER LEAGUE SCORE CARD

NCL 2022 FALL INDIVIDUAL GAME

### YOUR TOP CATEGORIES

**NATIONAL RANK**  
**205<sup>TH</sup> PLACE**  
**OUT OF 6675**  
**PERCENTILE**  
**97<sup>TH</sup>**



Average: 68.2%

[cyberskyline.com/report](https://cyberskyline.com/report/WGG9CNH9UP2B)  
ID: WGG9CNH9UP2B

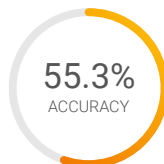


## NCL Fall 2022 Individual Game

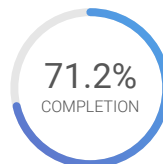
The NCL Individual Game is designed for student players nationwide to compete in realtime in the categories listed below. The Individual Game evaluates the technical cybersecurity skills of the individual, without the assistance of others.

**205<sup>TH</sup> PLACE**  
OUT OF 6675  
NATIONAL RANK

**1945** POINTS  
OUT OF 3000  
PERFORMANCE SCORE



Average: 68.2%



Average: 35.0%

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

Average: 816.7 Points

### Cryptography

**240** POINTS  
OUT OF 340

**55.6%**  
ACCURACY

COMPLETION: **83.3%**

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

### Enumeration & Exploitation

**175** POINTS  
OUT OF 325

**30.8%**  
ACCURACY

COMPLETION: **28.6%**

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

### Forensics

**220** POINTS  
OUT OF 300

**22.2%**  
ACCURACY

COMPLETION: **66.7%**

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

### Log Analysis

**160** POINTS  
OUT OF 320

**41.2%**  
ACCURACY

COMPLETION: **66.7%**

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

**200** POINTS  
OUT OF 360

**48.5%**  
ACCURACY

COMPLETION: **80.0%**

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

### Open Source Intelligence

**300** POINTS  
OUT OF 300

**71.4%**  
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

**230** POINTS  
OUT OF 330

**100.0%**  
ACCURACY

COMPLETION: **77.8%**

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

### Scanning & Reconnaissance

**210** POINTS  
OUT OF 300

**100.0%**  
ACCURACY

COMPLETION: **53.8%**

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

### Web Application Exploitation

**110** POINTS  
OUT OF 325

**100.0%**  
ACCURACY

COMPLETION: **57.1%**

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.





## Cryptography Module

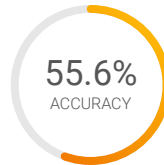
Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

**909** <sup>TH PLACE</sup>  
OUT OF 6675  
NATIONAL RANK

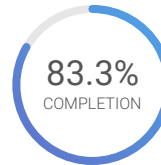
**240** <sup>POINTS</sup>  
OUT OF 340  
PERFORMANCE SCORE

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

Average: 177.8 Points



Average: 77.5%



Average: 63.3%

### TOP NICE WORKROLES

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

### Decoding 1 (Easy)

**30** <sup>POINTS</sup>  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the type of base encoding used and decode the data

### Decoding 2 (Easy)

**50** <sup>POINTS</sup>  
OUT OF 50

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the cipher scheme used and decrypt the data

### Decoding 3 (Easy)

**40** <sup>POINTS</sup>  
OUT OF 40

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the encoding scheme used and decode the data

### Decoding 4 (Medium)

**40** <sup>POINTS</sup>  
OUT OF 40

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the encoding scheme used and decode the data

### Decoding 5 (Hard)

**0** <sup>POINTS</sup>  
OUT OF 50

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Identify the cipher scheme used and decrypt the data

### Decoding 6 (Hard)

**30** <sup>POINTS</sup>  
OUT OF 80

**28.6%**  
ACCURACY

COMPLETION: **66.7%**

Break the encryption on a trivial RSA encryption without the secret key

### Steganography (Medium)

**50** <sup>POINTS</sup>  
OUT OF 50

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the steganography technique used and extract the hidden data





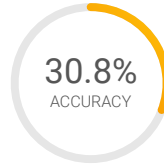
## Enumeration & Exploitation Module

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

**323** RD PLACE  
OUT OF 6675  
NATIONAL RANK

**175** POINTS  
OUT OF 325  
PERFORMANCE SCORE

Average: 56.9 Points



Average: 41.5%



Average: 14.8%

### TOP NICE WORKROLES

Cyber Operator  
Target Developer  
Exploitation Analyst  
Software Developer  
Systems Security Analyst

