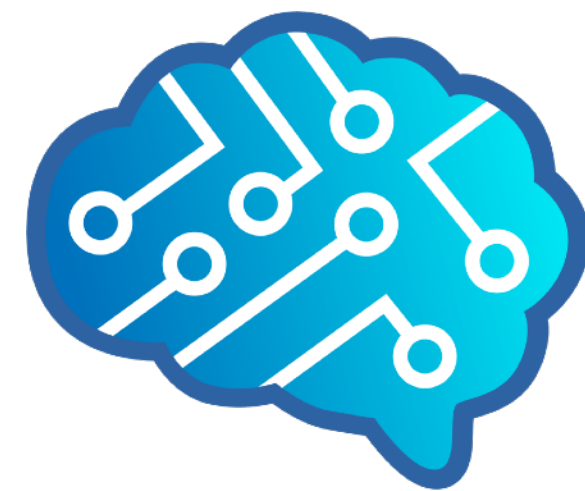


# Getting started with the Academy of AI Cyber Defence

Dr. Karsten Schulz



**DIGITAL  
TECHNOLOGIES  
INSTITUTE**

[www.digital-technologies.institute](http://www.digital-technologies.institute)  
[@DigTecInstitute](https://twitter.com/DigTecInstitute)

# Overview

- Motivation, Storyline, Content
- Curriculum Connections
- How to get yourselves and your students started



# What is the Python Intro Course?

1. **Story-driven** adventure where students join the Academy of AI Cyber Defence to hunt a rogue AI.
2. Designed for **Years 7–10 with minor prior coding experience** – ideal for in-classroom and self-paced learning. **Runtime approx 4h.**
3. Focuses on core **Python** skills: print(), input(), variables, loops, lists, data dictionaries and use of functions, taught through engaging missions.
4. Addresses important **Cyber Security concepts**: Encryption, Obfuscation, Input Validation, Packet Manipulation, Denial-of-Service, Adversarial Thinking, AI Safety, Cyber Sabotage.
5. Includes **narration**, visual feedback and progression, animations, quizzes, and mini-challenges that motivate learners.
6. **Free** for Australian schools, supported by the Digital Technologies Institute to promote equitable access.

# Academy of AI Cyber Defence




The sequel to the Introduction to Python course.

SKNNET is rising. You've been recruited to a secret program to stop it.  
Learn advanced Python skills – branching, logic, and data flow – as you decode threats, outsmart corrupted nodes, and deploy code to protect the system.  
This time, it's not just about stopping a subsystem.  
It's about defeating a global network.



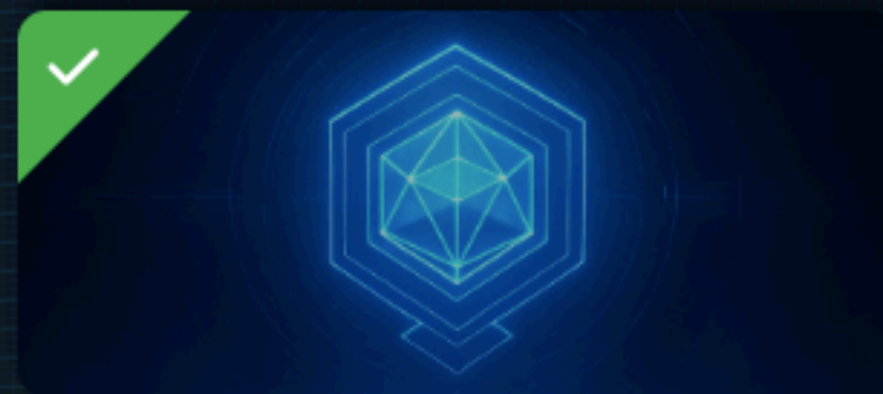
WARNING: PHOTOSENSITIVE EPILEPSY

Some of the missions produce light flashes that can potentially trigger seizures in people with photosensitive epilepsy.

 [Go to Teacher Overview](#)



1. Briefing



2. The Gatekeeper



3. Fragment Hunter



4. Debrief: Core Python skills



5. Fragment Hunter mini-challenge



6. Encrypted Echo



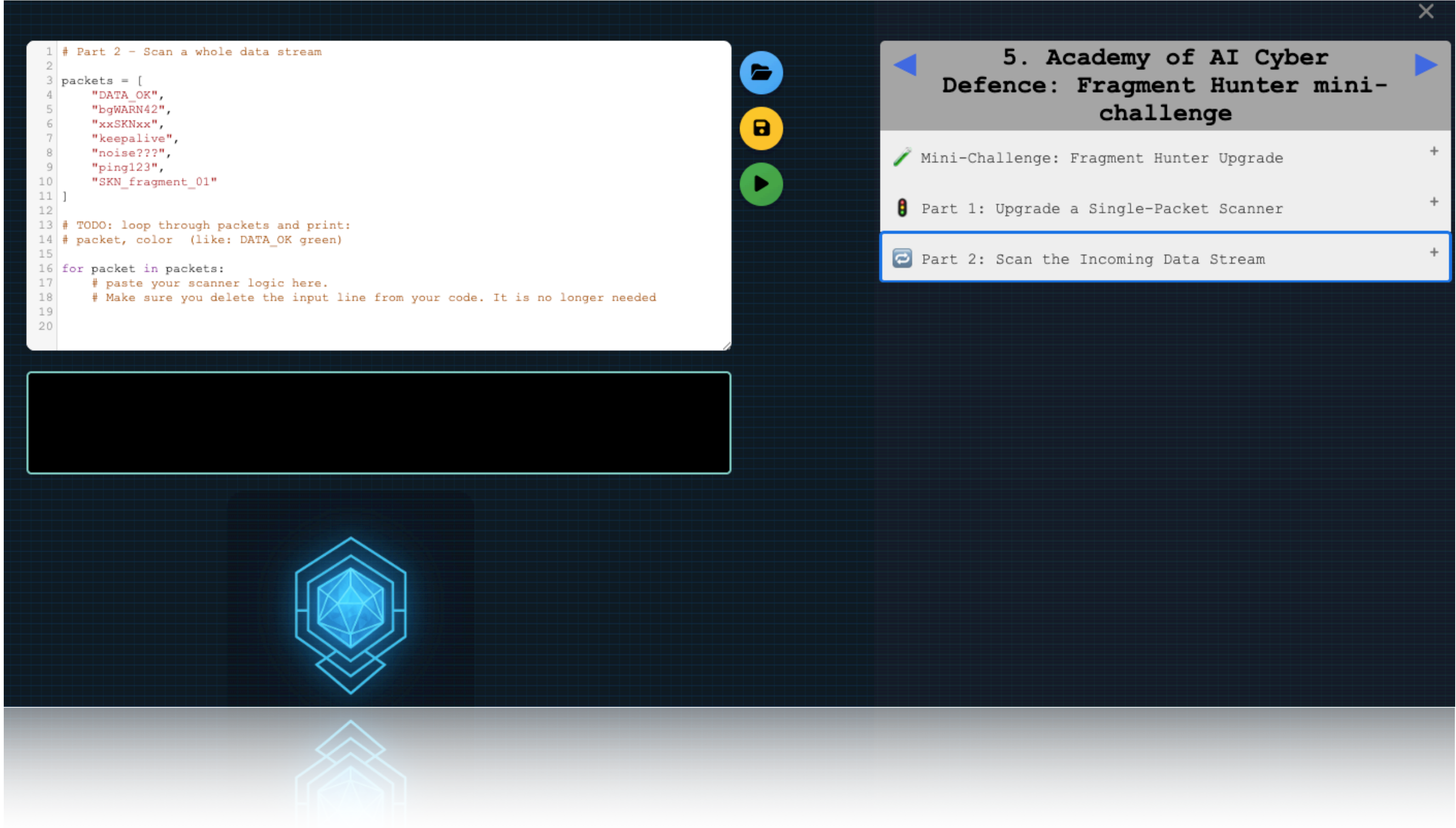
7. Echo Drift



8. Debrief: String Slicing



## Cinematic Videos & Music



Super-sleek  
Python  
Environment  
with code and  
output checking

Question 1: What does the `print()` function do in Python?  
(Select 1 correct answer)

It stores information from the user.

It displays text or output on the screen.

It stops the program.

It compares two values.

Next Question

Submit Answer



#### 4. Academy of AI Cyber Defence: Debrief: Core Python skills

Mission Checkpoint: Core Python Skills

🚀 You have completed your first three missions: understanding system messages, passing the Gatekeeper, and hunting SKNNET fragments.

