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**CYBER SKYLINE**

The National Cyber League  
A Community Where Cybersecurity Is a Passion

Divyank Patel

# NCL Fall 2023 Individual Game Scouting Report

Dear Divyank Patel,

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. You were in the Experienced Students Bracket, consisting of students enrolled in advanced degrees or hold extensive industry working experience.

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/PJJN29U64Y3E](https://cyberskyline.com/report/PJJN29U64Y3E)

**CompTIA** Based on the the performance detailed in this NCL Scouting Report, you have earned **3 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 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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**EXPERIENCED  
STUDENTS RANK  
185TH PLACE  
OUT OF 581  
PERCENTILE  
69TH**

## NATIONAL CYBER LEAGUE SCORE CARD

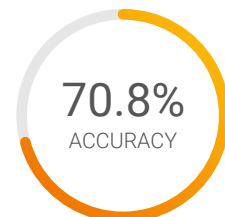
NCL 2023 FALL INDIVIDUAL GAME

### YOUR TOP CATEGORIES

**NETWORK TRAFFIC  
ANALYSIS  
81ST PERCENTILE**

**SCANNING &  
RECONNAISSANCE  
71ST PERCENTILE**

**PASSWORD  
CRACKING  
67TH PERCENTILE**



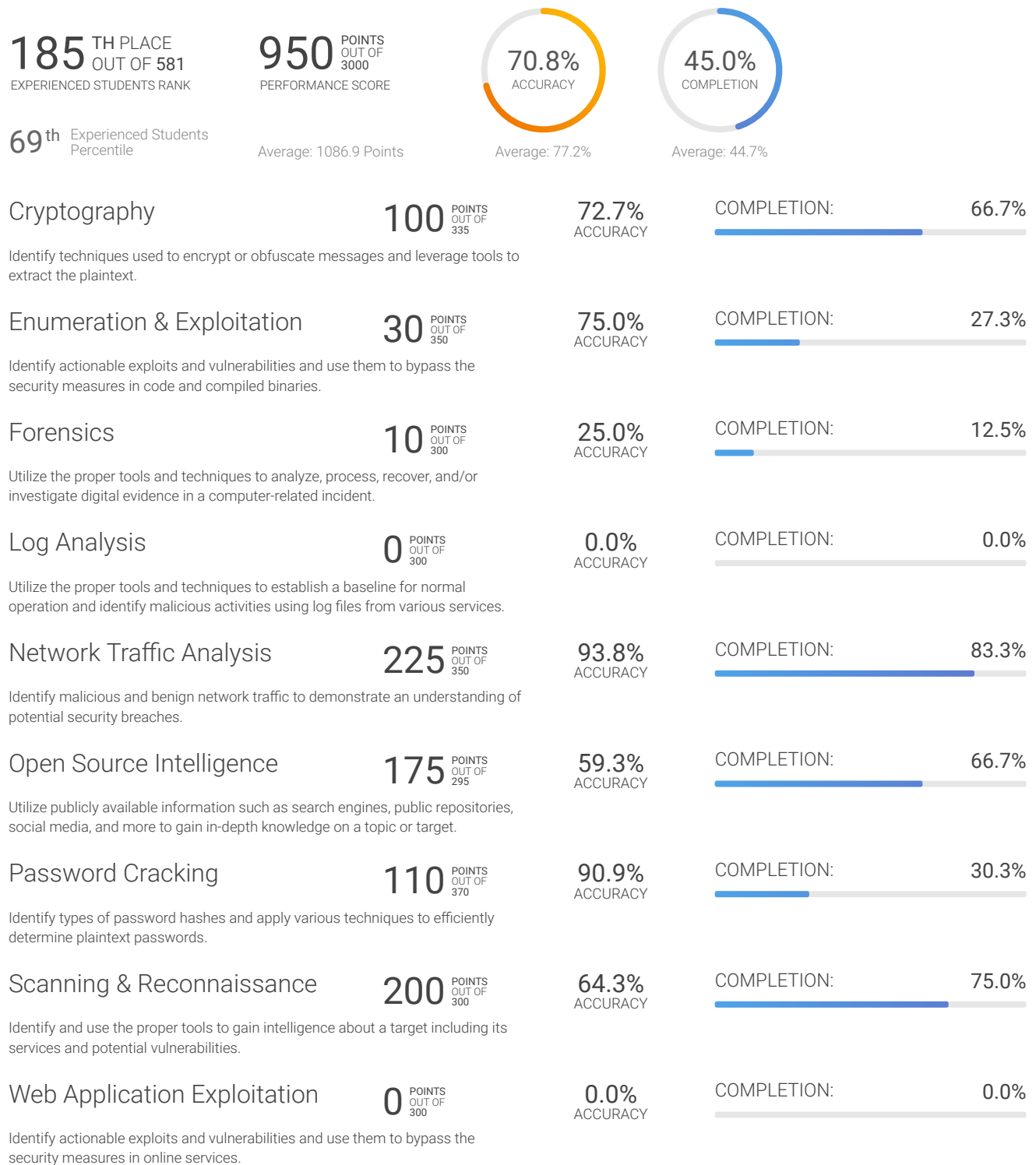
Average: 77.2%

[cyberskyline.com/report  
ID: PJJN29U64Y3E](https://cyberskyline.com/report/PJJN29U64Y3E)



## 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

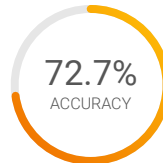
Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

**208<sup>TH</sup> PLACE**  
OUT OF 581  
EXPERIENCED STUDENTS RANK

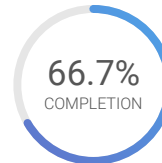
**100** POINTS  
OUT OF 335  
PERFORMANCE SCORE

**65<sup>th</sup>** Experienced Students  
Percentile

Average: 109.0 Points



Average: 87.5%



Average: 67.3%

### TOP NICE WORKROLES

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

### Bases (Easy)

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Obtain plaintext from messages encoded with common number bases

### Shift (Easy)

**30** POINTS  
OUT OF 30

**50.0%**  
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

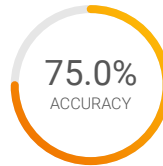
Identify actionable exploits and vulnerabilities and use them to bypass the security measures in code and compiled binaries.

