國立清華大學
National Tsing Hua University

INNOVATION ENGINEERING LAB

IEEM535300
智慧化企業整合

Robotic Process Automation

助教 馮品叡

國立清華大學 National Tsing Hua University

INNOVATION ENGINEERING LAB

OUTLINE

- Introduction RPA & UiPath
- Install UiPath & 介面介紹
- Activities & 功能
- 實作練習&Homework
- Reference

UiPath

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INTRODUCTION RPA & UIPATH

Introduction RPA(1/2)

什麼流程適合自動化？

高度手動與
重複性的流程

有明確規則
的流程

低例外率
的流程

具標準電子化輸
入類型的流程

高交易量
的流程

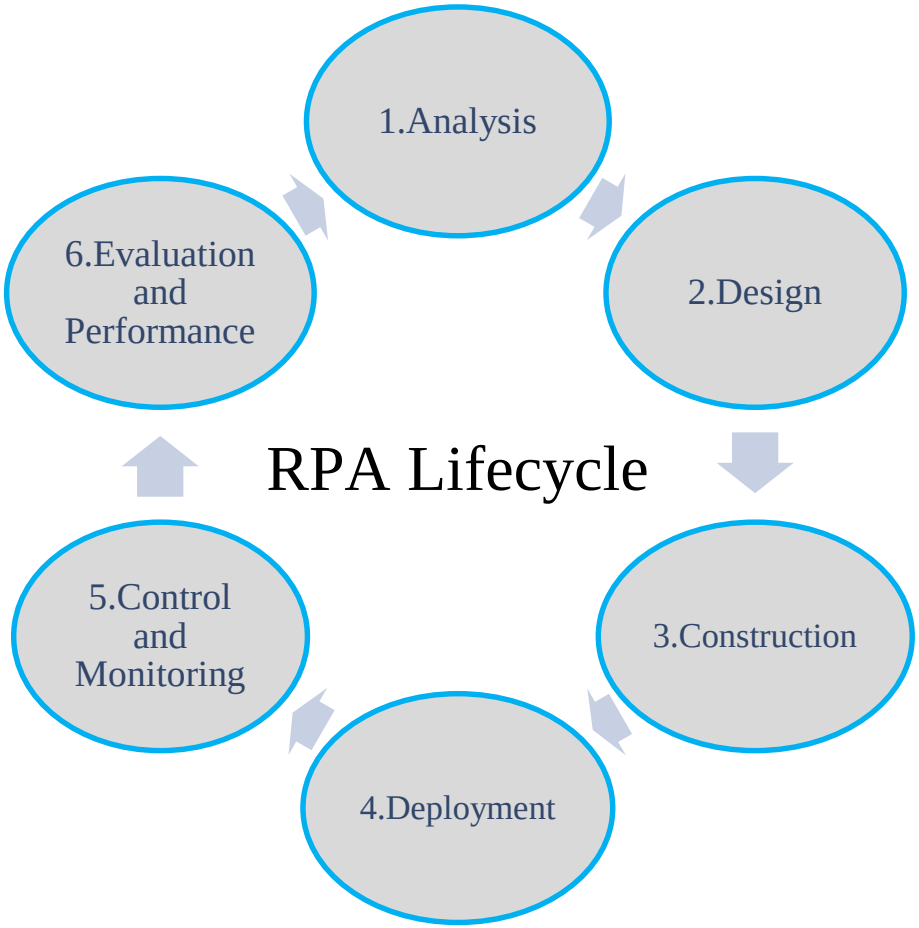
成熟穩定
的流程

耗費大量人力
的流程

需多系統間不斷
切換操作的流程

引用文獻[3]

Introduction RPA(2/2)



Step1 考慮並分析流程可行性及特性

Step2 詳細說明RPA流程中必須執行的操作，數據流，活動等。

Step3 建構流程構成要素

Step4 給robot一個環境執行工作

Step5 控制和監視每個機器人的性能。

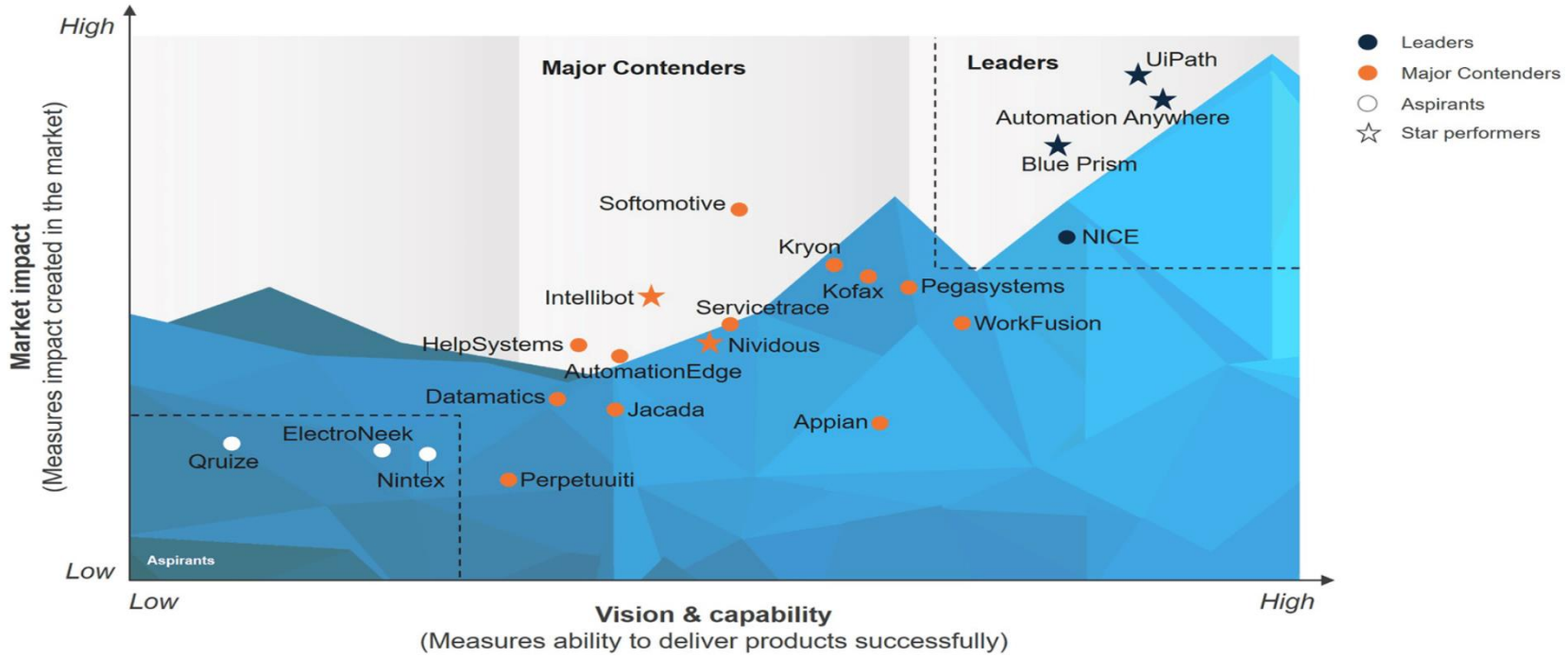
Step6 評估機器人的表現

Introduction UiPath(1/3)

uipath.com

Everest Group PEAK MATRIX

Everest Group Robotic Process Automation (RPA) Products PEAK Matrix® Assessment 2020[1]



1 Analysis for Softomotive is based on capabilities before its acquisition by Microsoft

*This assessment has been licensed for exclusive use and distribution by **UiPath***

引用文獻[1]

Introduction UiPath(2/3)

RPA操作採用 UiPath 因素:

- UiPath 提供免費試用版本供初學者練習
- Blueprism 並無試用版本
- AUTOMATION ANYWHERE 試用版有限制

Features	UiPath	Blue Prism	Automation Anywhere
How will I practice?	Has a Community Edition/ Free Edition Available	No trial version available, have to purchase this tool to learn	Trial Version available, but expires after 30 days.
Learning Curve	Has a user friendly visual designer, hence easy to learn and implement	Has a visual designer, easier than Automation Anywhere	Developer Friendly – Requires Higher programming skills
Google Trends Popularity	Most Popular tool	More Popular than Automation Anywhere	Least Popular of the three

Introduction UiPath(3/3)

Uipath has three key parts to its RPA platform:

1) **Uipath Studio** – a flowchart-based visual process modelling tool
2) UiPath Orchestrator – a web-based management console, which helps the admin to manage the robots, offering though a clear image of what is running and what is each robots' status
3) UiPath Robot – robots designed in UiPath Studio, which run and are being managed through UiPath Orchestrator

INSTALL UIPATH & 介面介紹

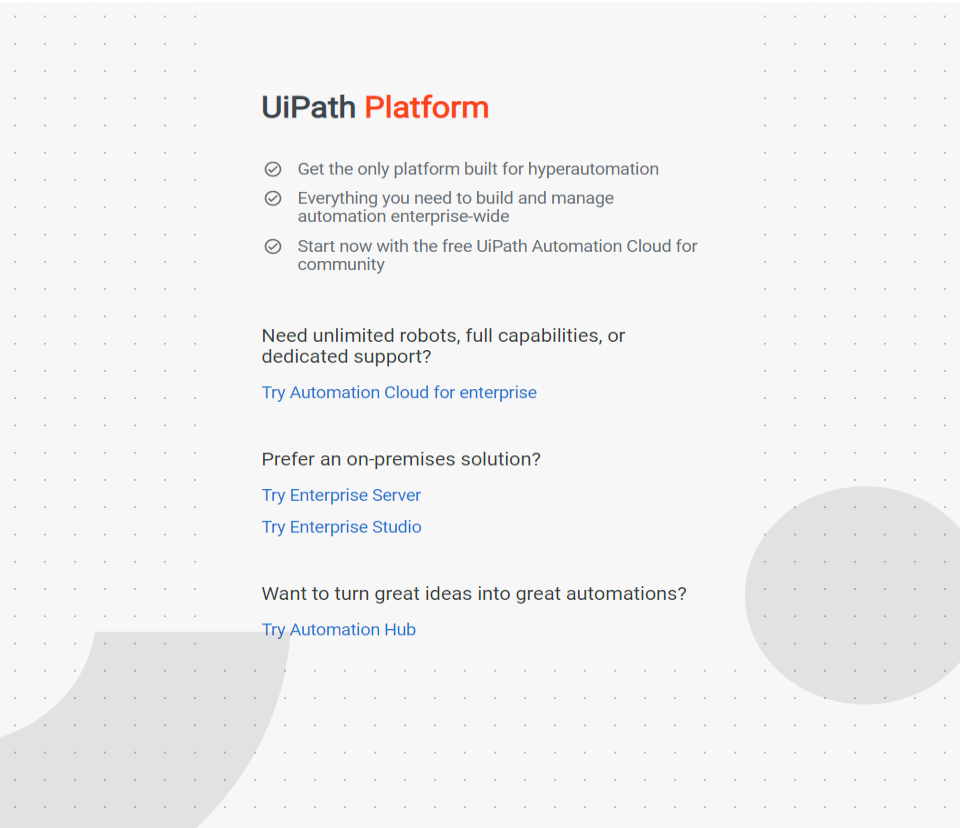
Install UiPath(1/3)

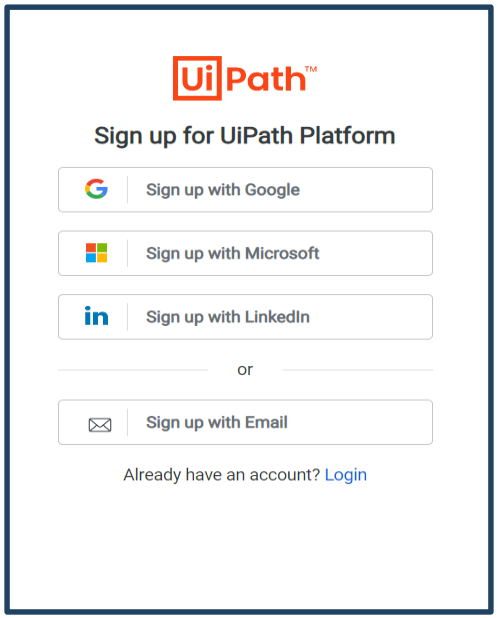
https://www.uipath.com/

引用文獻[1]

Install UiPath(2/3)

選擇一個方式登入註冊

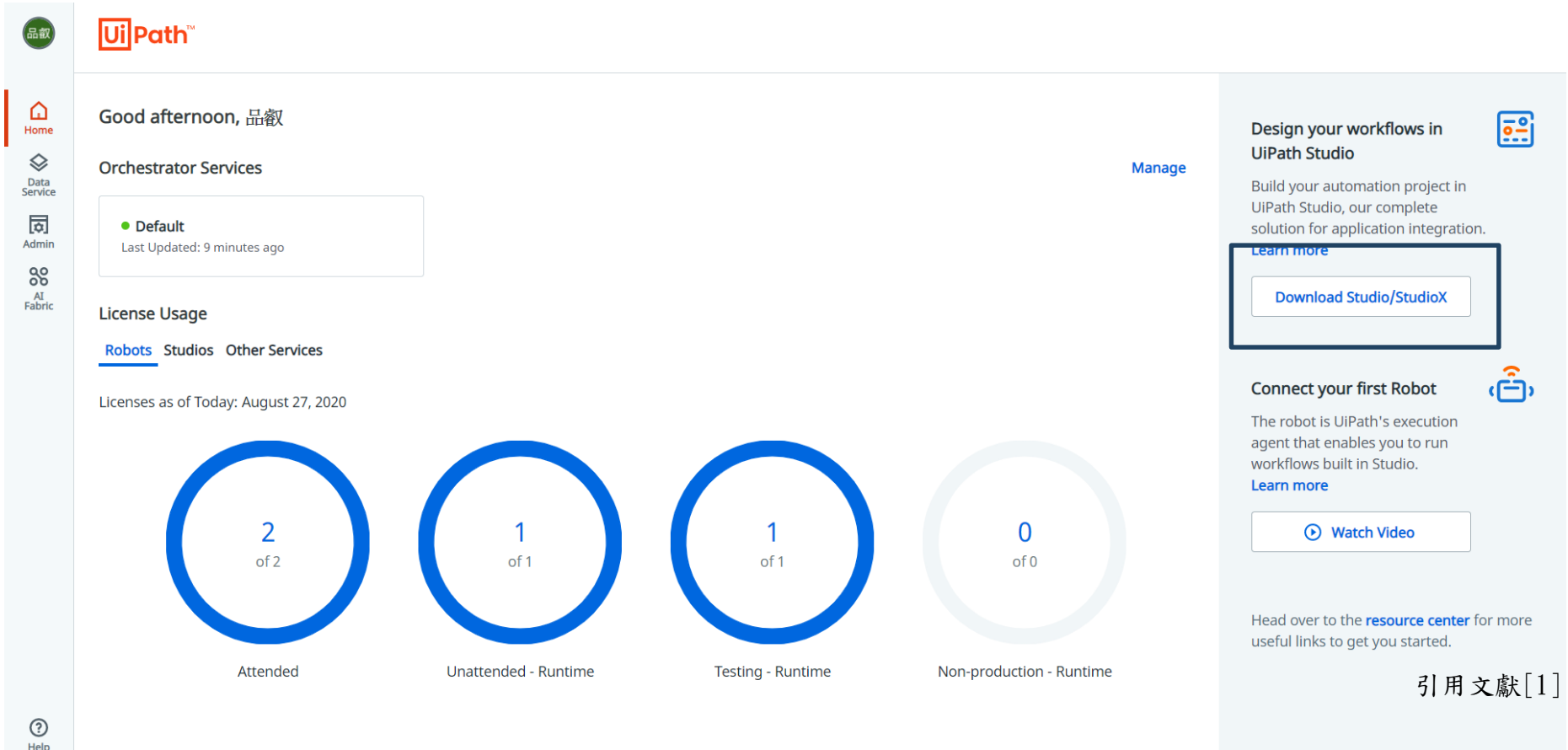




引用文獻[1]

