Astro-NACSA Coding Challenge 2024
(ANCC2024) Challenge Brief

Introduction

Never before has mankind been so interconnected as it is today, with the internet being a crucial component in our everyday lives but the booming of the cyberspace brings with it a host risks, ranging from malware exposure to other cyber threats that loom large.

A study conducted by Surfshark in 2023 unveils a startling truth – Malaysia ranks as the 8th most breached country in the third quarter of 2023, with a staggering 494,699 leaked accounts.

That's a whopping 144% surge from the second quarter of 2023; a spike that paints a vivid picture where nearly 4 user accounts were compromised every single minute during the third quarter of 2023.

As our digital footprint expands, so does the danger. With an ever-growing array of applications at our fingertips and an uptick in user activity on digital platforms, the trajectory is clear – the threat level is on the rise.

But here's where it gets even more intriguing—Professor Paul Watters, the brain behind a recent study commissioned by the English Premier League, discovered a worrying truth.

His findings, published on the Social Science Research Network, shed light on a startling correlation between malware detection and the consumption of illegal video content.

Among the top 25 sports streaming sites in Singapore, users who indulge in illegally streamed content are playing with fire; risking not just malware and cybersecurity threats but are also putting their personal data on the line.

According to Watters' research, the relative risk of scams on these shadowy streaming platforms is a whopping 3.5 times higher compared to other website domains.

The Astro-NACSA Mobile Coding Challenge is not just any competition; it's a call to action.

A rallying cry for university students to roll up their sleeves and showcase their coding prowess as well seizing the opportunity to confront head-on the pressing issues of cybersecurity and video piracy that plague our digital landscape.

Objective

The goal of the Coding Challenge is to combat the escalating threat of malware linked to cybercrimes.

Participants are tasked with creating robust malware detection and reporting mechanisms designed to shield users from potential hazards.

The resulting application will receive the stamp of approval from NACSA and should be developed on the Android platform as it has 67% market share in the Malaysian mobile

market (ref: Statista Sep 2023). We welcome those who would like to develop on Apple iOS platform.

The envisioned application will empower internet users to monitor URLs and applications engaged in cybercrimes such as, malware, phishing, illicit video streaming activities while leveraging cutting-edge malware detection techniques.

Additionally, it will feature a notification system to alert users when accessing or encountering URLs or content associated with the aforementioned threats, with users having the ability to report suspicious URLs and applications, which will be stored in a centralized repository for further analysis.

Eligibility

Only Malaysian university students from both the public and private institutions are eligible to participate and create innovative mobile applications that track URLs and applications potentially containing malware.

Evaluation Criteria & Submission Guidelines

Evaluation Criteria Overview

1. Accepted Languages:

- Mobile Apps Frontend: Flutter, Android native, iOS native, React Native
- Server Backend: Node.js, Java, Python
- Bonus: Extra points for projects incorporating the use of AI

2. Adherence to Requirements: Solutions must meet all specified requirements and constraints, including language preferences, input/output formats, and performance expectations.

3. Innovation and Creativity: We value novel approaches to tracking and detecting malware. Feel free to be as creative as you like, such as incorporating AI or adding gaming features to the app.

4. Functionality: The solution should effectively identify and alert users about potential threats.

5. User Experience: The application should be intuitive, responsive, and easy to use.

6. Efficiency: Code should be efficient, well-organized, easy to understand, and follow best practices. Solutions using optimal algorithms and data structures are preferred.

7. Testing and Documentation: The candidate should include test cases to validate the correctness of their solution. Additionally, documentation or comments explaining the approach, algorithm, and reasoning behind the solution are beneficial for understanding and reviewing the code.

8. Security and Privacy: Ensure your solution safeguards user data and privacy, complying with industry standards such as Open Web Application Security Project (OWASP).

9. Scalability: The application should be modular, scalable, and capable of handling larger datasets and future updates.

10. Edge Cases Handling: Your solution should handle edge cases and boundary conditions gracefully without crashing.

11. Competition Format: The competition consists of an Elimination Round and a Final Round. Only the top 5 participants/teams will proceed to the Final Round.

Submission Guidelines

1. Code Submission:

- Submit both frontend and backend code through GitHub.
- Share your GitHub repository with the ANCC-24 GitHub user: ancc2024@astro.com.my.
- Record a demo video (max 5 minutes) showcasing all features and capabilities.
- The video should include:
    - (1) Demo of the app's functionalities.
    - (2) User interface and experience (UIUX).
    - (3) Security features.
- Upload the video to YouTube as unlisted and share the URL via email.

2. Backend Deployment:

- Host your backend on any cloud or free hosting provider (e.g., Heroku, Vercel, Free AWS accounts, Digital Ocean) and make it accessible from the mobile app.

3. Project Submission:

Submit your project via GitHub and email the details. Use the following folder structure in your GitHub repository:

- Root Folder:

    - Folder – Frontend code: Mobile application code can be parked here.
    - Folder – Backend code: Backend API code can be parked here.
    - Folder – Architecture diagram: Detailed architecture diagram(s) of your solution. Including an explanation video (video link) will be appreciated.
    - Folder – APK: Drop APK (not AAB) of your mobile application here.
    - Folder – Other: To keep any other project details/files you want to share.

- Email submission details to ancc2024@astro.com.my by 5PM on June 30, 2024, including:
    - Subject: ANCC-24 Final Submission: [Date of Submission YYYYMMDD]_[University Name]_[Participants/Group Name]
    - Message: GitHub repo URL
    - Demo video YouTube URL
    - Hardware/software requirements to run the mobile application (e.g., minimum Android version)
    - Any test credentials or prerequisites to run the mobile application.