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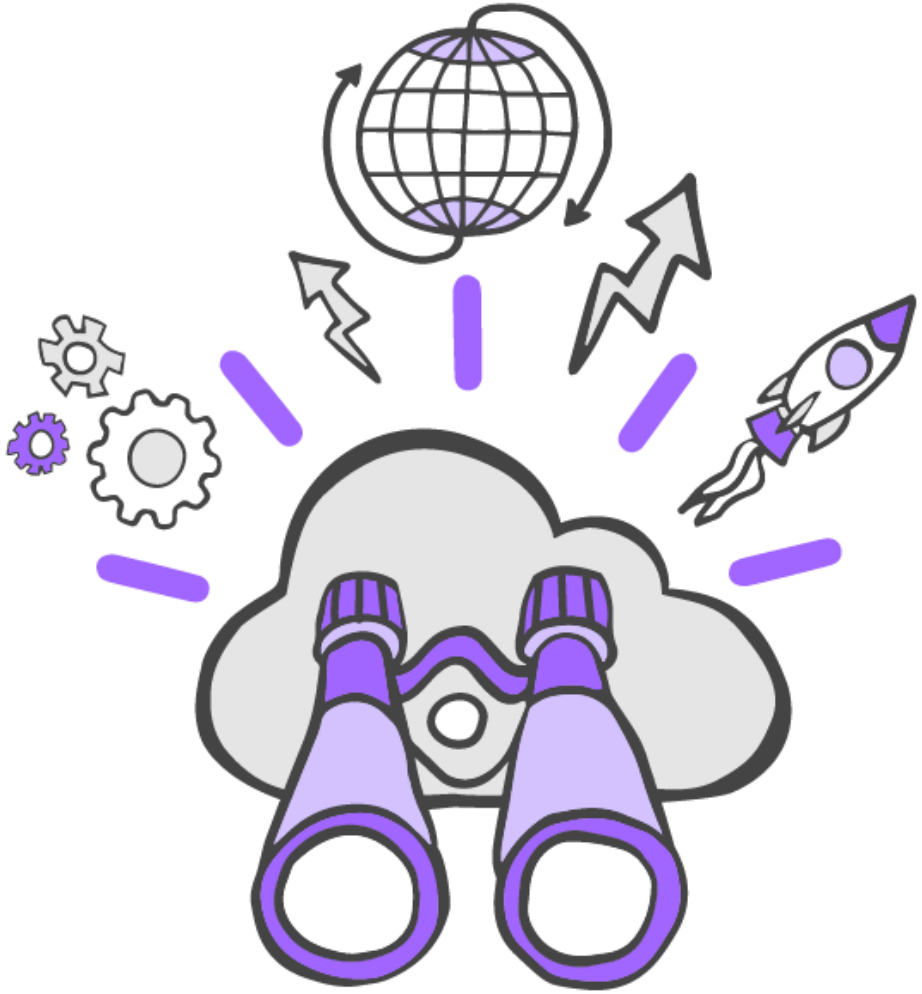
AWS跨領域教學與證照班授課分享



東海大學雲創學院 白鎧誌

AWS Educate Educator Meetup

2020/12/15

東海大學雲創學院

Cloud Innovation School,
Tunghai University

Powered by **AWS**

雲技術、新經濟
跨領域人才培育

https://cis.thu.edu.tw/

東海大學雲創學院學生背景

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資工	工工	電機	資管
企管	數學	會計	財金

東海大學雲創學院AWS相關課程

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AWS雲端服務認證與證照

- AWS常用雲端服務與概念
- 證照考試培訓

IoT物聯網技術與應用

- 學習AWS IoT相關服務與實作

智慧科技概論與應用

- AWS相關服務與實作

NOV

AWS雲端服務認證與證照

Course Website

powered by aws educate

- iLearn + TronClass (app)
- AWS Educate & AWS console
- AWS Website
- AWS Academy Cloud Foundations

AWS雲端服務認證與證照

powered by aws educate

- AWS Academy Cloud Foundations 教材
  - 申請Academy Cloud Foundations課程
- 註冊AWS Educate
- 搭配實作LAB

To-Do List

1. AWS Educate (建議用go.thu.edu.tw)
   - https://ithu.tw/9bK

2. AWS Educate registration (mail同上)

3. Share your thought 

Cloud Computing 101

Take a crash course on the cloud, its history, solutions, and why companies across the globe are looking for employees with AWS cloud expertise.

START ▶ LEARN MORE ▶

Application Developer

Curious how App Developers design, test, and improve engaging web and mobile applications in the cloud? Learn more about the skills you'll need.

START ▶ LEARN MORE ▶

Cloud Support Associate

If you're excited by the future of cloud computing and enjoy working directly with customers, learn more about becoming a Cloud Support Associate.

START ▶ LEARN MORE ▶

Cloud Support Engineer

Interested in multiple technologies and working with companies to support AWS cloud solutions? Learn more about becoming a Cloud Support Engineer.

START ▶ LEARN MORE ▶

Cybersecurity Specialist

Cybersecurity Specialists use expertise in networking, programming, and coding to protect customer data every day. Learn more about the skills they use.

START ▶ LEARN MORE ▶

Data Integration Specialist

Excited about bringing data sources together to tell the story of a product's performance? Discover ways to build and improve products through data.

START ▶ LEARN MORE ▶

Data Scientist

Curious how discovering patterns in large data sets can translate into new business strategies? Learn more about how Data Scientists do this every day.

START ▶ LEARN MORE ▶

DevOps Engineer

If you like working behind the scenes to tackle challenges and are curious about skills like scripting and coding, learn more about becoming a DevOps Engineer.

START ▶ LEARN MORE ▶

自主進度實驗室

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https://aws.amazon.com/tw/training/self-paced-labs/