**208<sup>TH</sup> PLACE**  
OUT OF 581  
EXPERIENCED STUDENTS RANK

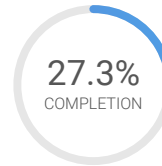
**65<sup>TH</sup>** Experienced Students  
Percentile

**30** POINTS  
OUT OF 350  
PERFORMANCE SCORE

Average: 151.6 Points



Average: 77.3%



Average: 55.8%

### TOP NICE WORKROLES

Cyber Operator  
Target Developer  
Exploitation Analyst  
Software Developer  
Systems Security Analyst

### Everywhere (Easy)

Analyze JavaScript source code to extract an insecurely stored authentication secret

**10** POINTS  
OUT OF 80

**100.0%**  
ACCURACY

COMPLETION: **50.0%**

### UDP Hijack (Medium)

Perform a session hijacking exploit by analyzing a custom network protocol

**10** POINTS  
OUT OF 80

**50.0%**  
ACCURACY

COMPLETION: **33.3%**

### 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

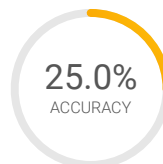
Utilize the proper tools and techniques to analyze, process, recover, and/or investigate digital evidence in a computer-related incident.

**207<sup>TH</sup> PLACE**  
OUT OF 581  
EXPERIENCED STUDENTS RANK

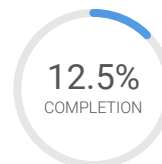
**65<sup>TH</sup>** Experienced Students  
Percentile

**10** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 111.7 Points



Average: 54.5%



Average: 45.4%

### 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

**10** POINTS  
OUT OF 100

**25.0%**  
ACCURACY

COMPLETION: **50.0%**

### 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%**





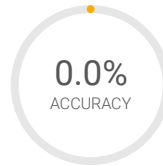
## Log Analysis Module

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

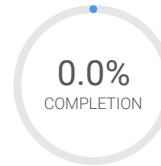
**228** TH PLACE  
OUT OF 581  
EXPERIENCED STUDENTS RANK

**0** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 97.5 Points



Average: 53.6%



Average: 33.9%

### TOP NICE WORKROLES

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

**61** st Experienced Students  
Percentile

### 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

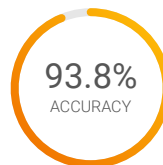
## Network Traffic Analysis Module

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

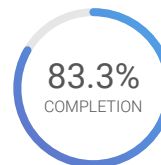
**114** TH PLACE  
OUT OF 581  
EXPERIENCED STUDENTS RANK