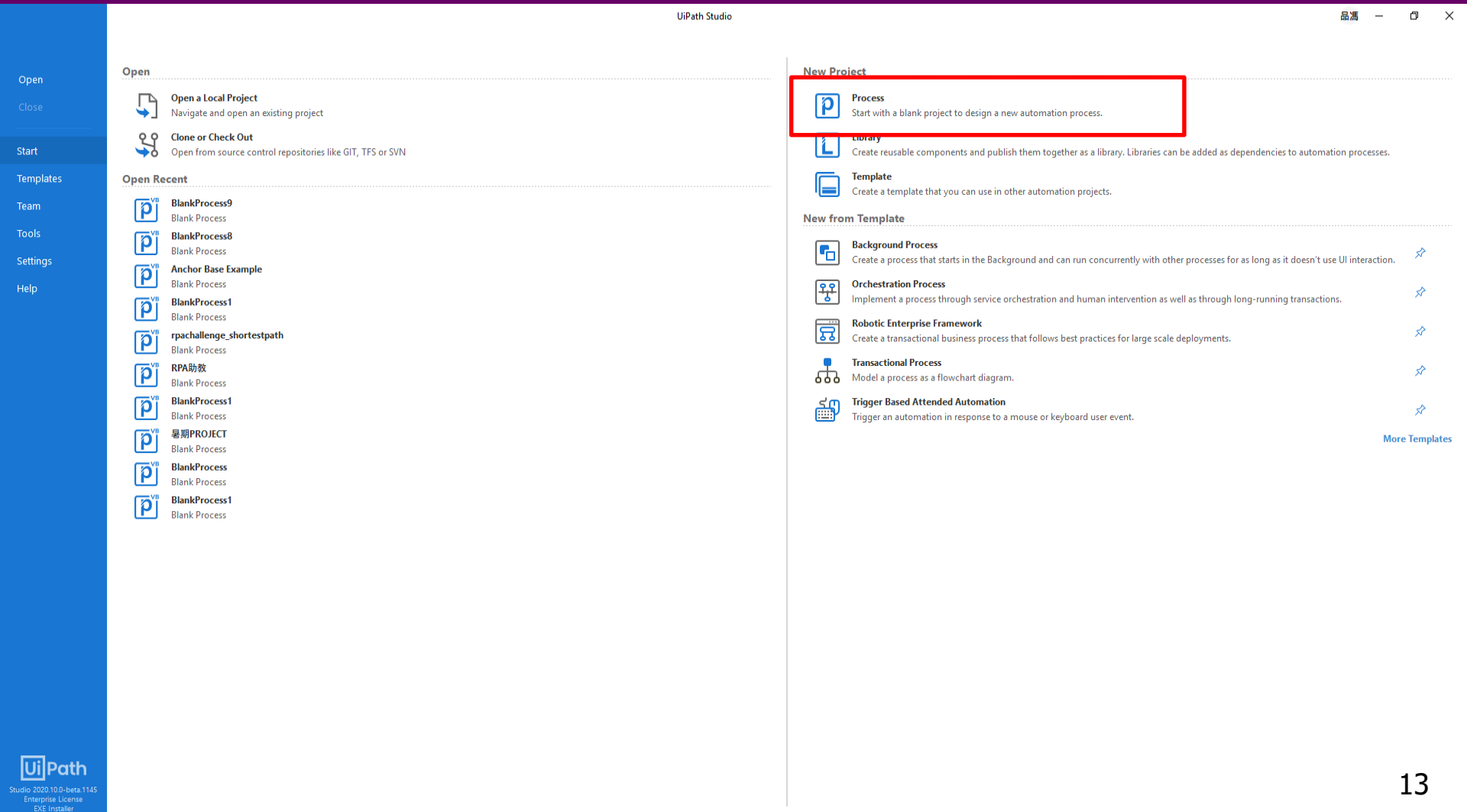
Install UiPath(3/3)

Download Studio/Studio X



引用文獻[1]

UiPath


UiPath Studio
Open
Close
Start
Templates
Team
Tools
Settings
Help
Open
Open a Local Project
Navigate and open an existing project
Clone or Check Out
Open from source control repositories like GIT, TFS or SVN
Open Recent
BlankProcess9
Blank Process
BlankProcess8
Blank Process
Anchor Base Example
Blank Process
BlankProcess1
Blank Process
rpachallenge_shortestpath
Blank Process
RPA助教
Blank Process
BlankProcess1
Blank Process
暑期PROJECT
Blank Process
BlankProcess
Blank Process
BlankProcess1
Blank Process
New Project
Process
Start with a blank project to design a new automation process.
Library
Create reusable components and publish them together as a library. Libraries can be added as dependencies to automation processes.
Template
Create a template that you can use in other automation projects.
New from Template
Background Process
Create a process that starts in the Background and can run concurrently with other processes for as long as it doesn't use UI interaction.
Orchestration Process
Implement a process through service orchestration and human intervention as well as through long-running transactions.
Robotic Enterprise Framework
Create a transactional business process that follows best practices for large scale deployments.
Transactional Process
Model a process as a flowchart diagram.
Trigger Based Attended Automation
Trigger an automation in response to a mouse or keyboard user event.
More Templates
UiPath
Studio 2020.10.0-beta.1145
Enterprise License
EXE Installer

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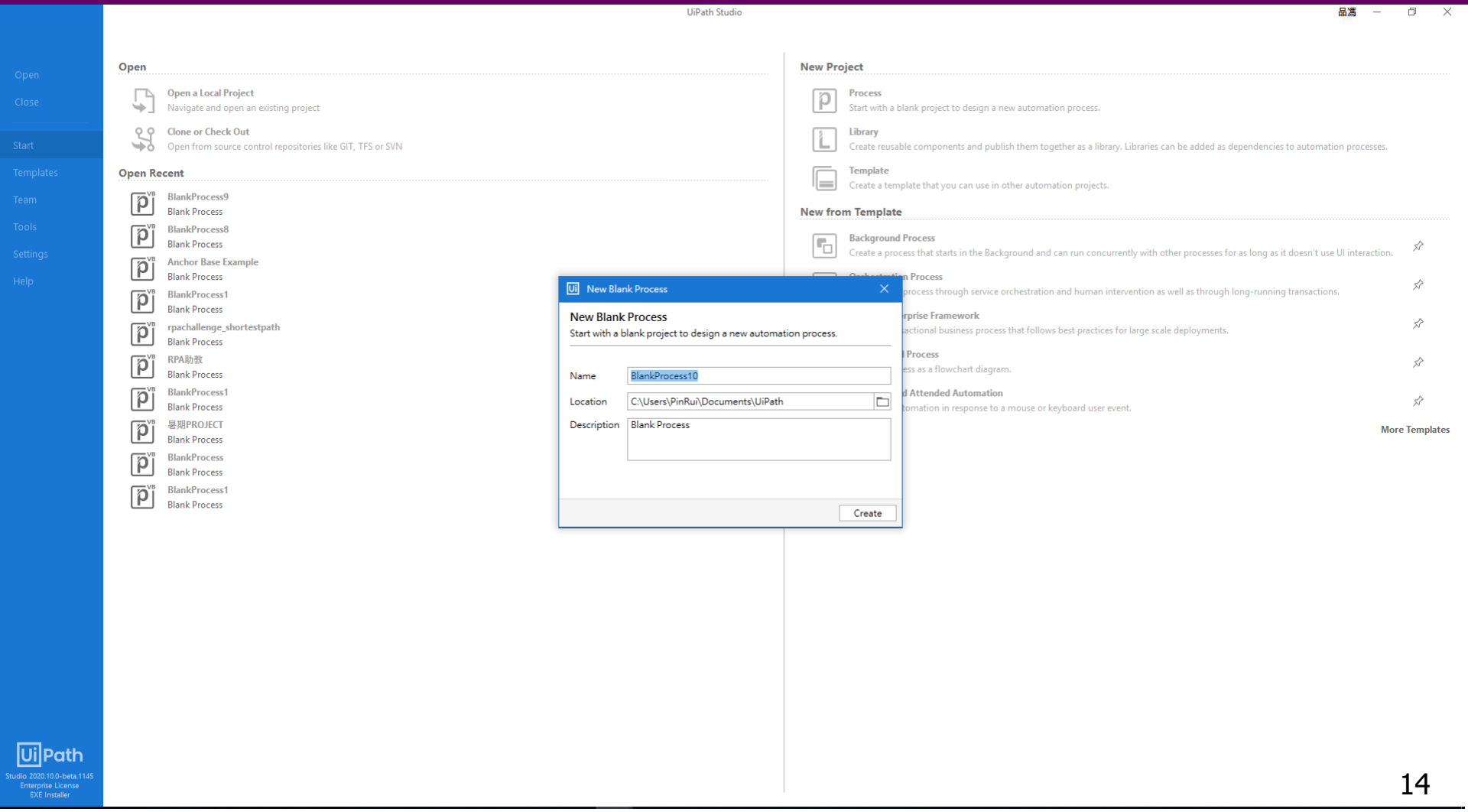
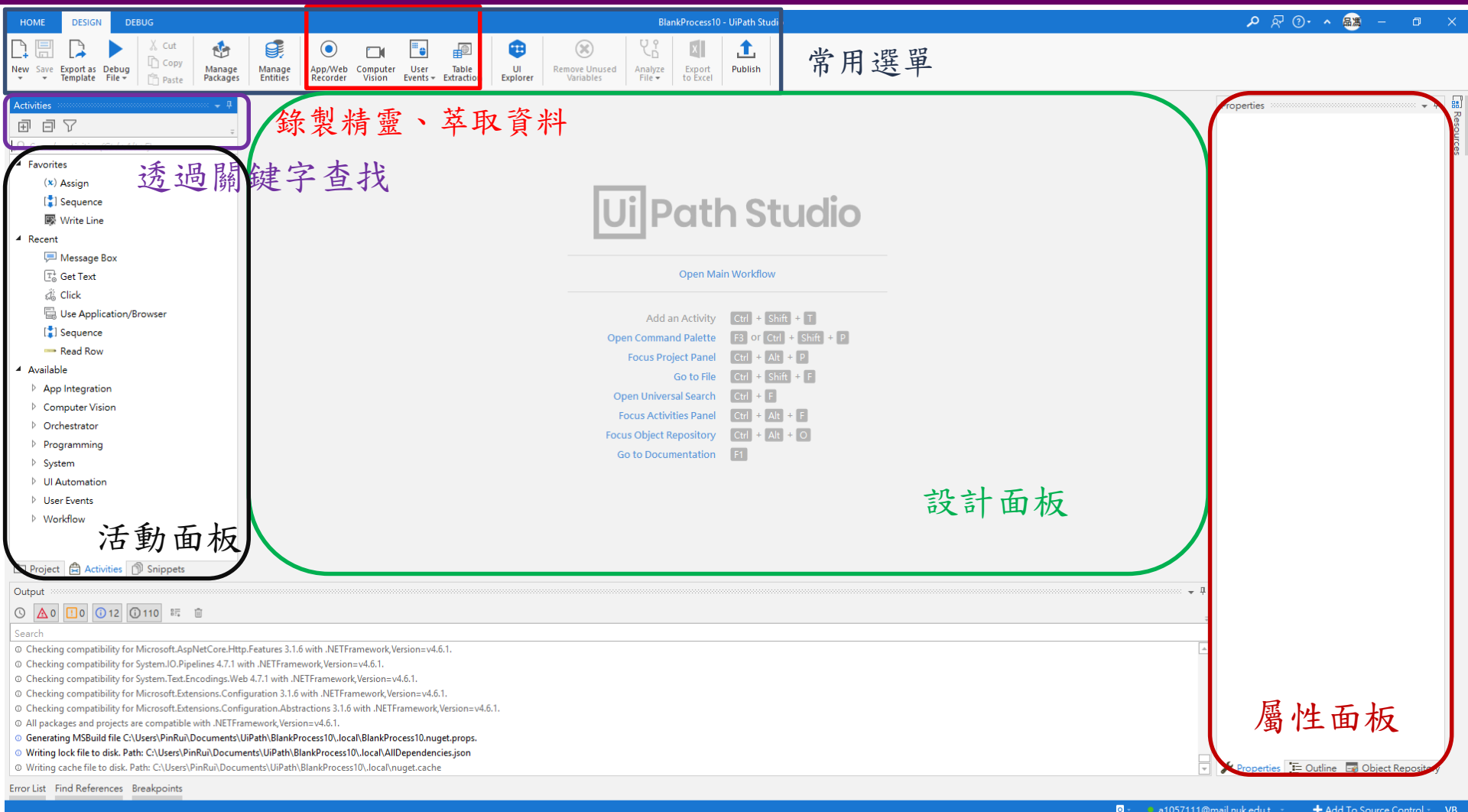
UiPath



