How to use Taiwan Computing Cloud?

Train YOLOv9 as an example

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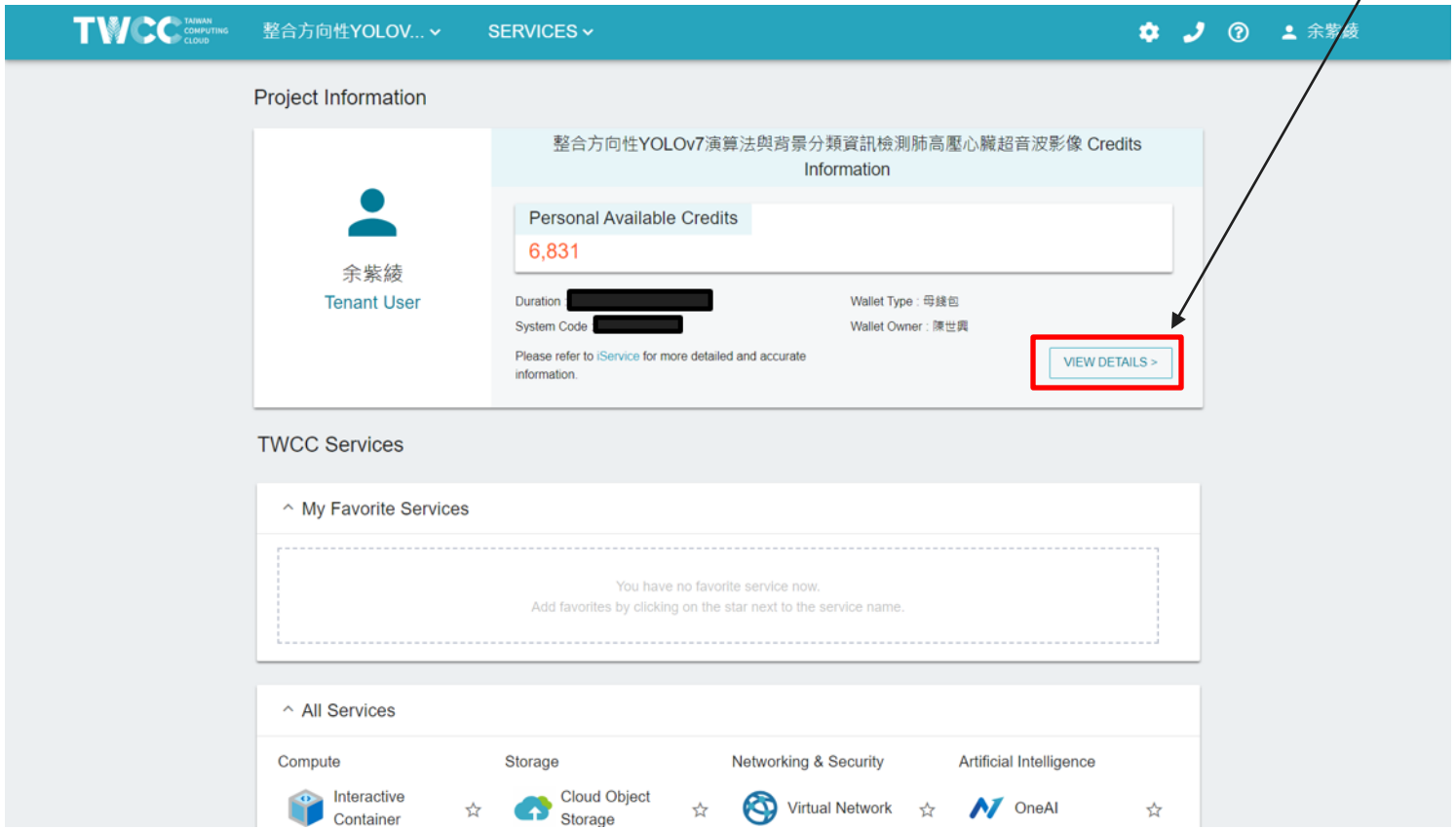
1. User interface of TWCC
2. Preparation of YOLOv9 and Dataset
3. Interactive container
4. Scheduled container
5. How to download files from TWCC
6. Query existing Interactive containers and delete them

1. User interface of TWCC

You can view storage and resource usage here.
(For PPT page19)

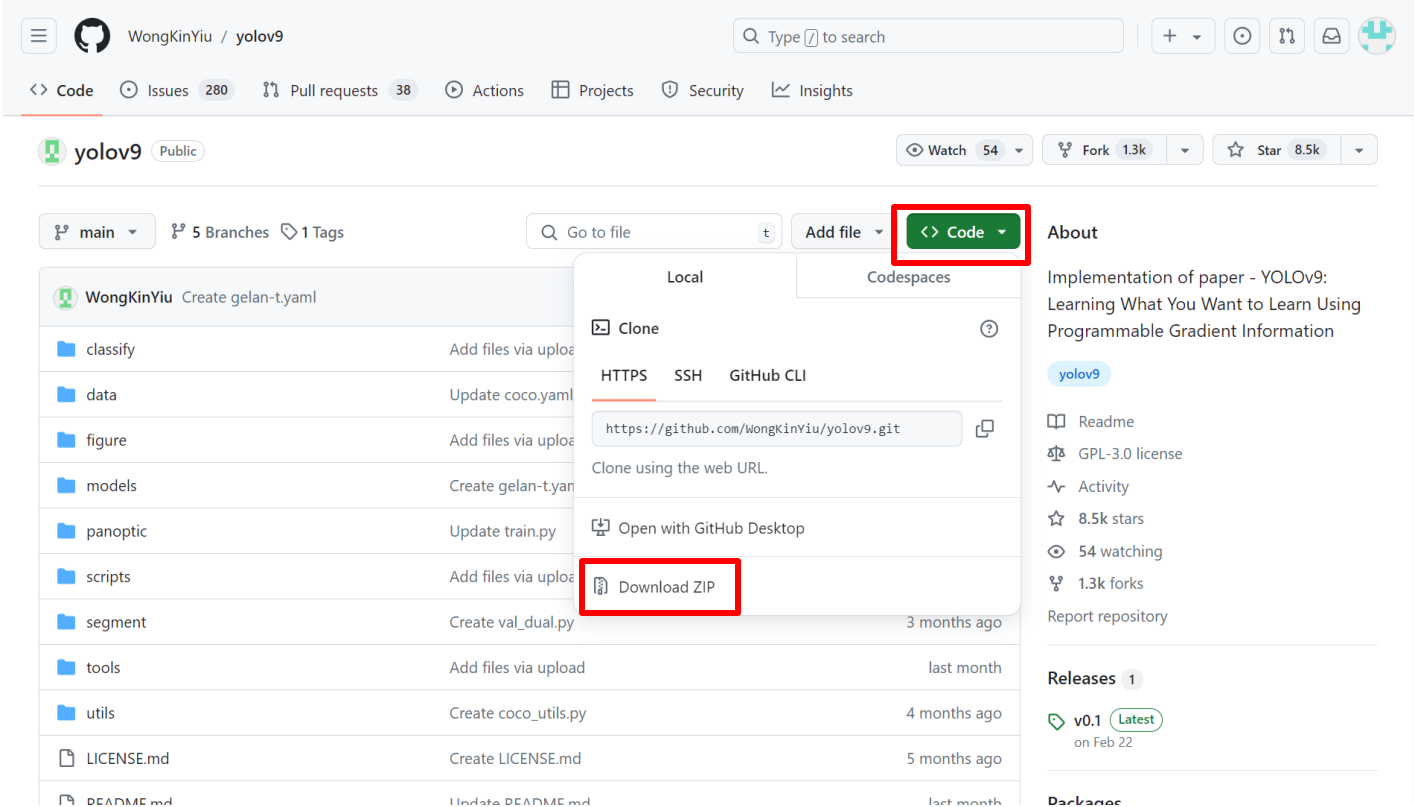


2. Preparation of YOLOv9 and Dataset

- We use YOLOv9 as an example, which is a well-known object detection algorithm
- Roboflow provides extensive datasets in image classification, object detection, segmentation, and so on.

