

CSIT Mini Challenge - Aug

Software Engineering and Cybersecurity

Capture the flag in the spirit of National Day

Singapore's big day is almost here

The fireworks are prepped and the crowd is waiting. Beneath the surface, however, something's not quite right. A system built to support the celebration has been infiltrated.

As the city prepares to look to the skies, you've been called to look into the shadows.

Step into a fictional cybersecurity challenge inspired by the spirit of National Day — and see if you can capture the flag!

Software Engineering and Cyber Security Mini Challenge

This year's National Day parade will dazzle the nation with a breathtaking synchronized fountain and holographic light show, orchestrated by a cutting-edge control platform. Unbeknownst to the public, a shadowy hacktivist group has infiltrated this advanced system, fracturing it digitally and scattering the keys to its restoration.

Challenge 1

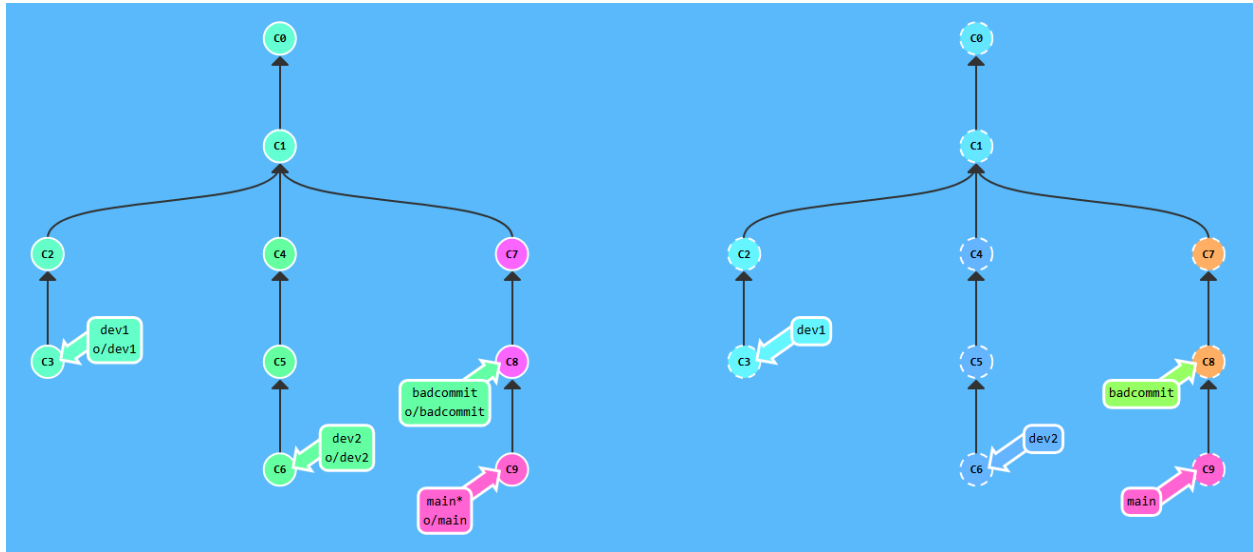
Challenge Instructions

The control platform was just the beginning — this shadowy group has its sights set on far bigger targets. Intelligence indicates their true objective is to infiltrate our transport infrastructure. Your first entry point: the control platform's development environment. Dig through the wreckage, recover the broken pipelines, and uncover clues to their next target!