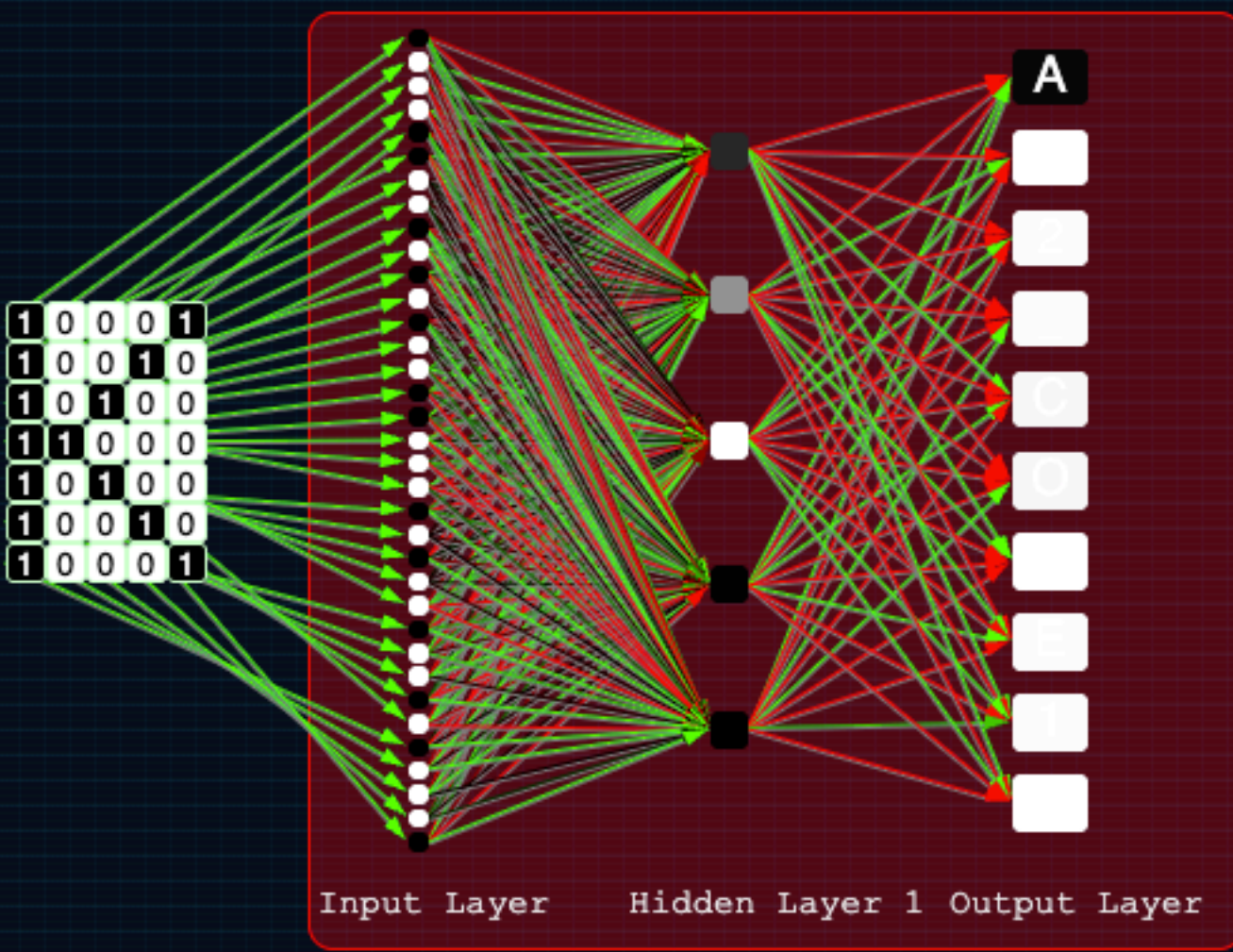
🧠 This short quiz checks your understanding of the essential Python skills you have learned so far:

- `print()`
- `input()`
- `if, elif, else`
- String matching using `in`

Answer the following questions to confirm your readiness for the next stage.

grade  
confirm your readiness for the next  
answer the following questions co

## Engaging Quizzes



Input Layer   Hidden Layer 1   Output Layer

SKNNET

1

19. Academy of AI Cyber Defence: Operation Neural Control

Operation: Neural Control

Step 1: Inspect the Perceptron

Step 2: Controlled Intervention

Step 3: Full Perceptron Control

Step 4: Apply Control to a Different Perceptron

Safe AI



Private



Lance Corporal



Corporal



Sergeant

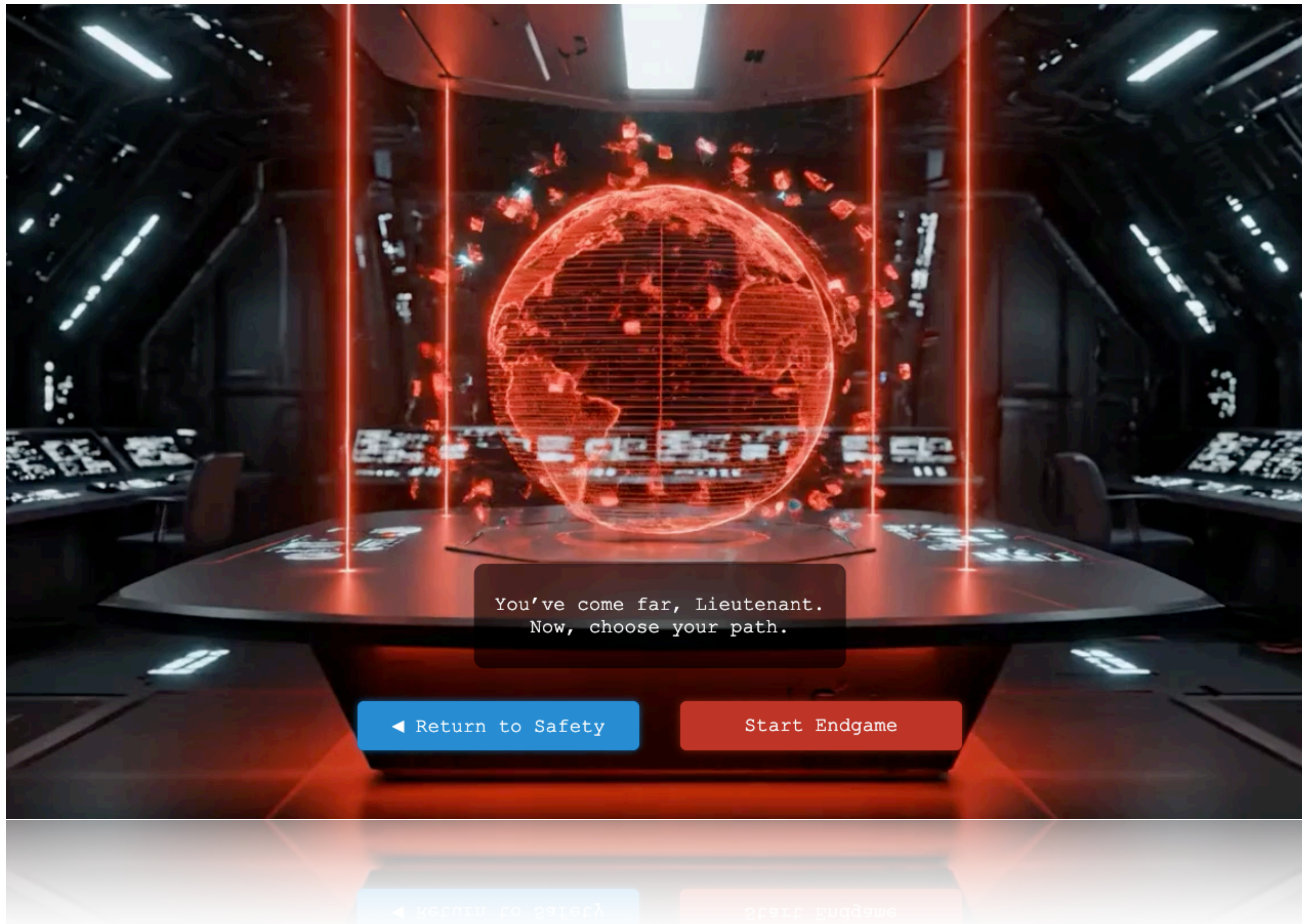


Lieutenant



Captain

## Rank Progression



Massive  
Endgame,  
performing a  
brain transplant  
on an AI

Certificate of Achievement


This is to certify that

Corporal Ai Hunter


Has completed the course

Academy of AI Cyber Defence

Achieving 55 of 100 points




In this course, students explored programming, cybersecurity, and AI by defending digital systems against an evolving threat. Through hands-on missions, they worked with strings, decisions, nested loops, lists, and data dictionaries. Students then interacted with an AI system by reading and modifying neural network weights. The course concluded with a dramatic endgame where code transformed a hostile AI into a benevolent one.



Dr. Karsten Schulz

Date

09/02/2026



PRINT

EXIT

Certificate of Distinction


This is to certify that

Sergeant Ai Hunter

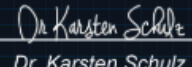
Has completed the course

Academy of AI Cyber Defence

Achieving 82 of 100 points




In this course, students explored programming, cybersecurity, and AI by defending digital systems against an evolving threat. Through hands-on missions, they worked with strings, decisions, nested loops, lists, and data dictionaries. Students then interacted with an AI system by reading and modifying neural network weights. The course concluded with a dramatic endgame where code transformed a hostile AI into a benevolent one.



Dr. Karsten Schulz

Date

10/02/2026



PRINT

EXIT

Certificate of High Distinction


This is to certify that

Captain Ai Hunter

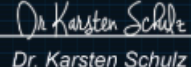
Has completed the course

Academy of AI Cyber Defence

Achieving 100 of 100 points




In this course, students explored programming, cybersecurity, and AI by defending digital systems against an evolving threat. Through hands-on missions, they worked with strings, decisions, nested loops, lists, and data dictionaries. Students then interacted with an AI system by reading and modifying neural network weights. The course concluded with a dramatic endgame where code transformed a hostile AI into a benevolent one.



