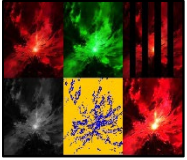


First Last

Completed



Original



```
def collage():
#kevin mack
#10-20-2023
    canvas = makeEmptyPicture(710,736,black)
    a = main0()
    copy(a, canvas, 0,0)
    b = main1()
    copy(b, canvas, getWidth(a), 0)
    c = main2()
    copy(c, canvas, getWidth(a) + getWidth(b), 0)
    d = main3()
    copy(d, canvas, 0, getHeight(a))
    e = main4()
    copy(e, canvas, getWidth(d), getHeight(a))
    f = main5()
    copy(f, canvas, getWidth(d)+getWidth(e), getHeight(a))
    show(canvas)

def copy(picture_in,picture_out,target_x,target_y):
    xNew = target_x
    for x in range(0,getWidth(picture_in)):
        yNew = target_y
        for y in range(0,getHeight(picture_in)):
            px = getPixel(picture_in,x,y)
            color = getColor(px)
            setColor(getPixel(picture_out,xNew,yNew),color)
            yNew = yNew+1
            xNew = xNew+1

def main(pic):
    scalefactor = .6
    small = makeEmptyPicture(int(getWidth(pic) /scalefactor),int(getHeight(pic) /scalefactor))
    scaling(pic,small, 1.0/scalefactor)
    return small
```

```

def scaling(pic,pick, scalefactor):
    sourceX = 0
    for targetX in range(0,int(getWidth(pic)*scalefactor)):
        sourceY = 0
        for targetY in range(0,int(getHeight(pic)*scalefactor)):
            color = getColor(getPixel(pic,int(sourceX),int(sourceY)))
            setColor(getPixel(pick,targetX,targetY), color)
            sourceY = sourceY + 1.0/scalefactor
            sourceX = sourceX + 1.0/scalefactor

def main0():
    pic=makePicture(getMediaPath("red.jpg"))
    return main(pic)

def main1():
    pic=makePicture(getMediaPath("red.jpg"))
    colorswap(pic)
    return main(pic)

def colorswap(picture):
    for p in getPixels(picture):
        r = getRed(p)
        g = getGreen(p)
        b= getBlue(p)
        color = makeColor(b,r,g)
        setColor(p,makeColor(b,r,g))

def main2():
    pic=makePicture(getMediaPath("red.jpg"))
    picture = pic
    bb(pic)
    return main(pic)

def bb(picture):
    wide = getWidth(picture)/9
    bar = bars(picture, wide, wide*2)
    bar = bars(bar,wide*3,wide*4)
    bar = bars(bar,wide*5,wide*6)
    bar = bars(bar,wide*7,wide*8)

```

```

def bars(pic, sX, eX):
    for x in range(sX, eX):
        for y in range(0, getHeight(pic)):
            px = getPixel(pic, x, y)
            setColor(px, black)
    return(pic)

def main3():
    pic=makePicture(getMediaPath("red.jpg"))
    gray(pic)
    return main(pic)

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

def main4():
    pic=makePicture(getMediaPath("red.jpg"))
    picture = pic
    edgedetect(pic)
    return main(pic)

def luminance(pixel):
    r = getRed(pixel)
    g = getGreen(pixel)
    b = getBlue(pixel)
    return (r+g+b)/3

def edgedetect(source):
    a = 10
    for px in getPixels(source):
        x = getX(px)
        y = getY(px)
        if y < getHeight(source) -1 and x < getWidth(source)-1:
            botrt = getPixel(source, x+1, y+1)
            thislum = luminance(px)
            brlum = luminance(botrt)
            if abs(brlum - thislum) > a:
                setColor(px, blue)
            if abs(brlum - thislum) <= a:
                setColor(px, orange)

```

```
def main5():
    pic=makePicture(getMediaPath("red.jpg"))
    lighten(pic)
    return main(pic)

def lighten(picture):
    for x in range(0,getWidth(picture)):
        for y in range(0,getHeight(picture)):
            px = getPixel(picture, x, y)
            setColor(px,makeLighter(makeLighter(getColor(px))))
```