

# CST 205 Project 1 Help

## Nested loop

### “for” loop on list

We want to find the median value of 9 images at every single pixel. To do this, we need to know the width and height of our images. (In our case, each of our images has the same width and height.) We can create a list of Pillow Image objects and then use a *for* loop. For example, if our list is `theImages = [image1, image2, image3]`, we can, for example, print the size of each Image object with:

```
for theImage in theImages:
    print(image.size)
```

### Nested loop

In order to generate our pixel coordinate pairs, we can use a so-called *nested* loop. The outer loop goes through the *x* values (width) and the inner loop through the *y* values (height).

If, for example, we have an image with height 5 pixels and width 4 pixels, we can generate all pixel coordinate pairs (for one image) as follows:

```
pictureWidth = 4
pictureHeight = 5

# loop from 0 to pictureWidth - 1
for x in range(0,pictureWidth):
    # loop from 0 to pictureHeight - 1
    for y in range(0, pictureHeight):
        print(x,y)
```

This prints out a list of pixels going down each column, from (0,0) to (0,4), from (1,0) to (1,4), and so on.

### Creating a new pixel

Our task is to create a new pixel based on the median of 9 images at each pixel. To do so, we can add another innermost loop through each of the 9 images:

```
for x in range(0, pictureWidth):
    for y in range(0, pictureHeight):
        for myImage in theImages:

            myRed, myGreen, myBlue = myImage.getpixel((x,y))

            redPixelList.append(myRed)
            greenPixelList.append(myGreen)
            bluePixelList.append(myBlue)

# Do our median calculations
# Clear our red, green, blue value lists
# Put the red, green blue values for the pixel for the output image
```

**Note!** The indentation above is intentional.