NCL Fall 2023 Individual Game Scouting Report

Dear Luke Leveque,

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.

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/EWCE1DX3HP1U

Based on the the performance detailed in this NCL Scouting Report, you have earned **8 hours** of Continuing Education Units (CEUs) as approved by CompTIA. You can learn more about the NCL - CompTIA alignment via 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

NATIONAL CYBER LEAGUE SCORE CARD

NCL 2023 FALL INDIVIDUAL GAME
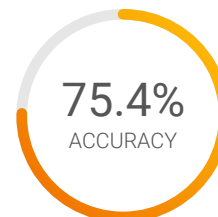
NATIONAL RANK

230TH PLACE OUT OF 7879

PERCENTILE
98TH

YOUR TOP CATEGORIES

FORENSICS
99TH PERCENTILE

LOG ANALYSIS
98TH PERCENTILE

PASSWORD CRACKING
98TH PERCENTILE

75.4%
ACCURACY
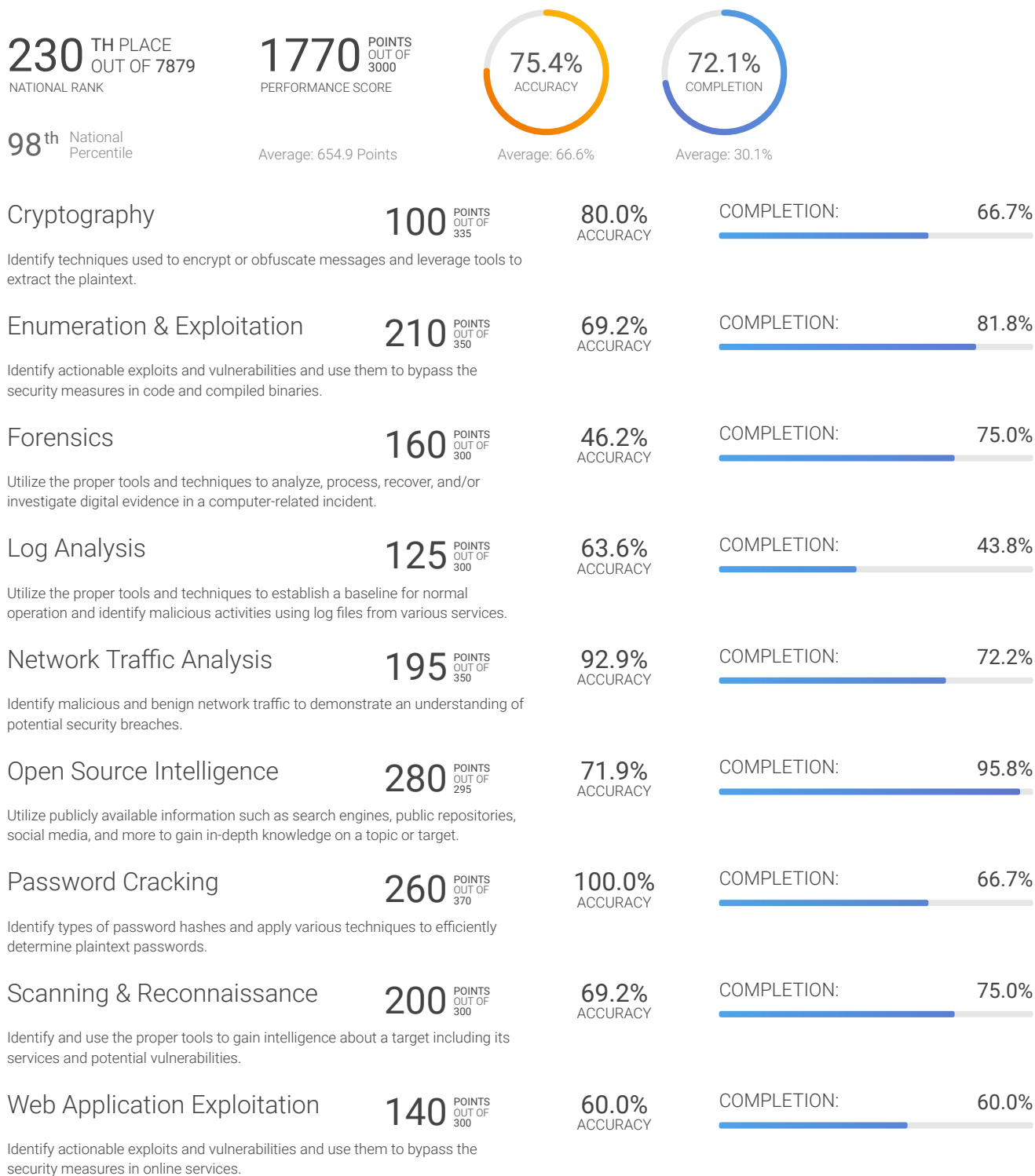
Average: 66.6%

cyberskyline.com/report
ID: EWCE1DX3HP1U

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.

