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CYBER SKYLINE

The National Cyber League
A Community Where Cybersecurity Is a Passion

Luke Leveque
lileve01@louisville.edu

NCL Fall 2023 Team Game Scouting Report

Dear Luke Leveque (Team "University of Louisville ACM"),

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 591 faculty/coaches from more than 510 two- and four-year schools & 270 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/FHAM10HNEUXA

Congratulations for your participation in the NCL 2023 Fall Team 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 TEAM GAME

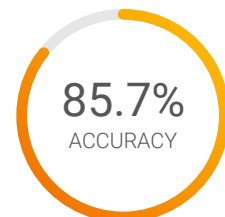
YOUR TOP CATEGORIES

LOG ANALYSIS
100TH PERCENTILE

NETWORK TRAFFIC
ANALYSIS
100TH PERCENTILE

ENUMERATION &
EXPLOITATION
100TH PERCENTILE

NATIONAL RANK
11TH PLACE
OUT OF 4672
PERCENTILE
100TH



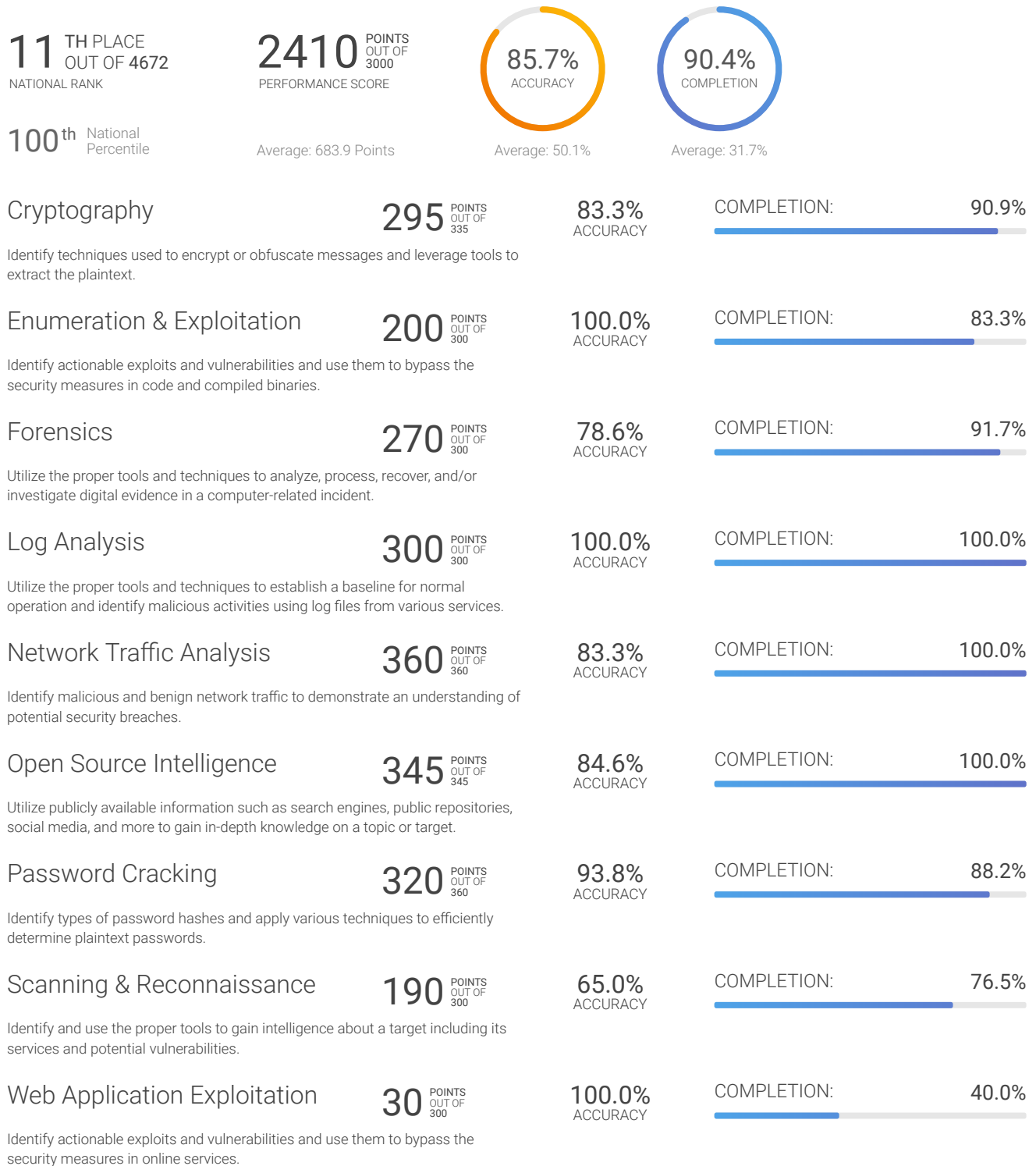
Average: 50.1%

[cyberskyline.com/report](https://cyberskyline.com/report/FHAM10HNEUXA)
ID: FHAM10HNEUXA



NCL Fall 2023 Team Game

The NCL Team Game is designed for student players nationwide to compete in realtime in the categories listed below. The Team Game promotes camaraderie and evaluates the collective technical cybersecurity skills of the team members.



