KD240 Face Detect

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AMD
together we advance_

Revision History

Date	Version	Description
01/26/24	1.1	Add missing step in page 7.
12/21/23	1.0	Initial version for flow introduction.

KD240 Face Detect

1. 先從以下網站安裝 KD240 的 Ubuntu 22.04

[Install Ubuntu on AMD | Ubuntu]

CHOOSE A BOARD

- Kria™ K24 SOMs
- Kria™ K26 SOMs
- Zynq™ UltraScale+™ MPSoC Development Boards
- Versal™ Adaptive SoC Evaluation Kit

Kria™ K24 SOMs (KD240)

Ubuntu Server 22.04

The version of optimised Ubuntu Server 22.04 is beta for now, the certified version is coming soon.

Works on:

- AMD Kria™ KD240 Drives Starter Kit

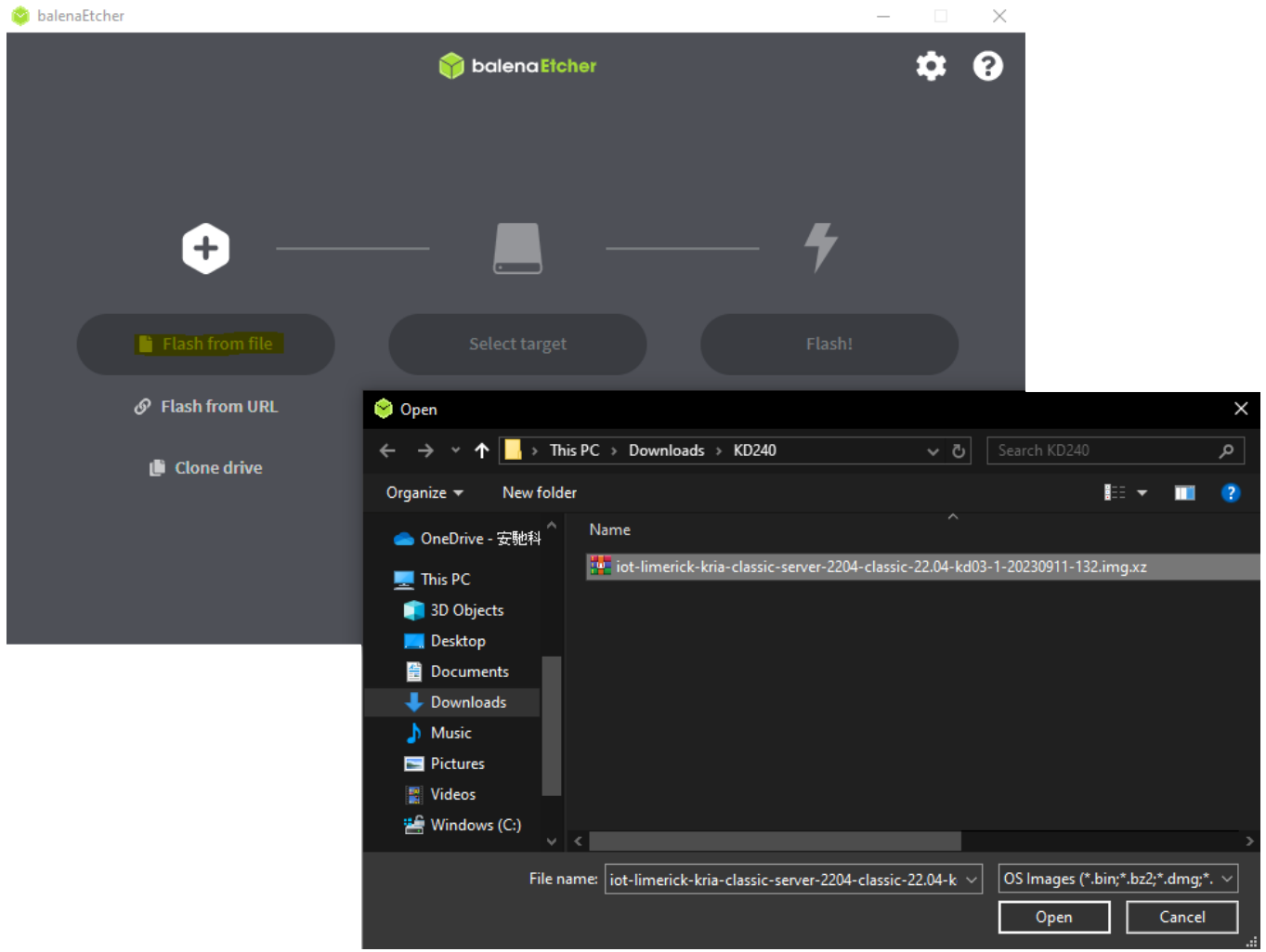
Please check the AMD Kria™ Wiki for the platform's latest boot firmware, technical documentation, and the Ubuntu for AMD-Xilinx Devices Wiki for known issues and limitations.

