

LAB 5

2017. 07. 20

BIT OPERATION

- $x = 25, y = 104$

- $x = 00011001$

- $y = 01101000$

$x \& y :$

8 \rightarrow 00001000

$x | y :$

121 \rightarrow 01111001

$\sim x :$

-26 \rightarrow 11100110

$x \wedge y :$

113 \rightarrow 01110001

$x \ll 2 :$

100 \rightarrow 01100100

$x \gg 2 :$

6 \rightarrow 00000110



EXERCISE

1. Write a function that pinkifies white in a picture. Input a picture, then check each pixel to see if the red, green, and blue are all over 100.

Use garden.jpg



EXERCISE

2. Rewrite the function using the helper function. (ch05. slide 20)

Use anthony.jpg

```
def pickPosterizeValue(current):  
    if (current < 64):  
        return 31  
    if (current > 63 and current < 128):  
        return 95  
    if (current > 127 and current < 192):  
        return 159  
    if (current > 191 and current < 256):  
        return 223
```



EXERCISE

3. Try doing chromakey in a range.

If “ $\text{getRed(px)} + \text{getGreen(px)} < \text{getBlue(px)} + 100$ ”, set Blue. Afterward, change the background to the jungle.

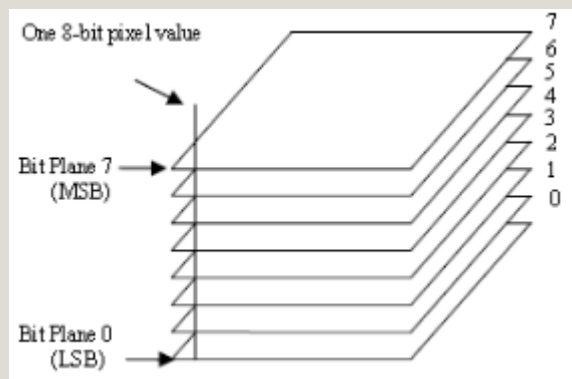
Use statue-tower.jpg and jungle2.jpg



EXERCISE: BIT-PLANE SLICING

- Each digital image consists of pixels, each of which is a specific value.
- In computer, the value is stored as a binary number, 8 bits.

e.g., 255: 11111111, 10: 00001010



11001011	01011011
00100100	01010101
01111010	01011100

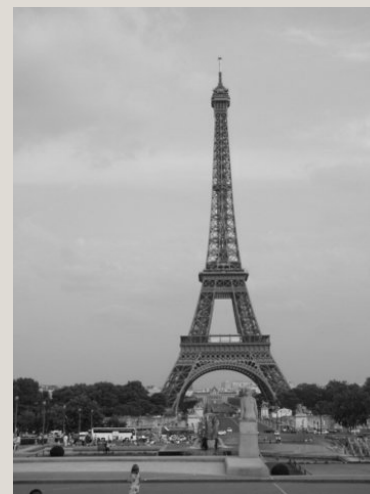
11	11	00	11
01	00	10	00
00	10	01	11
Bit 0	Bit 1	Bit 2	Bit 3
01	00	11	10
01	10	01	00
11	10	01	00
Bit 4	Bit 5	Bit 6	Bit 7

EXERCISE: BIT-PLANE SLICING

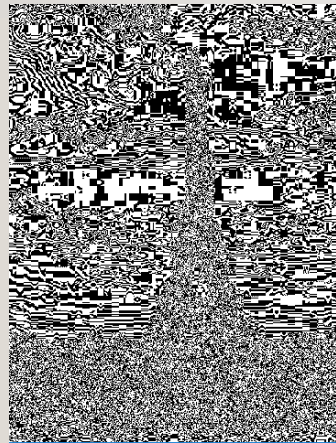
4. Separate image into eight different images.

- Convert to grayscale: an average of the three component colors
- If bit is 1, then the color is white. Otherwise, it is black.

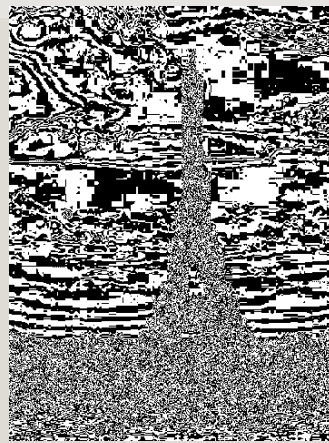
Use eiffel.jpg



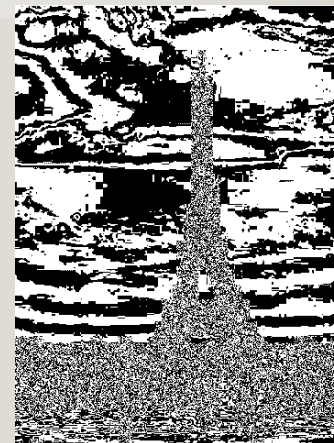
EXERCISE: BIT-PLANE SLICING



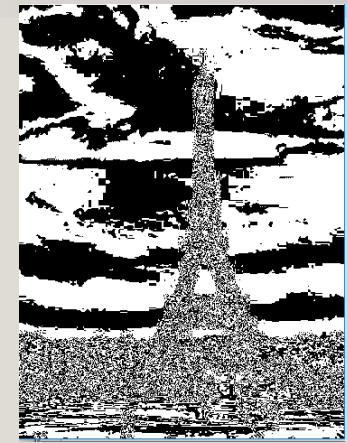
Bit 0



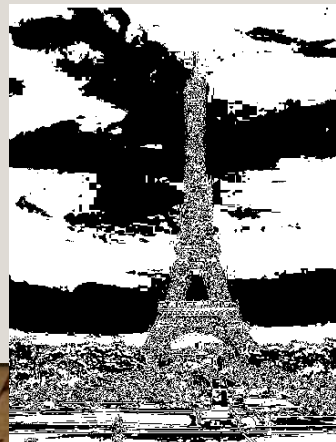
Bit 1



Bit 2



Bit 3



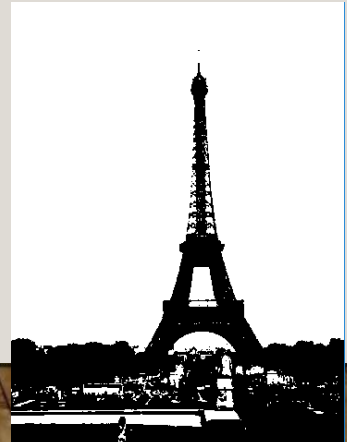
Bit 4



Bit 5



Bit 6



Bit 7