UiPath介面


HOME
DESIGN
DEBUG
BlankProcess10 - UiPath Studi
New
Save
Export as Template
Debug File
Cut
Copy
Paste
Manage Packages
Manage Entities
App/Web Recorder
Computer Vision
User Events
Table Extractio
UI Explorer
Remove Unused Variables
Analyze File
Export to Excel
Publish
常用選單
Activities
錄製精靈、萃取資料
透過關鍵字查找
Favorites
Assign
Sequence
Write Line
Recent
Message Box
Get Text
Click
Use Application/Browser
Sequence
Read Row
Available
App Integration
Computer Vision
Orchestrator
Programming
System
UI Automation
User Events
Workflow
活動面板
UiPath Studio
Open Main Workflow
Add an Activity Ctrl + Shift + T
Open Command Palette F3 or Ctrl + Shift + P
Focus Project Panel Ctrl + Alt + P
Go to File Ctrl + Shift + F
Open Universal Search Ctrl + F
Focus Activities Panel Ctrl + Alt + F
Focus Object Repository Ctrl + Alt + O
Go to Documentation F1
設計面板
Properties
Resources
屬性面板
Project
Activities
Snippets
Output
Search
Checking compatibility for Microsoft.AspNetCore.Http.Features 3.1.6 with .NETFramework,Version=v4.6.1.
Checking compatibility for System.IO.Pipelines 4.7.1 with .NETFramework,Version=v4.6.1.
Checking compatibility for System.Text.Encodings.Web 4.7.1 with .NETFramework,Version=v4.6.1.
Checking compatibility for Microsoft.Extensions.Configuration 3.1.6 with .NETFramework,Version=v4.6.1.
Checking compatibility for Microsoft.Extensions.Configuration.Abstractions 3.1.6 with .NETFramework,Version=v4.6.1.
All packages and projects are compatible with .NETFramework,Version=v4.6.1.
Generating MSBuild file C:\Users\PinRui\Documents\UiPath\BlankProcess10\.local\BlankProcess10.nuget.props.
Writing lock file to disk. Path: C:\Users\PinRui\Documents\UiPath\BlankProcess10\.local\AllDependencies.json
Writing cache file to disk. Path: C:\Users\PinRui\Documents\UiPath\BlankProcess10\.local\nuget.cache
Properties
Outline
Object Repository
Error List
Find References
Breakpoints

UiPath介面

引用文獻[5]

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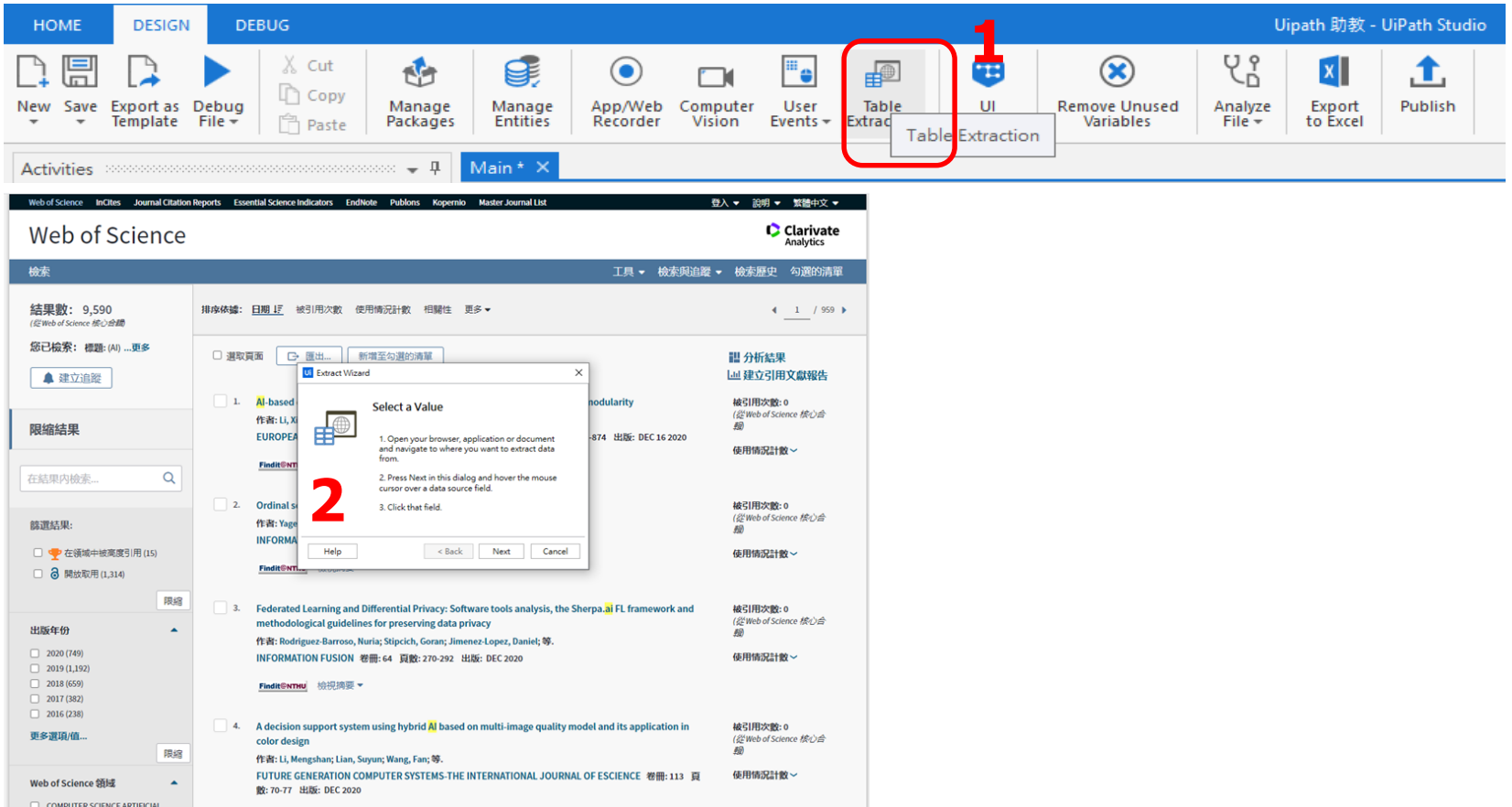
ACTIVITIES & 功能

Excel Activities

- Excel Application Scope(https://docs.uipath.com/activities/docs/excel-application-scope)
- Write Range(https://docs.uipath.com/activities/docs/excel-write-range)
- Read Range(https://docs.uipath.com/activities/docs/excel-read-range)
- Read Column(https://docs.uipath.com/activities/docs/excel-read-column)
- Read Row(https://docs.uipath.com/activities/docs/excel-read-row)

Table Extraction_情境描述

Uipath Robot 與桌面端軟件和Web的交互使用(EX:網路爬蟲、購物網站價格追蹤等)



功能_Table Extraction(1/6)

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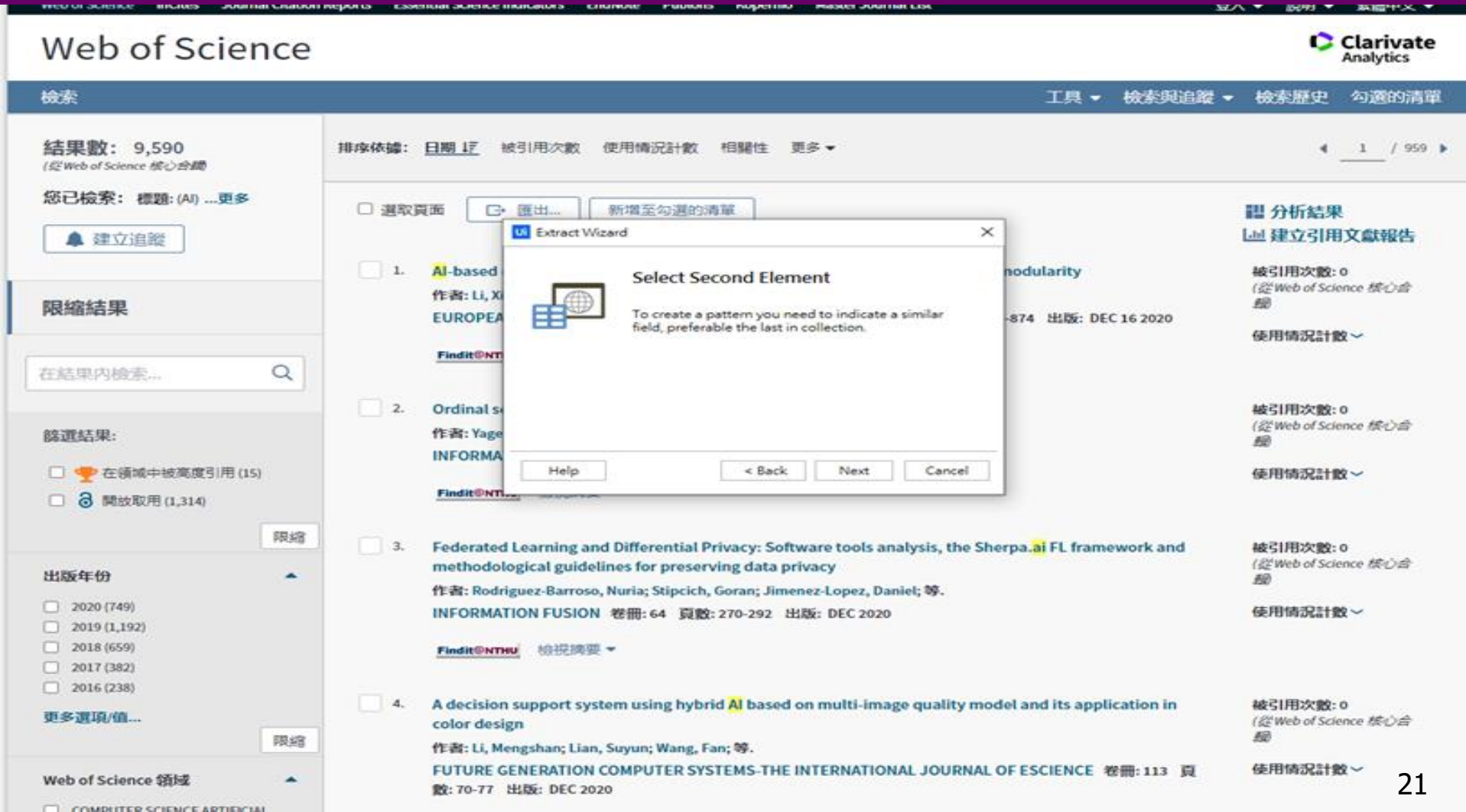
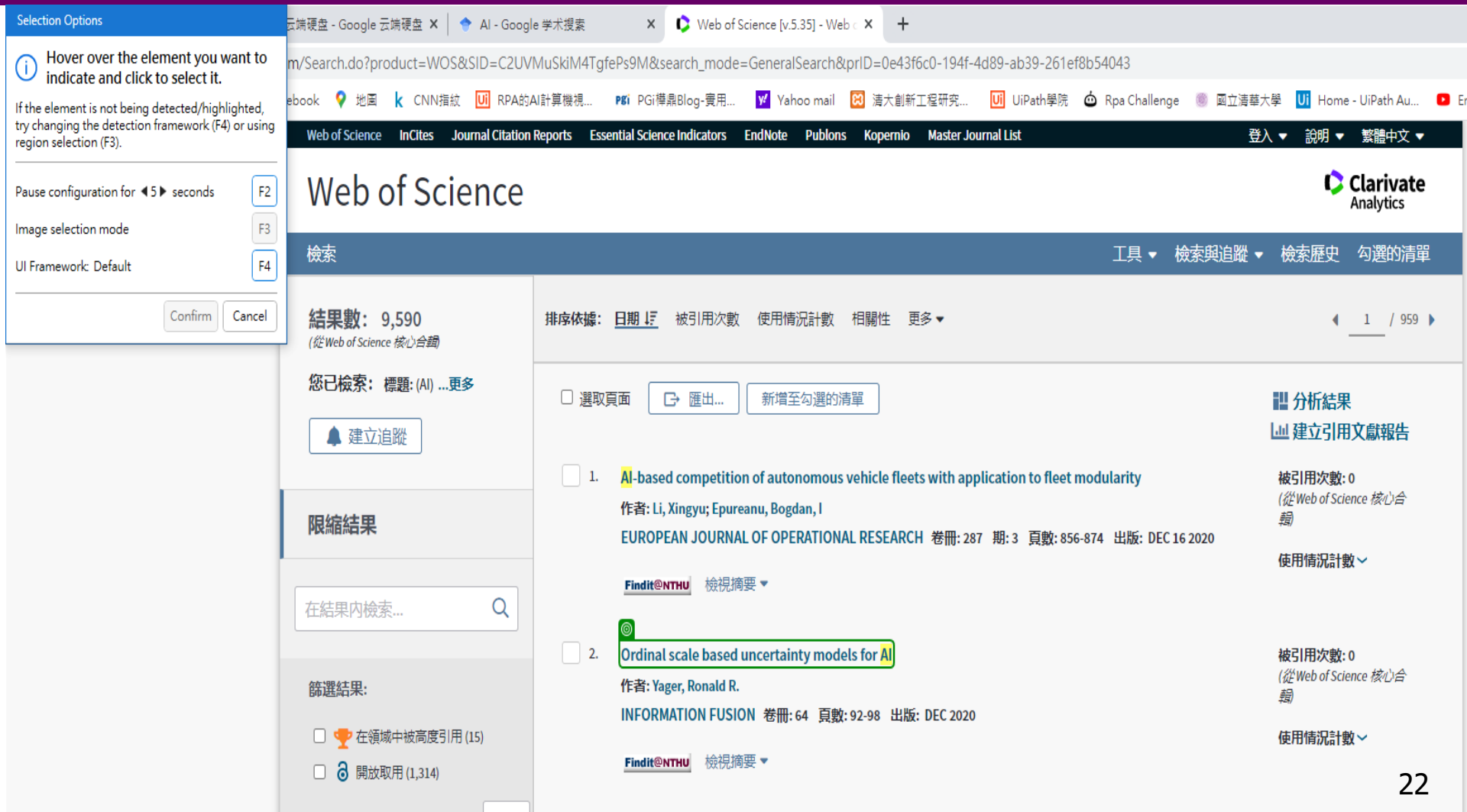
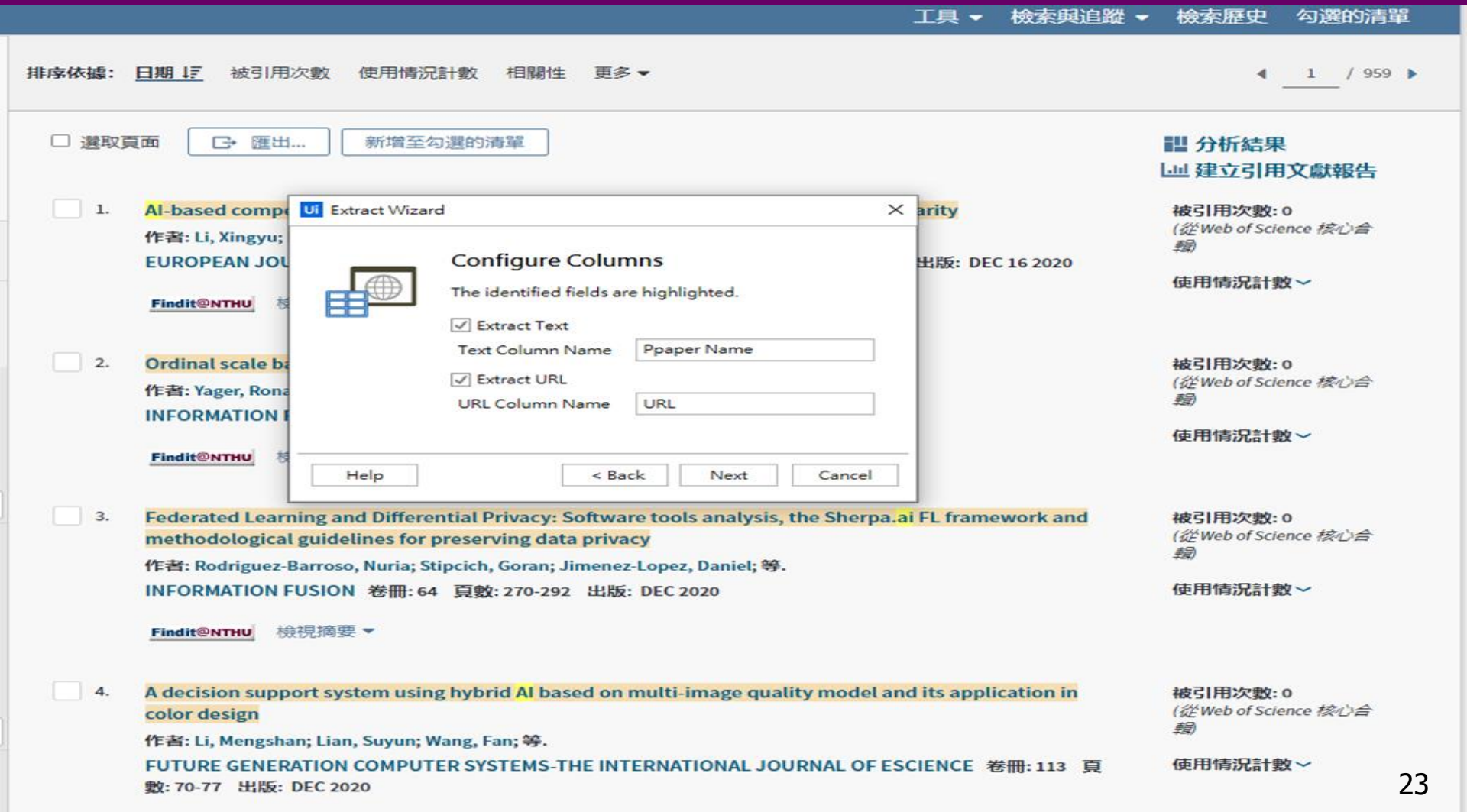
功能_Table Extraction(2/6)