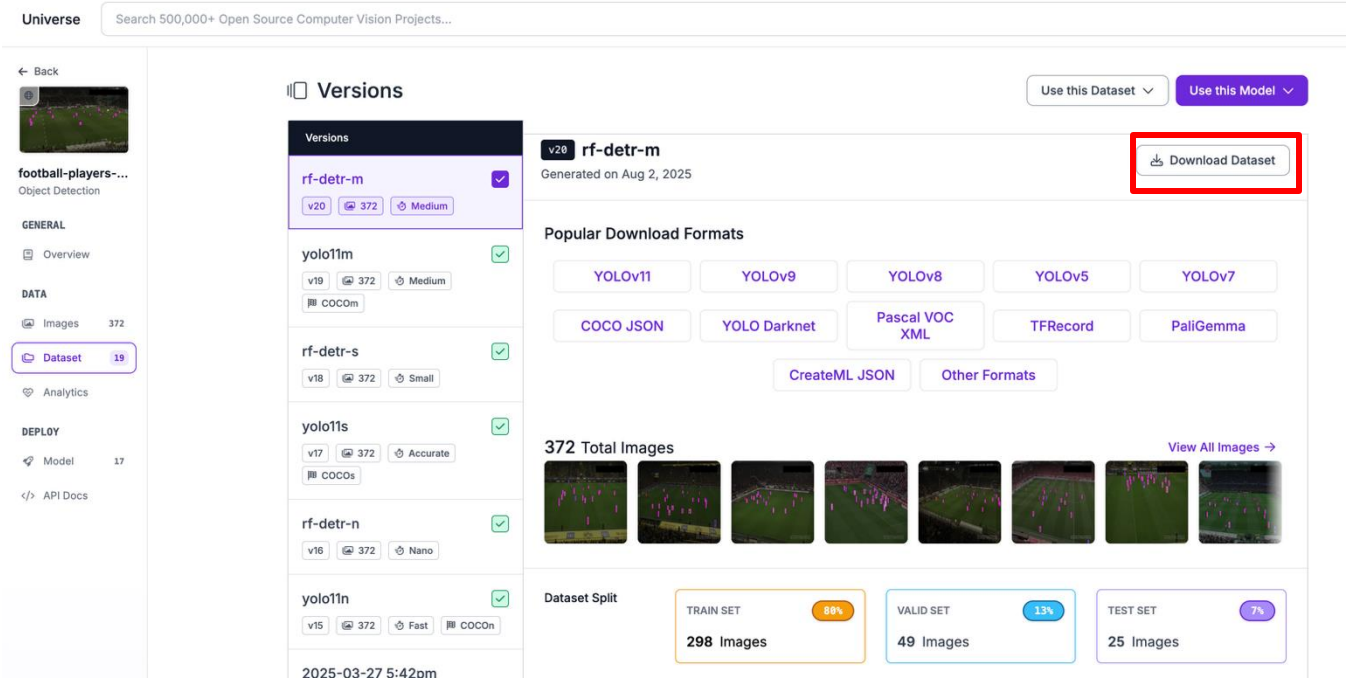
2.1 Download YOLOv9 from GitHub

Download yolov9 in zip form.
https://github.com/WongKinYiu/yolov9



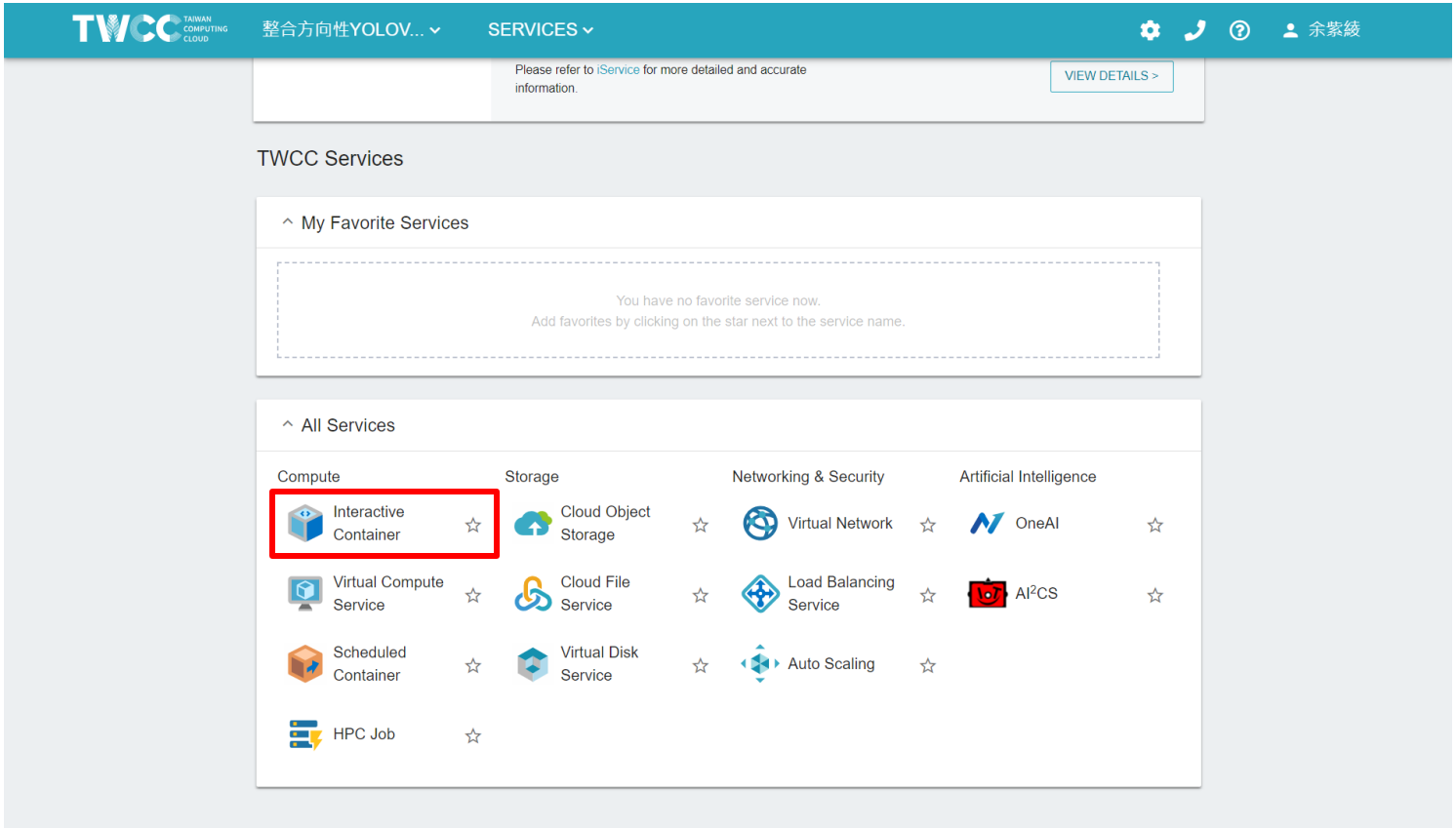
2.2 Object Detection Dataset

- A football player dataset from https://universe.roboflow.com/roboflow-jvuqo/football-players-detection-3zvbc/dataset/20



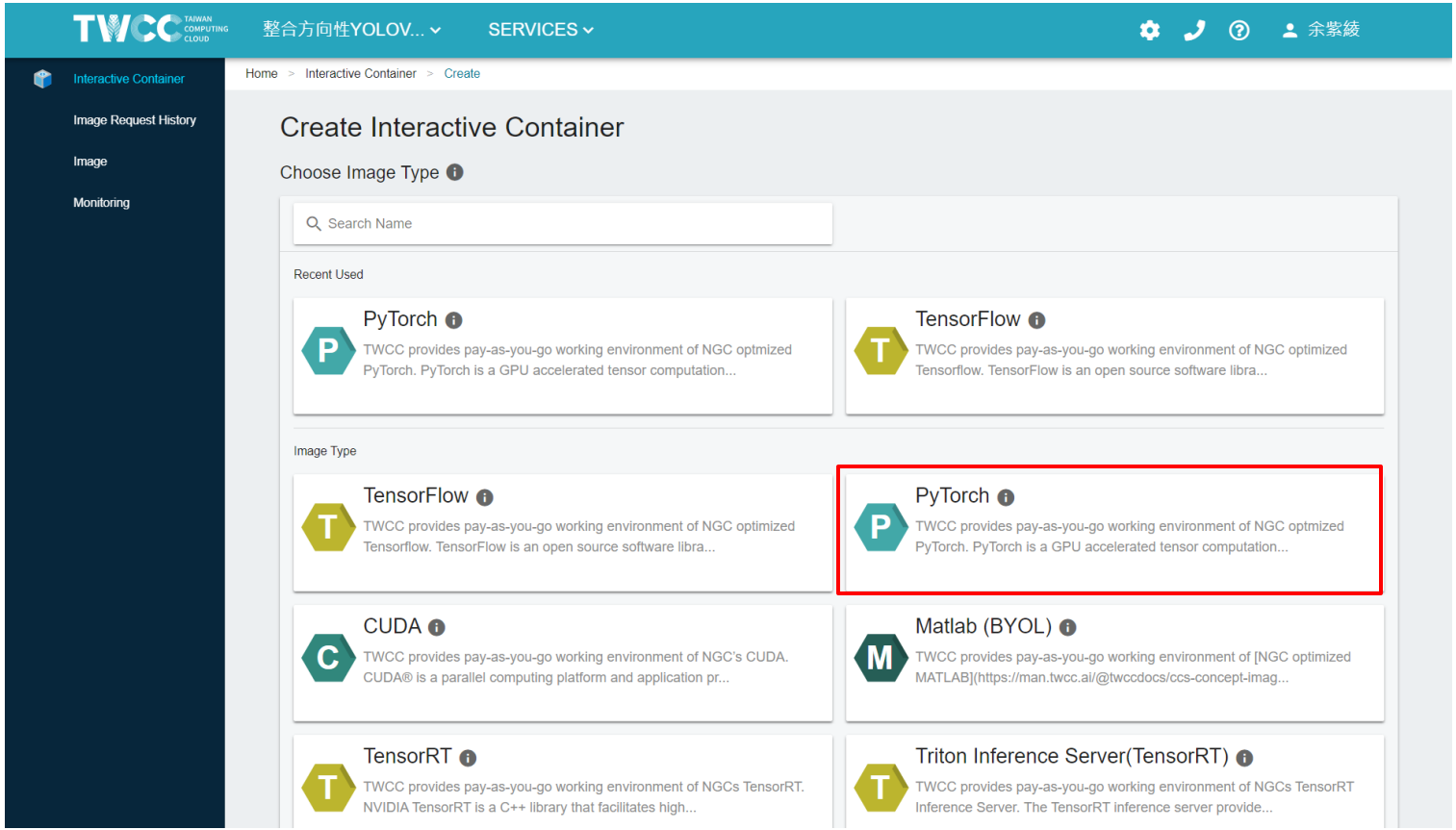
3. Interactive container

Click on development container



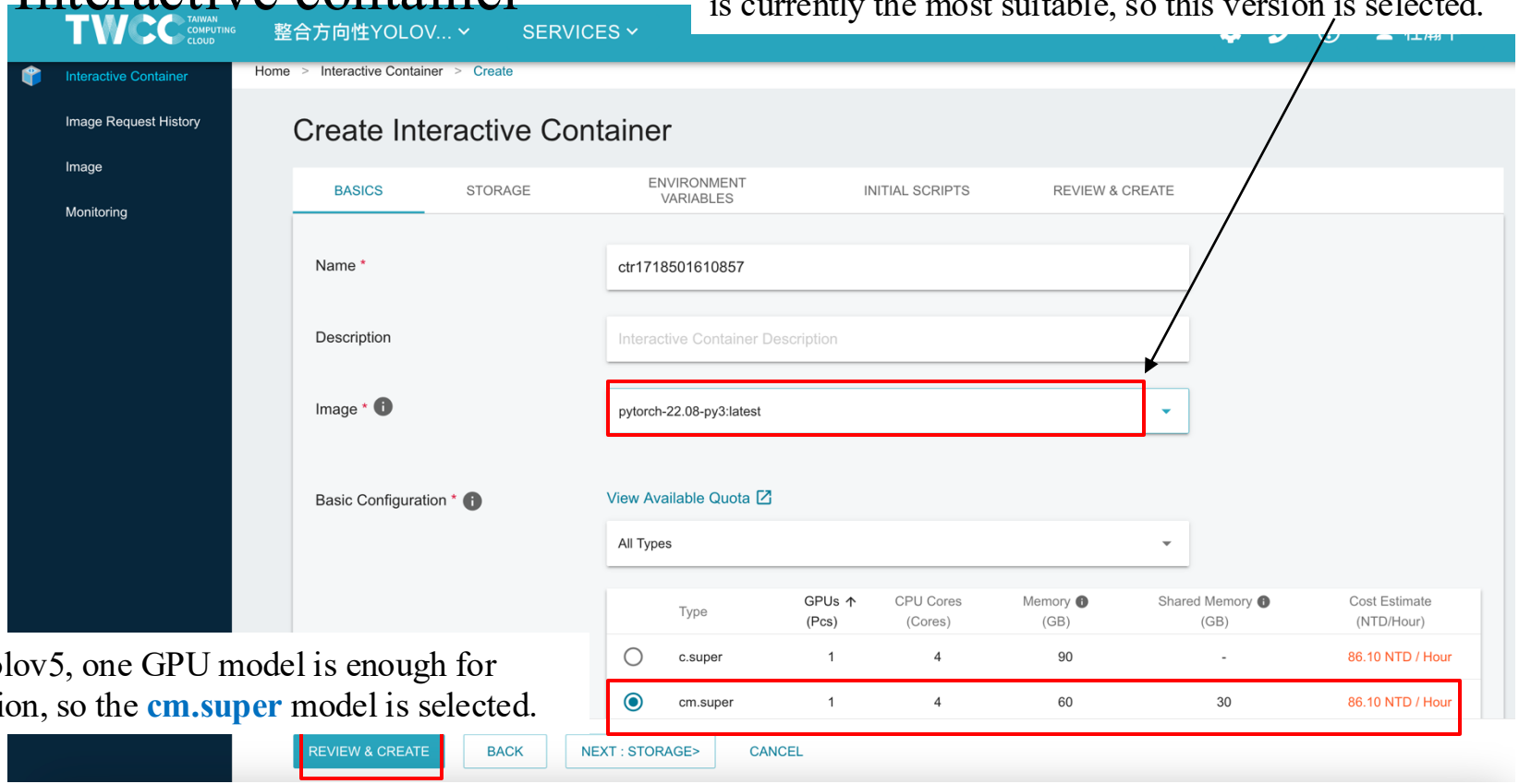
3. Interactive container

Since yolov9 uses PyTorch for image recognition, we chose PyTorch.



