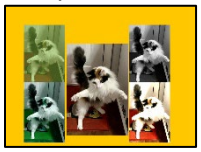
Charles Veatch

Completed



Original



```
from mediaComp import*
#Charles Veatch 10/21/2026

#all helper functions

def scale(source_picture, number):
    new_width = getWidth(source_picture) * number
    new_height = getHeight(source_picture) * number
    new_picture = makeEmptyPicture(new_width, new_height)
    source_x = 0
    for new_x in range(0,getWidth(new_picture)):
        source_y = 0
        for new_y in range(0,getHeight(new_picture)):
            color = getColor(getPixelAt(source_picture,int(source_x), int(source_y)))
            setColor(getPixelAt(new_picture, new_x, new_y), color)
            source_y = source_y + (1 / number)
        source_x = source_x + (1 / number)
    return new_picture

def scaleDown(source_picture, number):
    new_width = getWidth(source_picture) // number
    new_height = getHeight(source_picture) // number
    new_picture = makeEmptyPicture(new_width, new_height)
    source_x = 0
    for new_x in range(0,getWidth(new_picture)):
        source_y = 0
        for new_y in range(0,getHeight(new_picture)):
            color = getColor(getPixelAt(source_picture, source_x, source_y))
            setColor(getPixelAt(new_picture, new_x, new_y), color)
            source_y = source_y + number
        source_x = source_x + number
    return new_picture

def grayScale(picture):
    for pixel in getPixels(picture):
        intensity = (getRed(pixel) + getGreen(pixel) + getBlue(pixel)) // 3
        setColor(pixel, makeColor(intensity, intensity, intensity))

def avgColor(picture):
    for pixel in getPixels(picture):
        redValue = (getRed(pixel) + 127) / 2
        greenValue = (getGreen(pixel) + 181) /2
        blueValue = (getBlue(pixel) + 63) / 2
        setColor(pixel, makeColor(redValue, greenValue, blueValue))
```

```
def colorSwap(picture):
    for pixel in getPixels(picture):
        r = (getRed(pixel))
        g = (getGreen(pixel))
        b = (getBlue(pixel))
        setColor(pixel, makeColor(b,r,g))

def lighten(picture):
    for pixel in getPixels(picture):
        for i in range(2):
            color = getColor(pixel)
            color = makeLighter(color)
            setColor(pixel, color)

def copyinto(picture, target, startX, startY):
    for x in range(getWidth(picture)):
        for y in range(getWidth(picture)):
            if startX + x < getWidth(target) and startY + y < getHeight(target):
                sourcePixel = getPixelAt(picture, x, y)
                targetPixel = getPixelAt(target, startX + x, startY + y)
                setColor(targetPixel, getColor(sourcePixel))
#Main function
def collage():
    setMediaFolder()
    source_picture = makePicture(getMediaFolder("Pixie.jpg"))
    picture = scale(source_picture, .3)
    avg = scale(source_picture, .2)
    avgColor(avg)
    swap = scale(source_picture, .2)
    colorSwap(swap)
    dark = scale(source_picture, .2)
    grayScale(dark)
    light = scale(source_picture, .2)
    lighten(light)
    canvas = makeEmptyPicture(1000, 736, orange)

    copyInto(picture, canvas, 325, 200)
    copyInto(avg, canvas, 100, 100)
    copyInto(swap, canvas, 100, 400)
    copyInto(dark, canvas, 650, 100)
    copyInto(light, canvas, 650, 400)
    pictureTool(canvas)
```