Capture the Flag Challenge
Design and Implementation (Part 2)

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Project Objectives

- To supplement existing teaching materials with Class CTF, which are small-scope CTF exercises designed to introduce Capture The Flag (CTF) to students

- Conduct a Week-long CTF Competition

- Research on an automated tool to generate CTF Challenges

Capture The Flag Challenge

The CTF challenges were designed to reflect the learning objectives of CZ4067 Software Security module, with gradual increase in difficulty

- The CTF Competition introduces 5 categories:

| Open-Source Intelligence | Binary Exploitation | Web Exploitation | Steganography | Miscellaneous |

- Formulated a challenge development lifecycle to facilitate challenge development process

CHALLENGE DEVELOPMENT LIFECYCLE

01 Ideation
02 Creation
03 Testing
04 Deploy
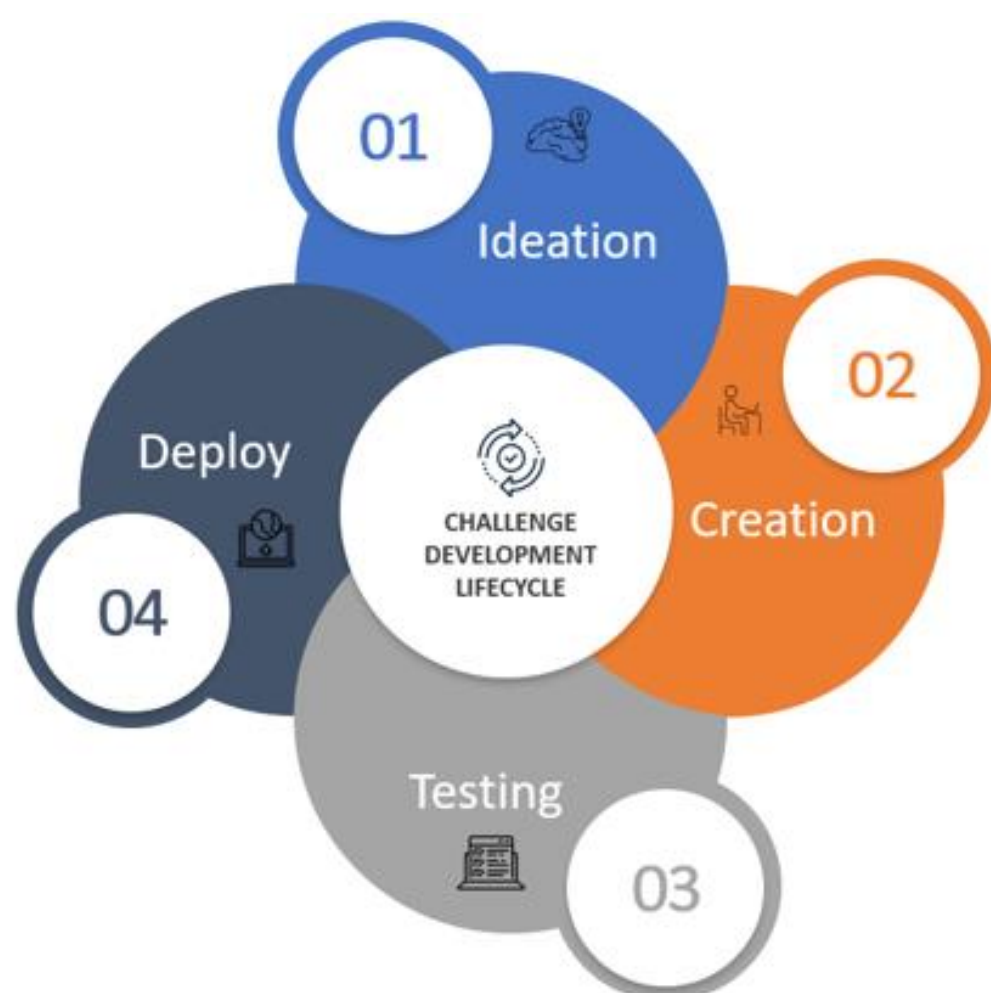
"*CTF is a great tool to bridge the gap between theoretical cybersecurity concepts and its actual application. Nothing beats having practical application exposure*" – [S2]

Approach

- The class CTF acts as a precursor to the CTF competition
- Both CTFs are designed to enable students to understand the theoretical concepts taught in lesson through a hands-on approach

9 Class CTF challenges

29 CTF Competition challenges

Real-Time Challenge Monitor

Developed a real-time Challenge Monitor to ensure the uptime of CTF challenges.