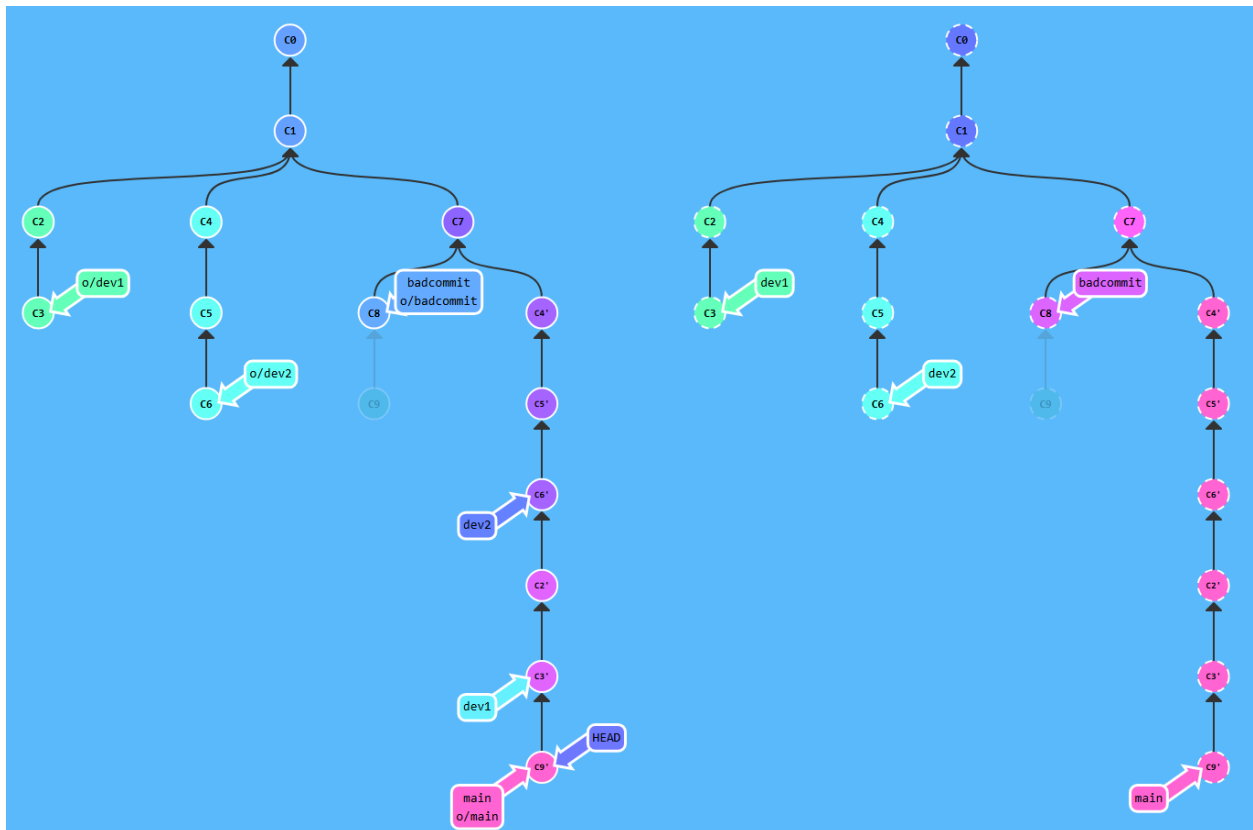
Hints and Resources

Two roads diverged, A corrupted commit not meant to merge. Reclaim the feat, Escape your past, A path through will be revealed at last, (Look for magnifying glass on this page)

Start



Goal



Solution

11 command (Default)

```
$ git reset c7
$ git checkout dev2
$ git rebase main
$ git checkout main
$ git merge dev2
```

Fast forwarding...

```
$ git checkout dev1
$ git rebase main
$ git checkout main
$ git merge dev1
```

Fast forwarding...

```
$ git cherry-pick c9
$ git push --force
```

6 commands

```
$ git reset c7
$ git rebase main dev2
$ git rebase dev2 dev1
$ git rebase dev1 main
```

Fast forwarding...

```
$ git cherry-pick c9
$ git push --force
```

Flag

CSIT{EWP@YAL3BARSTA7I0N}

Challenge 2

Challenge Instructions

You've successfully blocked the hackers' first strike. While cleaning the repository, you uncovered discarded communication logs. The data is scrambled, but you've isolated two strange audio fragments. They sound like echoes from long-forgotten transmission tech. Decode these phantom sounds to unlock the next piece of the puzzle.

Hints and Resources

An old language echoes in bursts and beeps — one speaks in dots and dashes, the other through numbered keys. From fading tones and rhythmic clicks, two paths emerge. Only when their voices unite does the message come alive. (Look for seedling on this page)

Provided with a [challenge2.txt](#) file.

Solution

Convert the [challenge2.txt](#) file to [challenge2.zip](#) and extract the files.