3. Interactive container

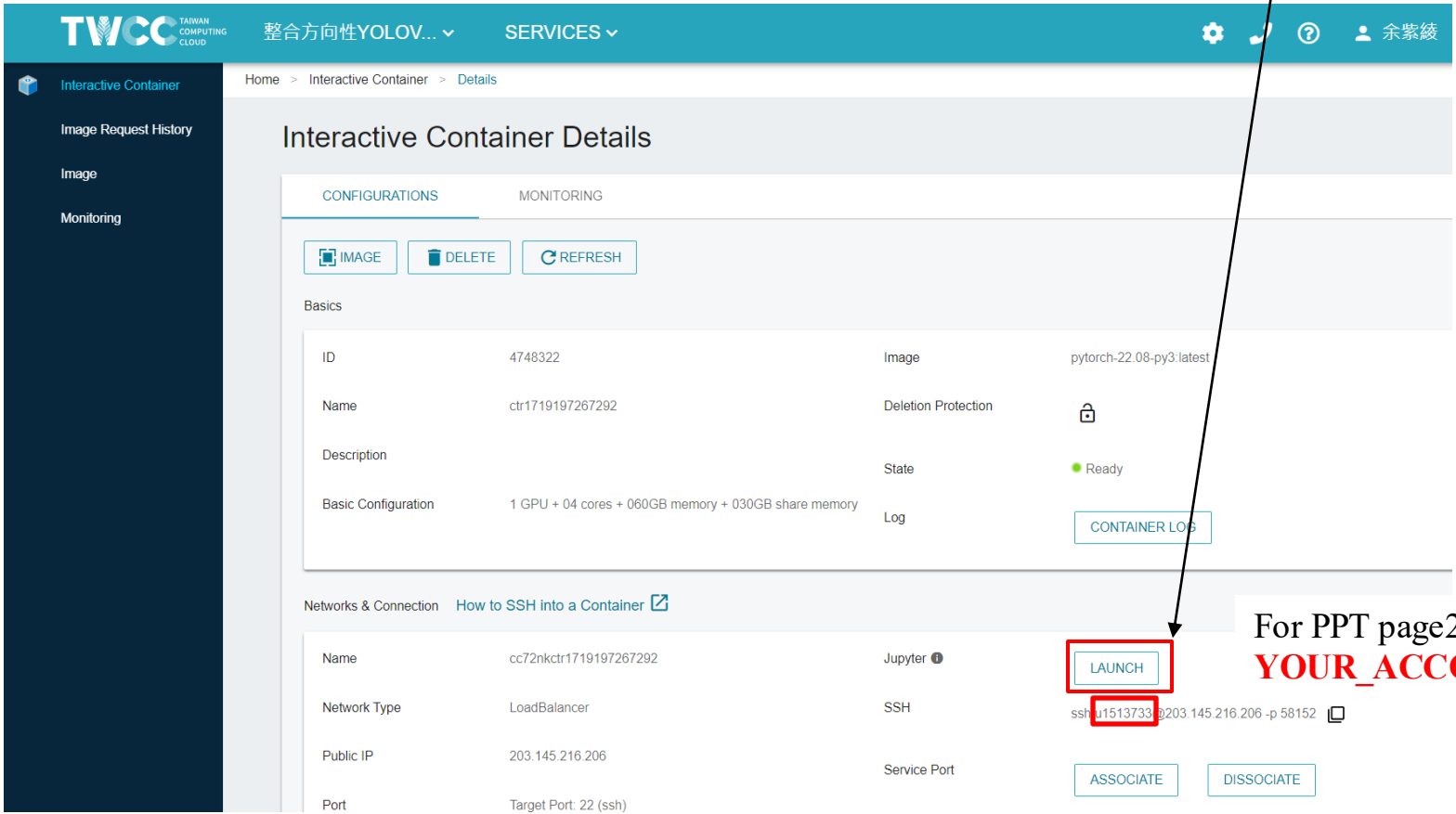
The latest version of the image file is not necessarily the most suitable for yolov9 , but **pytorch-22.08-py3:latest** is currently the most suitable, so this version is selected.



For yolov5, one GPU model is enough for detection, so the **cm.super** model is selected.

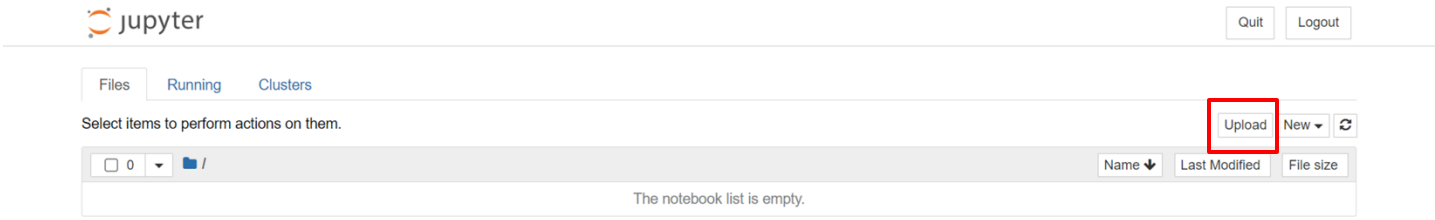
3. Interactive container

Open Jupyter, we can use Jupyter to upload the data and input commands required for yolov9 recognition.



For PPT page28
YOUR_ACCOUNT

3. Interactive container

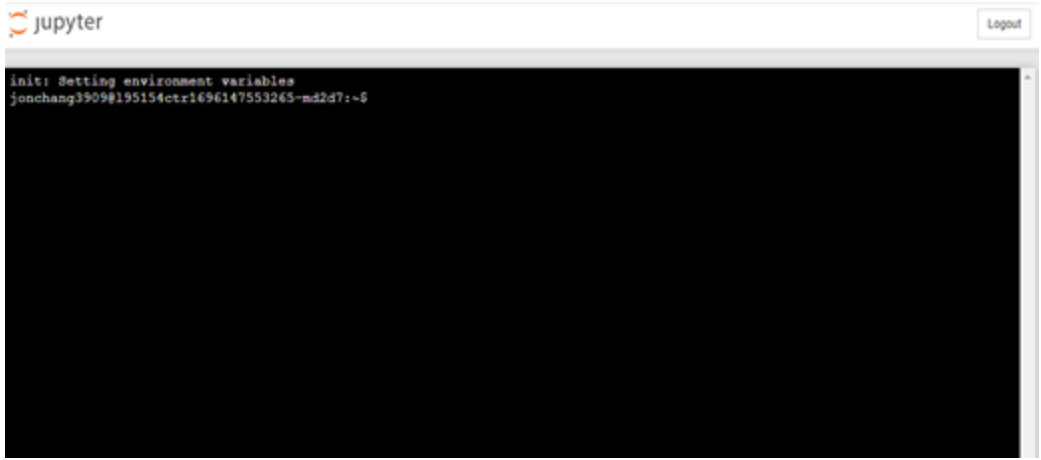


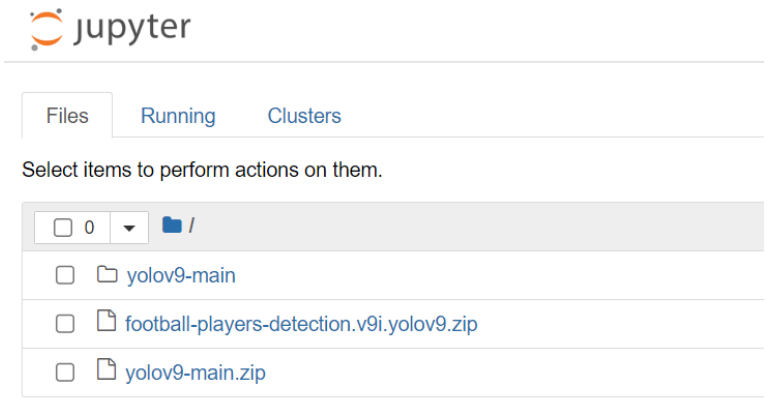
Upload yolov9-main.zip and dataset

3. Interactive container

Open the terminal

3. Interactive container





You can enter your commands here.

Unzip yolov9-main.zip and dataset.zip

- unzip yolov9-main.zip
- unzip YOUR_DATASET.zip –d ~/yolov9-main

3. Interactive container

- **What is the content of data.yaml?**
- **A relative path of the three folders. Please modify the ../ to ./**

jupyter data.yaml 2023年12月21日

File Edit View Language

```yaml
train: ../train/images
val: ../valid/images
test: ../test/images

nc: 4
names: ['ball', 'goalkeeper', 'player', 'referee']

roboflow:
  workspace: roboflow-jvuqo
  project: football-players-detection-3zvbc
  version: 2
  license: CC BY 4.0
  url: https://universe.roboflow.com/roboflow-jvuqo/
```

jupyter data.yaml 1 分鐘前

File Edit View Language

```yaml
train: ./train/images
val: ./valid/images
test: ./test/images

nc: 4
names: ['ball', 'goalkeeper', 'player', 'referee']

roboflow:
  workspace: roboflow-jvuqo
  project: football-players-detection-3zvbc
  version: 2
  license: CC BY 4.0
  url: https://universe.roboflow.com/roboflow-jvuqo/
```

3. Interactive container

Install the packages required for identification and then train the model

- cd ~/yolov9-main
- wget -P ./weights –q https://github.com/WongKinYiu/yolov9/releases/download/v0.1/yolov9-c.pt
- wget -P ./weights –q https://github.com/WongKinYiu/yolov9/releases/download/v0.1/yolov9-e.pt
- wget -P ./weights –q https://github.com/WongKinYiu/yolov9/releases/download/v0.1/gelan-c.pt
- wget -P ./weights -q https://github.com/WongKinYiu/yolov9/releases/download/v0.1/gelan-e.pt

```
u1513733@gvns8xctr1720416049770-gt28n:~$
u1513733@gvns8xctr1720416049770-gt28n:~$
u1513733@gvns8xctr1720416049770-gt28n:~$ cd ~/yolov9-main
u1513733@gvns8xctr1720416049770-gt28n:~/yolov9-main$ wget -P ./weights -q  https://github.com/WongKinYiu/yolov9/releases/dow
nload/v0.1/gelan-c.pt
--2024-07-08 13:55:23--  http://xn--q-5gn/
Resolving xn--q-5gn (xn--q-5gn)... failed: Name or service not known.
wget: unable to resolve host address 'xn--q-5gn'
--2024-07-08 13:55:23--  https://github.com/WongKinYiu/yolov9/releases/download/v0.1/gelan-c.pt
Resolving github.com (github.com)... 20.27.177.113
Connecting to github.com (github.com)|20.27.177.113|:443... connected.
```

3. Interactive container

Install the packages required for identification and then train the model

- sudo apt-get update && sudo apt-get install libgl1 -y && pip install seaborn && python train.py --batch **64** --epochs 5 --img 416 --device 0 --min-items 0 --close-mosaic 15 --data ./data.yaml --weights ./weights/**gelan-c.pt** --cfg models/detect/gelan-c.yaml --hyp hyp.scratch-high.yaml

```
u1513733@gvns8xctr1720416049770-gt28n:~/yolov9-main$ sudo apt-get update && sudo apt-get install libgl1 -y && python train.p
y --batch 64 --epochs 5 --img 416 --device 0 --min-items 0 --close-mosaic 15 --data ./data.yaml --weights ./weights/gelan-c.
pt --cfg models/detect/gelan-c.yaml --hyp hyp.scratch-high.yaml
Hit:1 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Hit:4 http://archive.ubuntu.com/ubuntu focal-backports InRelease
Fetched 128 kB in 2s (68.3 kB/s)
Reading package lists... Done
Reading package lists... Done
Building dependency tree
Reading state information... Done
libgl1 is already the newest version (1.3.2-1~ubuntu0.20.04.2).
0 upgraded, 0 newly installed, 0 to remove and 164 not upgraded.
train: weights=./weights/gelan-c.pt, cfg=models/detect/gelan-c.yaml, data=./data.yaml, hyp=hyp.scratch-high.yaml, epochs=5,
```

3. Interactive container

```
Validating runs/train/exp4/weights/best.pt...
Fusing layers...
gelan-c summary: 387 layers, 25230172 parameters, 0 gradients, 101.8 GFLOPs
                 Class     Images  Instances          P          R      mAP50   mAP50-95: 100%|          | 1/1 00:00
                   all         43       1025      0.711      0.204      0.186      0.101
                  ball         43         39          1          0          0          0
            goalkeeper         43         32          1          0          0          0
                player         43        853      0.634      0.798      0.708      0.384
               referee         43        101      0.209     0.0184      0.037     0.0209
Results saved to runs/train/exp4
u1513733@gvns8xctr1720416049770-gt28n:~/yolov9-main$
```

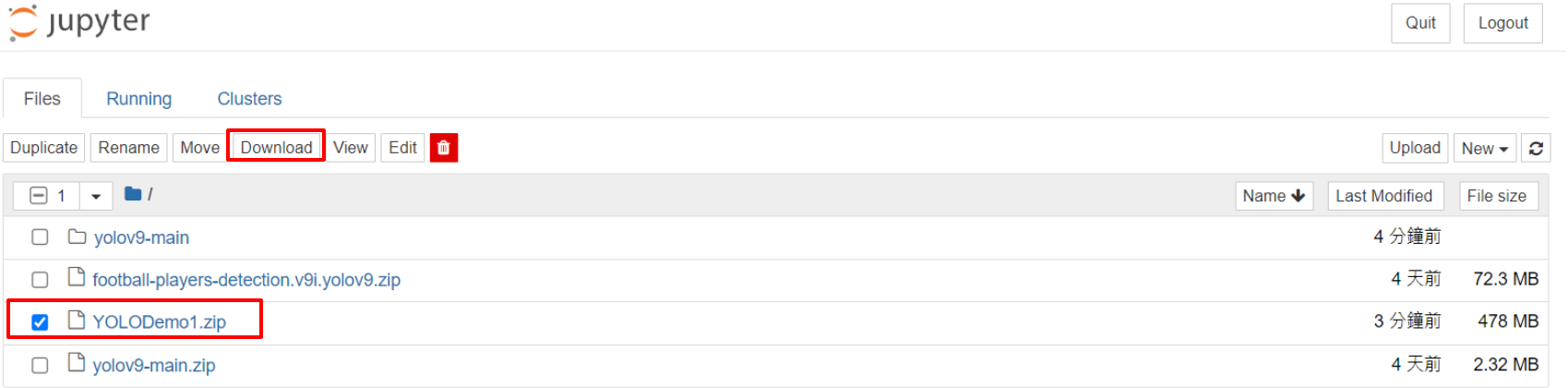
Training result storage location

Compressed archive

- sudo apt-get install zip gzip tar && zip -r YOLODemo1.zip /home/**YOUR_ACCOUNT**/yolov9-main/runs/train/**exp4**