Download 22.04

KD240 Face Detect

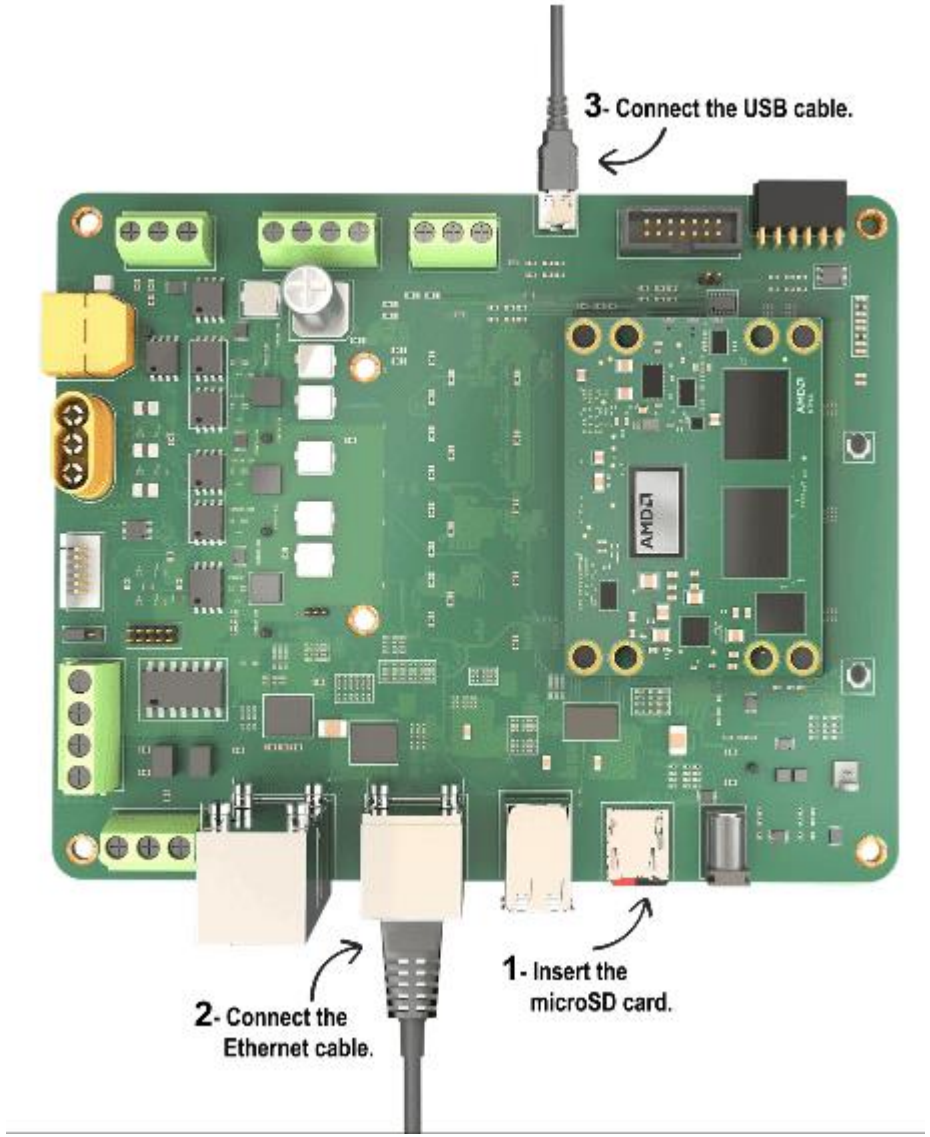
2. 使用 balenaEtcher 燒錄到 SD Card 內

[Setting up the SD Card Image (xilinx.com)]