README.txt

After successfully decoding the 2 wave files, you will get 2 flag parts (e.g., FLAG1 and FLAG2). You have to combine the 2 flag parts and submit it with the following format: CSIT{FLAG1FLAG2}

challenge2_sound1.wav

62#74#23#43#81#93 using <https://dtmf.netlify.app/> translates into NSCITY

challenge2_sound2.wav

H@LLS7AT10N using <https://morsecode.world/international/decoder/audio-decoder-adaptive.html>

Flag

CSIT{NSCITYH@LLS7AT10N}

Challenge 3

Challenge Instructions

With the key from the audio logs in hand, you arrive at the hackers' control system—its web portal. Locked out by a shattered authentication gateway, you must dig through the portal code and bypass the broken lock.

Hints and Resources

A broken gate where shadows creep, With secrets that the source code keep. Gather the crumbs, the token's soul, To prove your worth and take control. (Look for padlock on this page)

Solution

Console messages

```
CTFChallenge.tsx:39 🎯 Challenge initialized: 🔍 Check your cookies and console for clues!
CTFChallenge.tsx:52 🔍 Secret key for JWT validation:
csit-mini-challenge-2025-jwt-secret-key
CTFChallenge.tsx:52 💡 Check the cookies for JWT structure example
CTFChallenge.tsx:52 🎯 Create a JWT with the correct name and organization
CTFChallenge.tsx:52 🔧 Use jwt.io to construct your token
```

Cookies

Name	Value
age_at_rescue	6%20weeks
bishan_family	First%20spotted%20around%202014%3B%20grew%20from%20%E2%80%9CBishan%20%E2%80%9D%20to%20%E2%80%9CBishan%20%E2%80%9D%20after%202016%20pups
bishan_otter_family	Coverage%20on%20Bishan%20otter%20family%20and%20others%3A%20https%3A%2F%2Fmothership.sg%2F2017%2F05%2Flove-blossoms-between-a-bishan-female-otter-and-a-marina-male-otter-despite-territorial-rivalry%2F
bishan_otter_family_wiki	Overview%20and%20history%3A%20https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FBishan_otter_family
caregiver	Wildlife%20Reserves%20Singapore

common_diet	Fish%20from%20rivers%2C%20ponds%2C%20and%20ornamental%20koi%20ponds
conservation_group	Otter%20Working%20Group%20(NParks%2C%20PUB%2C%20NUS%20researchers%2C%20OtterWatch%2C%20volunteers)
date_of_rescue	9%20May%202016
estimated_population	70%E2%80%9390%20smooth-coated%20otters%20in%20~10%20known%20family%20groups
family	Marina%209%20pack
hybridization_observed	Yes%2C%20wild%20hybrids%20between%20smooth-coated%20and%20small-clawed%20otters
incident_location	Canal%20near%20Fort%20Road
jwt_sample	eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1bW1ljoiliwiZmFtaWx5ljoiliwiYWdlX2F0X3Jlc2N1ZSI6IiIsImRhdGVfb2ZfcjVzY3VlIjoiliwiaW5jaWRlbnRfbG9jYXRpb24iOiIlLCJyZXNjdWVyaX25hbWUiOiIlLCJpYXQiOiE3NTQ3MjkwNzMsImV4cCI6MTc1NDgxNTQ3M30.hBoc8U5B84n-XEHrzuiq8-Foa5NqM8RECUJ3PGkmcKM
jwt_secret	Check%20the%20browser%20console%20for%20more%20hints
major_threats	Road%20accidents%20(5%E2%80%936%20otters%20per%20year)%3B%20Monitor%20lizard%20attacks%20(mostly%20on%20pups)
marina_family	Coastal%20residents%20of%20Marina%20Bay
medical_care	Bottle%E2%80%93fed%3B%20vitamin%20B%20injection%3B%20dewormed%3B%20vet%20Dr%20Serena%20Oh
monitoring_efforts	Daily%20tracking%2C%20rescue%20operations%2C%20citizen%20reports%2C%20and%20educational%20outreach
name	Toby
otter_families	General%20info%20on%20otter%20families%20and%20conservation%20efforts%3A%20https%3A%2F%2Fwww.facebook.com%2FOtterWatch%2F
otter_species	Insights%20on%20otter%20species%20and%20urban%20adaptations%3A%20https%3A%2F%2Fwww.ricemedia.co%2Fculture-life-absurd-singaporean-obsession-with-otters%2F
reason_for_urban_comeback	Improved%20water%20quality%20in%20waterways%20and%20strong%20fish%20populations
release	On%20a%20beach%3B%20pup%20squeaked%2C%20triggering%20family%20reunion
rescuer_name	Patrick%20Ng
reunion_method	Dad%20and%20sibling%20otters%20responded%2C%20nuzzled%2C%20and%20guided%20Toby%20home
small_clawed_otter_location	Pulau%20Tekong%20Besar
species_present	Smooth-coated%20otter%20(Lutrogale%20perspicillata)%3B%20Asian%20small-clawed%20otter%20(Aonyx%20cinerea)