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

### Shell (Easy)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze a shell script to identify its functionalities and vulnerabilities

### Tracked (Medium)

**75** POINTS  
OUT OF 100

**18.2%**  
ACCURACY

COMPLETION: **50.0%**

Identify the keylogger installed on a remote Linux system and its configuration

### NetCode (Hard)

**0** POINTS  
OUT OF 125

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Decompile a binary malware to identify its target environment and reverse engineer the Domain Generation Algorithm (DGA) to find the Command and Control (C2) server

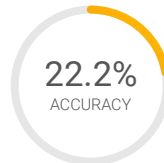
## Forensics Module

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

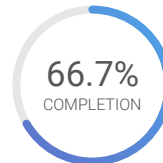
**121** ST PLACE  
OUT OF 6675  
NATIONAL RANK

**220** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 100.0 Points



Average: 42.2%



Average: 25.3%

### TOP NICE WORKROLES

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

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

### Stacked (Easy)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Extract additional files hidden in a photograph file using tools such as binwalk

### Paper Trail (Medium)

**50** POINTS  
OUT OF 100

**10.0%**  
ACCURACY

COMPLETION: **50.0%**

Analyze a "counterfeit" bill to find the hidden Printer Machine Identification Code and identify the machine that printed the "counterfeit" bill

### USB (Hard)

**70** POINTS  
OUT OF 100

**28.6%**  
ACCURACY

COMPLETION: **66.7%**

Recover and extract files from a filesystem image using tools such as Autopsy





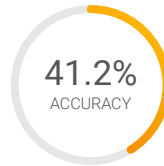
## Log Analysis Module

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

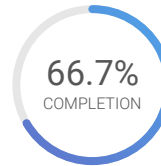
**569<sup>TH</sup>** PLACE  
OUT OF 6675  
NATIONAL RANK

**160** POINTS  
OUT OF 320  
PERFORMANCE SCORE

Average: 107.6 Points



Average: 41.6%



Average: 41.7%

### TOP NICE WORKROLES

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

### Compromise (Easy)

**100** POINTS  
OUT OF 100

**45.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze a Linux kernel log to identify threat actor activity and backdoors

### Access (Medium)

**60** POINTS  
OUT OF 100

**35.7%**  
ACCURACY

COMPLETION: **62.5%**

Analyze a SSH server log to identify compromise attempts from threat actors

### Minimal (Hard)

**0** POINTS  
OUT OF 120

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Analyze a binary log format and calculate anomalies in the log

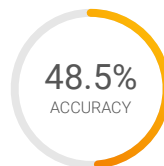
## Network Traffic Analysis Module

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

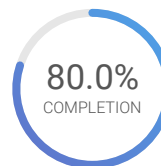
**226<sup>TH</sup>** PLACE  
OUT OF 6675  
NATIONAL RANK

**200** POINTS  
OUT OF 360  
PERFORMANCE SCORE

Average: 125.6 Points



Average: 62.3%



Average: 49.6%

### TOP NICE WORKROLES

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

### Retriever (Easy)

**90** POINTS  
OUT OF 90

**87.5%**  
ACCURACY

COMPLETION: **100.0%**

Extract sensitive information from emails in an IMAP packet capture

### WiFi Cracking (Medium)

**70** POINTS  
OUT OF 70

**83.3%**  
ACCURACY

COMPLETION: **100.0%**

Identify vulnerable WiFi encryption scheme and crack the WiFi password

### Trip to the Movies (Medium)

**40** POINTS  
OUT OF 90

**30.8%**  
ACCURACY

COMPLETION: **80.0%**

Extract the video stream transferred in an RTP packet capture

### Secret (Hard)

**0** POINTS  
OUT OF 110

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Analyze and extract sensitive information from a covert DNS-based tunneling protocol in a comprehensive packet capture





## Open Source Intelligence Module

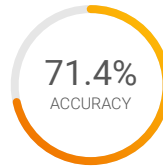
Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

**1046** <sup>TH PLACE</sup>  
OUT OF 6675  
NATIONAL RANK

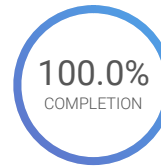
**300** <sup>POINTS</sup>  
OUT OF 300  
PERFORMANCE SCORE