專業級

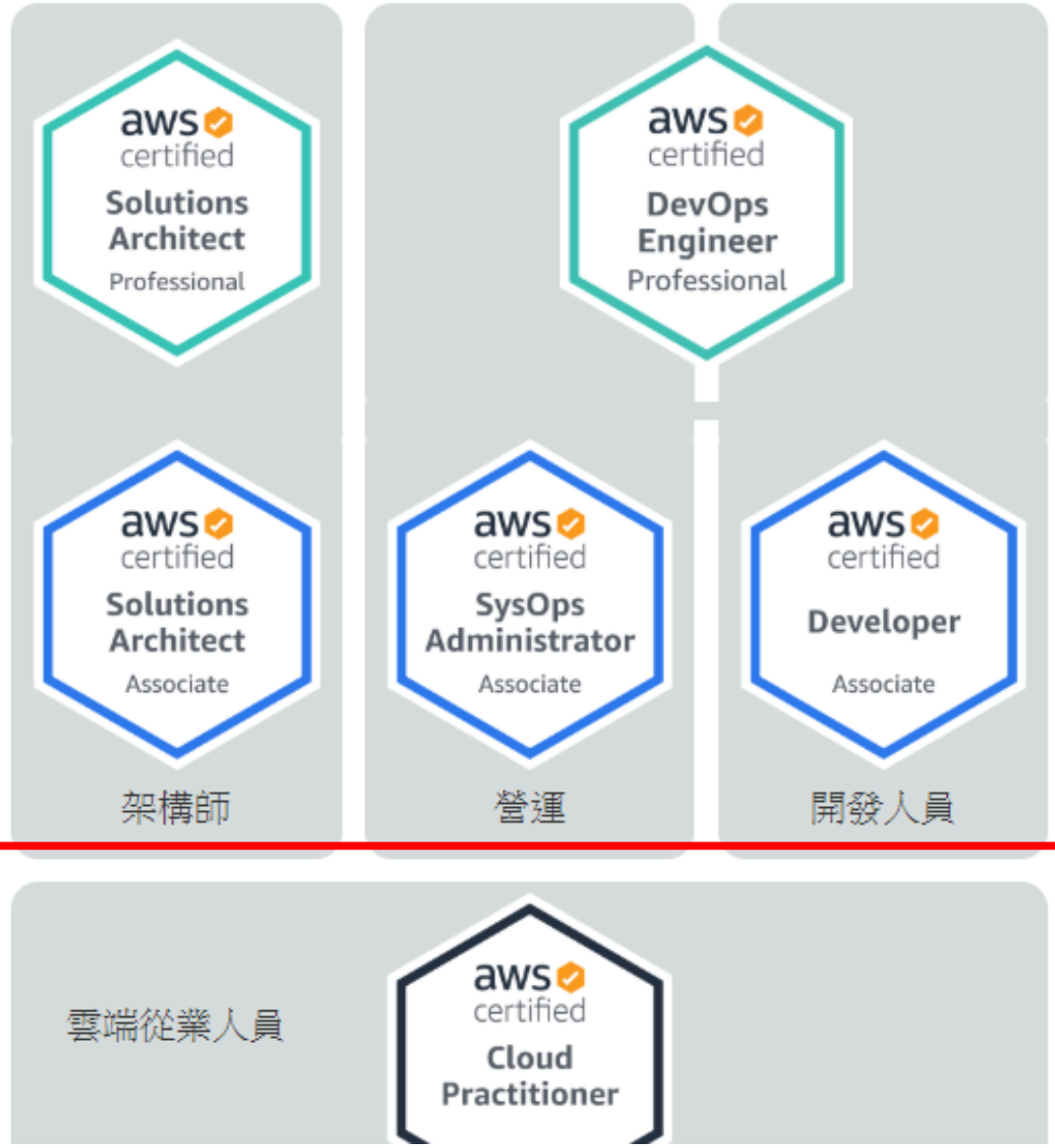
兩年使用 AWS 雲端設計、操作及疑難排解解決方案的廣泛經驗

助理級

一年使用 AWS 雲端解決問題和實作解決方案的經驗

基礎

六個月的基礎 AWS 雲端和產業知識



專家級

考試指南中指定的專業領域中的 AWS 雲端技術經驗

專業級

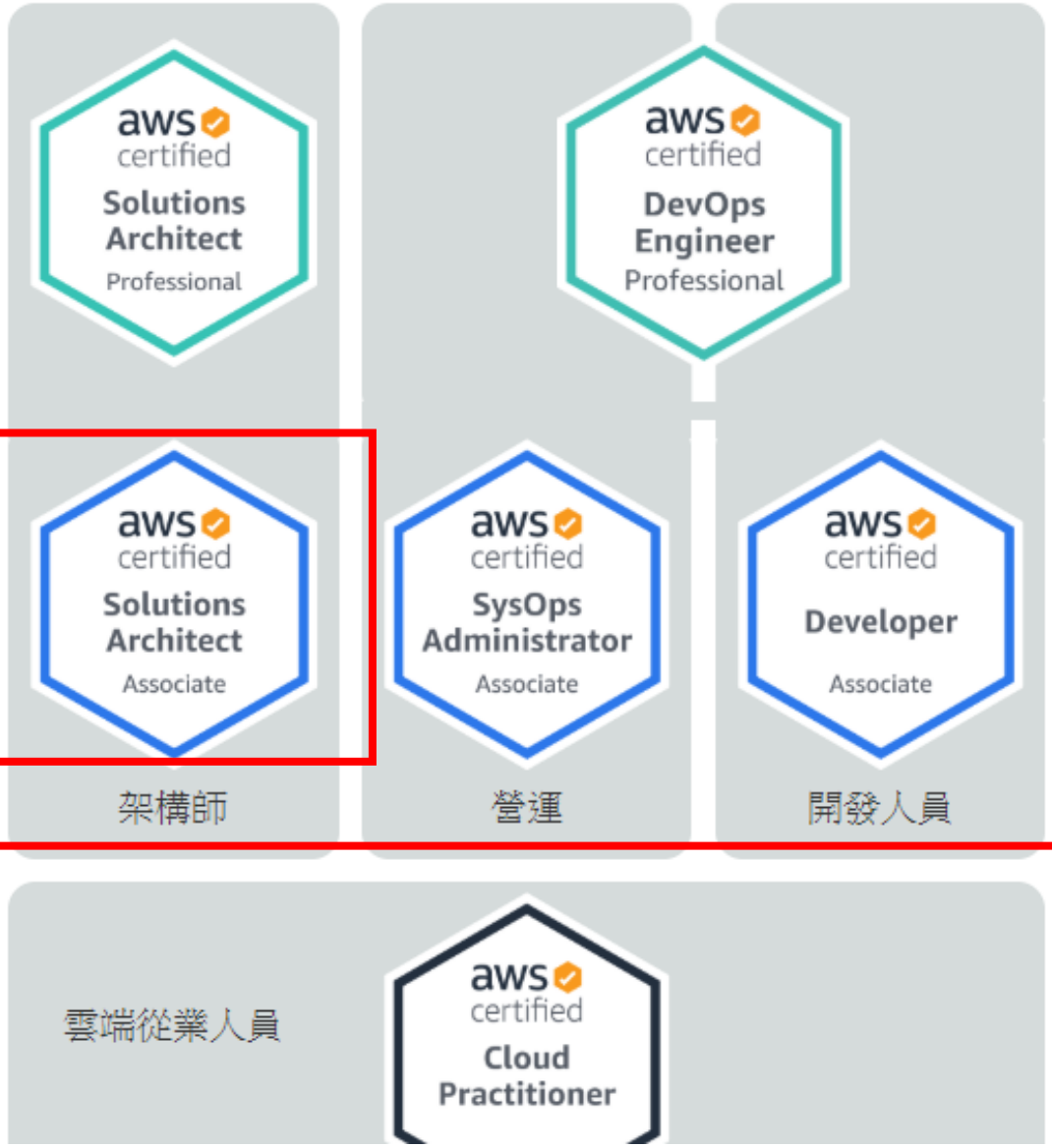
兩年使用 AWS 雲端設計、操作及疑難排解解決方案的廣泛經驗

助理級

一年使用 AWS 雲端解決問題和實作解決方案的經驗

基礎

六個月的基礎 AWS 雲端和產業知識



專家級

考試指南中指定的專業領域中的 AWS 雲端技術經驗

AWS Academy Course modules

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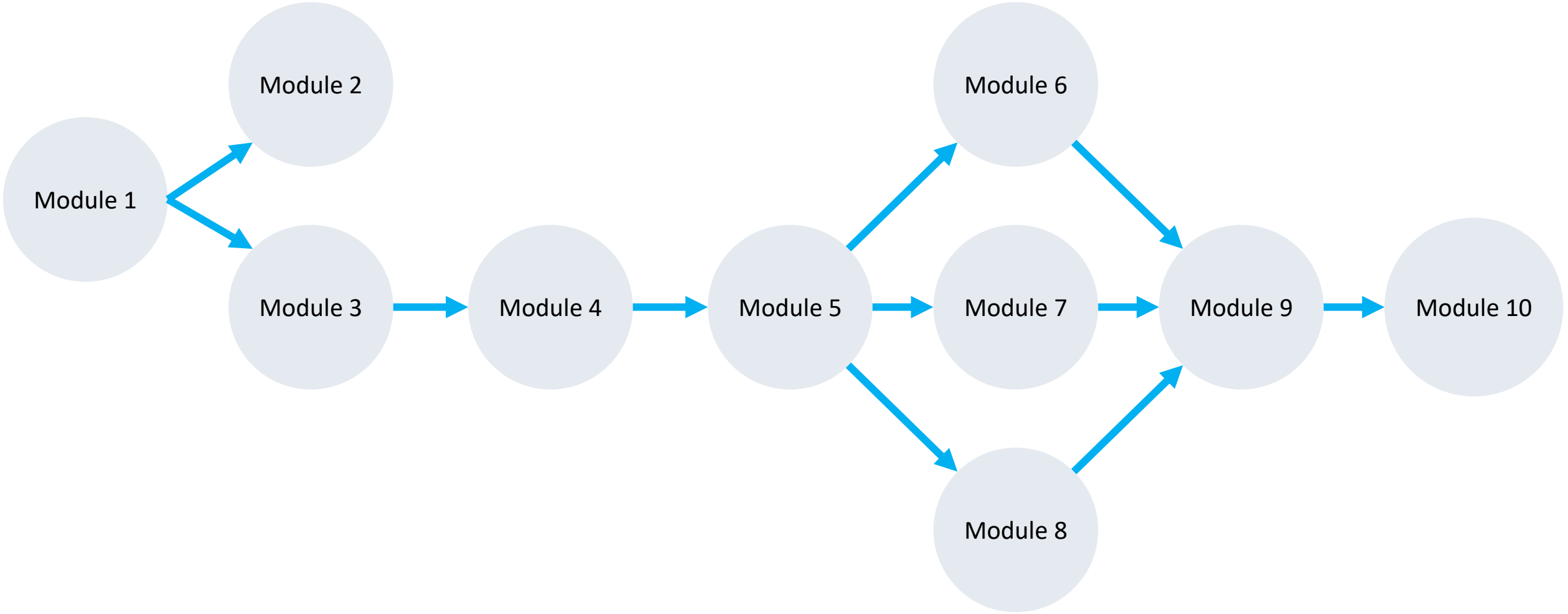
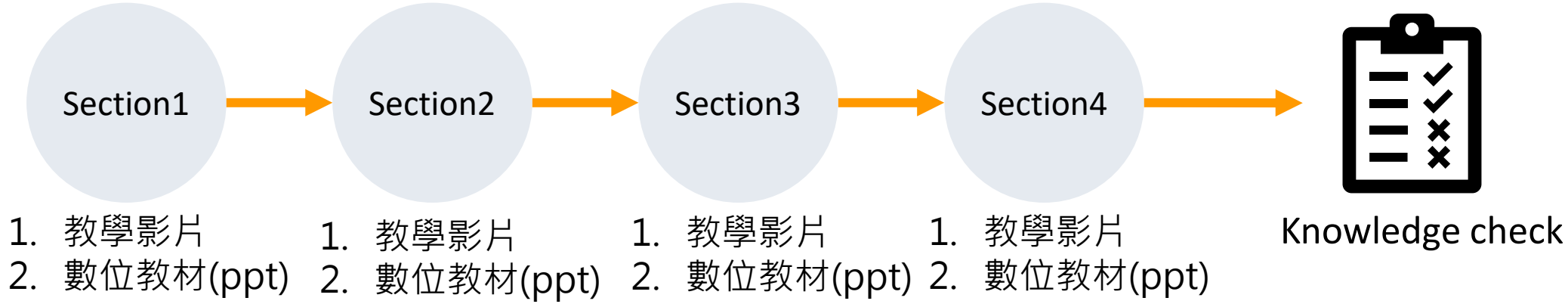
Module 1 - Cloud Concepts Overview
Module 2 - Cloud Economics and Billing
Module 3 - AWS Global Infrastructure Overview
Module 4 - AWS Cloud Security
Module 5 - Networking and Content Delivery
Module 6 - Compute
Module 7 - Storage
Module 8 - Databases
Module 9 - Cloud Architecture
Module 10 - Automatic Scaling and Monitoring

學習地圖(學習目標)


Module 1
Module 2
Module 3
Module 4
Module 5
Module 6
Module 7
Module 8
Module 9
Module 10