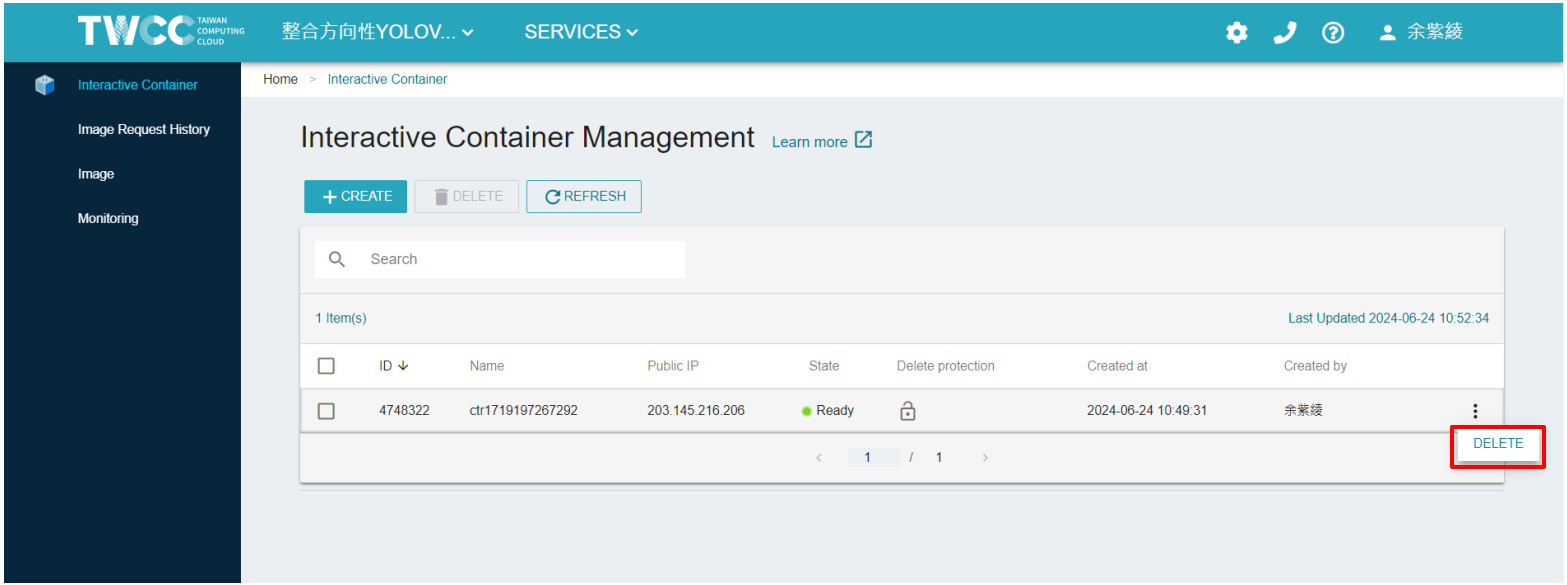
```
u1513733@gvns8xctr1720416049770-gt28n:~$ sudo apt-get install zip gzip tar && zip -r YOLODemo1.zip  /home/u1513733/yolov9-mai
uns/train/exp4
Reading package lists... Done
Building dependency tree
Reading state information... Done
zip is already the newest version (3.0-11build1).
```

3. Interactive container



Check and download the results of completed training

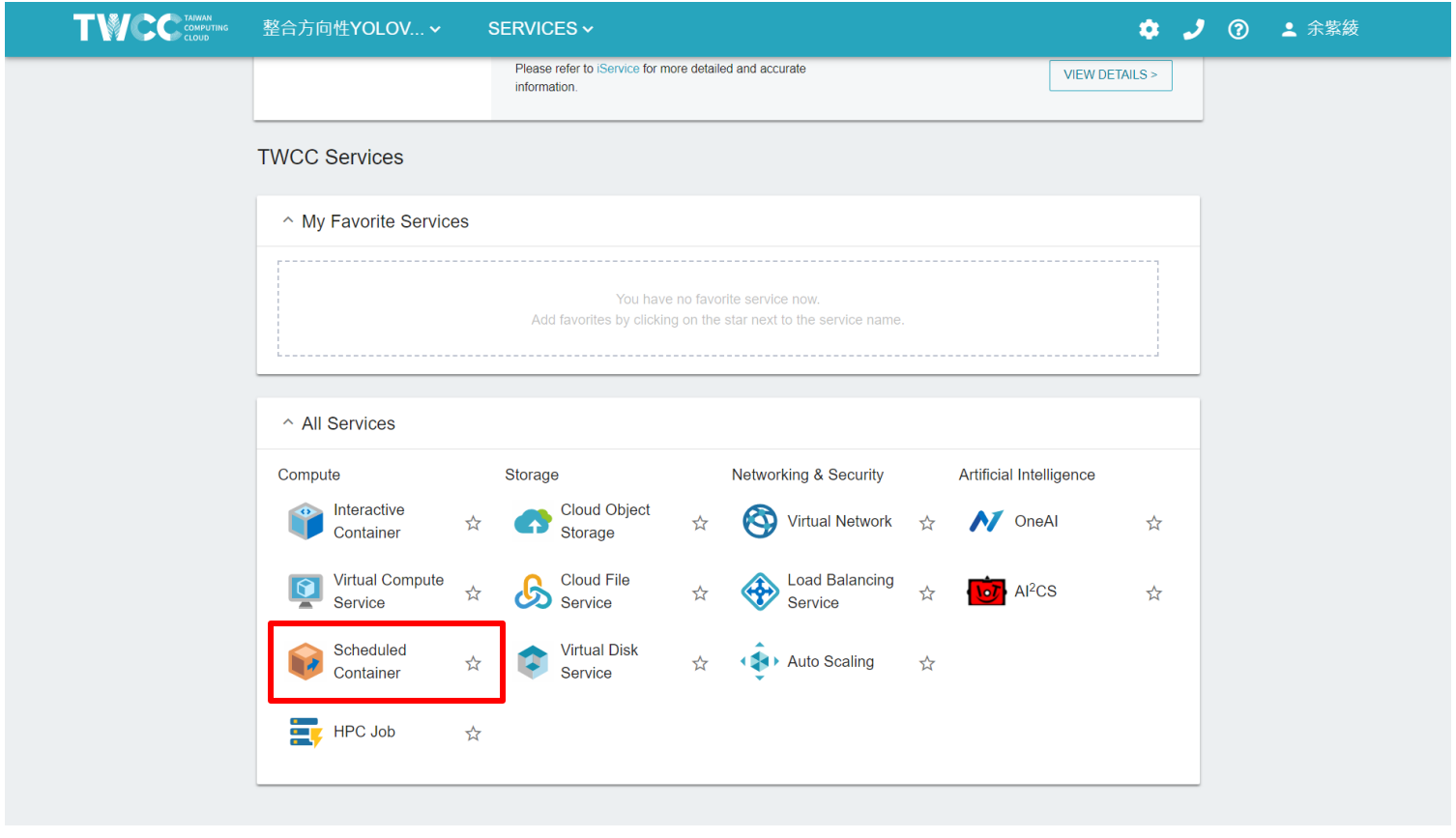
3. Interactive container



Most important don't forget to delete the container after you finished!!!