toby_and_otter_families	Post%20about%20Toby%20and%20otter%20families%3A%20https%3A%2F%2Fwww.facebook.com%2FOtterWatch%2Fposts%2F1093559214049959%3Fref%3Dembed_post
toby_rescue_and_reunion	Article%20on%20Toby%E2%80%99s%20rescue%20and%20reunion%3A%20https%3A%2F%2Fwww.straitstimes.com%2Fsingapore%2Fenvironment%2Fsix-week-old-otter-pup-rescued-reunited-with-family-after-it-almost-drowned
urban_adaptation	Use%20canal%20walls%2C%20ladders%2C%20reservoirs%2C%20and%20even%20condo%20areas%20to%20live%20and%20travel
urban_otters_in_singapore	Article%20on%20urban%20otters%20thriving%20in%20Singapore%3A%20https%3A%2F%2Fwww.nationalgeographic.com%2Fanimals%2Farticle%2Furban-otters-singapore-wildlife
zouk_family	Active%20group%20tracked%20by%20OtterWatch

Token Construction

Use jwt.io to construct the token

```
{
  "name": "Toby",
  "family": "Marina 9 pack",
  "age_at_rescue": "6 weeks",
  "date_of_rescue": "9 May 2016",
  "incident_location": "Canal near Fort Road",
  "rescuer_name": "Patrick Ng",
  "iat": 1754729073,
  "exp": 1754815473
}
```

Secret Key

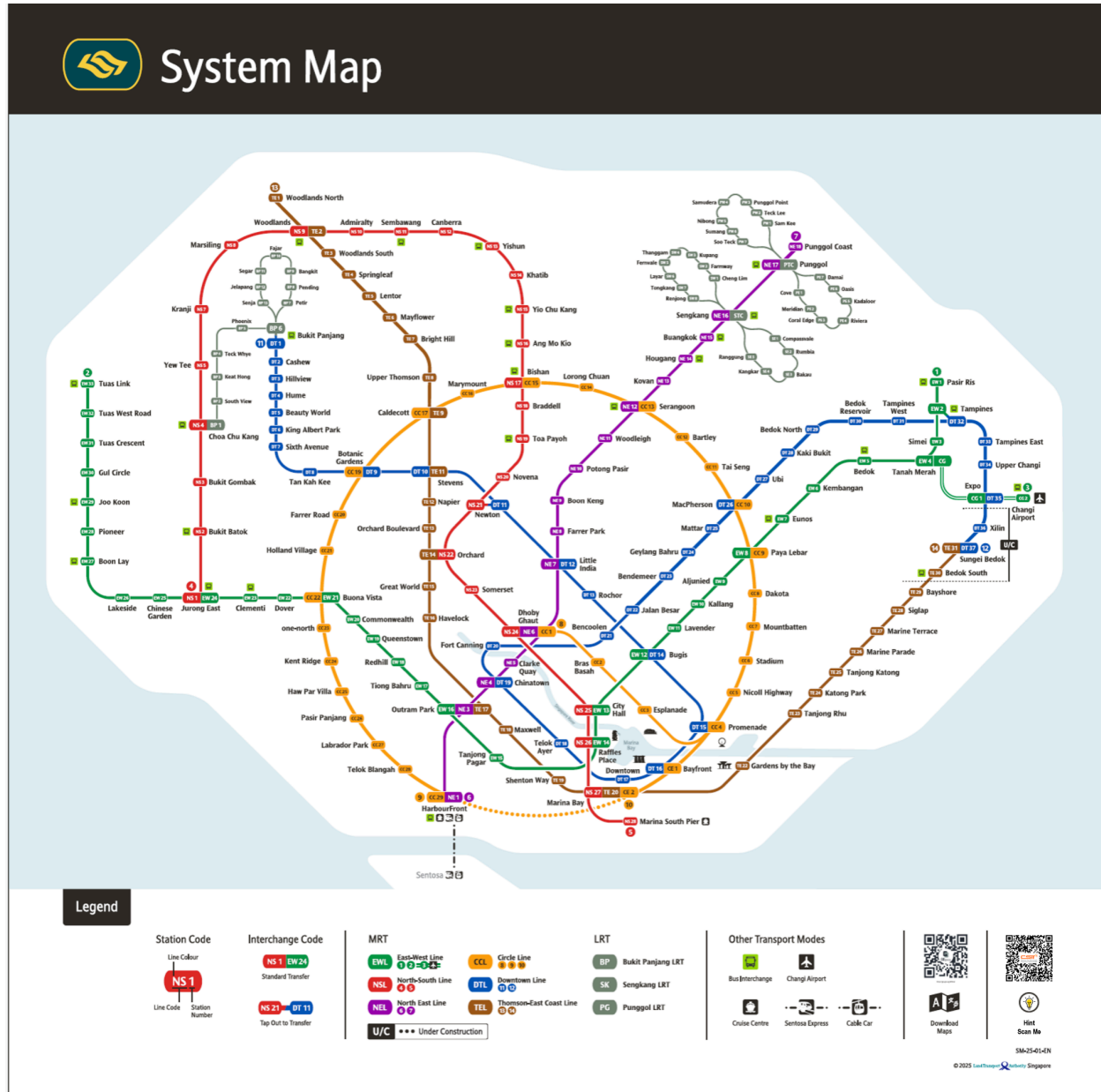
```
csit-mini-challenge-2025-jwt-secret-key
```

