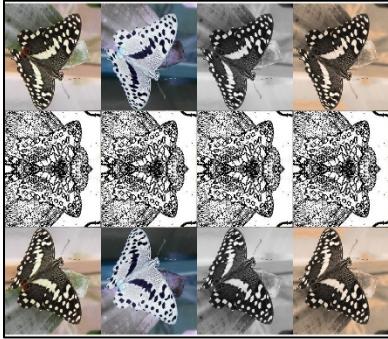


Abigail Shaw

Completed



Original



```
#Abby Shaw/CS 120/Project 2
```

```
def collage():
    #starting images
    picture=getMediaPath('butterfly1.jpg')
    source1=scaleDown1(makePicture(picture),2)
    source2=scaleDown1(makePicture(picture),2)
    source3=scaleDown1(makePicture(picture),2)
    source4=scaleDown1(makePicture(picture),2)
    source5=scaleDown1(makePicture(picture),2)
    emptypic=makeEmptyPicture(4*getWidth(source1),3*getHeight(source1)-8)
    h=getHeight(source1)
    w=getWidth(source1)
    H=getHeight(emptypic)
    W=getWidth(emptypic)
    #creates altered images
    image1=source1
    image2=invertColor(source2)
    image3=grayscale(source3)
    image4=edgeDetect(source4)
    image5=sepia(source5)
    #copying of altered images onto canvas
    tarX=0
    tarY=H-h-5
    copy(image1, emptypic, tarX, tarY)
    copy(image2, emptypic, tarX+w, tarY)
    copy(image3, emptypic, tarX+2*w, tarY)
    copy(image5, emptypic, tarX+3*w, tarY)
    copy(image4, emptypic, 0,getHeight(source1))
    copy(image4, emptypic, getWidth(source1),getHeight(source1))
    copy(image4, emptypic, 2*getWidth(source1),getHeight(source1))
    copy(image4, emptypic, 3*getWidth(source1),getHeight(source1))
    newpic=mirrorHorizontal(emptypic)
    repaint(newpic)
    return newpic
```

```
def copy(source, target, tarX, tarY):
    targetX=tarX
    for sourceX in range(0, getWidth(source)):
```

```

targetY=tarY
for sourceY in range(0, getHeight(source)):
    px=getPixel(source, sourceX, sourceY)
    tx=getPixel(target, targetX, targetY)
    setColor(tx, getColor(px))
    targetY=targetY+1
targetX=targetX+1

```

#programs to edit pictures

```

def sepia(picture):
    grayscale(picture)
    for p in getPixels(picture):
        red=getRed(p)
        blue=getBlue(p)
        if (red<63):
            red=red*1.1
            blue=blue*0.9
        if (red>62 and red<192):
            red=red*1.15
            blue=blue*0.85
        if (red>191):
            red=red*1.08
            if (red>255):
                red=255
            blue=blue*0.93
        setBlue(p, blue)
        setRed(p, red)
    return picture

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

def edgeDetect(source):
    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)>10:
                setColor(px, black)
            if abs(brlum-thislum)<=10:
                setColor(px, white)
    return source

```

```

def invertColor(source):
    for px in getPixels(source):
        red=getRed(px)
        green=getGreen(px)
        blue=getBlue(px)
        negColor=makeColor(255-red, 255-green, 255-blue)
        setColor(px, negColor)
    return source

def scaleDown1(picture, f):
    small_picture= makeEmptyPicture(int(getWidth(picture)/f), ↵
        int(getHeight(picture)/f))
    scaleDown(picture, small_picture, f)
    return small_picture

def scaleDown(picture_in, picture_out, f):
    sourceX=0
    for targetX in range(0, int(getWidth(picture_in)/f)):
        sourceY=0
        for targetY in range(0, int(getHeight(picture_in)/f)):
            color= getColor(getPixel(picture_in, sourceX, sourceY))
            setColor(getPixel(picture_out, targetX, targetY), color)
            sourceY=sourceY+f
        sourceX=sourceX+f
    return picture_out

#mirrors collage horizontally
def mirrorHorizontal(source):
    mirrPoint=getHeight(source)/2
    height=getHeight(source)
    for x in range(0, getWidth(source)):
        for y in range(0, mirrPoint):
            topPixel=getPixel(source, x, y)
            bottomPixel=getPixel(source, x, height-y-1)
            bottomColor=getColor(bottomPixel)
            setColor(topPixel, bottomColor)
    show(source)
    return source

##I tried to chromakey my signature, but couldnt sucessfully complete it
def chromakey():
    picture=pickAFile()
    pic=makePicture(picture)
    canvas=makeEmptyPicture(getWidth(pic), getHeight(pic))
    newColor=makeColor(75,74,79)
    targetx=570
    for x in range(60,210):
        targety=950
        for y in range(0, 55):
            color=getColor(getPixel(pic,x,y))
            if distance(color, newColor)<160:
                setColor(getPixel(canvas, targetx, targety), color)
                targety=targety+1
            targetx=targetx+1
    show (pic)

```

↵ means the line is continued on the next line.