230 TH PLACE OUT OF **7879**
NATIONAL RANK

98 th National Percentile

1770 POINTS OUT OF 3000
PERFORMANCE SCORE

Average: 654.9 Points

75.4% ACCURACY

Average: 66.6%

72.1% COMPLETION

Average: 30.1%

Cryptography

100 POINTS OUT OF 335

80.0% ACCURACY

COMPLETION: 66.7%

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

Enumeration & Exploitation

210 POINTS OUT OF 350

69.2% ACCURACY

COMPLETION: 81.8%

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

Forensics

160 POINTS OUT OF 300

46.2% ACCURACY

COMPLETION: 75.0%

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

Log Analysis

125 POINTS OUT OF 300

63.6% ACCURACY

COMPLETION: 43.8%

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

195 POINTS OUT OF 350

92.9% ACCURACY

COMPLETION: 72.2%

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

Open Source Intelligence

280 POINTS OUT OF 295

71.9% ACCURACY

COMPLETION: 95.8%

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

260 POINTS OUT OF 370

100.0% ACCURACY

COMPLETION: 66.7%

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

Scanning & Reconnaissance

200 POINTS OUT OF 300

69.2% ACCURACY

COMPLETION: 75.0%

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

Web Application Exploitation

140 POINTS OUT OF 300

60.0% 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.

Luke Leveque
lileve01@louisville.edu

The National Cyber League
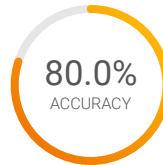A Community Where Cybersecurity Is a Passion

Cryptography Module

Identify techniques used to encrypt or obfuscate messages and leverage tools to extract the plaintext.
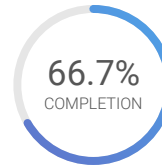
1222 ND PLACE OUT OF **7879**
NATIONAL RANK

85th National Percentile

100 POINTS OUT OF 335
PERFORMANCE SCORE

Average: 90.5 Points

80.0%
ACCURACY

Average: 78.4%

66.7%
COMPLETION

Average: 59.4%

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   **100.0%** 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

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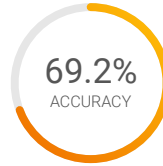
Enumeration & Exploitation Module

Identify actionable exploits and vulnerabilities and use them to bypass the security measures in code and compiled binaries.
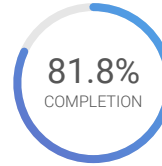
265 TH PLACE OUT OF **7879**
NATIONAL RANK

97th National Percentile

210 POINTS OUT OF 350
PERFORMANCE SCORE

Average: 81.7 Points

69.2% ACCURACY

Average: 56.1%

81.8% COMPLETION

Average: 34.1%

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

Everywhere (Easy)
80 POINTS OUT OF 80
50.0% ACCURACY
COMPLETION: **100.0%**

Analyze JavaScript source code to extract an insecurely stored authentication secret

UDP Hijack (Medium)
30 POINTS OUT OF 80
50.0% ACCURACY
COMPLETION: **66.7%**

Perform a session hijacking exploit by analyzing a custom network protocol

Throne (Medium)
90 POINTS OUT OF 90
100.0% ACCURACY
COMPLETION: **100.0%**

Analyze an obfuscated PowerShell malware using scheduled tasks

Hacktivate (Hard)
10 POINTS OUT OF 100
100.0% ACCURACY
COMPLETION: **50.0%**

Reverse engineer a compiled software program with anti-tamper features
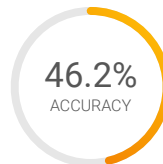
Forensics Module

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

113 TH PLACE OUT OF **7879**
NATIONAL RANK

99th National Percentile

160 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 66.4 Points

46.2% ACCURACY

Average: 40.3%

75.0% COMPLETION

Average: 27.9%

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

Run (Easy)
100 POINTS OUT OF 100
40.0% ACCURACY
COMPLETION: **100.0%**

Extract hidden files within an image using tools like binwalk

Download Manager (Medium)
60 POINTS OUT OF 100
50.0% ACCURACY
COMPLETION: **80.0%**

Perform binary data carving on a download manager's metadata file

Redacted (Hard)
0 POINTS OUT OF 100
0.0% ACCURACY
COMPLETION: **0.0%**

Programmatically un-blur text in an image to reveal redacted information
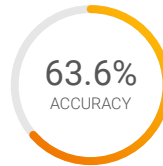
Log Analysis Module

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

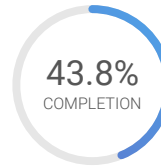**197** TH PLACE OUT OF **7879**
NATIONAL RANK

98th National Percentile

125 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 53.7 Points

63.6% ACCURACY

Average: 36.9%

43.8% COMPLETION

Average: 19.3%

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

Attempt (Easy)
50 POINTS OUT OF 100 — **60.0%** ACCURACY — COMPLETION: **60.0%**

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)
75 POINTS OUT OF 100 — **80.0%** ACCURACY — COMPLETION: **80.0%**

Develop a custom method for parsing a non-standard binary log file and conduct statistical analysis
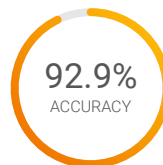
Network Traffic Analysis Module

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

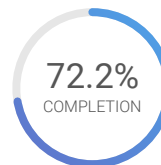**455** TH PLACE OUT OF **7879**
NATIONAL RANK

