def collage():
    setMediaPath("C:\Users\gabem\Desktop\CS120\Labs+Projects\Project 2")
    pic = makePicture("ferris-wheel.jpg")
    #original is 640x427
    collagecanvas = makeEmptyPicture(getWidth(pic), getHeight(pic))
    small_pic = makeEmptyPicture(getWidth(pic)/4, getHeight(pic)/4)
    #small_pic is a scaled down original

    mirrorLeft(pic)
    mirrorBottom(pic)
    copy(pic, collagecanvas, 0, 0)
    #creates cool mirrored circle on canvas

    pic = makePicture("ferris-wheel.jpg")
    #resets pic to original jpg
    scale(pic, small_pic, 0.25)
    copy(small_pic, collagecanvas, 0, 0)
    #puts a scaled down original pic in top left

    scale(pic, small_pic, 0.25)
    greyscale(small_pic)
    copy(small_pic, collagecanvas, getWidth(pic)-getWidth(small_pic), 0)
    #puts a scaled down greyscaled pic in top right

    scale(pic, small_pic, 0.25)
    negative(small_pic)
copy(small_pic, collagecanvas, 0, getHeight(pic)-getHeight(small_pic))
#puts a scaled down negative pic in bottom left

scale(pic, small_pic, 0.25)
colorswap(small_pic)
copy(small_pic, collagecanvas, getWidth(pic)-getWidth(small_pic), getHeight(pic)-getHeight(small_pic))
#puts a scaled down colorswapped pic in bottom right

signature = makePicture("signature.jpg")
addSignature(collagecanvas, signature, 530, 265, black)
#puts signature above colorswapped pic

explore(collagecanvas)

def scale(picture_in, picture_out, scale):
inX = 0
for x in range(0, int(getWidth(picture_in)*scale)):
inY = 0
for y in range(0, int(getHeight(picture_in)*scale)):
  incolor = getColor(getPixel(picture_in, int(inX), int(inY)))
  setColor(getPixel(picture_out, x, y), incolor)
inY = inY + 1.00/scale
inX = inX + 1.00/scale

def copy(picture_in, picture_out, targetX, targetY):
  height = getHeight(picture_in)
  newX = targetX
  for x in range(0, getWidth(picture_in)):
    newY = targetY
    for y in range(0, getHeight(picture_in)):
      pixel = getPixel(picture_in, x, y)
      newPixel = getPixel(picture_out, newX, newY)
      setColor(newPixel, getColor(pixel))
      newX = newX + 1
      newY = newY + 1

def mirrorLeft(picture):
  width = getWidth(picture)
  mirror = width/2
  for x in range(0, mirror):
    for y in range(0, getHeight(picture)):
      leftPixels = getPixel(picture, x, y)
      rightPixels = getPixel(picture, width-x-1, y)
      setColor(rightPixels, getColor(leftPixels))
def mirrorBottom(picture):
    height = getHeight(picture)
    mirror = height / 2
    for y in range(0, mirror):
        for x in range(0, getWidth(picture)):
            topPixels = getPixel(picture, x, y)
            bottomPixels = getPixel(picture, x, height - y - 1)
            setColor(bottomPixels, getColor(topPixels))

def greyscale(picture):
    for p in getPixels(picture):
        color = (getRed(p) + getGreen(p) + getBlue(p)) / 3
        setColor(p, makeColor(color, color, color))

def negative(picture):
    for p in getPixels(picture):
        red = getRed(p)
        green = getGreen(p)
        blue = getBlue(p)
        color = makeColor(255 - red, 255 - green, 255 - blue)
        setColor(p, color)

def colorswap(picture):
    for p in getPixels(picture):
        red = getRed(p)
        green = getGreen(p)
        blue = getBlue(p)
        setColor(p, makeColor(blue, red, green))

def addSignature(target, signature, toX, toY, color):
    toYStart = toY
    for x in range(0, getWidth(signature)):
        toY = toYStart
        for y in range(0, getHeight(signature)):
            p = getPixel(signature, x, y)
            if (getRed(p) < 225 and getGreen(p) < 225 and getBlue(p) < 225):
                setColor(getPixel(target, toX, toY), color)
            toY = toY + 1
        toX = toX + 1
    return target