

# CAE-C National Competition

JAKE MIHEVC

MOHAWK VALLEY COMMUNITY COLLEGE

**DR. RON SANDERS** CYBER FLORIDA-UNIVERSITY OF SOUTH FLORIDA





## how we got here





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- CNY Hackathon held each semester since spring 2013
- Each event an intentional trial-by-fire
- Experimentation, assessment, improvement





### lessons learned

#### Dynamic Scoreboard





### lessons learned

#### Manage the competitive element

 Reward the behavior you would like to encourage (Most Valuable Teammate MVT, Most Improved MI)

 Professional Red Team backs off when teams struggle, leaves bread crumbs, becomes more of <u>a test of</u>

adaptability than knowledge



### lessons learned

#### Discord for communication





## the platform









## regional pilots

- CAE Northeast Region events in 2018 and 2019
- Very well-received by participating CAE students and faculty
- CAE's with established competition teams noted that event is perfect for newer students and encourage more



c squared games







CCM

**COUNTY COLLEGE OF MORRIS** 



INDIANA UNIVERSITY OF PENNSYLVANIA









# THIS project: CAE-C National Competition!



goals

- Keep student experience first
- Focus on students who are new to competition
- All experiences *formative*, "having a profound and lasting influence on an individual's development"
- Students share experiences through post-event report-out session
- Expand and enhance faculty capacity
- Expand and enhance student capacity, supporting clubs
- Capture unique focus and innovation of each CAE-C program with challenge submission process
- Link to CCDC, CANS, NCL, US Cyber Challenge, Cyber Force
- Challenge library becomes available for club and classroom use



#### content

#### **Existing infrastructure and CTF content acts as a baseline:**

- Linux-oriented
- MySQL Maintaining Database Read and Write access
- SMB Maintaining Samba File Share Read and Write access -
- FTP Maintaining FTP server Read and Write access
- SFTP Maintaining SFTP server Read and Write access over SSH
- DNS Maintaining Forward and Reverse Lookups for the student manage infrastructure
- SSH Maintaining Users' Remote Access to an SSH server
- Web Content Maintaining functionality of databased-backed vulnerable PHP Application
- WebSSL Enabling *valid*, signed SSL certificates for Web Application



#### content

**CTF**: Cryptography, Exploitation, Reverse Engineering, Trivia

- **Crypto** challenges usually revolve around classical ciphers or custom algorithms that have weaknesses in the way they protect information.
- **Exploitation** includes publicly disclosed or custom programs or web applications that need to be researched or evaluated and then attacked.
- **Reverse Engineering** includes binaries or source code that needs to be reviewed or decompiled to identify how to solve the problem presented.



### alignment

- CAE knowledge unit *outcomes*
- Identify a work role to assist with NICE framework and competencies





### collaboration

**CAE-Sourced**: Content from CAE-C community will power this event:

- Unique features of CAE-C programs/faculty become a component of regional events
- Challenges will be attributed to faculty
- Clear guidance soon on challenge submission requirements
- Stipends from \$250 to \$750

## faculty engagement

• Platform transparency

QUARED

- Tools, tutorials, activities to help students prepare
- Opportunity for faculty to directly contribute and help shape the event



#### student capacity building

#### **Student Sandbox/Practice Environment**

- Onramp to competitions
- Build necessary skills
- Introduce and provide a pathway into other events



#### evidencing competencies

- Collaborate with CAE Evidencing Competencies Workgroup
- Identify a broadly accepted competency for pilot
- Challenge: Breakout individual performance in team setting



#### regional event structure

- Each region will have a competition lead
- Build-out from baseline event structure and content to customize by region
- Achieve a balance between local customization and national consistency
- Competition slots for up to 165 CAE institutions and capacity to expand



















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#### outcomes

- 2,000 CAE students participate in their first competition
- Prizes issued for "winners," Most Valuable Teammate, Most Improved, shape how students experience future competitions
- CAE-C Faculty contribute challenges and leverage challenge library in the classroom and student clubs
- Pilot of competency validation and badging informs future practice

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