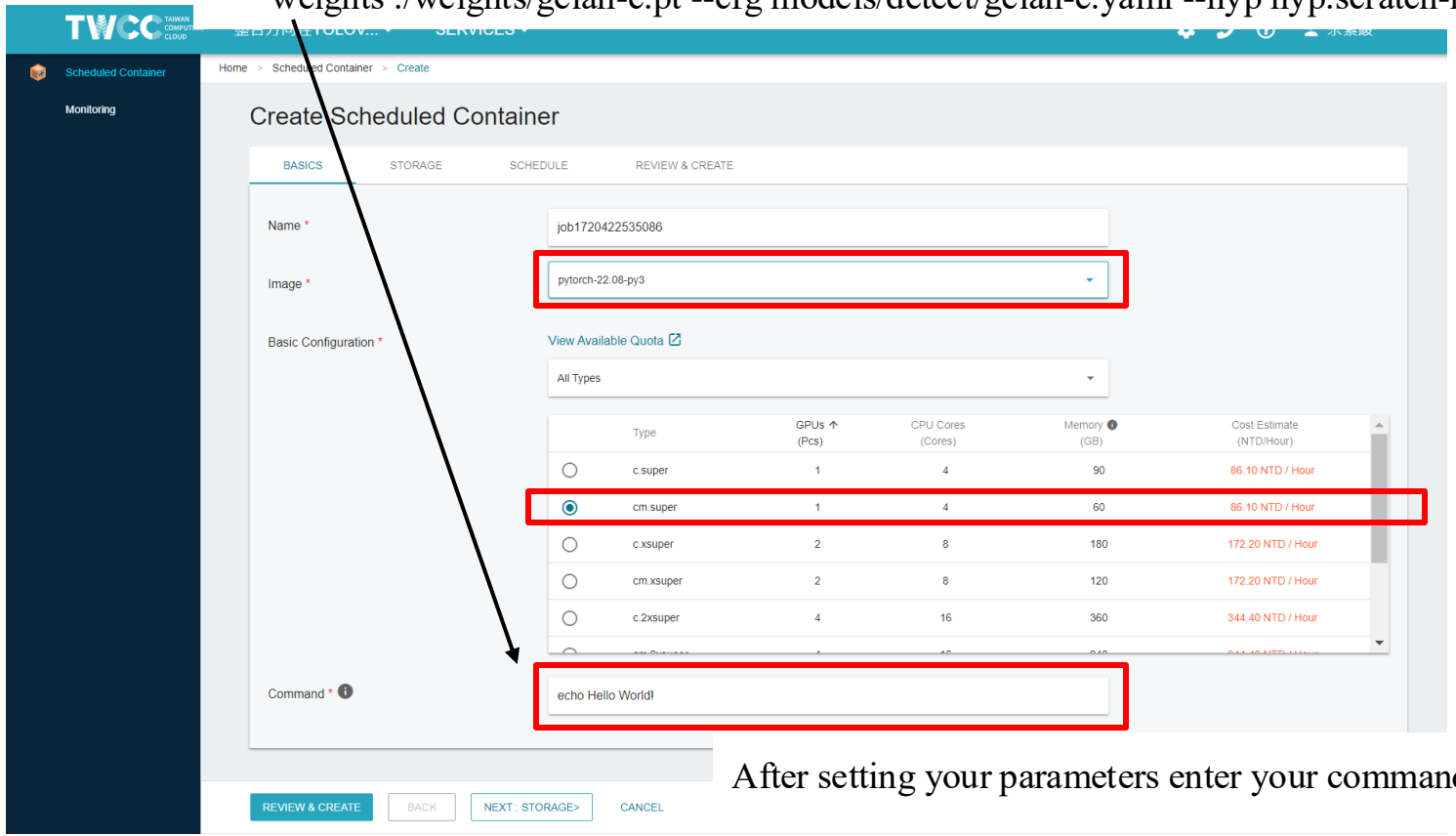
4. Scheduled container

Click on the task container



4. Scheduled

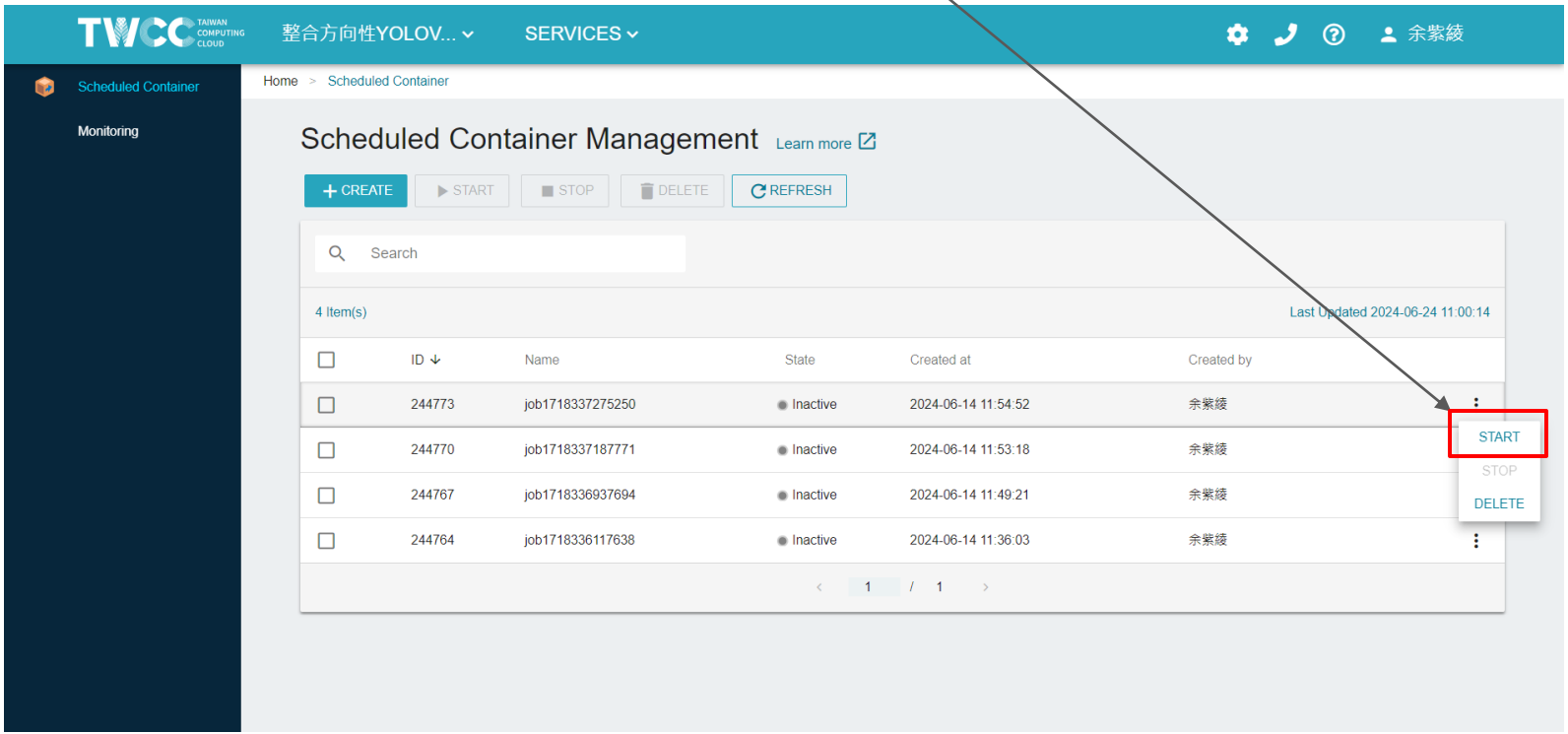
- sudo apt-get update && sudo apt-get install libgl1 -y && pip install pandas && pip install seaborn && pip install pillow==9.5.0 && cd ~/yolov9-main/ && python train.py --batch 64 --epochs **100** --img 416 --device 0 --min-items 0 --close-mosaic 15 --data ./data.yaml --weights ./weights/gelan-c.pt --cfg models/detect/gelan-c.yaml --hyp hyp.scratch-high.yaml



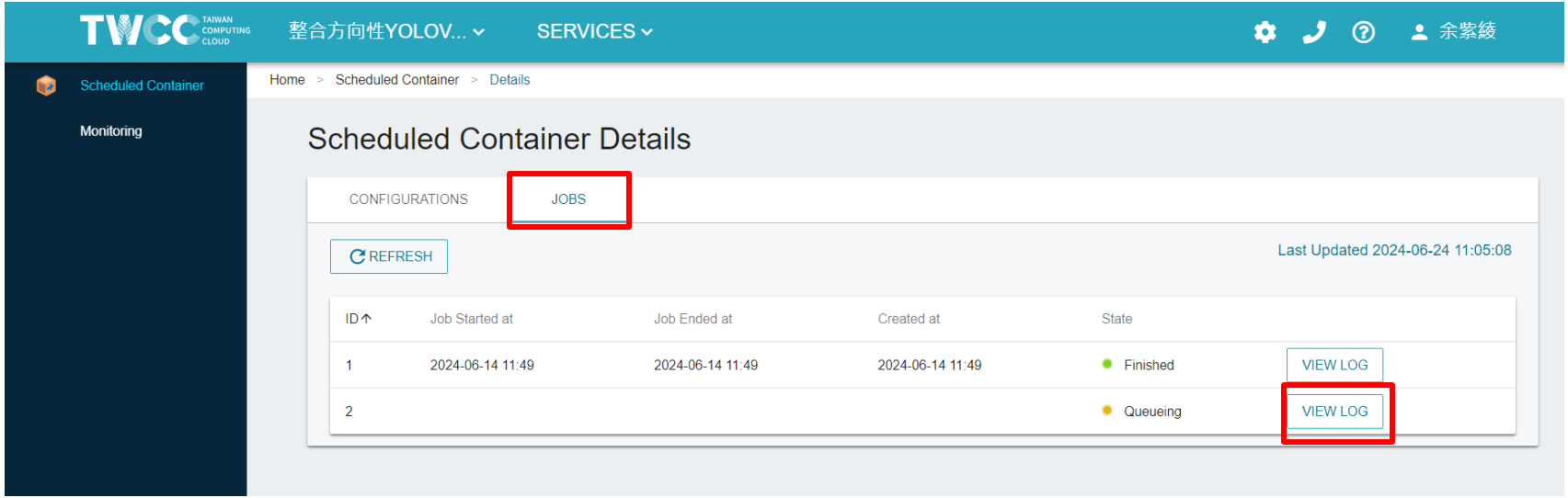
After setting your parameters enter your commands here

You have to manually start the container

4. Scheduled container

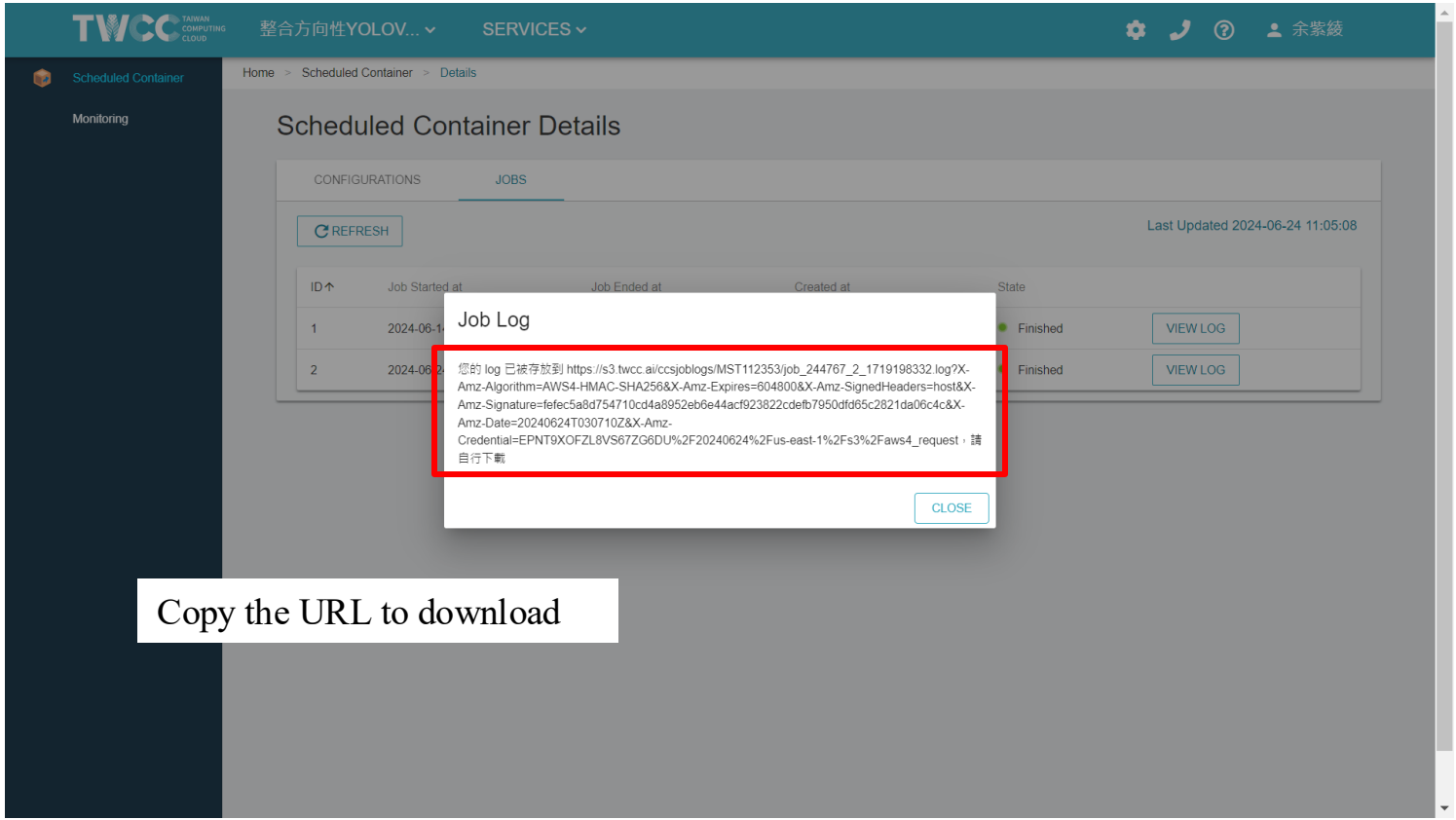


4. Scheduled container



Click to view progress

4. Scheduled container



Copy the URL to download

4. Scheduled container: Example Commands

A. Multiple training

cd /work/jonchang3909/yolov5/ && sudo apt-get update && sudo apt-get install libgl1 -y && pip install pandas && pip install seaborn && pip install pillow==9.5.0 &&

python train.py --img 416 --batch 72 --epochs 300 --data ../MuseumImages/1505/data.yaml --cfg ./models/yolov5l.yaml --weights '' --name 1505V5L -- cache &&

python train.py --img 416 --batch 72 --epochs 300 --data ../MuseumImages/1510/data.yaml --cfg ./models/yolov5l.yaml --weights '' --name 1510V5L -- cache &&

python train.py --img 416 --batch 72 --epochs 300 --data ../MuseumImages/1515/data.yaml --cfg ./models/yolov5m.yaml --weights '' --name 1515V5m -- cache &&

python train.py --img 416 --batch 72 --epochs 300 --data ../MuseumImages1520/data.yaml --cfg ./models/yolov5s.yaml --weights '' --name 1520V5s --cache

