Submission Guideline

Outline

- Homework file format
  - Programming language
  - RUN
  - Image I/O
- Submission requirement
  - Source Code
  - Report

Homework File Format

Programming Language

- Python >= 3.6
  - numpy >= 1.19.5
  - matplotlib (only for you)
  - OpenCV == 4.5.x
  - Pillow >= 5.x
- Matlab
  - Image processing toolbox
- C/C++
  - OpenCV
    - Installation guideline (`apt install libopencv-lib`)
    - Using OpenCV with gcc and CMake

Only for Image I/O and plotting

For the C/C++ and MATLAB code, please provide instructions on how to execute the code within the report.

RUN

- Named RUN
  - RUN.sh for python
  - RUN.m for matlab
  - RUN.sh for c/cpp
- The file should include the following information:
  - Homework number
  - Your name
  - Your student ID #
  - Your email address

Python Example

- RUN.sh

```
# DIP Homework Assignment #1
# Name: William Watt
# ID #: x12345678
# email: wwatt@csie.ntu.edu.tw
python hw1.py --input input_path --output output_path
```

- Run your code
  - ```
    sh RUN.sh
    ```
    ```

MATLAB Example

- RUN.m

```
% DIP Homework Assignment #1
% Name: William Watt
% ID #: x12345678
% email: wwatt@csie.ntu.edu.tw
hw1(input_path, output_path)
```

- Run your code

```
>>RUN
```

C/Cpp Example

- RUN
  - Please refer to OpenCV webpage.

```
# DIP Homework Assignment #1
# Name: William Watt
# ID : x12345678
# email: wwatt@csie.ntu.edu.tw
cmake
make
./hw1 input_path output_path
```

- Remember to link other libs you used
- Run your code

```
sh RUN.sh
```

Image I/O (Python example)

- read raw

```
img = np.fromfile('sample.raw', dtype = 'uint8')
```

- write raw

```
img.tofile("result.raw")
```

- write png

```
cv2.imwrite("result.png", img)
```

- read png
  - grayscale image

```
img = cv2.imread("sample.png", cv2.IMREAD_GRAYSCALE) #1 channel

img = cv2.imread("sample.png") #3 channel
```

  - color image

```
img = cv2.imread("sample.png") #3 channel
```

Image I/O (MATLAB raw example)

- Read raw file

```
fid=fopen(image_name,'rb');
pixel=fread(fid,inf, 'uchar');
fclose(fid);
```

- Write raw file

```
fid = fopen('test.raw', 'wb');
fwrite(fid, pixel, 'uchar');
fclose(fid);
```

Image I/O (MATLAB png example)

- Grayscale image

```
function hw1(image_name, output_name)
    img = imread(image_name); % # of channel: 3
    img = rgb2gray(img); % # of channel: 1

    % do your algorithm here

    imwrite(img, output_name);
end
```

- Color image

```
function hw1(image_name, output_name)
    img = imread(image_name); % # of channel: 3

    % do your algorithm here

    imwrite(img, output_name);
end
```

Image I/O (C/Cpp raw example)

- Grayscale image

```c
int main(){
    FILE *file;
    unsigned char image_data[SIZE][SIZE];
    file = fopen("sample.raw", "rb");
    fread(image_data, sizeof(unsigned char), SIZE*SIZE, file);
    fclose(file);

    // do some image processing task...

    file = fopen("result.raw", "wb");
    fwrite(image_data, sizeof(unsigned char), SIZE*SIZE, file);
    fclose(file);
    return 0;
}
```

- Color image

```c
int main(){
    FILE *file;
    unsigned char image_data[3][SIZE][SIZE];
    file = fopen("sample.raw", "rb");
    fread(image_data, sizeof(unsigned char), SIZE* SIZE * 3, file);
    fclose(file);

    // do some image processing task...

    file = fopen("result.raw", "wb");
    fwrite(image_data, sizeof(unsigned char), SIZE* SIZE * 3, file);
    fclose(file);
    return 0;
}
```

Image I/O (C/Cpp jpg example)

- Grayscale image

