

CELEBRATING SENTINEL ACHIEVEMENTS



The first graduating class of Sentinel post-secondary students celebrating their successful completion of the Sentinel Challenge 2025 competition.

Though still in its early years, the Sentinel Programme is already beginning to uncover the immense potential of our students. Their passion, growing technical expertise, and determination to tackle real-world cybersecurity challenges are truly encouraging.

This edition of **Sentinel Bytes** spotlights some of the key moments from the first half of 2025 – including the exhilarating Capture-The-Flag (CTF) Sentinel Challenge for our first graduating class of post-secondary Sentinels, outstanding individual achievements that exemplify the calibre of talent emerging from the programme, and our holiday workshops for new Sentinels.

As the global cyber threat landscape continues to grow in complexity and scale, the need to develop a pipeline of capable, ethical, and forward-thinking cyber defenders has never been more critical.

We look forward to welcoming the next generation of aspiring students. Together, we can continue to build a strong and capable pipeline of cybersecurity talent for the future.



COL Clarence Cai
Defence Cyber Chief
The Digital and Intelligence Service (DIS)

Key Highlights

Secondary Programme

- Holiday Workshops
- Sentinel Defence Tech Experience @ BrainHack 2025

Post-Sec Programme

- Holiday Workshops
- Visit to DSO National Laboratories
- Sentinel @ BrainHack 2025
- Sentinel Challenge 2025
- SHIELD Award 2025 (JC Cohort)

HOLIDAY WORKSHOPS



Defence Cyber Chief, COL Clarence Cai, welcoming Year 1 Sentinel students with an inspiring opening address.

YEAR 1 WORKSHOP

We welcomed our 2025 intake of Year 1 Sentinels, from over 50 schools, to their first holiday workshop held from 3 to 5 June. Over three action-packed days, they were introduced to cybersecurity and learnt the building blocks of the web using **HTML and JavaScript**. They built their own "image safes" to protect sensitive files and competed in teams to win prizes in a Kahoot competition.



Sentinels explored key concepts with the support of their trainer in a collaborative setting.



Teams battled it out in a lively Kahoot competition, sparking friendly rivalry and quick thinking.

YEAR 2 WORKSHOPS

Our Year 2 Sentinels continued to deepen their skills in networking and web development during holiday workshops. In March, they explored computer networking and learnt to analyse network traffic, while June's workshop challenged them to build secure web servers using **Express.js**. They also created a mock social media app with user authentication as part of a team project!



Sentinels engaged in fun bonding games, strengthening connections and creating lasting memories along the way.



Bringing peer learning to life, Sentinels worked together to unpack new concepts and share insights.



Sentinels put their knowledge to the test and reinforced their learning through an engaging quiz activity.

SENTINEL DEFENCE TECH EXPERIENCE @ BRAINHACK 2025



Students participating in an immersive activity at BrainHack 2025, exploring real-world surveillance and evasion using LIDAR and robotics.

Our Year 1 and 2 Sentinels visited the Tech Showcase @ BrainHack 2025 during their June holidays! They explored **next-generation cybersecurity solutions** and discovered how **military technologies** are shaping the future of defence. Some Sentinels also had the chance to take part in hands-on workshops, where they experimented with generative AI tools, developed their own counter-drone systems, and learnt to programme drones on a virtual platform. These activities offered our Sentinels a rare glimpse into the future of cyber defence – along with plenty of fun along the way!



A Sentinel student engaged in an immersive VR simulation.



Students attempting to take down a flying drone with a simulated gun.



An engaging session where our Sentinels learnt the essentials of drone detection and response.



Sentinels testing the power and risks of Generative AI.



A Sentinel student showcasing her AI-generated content tested against detection tools.



Sentinels broke the ice with fun activities, getting to know each other as they began their journey together.



A trainer providing guidance as Sentinels worked through hands-on exercises.



Sentinels building friendships and bonding over lunch.

HOLIDAY WORKSHOPS

The first half of 2025 was equally enriching, featuring holiday workshops for our post-secondary Sentinels in March and June.