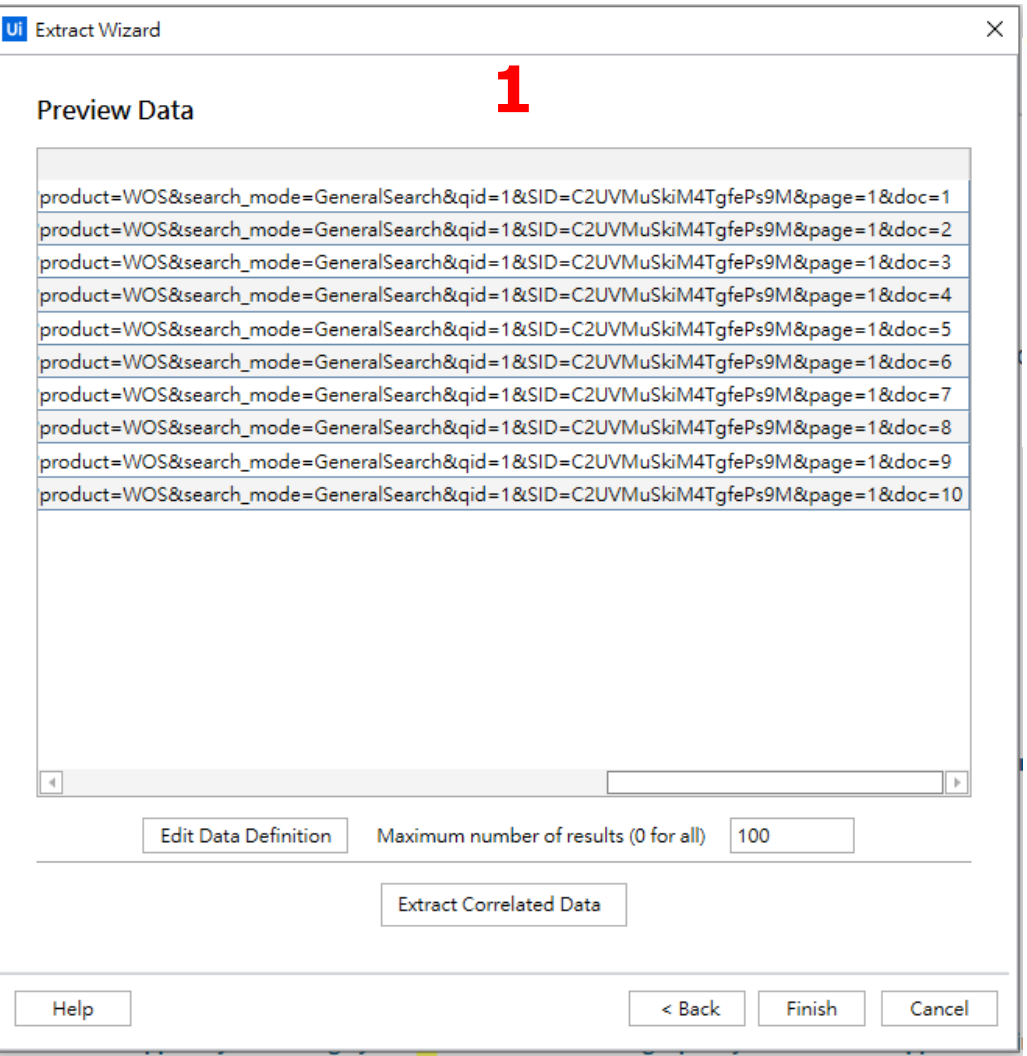
功能_Table Extraction(3/6)

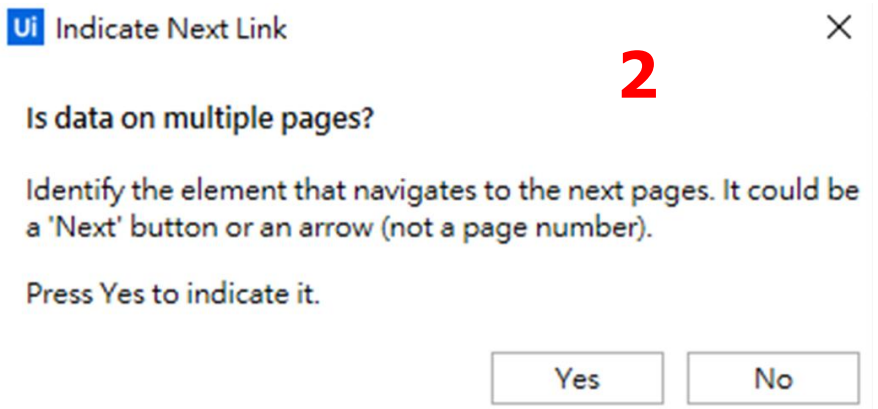


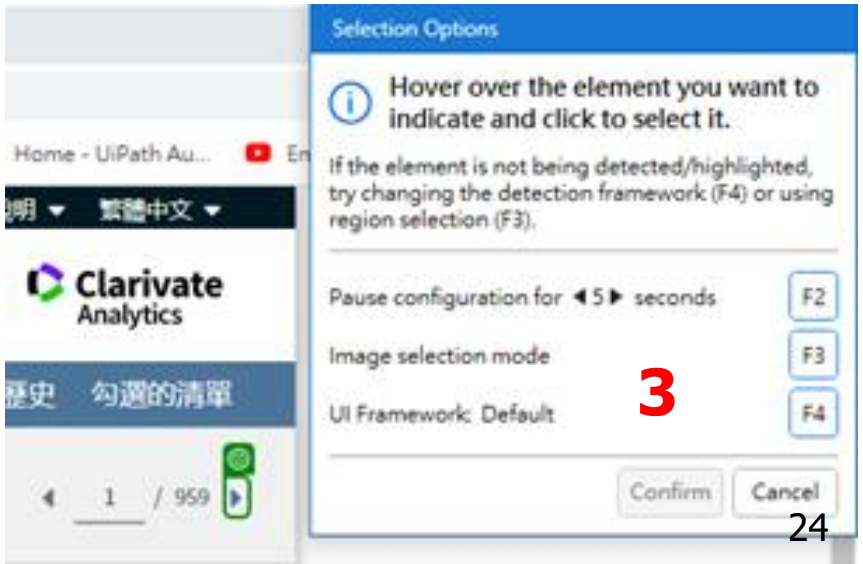
功能_Table Extraction(4/6)



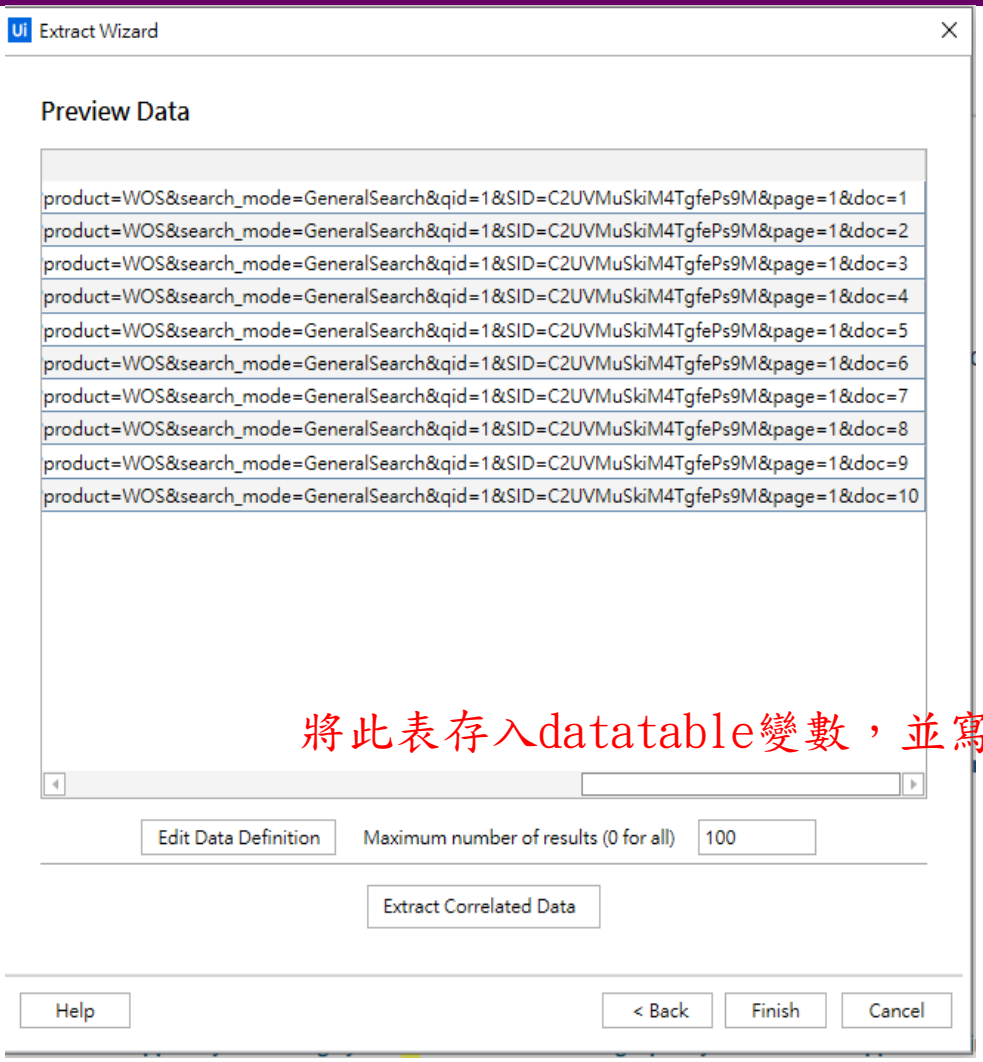
功能_Table Extraction(5/6)