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



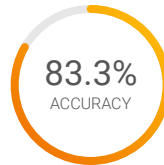


Cryptography Module

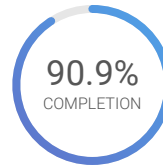
Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

15TH PLACE
OUT OF 4672
NATIONAL RANK

295 POINTS
OUT OF 335
PERFORMANCE SCORE



Average: 59.3%



Average: 54.0%

TOP NICE WORKROLES

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

100th National
Percentile

Average: 115.0 Points

Salad (Easy)

30 POINTS
OUT OF 30

100.0%
ACCURACY

COMPLETION: **100.0%**

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

Beep Beep (Easy)

30 POINTS
OUT OF 30

100.0%
ACCURACY

COMPLETION: **100.0%**

Analyze and obtain the plaintext for a message encoded with Morse code

Someone Cooked (Medium)

10 POINTS
OUT OF 50

33.3%
ACCURACY

COMPLETION: **50.0%**

Analyze and obtain the plaintext for a message with multiple layers of encoding

Roots (Medium)

50 POINTS
OUT OF 50

100.0%
ACCURACY

COMPLETION: **100.0%**

Interpret the Logo programming language to extract hidden information

Pretty Good Signature (Hard)

75 POINTS
OUT OF 75

100.0%
ACCURACY

COMPLETION: **100.0%**

Identify fraudulent emails through the use of PGP signature verification

Boomers (Hard)

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

Decipher the plaintext for a message encrypted with a Sudoku cipher





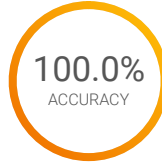
Enumeration & Exploitation Module

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

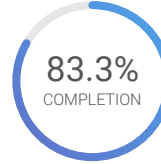
6TH PLACE
OUT OF 4672
NATIONAL RANK

200 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 58.8 Points



Average: 54.4%



Average: 33.2%

TOP NICE WORKROLES

Cyber Operator
Target Developer
Exploitation Analyst
Software Developer
Systems Security Analyst

100th National
Percentile

Espionage (Easy)

Be able to read and decipher OCaml Code and recognize bitwise operations

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

Bytecode (Medium)

Decompile and analyze the bytecode for Ruby to reverse engineer the authentication scheme

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

Journal (Hard)

Reverse engineer a compiled binary and exploit a TOCTOU (Time-of-Check Time-of-Use) vulnerability to escalate user privileges

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

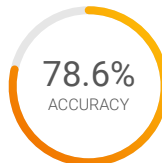
Forensics Module

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

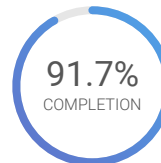
26TH PLACE
OUT OF 4672
NATIONAL RANK

270 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 63.0 Points



Average: 46.0%



Average: 26.8%

TOP NICE WORKROLES

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

100th National
Percentile

Seek (Easy)

Identify tampered files on an NTFS file system through forensic analysis of the Master File Table

100 POINTS
OUT OF 100

75.0%
ACCURACY

COMPLETION: **100.0%**

Art (Medium)

Reconstruct a file from a binary data stream by following the specification for a custom file format

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

The Book (Hard)

Analyze and search through a live Windows memory dump to extract the SQL database from memory

70 POINTS
OUT OF 100

71.4%
ACCURACY

COMPLETION: **83.3%**





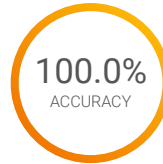
Log Analysis Module

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

1ST PLACE
OUT OF 4672
NATIONAL RANK

300 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 111.8 Points



Average: 42.2%



Average: 49.7%

TOP NICE WORKROLES

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

100th National
Percentile

Wardriving (Easy)

Parse a wardriving log to identify WiFi and Bluetooth network beacons

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

Mobile (Medium)

Dissect an Android log to identify historic user activity on the device

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

Za (Hard)

Analyze a Windows Sysmon log to identify the file that was covertly exfiltrated via DNS query packets

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

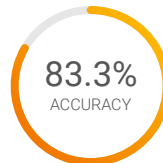
Network Traffic Analysis Module

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

4TH PLACE
OUT OF 4672
NATIONAL RANK

360 POINTS
OUT OF 360
PERFORMANCE SCORE

Average: 143.9 Points



Average: 37.5%



Average: 48.4%

TOP NICE WORKROLES

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

100th National
Percentile

Next Gen (Easy)

Analyze and identify the layout of an IPv6 network

90 POINTS
OUT OF 90

71.4%
ACCURACY

COMPLETION: **100.0%**

The Webz (Medium)

Analyze Border Gateway Protocol (BGP) traffic to identify automatic route discovery mechanisms

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

Router (Medium)

Decrypt a WiFi packet capture and extract the contents of the network traffic

70 POINTS
OUT OF 70

100.0%
ACCURACY

COMPLETION: **100.0%**

Looking Glass (Hard)

