The National Cyber League
A Community Where Cybersecurity Is a Passion

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NCL Fall 2023 Team Game Scouting Report

Dear Mitchell Arndt (Team "(red)BIRD UP @ Illinois State University"),

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/2RVQ8FD96PH9

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

NATIONAL CYBER LEAGUE SCORE CARD

NCL 2023 FALL TEAM GAME

NATIONAL RANK
29TH PLACE OUT OF 4672

PERCENTILE
100TH

YOUR TOP CATEGORIES

FORENSICS	SCANNING & RECONNAISSANCE	CRYPTOGRAPHY
100TH PERCENTILE	100TH PERCENTILE	100TH PERCENTILE

73.6%
ACCURACY

Average: 50.1%

cyberskyline.com/report
ID: 2RVQ8FD96PH9

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NCL Fall 2023 Team Game

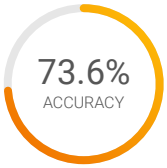
The NCL Team Game is designed for student players nationwide to compete in realtime in the categories listed below. The Team Game promotes camaraderie and evaluates the collective technical cybersecurity skills of the team members.

29 TH PLACE OUT OF 4672
NATIONAL RANK

2090 POINTS OUT OF 3000
PERFORMANCE SCORE

100th National Percentile

Average: 683.9 Points



Average: 50.1%

Average: 31.7%

Cryptography

285 POINTS OUT OF 335

69.2% ACCURACY

COMPLETION: **81.8%**

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

Enumeration & Exploitation

120 POINTS OUT OF 300

66.7% ACCURACY

COMPLETION: **66.7%**

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

Forensics

300 POINTS OUT OF 300

100.0% ACCURACY

COMPLETION: **100.0%**

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

Log Analysis

230 POINTS OUT OF 300

71.4% ACCURACY

COMPLETION: **83.3%**

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

280 POINTS OUT OF 360

65.5% ACCURACY

COMPLETION: **95.0%**

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

Open Source Intelligence

335 POINTS OUT OF 345

56.8% ACCURACY

COMPLETION: **95.5%**

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

110 POINTS OUT OF 360

100.0% ACCURACY

COMPLETION: **29.4%**

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

Scanning & Reconnaissance

210 POINTS OUT OF 300

93.8% ACCURACY

COMPLETION: **88.2%**

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

Web Application Exploitation

120 POINTS OUT OF 300

100.0% ACCURACY

COMPLETION: **60.0%**

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.

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Cryptography Module

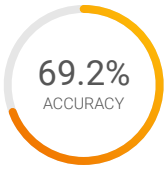
Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.

44 TH PLACE OUT OF **4672**
NATIONAL RANK

100th National Percentile

285 POINTS OUT OF 335
PERFORMANCE SCORE

Average: 115.0 Points



Average: 59.3%

Average: 54.0%

TOP NICE WORKROLES
Security Control Assessor
Secure Software Assessor
Exploitation Analyst
Cyber Operator
Security Architect

Salad (Easy)

30 POINTS OUT OF 30

60.0% 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)

0 POINTS OUT OF 50

0.0% ACCURACY

COMPLETION: 0.0%

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

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Enumeration & Exploitation Module

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

123 RD PLACE OUT OF 4672
NATIONAL RANK

98th National Percentile

120 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 58.8 Points

66.7% ACCURACY

Average: 54.4%

66.7% COMPLETION

Average: 33.2%

TOP NICE WORKROLES
Cyber Operator
Target Developer
Exploitation Analyst
Software Developer
Systems Security Analyst

Espionage (Easy)

100 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: 100.0%

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

Bytecode (Medium)

20 POINTS OUT OF 100

50.0% ACCURACY

COMPLETION: 66.7%

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

Journal (Hard)

0 POINTS OUT OF 100

0.0% ACCURACY

COMPLETION: 0.0%

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

Forensics Module

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

4 TH PLACE OUT OF 4672
NATIONAL RANK

100th National Percentile

300 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 63.0 Points

100.0% ACCURACY

Average: 46.0%

100.0% COMPLETION

Average: 26.8%

TOP NICE WORKROLES
Cyber Defense Forensics Analyst
Cyber Crime Investigator
Cyber Defense Incident Responder
Cyber Defense Analyst

Seek (Easy)

100 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: 100.0%

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

Art (Medium)

100 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: 100.0%

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

The Book (Hard)

100 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: 100.0%

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

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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.