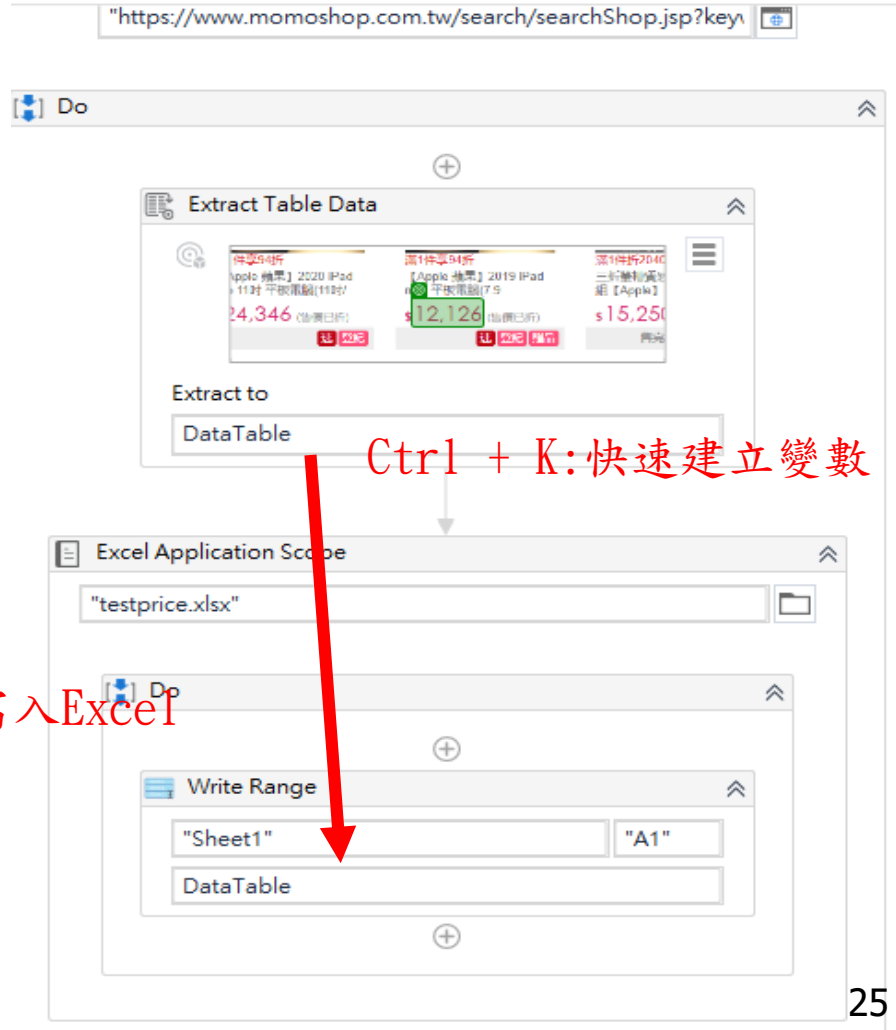






功能_Table Extraction(6/6)

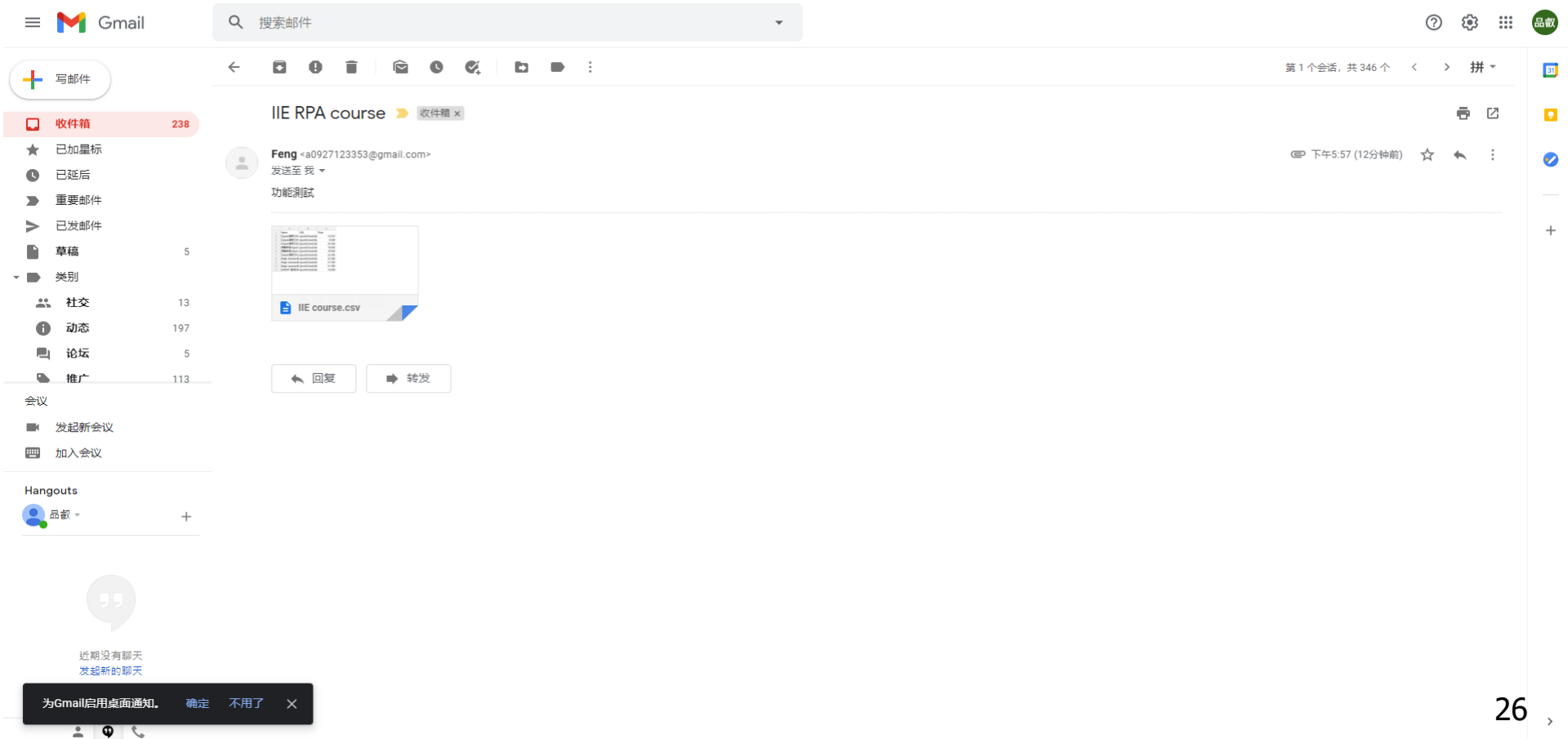




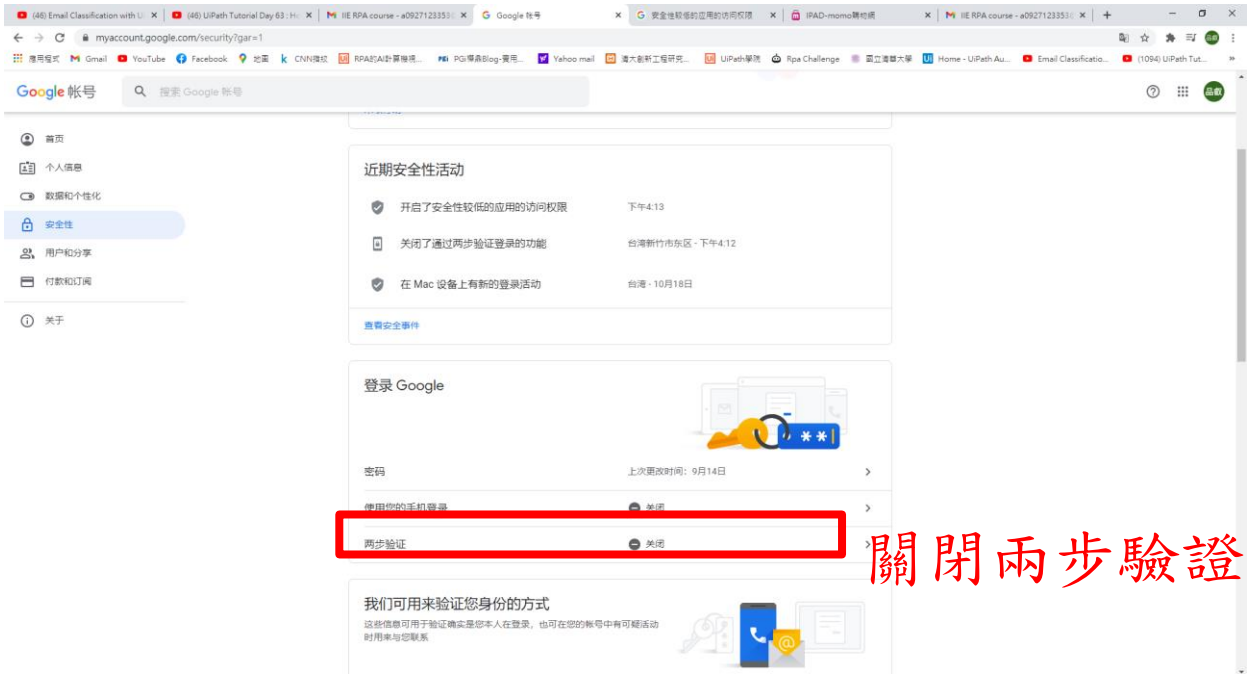
將此表存入datatable變數，並寫入Excel

Activities_Send SMTP情境描述

如何將抓取的資料直接用Email發送?



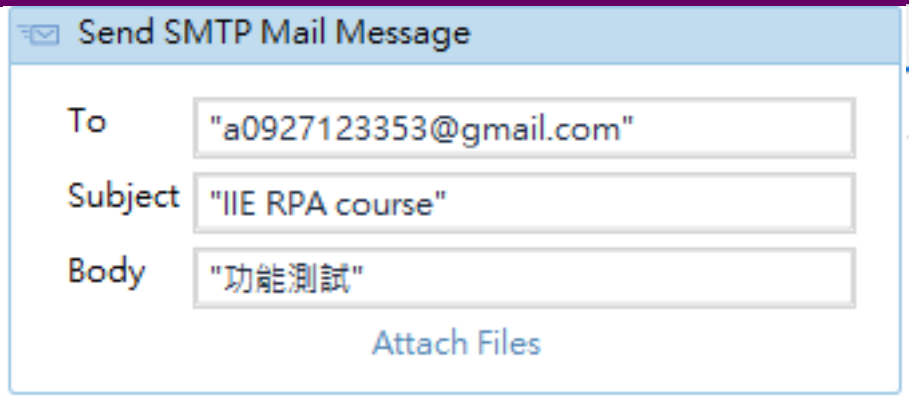
Activities_Send SMTP(1/3)

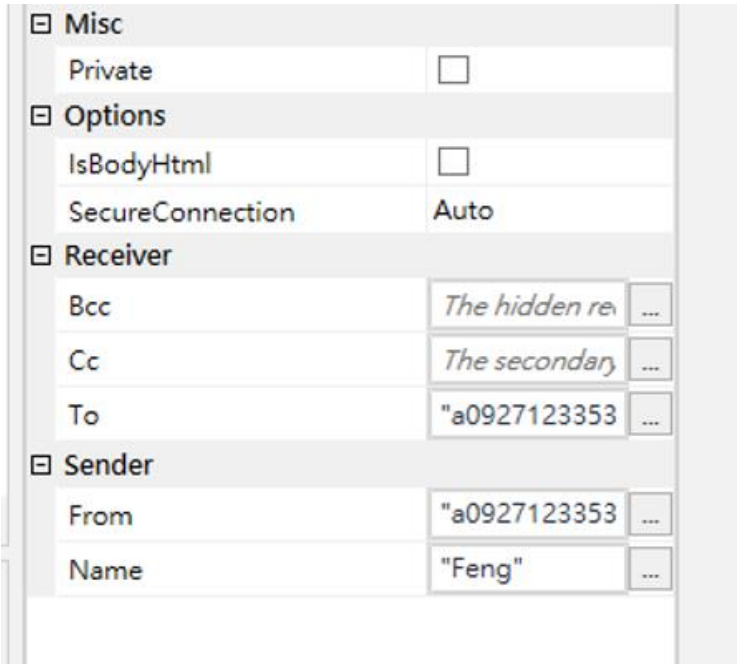


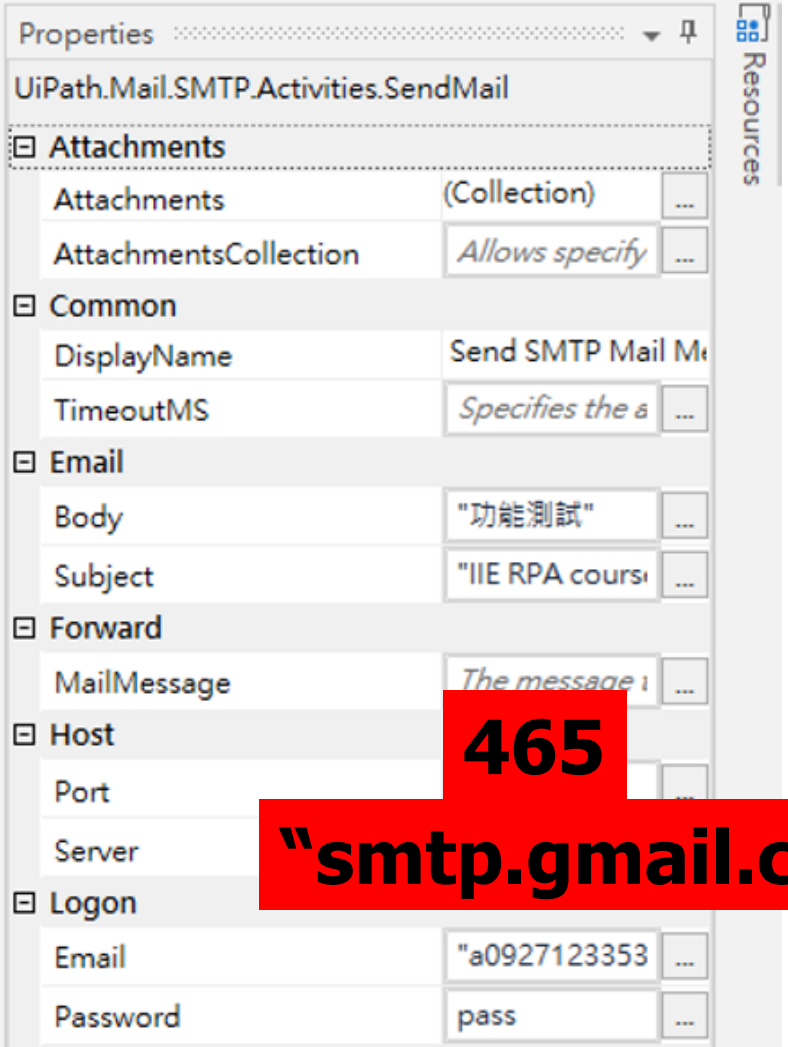
關閉兩步驗證

開啟安全性較低的應用的訪問權限

Activities_Send SMTP(2/3)