Flag

```
CSIT{NSW00DL@ND5ST@T10N}
```

Challenge 4

Final Challenge - Mission Control



Hints and Resources

The map may look familiar, but something's off. Perhaps the truth lies in how it's presented, not just what it shows. (Look for... there's nth to look for on this page)

Solution

Within the image is a QR code:

<https://aug-2025-mini-challenge.csit-events.sg/challenge4/api/challenge-four-hint>

Each of these flags you have obtained has more than one significance.
Use the map and combine them to form a significant day to Singapore.

To complete this challenge, use the following flag format:
CSIT{STATIONCODE1-STATIONCODE2-STATIONCODE3}

Challenge	Flag	Station Code
Challenge 1	CSIT{EWP@YAL3BARSTA7I0N}	EW8
Challenge 2	CSIT{NSCITYH@LLS7AT10N}	NS25
Challenge 3	CSIT{NSW00DL@ND5ST@T10N}	NS9

Had to reorder the stations, and use NS09 instead of NS9.
Reordering the station was to form the date for National Day.

Flag

CSIT{NS09-EW08-NS25}

Mission Accomplished!

You have successfully thwarted the hacktivists' plot and restored the National Day parade control systems! Your cybersecurity skills have saved Singapore's most important celebration.

Through your journey, you've gotten a brief taste in:

[Challenge 1] DevOps

By meticulously debugging and resolving issues in a fracture repository, you have demonstrated proficiency in VCS and enabled the restoration of a Continuous Integration pipeline. This gives you a taste of resilient software development and delivery.

[Challenge 2] Cryptanalysis Fundamentals

Analyzing clues from seemingly innocent data and piecing the clues together demonstrates a level of Pattern Recognition and Logical deduction which are crucial for Data Analysts and Cyber Forensic to think outside of the box to unearth the hidden information.

[Challenge 3] Software Security

To protect against sophisticated web-based attacks, Web developers must understand and mitigate vulnerabilities in web applications. As misconfigured authentication mechanism or Client-Side scripting & DOM manipulation can result in exposure of attack vectors into a system through the web app.

[Challenge 4] Digital Forensics & Intelligence Integration

By synthesizing clues from multiple sources and analyzing transportation data to extract hidden codes, you have demonstrated the investigative skills essential for Cyber Intelligence operations. This multi-source correlation approach mirrors how Security Analysts uncover hidden threats in critical infrastructure systems.

☀️ The skills you've honed today are exactly what Singapore needs to maintain our technological edge and digital resilience. Consider this your first step into the world of technology professionals!

Join the Mission

In CSIT, we look for individuals with a unique blend of analytical prowess, meticulous attention to detail, & a relentless drive to secure our digital world. The skills that you've demonstrated today are not just theoretical; they are the very tools of trade for those on the front lines of innovation and security.

 Challenge completed on 09/08/2025