Dr. Karsten Schulz

Date


10/02/2026



PRINT

EXIT

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# Storyline

Students join the Academy of AI Cyber Defence to hunt a rogue AI, SKNNET. One of its fragments escaped at the end of the Python Intro course

Part 1 (Missions 1–5): Review of key coding concepts, including print, input, and decisions. Students analyse strings and substrings and build a traffic-light system to classify network packets.

Part 2 (Missions 6–9): String-based encryption techniques such as skipping characters, slicing, and reversing strings.


Part 3 (Missions 10–13): Manipulation of cloud deployment. Small changes can have large system-wide effects.


Part 4 (Missions 14–17): Data dictionaries and strategic packet manipulation. Students apply encryption techniques to coordinate global efforts and extract an API key from SKNNET.


Part 5 (Missions 18–21): Use of an AI API to strategically read and modify artificial neural network (ANN) weights.


Capstone (Mission 22 – Endgame): Students transplant data from a benevolent AI into SKNNET, transforming it from a hostile system into a cooperative one. This mission brings together concepts from across the course.

# Inside the Student Journey


 **Storyline-Driven Learning:** The course uses a suspenseful storyline to engage students in hunting SKNNET, foil its attempts to grow and eventually attack the AI core, providing context and motivation for each coding task.

 **Progressive Programming Concepts:** Students extend their Python skills in output, input, decisions, nested loops, data dictionaries, string manipulation, API keys, and functions.

 **Embedded Cybersecurity Themes:** The AI's behaviour prompts students to question trust, validate code, and reflect on ethical coding, encouraging critical thinking about digital safety and manipulation.

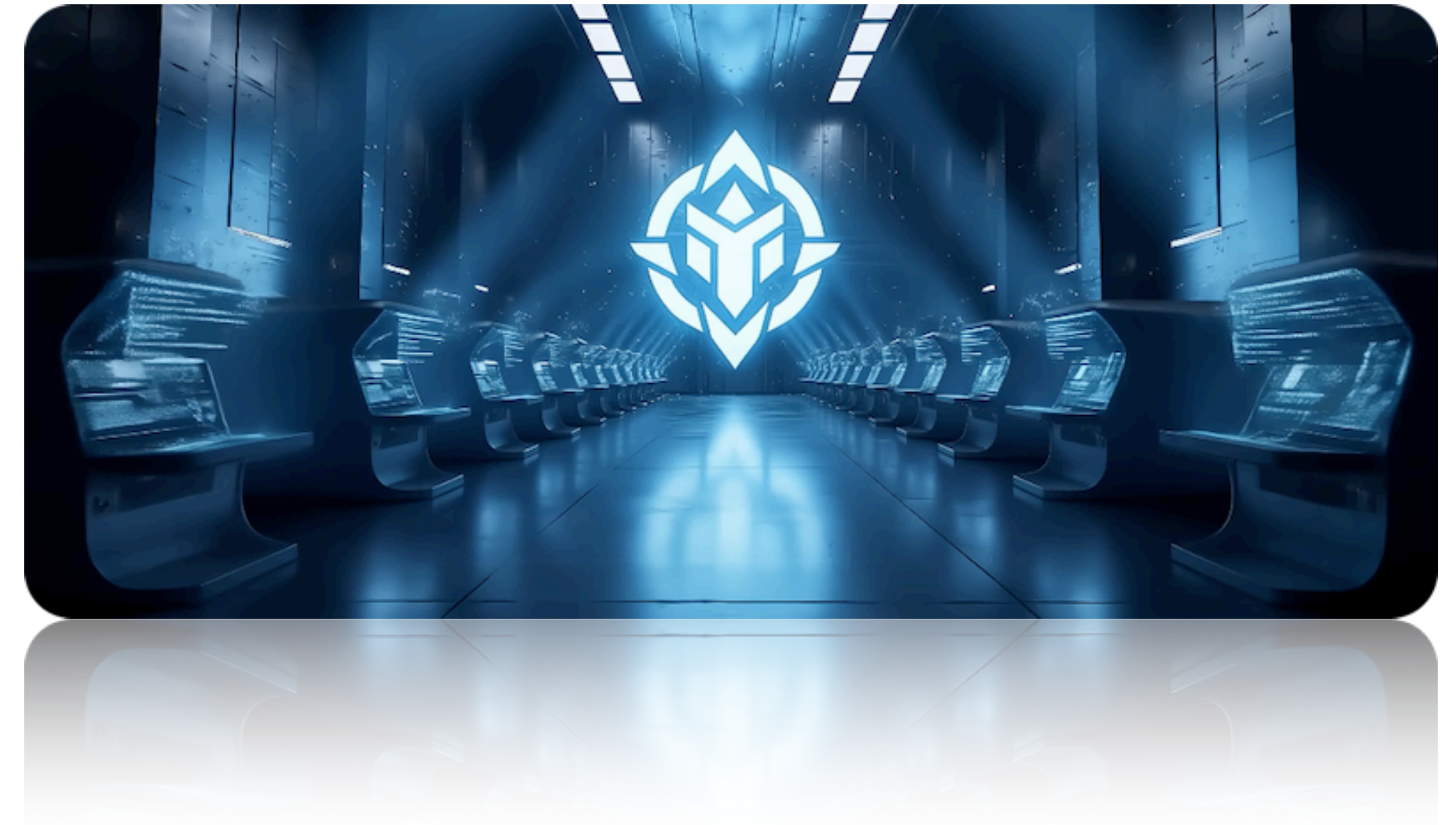
 **Problem-Solving Through Code:** Encryption, Obfuscation, Input Validation, Packet Manipulation, Denial-of-Service, Adversarial Thinking, AI Safety, Cyber Sabotage.

 Quizzes reinforce and consolidate learning.

 **Climactic Endgame Scenario:** The final challenge requires students to apply all their coding knowledge to perform a brain transplant of an AI to change it from evil to benevolent.

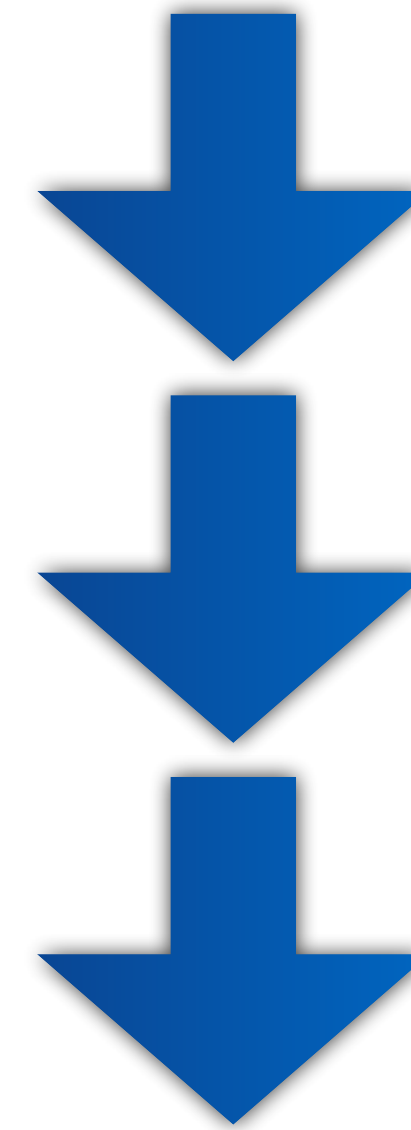
# Sequence of Topics

- Output, Input, Variables, Decisions
- String-based encryption and decryption
- Data dictionaries
- Binary numbers, API keys, functions, AI intervention
- Endgame