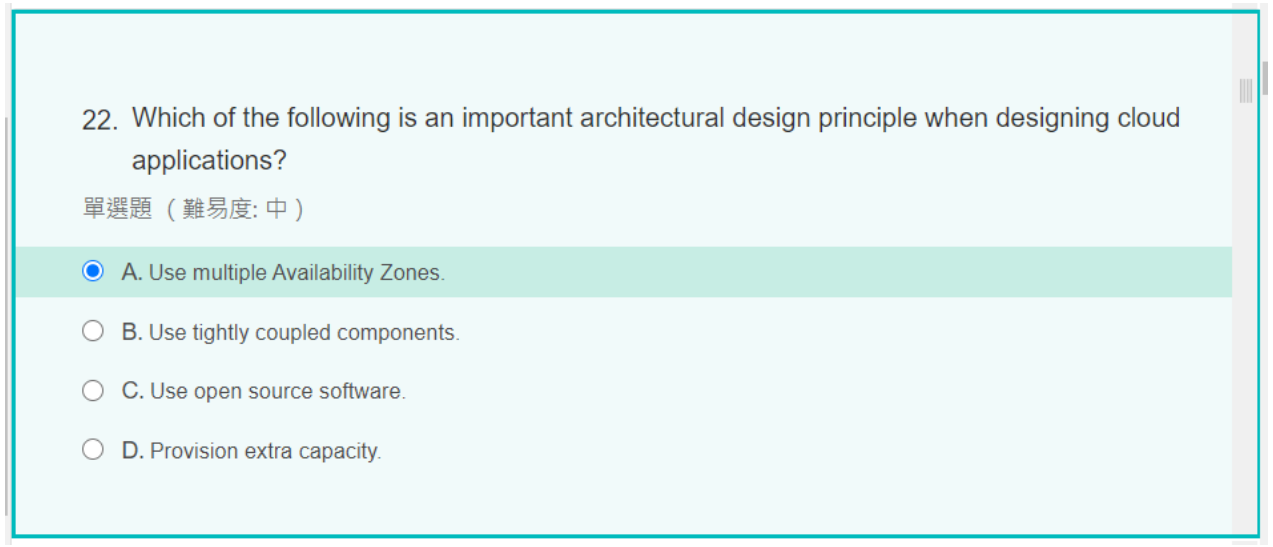
學習地圖(學習節點)

- Module 1 - Cloud Concepts Overview
  - Section1 - Introduction to cloud computing
  - Section2 - Advantages of cloud computing
  - Section3 - Introduction to Amazon Web Services (AWS)
  - Section4 - AWS Cloud Adoption Framework (AWS CAF)
- Knowledge check