B. Scripting

./train123.sh

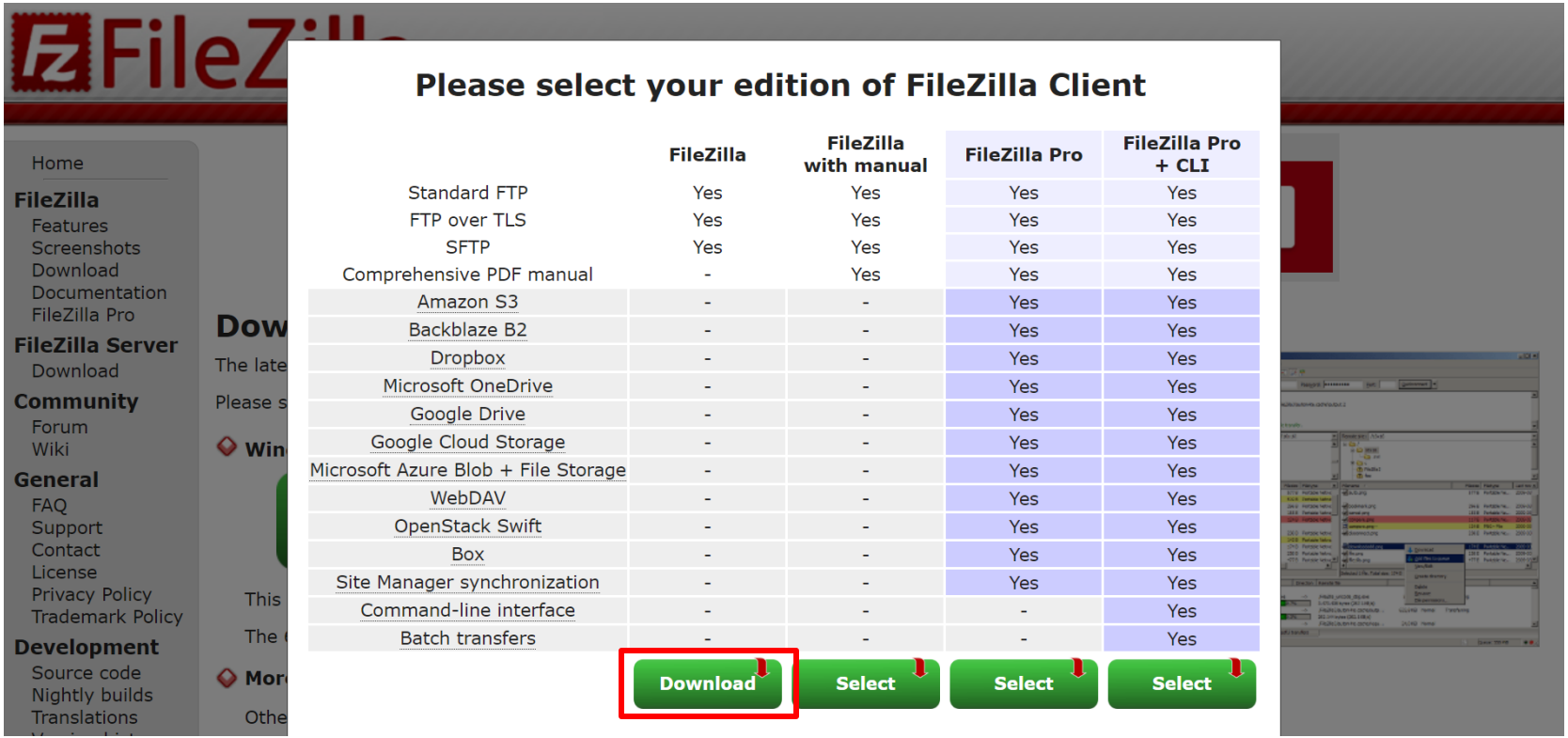
C. Zip result folder

sudo apt-get install zip gzip tar && zip -r Yolov5Test0305-2.zip '/home/u1513733/yolov5-master/runs/train/test0305-2'

5. How to download files from TWCC

Download filezilla
https://filezilla-project.org/

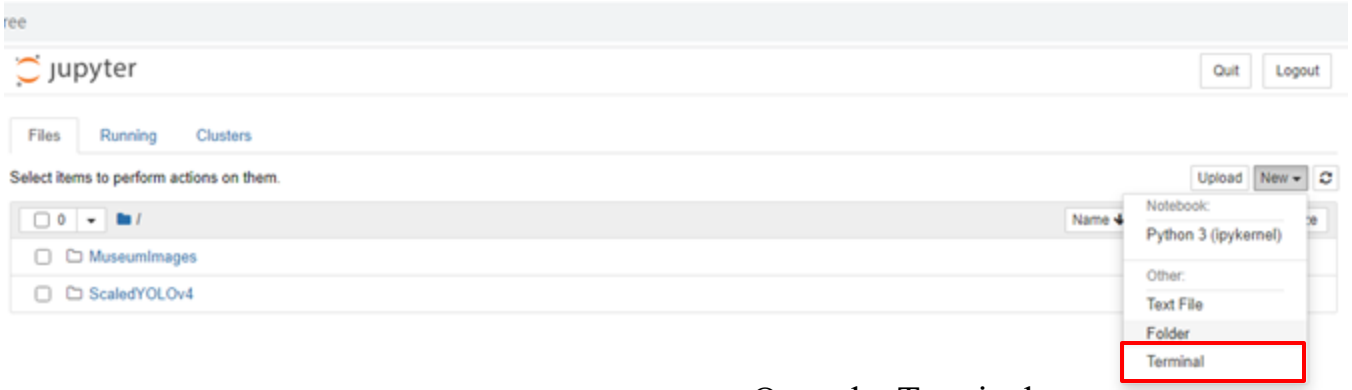
5. How to download files from TWCC



5. How to download files from TWCC

Obtain the private key

Option 1: Create an interactive container and open the terminal



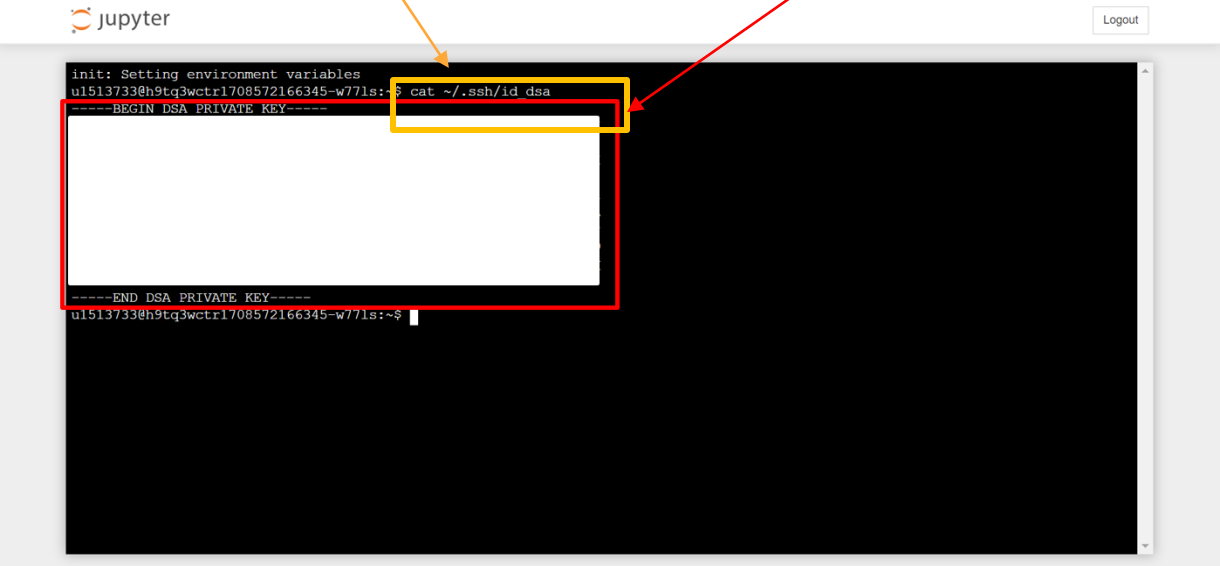
Open the Terminal

5. How to download files from TWCC

Copy the text contained in the entire **red box**, paste it into notepad, and change the attachment name to 【 .ppk 】,
for example, test1.ppk

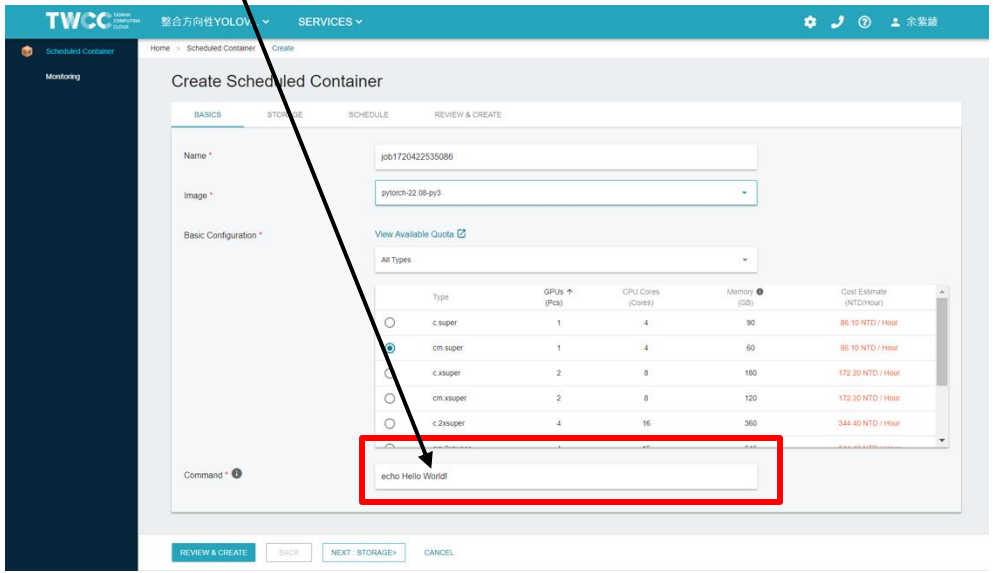
The 3 commands create and obtain key file:
ssh-keygen -t rsa -b 4096 -N '' -f ~/.ssh/id_rsa
cat >> ~/.ssh/authorized_keys < ~/.ssh/id_rsa.pub
cat ~/.ssh/id_rsa

This red area is a key file, including BEGIN/END.