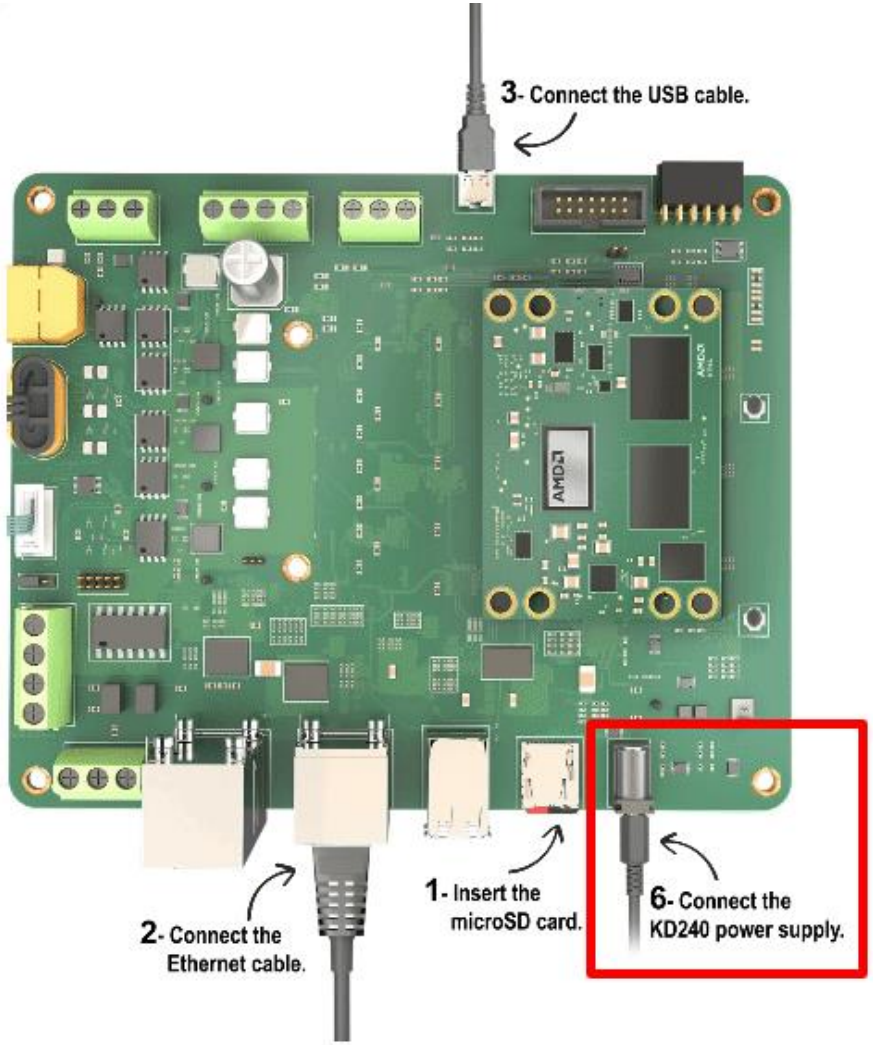
KD240 Face Detect

3. 依照下面方式插入到 KD240 的 SD Card 槽中



KD240 Face Detect

4. 上電並透過 MobaXtern 與 KD240 透過 UART 溝通




```
2. COM17 (USB Serial Port (COM1
kria login: ubuntu
Password:
You are required to change your password immediately (administrator enforced).
Changing password for ubuntu.
Current password:
New password:
Retype new password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-9002-xilinx-zynqmp aarch64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Thu Dec 21 05:15:06 UTC 2023

  System load:  0.11962890625     Processes:             122
  Usage of /:   6.2% of 28.21GB   Users logged in:       0
  Memory usage: 10%               IPv4 address for eth0: 10.8.3.232
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
```