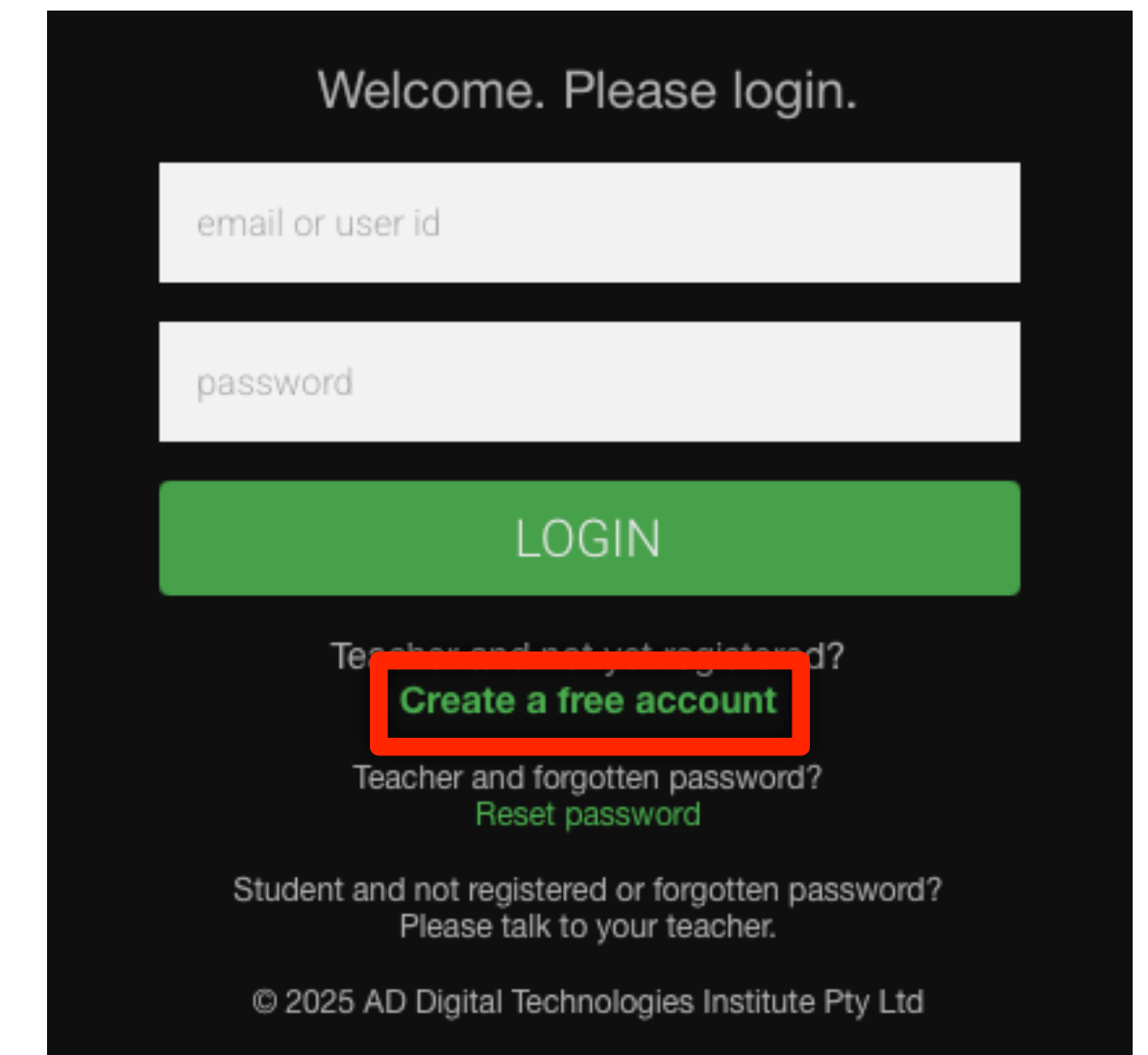
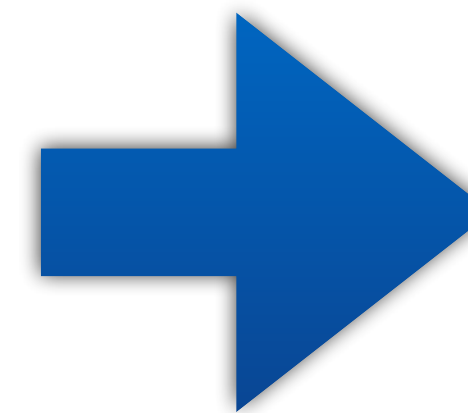
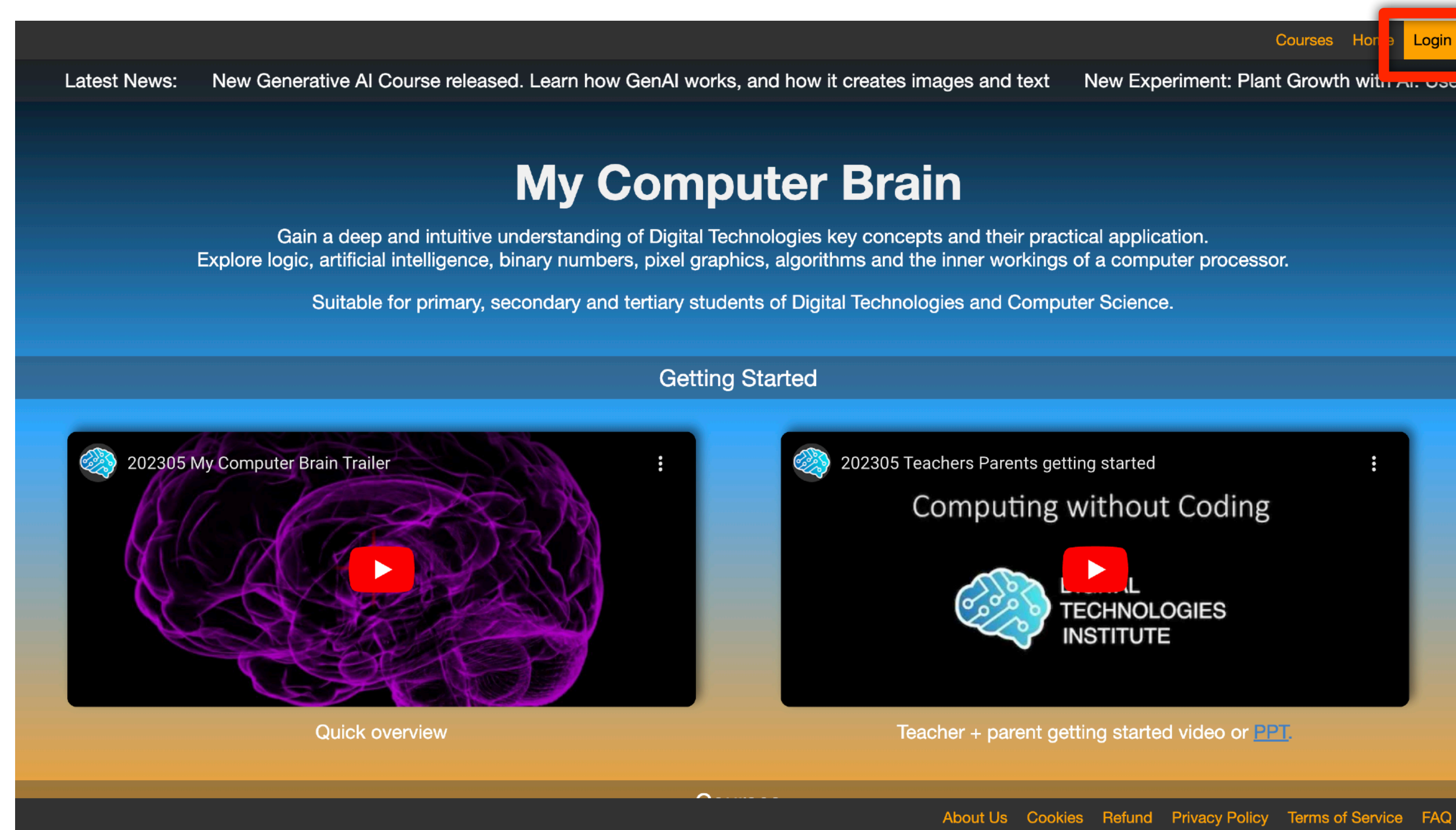
# Inside each Topic

- Learning by doing: missions
- Quiz
- Mini-challenge



# Teacher account

Create a free teacher / home school account at [www.mycomputerbrain.net](http://www.mycomputerbrain.net)



# Teacher Accounts

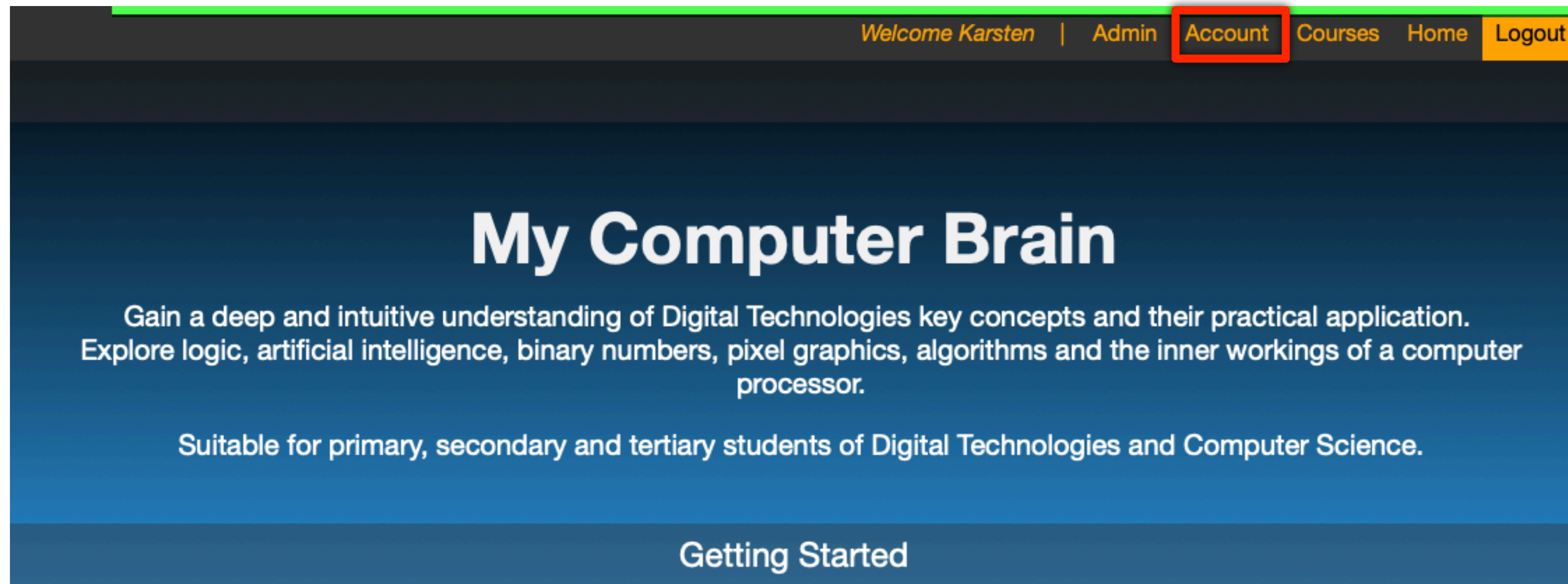
1. Are free
2. Have access to all course resources on the platform
3. Can manage students and check on student progress
4. Are needed to create student accounts (see next slide)
5. Once you register, we will need to confirm your teacher status.
6. You will receive two emails (account creation and teacher confirmation)

