def collage():
    setMediaPath()
    picture = makePicture(getMediaPath("bigben.jpg"))
    sigPicture = makePicture(getMediaPath("signature.jpg"))
    canvas = makeEmptyPicture(1000, 468)
    #original picture in slot 3
    copyX(picture, 400, 599, canvas)
    #mirrored picture in slot 1
    mirrorVertically(picture)
    copyX(picture, 0, 199, canvas)
    #lightened/mirrored picture in slot 2
    lighten(picture)
    copyX(picture, 200, 399, canvas)
    #grid lines/lightened/mirrored picture in slot 4
    lines(picture)
    copyX(picture, 600, 799, canvas)
    #grayscale/grid lines/lightened/mirrored picture in slot 5
    grayScale(picture)
    copyX(picture, 800, 999, canvas)
    #signature in top left corner
    copySig(sigPicture, canvas, 0, 0)
    #final product
    show(canvas)

#first slot
def mirrorVertically(picture):
    canvas = makeEmptyPicture(999, 468)
    mirrorPoint = getHeight(picture)/2
    height = getHeight(picture)
    for x in range(0, getWidth(picture)):
        for y in range(0,mirrorPoint):
            topPixel = getPixel(picture,x,y)
            bottomPixel = getPixel(picture, x, height-y-1)
            color = getColor(bottomPixel)
            setColor(topPixel,color)

#second slot
def lighten(picture):
    canvas = makeEmptyPicture(999, 468)
    for x in range(0, getWidth(picture)):
for y in range(0, getHeight(picture)):
    px = getPixel(picture, x, y)
    color = getColor(px)
    color = makeLighter(color)
    setColor(px, color)

#third slot is original picture

#fourth slot

def lines(picture):
    canvas = makeEmptyPicture(999, 468)
    for x in range(0, getHeight(picture), 10):
        for y in range(0, getWidth(picture)):
            setColor(getPixel(picture, y, x), black)
    for x in range(0, getWidth(picture), 10):
        for y in range(0, getHeight(picture)):
            setColor(getPixel(picture, x, y), black)

#fifth slot

def grayScale(picture):
    canvas = makeEmptyPicture(999, 468)
    for p in getPixels(picture):
        intensity = (getRed(p) + getGreen(p) + getBlue(p)) / 3
        setColor(p, makeColor(intensity, intensity, intensity))

#copy function for images

def copyX(picture, startx, endx, newPicture):
    newX = startx
    for x in range(0, getWidth(picture)):
        for y in range(0, getHeight(picture)):
            pixel = getPixel(picture, x, y)
            color = getColor(pixel)
            newPixel = getPixel(newPicture, newX, y)
            setColor(newPixel, color)
        newX = newX + 1

#copy function for signature

def copySig(sPicture, targetPicture, targetX, targetY):
    sigColor = makeColor(0, 0, 0)
    for sx in range(0, getWidth(sPicture)):
        for sy in range(0, getHeight(sPicture)):
            sPxl = getPixelAt(sPicture, sx, sy)
            sColor = getColor(sPxl)
            targetPxl = getPixelAt(targetPicture, int(sX + targetX), int(sY + targetY))
            if distance(sColor, black) < 180:
                if distance(sColor, black) < 180:
                    setColor(targetPxl, white)