56 TH PLACE OUT OF **4672**
NATIONAL RANK

99th National Percentile

230 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 111.8 Points

71.4% ACCURACY

Average: 42.2%

83.3% COMPLETION

Average: 49.7%

TOP NICE WORKROLES
Cyber Defense Analyst
Systems Security Analyst
All-Source Analyst
Cyber Defense Forensics Analyst
Data Analyst

Wardriving (Easy)

100 POINTS OUT OF 100

90.0% ACCURACY

COMPLETION: 100.0%

Parse a wardriving log to identify WiFi and Bluetooth network beacons

Mobile (Medium)

30 POINTS OUT OF 100

33.3% ACCURACY

COMPLETION: 40.0%

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

Za (Hard)

100 POINTS OUT OF 100

80.0% ACCURACY

COMPLETION: 100.0%

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

Network Traffic Analysis Module

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

45 TH PLACE OUT OF **4672**
NATIONAL RANK

100th National Percentile

280 POINTS OUT OF 360
PERFORMANCE SCORE

Average: 143.9 Points

65.5% ACCURACY

Average: 37.5%

95.0% COMPLETION

Average: 48.4%

TOP NICE WORKROLES
Cyber Defense Analyst
All-Source Analyst
Cyber Defense Incident Responder
Target Network Analyst
Cyber Operator

Next Gen (Easy)

90 POINTS OUT OF 90

71.4% ACCURACY

COMPLETION: 100.0%

Analyze and identify the layout of an IPv6 network

The Webz (Medium)

100 POINTS OUT OF 100

66.7% ACCURACY

COMPLETION: 100.0%

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

Router (Medium)

70 POINTS OUT OF 70

85.7% ACCURACY

COMPLETION: 100.0%

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

Looking Glass (Hard)

20 POINTS OUT OF 100

33.3% ACCURACY

COMPLETION: 66.7%

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

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Open Source Intelligence Module

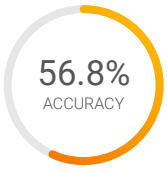
Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.

133 RD PLACE OUT OF 4672
NATIONAL RANK

335 POINTS OUT OF 345
PERFORMANCE SCORE

98th National Percentile

Average: 189.1 Points



Average: 53.2%

Average: 76.4%

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

Rules of Conduct (Easy)

25 POINTS OUT OF 25

100.0% 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)

50 POINTS OUT OF 60

50.0% ACCURACY

COMPLETION: 85.7%

Identify characteristics of the 2020 Twitter hack from government reports

Reputation (Medium)

40 POINTS OUT OF 40

66.7% ACCURACY

COMPLETION: 100.0%

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

Airport (Medium)

75 POINTS OUT OF 75

66.7% ACCURACY

COMPLETION: 100.0%

Identify the geolocation of an image without the EXIF metadata

Gotta Go Fast (Hard)

100 POINTS OUT OF 100

20.0% ACCURACY

COMPLETION: 100.0%

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

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Password Cracking Module

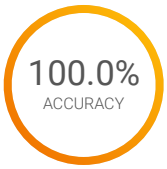
Identify types of password hashes and apply various techniques to efficiently determine plaintext passwords.

63 RD PLACE OUT OF 4672
NATIONAL RANK

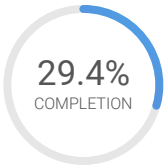
99th National Percentile

110 POINTS OUT OF 360
PERFORMANCE SCORE

Average: 44.4 Points



Average: 82.2%



Average: 18.2%

Hashing (Easy)

20 POINTS OUT OF 20

100.0% 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)

0 POINTS OUT OF 50

0.0% ACCURACY

COMPLETION: 0.0%

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

Monsters (Medium)

0 POINTS OUT OF 100

0.0% ACCURACY

COMPLETION: 0.0%

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)

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

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Scanning & Reconnaissance Module

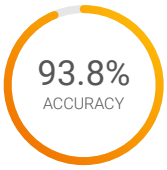
Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

23 RD PLACE OUT OF **4672**
NATIONAL RANK

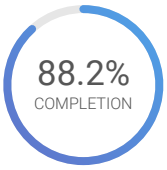
210 POINTS OUT OF 300
PERFORMANCE SCORE

100th National Percentile

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)

100 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: **100.0%**

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

SSH Server (Medium)

10 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: **33.3%**

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

Academic Papers (Hard)

100 POINTS OUT OF 100

88.9% ACCURACY

COMPLETION: **100.0%**

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

Web Application Exploitation Module

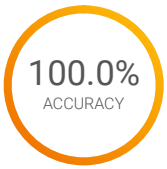
Identify actionable exploits and vulnerabilities and use them to bypass the security measures in online services.

52 ND PLACE OUT OF **4672**
NATIONAL RANK

120 POINTS OUT OF 300
PERFORMANCE SCORE

99th National Percentile

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)

100 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: **100.0%**

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

LowLine (Medium)

20 POINTS OUT OF 100

100.0% ACCURACY

COMPLETION: **50.0%**

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

Toms Fan Club v2 (Hard)

0 POINTS OUT OF 100

0.0% ACCURACY

COMPLETION: **0.0%**

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