```cpp
#include <stdio.h>
#include <opencv2/opencv.hpp>
using namespace cv;
int main(){
    Mat img;
    img = imread("sample.jpg", IMREAD_GRAYSCALE); //1 channel
    img = imread("sample.jpg"); //3 channel

    //do some image processing task...

    imwrite("result.jpg", img);
    return 0;
}
```

- Color image

```cpp
#include <stdio.h>
#include <opencv2/opencv.hpp>
using namespace cv;
int main(){
    Mat img;
    img = imread("sample.jpg"); //3 channel

    //do some image processing task...

    imwrite("result.jpg", img);
    return 0;
}
```

Submission Requirement

1. Source Code

+- **hw1_x12345678/**

  +- RUN.sh

  +- mycode.py

  +- SampleImage/

    +- sample1.png

    +- sample2.png

    ……

Do not include the result images in the folder

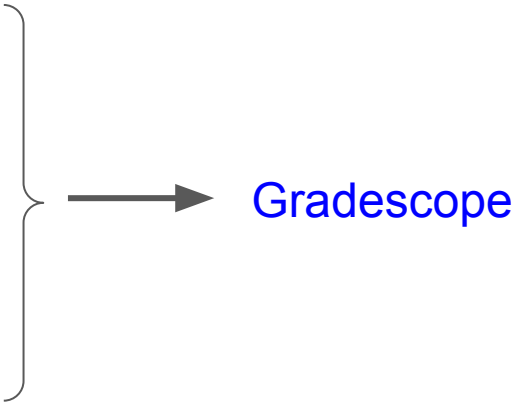
一定要有最外層 folder

