

# Shaun Whitlow

Completed



Original



```
#Shaun Whitlow
#Project 2
#Description:
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#Main Collage Function
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```
def collage():
    setMediaPath()
    mountainPic=makePicture ("Mountain.jpg")
    signaturePic=makePicture ("MySignature.png")
    #explore(mountainPic)
    darkPic=darken(mountainPic) #function 1
    #show (darkPic)
    grayScalePic=grayScale(mountainPic)
    #show(grayScalePic)
    negativePic=negative(mountainPic)
    #show(negativePic)
    #Copy
    canvas = makeEmptyPicture(getWidth(mountainPic), getHeight(mountainPic))
    startX=0; startY=0
    smallPic1=scaleDown1(mountainPic)
    smallPic2=scaleDown2(grayScalePic)
    smallPic3=scaleDown3(negativePic)
    copy(darkPic, canvas, startX, startY)
    copy(smallPic3, canvas, 156, 116)
    copy(smallPic1, canvas, 256, 191)
    copy(smallPic2, canvas, 0, 0)
    copy(smallPic2, canvas, 768, 0)
    copy(smallPic2, canvas, 0, 574)
    copy(smallPic2, canvas, 768, 574)
    copy(signaturePic, canvas, 360, 664)
    show(canvas)
```

```
#Resizing
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```
def scaleDown1(source):
    width=getWidth(source) /2
    height=getHeight(source)/2
    targetPic=makeEmptyPicture(width, height,white)
    sourceX = 0
    for targetX in range(0, int(getWidth(source) /2)):
        sourceY = 0
        for targetY in range(0, int(getHeight(source)) /2):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
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    sourceColor=getColor(sourcePx)
    targetPx=getPixelAt(targetPic, targetX, targetY)
    setColor(targetPx, sourceColor)
    sourceY=sourceY+ 1.0/0.5
    sourceX=sourceX+ 1.0/0.5
return targetPic

```

```

def scaleDown2(source):
    width=getWidth(source) /4
    height=getHeight(source)/4
    targetPic=makeEmptyPicture(width, height,white)
    sourceX = 0
    for targetX in range(0, int(getWidth(source) /4)):
        sourceY = 0
        for targetY in range(0, int(getHeight(source)) /4):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(targetPic, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+ 1.0/0.25
            sourceX=sourceX+ 1.0/0.25
    return targetPic

```

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def scaleDown3(source):
    width=int(getWidth(source) *0.7)
    height=int(getHeight(source)*0.8)
    targetPic=makeEmptyPicture(width, height,white)
    sourceX = 0
    for targetX in range(0, int(getWidth(source) *0.7)):
        sourceY = 0
        for targetY in range(0, int(getHeight(source) *0.7)):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(targetPic, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+ 1.0/0.7
            sourceX=sourceX+ 1.0/0.7
    return targetPic

```

#Defining Copy

```

def copy(pic,target,targX,targY):
    targetX = targX
    for x in range(getWidth(pic)):
        targetY = targY
        for y in range(getHeight(pic)):
            pixel = getPixel(pic,x,y)
            tx = getPixel(target,targetX,targetY)
            setColor(tx,getColor(pixel))
            targetY=targetY+1
            targetX = targetX+1

```

#Image Appearance Manipulation

```

def darken(picture):
    newPic = duplicatePicture(picture)
    allPixels=getPixels(newPic)
    for index in range (int (len(allPixels)*0), len(allPixels)):
        px=allPixels[index]
        rValue=getRed(px)
        gValue=getGreen(px)
        bValue=getBlue(px)

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```
    setRed(px, rValue*0.4)
    setGreen (px, gValue* 0.5)
    setBlue(px, bValue*0.6)
return newPic
```

```
def grayScale(picture):
    newPic = duplicatePicture(picture)
    for pixel in getAllPixels(newPic):
        newRed = getRed(pixel)*0.299
        newGreen = getGreen(pixel)*0.587
        newBlue = getBlue(pixel)* 0.114
        luminance = newRed+newGreen+newBlue
        setColor(pixel, makeColor(luminance, luminance, luminance))
    return newPic
```

```
def negative(pic):
    newPic = duplicatePicture(pic)
    for px in getPixels(newPic):
        r = getRed(px)
        b = getBlue(px)
        g = getGreen(px)
        neg = makeColor(255-r, 255-g, 255-b)
        setColor(px, neg)
    return newPic
```