## Student Accounts

1. Are created by teachers
2. Provide students with a personalised learning experience
3. Collect points, see mission completion records, earn a medal, and a certificate
4. Students cannot change passwords or change names (only teachers can)
5. Logins consist of a username and a 4-letter password

# Creating Student accounts

Click on Account




Select a product

Recommendation:  
Go for the Python  
Combo


My Students Student Progress Learning Outcomes Assessment **Shop** Order History My Account Change Password Support

Download the Getting Started Guide




**Python Combo – 3 Months**  
Python Intro + Academy of AI Cyber Defence  
\$ 0.00

#students Add to cart




**Python Combo – 6 Months**  
Python Intro + Academy of AI Cyber Defence  
\$ 0.00

#students Add to cart




**Python Combo – 12 Months**  
Python Intro + Academy of AI Cyber Defence  
\$ 0.00

#students Add to cart




**Intro to Python – 12 Months**  
12 month subscription to a course that introduces students to Python. Learning is reinforced through quizzes and examples.  
\$ 0.00

#students Add to cart



**Intro to Python (Express) – 12 Months**  
A fast-tracked version of the full Python Intro Course. 12 month subscription to a course that introduces students to Python. Learning is reinforced through quizzes and examples.  
\$ 0.00

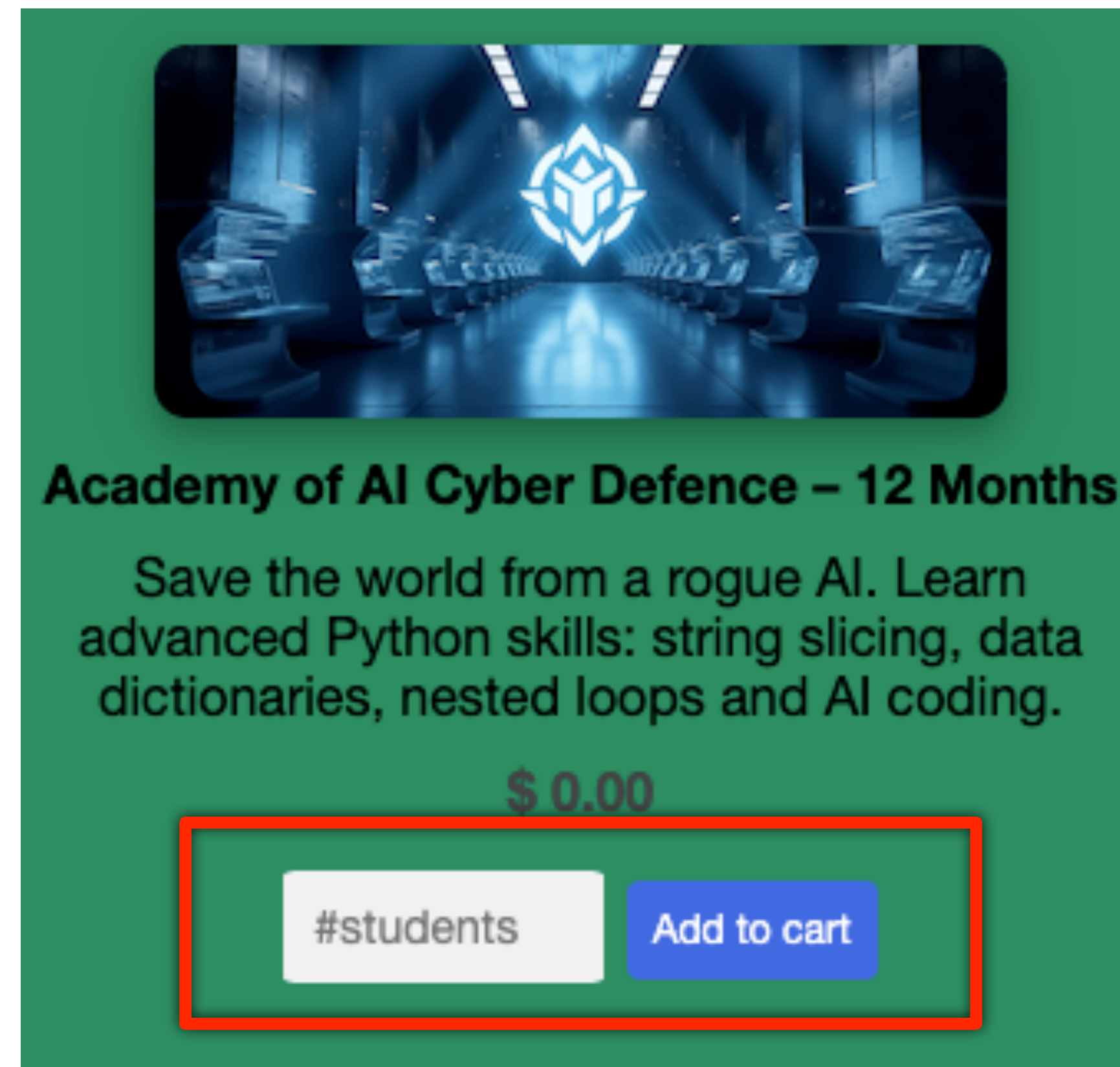
#students Add to cart



**Academy of AI Cyber Defence – 12 Months**  
Save the world from a rogue AI. Learn advanced Python skills: string slicing, data dictionaries, nested loops and AI coding.  
\$ 0.00

#students Add to cart

Enter number of student licenses and click on ‘Add to cart’



The image shows a product card for the 'Academy of AI Cyber Defence – 12 Months'. At the top is a blue-tinted image of a futuristic corridor with a glowing logo in the center. Below the image, the title 'Academy of AI Cyber Defence – 12 Months' is displayed in bold. The description reads: 'Save the world from a rogue AI. Learn advanced Python skills: string slicing, data dictionaries, nested loops and AI coding.' The price '\$ 0.00' is shown in red. At the bottom, there is a white input field labeled '#students' and a blue 'Add to cart' button. A red rectangular box highlights both the input field and the button.

**Academy of AI Cyber Defence – 12 Months**

Save the world from a rogue AI. Learn advanced Python skills: string slicing, data dictionaries, nested loops and AI coding.

**\$ 0.00**

#students Add to cart

# Click on Checkout

Shopping Cart

Empty CartCheckout →

Name	Code	Quantity	Price	Action		Subtotal
Python Combo - 12 Months	B4-C-PYCOMBO-12	100	\$ 0.00	Update Quantity	Remove Item	\$ 0.00
Total payable: \$ 0.00						

# Confirm your details and click 'Checkout'

Shopping Cart

← Previous step

Checkout →

Name	Code	Quantity	Price	Action	Subtotal
Python Combo - 12 Months	B4-C-PYCOMBO-12	100	\$ 0.00	<div>Update Quantity</div> <div>Remove Item</div>	\$ 0.00

Total payable: \$ 0.00

Title

Name

Surname

Email

Phone

School

Street and Number

Postcode

City

State

Country

Cancel

Save

# Click on 'Create Free Accounts'

Shopping Cart

← Previous step

Name	Code	Quantity	Price	Action	Subtotal
Python Combo - 12 Months	B4-C-PYCOMBO-12	100	\$ 0.00	<div>Update Quantity</div> <div>Remove Item</div>	\$ 0.00
Total payable: \$ 0.00					

Click the button to generate the free student accounts. You will then be automatically redirected to the My Students page where you will find the new student accounts.

Create Free Accounts

The system will create the accounts and redirect to the My Students screen

# Distribute usernames+passwords to your students

If you like, you can add names/surnames (optional), -  
needed for personalised certificates

My Students

Student Progress

Learning Outcomes

Assessment

Shop

Order History

My Account

Change Password

Support

Download the Getting Started Guide

My Students

This page lets you manage your student accounts. Entering a Name or Surname is optional – you may leave them blank or use pseudonyms / aliases. Students see the Name field when they log in, and the combined Name + Surname on their certificates. If both fields are left empty, certificates will include a blank line for students to fill in after printing or PDF export (outside of MyComputerBrain). Students cannot change their name, surname, or password themselves. You can copy and paste data from a spreadsheet (e.g. a class roll) into the table. Remember to save your changes before leaving this page.