hw1_x12345678.zip → NTU COOL

2. Report

Every problems should contain:

1. Original_images
2. Output_images
3. Your **motivation and approach** (include parameters)
4. **Discussion** of results



Please submit the REPORT file in PDF format.

Gradescope

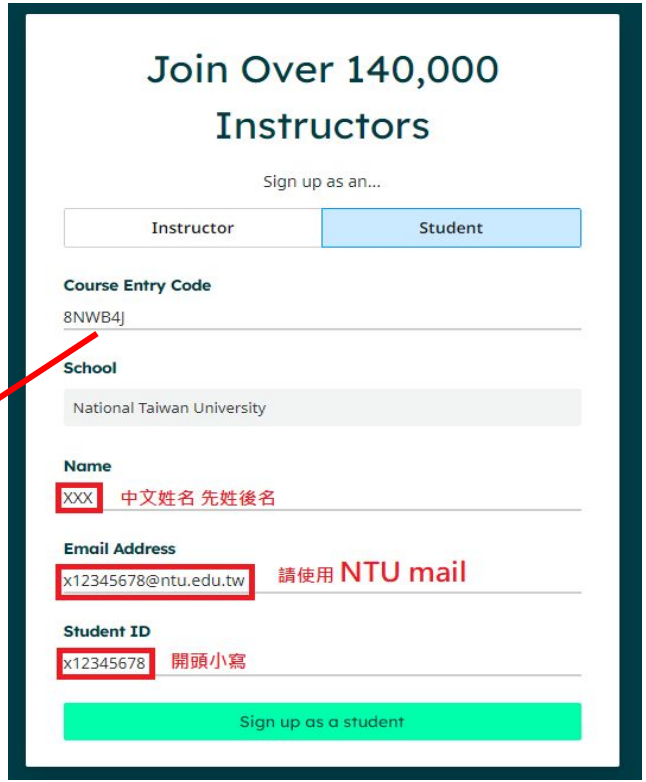
https://www.gradescope.com/

1. Click Sign Up and choose sign up as a student

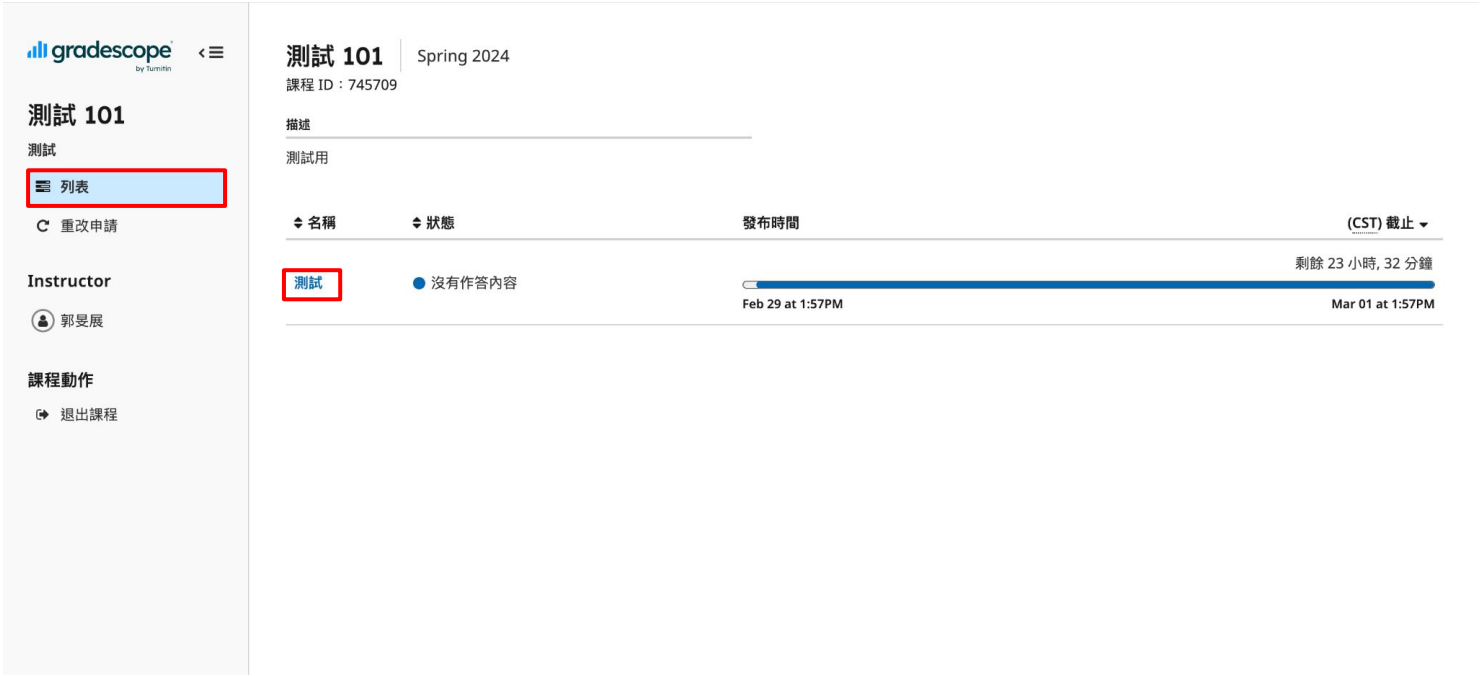
2. Enter Course Entry Code (**6G3RVW**)

3. Enter your name, school email, and student ID.

4. Then the system will send an email to your address to set up your password.



Gradescope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by Turnitin
測試 101
測試
列表
重改申請
Instructor
郭旻展
課程動作
退出課程
測試 101
Spring 2024
課程 ID：745709
描述
測試用
名稱
狀態
發布時間
(CST) 截止
測試
沒有作答內容
剩餘 23 小時, 32 分鐘
Feb 29 at 1:57PM
Mar 01 at 1:57PM

