

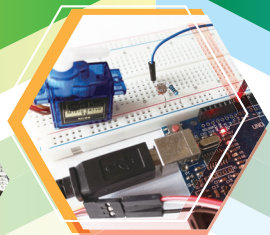
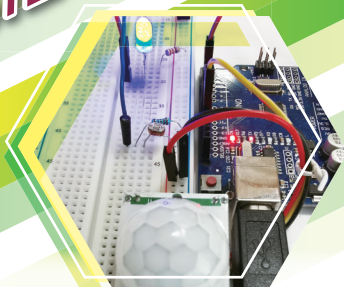
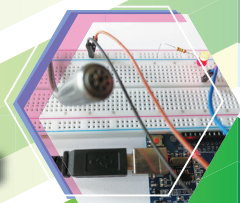


PA04

Python

基礎課程
A Basic Course

STEM 實驗套件
Experiment Set



- 本實驗套件為《初中電腦之旅（校本單元版）PA04 Python 基礎課程》提供 STEM 延伸學習及活動

This Experiment Set accompanies *Journey of Computer Literacy for Secondary Schools (School-based Edn.) PA04 Python: A Basic Course* for STEM learning and activity enrichment

- 全部教學材料採用開放源碼軟硬件，提升學習效能
Open-source software and hardware are adopted for all teaching to boost learning
- 全部 STEM 專案均有理論和實作的說明，並附有相關程式檔案，易學易用
All STEM projects have learner-friendly theoretical and practical instructions with related program files
- 在學習 Python 編程語言的過程中開發 Arduino 專案
Arduino project development is integrated with the learning process of Python programming language
- 深入淺出學習如何應用 LED、伺服電動機、光敏電阻、人體紅外線感應模組等硬件製作趣味的 Arduino 專案
A guided process to explore the use of hardware components such as LEDs, servo motors, LDRs and the PIR sensor module to develop interesting Arduino projects
- 提供可配合設計與科技科教學內容的 STEM 教學活動
Customizable STEM learning activities for the Design & Technology curriculum



雅博資訊科技有限公司
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主要零件 Key Parts



Arduino Uno R3 兼容主板 /
Arduino Uno R3 Compatible Board



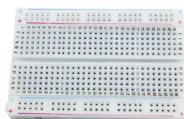
USB 線 /
USB Cable



杜邦線 (公對公、公對母) /
Jumper Wires (M/M, M/F)



SG90 伺服電動機 (180 度轉動) /
SG90 Servo Motor (180-degree rotation)



麵包板 / Breadboard



電阻 (220 Ω , 10k Ω [上至下]) /
Resistors (220 Ω , 10k Ω [from top])



發光二極管 /
Light-Emitting Diodes (LEDs)



光敏電阻 /
Light Dependent Resistor (LDR)



HC-SR501 人體紅外線感應模組 /
HC-SR501 PIR Sensor Module



電腦用咪高風 /
Computer microphone

《PA04 Python 基礎課程》各單元中 STEM 專案 STEM Projects in Various Units of PA04 Python: A Basic Course

單元 / Unit	頁 / Page	專案 / Project
1	13-14	用 Arduino 板控制 LED 開關 LED Control with an Arduino Board
2	21-22	STEM 實驗 (一)：為一顆 LED 閃動編程 STEM Experiment (1): Programming an LED to Blink
2	25-26	STEM 實驗 (二)：為一顆 LED 漸亮漸暗編程 STEM Experiment (2): Programming an LED to Glow and Fade
2	28	延伸活動：為三顆 LED 輪流閃動編程 Enrichment: Programming 3 LEDs to Take Turns to Blink
3	33-34	STEM 實驗 (三)：光控伺服電動機 STEM Experiment (3): Light-Controlled Servo Motor
3	34	活動視窗：STEM 實驗 (三) 的延伸版本 Activity Window: An Enriched Version of STEM Experiment (3)
4	43-45	STEM 實驗 (四)：LED 開關控制 GUI 程式 STEM Experiment (4): GUI program for LED On/Off Control
4	45	活動視窗：STEM 實驗 (四) 的延伸版本 Activity Window: An Enriched Version of STEM Experiment (4)
4	46-47	STEM 實驗 (五)：供用戶輸入數值的 GUI 程式 [控制一個伺服電動機和一個 LED] STEM Experiment (5): GUI Program for User Input of Values [Controlling a Servo Motor and an LED]
4	48	延伸活動：顯示光敏電阻數據的 GUI 程式 Enrichment: GUI program for Display of LDR Data
4		專題研習 (一)：語音識別控制 LED 開關 Project Learning (1): Speech Recognition for LED On/Off Control
5	59	延伸活動：修訂 STEM 實驗 (三) 程式以產生 CSV 數據檔案 Enrichment: Modified STEM Experiment (3) That Generates a CSV Data File
5		專題研習 (二)：模擬智能家居照明系統 Project Learning (2): Simulated Smart Home Corridor Lighting System

(每個專案均備程式檔案 Program File Provided for Each Project)

專案資源 Project Resources

工作紙 Worksheets



程式檔案 Program Files



專題研習 Project Learning



相關課本 Related Textbook

《初中電腦之旅（校本單元版）

PA04 Python 基礎課程》

*Journey of Computer Literacy for
Secondary Schools (School-based Edn.)*

PA04 Python: A Basic Course



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