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)

def scaleDown1(source):
    width = int(getWidth(source)) / 2
    height = int(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))
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

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)
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