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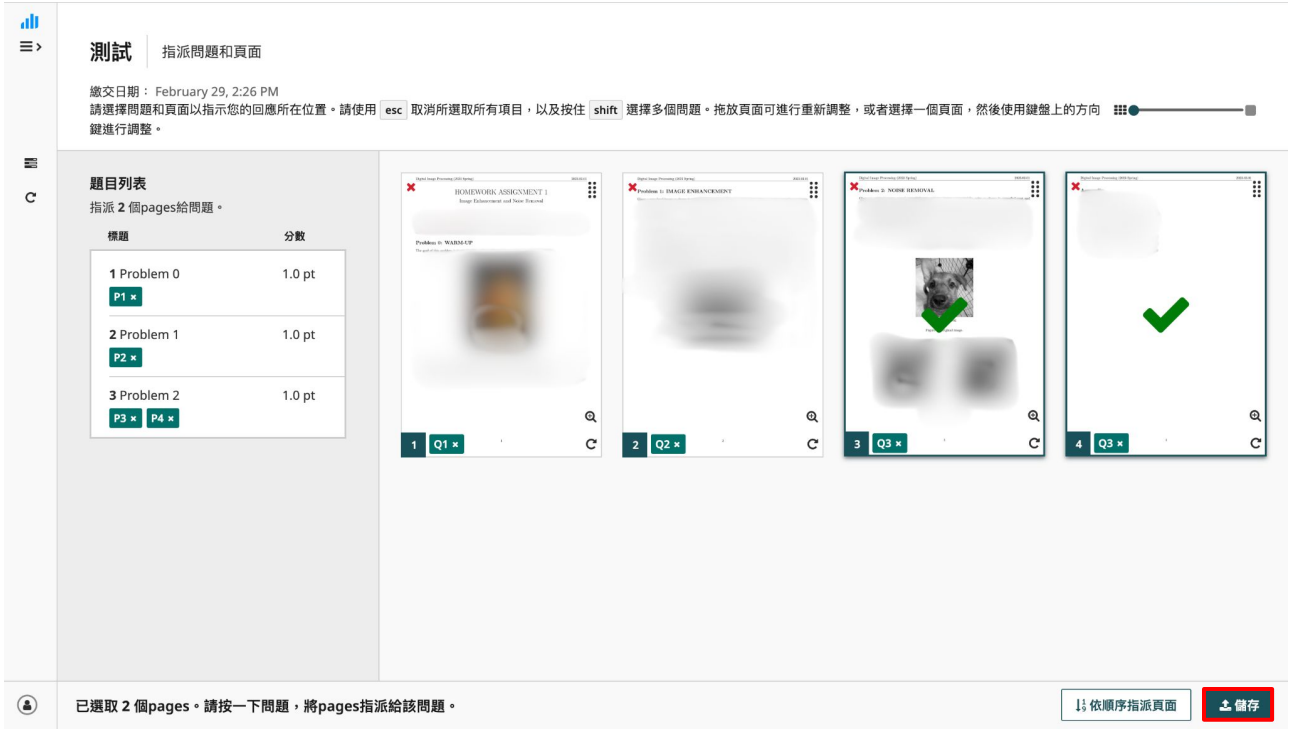
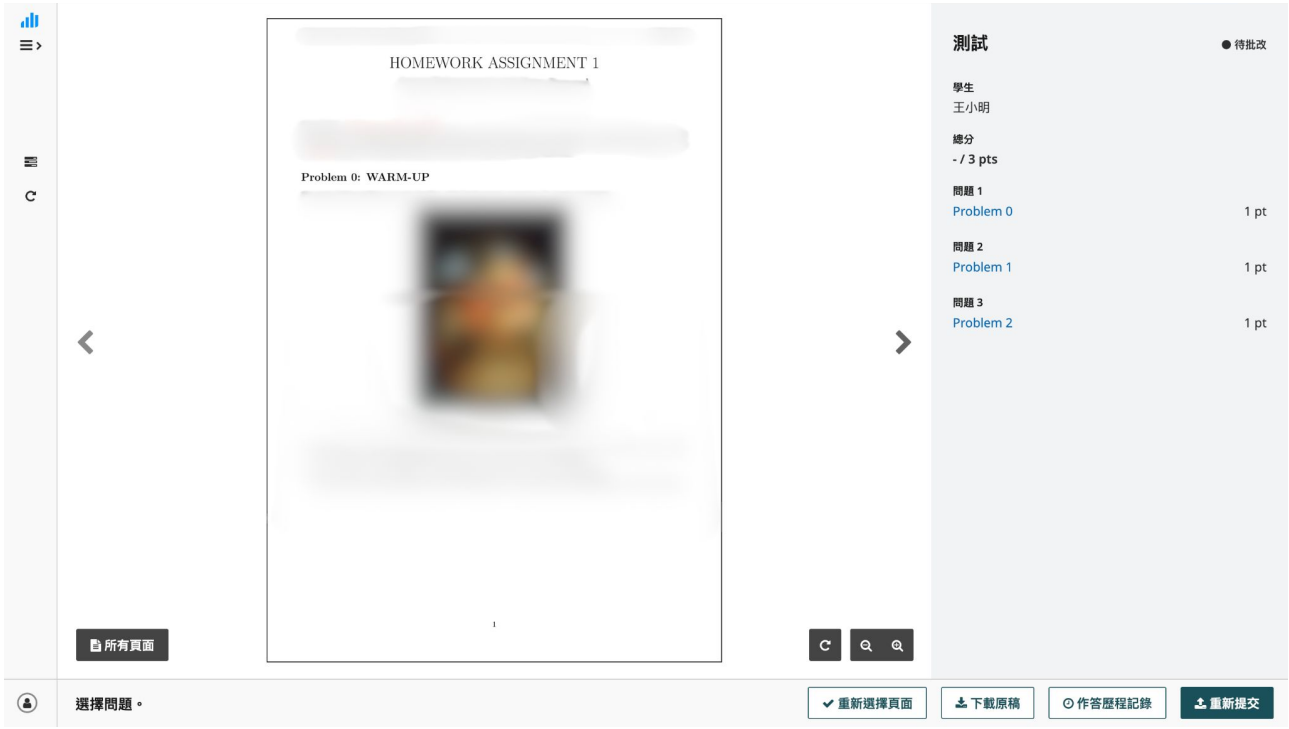
(CST) 截止
剩餘 23 小時, 32 分鐘
Mar 01 at 1:57PM
儲存作業
儲存每個問題的影像，或單一 PDF。
您的教師已提供一份 PDF 來協助您完成作業。
下載 測試 PDF
儲存影像以單獨回答問題，或儲存單一 PDF 供所有人使用。別忘了將您的 PDF 頁面分配給相應的問題。
提交影像
儲存 PDF
使用 Gradescope 行動裝置應用程式儲存作業。
Download on the App Store
GET IT ON Google Play
關閉

Gradescope


測試
指派問題和頁面
繳交日期： February 29, 2:26 PM
請選擇問題和頁面以指示您的回應所在位置。請使用 esc 取消所選取所有項目，以及按住 shift 選擇多個問題。拖放頁面可進行重新調整，或者選擇一個頁面，然後使用鍵盤上的方向鍵進行調整。
題目列表
指派 2 個pages給問題。
標題
分數
1 Problem 0
1.0 pt
P1 ×
2 Problem 1
1.0 pt
P2 ×
3 Problem 2
1.0 pt
P3 ×
P4 ×
1 Q1 ×
2 Q2 ×
3 Q3 ×
4 Q3 ×
已選取 2 個pages。請按一下問題，將pages指派給該問題。
依順序指派頁面
儲存

Gradescope


HOMEWORK ASSIGNMENT 1
Problem 0: WARM-UP
所有頁面
測試
待批改
學生
王小明
總分
- / 3 pts
問題 1
Problem 0
1 pt
問題 2
Problem 1
1 pt
問題 3
Problem 2
1 pt
選擇問題。
重新選擇頁面
下載原稿
作答歷程記錄
重新提交

Grading Policy

- Program 30%
  - Format 10/30
  - Execution
  - Algorithm 20/30
  - Code running with a 10-minute time limit
- Report 70%
  - motivation and approach 20/70
  - performance of results 20/70
  - discussion 30/70

The regrade period is **3 days** after each homework's grade release

Hot to Submit regrade request:
https://help.gradescope.com/article/8hchz9h8wh-student-regrade-request

Remark

- Unix-Based environment is recommended
- If you use Windows system
  - Windows Subsystem for Linux (WSL)
  - bash in powershell
    - Anaconda
  - CSIE workstation
    - You may need X-server to show Image
- Compress the folder by ZIP only
- If you have any question, feel free to post on NTU COOL
- TA hour @532
  - Thu. 13:00~15:00
  - Fri. 10:00~12:00

Questions?