**225** POINTS  
OUT OF 350  
PERFORMANCE SCORE

Average: 188.2 Points



Average: 74.8%



Average: 62.3%

### TOP NICE WORKROLES

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

**81** st Experienced Students  
Percentile

### Pong (Easy)

**80** POINTS  
OUT OF 80

100.0%  
ACCURACY

COMPLETION: 100.0%

Extract ICMP information from a packet capture

### HTTPS (Medium)

**100** POINTS  
OUT OF 100

83.3%  
ACCURACY

COMPLETION: 100.0%

Decrypt and analyze an intercepted TLS packet capture

### Cracking (Medium)

**35** POINTS  
OUT OF 70

100.0%  
ACCURACY

COMPLETION: 75.0%

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

### Extraction (Hard)

**10** POINTS  
OUT OF 100

100.0%  
ACCURACY

COMPLETION: 33.3%

Recover data that was covertly exfiltrated in TCP sequence numbers





## Open Source Intelligence Module

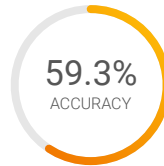
Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

**239<sup>TH</sup>** PLACE  
OUT OF 581  
EXPERIENCED STUDENTS RANK

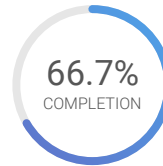
**59<sup>th</sup>** Experienced Students  
Percentile

**175** POINTS  
OUT OF 295  
PERFORMANCE SCORE

Average: 202.4 Points



Average: 80.1%



Average: 72.3%

### TOP NICE WORKROLES

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

### Rules of Conduct (Easy)

Introductory challenge on acceptable conduct during NCL

**15** POINTS  
OUT OF 15

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### PGP Lookup (Easy)

Query details of PGP public encryption keys shared online

**0** POINTS  
OUT OF 45

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

### Undersea (Easy)

Conduct open-source target research on a public works project

**70** POINTS  
OUT OF 70

**77.8%**  
ACCURACY

COMPLETION: **100.0%**

### Certificates (Medium)

Query Certificate Transparency tools to audit historic TLS certificates

**0** POINTS  
OUT OF 45

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

### Electrified (Medium)

Identify openly available information on EV charging infrastructure

**70** POINTS  
OUT OF 70

**80.0%**  
ACCURACY

COMPLETION: **100.0%**

### Liber8tion v. Lawyers (Hard)

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

**20** POINTS  
OUT OF 50

**22.2%**  
ACCURACY

COMPLETION: **50.0%**



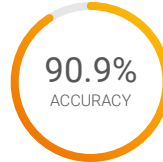


## Password Cracking Module

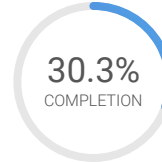
Identify types of password hashes and apply various techniques to efficiently determine plaintext passwords.

**195** TH PLACE  
OUT OF 581  
EXPERIENCED STUDENTS RANK

**110** POINTS  
OUT OF 370  
PERFORMANCE SCORE



Average: 92.1%



Average: 42.0%

**67<sup>th</sup>** Experienced Students  
Percentile

Average: 156.8 Points

### Hashing (Easy)

**20** POINTS  
OUT OF 20

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

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

### Rockyou (Easy)

**45** POINTS  
OUT OF 45

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Crack MD5 password hashes for password found in the rockyou breach

### Windows (Easy)

**45** POINTS  
OUT OF 45

**75.0%**  
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

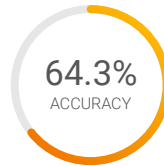
Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

**172** ND PLACE  
OUT OF 581  
EXPERIENCED STUDENTS RANK

**71<sup>st</sup>** Experienced Students  
Percentile

**200** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 220.6 Points



Average: 77.7%



Average: 78.0%

### TOP NICE WORKROLES

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

### Scan (Easy)

Scan a remote host for open ports and identify running services

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Masscan (Medium)

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

**100** POINTS  
OUT OF 100

**85.7%**  
ACCURACY

COMPLETION: **100.0%**

### Message (Hard)

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

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

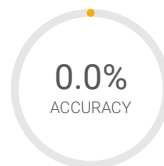
## Web Application Exploitation Module

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

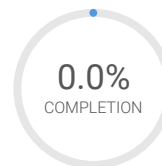
**N/A**  
EXPERIENCED STUDENTS RANK

**0** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 120.9 Points



Average: 68.8%



Average: 46.0%

### TOP NICE WORKROLES

Cyber Operator  
Software Developer  
Exploitation Analyst  
Systems Security Analyst  
Database Administrator

### Witter (Easy)

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

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

### Login (Medium)

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

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

### Cryptographic Lottery (Hard)

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

**0** POINTS  
OUT OF 100

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