Our new Year 5 Sentinels began their learning journey with **Python programming** workshops, covering core programming concepts and creating a mini search engine as a capstone project.

Meanwhile, our Year 6 JC Sentinels participated in a hands-on workshop on **Network Intrusion Detection Systems**, gaining valuable skills in identifying threats and strengthening network security. This marked one of the final learning milestones in their Sentinel journey.



Ending the Year 6 (JC) workshop with an interactive quiz to reinforce concepts learnt.

VISIT TO DSO NATIONAL LABORATORIES

Our post-secondary Sentinels experienced defence technology firsthand at DSO National Laboratories. The programme began with an introduction to the Information and Digital Divisions, followed by a virtual tour of the Cyber Security Operations Group.

In the cyber analysis workshop that followed, Sentinels put theory into practice. Working with simulated network logs, they analysed digital evidence to trace cyber attacks, identifying malicious IP addresses and compromised systems. The hands-on exercise strengthened their forensic skills as they uncovered patterns of unauthorised access and privilege escalation.



A DSO professional sharing insights into his daily work, giving students a glimpse into the agency's operations.



Collaborative teamwork in action as students analyse simulated logs to uncover network attack details.



Year 5 Sentinels wrapped up a guided CTF walkthrough—glowing with light sticks, LED headbands, and excitement!

SENTINEL @ BRAINHACK 2025

Our Year 5 Sentinels took part in a Capture-The-Flag (CTF) walkthrough session—an exciting opportunity where many had their first hands-on experience with CTF challenges. Through this guided walkthrough, the Sentinels became familiar with common CTF challenge types, such as **basic web exploitation** and **data decoding**. They also gained practical exposure to useful tools like CyberChef and learnt how to identify clues within challenge prompts, building an early understanding of CTF problem-solving approaches.



Decked out in LED headbands, our Year 5 Sentinels bring energy and fun to their guided CTF experience.



Sentinel mentors guiding students through the challenges during the hands-on CTF session.



Sentinels (from left: Leow Changzhi James, Muhammad Abdul Azim Syahmi, Qian Pengcheng, Lim Junzhe Xavier) shared their learning takeaways with Senior Minister of State for Defence, Mr Zaqq Mohamad (centre), and Defence Cyber Chief, COL Clarence Cai (right).

SENTINEL CHALLENGE 2025



Our Year 6 Sentinel students from Junior Colleges, Polytechnics, and ITEs competing intensely at the Sentinel Challenge 2025.

Over 40 teams of our Year 6 Sentinels competed across the Junior College (JC) and Poly/ITE categories in the first post-secondary Sentinel Challenge on 12 June. Sentinels tackled cybersecurity scenarios designed to reflect real-world challenges in areas such as **web exploitation**, **cryptography**, **steganography**, and **network security**. The competition tested not only their technical competencies but also their resilience, problem-solving skills, and teamwork under pressure.

For our Year 6 JC Sentinels, this challenge marked their graduation from the Sentinel Programme, culminating 18 months of hands-on workshops, classes, and self-directed learning. Their impressive performance demonstrates their readiness to take on future challenges in cybersecurity.

“

Good communication was key—we coordinated effectively, focused on our individual specialisations, and avoided duplicating efforts.

”

- Untitled Group, JC and Overall Champion Team

“

The most challenging was the Web Exploitation Challenge—we spent nearly 30 to 45 minutes on it but eventually managed to solve it by referring back to the notes and resources we had learnt during the programme.

”

- SentinelFOUR, Poly/ITE Champion Team



JC and Overall Champion Team: Untitled Group
(From left: Xiao Nianhe, Wayne William Loo Shyan, Xie Yundi, Ang Jun Ray)



Poly/ITE Champion Team: SentinelFOUR
(From left: Goh Hong Wei, Ho Jun Wei, Selvendrasamy Mithun Vendra)

SENTINEL CHALLENGE 2025 WINNERS (JC)



1st Runner Up: SIGMA POOKIE BEARS
(From left: Tan Kaien, Liou Larissa, Xing Zian)