KD240 Face Detect

5. 登入帳號與密碼皆為 ubuntu，第一次輸入密碼後會叫你改成自己的密碼
6. 登入後一定要先進行以下指令

Update Ubuntu package

- sudo apt update
- sudo apt upgrade

git clone https://github.com/Xilinx/Kria-PYNQ.git

cd Kria-PYNQ

更改 install.sh 242 行 ---> cp -r pynq_dpu/kd240_notebooks /root/jupyter_notebooks/

sudo bash install.sh -b KD240

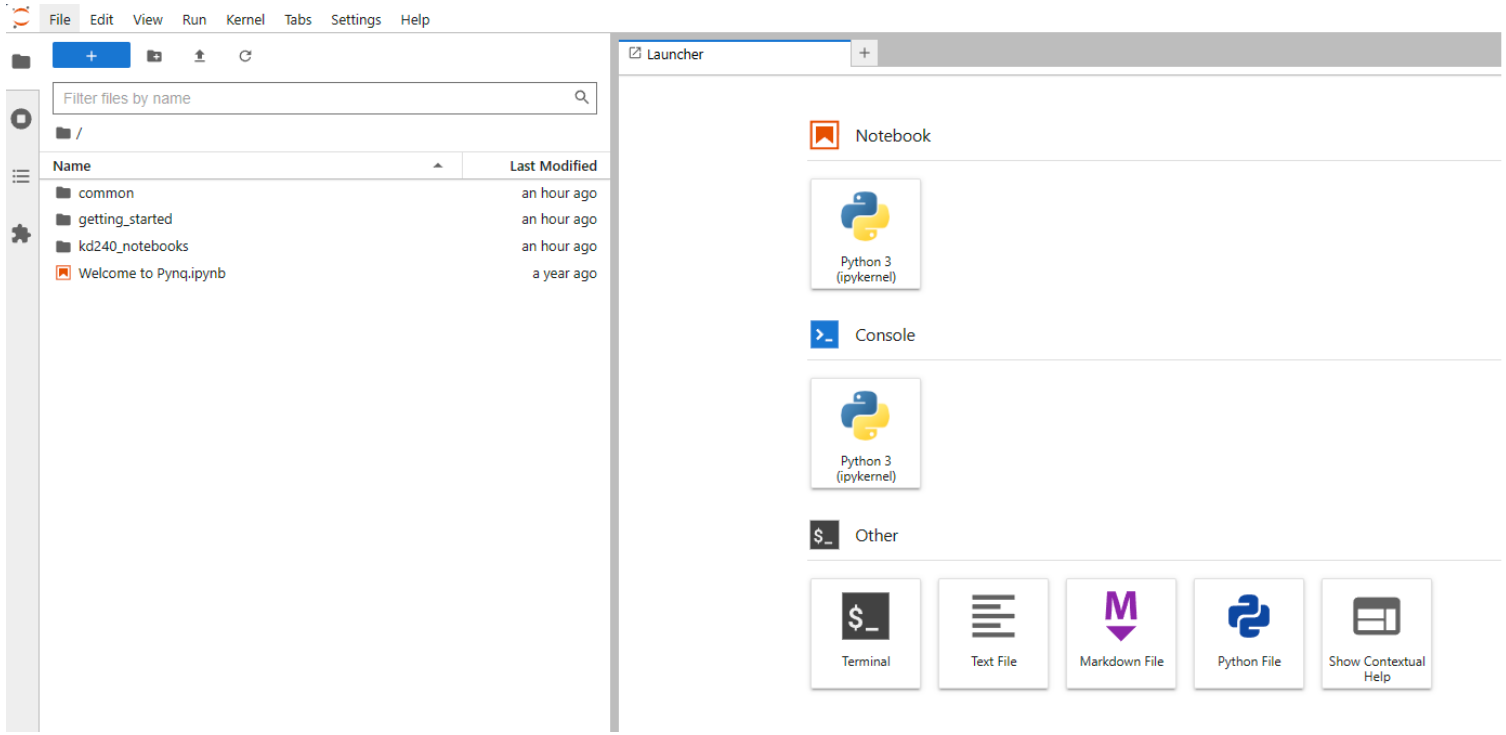

ONE HOUR
LATER...

