CS 1124 Media Computation Lab 2.3

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Questions about HW 1?

A reminder about names and data

- Lets look again at **negative(picture) ...**

Returning a result

```
def negative(picture):
  for px in getPixels(picture):
    red = getRed(px)
    green = getGreen(px)
    blue = getBlue(px)
    negColor = makeColor( 255-red, 255-green, 255-blue)
    setColor(px, negColor)

  return (picture)
```

```
>>> myPicture = makePicture(file)
>>> negPicture = negative(myPicture)
>>> show(negPicture)
```

Returning from a function

- What will we see?
- Why?

```
>>> myPicture = makePicture(file)
>>> show(myPicture)
>>> negPicture = negative(myPicture)
>>> show(negPicture)
>>> show(myPicture)
```

How “close” are two colors?

- Sometimes you need to find the *distance* between two colors, e.g., when deciding if something is a “close enough” match
- How do we measure distance?
  - **Pretend it’s Cartesian coordinate system**
  - **Distance between two points:**

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

- Distance between two colors:
  - **This is a case where the figure of speech “distance between colors” actually is a mathematical function!**

$$\sqrt{(red_1 - red_2)^2 + (green_1 - green_2)^2 + (blue_1 - blue_2)^2}$$

distance(color1, color2)

- It does the distance calculation:

$$\sqrt{(red_1 - red_2)^2 + (green_1 - green_2)^2 + (blue_1 - blue_2)^2}$$

```
def distance( color1, color2 ):
    redDiff = getRed(color1) - getRed(color2)
    greenDiff = getGreen(color1) - getGreen(color2)
    blueDiff = getBlue(color1) - getBlue( color2)
    colorDistance = sqrt((redDiff*redDiff)+(greenDiff*greenDiff)+(blueDiff*blueDiff))
    return colorDistance
```

Making Barb a redhead

```
def turnRed(file ):
  brown = makeColor(57, 16, 8)
  picture = makePicture(file)
  for px in getPixels(picture):
      color = getColor(px)
      if distance(color, brown) < 50.0:
          redness = getRed(px) * 1.5
          setRed(px, redness)
  show(picture)
  return(picture)
```

Original:

Digital makeover:

Multiple functions?

- Put in same file, one right after the other
- GOOD PROGRAMMING:
  - **put the main function -- one that calls the other functions -- first.**
  - **name the file the same as the main function**
- Just be sure that "**def**" for each function starts in the first column.

Multiple functions?

- So in the current recipe:
  - ```
    def turnRed(file ):
      brown = makeColor(57, 16, 8)
      ...
      return(picture)
    ```

```
def distance( color1, color2 ):
  redDiff = getRed(color1) - getRed(color2)
  ...
  return(picture)
```
```

Questions?

Project 2

- Specification - SIX variations of Lane Stadium:

1)reduce red by 50%

2)reduce blue by 40%

3)reduce green by 30%

4)makeSunset (page 62)

5)posterize(page 105)

6)some combination of two of the above 5 (your choice)

- Lagniappe ("A Little Bit Extra")
  - **do any of ONE the above for 1/2 of the picture. There are many ways to define "1/2 of the picture". (Think about it...)**
  - **# tell us what you did so we will know!**
- Details on moodle

chci Center for Human Computer Interaction
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On September 5, 2008

OPEN HOUSE!

CENTER FOR HUMAN COMPUTER INTERACTION

- **Come meet our CHCI faculty and students.**
- **See demonstrations of ongoing projects and find out how you can participate.**
- **Come to view our resources: labs, equipment.**
- **Join us for refreshments, information and FUN!**
    - **Opening welcome at 4pm in #1110 KW II**
    - **Research Demonstrations**
    - **Refreshments at 5pm**

Coming Attractions

- For Friday
  - **Project 1 due @ 2:00**
  - **start on Project 2**
  - **shortened lab**
  - **HCI Center Open House @ 4:00 PM**
- For Monday
  - **Read Chapter 4 (through at least 4.3)**
  - **Do Quiz 3 (due 10:00 am)**
- Next Friday
  - **Project 2 Due**