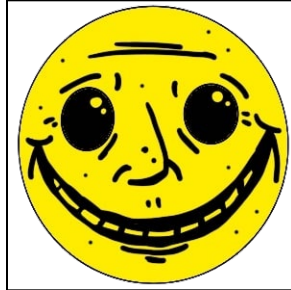


Ethan Couch

Completed



Original



```
def redFactor(picture, factor):
    for p in getPixels(picture):
        setGreen(p, getGreen(p) * factor)
    return (picture)
```

```
def darken(picture):
    for p in getPixels(picture):
        setRed(p, getRed(p) *.1)
        setBlue(p, getBlue(p) *.1)
        setGreen(p, getGreen(p) *.1)
    return (picture)
```

```
def addRectWThickness(picture, xloca, yloca, xleng, yleng, thickness, color):
    for p in getPixels(picture):
        if getX(p) in range(xloca, xloca+xleng) and getY(p) in range(yloca, yloca+thickness):
            setColor(p, color)
        elif getX(p) in range(xloca, xloca+xleng) and getY(p) in range(yloca+yleng, yloca+yleng+thickness):
            setColor(p, color)
        elif getX(p) in range(xloca, xloca+thickness) and getY(p) in range(yloca, yloca+yleng):
            setColor(p, color)
        elif getX(p) in range(xloca+xleng, xloca+xleng+thickness) and getY(p) in range(yloca, yloca+yleng+thickness):
            setColor(p, color)
```

```

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

def scale(sFactor,picture):
    width = getWidth(picture)
    height = getHeight(picture)

    newPic = makeEmptyPicture(int(width*sFactor), int(height*sFactor), black)
    sX = 0
    for x in range (0,int(width*sFactor)):
        sY = 0
        for y in range (0,int(height *sFactor)):
            pixel =getPixel(picture,int(sX),int(sY))
            color = getColor(pixel)
            setColor(getPixel(newPic,x, y), color)
            sY = sY + (1/sFactor)
            sX = sX + (1/sFactor)
    return newPic

def chromakeyCopy(sX,sY,picture,newPic):
    width = getWidth(picture)
    height = getHeight(picture)

    startX = sX
    for x in range(0,width):
        startY = sY
        for y in range(0,height):
            pixel=getPixel(picture,x,y)
            color = getColor(getPixel(picture,x,y))
            #threshold to remove black background pixels, aka overlap
            if (getRed(pixel)+getGreen(pixel)+getBlue(pixel))> 2:
                setColor(getPixel(newPic,startX,startY),color)
            startY=startY+1
            startX=startX+1
    return(newPic)

```

```

def collage():
    bg=makeEmptyPicture(1000,736,black)
    width = getWidth(bg)
    height = getHeight(bg)
    smile = makePicture("prune.png")

    signature = makePicture("name2.png")

    smile2 = scale(.5,smile)

    #color gradient copying
    for x in range(0, 18):
        for y in range(0,12):
            smile3 = redFactor(smile2, .99)
            chromakeyCopy(x*50,y*53,smile3,bg)
    #gray smile centered
    smile4 = grayScale(smile)
    chromakeyCopy((width/2)-(getWidth(smile)/2) , (height/2)-(getHeight(smile)/2) ,smile4,bg)

    #darken smile bigger around the gray
    smile5 = darken(scale(1.3,smile))
    chromakeyCopy((width/2)-(int(getWidth(smile)*1.3)/2) , (height/2)-(int(getHeight(smile)*1.3)/2) ,smile5, bg)

    #border
    addRectWThickness(bg,0, 0, width-20, height-20, 20, black)

    chromakeyCopy(width-getWidth(signature),height-getHeight(signature),signature,bg)

    show(bg)

```