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**CYBER SKYLINE**

The National Cyber League  
A Community Where Cybersecurity Is a Passion

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## NCL Fall 2021 Individual Game Scouting Report

Dear Kollin Labowski,

Thank you for participating in the National Cyber League (NCL) 2021 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 2021 Fall Season had 7,130 students/players and 491 faculty/coaches from more than 500 two- and four-year schools & 70 high schools across all 50 U.S. states registered to play. The Individual Game Capture the Flag (CTF) event took place from October 22 through October 24. The Team Game CTF event took place from November 5 through November 7. 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/TY45C8HN9XYX](https://cyberskyline.com/report/TY45C8HN9XYX)

**CompTIA.** Based on the the performance detailed in this NCL Scouting Report, you have earned **16 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 2021 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



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### NATIONAL CYBER LEAGUE SCORE CARD

NCL 2021 FALL INDIVIDUAL GAME

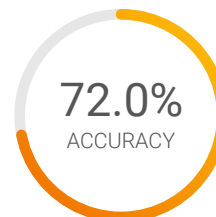
#### YOUR TOP CATEGORIES

**NATIONAL RANK**  
**180TH PLACE**  
**OUT OF 6478**  
**PERCENTILE**  
**98TH**

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

**ENUMERATION &  
EXPLOITATION**  
**100TH PERCENTILE**

**FORENSICS**  
**99TH PERCENTILE**

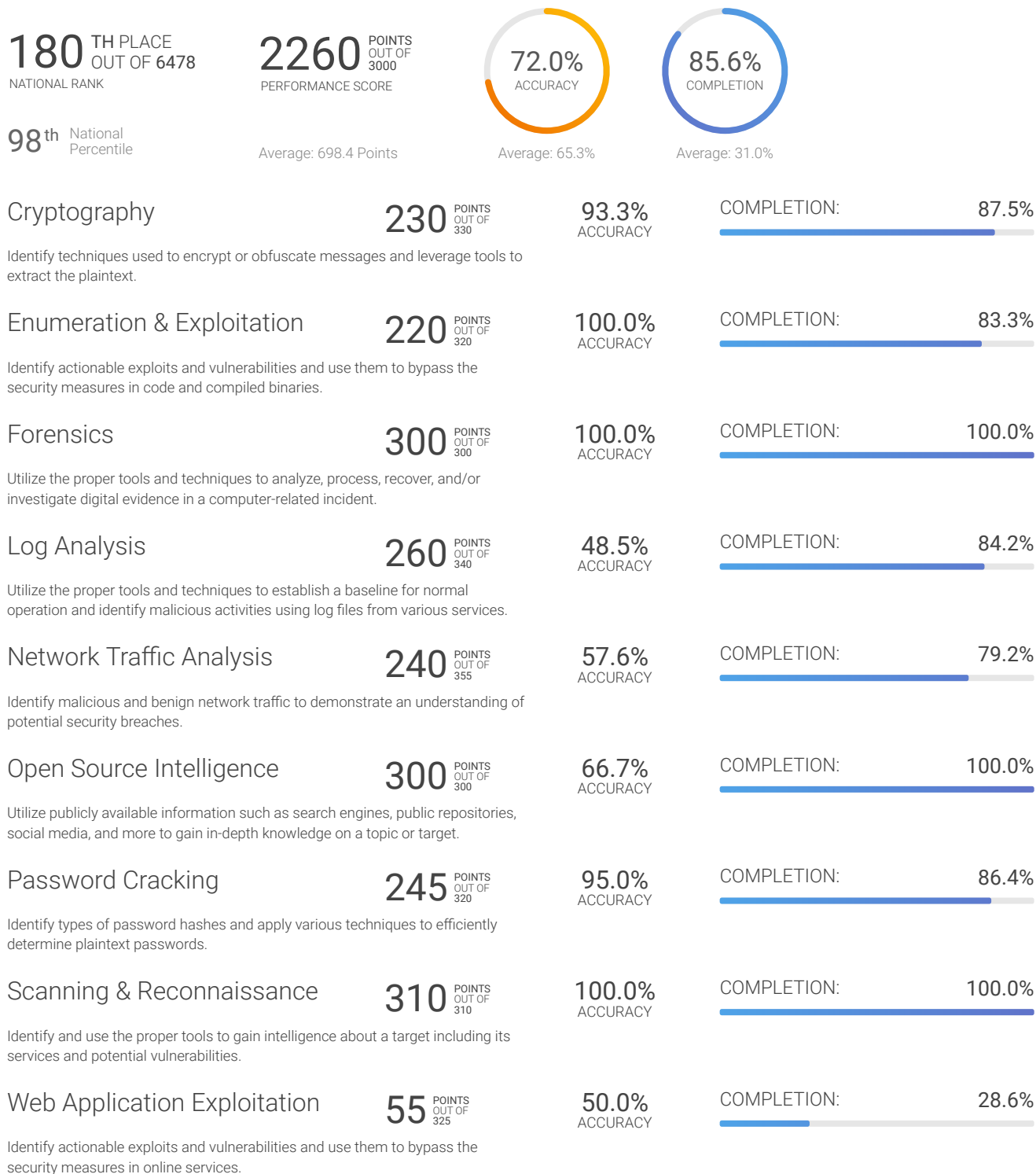


[cyberskyline.com/report](https://cyberskyline.com/report/TY45C8HN9XYX)  
ID: TY45C8HN9XYX



## NCL Fall 2021 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.





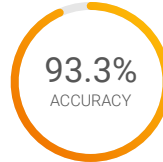
## Cryptography Module

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

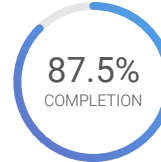
**422** ND PLACE  
OUT OF 6478  
NATIONAL RANK

**230** POINTS  
OUT OF 330  
PERFORMANCE SCORE

Average: 134.1 Points



Average: 85.2%



Average: 53.1%

### TOP NICE WORKROLES

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