KD240 Face Detect

8. 安裝結束且成功後看到以下訊息

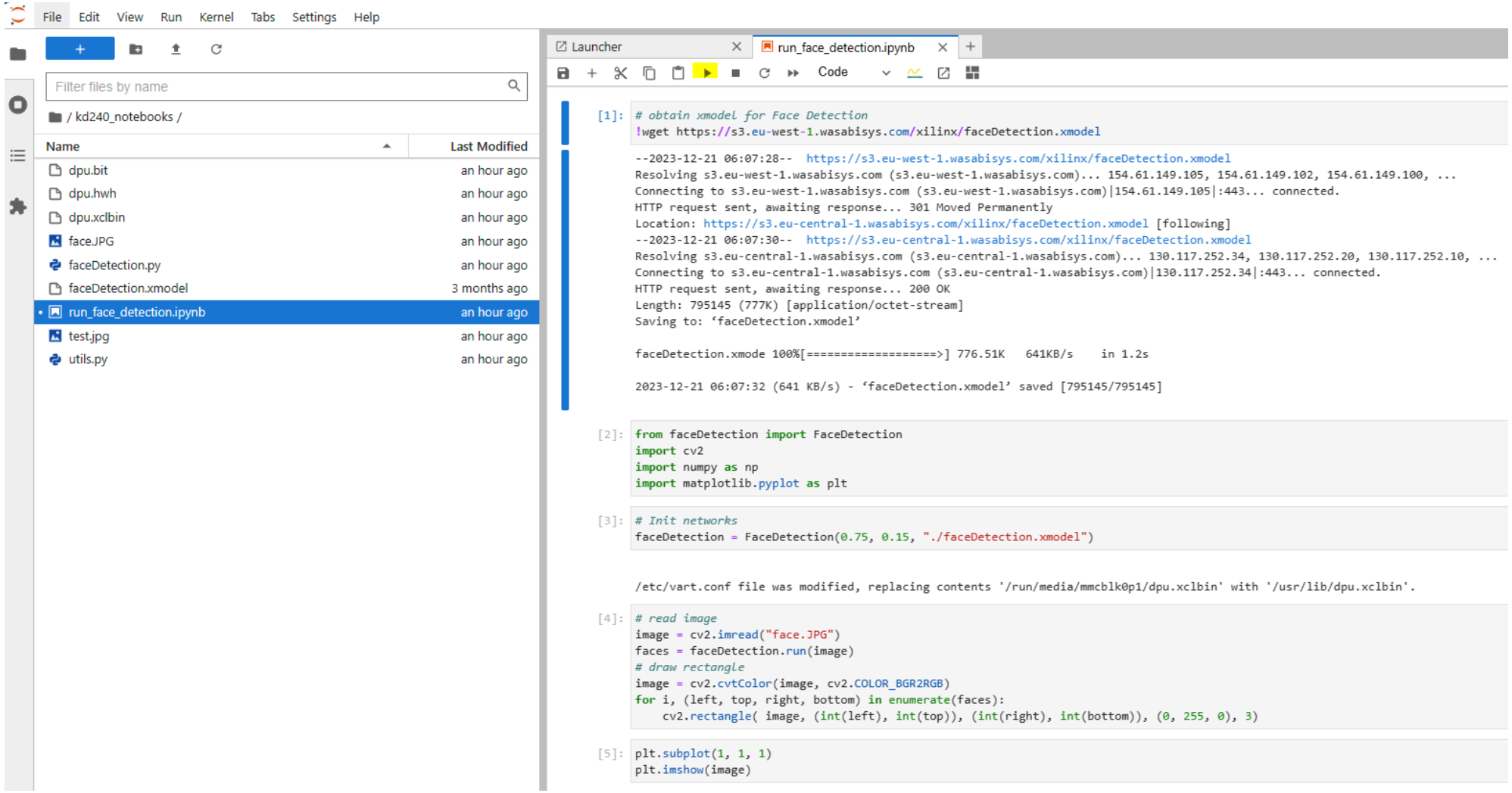
```
Installing collected packages: tomli, pluggy, iniconfig, exceptiongroup, pytest
Successfully installed exceptiongroup-1.2.0 iniconfig-2.0.0 pluggy-1.3.0 pytest-7.4.3 tomli-2.0.1
PYNQ Installation completed.


To continue with the PYNQ experience, connect to JupyterLab via a web browser using this url: 10.8.3.232:9090/lab or k
ria:9090/lab - The password is xilinx
```

9. 在電腦上輸入黃字給予的網址 e.g., 10.8.3.232:9090/lab，並輸入密碼：xilinx 後會看到



KD240 Face Detect

10. 點開 kd240_notebooks，再點開 run_face_detection.ipynb，可以發現會去呼叫 faceDetection.py，並且在 faceDetection.py 中會再去呼叫 utils.py，可以點選圖中黃色撥放鍵逐一執行程式



KD240 Face Detect

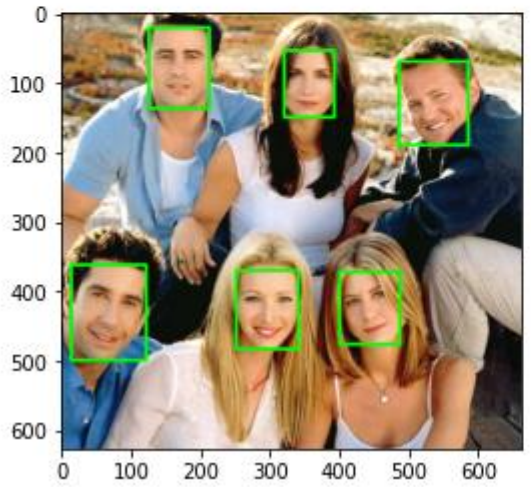
11. 最後可以發現結果會顯示在畫面上，並且可以自己抓圖片來做測試

[4]:
```
# read image
image = cv2.imread("face.JPG")
faces = faceDetection.run(image)
# draw rectangle
image = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
for i, (left, top, right, bottom) in enumerate(faces):
    cv2.rectangle( image, (int(left), int(top)), (int(right), int(bottom)), (0, 255, 0), 3)
```

改這行換要測試的圖片

[5]:
```
plt.subplot(1, 1, 1)
plt.imshow(image)
```

[5]:
```
<matplotlib.image.AxesImage at 0xffff569bb730>
```

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APPENDIX: Code Flow