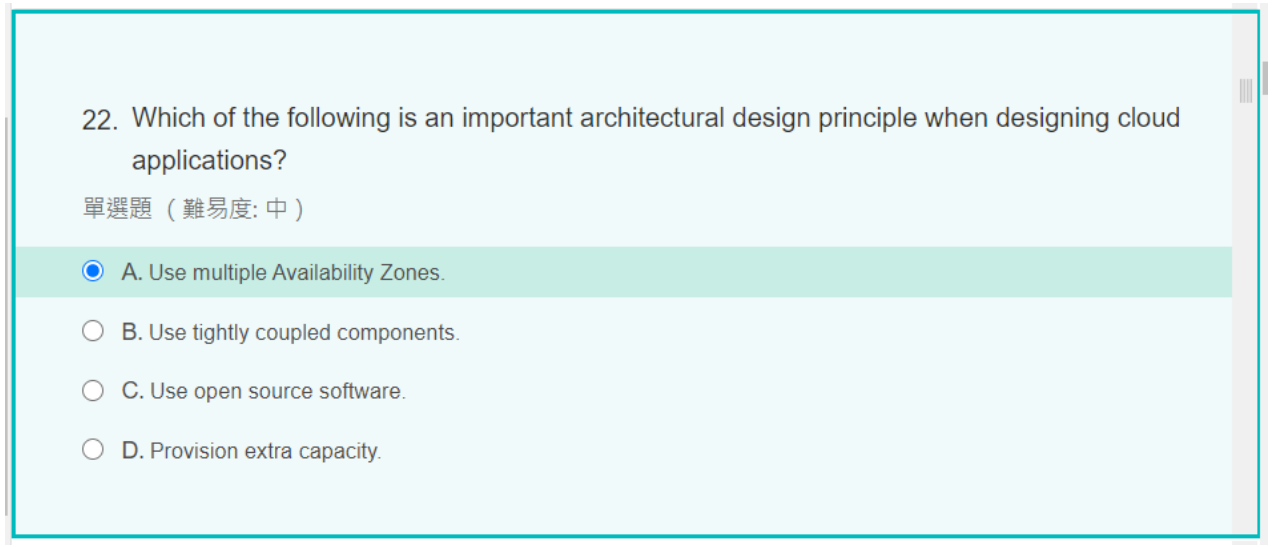
自我檢核 – Knowledge Check

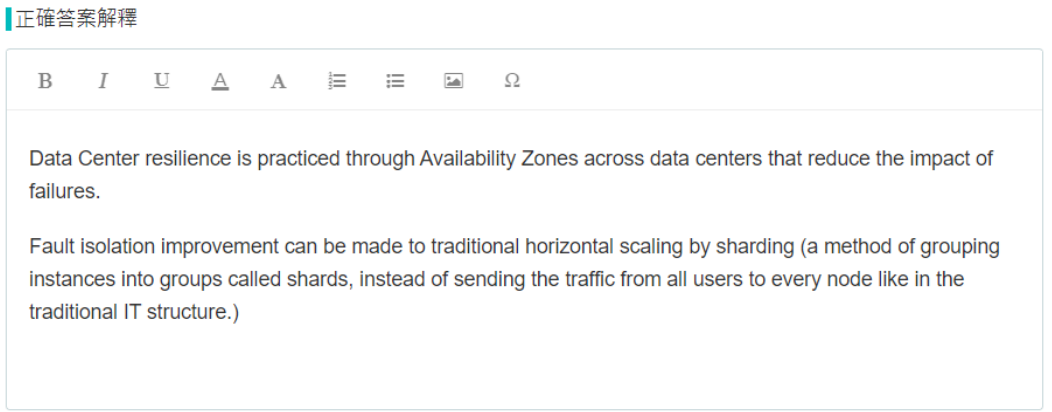
- 每個題目都需要有明確的解釋與說明



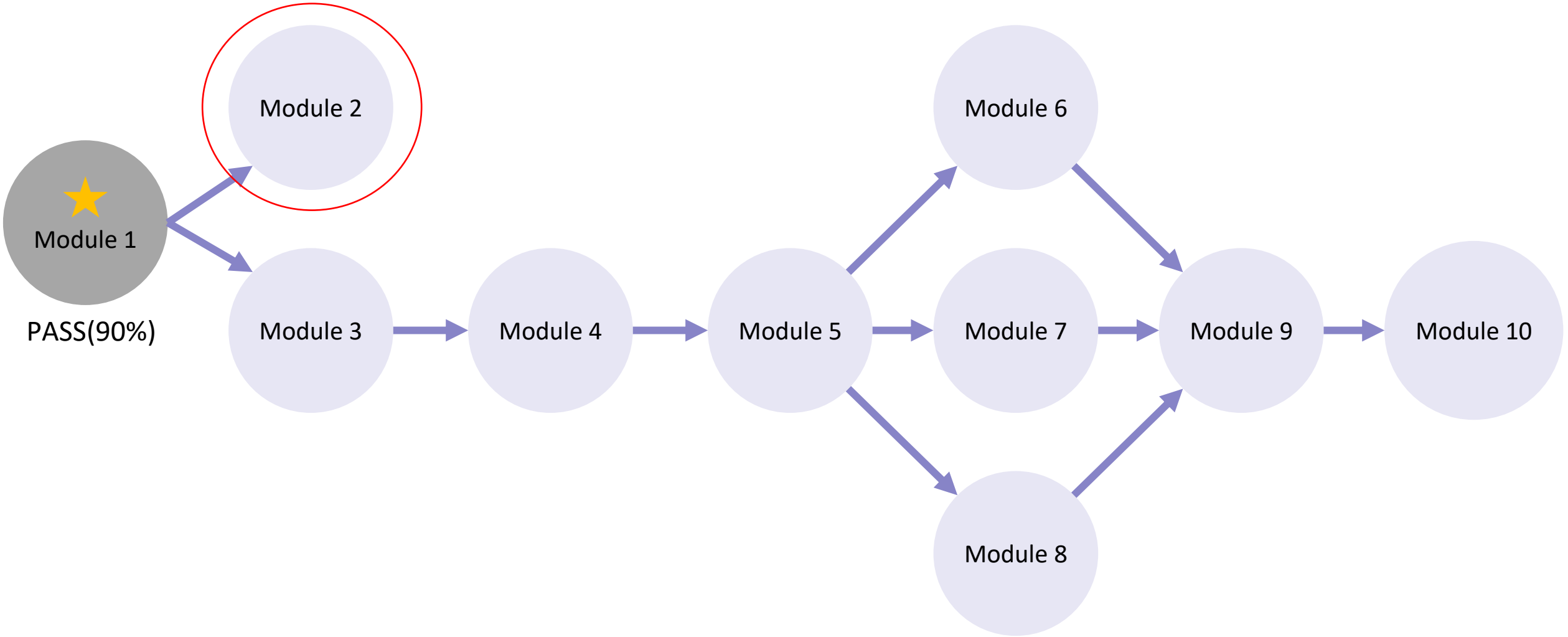
自我檢核 – Knowledge Check

- 每個題目都需要有明確的解釋與說明

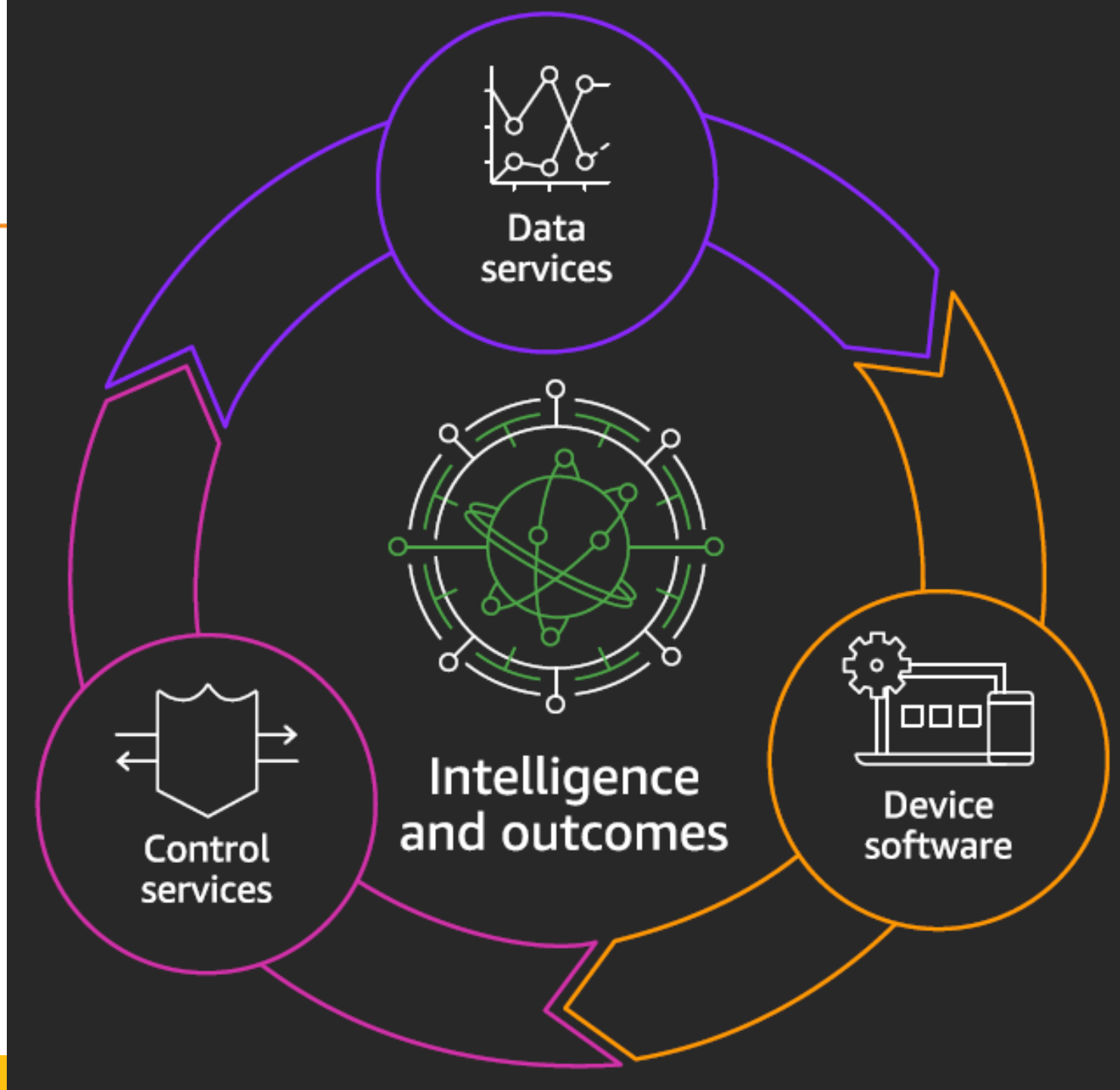




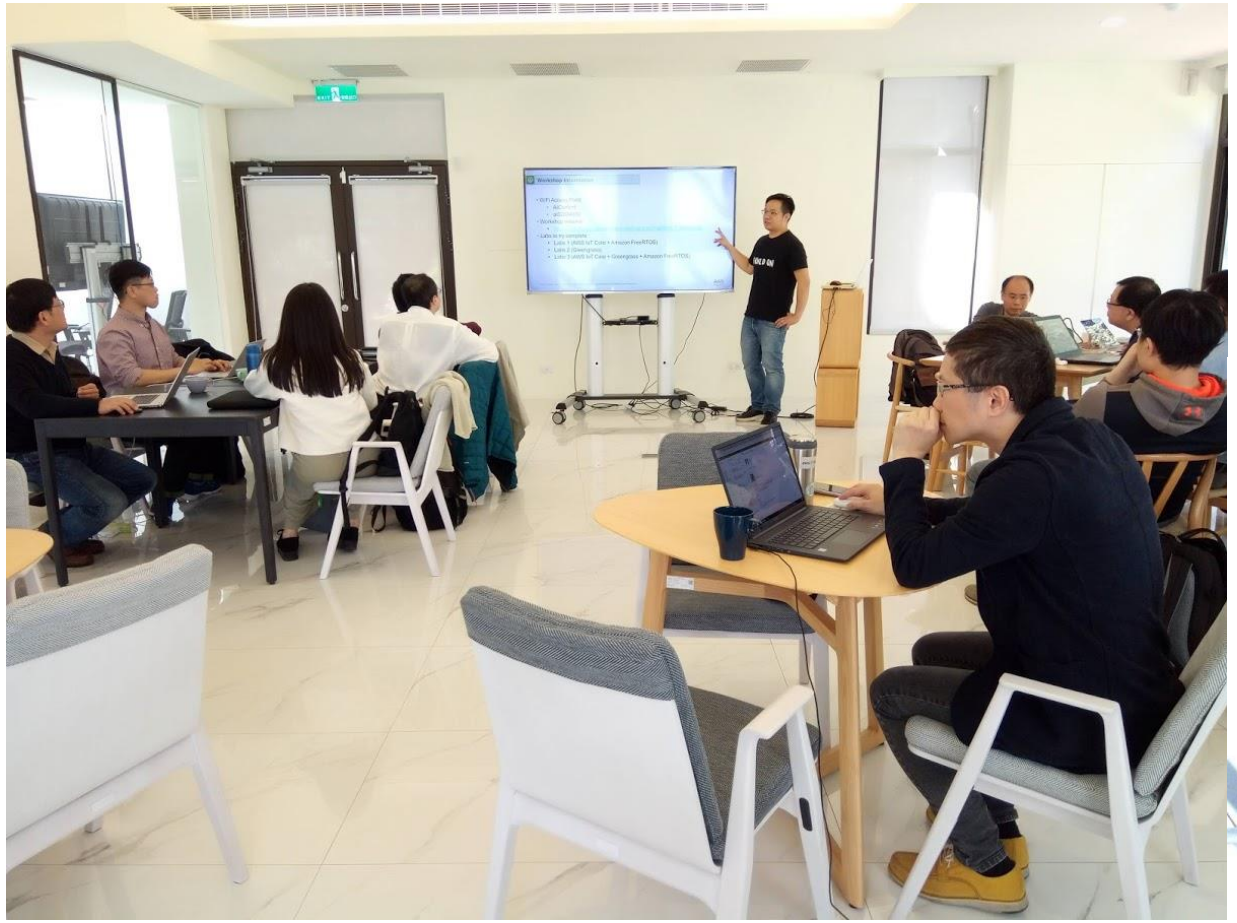
學習地圖(學習目標)


Module 2
Module 1
PASS(90%)
Module 3
Module 4
Module 5
Module 6
Module 7
Module 8
Module 9
Module 10

IoT物聯網技術與應用



https://www.slideshare.net/AmazonWebServices/leadership-session-aws-iot-iot218l-aws-reinvent-2018



AWS IoT Services

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Data Services

- AWS IoT Analytics
- AWS IoT SiteWise

Control Services

- AWS IoT Device Management
- AWS IoT Device Defender
- AWS IoT Core

Device Software

- AWS IoT Greengrass
- Amazon FreeRTOS

Course Website

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- iLearn + TronClass (app)
- AWS Educate & AWS console
- AWS Website
- Materials
  - Agus Kurniawan, Learning AWS IoT, Packt Publishing, Jan. 2018.
  - Udemy - Exploring AWS IoT
  - AWS Blog

Course modules

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Module 1 - Introduction to Cloud Computing

