

# Digital Image Processing (2024)

## Homework 1

{Image input/flip/output + Resolution + Cropping}

Deadline: 11.10.23 23:59

### Image input/flip/output (30%)

Using C++ or C, read, flip horizontally and write the images of BMP format.  
Please notice Bit Depth of the images.



input1.bmp



output1\_flip.bmp

[Input]	input1.bmp	input2.bmp
[Output]	output1_flip.bmp	output2_flip.bmp

## Resolution (30%)

Using C++ or C, accomplish the discussion of Quantization Resolution.



output1\_1.bmp



output1\_2.bmp



output1\_3.bmp

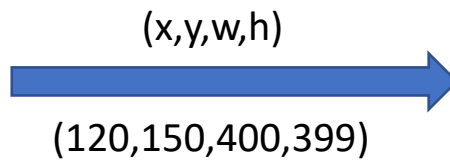
[Input]	input1.bmp	(3*8bits)	input2.bmp	(4*8bits)
[Output]	output1_1.bmp	(3*6bits)	output2_1.bmp	(4*6bits)
	output1_2.bmp	(3*4bits)	output2_2.bmp	(4*4bits)
	output1_3.bmp	(3*2bits)	output2_3.bmp	(4*2bits)

## Cropping (40%)

Using C++ or C, implement image cropping for a user-defined region.



input1.bmp



output1\_crop.bmp

[Input]	input1.bmp	input2.bmp
[Output]	output1_crop.bmp	output2_crop.bmp

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## **Homework Rules and Grading Policy**

### **Homework will be graded by:**

1. Correctness (70%)
2. Report (30%)
  - Image input/flip/output
    - Explain BMP format in most 2 pages (A4).
  - Resolution
    - Do some discussion and explain how you do it in most 1 page (A4).
  - Cropping
    - Explain how you do it in most 1 page (A4).

### **Demo:**

Lab634

### **Upload:**

[web] E3

[File Name] hw1\_StudentID.zip (ex: hw1\_123456789.zip)

- report in the format of .pdf.
- three C, C++ codes with comments.
- ReadMe.txt file which describes how to run your program.
- all output images.

### **Remind:**

#### **Deadline**

If you have a late submission by 1 to 7 days, you will only get 70% of the score.

We DO NOT accept any late submission after 7 days after the deadline.

#### **Test failure**

We will use other images for testing, and if the test does not pass, half of the score will be deducted, but there is a chance for remediation.