95th National Percentile

195 POINTS OUT OF 350
PERFORMANCE SCORE

Average: 100.5 Points

92.9% ACCURACY

Average: 54.3%

72.2% COMPLETION

Average: 37.5%

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

Pong (Easy)
60 POINTS OUT OF 80 — **100.0%** ACCURACY — COMPLETION: **83.3%**

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)
0 POINTS OUT OF 100 — **0.0%** ACCURACY — COMPLETION: **0.0%**

Recover data that was covertly exfiltrated in TCP sequence numbers

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Luke Leveque
lileve01@louisville.edu

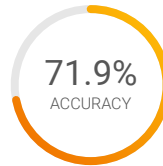## Open Source Intelligence Module

Utilize publicly available information such as search engines, public repositories, social media, and more to gain in-depth knowledge on a topic or target.
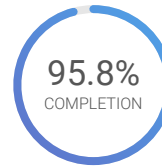
730 TH PLACE OUT OF **7879**
NATIONAL RANK

91 st National Percentile

280 POINTS OUT OF 295
PERFORMANCE SCORE

Average: 166.1 Points

71.9% ACCURACY

Average: 70.7%

95.8% COMPLETION

Average: 61.9%

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				
PGP Lookup (Easy)	**30** POINTS OUT OF 45	**100.0%** ACCURACY	COMPLETION:	**66.7%**
Query details of PGP public encryption keys shared online				
Undersea (Easy)	**70** POINTS OUT OF 70	**100.0%** ACCURACY	COMPLETION:	**100.0%**
Conduct open-source target research on a public works project				
Certificates (Medium)	**45** POINTS OUT OF 45	**100.0%** ACCURACY	COMPLETION:	**100.0%**
Query Certificate Transparency tools to audit historic TLS certificates				
Electrified (Medium)	**70** POINTS OUT OF 70	**57.1%** ACCURACY	COMPLETION:	**100.0%**
Identify openly available information on EV charging infrastructure				
Liber8tion v. Lawyers (Hard)	**50** POINTS OUT OF 50	**40.0%** ACCURACY	COMPLETION:	**100.0%**
Identify location of image through reverse image lookup and access publicly available government databases				

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A Community Where Cybersecurity Is a Passion
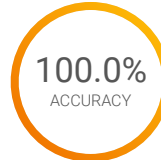
Luke Leveque
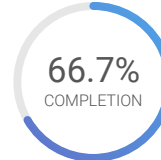lileve01@louisville.edu

Password Cracking Module

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

232 ND PLACE OUT OF 7879
NATIONAL RANK

98 th National Percentile

260 POINTS OUT OF 370
PERFORMANCE SCORE

Average: 109.9 Points

100.0%
ACCURACY

Average: 87.0%

66.7%
COMPLETION

Average: 31.1%

| 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 | **100.0%** ACCURACY | COMPLETION: | **100.0%** |

Crack Windows NTLM password hashes using rainbow tables

| Flag Format (Medium) | **60** POINTS OUT OF 60 | **100.0%** ACCURACY | COMPLETION: | **100.0%** |

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

| Cities (Medium) | **90** POINTS OUT OF 100 | **100.0%** ACCURACY | COMPLETION: | **90.0%** |

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

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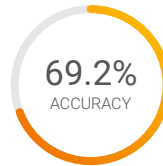
Identify and use the proper tools to gain intelligence about a target including its services and potential vulnerabilities.

745 TH PLACE OUT OF **7879**
NATIONAL RANK

91 st National Percentile

200 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 158.3 Points

69.2% ACCURACY

Average: 60.7%

75.0% COMPLETION

Average: 59.5%

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

Scan (Easy)
100 POINTS OUT OF 100 | **75.0%** ACCURACY | COMPLETION: **100.0%**

Scan a remote host for open ports and identify running services

Masscan (Medium)
100 POINTS OUT OF 100 | **100.0%** ACCURACY | COMPLETION: **100.0%**

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

Message (Hard)
0 POINTS OUT OF 100 | **0.0%** ACCURACY | COMPLETION: **0.0%**

Capture network traffic sent to a server using tools such as tcpdump
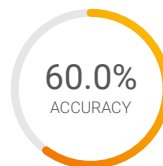
Web Application Exploitation Module

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

256 TH PLACE OUT OF **7879**
NATIONAL RANK

97 th National Percentile

140 POINTS OUT OF 300
PERFORMANCE SCORE

Average: 69.1 Points

60.0% ACCURACY

Average: 39.9%

60.0% COMPLETION

Average: 26.1%

TOP NICE WORKROLES
Cyber Operator
Software Developer
Exploitation Analyst
Systems Security Analyst
Database Administrator

Witter (Easy)
100 POINTS OUT OF 100 | **100.0%** ACCURACY | COMPLETION: **100.0%**

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

Login (Medium)
30 POINTS OUT OF 100 | **50.0%** ACCURACY | COMPLETION: **50.0%**

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

Cryptographic Lottery (Hard)
10 POINTS OUT OF 100 | **50.0%** ACCURACY | COMPLETION: **50.0%**

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

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