Module 2 - Getting Started with AWS IoT

Module 3 - Connecting IoT Devices to AWS IoT Platform

Module 4 - AWS IoT Shadows

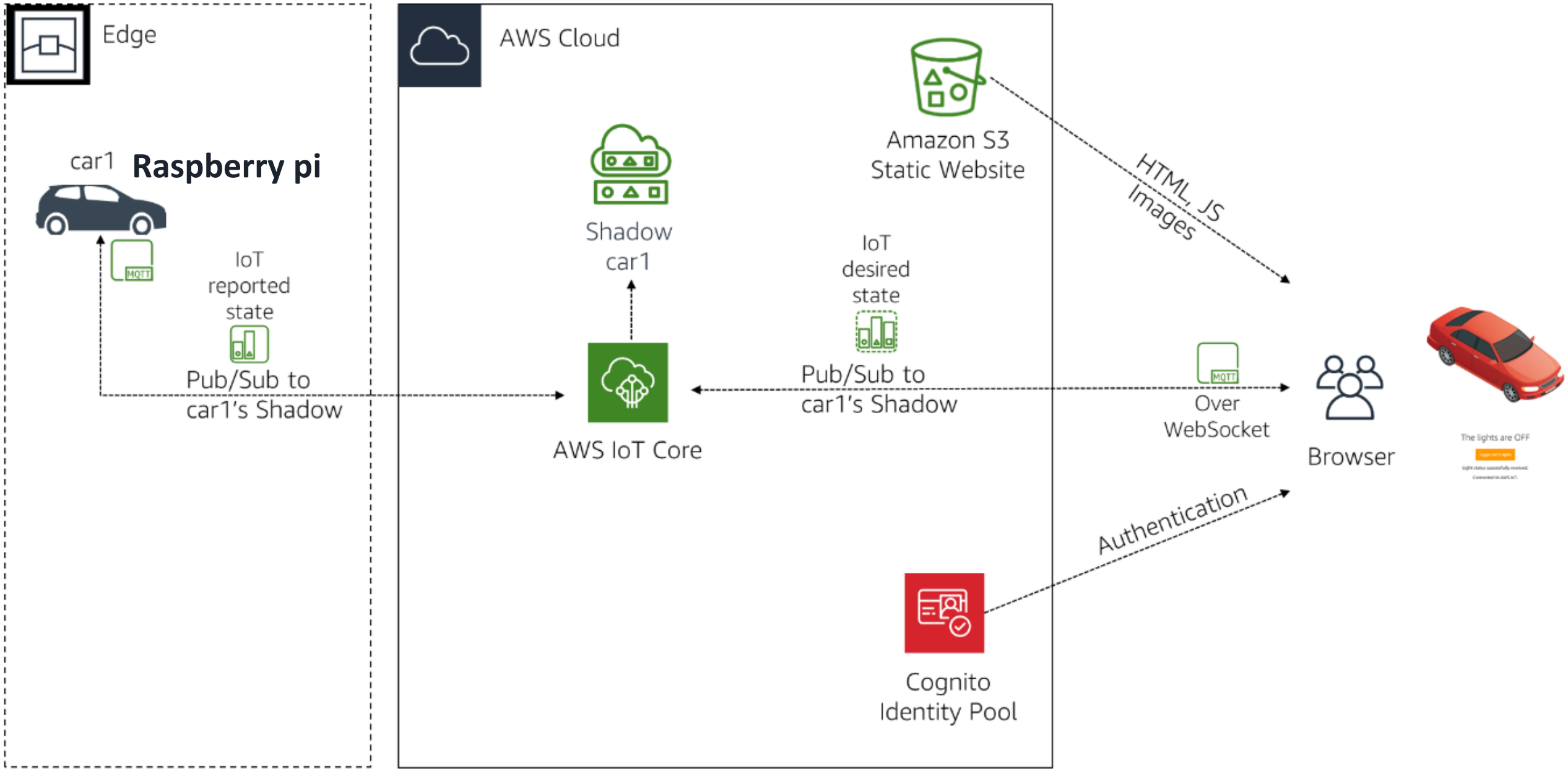
Module 5 - Mid Project

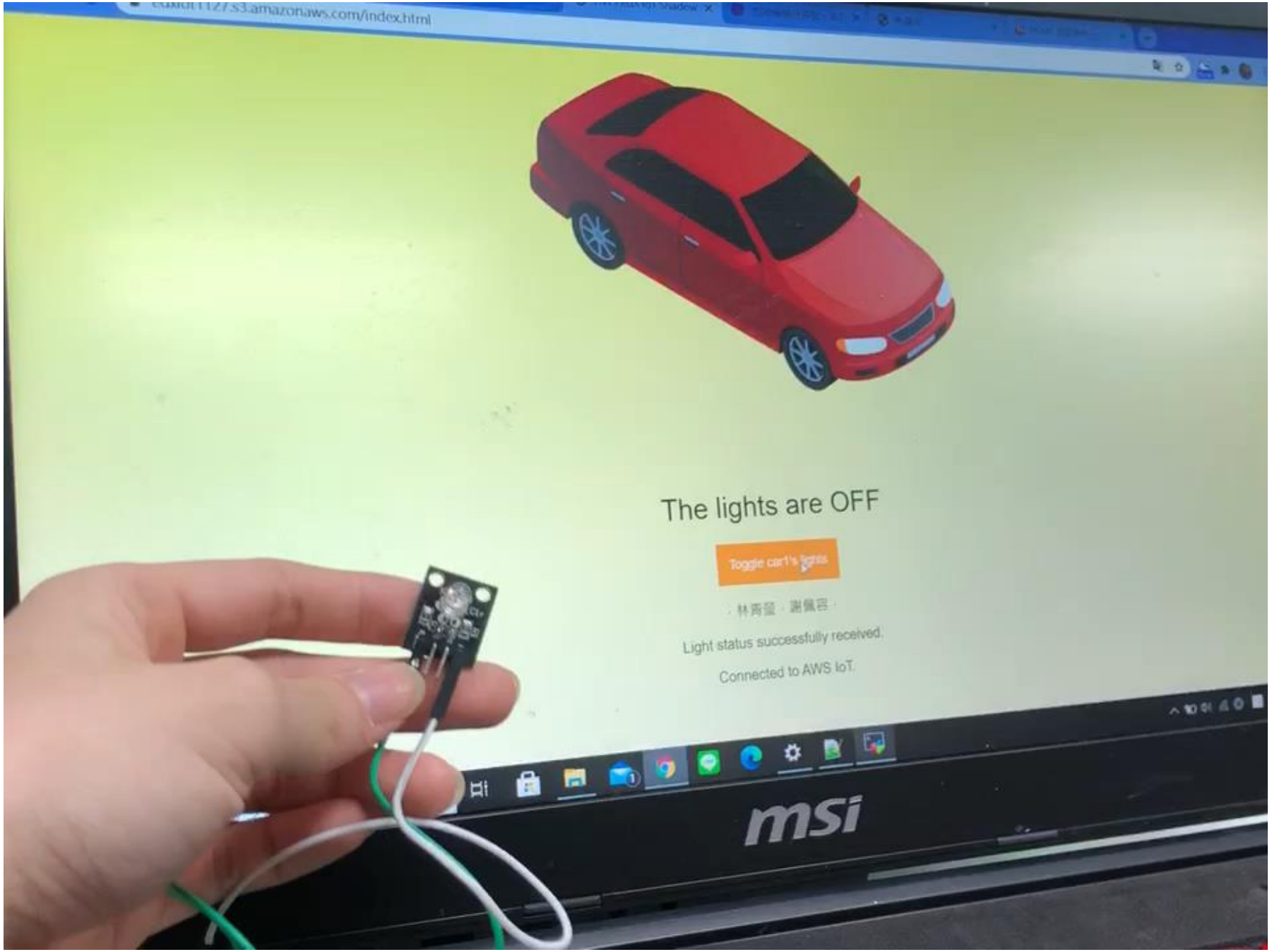
Module 6 - Creating a rule with a DynamoDB action

Module 7 - Build a Data Stream for IoT Data with Amazon Kinesis Analytic

Module 8 - AWS Greengrass & FreeRTOS

Module 9 - Final Project


Edge
AWS Cloud
car1
Raspberry pi
MQTT
IoT
reported
state
Pub/Sub to
car1's Shadow
Shadow
car1
AWS IoT Core
Amazon S3
Static Website
HTML, JS
Images
IoT
desired
state
Pub/Sub to
car1's Shadow
MQTT
Over
WebSocket
Browser
The lights are OFF
Authentication
Cognito
Identity Pool


The lights are OFF
Toggle car1's lights
Light status successfully received.
Connected to AWS IoT.
msi

激發學生創意

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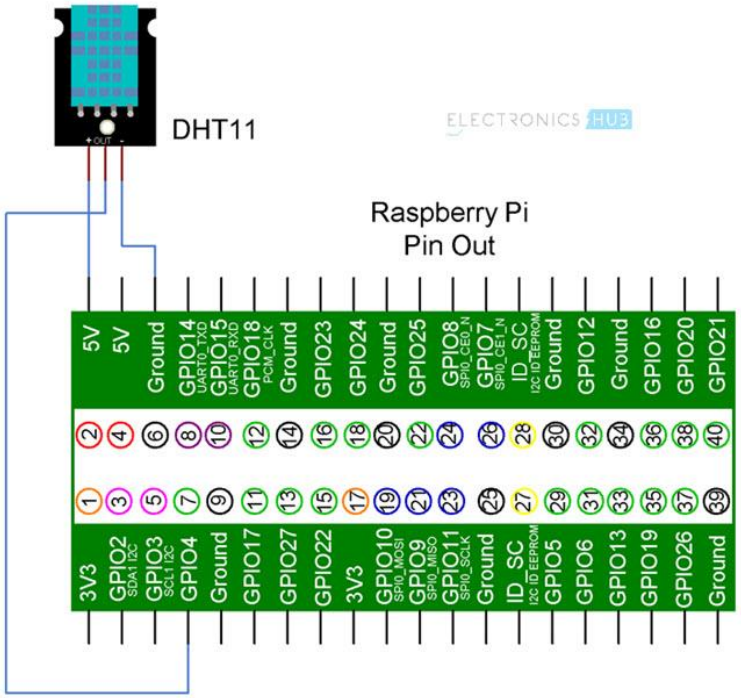
```
og("      ____\r\n" +
   ' __/     \\__\r\n' +
   '|          `-.///\r\n'
   "'-(_)---(_)--'\\\\\\");

ync(0); //set pin state to
og('My lights are off');
og("      ____\r\n" +
   ' __/     \\__\r\n' +
   '|          `-.\r\n' +
   "'-(_)---(_)--'");
```

```
("      ____\r\n" +
 ' __/ □ □\\__\r\n' +
 '|          `-.///\r\n'
 "'--○-----○---'\\\\\\")

nc(0); //set pin state to
('My lights are off');
("      ____\r\n" +
 ' __/ □ □\\__\r\n' +
 '|          `-.\r\n' +
 "'--○-----○---'");
```