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

Average: 204.2 Points



Average: 79.4%



Average: 77.7%

### TOP NICE WORKROLES

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

### Rules of Conduct (Easy)

**15** <sup>POINTS</sup>  
OUT OF 15

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Introductory challenge on acceptable conduct during NCL

### Bank Routes (Easy)

**40** <sup>POINTS</sup>  
OUT OF 40

**80.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify bank routing numbers using openly available information

### Alley (Medium)

**35** <sup>POINTS</sup>  
OUT OF 35

**42.9%**  
ACCURACY

COMPLETION: **100.0%**

Extract GPS coordinates from JPEG metadata to find where the photo was taken

### GeoData (Medium)

**50** <sup>POINTS</sup>  
OUT OF 50

**60.0%**  
ACCURACY

COMPLETION: **100.0%**

Utilize Geographic Information System (GIS) to identify land plot and owner data

### Colonial Crypto (Medium)

**60** <sup>POINTS</sup>  
OUT OF 60

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Uncover the redacted Bitcoin wallets in the 2021 Colonial Ransomware Attack

### Info (Hard)

**100** <sup>POINTS</sup>  
OUT OF 100

**80.0%**  
ACCURACY

COMPLETION: **100.0%**

Analyze an unknown identifier scheme to find the media metadata



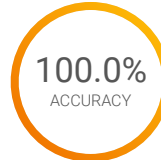


## Password Cracking Module

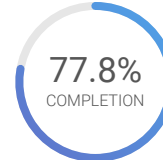
Identify types of password hashes and apply various techniques to efficiently determine plaintext passwords.

**234<sup>TH</sup>** PLACE  
OUT OF 6675  
NATIONAL RANK

**230** POINTS  
OUT OF 330  
PERFORMANCE SCORE



Average: 87.6%



Average: 50.1%

### TOP NICE WORKROLES

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

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

Average: 133.7 Points

### Hashing (Easy)

**15** POINTS  
OUT OF 15

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Generate password hashes for MD5, SHA1, and SHA256

### Cracking 1 (Easy)

**60** POINTS  
OUT OF 60

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Crack MD5 password hashes

### Cracking 2 (Easy)

**60** POINTS  
OUT OF 60

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Crack Windows NTLM password hashes using rainbow tables

### Cracking 3 (Medium)

**60** POINTS  
OUT OF 60

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

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

### Cracking 4 (Hard)

**35** POINTS  
OUT OF 135

**100.0%**  
ACCURACY

COMPLETION: **33.3%**

Build a wordlist to crack passwords not found in common wordlists





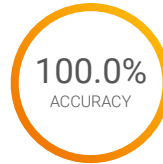
## Scanning & Reconnaissance Module

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

**168<sup>TH</sup> PLACE**  
OUT OF 6675  
NATIONAL RANK

**210** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 115.0 Points



Average: 70.6%



Average: 31.3%

### TOP NICE WORKROLES

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

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

### Looking Glass (Easy)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Scan a HTTP server to enumerate its contents and possible vulnerabilities

### Net Track (Medium)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Communicate with a text-based service using netcat/telnet

### Tracker (Hard)

**10** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **14.3%**

Scan and analyze the results from an HTTP BitTorrent Tracker service

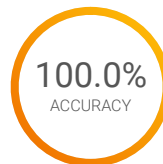
## Web Application Exploitation Module

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

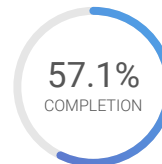
**245<sup>TH</sup> PLACE**  
OUT OF 6675  
NATIONAL RANK

**110** POINTS  
OUT OF 325  
PERFORMANCE SCORE

Average: 74.9 Points



Average: 82.6%



Average: 40.2%

### TOP NICE WORKROLES

Cyber Operator  
Software Developer  
Exploitation Analyst  
Systems Security Analyst  
Database Administrator

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

### Tom's Fan Club (Easy)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Craft custom requests to a web server to uncover hidden pages

### Setup (Medium)

**10** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **33.3%**

Identify and exploit a directory traversal vulnerability in nginx to download sensitive files from the web server

### Mystery (Hard)

**0** POINTS  
OUT OF 125

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Identify and exploit a SQL injection vulnerability to gain unauthorized access to a web server database

