

### Homework Assignment 03:

1. Give a formula for the number of bytes a raw RGB image of size  $n \times m$  requires. If an image is of size  $3000 \times 4000$ , how many bytes does the raw RGB image occupy?
2. When we double an image of size  $n \times m$ , how many bytes the new image will require? Is it really necessary for it to have that many bytes? Propose a representation method that will require fewer bytes.
3. Explain what the following function does to the  $n \times n$  size image represented using "im".

```
p = Pixel(0,0,0)
for i in range(n):
    im.setPixel(i,i,p)
```

4. The function to turn a color pixel to gray scale was given as

```
p = im.getPixel(i,j)
r = p.getRed()
g = p.getGreen()
b = p.getBlue()
avg = (r+g+b)//3
q = Pixel(avg, avg, avg)
im.setPixel(i,j,q)
```

Explain why the average value (avg) has to be computed using " $avg = (r+g+b)//3$ "

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### Due 5pm Wednesday, January 28

Either, email an electronic copy to the Instructor ([koc@cs.ucsb.edu](mailto:koc@cs.ucsb.edu)) or the TA ([zhijing@cs.ucsb.edu](mailto:zhijing@cs.ucsb.edu)). Or, deliver a paper copy to the HW Box in HFH 2108.

Electronic copy of your homework or lab report can be in Text, PDF or MS Word, or Open Office format. You could also scan/pdf your handwritten work; however, do not send phone-camera images under any circumstances!