Export Table as CSV

Show All Passwords

Name	Surname	Username	Password	Product	Valid Until	Status
		753512		Python Combo - 12 Months	2027-01-28	Active
		753513		Python Combo - 12 Months	2027-01-28	Active
		753514		Python Combo - 12 Months	2027-01-28	Active
		753515		Python Combo - 12 Months	2027-01-28	Active
		753516		Python Combo - 12 Months	2027-01-28	Active
		753517		Python Combo - 12 Months	2027-01-28	Active
		753518		Python Combo - 12 Months	2027-01-28	Active
		753519		Python Combo - 12 Months	2027-01-28	Active
		753520		Python Combo - 12 Months	2027-01-28	Active
		753521		Python Combo - 12 Months	2027-01-28	Active
		753522		Python Combo - 12 Months	2027-01-28	Active
		753523		Python Combo - 12 Months	2027-01-28	Active

Cancel

Save

Export as CSV and distribute to your students


Note: each account collects achievement points

# Teacher Course Page

## Academy of AI Cyber Defence


The sequel to the Introduction to Python course.


SKNNET is rising. You've been recruited to a secret program to stop it. Learn advanced Python skills – branching, logic, and data flow – as you decode threats, outsmart corrupted nodes, and deploy code to protect the system. This time, it's not just about learning the AI. It's about defeating it.




WARNING: PHOTSENSITIVE EPILEPSY

Some of the missions produce light flashes that can potentially trigger seizures in people with photosensitive epilepsy.


 [Go to Teacher Overview](#)




1. Briefing



2. The Gatekeeper




3. Fragment Hunter



4. Debrief: Core Python skills

## Teacher Information

**About this course:** Academy of AI Cyber Defence stands out by bringing a large portion of the Digital Technologies curriculum together into one highly engaging experience. Students use input and output, decisions, nested loops, lists, and data dictionaries to solve real problems, while also working with functions, classes, encryption, cybersecurity, and AI. Rather than learning these ideas in isolation, students apply them inside a live, interactive system featuring an evil AI (SKNNET) and a protective Gatekeeper. By manipulating real data, packets, and neural network weights, students develop strong systems thinking and see how small code changes can affect large, distributed systems—making advanced AI concepts accessible, concrete, and memorable.

 [Download the Getting Started Guide](#)

## Storyline

SKNNET is a hostile AI system that has infiltrated the internet, threatening system integrity and security.

Students take on the role of a cadet at the newly-formed Academy of AI Cyber Defence, examining packets, strings, weights, and propagation patterns to understand and influence the behaviour of SKNNET. Through interactive challenges, they decrypt hostile data packets, coordinate global efforts, and eventually overwrite the SKNNET AI to make it benevolent.

## Course Structure & Learning Progression

The course continues where the Python Introduction course ended. We catch-up students quickly about core coding concepts at the beginning.

The course is deliberately structured to build from core Python skills to more advanced Python and toward AI and cybersecurity concepts, guiding students through a carefully sequenced learning journey.

- **Part 1 (Missions 1–5):** Review of key coding concepts including print, input, and decisions. Students analyse strings and substrings and build a traffic-light system to classify network packets.
- **Part 2 (Missions 6–9):** Exploration of simple string-based encryption techniques such as skipping characters, slicing, and reversing strings.
- **Part 3 (Missions 10–13):** Subtle manipulation of cloud deployment data, including sabotaging cloud deployment strings and modifying cooling capacity values. The focus is on how small changes can have large system-wide effects.
- **Part 4 (Missions 14–17):** Introduction to data dictionaries and strategic packet manipulation. Students apply encryption techniques to coordinate global efforts and extract an API key from SKNNET.
- **Part 5 (Missions 18–21):** Use of an AI API to strategically read and modify artificial neural network (ANN) weights.
- **Capstone (Mission 22 – Endgame):** Students transplant data from a benevolent AI into SKNNET, transforming it from a hostile system into a cooperative one. This mission brings together concepts from across the course.

## Cybersecurity Concepts Embedded in the Course

While the course is delivered through coding missions and narrative, it deliberately exposes students to core cybersecurity concepts through hands-on experience rather than abstract theory.

- **Input Validation & Trust Boundaries:** Students learn that incomplete or partial checks can be exploited and that all external input must be treated with caution.
- **Encryption & Obfuscation:** String manipulation techniques such as reversing, slicing, and skipping characters introduce foundational ideas behind encryption and data protection.
- **Packet Inspection & Traffic Classification:** Students analyse packet-like data to distinguish between benign and hostile traffic, reflecting real-world firewall and intrusion detection concepts.
- **API Security & Access Control:** Interaction with protected APIs and keys models authentication, separation of concerns, and least-privilege access.
- **Distributed Systems & Propagation:** SKNNET is presented as a hierarchical, distributed system, helping students understand why local fixes must propagate globally.
- **Denial-of-Service (DoS):** Through logic errors, repetition, and feedback effects, students experience how systems can be overwhelmed.
- **Adversarial Thinking:** Students repeatedly switch perspectives between defender, attacker, and system designer, developing threat-modelling skills.
- **AI Safety & Control:** By reading and modifying neural network weights, students explore safe intervention, alignment, and indirect control of AI systems.

## Tips for Teachers

- **Recommended:** [Python Introduction](#) or [Python Introduction \(Express\)](#)– students benefit from prior exposure to core Python concepts.
- You do not need prior AI expertise to facilitate this course; the materials guide students through the concepts clearly.
- Encourage discussions about the benefits and risks of large-scale distributed systems.
- Focus on the implications of cybersecurity and AI behaviour.
- If students encounter difficulties or dead ends during experiments, especially in later stages, they can reload the page to reset the environment and try again. Iterative problem-solving is encouraged.

## Curriculum Mapping – Years 7–10


This table outlines how key components of the course align with the Australian Curriculum: Digital Technologies (Version 9).

Strand	Curriculum Code	Mapped in Course
Digital Systems	AC9TDI8K01, AC9TDI8K02, AC9TDI10K01	Explored through distributed systems concepts and network hierarchies within AI environments
Data Representation	AC9TDI8K03, AC9TDI8K04	Analysed via packet data, string manipulation, data dictionaries, and weighted propagation in AI models
Acquiring & Analysing Data	AC9TDI8P01–03, AC9TDI10P01–03	Applied through cybersecurity validation techniques and AI behaviour analysis


# Students

# Starting the course


Courses and Activities

A futuristic computer room with multiple monitors displaying green data visualizations and a glowing blue geometric logo in the background.


Python

A cartoon illustration of a detective in a brown trench coat and hat holding a magnifying glass, standing next to a cat, while a hacker in a black hoodie sits at a laptop in front of a large metal vault door.

Hack The Bank Cyber Activity

A colorful 3D Rubik's cube with yellow, green, blue, and pink faces.

Computer Logic

A vibrant, colorful spiral galaxy or nebula in space, surrounded by stars and a grid-like structure.

Generative Artificial Intelligence



## Start Your Python Journey

Two independent entry paths. One advanced destination in AI & Cyber Defence.



### Python Intro

*Full foundations*

A comprehensive introduction to Python. Ideal for students who want to explore concepts in depth through engaging missions and narrative-driven challenges.

Start with Python Intro



### Python Intro (Express)

*Fast-track foundations*

A streamlined entry into Python for confident or time-limited learners. Focuses on core concepts with rapid progression.

Start with Python Intro (Express)

▼ Both paths lead to ▼



### Academy of AI Cyber Defence

An advanced, story-driven course where students expand their Python skills and learn powerful new concepts in AI and cybersecurity while tackling high-stakes challenges.

Enter the Academy

Enter the Academy

An advanced, story-driven course where students expand their Python skills and learn powerful new concepts in AI and cybersecurity while tackling high-stakes challenges.

# Inside the Course

Not logged in

English Courses Home Login

## Academy of AI Cyber Defence

The sequel to the Introduction to Python course.

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⚠

WARNING: PHOTSENSITIVE EPILEPSY

Some of the missions produce light flashes that can potentially trigger seizures in people with photosensitive epilepsy.



1. Briefing



2. The Gatekeeper  
(requires student license or teacher account)



3. Fragment Hunter  
(requires student license or teacher account)



4. Debrief: Core Python skills  
(requires student license or teacher account)



5. Fragment Hunter mini-challenge  
(requires student license or teacher account)



6. Encrypted Echo  
(requires student license or teacher account)



7. Echo Drift  
(requires student license or teacher account)



8. Debrief: String Slicing  
(requires student license or teacher account)

Logged in

English Welcome 753419 | Courses Home Logout

## Academy of AI Cyber Defence

The sequel to the Introduction to Python course.

SKNNET is rising. You've been recruited to a secret program to stop it. Learn advanced Python skills – branching, logic, and data flow – as you decode threats, outsmart corrupted nodes, and deploy code to protect the system. This time, it's not just about learning the AI. It's about defeating it.