2nd Runner Up: Skibidi Sigmas
(From left: Tiu Kai Qi, Low Esme, Yang An Yi)



3rd Runner Up: SentinelFive
(From left: Tan Si Ying, Tan Zhu Mo, Skyler Lee Zhe Xu, Kaven Leong Ka Wai)



4th Runner Up: hackers 10000
(From left: Wayne Lai, Liw Ee Shwen Ignatius, Tan Zi Yan)

SENTINEL CHALLENGE 2025 WINNERS (POLY/ITE)



1st Runner Up: Quiet Bytes
(From left: Tan Yu Lin Natalie, Hoo Jun Hui Anson, Chen Zi Qian, Tan Chin Ang)



2nd Runner Up: NAT 20
(From left: Vlenn Theodorus Halim, Chai Jing Xuan, Denzyl Toh Guan Seng)



3rd Runner Up: Blueberry
(From left: Rehan Faris Bin Nazirudin, Pang Jing Qing, Pierre Yves Perera-Foo, Alicia See Siang Teng)



4th Runner Up: AGE_
(From left: Ashton Neo Jin Hwee, Enzo Yap Qi Xuan, Gideon Ong Ghee Hong)

SHIELD AWARD 2025 (JC COHORT)

Year 6 Sentinels from the JC cohort who exemplified the programme's core values—**S**pirit of Inquiry; **H**igh Performance; **I**nnovativeness; **E**thics; **L**earning & Teamwork; and **D**etermination & Perseverance—were presented with the Sentinel SHIELD Award at the Sentinel Challenge event.

Their performance stood out not only in technical tasks but also in attitude and leadership. These Sentinels embraced challenges, supported their peers, and showed initiative beyond the classroom. They served as role models in both skill and character, reflecting the true spirit of the programme.



SHIELD Award winners with Defence Cyber Chief, COL Clarence Cai (centre).

SHIELD Award 2025 (JC Cohort) Winners (in no order of merit):

- Ang Jun Ray, Raffles Institution
- Chew Charlotte, Anglo Chinese School (Independent)
- Declan Ng, Hwa Chong Institution
- Faazilah Binte Javeed Maliq, Temasek Junior College
- Hong Sarah, Nanyang Junior College
- Koh Kiera, Nanyang Junior College
- Kwok Matthew, Temasek Junior College
- Lai Chiew Tynn, Hwa Chong Institution
- Lau Yi Wei, Raffles Institution
- Lim Boon Khai, Raffles Institution
- Lin Zi Xiu, Hwa Chong Institution
- Loo Wayne, Raffles Institution
- Low Cheng Jun Lewis, Nanyang Junior College
- Sun Hongxuan, Jurong Pioneer Junior College
- Sutrisno Jax, Raffles Institution
- Tan Hong En, Jurong Pioneer Junior College
- Tan Si Ying, Raffles Institution
- Tan Zi Yan, Temasek Junior College
- Teh Zi Ern, Raffles Institution
- Ter Dylan, Dunman High School
- Tham Anders, Dunman High School
- Wu Junior, Jurong Pioneer Junior College
- Yang An Yi, Hwa Chong Institution
- Zai Isabelle, Eunoia Junior College

LET'S HEAR FROM OUR SHIELD AWARD 2025 (JC COHORT) WINNERS

Q: Which SHIELD value resonates most with you and why?

Out of the 6 Sentinel Core Values, the one that resonates with me the most is **Innovativeness**. I find great joy in going beyond the requirements of each task, striving to deliver more than expected. For me, the real challenge lies in not just creating functional code, but also in identifying potential edge cases and vulnerabilities that may cause unexpected behaviour.

- Tan Zi Yan, Temasek Junior College

A strong **spirit of inquiry** is certainly needed in the field of cybersecurity, where you are constantly learning new techniques (as) threats keep evolving. For instance, even in CTFs alone, there is an abundance of new tools and vulnerabilities in programs to find and discover for yourself all the time. In Sentinel classes, being curious to ask questions beyond the scope of the lesson has also certainly allowed me to gain even more from my Sentinel experience.