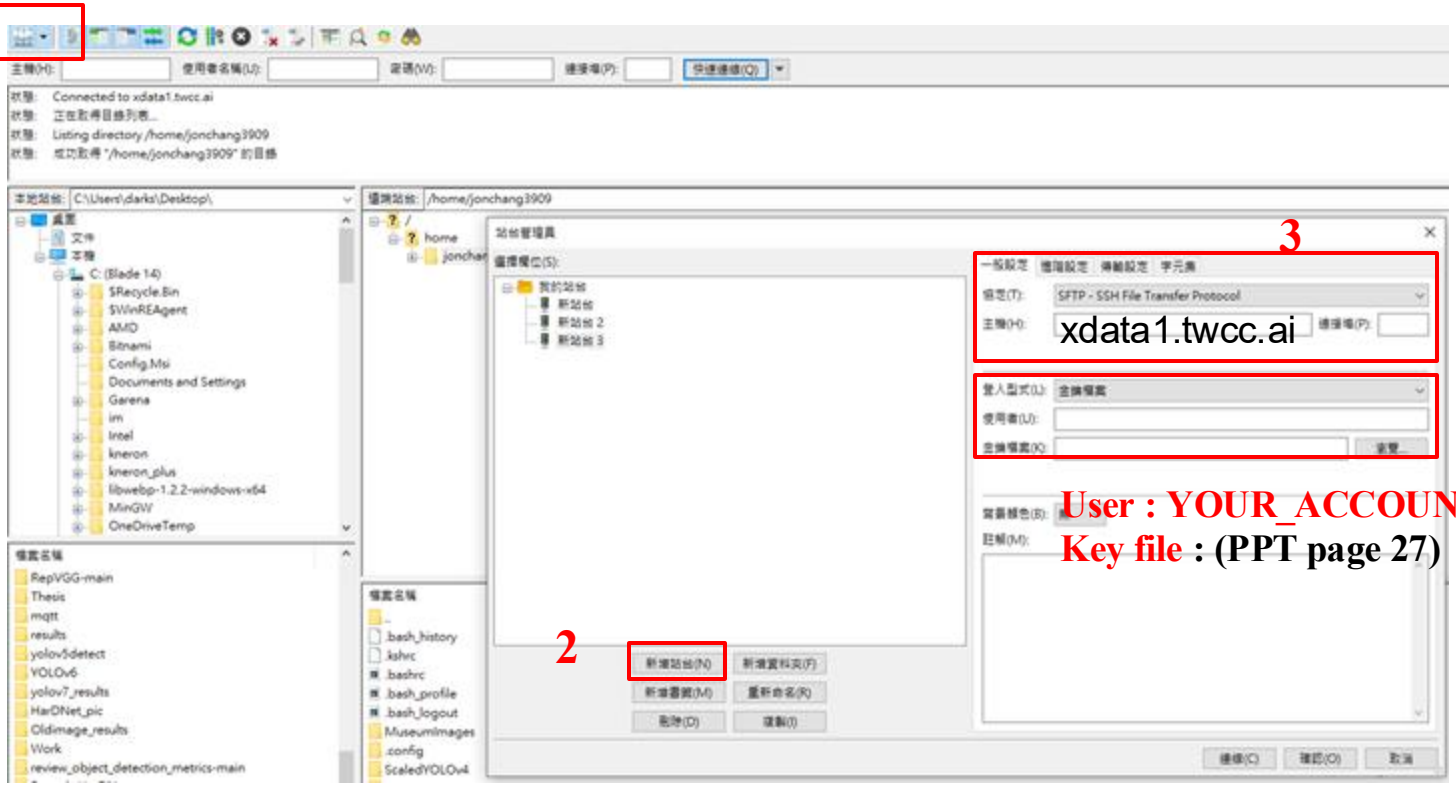


5. How to download files from TWCC

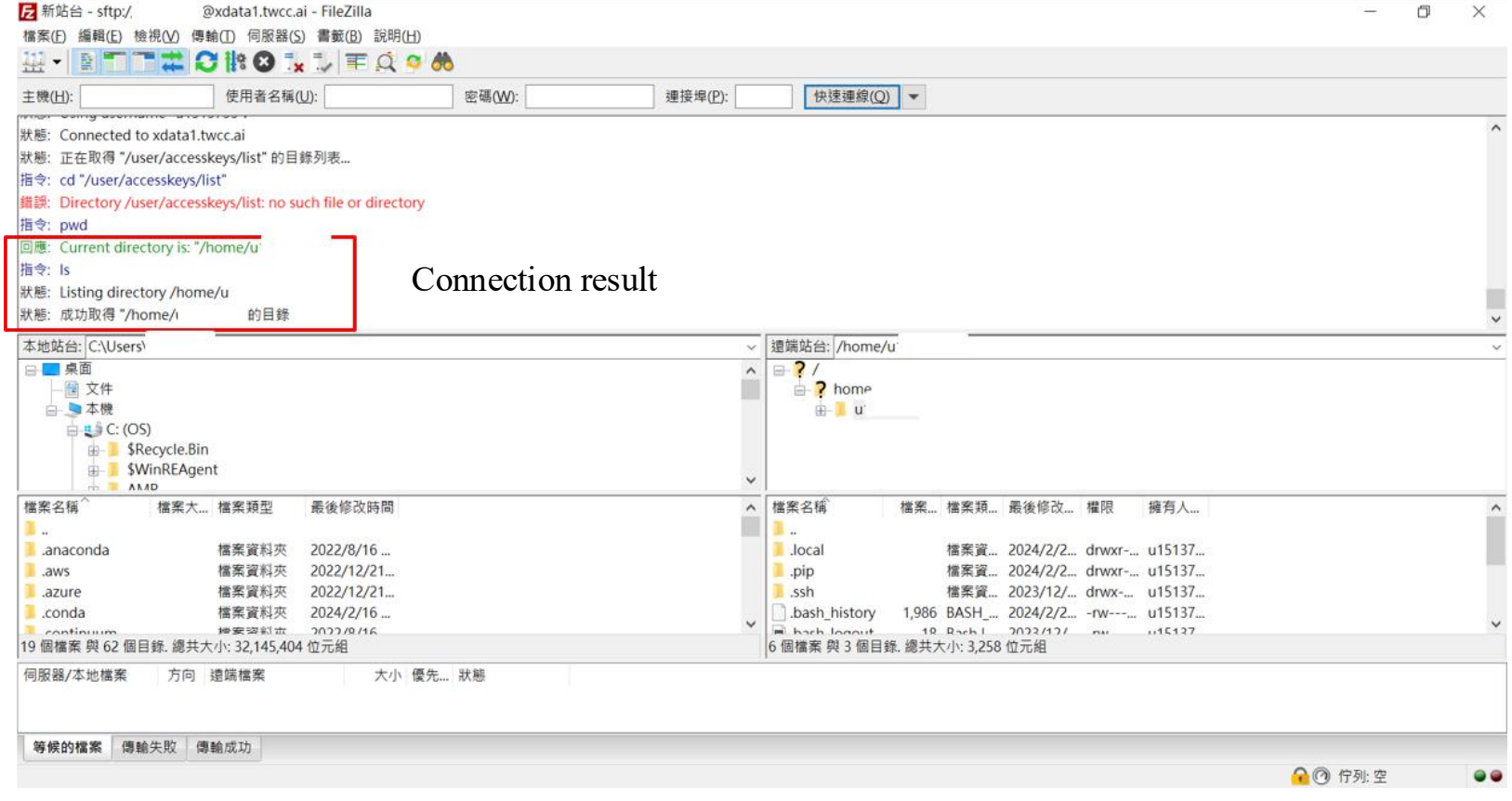
- Option 2: Input the following commands under the schedule container
- cd ~/ && ssh-keygen -t rsa -b 4096 -N '' -f ~/.ssh/id_rsa && cat >> ~/.ssh/authorized_keys < ~/.ssh/id_rsa.pub && cat ~/.ssh/id_rsa



5. How to download files from TWCC



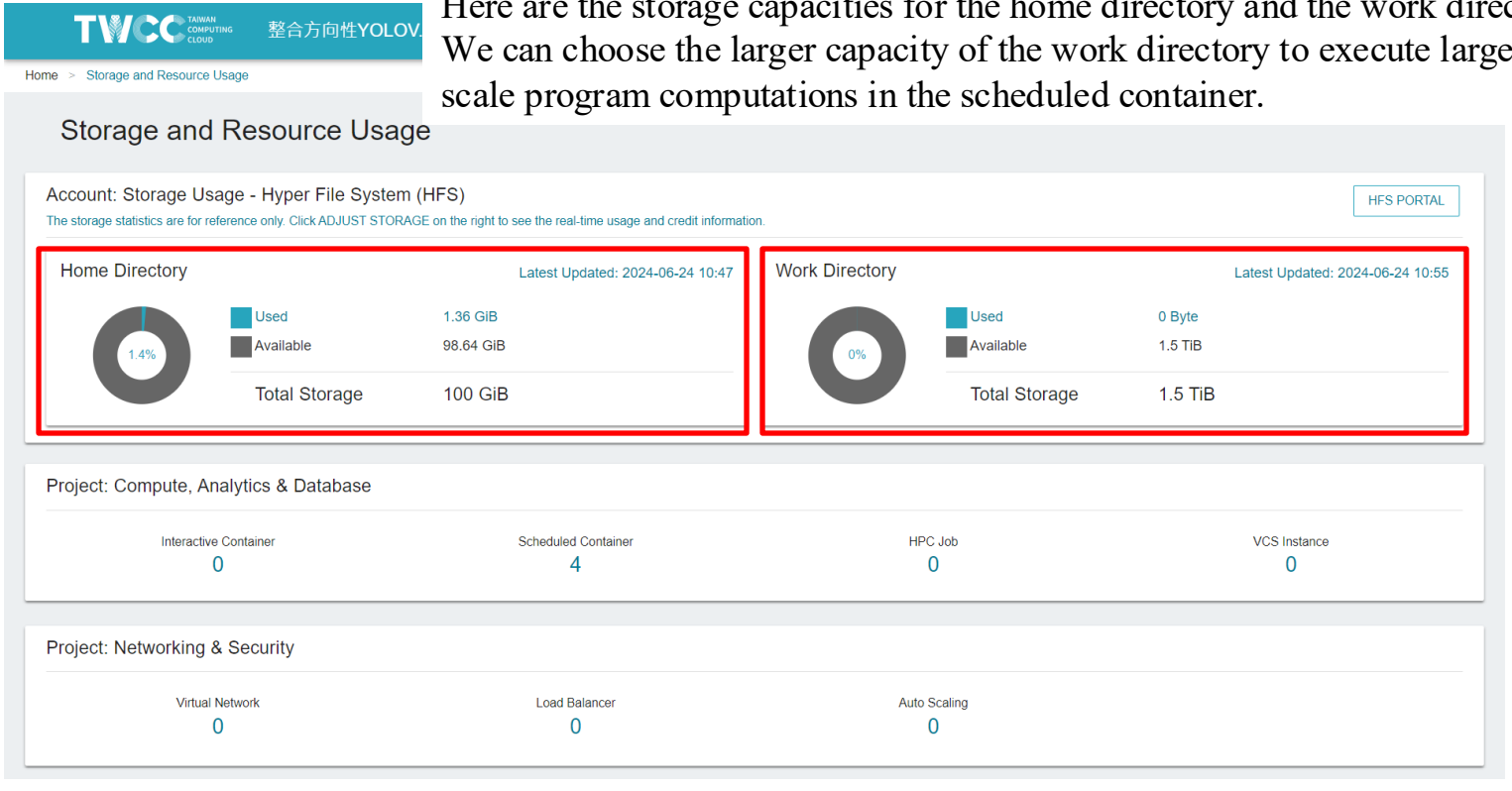
5. How to download files from TWCC



Connection result

5. How to download files from TWCC

Here are the storage capacities for the home directory and the work directory. We can choose the larger capacity of the work directory to execute larger-scale program computations in the scheduled container.



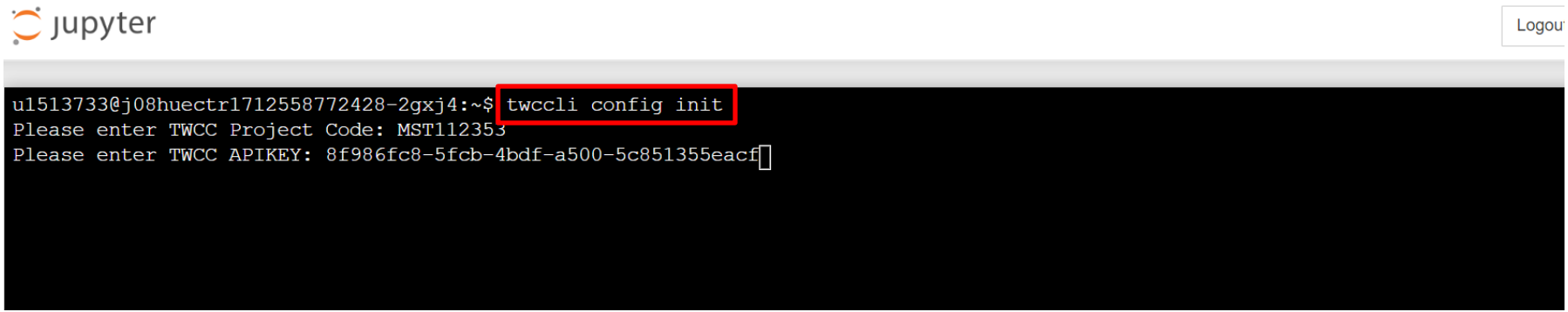
6. Query existing Interactive containers and delete them

```
u1513733@j08huectr1712558772428-2gxj4:~$ twccli config version
[TWCCLI] This version is 0.5.21
u1513733@j08huectr1712558772428-2gxj4:~$ pip install -U TWCC-CLI
Requirement already satisfied: TWCC-CLI in /opt/conda/lib/python3.8/site-packages (0.5.21)
Collecting TWCC-CLI
  Downloading TWCC_CLI-0.6.1-py3-none-any.whl.metadata (13 kB)
Requirement already satisfied: sphinx-click in /opt/conda/lib/python3.8/site-packages (from TWCC-CLI) (3.0.1)
Requirement already satisfied: myst-parser in /opt/conda/lib/python3.8/site-packages (from TWCC-CLI) (0.15.2)
Collecting docutils==0.18 (from TWCC-CLI)
  Downloading docutils-0.18-py2.py3-none-any.whl.metadata (2.9 kB)
Requirement already satisfied: loguru in /opt/conda/lib/python3.8/site-packages (from TWCC-CLI) (0.5.3)
Requirement already satisfied: jmespath in /opt/conda/lib/python3.8/site-packages (from TWCC-CLI) (0.10.0)
Requirement already satisfied: netaddr in /opt/conda/lib/python3.8/site-packages (from TWCC-CLI) (0.8.0)
Requirement already satisfied: pytz in /opt/conda/lib/python3.8/site-packages (from TWCC-CLI) (2021.1)
```

In Jupter of Interactive containers,
Look for Query the TWCC CLI version and update it.