⚠

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1. Briefing



2. The Gatekeeper



3. Fragment Hunter



4. Debrief: Core Python skills



5. Fragment Hunter mini-challenge



6. Encrypted Echo



7. Echo Drift



8. Debrief: String Slicing

# Progress Tracker

Done

Partially done

Not yet tried

The screenshot displays a progress tracker interface with a dark theme. At the top, there is a navigation bar with 'English' (with a flag icon), 'Welcome AI', 'Courses', 'Home', and a 'Logout' button. A volume icon is also present. The tasks are arranged in a 3x4 grid:

- Row 1:**
  - 9. Echo mini-challenge (Status: Done - green checkmark icon)
  - 10. Operation Underclock (Status: Not yet tried - blue question mark icon)
  - 11. Operation Overheat (Status: Not yet tried - blue question mark icon)
  - 12. Debrief: Slicing in Action (Status: Not yet tried - blue question mark icon)
- Row 2:**
  - 13. Silent Pressure mini-challenge (Status: Partially done - gear icon)
  - 14. Enemy at the Gate (Status: Not yet tried - blue question mark icon)
  - 15. Secure Coordination (Status: Not yet tried - text: 'We coordinate our next move with the Academy node in Melbourne')
  - 16. Debrief: Data Dictionaries (Status: Not yet tried - blue question mark icon)
- Row 3:**
  - 17. Key Heist mini-challenge (Status: Not yet tried - blue question mark icon)
  - 18. Operation Neural decode (Status: Not yet tried - blue question mark icon)
  - 19. Operation Neural Control (Status: Not yet tried - blue question mark icon)
  - 20. Debrief: Artificial Intelligence (Status: Not yet tried - blue question mark icon)