Analyze and extract raw H.264 video from a wireless Android screen recording

100 POINTS
OUT OF 100

60.0%
ACCURACY

COMPLETION: **100.0%**



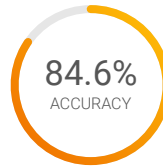


Open Source Intelligence Module

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

19TH PLACE
OUT OF 4672
NATIONAL RANK

345 POINTS
OUT OF 345
PERFORMANCE SCORE



Average: 53.2%



Average: 76.4%

TOP NICE WORKROLES

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

100th National
Percentile

Average: 189.1 Points

Rules of Conduct (Easy)

25 POINTS
OUT OF 25

83.3%
ACCURACY

COMPLETION: **100.0%**

Introductory challenge on acceptable conduct during NCL

Park (Easy)

45 POINTS
OUT OF 45

100.0%
ACCURACY

COMPLETION: **100.0%**

Extract EXIF metadata from a JPEG file to determine geolocation

X Marks the Spot (Easy)

60 POINTS
OUT OF 60

70.0%
ACCURACY

COMPLETION: **100.0%**

Identify characteristics of the 2020 Twitter hack from government reports

Reputation (Medium)

40 POINTS
OUT OF 40

100.0%
ACCURACY

COMPLETION: **100.0%**

Reverse lookup IP addresses to identify the name of the VPN service providers

Airport (Medium)

75 POINTS
OUT OF 75

100.0%
ACCURACY

COMPLETION: **100.0%**

Identify the geolocation of an image without the EXIF metadata

Gotta Go Fast (Hard)

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **100.0%**

Analyze a series of locations to identify the commonality between them and extrapolate another likely target location



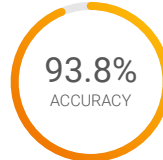


Password Cracking Module

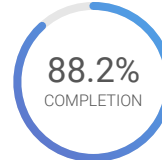
Identify types of password hashes and apply various techniques to efficiently determine plaintext passwords.

6TH PLACE
OUT OF 4672
NATIONAL RANK

320 POINTS
OUT OF 360
PERFORMANCE SCORE



Average: 82.2%



Average: 18.2%

100th National
Percentile

Average: 44.4 Points

Hashing (Easy)

20 POINTS
OUT OF 20

66.7%
ACCURACY

COMPLETION: 100.0%

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

International (Easy)

30 POINTS
OUT OF 30

100.0%
ACCURACY

COMPLETION: 100.0%

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

WPA (Medium)

50 POINTS
OUT OF 50

100.0%
ACCURACY

COMPLETION: 100.0%

Research and crack WiFi passwords saved in a wpa_supplicant.conf file

Monsters (Medium)

100 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: 100.0%

Build a wordlist to crack passwords not found in common password wordlists

Speakeasy (Medium)

60 POINTS
OUT OF 60

100.0%
ACCURACY

COMPLETION: 100.0%

Build a wordlist or pattern rule to crack passwords with leet speak character replacements

Say My Name (Hard)

60 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: 60.0%

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





Scanning & Reconnaissance Module

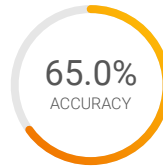
Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

60TH PLACE
OUT OF 4672
NATIONAL RANK

99TH National
Percentile

190 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 70.3 Points



Average: 44.8%



Average: 29.9%

TOP NICE WORKROLES

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

Knock (Easy)

Run a TCP and UDP scan to identify running services and utilize port knocking to access a hidden service

80 POINTS
OUT OF 100

40.0%
ACCURACY

COMPLETION: **66.7%**

SSH Server (Medium)

Utilize Public Key Infrastructure to generate valid SSH authentication certificates from a Certificate Authority

10 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **33.3%**

Academic Papers (Hard)

Analyze the history and metadata of a Docker image to identify information stored in the container

100 POINTS
OUT OF 100

88.9%
ACCURACY

COMPLETION: **100.0%**

Web Application Exploitation Module

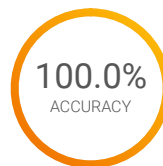
Identify actionable exploits and vulnerabilities and use them to bypass the security measures in online services.

103RD PLACE
OUT OF 4672
NATIONAL RANK

98TH National
Percentile

30 POINTS
OUT OF 300
PERFORMANCE SCORE

Average: 32.6 Points



Average: 39.8%



Average: 26.0%

TOP NICE WORKROLES

Cyber Operator
Software Developer
Exploitation Analyst
Systems Security Analyst
Database Administrator

Secure Banking (Easy)

Identify the vulnerability that leaks an API token and utilize it in an account takeover attack

10 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **50.0%**

LowLine (Medium)

Exploit a known vulnerability in the JavaScript Lodash library (CVE-2021-23337) to extract sensitive server side data

20 POINTS
OUT OF 100

100.0%
ACCURACY

COMPLETION: **50.0%**

Toms Fan Club v2 (Hard)

Analyze and conduct an assessment on a web application that uses a custom HTTP upgrade procedure

0 POINTS
OUT OF 100

0.0%
ACCURACY

COMPLETION: **0.0%**