### Decoding 1 (Easy)

**45** POINTS  
OUT OF 45

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the type of base encoding used and decode the data

### Decoding 2 (Easy)

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the cipher scheme used and decrypt the data

### Decoding 3 (Easy)

**20** POINTS  
OUT OF 20

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the cipher scheme used and decrypt the data

### Decoding 4 (Medium)

**35** POINTS  
OUT OF 35

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the alphabet encoding used and decode the data

### Decoding 5 (Hard)

**50** POINTS  
OUT OF 50

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Exploit an RSA implementation and extract the sensitive data that was encrypted

### Steg (Easy)

**20** POINTS  
OUT OF 20

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the steganography technique used and extract the hidden data

### Cyber Cat (Easy)

**0** POINTS  
OUT OF 50

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Identify the metadata and encoding used to hide data in an image file

### SSL (Hard)

**30** POINTS  
OUT OF 80

**66.7%**  
ACCURACY

COMPLETION: **66.7%**

Parse through hundreds of SSL certificates to identify any invalid or improperly signed SSL certificates





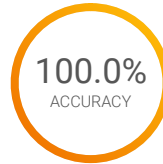
## Enumeration & Exploitation Module

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

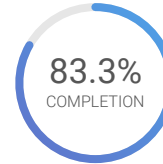
**63<sup>RD</sup>** PLACE  
OUT OF 6478  
NATIONAL RANK

**220** POINTS  
OUT OF 320  
PERFORMANCE SCORE

Average: 55.0 Points



Average: 43.1%



Average: 32.2%

### TOP NICE WORKROLES

Cyber Operator  
Target Developer  
Exploitation Analyst  
Software Developer  
Systems Security Analyst

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

### Micro (Easy)

Analyze a Lua script source code & reverse engineer its functionality

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Shinny (Medium)

Analyze an obfuscated Python program & reverse engineer its functionality

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Rock (Hard)