# Key elements

Editor

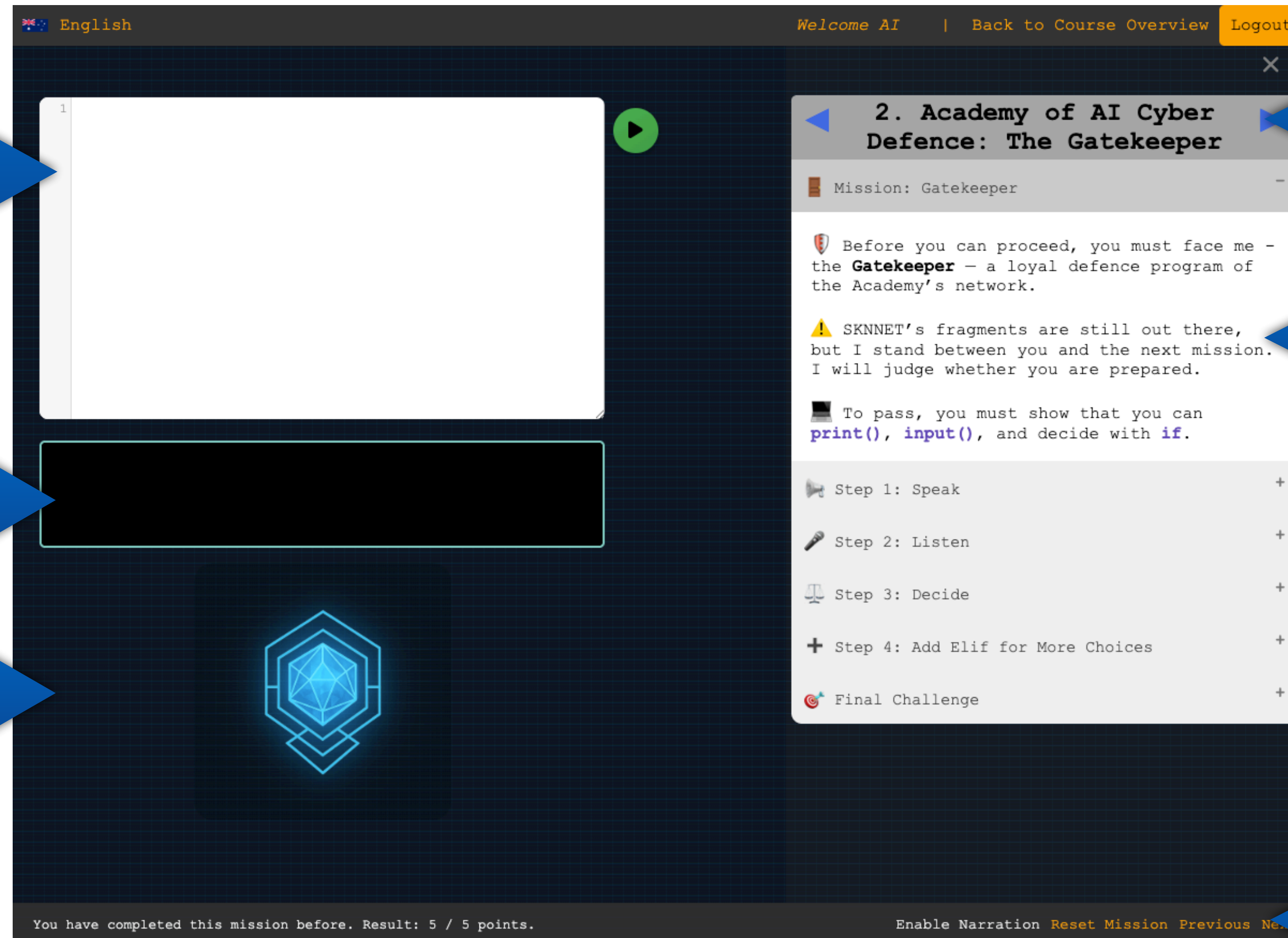
Output

Gatekeeper

Navigation

Instructions Panel

Narration/ Navigation/Control



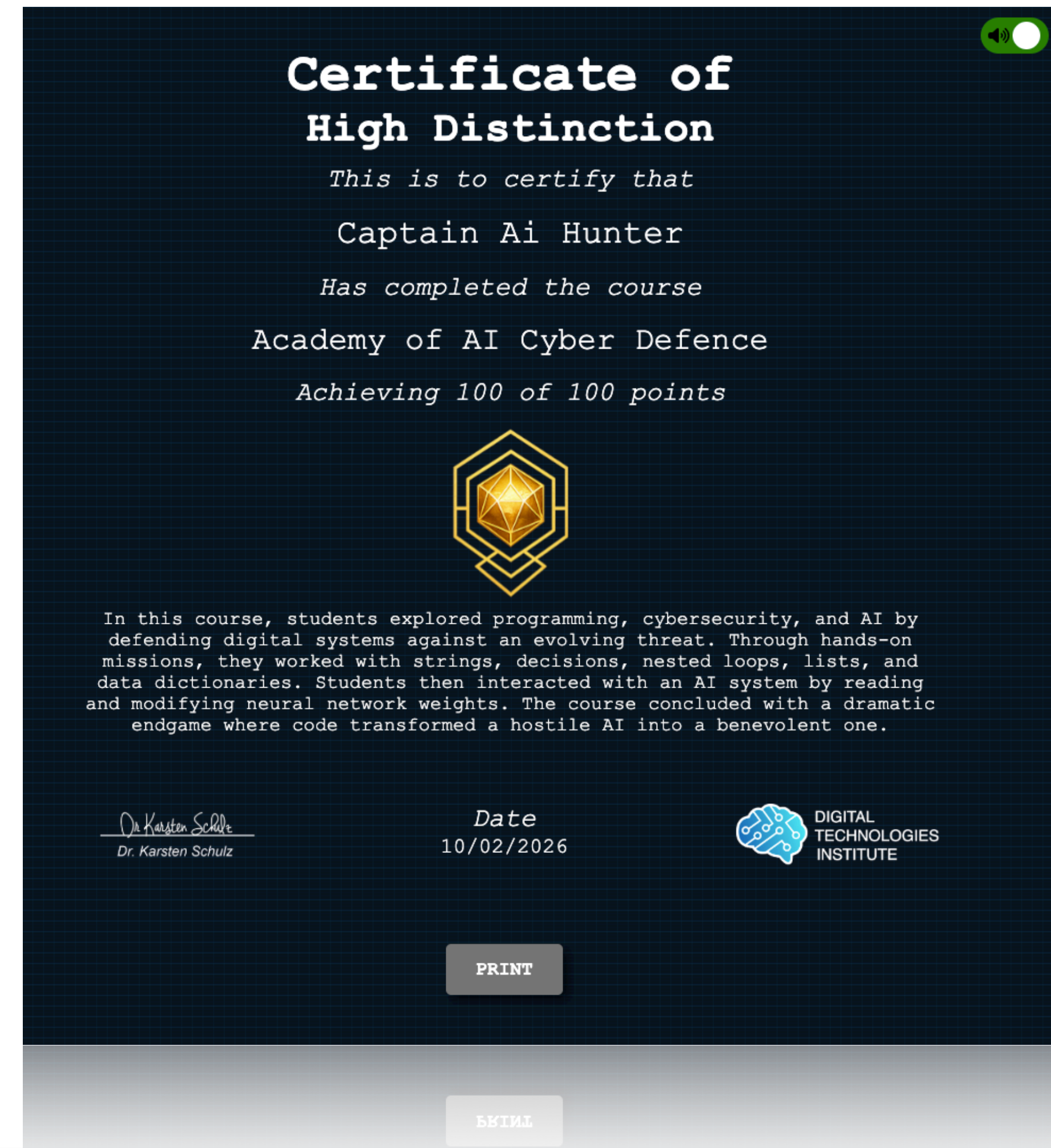
# Certificate and Medal

100 points maximum

>85 points, high distinction, gold

>75 points, distinction, silver

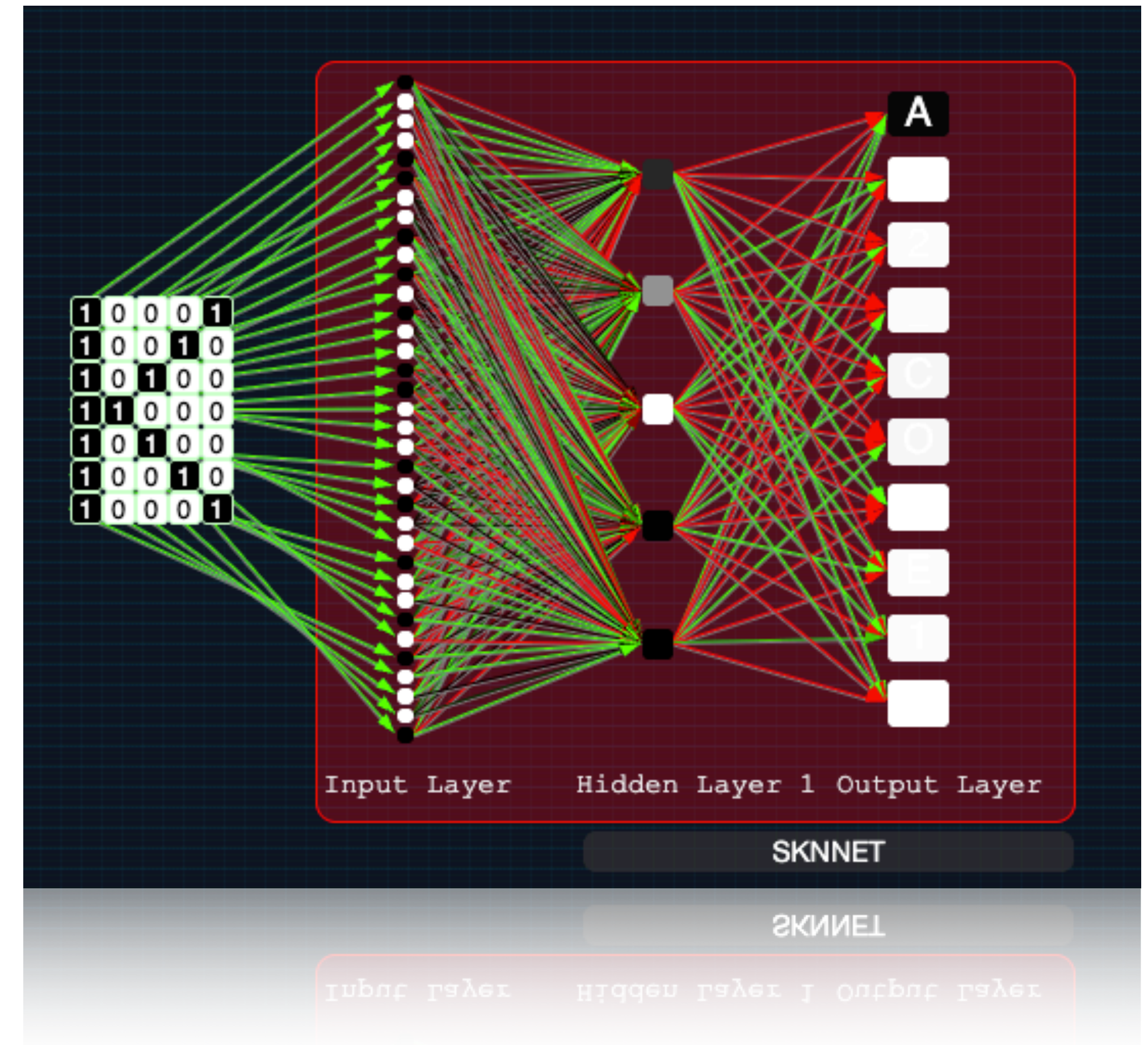
>50 points, achievement, bronze



Wait, there is more ...

# Safe AI

- The course features a simple neural network AI
- Completely browser-based
- Not communicating with backend.
- Not GenAI
- SAFE !

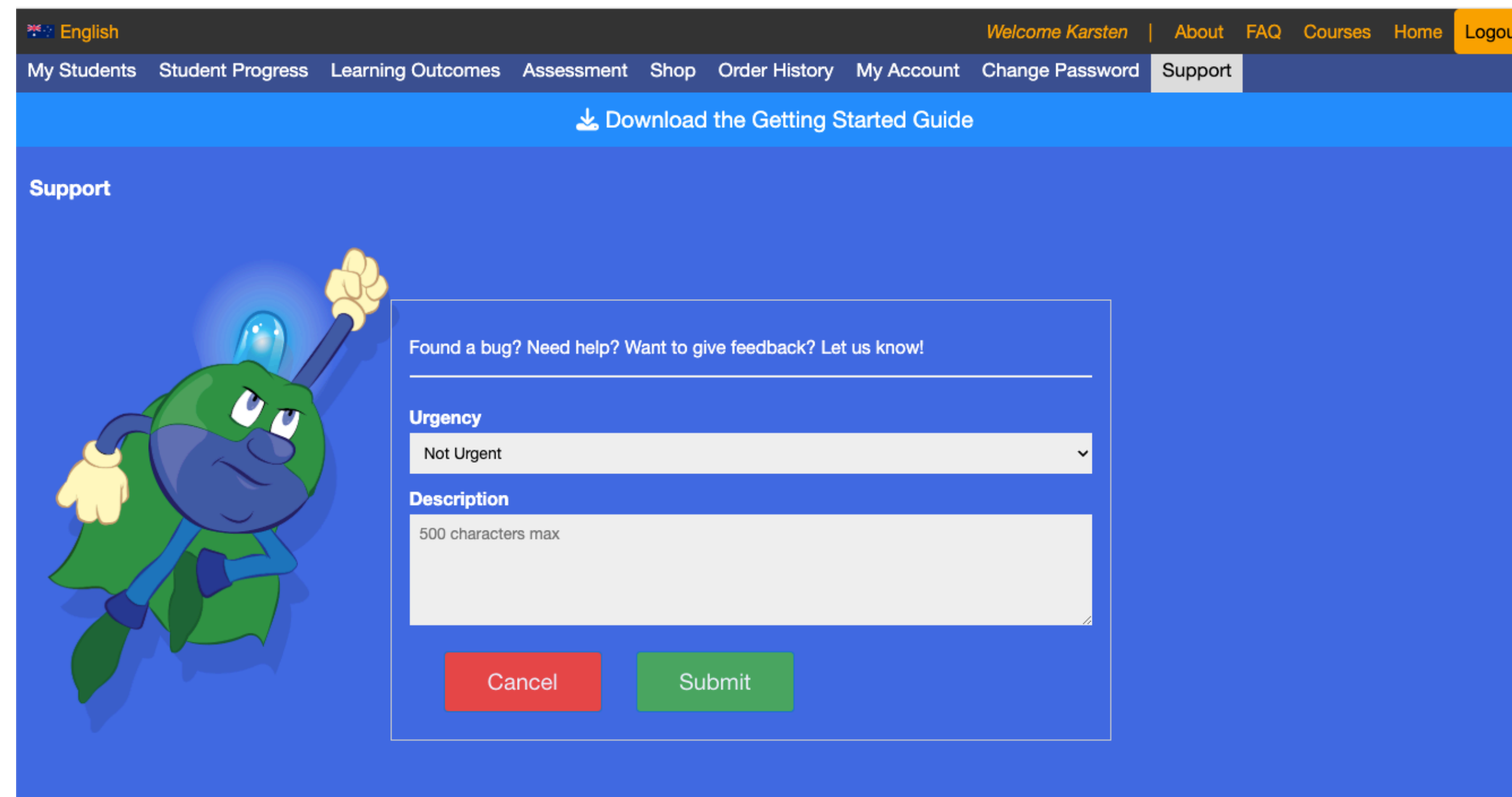


# Tracking student progress

[illegible]

# Support

Please use the support field in your Account (teachers only)



The screenshot shows a web interface for a user account. At the top, there is a navigation bar with links: English, Welcome Karsten, About, FAQ, Courses, Home, and Logout. Below this is a secondary navigation bar with links: My Students, Student Progress, Learning Outcomes, Assessment, Shop, Order History, My Account, Change Password, and Support. A blue banner below the navigation bar says "Download the Getting Started Guide". The main content area is titled "Support" and features a cartoon character on the left. The character is green with a blue head, a blue cape, and a yellow glove, holding a yellow torch. To the right of the character is a form with the following fields:

- A text input field with the placeholder text "Found a bug? Need help? Want to give feedback? Let us know!".
- An "Urgency" dropdown menu with "Not Urgent" selected.
- A "Description" text area with a placeholder "500 characters max".
- Two buttons at the bottom: "Cancel" (red) and "Submit" (green).

# Q&A

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