- Wayne William Loo Shyan, Raffles Institution

Spirit of Inquiry, as well as **Determination** and **Perseverance**, were the two Sentinel core values that resonated with me the most. Entering Sentinels last year was truly an enlightening experience, being exposed to so many foreign topics and unique ways of thinking or problem solving... For Determination and Perseverance, while they were necessary during lessons, they became even more apparent during competitions. I vividly remember my first CTF shortly after joining Sentinels, and how I struggled to solve almost all of the questions and spent hours testing random methods over and over again. It was after the Sentinel programme that I understood how important it is to never give up. Especially in competition settings, we often find ourselves out of ideas or frustrated after two or even three hours of trying the same questions. But all we need is one spark of an idea to solve the questions ahead. That is the beauty I see in what we have learnt, and each failure only gets us closer to success. We just need to take those steps forward.

- Tan Hong En, Jurong Pioneer Junior College

Q: What did you value most about your Sentinel experience?

Amongst the countless invaluable aspects of the Sentinel Experience, I hold most dearly the **friends** that I have made. While I enjoy the out-of-classroom content I get to learn and explore in this programme, I believe that the friendships forged are truly irreplaceable. There is something deeply rewarding about those 'Ohhh!' moments my friends and I share when working together to complete a tough assignment, and the many chats we had over lunch. These friendships have shaped my Sentinel experience into something unique—one that I will look back on fondly for a long, long time.

- Zai Min Si Isabelle, Eunoia Junior College

The thing I valued most about my experience in Sentinel was the **opportunity to learn**. Being in JC doesn't provide as much practical learning experience. Learning to code using Python as well as gaining experience using various software such as Wireshark was invaluable to my personal growth! As such, I am grateful to Sentinel for this opportunity.

- Lim Boon Khai, Raffles Institution

The thing I valued most was the new **experiences** that I was exposed to, including Capture-The-Flag (CTF) competitions and getting to speak with industry experts and mentors. It really opened up a world of new experiences I couldn't have found on my own.

- Keira Koh, Nanyang Junior College

The **teachers** are an extremely helpful source of information. You can ask them about content beyond the syllabus and listen to them share their university and internship experiences, to learn more about actual cybersecurity work like pen testing outside of the theoretical lessons. I had a teacher who would sometimes do demos of their work, which was very cool!

- Tan Si Ying, Raffles Institution

Congratulations to all our winners!

APPLICATIONS

FOR 2026 SECONDARY 3 INTAKE ARE NOW OPEN!

Applications are currently open for a limited number of places in the 2026 Secondary 3 intake. This intake offers students who had previously missed the chance to apply for the programme in Secondary 1, to join the programme from Secondary 3.

ELIGIBILITY & PRE-REQUISITES

Only students who are in Secondary 2 in 2025, and are Singaporeans or Singapore Permanent Residents, are eligible to apply.

We are looking for students who:

- Exhibit strong logical thinking, self-motivation, and interest in the digital/cybersecurity domain;
- Demonstrate a good foundation in web development (e.g. HTML, CSS, JavaScript), and have some familiarity with backend web frameworks (e.g. Express.js) and common web vulnerabilities;
- Possess basic knowledge of computer networking, and preferably have experience with practical networking tools (e.g. Wireshark, Nmap, and Netcat); and
- Are able to commit to the programme activities.

HOW LONG IS THE PROGRAMME?

While Sentinel is a 4-year programme for students who sign up in Secondary 1, students who join in Secondary 3 will participate in the 2-year upper secondary programme. Secondary school students can continue with the 2-year programme for Pre-University students, subject to meeting the qualifying criteria.

KEY DATES

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|--|------------------------|
| Application Period | Current to 28 Sep 2025 |
| Selection Test Period | 13-26 Oct 2025 |
| Notification of Selection Results & Offer of Enrolment | By 14 Nov 2025 |
| Bridging Workshop | 02-04 Dec 2025 |
| Year 3 Programme | From 24 Jan 2026 |

Come join us!

Find out more at the Sentinel website: www.dis.gov.sg/sentinel