Decompile and analyze a C++ binary file & reverse engineer its functionality

**20** POINTS  
OUT OF 120

**100.0%**  
ACCURACY

COMPLETION: **50.0%**

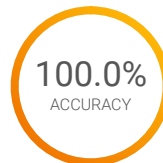
## Forensics Module

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

**128<sup>TH</sup>** PLACE  
OUT OF 6478  
NATIONAL RANK

**300** POINTS  
OUT OF 300  
PERFORMANCE SCORE

Average: 163.7 Points



Average: 73.5%



Average: 59.6%

### TOP NICE WORKROLES

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

### Archive (Easy)

Fix a corrupted rar file to recover the archive's original contents

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Docter (Medium)

Identify and extract files hidden inside a Microsoft Word document file

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Where in the World? (Hard)

Analyze the available information in a photograph to identify where the photo was taken

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**





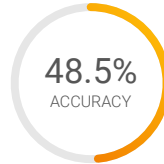
## Log Analysis Module

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

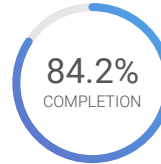
**354<sup>TH</sup>** PLACE  
OUT OF 6478  
NATIONAL RANK

**260** POINTS  
OUT OF 340  
PERFORMANCE SCORE

Average: 103.9 Points



Average: 42.9%



Average: 35.2%

### TOP NICE WORKROLES

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

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

### Wild Web (Easy)

**85** POINTS  
OUT OF 110

42.9%  
ACCURACY

COMPLETION: 85.7%

Analyze a web server's access logs to identify trends and suspicious access

### Mountains (Medium)

**100** POINTS  
OUT OF 100

100.0%  
ACCURACY

COMPLETION: 100.0%

Execute commands on an Alpine Linux server to identify installed packages

### IDS (Hard)

**75** POINTS  
OUT OF 130

35.7%  
ACCURACY

COMPLETION: 71.4%

Analyze an IDS log to identify indicators of compromise and attack signatures

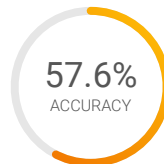
## Network Traffic Analysis Module

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

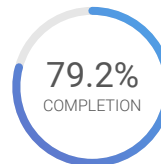
**379<sup>TH</sup>** PLACE  
OUT OF 6478  
NATIONAL RANK

**240** POINTS  
OUT OF 355  
PERFORMANCE SCORE

Average: 121.8 Points



Average: 65.0%



Average: 41.2%

### TOP NICE WORKROLES

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

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

### FTP (Easy)

**80** POINTS  
OUT OF 80

100.0%  
ACCURACY

COMPLETION: 100.0%

Analyze a capture of FTP traffic to identify user credentials and files accessed

### Cracking (Medium)

**30** POINTS  
OUT OF 55

75.0%  
ACCURACY

COMPLETION: 75.0%

Analyze and identify WiFi network metadata and crack the WiFi password

### TV (Medium)

**60** POINTS  
OUT OF 100

38.5%  
ACCURACY

COMPLETION: 62.5%

Analyze a websocket packet capture containing smart TV control commands

### WiFi (Hard)

**70** POINTS  
OUT OF 120

54.5%  
ACCURACY

COMPLETION: 85.7%

Identify the vulnerable data fields to exploit the 802.11 PMKID vulnerability and crack the WiFi network access password





## Open Source Intelligence Module

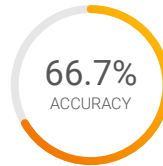
Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

**305<sup>TH</sup>** PLACE  
OUT OF 6478  
NATIONAL RANK

**300** POINTS  
OUT OF 300  
PERFORMANCE SCORE

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

Average: 134.2 Points



Average: 66.9%



Average: 58.3%

### 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

### APTs (Easy)

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify attributes regarding popular Advanced Persistent Threats

