def collage():
    picture = makePicture(getMediaPath("waterfall.jpg"))
    grayScale(picture,0,80)
    darker(picture,0,80)
    posterize2(picture,80,150)
    posterize(picture,150,240)
    makeSunset(picture,80,150)
    mirrorHorizontal(picture,240,400)
    posterize(picture,400,489)
    posterize3(picture,489,559)
    makeSunset(picture,489,559)
    grayScale(picture,559,639)
    darker(picture,559,639)
    signature=makePicture(getMediaPath("signature.jpg"))
    sign(signature,picture,0,0)
    repaint(picture)

def grayScale(picture,startX,endX):
    for x in range(startX,endX):
        for y in range(0,getHeight(picture)):
            p = getPixel(picture,x,y)
            intensity = (getRed(p) + getBlue(p) + getGreen(p)) / 3
            setColor(p,makeColor(intensity,intensity,intensity))

def posterize2(picture,startX,endX):
    for x in range(startX,endX):
        for y in range(0,getHeight(picture)):
            px = getPixel(picture,x,y)
            r = getRed(px)
            g = getGreen(px)
            b = getBlue(px)
            luminance = (r+g+b)/3
            if luminance < 64:
                setColor(px,black)
            elif luminance > 120:
                setColor(px,white)
            else:
                setColor(px,blue)

def posterize(picture,startX,endX):
    for x in range(startX,endX):
        for y in range(0,getHeight(picture)):
            px = getPixel(picture,x,y)
red = getRed(px)
green = getGreen(px)
blue = getBlue(px)

if(green > 60):
    setGreen(px,25)
if(green > 78 and green < 100):
    setGreen(px,88)
if(green > 115 and green > 183):
    setGreen(px,156)
if(green > 223 and green < 247):
    setGreen(px,233)

if(blue > 60):
    setBlue(px,25)
if(blue > 78 and blue > 100):
    setBlue(px,88)
if(blue > 115 and blue < 183):
    setBlue(px,156)
if(blue > 223 and blue > 247):
    setBlue(px,233)

if(red > 60):
    setRed(px,25)
if(red > 78 and red > 100):
    setRed(px,88)
if(red > 115 and red < 183):
    setRed(px,156)
if(red > 223 and red < 247):
    setRed(px,233)

def makeSunset(picture,startX,endX):
    for x in range(startX,endX):
        for y in range(0,getHeight(picture)):
            px = getPixel(picture,x,y)
            value = getGreen(px)
            setGreen(px,value*0.7)
            value = getRed(px)
            setRed(px,value*0.7)

def mirrorHorizontal(picture,startX,endX):
    mirrorPoint = getHeight(picture)/2
    height = getHeight(picture)
    for x in range(startX,endX):
        for y in range(0,mirrorPoint):
            topPixel = getPixel(picture,x,y)
            bottomPixel = getPixel(picture,x,height - y-1)
            color = getColor(topPixel)
            setColor(bottomPixel,color)

def posterize3(picture,startX,endX):
    for x in range(startX,endX):
        for y in range(0,getHeight(picture)):
            px = getPixel(picture,x,y)
            r = getRed(px)
            g = getGreen(px)
            b = getBlue(px)
            luminance = (r+g+b)/3
            if luminance < 64:
                setColor(px,black)
elif luminance > 120:
    setColor(px, white)
else:
    setColor(px, blue)

def darker(picture, startX, endX):
    for x in range(startX, endX):
        for y in range(0, getHeight(picture)):
            px = getPixel(picture, x, y)
            color = getColor(px)
            color = makeDarker(color)
            setColor(px, color)

def sign(picture, picture2, newX, newY):
    startX = newX
    for x in range(0, getWidth(picture)):
        startY = newY
        for y in range(0, getHeight(picture)):
            opx = getPixel(picture, x, y)
            color = getColor(opx)
            if distance(color, blue) < 200:
                px = getPixel(picture2, int(startX), int(startY))
                setColor(px, white)
                startY = startY + 1
                startX = startX + 1

startY = startY + 1
startX = startX + 1