Scenario



Raspberry Pi + Sensor

MQTT

AWS IoT

DynamoDB

DHT Close

Overview | Items | Metrics | Alarms | Capacity | Indexes | Global Tables | Backups | Contributor Insights | Triggers | More

Create item | Actions

Scan: [Table] DHT: Date, time — Viewing 1 to 26 items

Scan | [Table] DHT: Date, time

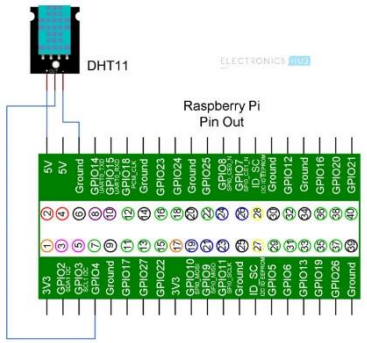
Add filter

Start search

Date	time	Payload
2020-05-22	15:25:43	{ "Date" : { "S" : "2020-05-22" }, "humidity" : { "S" : "53.8" }, "temperature" : {…
2020-05-22	15:25:53	{ "Date" : { "S" : "2020-05-22" }, "humidity" : { "S" : "53.7" }, "temperature" : {…
2020-05-22	15:42:40	{ "Date" : { "S" : "2020-05-22" }, "humidity" : { "S" : "53.7" }, "temperature" : {…
2020-05-22	15:42:50	{ "Date" : { "S" : "2020-05-22" }, "humidity" : { "S" : "54.8" }, "temperature" : {…
2020-05-22	15:43:00	{ "Date" : { "S" : "2020-05-22" }, "humidity" : { "S" : "54.8" }, "temperature" : {…
2020-05-22	15:43:11	{ "Date" : { "S" : "2020-05-22" }, "humidity" : { "S" : "54.6" }, "temperature" : {…

LAB - IoT Shadow + DynamoDB

- Led亮時才傳送溫溼度資料到DynamoDB



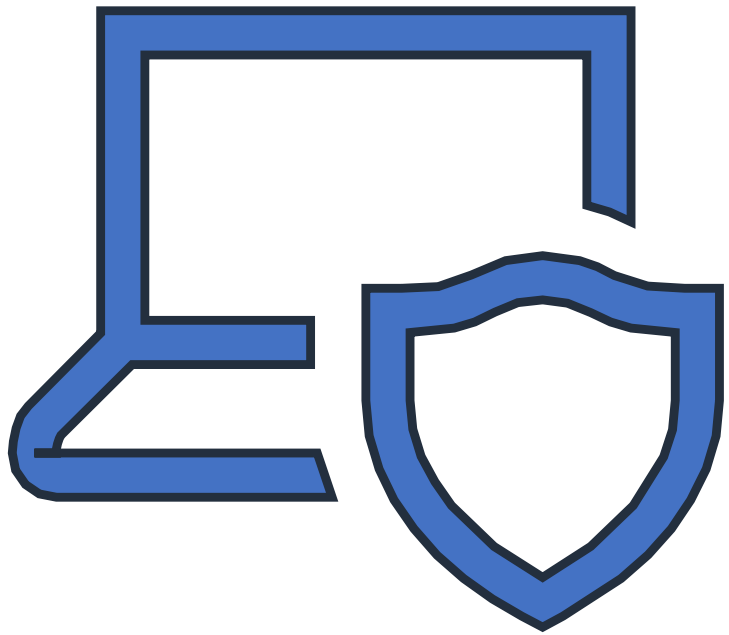
MQTT

Raspberry Pi + Sensor

AWS IoT

DynamoDB

智慧科技概論與應用



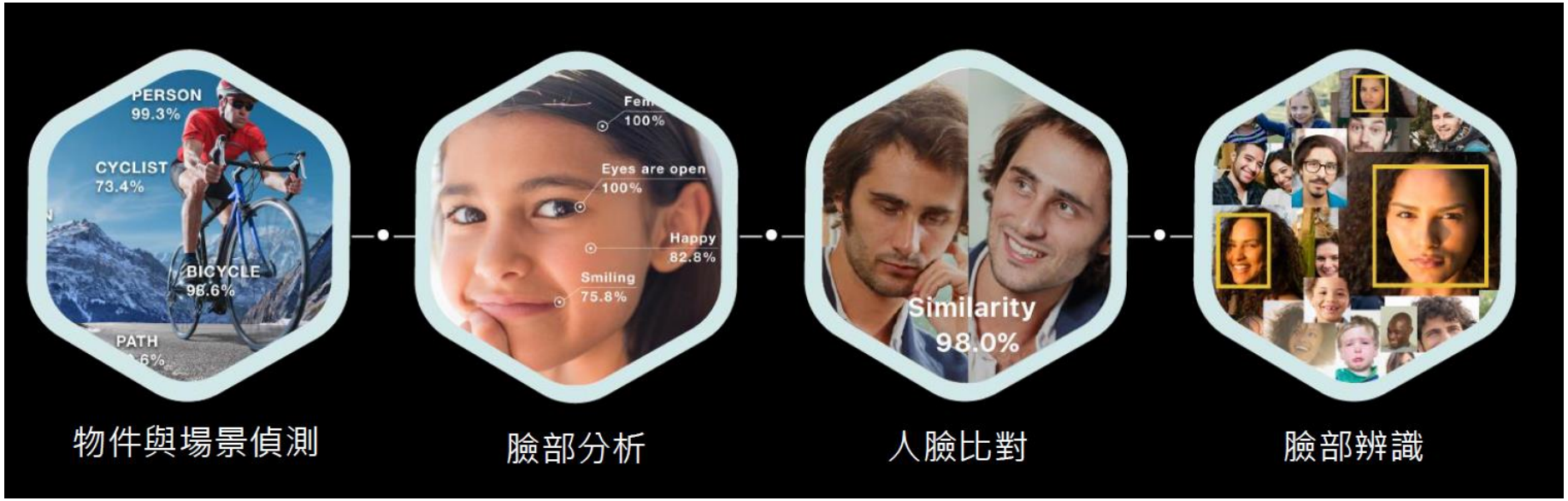
Course modules

Module 1 - AWS雲端概念與服務介紹
Module 2 - Amazon Rekognition 服務實際應用案例與實作
Module 3 - Amazon Personalizing應用實作
Module 4 -智慧科技服務場景的應用
Module 5 -智慧科技服務創新缺口分析與機會發掘
Module 6 -智慧科技服務設計 (I)
Module 7 -期中報告

Course modules

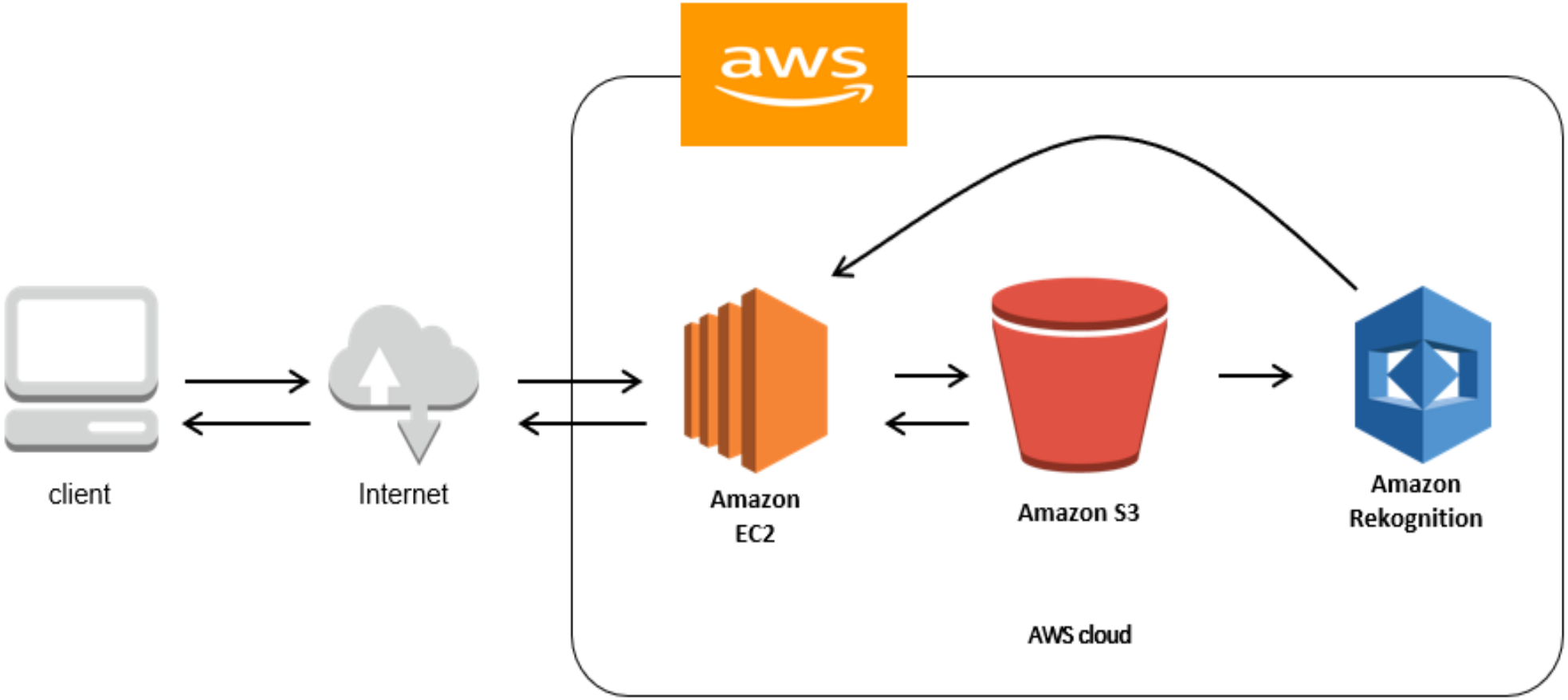
Module 8 - Amazon Lex 服務實際應用案例
Module 9 - Amazon 其他服務與應用
Module 10 -智慧科技服務設計 (II)
Module 11 -智慧科技商業模式設計
Module 12 -專案實作討論
Module 13 -專案實作討論
Module 14 -期末報告

Amazon Rekognition



https://www.slideshare.net/AmazonWebServices/amazon-rekognition

Build a Simple AWS Rekognition Application



Upload Photo

Photo

選擇檔案 未選擇任何檔案

Upload

Uploaded!