### Unknown Hash (Easy)

**45** POINTS  
OUT OF 45

**27.3%**  
ACCURACY

COMPLETION: **100.0%**

Identify the protocol associated with a hash digest and its associated files

### Hacker Location (Medium)

**50** POINTS  
OUT OF 50

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify the location encoding scheme which uses only 3 words

### Stolen Camera (Medium)

**70** POINTS  
OUT OF 70

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Extract camera serial number from an image and identify stolen camera registries

### Tom's Hotel (Hard)

**90** POINTS  
OUT OF 90

**75.0%**  
ACCURACY

COMPLETION: **100.0%**

Identify attributes from a photo to pin point the location that the photo was taken





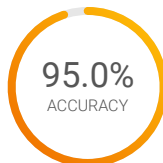
## Password Cracking Module

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

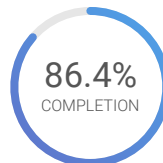
**138<sup>TH</sup> PLACE**  
OUT OF 6478  
NATIONAL RANK

**245** POINTS  
OUT OF 320  
PERFORMANCE SCORE

Average: 94.4 Points



Average: 86.8%



Average: 43.0%

### TOP NICE WORKROLES

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

### Hashing (Easy)

Generate password hashes for MD5, SHA1, and SHA256

**15** POINTS  
OUT OF 15

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### 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

**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)

Build a wordlist to crack passwords not found in common wordlists

**20** POINTS  
OUT OF 95

**100.0%**  
ACCURACY

COMPLETION: **40.0%**

### ZIP (Medium)

Crack the password of a ZIP archive file

**30** POINTS  
OUT OF 30

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

### Kali Linux (Hard)

Crack the new yescrypt password hashes included in Kali Linux

**75** POINTS  
OUT OF 75

**100.0%**  
ACCURACY

COMPLETION: **100.0%**





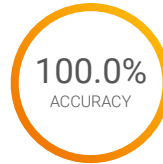
## Scanning & Reconnaissance Module

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

**45<sup>TH</sup> PLACE**  
OUT OF 6478  
NATIONAL RANK

**310** POINTS  
OUT OF 310  
PERFORMANCE SCORE

Average: 104.1 Points



Average: 52.9%



Average: 36.4%

### TOP NICE WORKROLES

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

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

### Port Scan (Easy)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Perform a port scan and identify services running on a remote host

### Treasure Hunt (Medium)

**100** POINTS  
OUT OF 100

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Perform a directory scan and identify hidden files on a remote HTTP server

### Mail (Hard)

**110** POINTS  
OUT OF 110

**100.0%**  
ACCURACY

COMPLETION: **100.0%**

Perform a targeted service scan of a SMTP server to identify the names of users in the server directory

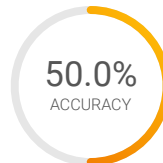
## Web Application Exploitation Module

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

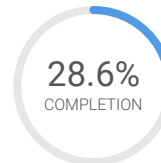
**576<sup>TH</sup> PLACE**  
OUT OF 6478  
NATIONAL RANK

**55** POINTS  
OUT OF 325  
PERFORMANCE SCORE

Average: 66.5 Points



Average: 59.1%



Average: 30.2%

### TOP NICE WORKROLES

Cyber Operator  
Software Developer  
Exploitation Analyst  
Systems Security Analyst  
Database Administrator

**92<sup>nd</sup>** National  
Percentile

### Storage (Easy)

**30** POINTS  
OUT OF 100

**50.0%**  
ACCURACY

COMPLETION: **33.3%**

Analyze source code on a web page and exploit local authentication measures

### Pasta (Medium)

**25** POINTS  
OUT OF 100

**50.0%**  
ACCURACY

COMPLETION: **33.3%**

Exploit the backdoor vulnerability present in a Node-RED IOT control server

### Leek (Hard)

**0** POINTS  
OUT OF 125

**0.0%**  
ACCURACY

COMPLETION: **0.0%**

Exploit the web server to obtain uninitialized server buffer memory and extract sensitive server-side data such as encryption keys