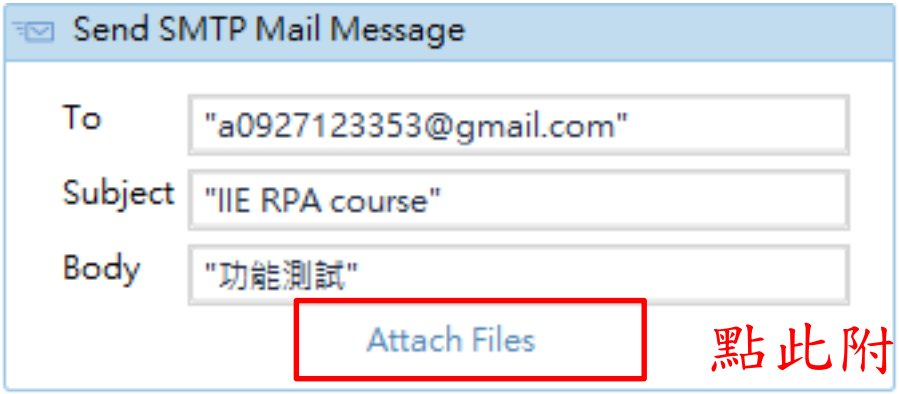




465

"smtp.gmail.com"

Activities_Send SMTP(3/3)



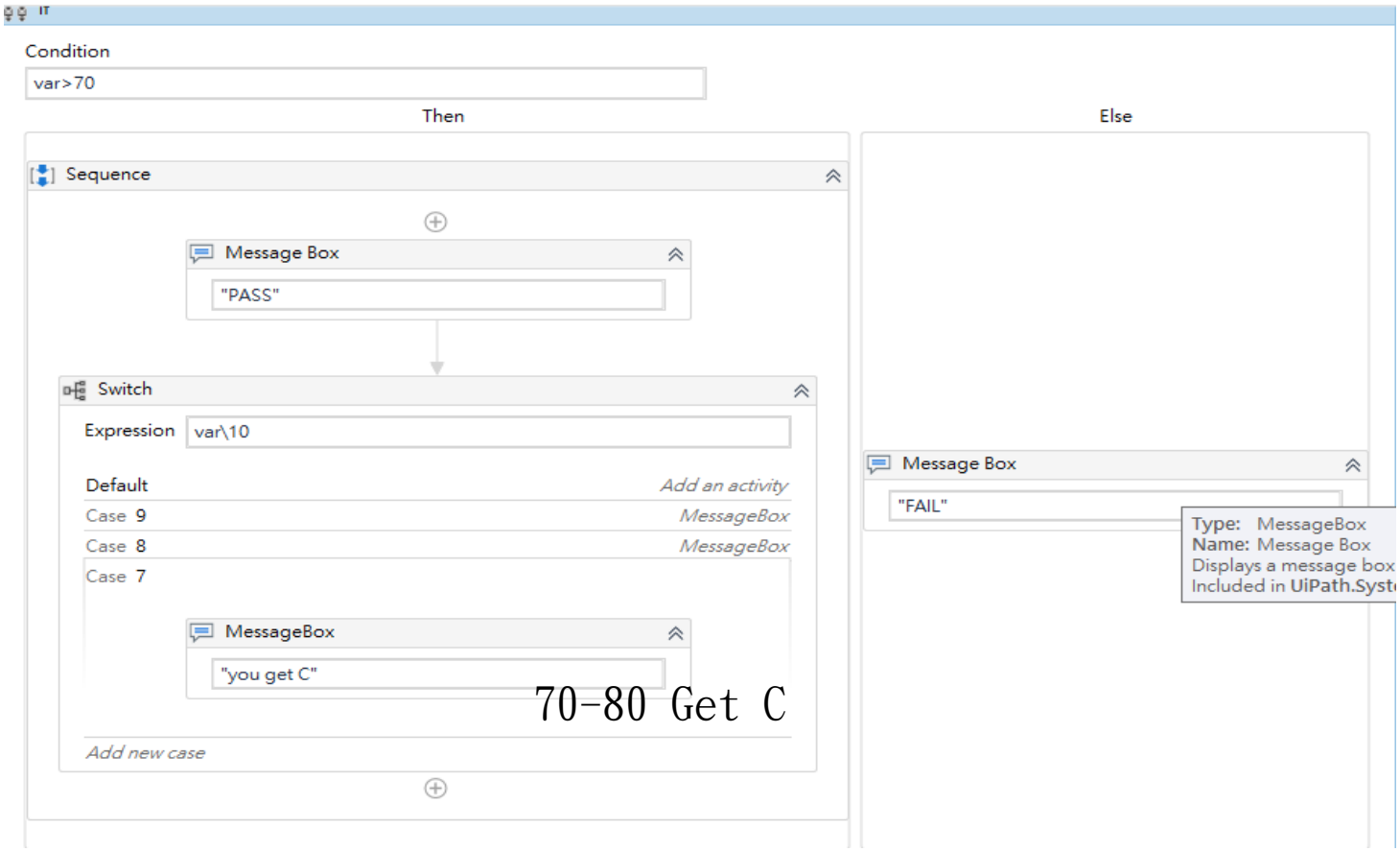
點此附上檔案

UiPath裡的判斷、循環Activities

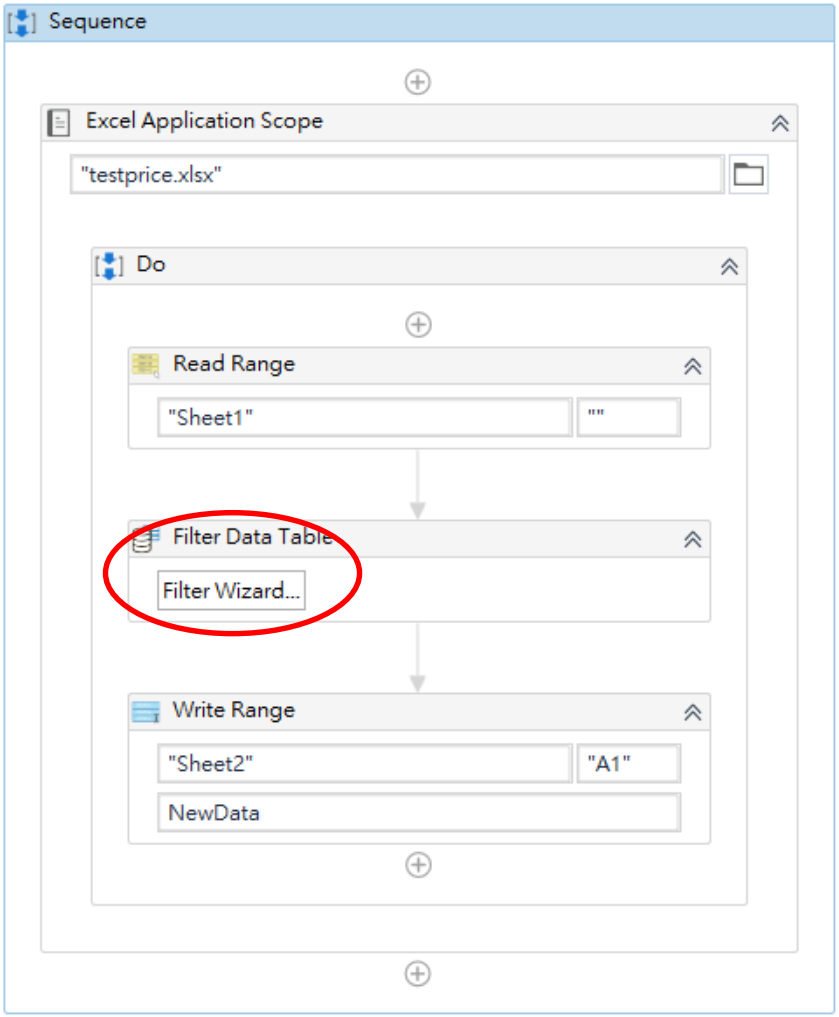
- If (https://docs.uipath.com/studio/docs/the-if-activity)
- Filter Data Table (https://docs.uipath.com/studio/docs/the-switch-activity)
- Switch (https://docs.uipath.com/studio/docs/the-switch-activity)
- For Each(https://docs.uipath.com/studio/v2020.4/docs/the-for-each-activity)
- Do while(https://docs.uipath.com/studio/docs/the-do-while-activity)
- Try Catch(https://docs.uipath.com/activities/docs/try-catch)

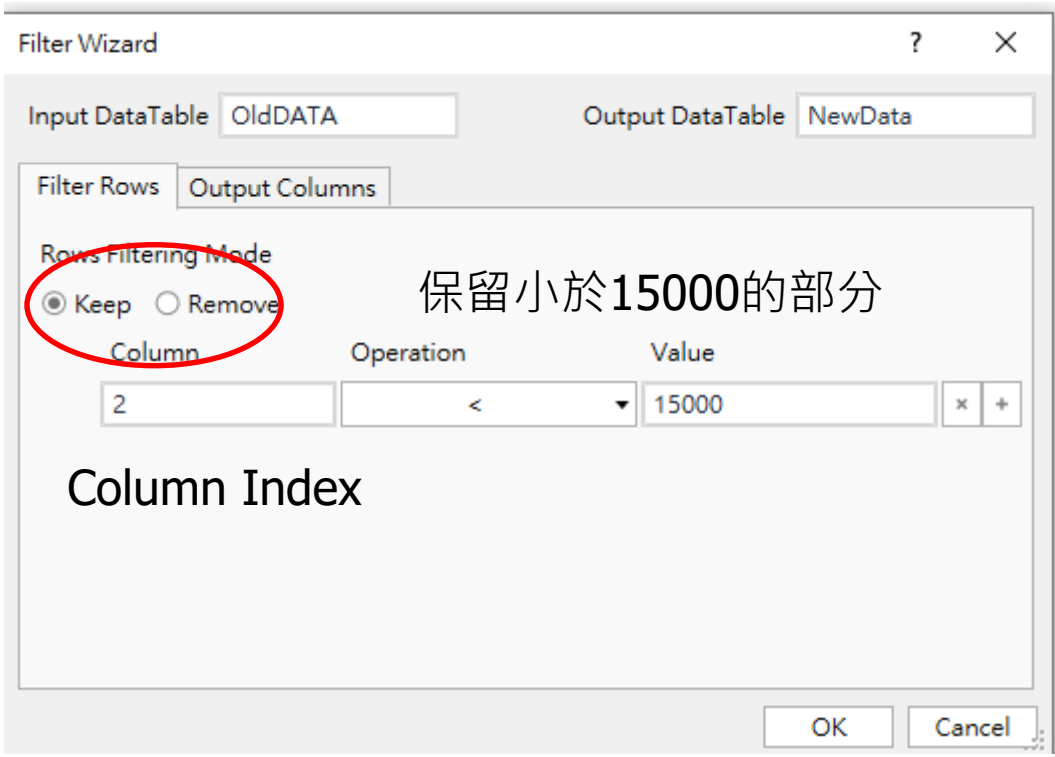
Activities_IF

期末成績大於70 輸出Pass 否則Fail



條件下取價_Filter Data Table





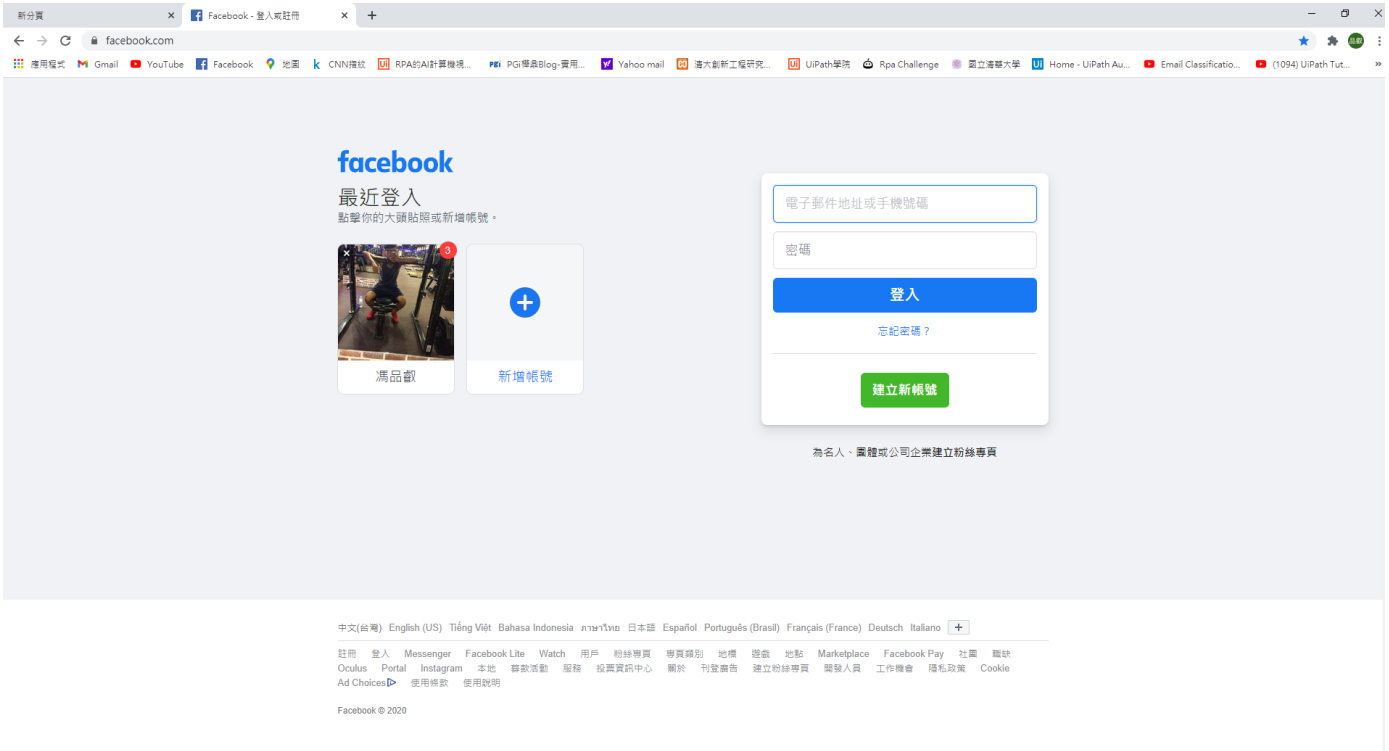
Result

	A	B	C
1	【Apple 蘋	/goods/Goc	12126
2	【Apple 蘋	/goods/Goc	12510
3	預購賣場	/goods/Goc	10500
4	預購賣場	/goods/Goc	13500
5	預購賣場	/goods/Goc	13500
6	預購賣場	/goods/Goc	10500
7	【Apple 蘋	/goods/Goc	12126
8	三折防摔	/goods/Goc	12290
9	【Apple 蘋	/goods/Goc	8900
10	三折防摔	/goods/Goc	12290
11	【Apple 蘋	/goods/Goc	12126
12	【Apple 蘋	/goods/Goc	12510
13	預購賣場	/goods/Goc	10500
14	預購賣場	/goods/Goc	13500
15	預購賣場	/goods/Goc	13500
16	預購賣場	/goods/Goc	10500
17	【Apple 蘋	/goods/Goc	12126
18	三折防摔	/goods/Goc	12290
19	【Apple 蘋	/goods/Goc	8900
20	三折防摔	/goods/Goc	12290
21	【Apple 蘋	/goods/Goc	12126