Human: 99.48539733886719% Person: 99.48539733886719% Indoors: 97.74449157714844% Interior Design: 97.74449157714844% Building: 95.85252380371094% Architecture: 95.85252380371094% Face: 88.42221069335938% Window: 85.63800811767578% Accessory: 85.1557388305664% Accessories: 85.1557388305664% Glasses: 85.1557388305664% Crowd: 77.57759857177734% Speech: 77.57759857177734% Audience: 77.57759857177734% Lecture: 77.57759857177734% Skylight: 77.11930847167969% Head: 69.13758850097656% Screen: 68.77005767822266% Electronics: 68.77005767822266% Room: 63.981407165527344% White Board: 61.630279541015625%

Amazon Rekognition API

powered by aws educate

```python
import time
import boto3
collectionId='mycollection' #collection name

ACCESS_KEY = 'ASIA3XDFHD356MXCVJ4N'
SECRET_KEY = 'pHYDZEJTXh/qS02CD/ZLrLQkqO+OVgGfvt7ivUB2'
SESSION_TOKEN = 'FwoGZXIvYXdzEAQaDNrGhKA0LtqC8IFWyiKyAdp1A61qf4mGj+nqY2cVYs9W0ubNp9xmc0ggbBlphgAzjWrcRg/Q0nkLMH8kc

rek_client=boto3.client('rekognition', region_name='us-east-1',
                       aws_access_key_id=ACCESS_KEY,
                       aws_secret_access_key=SECRET_KEY,
                       aws_session_token=SESSION_TOKEN)
while True:

        #camera warm-up time
        time.sleep(2)

        milli = int(round(time.time() * 1000))
        image ='123.png'
        print('captured '+image)
        with open(image, 'rb') as image:
            try: #match the captured imges against the indexed faces
                match_response = rek_client.search_faces_by_image(CollectionId=collectionId, Image={'Bytes': image
                if match_response['FaceMatches']:
                    print('Hello,',match_response['FaceMatches'][0]['Face']['ExternalImageId'])
                    print('Similarity: ',match_response['FaceMatches'][0]['Similarity'])
                    print('Confidence: ',match_response['FaceMatches'][0]['Face']['Confidence'])
                    break
                else:
                    print('No faces matched')
                    break
            except:
                print('No face detected')
                break
```

No documentation available

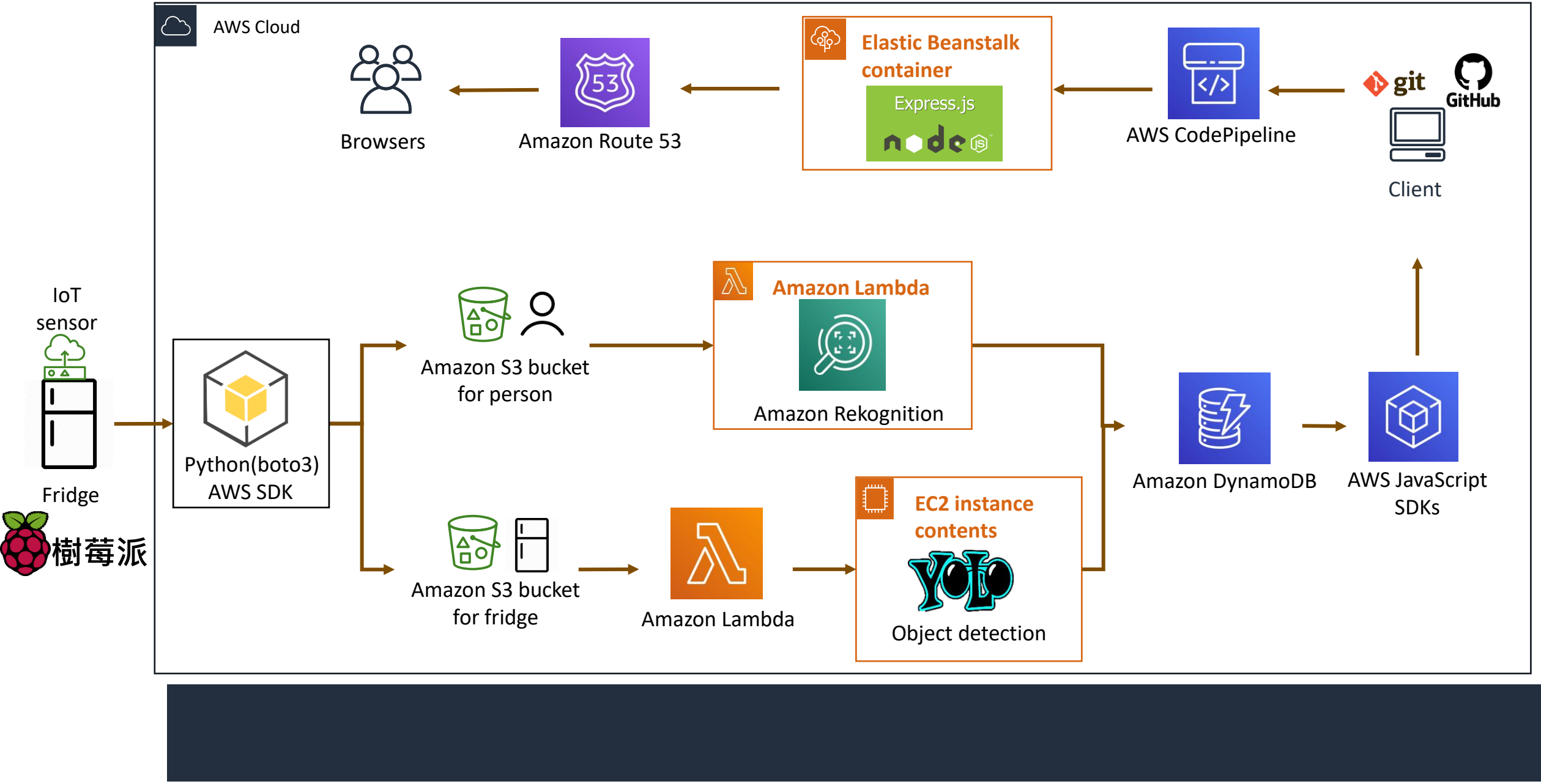
Variable explorer | Help | Plots | Files

Console 1/A

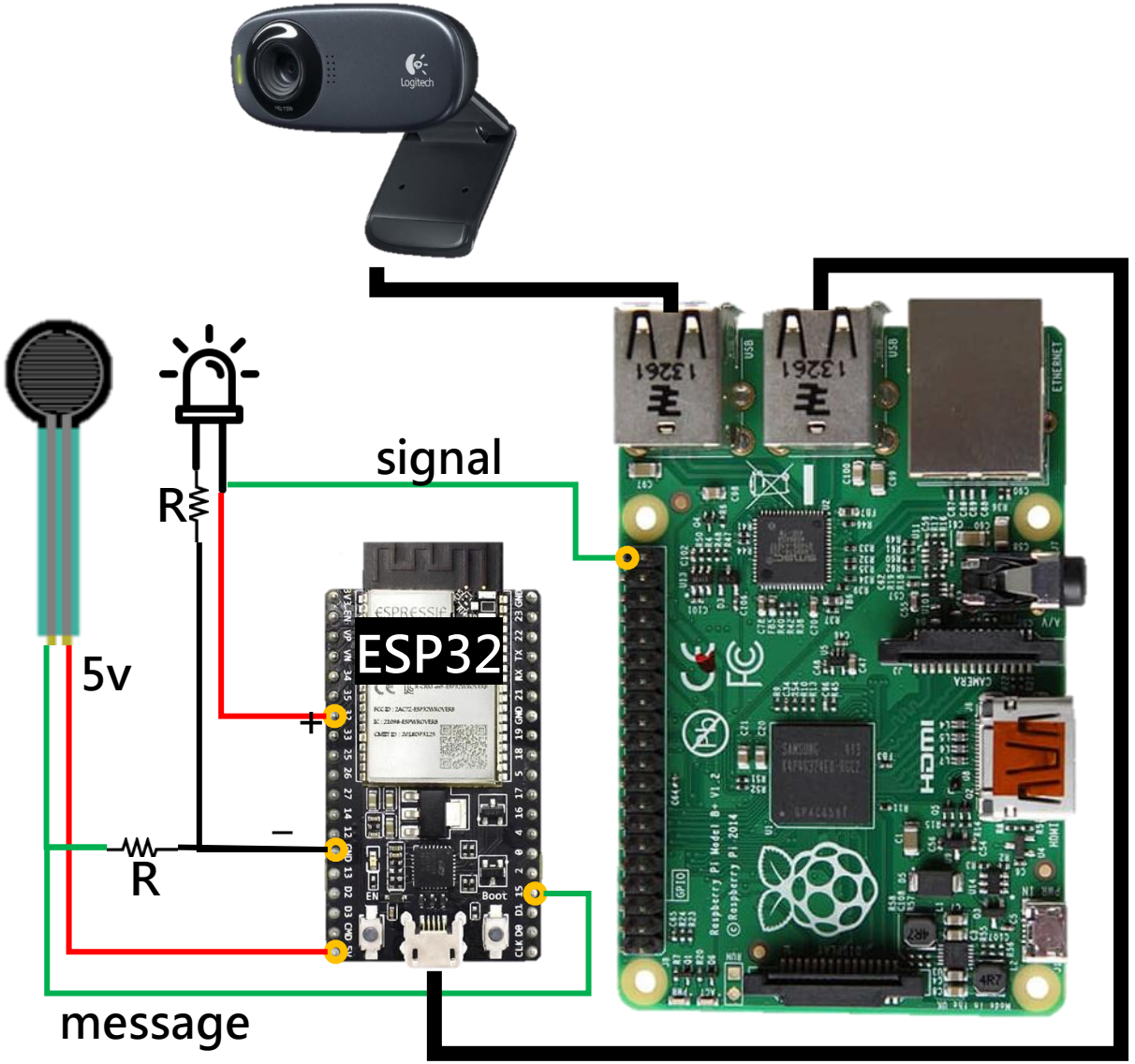
```
In [7]: runfile('C:/Users/ENVY/OneDrive - 東海大學/東海大學/教學/東海課程/109上課程/智慧科技概論/Amazon Rekognition/match_faces.py', wdir='C:/Users/ENVY/OneDrive - 東海大學/東海大學/教學/東海課程/109上課程/智慧科技概論/Amazon Rekognition')
captured 123.png
Hello, KAI-CHIH
Similarity:  99.97135162353516
Confidence:  99.99840545654297

In [8]:
```