- twccli config version
- pip install -U TWCC-CLI

6. Query existing Interactive containers and delete them

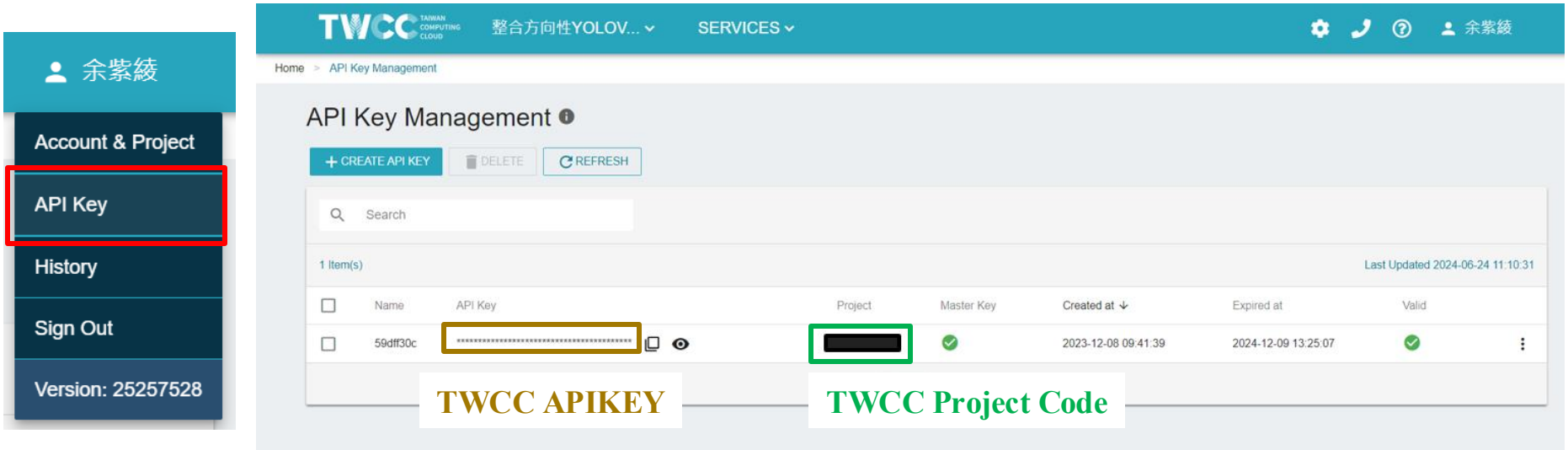


Enter the following command

- twccli config init

Enter the **TWCC APIKEY** and **TWCC Project Code** to log in to the TWCC CLI.
(Refer to PPT page33)

6. Query existing Interactive containers and delete them



Click API key management,
And copy **TWCC Project Code** and **TWCC APIKEY.** (For PPT page32)

6. Query existing Interactive containers and delete them

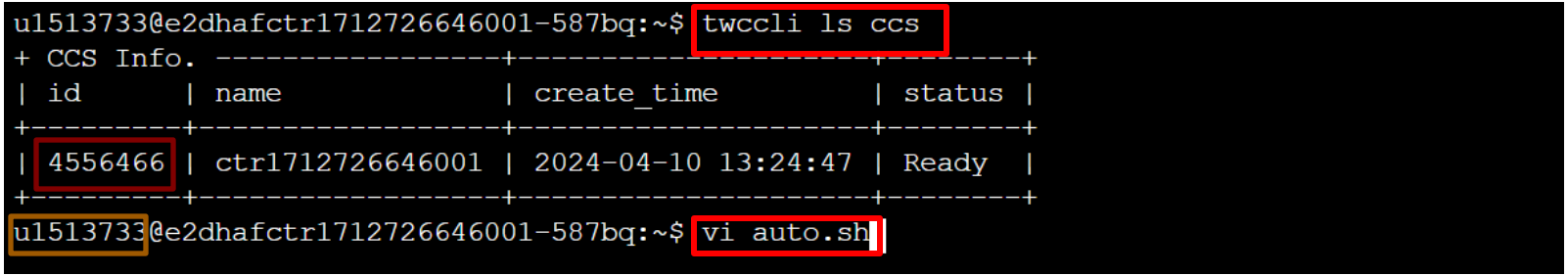
TWCC CLI login results

```
u1513733@j08huectr1712558772428-2gxj4:~$ twccli config init
Do you agree we use the collection of the information by GA to improve user experience?  [Y/n]: y
Please enter TWCC Project Code: [redacted]
Please enter TWCC APIKEY: [redacted]
Hi! 余紫綾, welcome to TWCC!
Add language setting to `.bashrc`.
+ parameters ----------+-------------------------------------------------------------------------------+
| key                 | value                                                                         |
+---------------------+-------------------------------------------------------------------------------+
| _TWCC_API_KEY_      | [redacted]                                                                    |
| _TWCC_PROJECT_CODE_ |                                                                               |
| session_created_time | 2024-04-08 16:16:55                                                          |
| twcc_cli_version    | 0.6.1                                                                         |
| twcc_apikey_owner   | 余紫綾                                                                        |
| twcc_data_path      | /home/u1513733/.twcc_data                                                     |
| package_yaml        | /home/u1513733/.local/lib/python3.8/site-packages/twccli/yaml/TWCC_API.yaml   |
| twcc_file_session   | /home/u1513733/.twcc_data/credential                                          |
| twcc_file_resources | /home/u1513733/.twcc_data/resources                                           |
+---------------------+-------------------------------------------------------------------------------+
u1513733@j08huectr1712558772428-2gxj4:~$
```

6. Query existing Interactive containers and delete them

CCS_ID

Username



View the currently used Interactive container ID

- twccli ls ccs

Enter the following command to edit the automation script

- vi auto.sh

6. Query existing Interactive containers and delete them

Enter i Enter editing mode and copy and paste the following example script into auto.sh. The content can be modified according to your algorithm.

```
TWCC_CLI_CMD=/home/<USERNAME>/.local/bin/twccli
#<USERNAME>: Host account
echo "1. Perform operations"
#Input the executable file of the calculation program
echo "2. Delete the development container"
$ TWCC_CLI_CMD rm ccs -f -s <CCS_ID>
 #<CCS_ID>: Container ID of Step 3
```

https://man.twcc.ai/@ twccdocs/doc-cli-main-zh/https%3A%2F%2Fman.twcc.ai%2F%40twccdocs%2Fhowto-cli-ccs-automate-compute-delete-with -twccli-zh

6. Query existing Interact

Please replace it with your **Username** (Refer to PPT page35)
For example, TWCC_CLI_CMD =/home/u1513733/.local/bin/ twccli

```
TWCC_CLI_CMD=/home/<USERNAME>/.local/bin/twccli
#<USERNAME>：主機帳號

echo "1. 執行運算"
#輸入運算程式的執行檔

echo "2. 刪除開發型容器"
$TWCC_CLI_CMD rm ccs -f -s <CCS ID>
#<CCS_ID>：Step 3 的容器 ID
-- INSERT --
```

You can enter commands below the echo 1

Please replace the **CCS_ID** which you want to delete after performing the operation,
For example,
$ TWCC_CLI_CMD rm ccs -f -s 4556466
(Refer to PPT page35)

Press the Esc key and enter **:wq !**
to save and exit the editing interface.

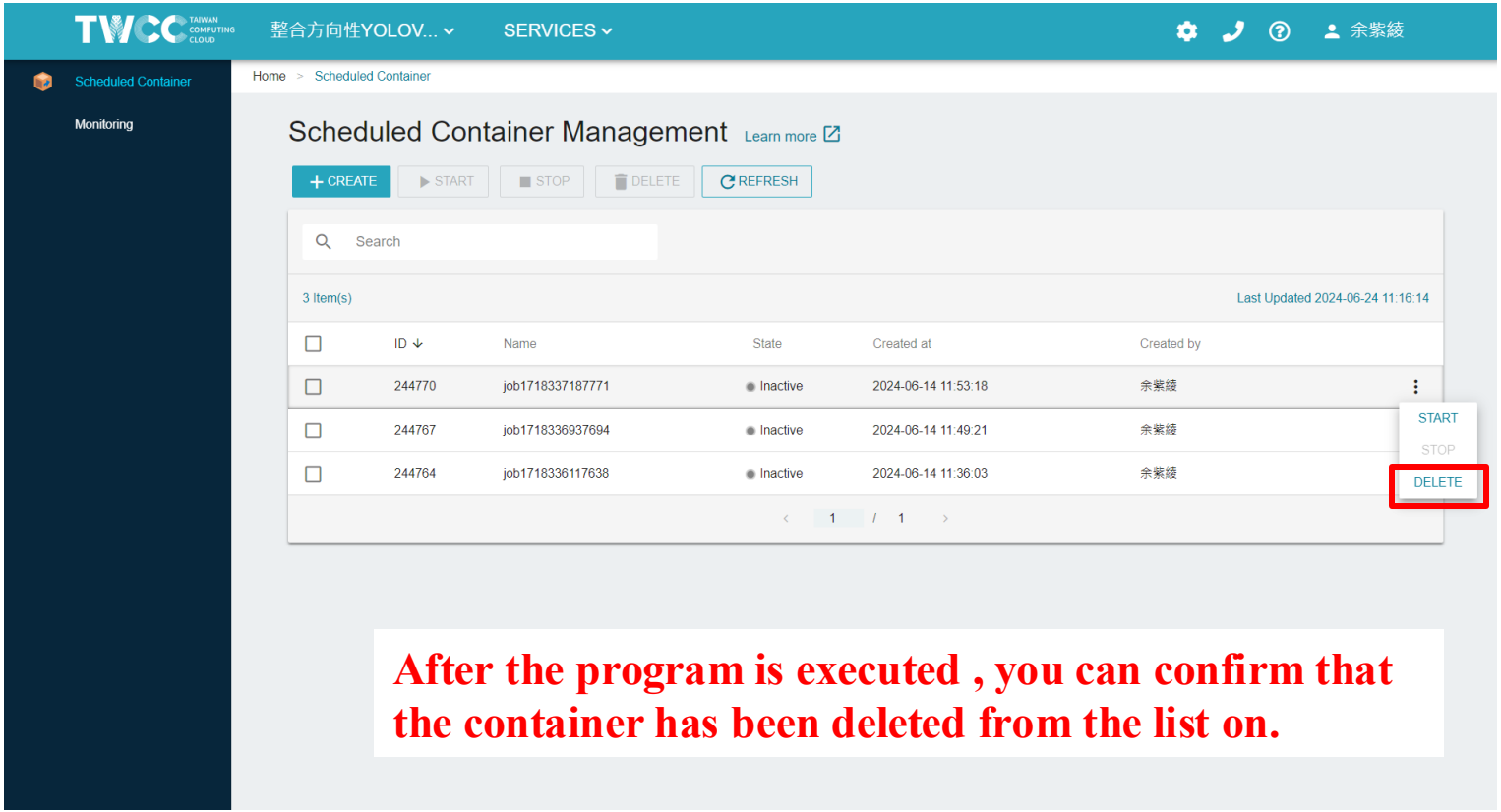
6. Query existing Interactive containers and delete them

```
init: Setting environment variables
u1513733@e2dhafctr1712726646001-587bq:~$ twccli ls ccs
+ CCS Info. -----------------+---------------------+--------+
| id      | name              | create_time         | status |
+---------+-------------------+---------------------+--------+
| 4556466 | ctr1712726646001 | 2024-04-10 13:24:47 | Ready  |
+---------+-------------------+---------------------+--------+
u1513733@e2dhafctr1712726646001-587bq:~$ vi auto.sh
u1513733@e2dhafctr1712726646001-587bq:~$ bash auto.sh
1. 執行連算
2. 刪除開發型容器
u1513733@e2dhafctr1712726646001-587bq:~$
```

Execute automation script

- bash auto.sh

6. Query existing Interactive containers and delete them



After the program is executed , you can confirm that the container has been deleted from the list on.