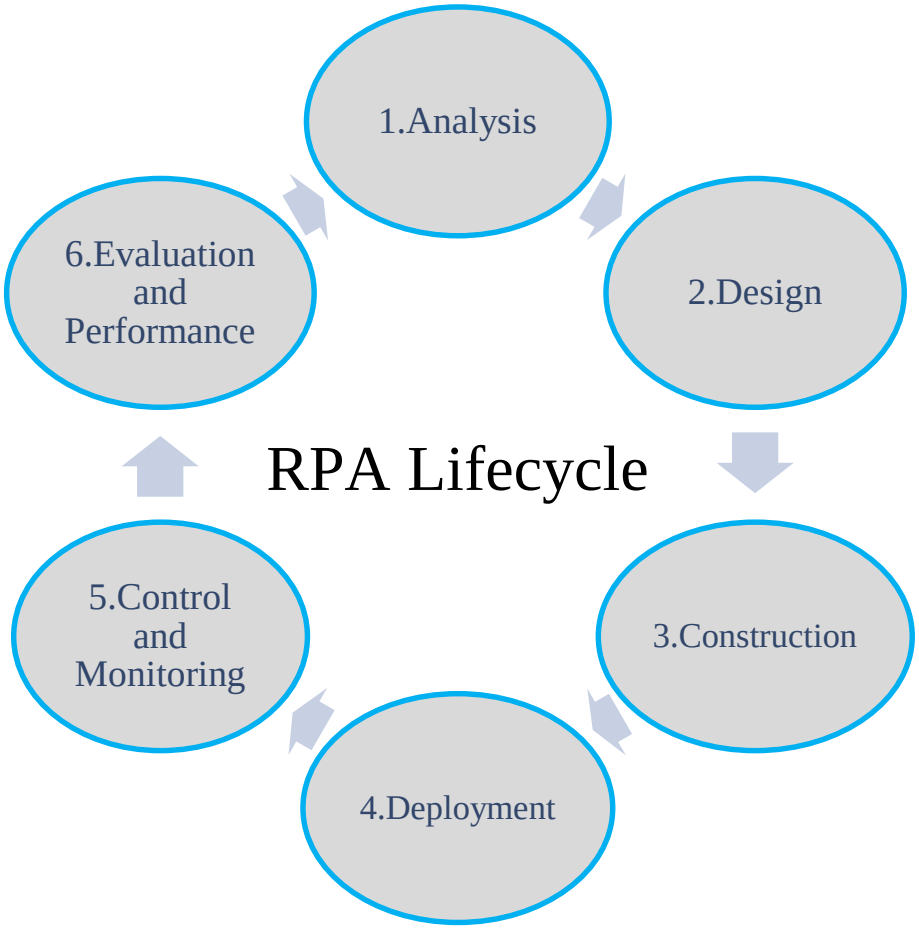
實作練習 & HOMEWORK

Activities實作練習_問題描述

是否可以利用UIPATH完成自動輸入帳號密碼之機器流程自動化?



RPA Lifecycle



Step1 考慮應用在輸入帳號密碼是否合適

Step2 探討輸入帳號密碼的流程配置

Step3 建構輸入帳號密碼流程構成要素

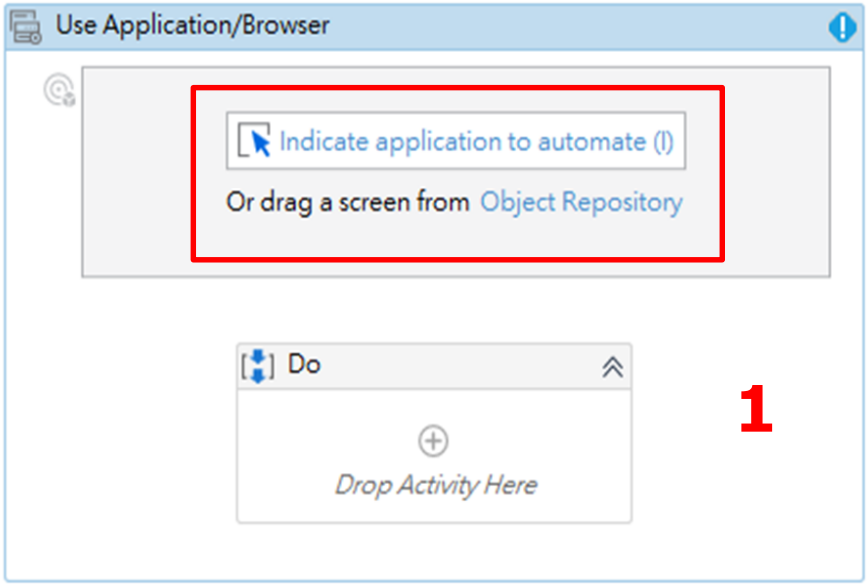
Step4 使用UiPath robot一個環境執行工作

Step5 控制和監視每個機器人的性能。

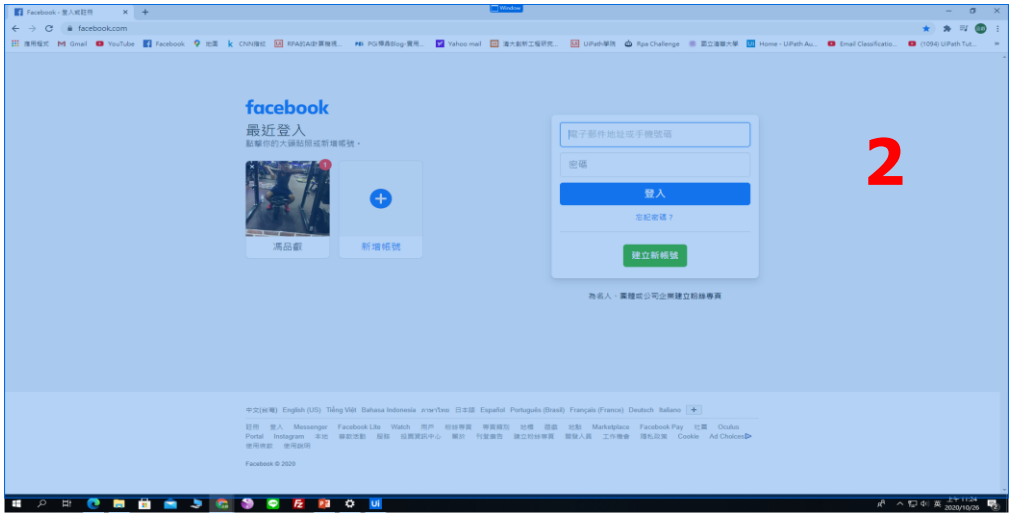
Step6 評估機器人的表現

Activities實作練習(1/6)

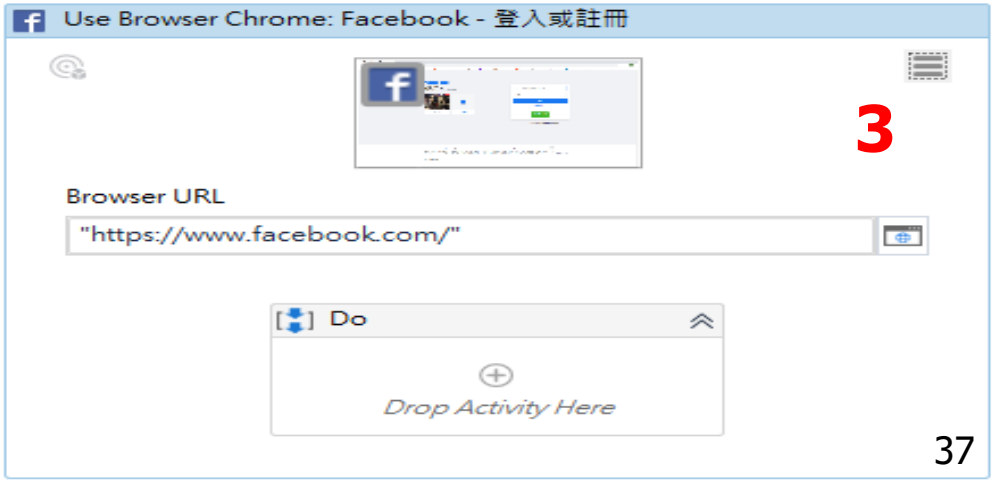
Use Application/Browser



1



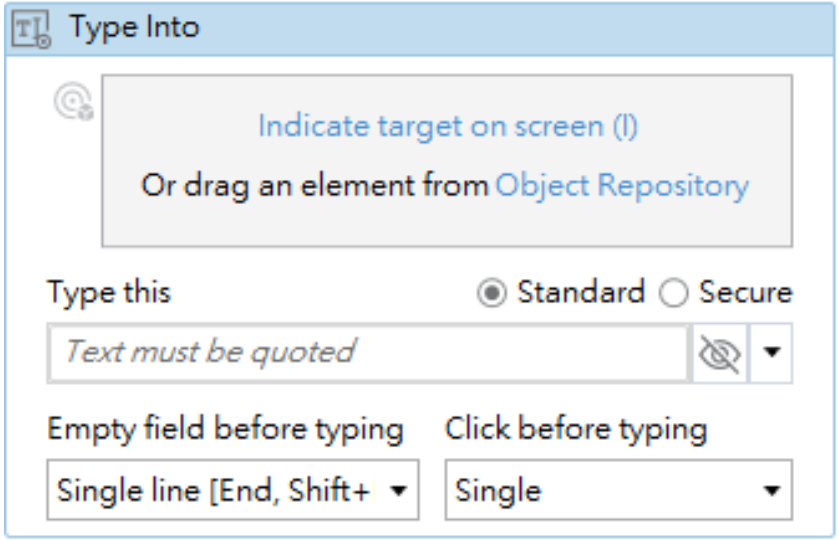
2

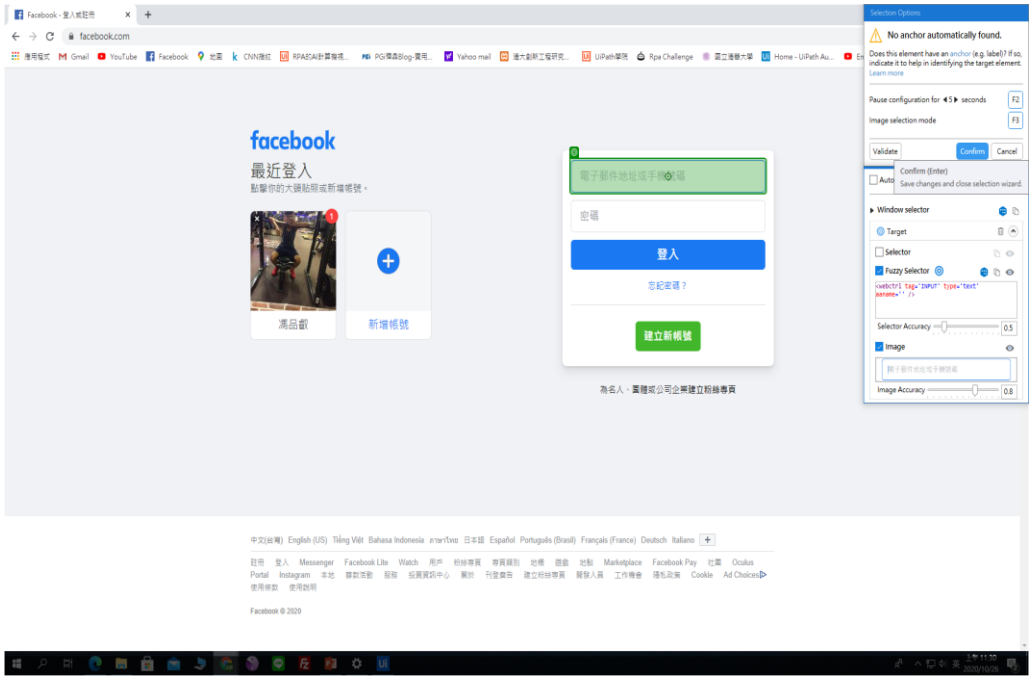


3

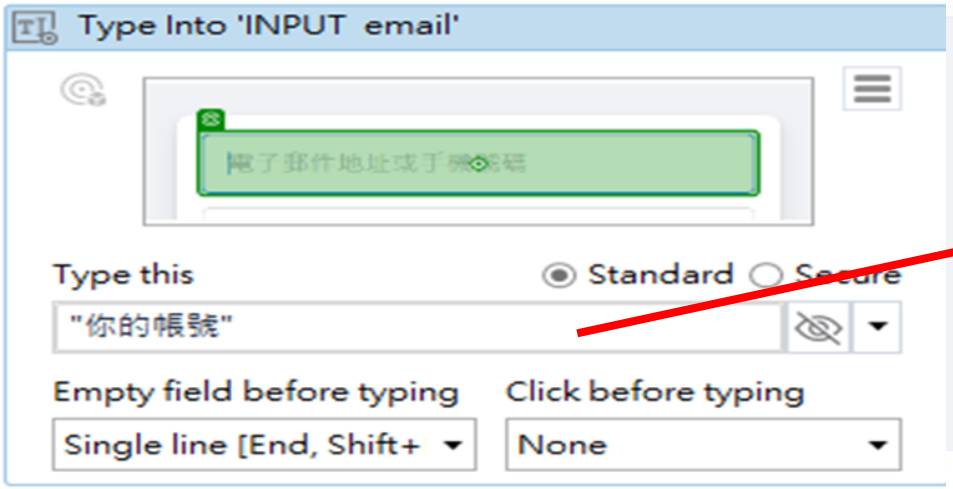
Activities實作練習(2/6)