智 慧 冰 箱


AWS Cloud
Browsers
Amazon Route 53
Elastic Beanstalk container
Express.js
node
AWS CodePipeline
git
GitHub
Client
IoT sensor
Fridge
樹莓派
Python(boto3) AWS SDK
Amazon S3 bucket for person
Amazon Lambda
Amazon Rekognition
Amazon S3 bucket for fridge
Amazon Lambda
EC2 instance contents
YOLO
Object detection
Amazon DynamoDB
AWS JavaScript SDKs

IOT 接線圖

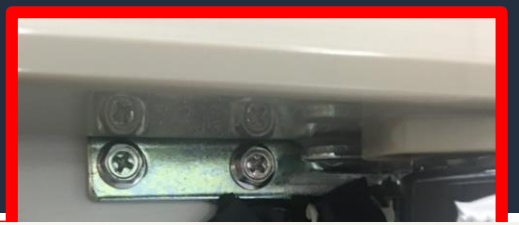


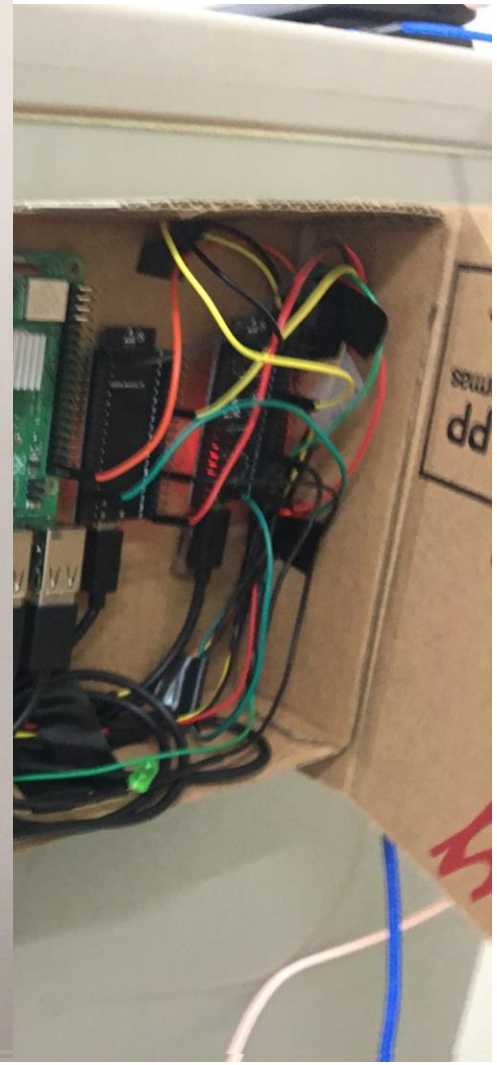
壓力感測器：感測冰箱門開關

ESP32：接收壓力感測器資訊

樹莓派：利用接腳接收ESP32的資訊來控制Webcam，並上傳AWS S3

IOT 設計





DynamoDB

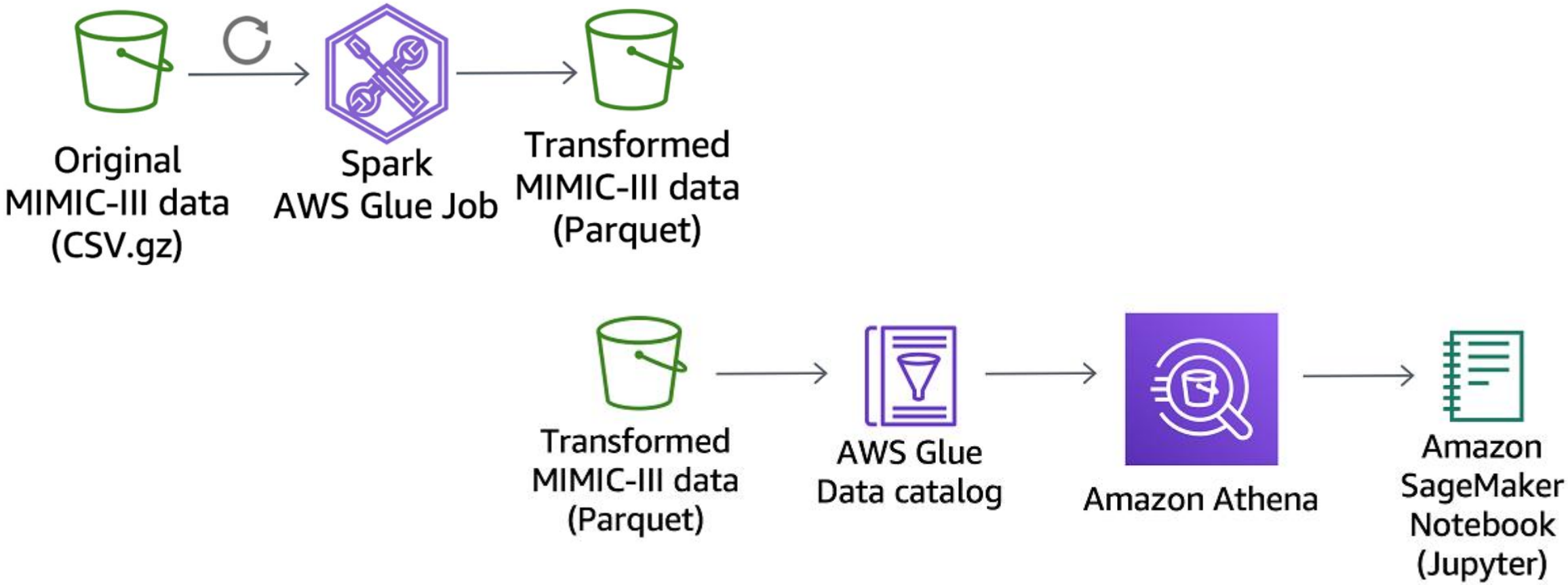
Person Table

人員ID	時間	URL
Emma	2020-05-20T18:45:06Z	
stranger-520c5e18904940429ebaa1636290be5a	2020-05-20T18:47:16Z	https://fridge-person-video.s3.amazonaws.com/06-03_2045.mp4

Object Table

物品	放進之人員	放進時間	位置(座標)	拿出時間	拿出之人員
Bottle	Emma	2020-05-20T18:45:06Z	(743, 338, 970, 536)	2020-05-20T18:47:16Z	stranger-520c5e18904940429ebaa1636290be5a
cupcake	Emma	2020-05-20T18:45:19Z	(168, 387, 590, 724)		

Transforming MIMIC-III data



Challenge

- 老師也要跨領域
- 學生來自不同科系
- 如何引起學生學習動機？
- 如何幫助學生準備證照考試？
- AWS介面改版

正在編輯範本： THU EKSWorkshop

```
7
8  ![](https://i.imgur.com/QeCQT6u.jpg)
9
10
11 日期：December 07, 2020
12 時間: 8:30am-16:30pm
13 地點：東海大學管理學院M014
14
15
16 現場資訊
17 ---
18 Telegram現場群:
19 https://t.me/joinchat/N83WXhn8i_V9_uUUNaO8ZQ
20 ![](https://i.imgur.com/vMXtYkj.png)
21
22 ---
23 Agenda
24 ---
25 **Event Warm Up Video**
26 <iframe width="560" height="315"
   src="https://www.youtube.com/embed/y3ob_lWTVuo"
   frameborder="0" allow="accelerometer; autoplay; clipboard-
```

aws educate

/

		Instructor
8:30-9:00	報到	
9:00-10:30	容器與 Kubernetes 基礎介紹	Lawrence Chen
10:30-12:00	AWS 環境測試與建立	Lawrence Chen
	午餐時間	
13:00-16:00	Hands on Lab *Lab 1 : 使用 Cloud9 和 kubectl 指令安裝套件 *Lab2 :Deploy K8s dashboard on your Cloud9 *Lab3: Deploy your microservice	Lawrence Chen

日期：December 07, 2020
時間: 8:30am-16:30pm
地點：東海大學管理學院M014

推薦訂閱

Lawrence Chen

https://www.youtube.com/c/LCAWS/videos

Thank you