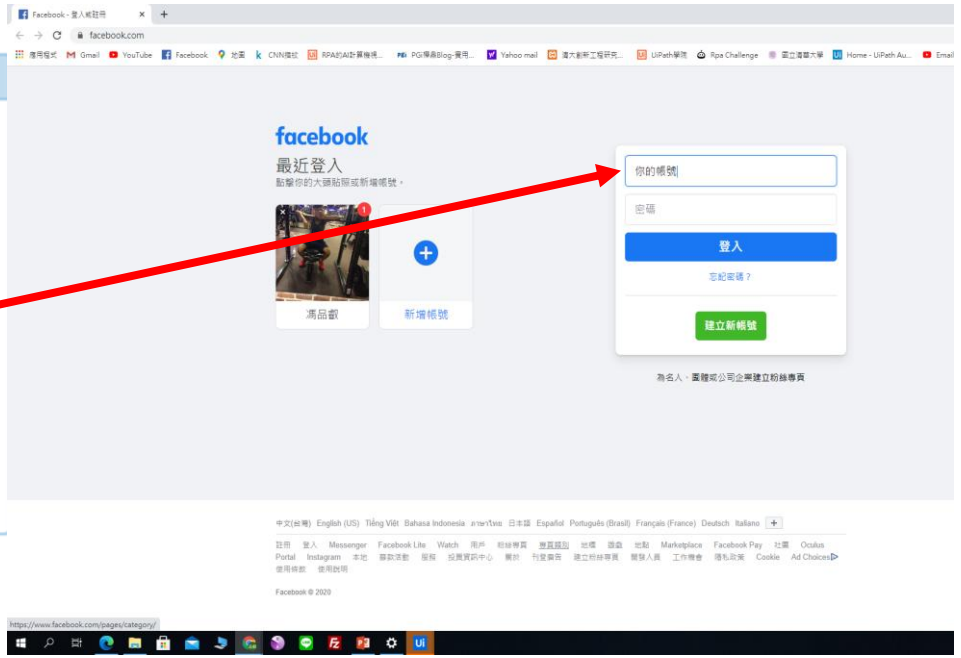
Type Into





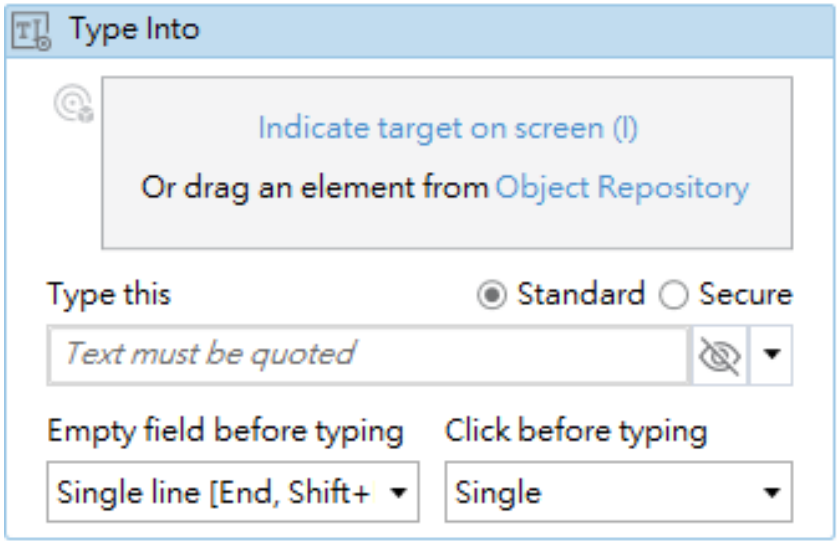
Activities實作練習(3/6)

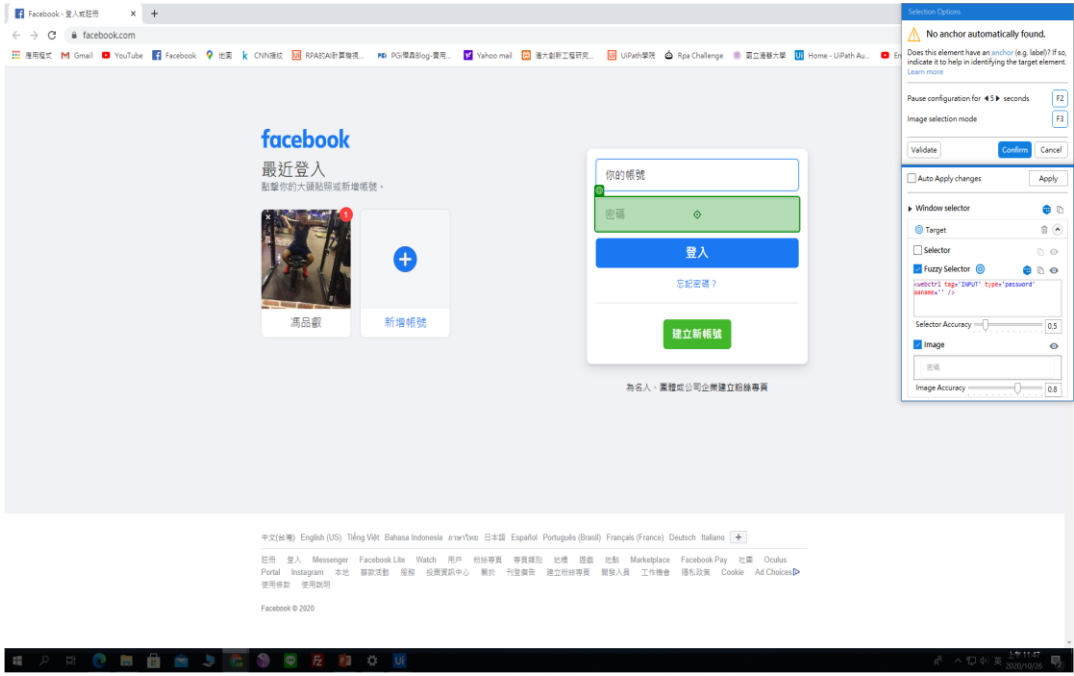




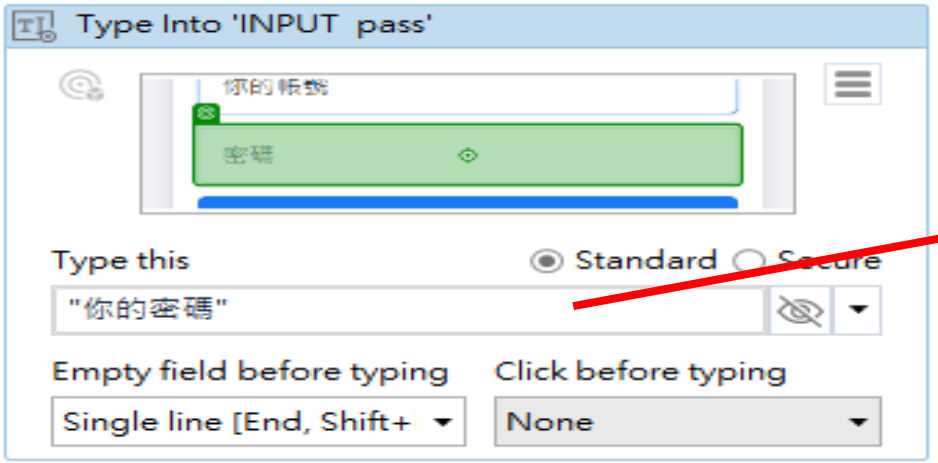
Activities實作練習(4/6)

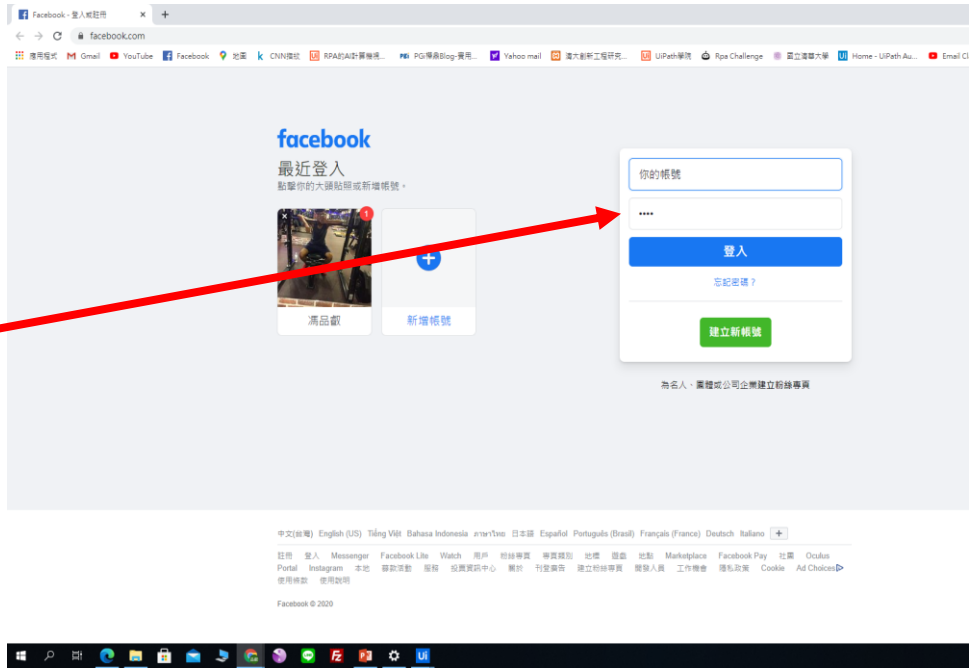
Type Into





Activities實作練習(5/6)





Activities實作練習(6/6)

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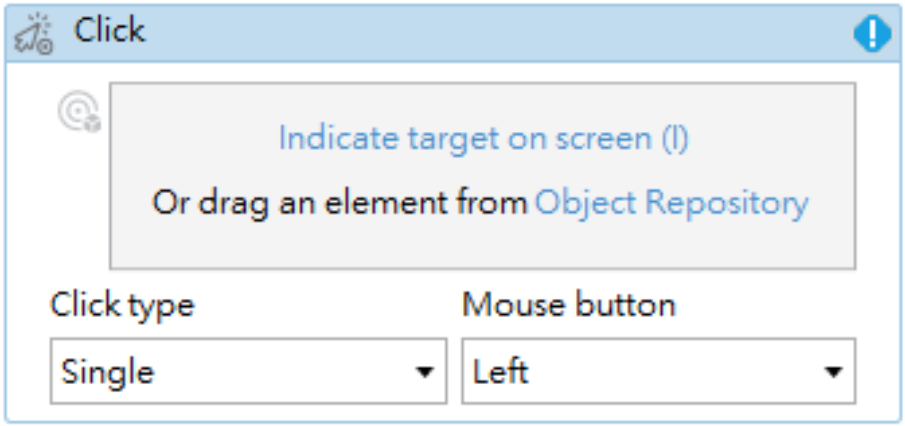

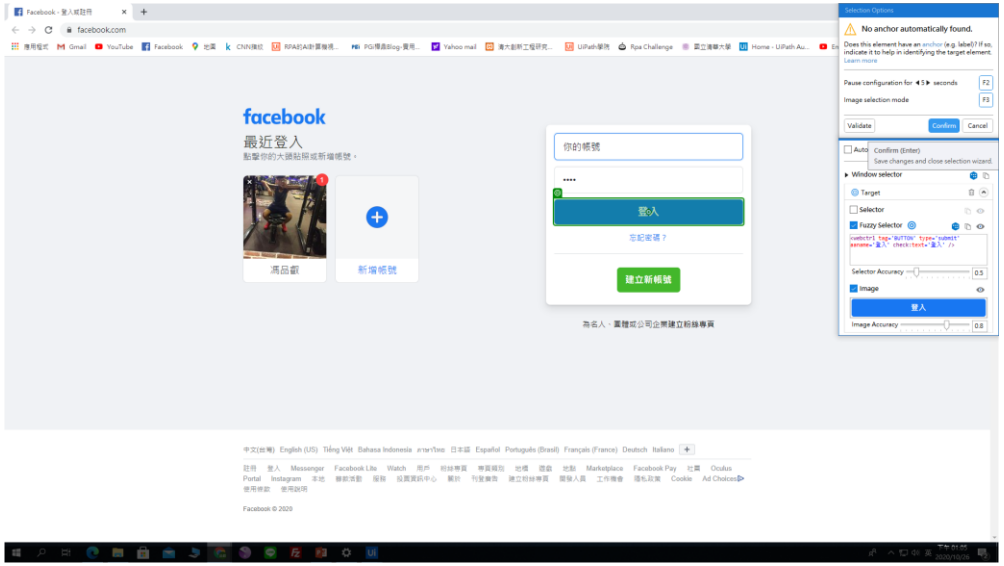

Homework

- Please use the UiPath Studio at least 6 activities to construction your process, and must use “send SMTP activities”.(You can send SMTP to anyone including yourself)
- You should upload UiPath file.

Reference

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