# Clare Endris, 3/12/2021  
# setMediaPath(r"C:\Users\clare\Desktop\CS 120\projects\project2")

#main program  
def collage():  
    picture= makePicture(getMediaPath("ocean.jpg"))  
    signature= makePicture(getMediaPath("signature.jpg"))  
    canvas= makeEmptyPicture(getWidth(signature)/10, getHeight(signature)/10)  
    #grayscale and mirror(swapping) picture, making smaller canvas w/ picture (canvas_one is original)  
    canvas_one= makeEmptyPicture(int(getWidth(picture)*0.6),(int(getHeight(picture)*0.6)))  
    mirrorVertical(picture)  
    scale(picture,canvas_one,0.6)  
    grayScale(picture)  
    move(canvas_one,picture,(int(getWidth(picture)*.2)),(int(getHeight(picture)*.2)))  
    #making a second canvas from canvas_one, lightening function & sunset function canvas_two  
    canvas_two= makeEmptyPicture(int(getWidth(canvas_one)*0.6),(int(getHeight(canvas_one)*0.6)))  
    scale(canvas_one,canvas_two,0.6)  
    lighten(canvas_two)  
    sunSet(canvas_two)  
    move(canvas_two,picture,(int(getWidth(canvas_one)*.55)),(int(getHeight(canvas_one)*.55)))  
    #making a third canvas from canvas_two, negative function canvas_three  
    canvas_three= makeEmptyPicture(int(getWidth(canvas_two)*0.6),(int(getHeight(canvas_two)*0.6)))  
    scale(canvas_two,canvas_three,0.6)  
    negative(canvas_three)  
    move(canvas_three,picture,(int(getWidth(canvas_two)*1.12)),(int(getHeight(canvas_two)*1.12)))  
    #making a fourth canvas from canvas_three, cyanotype function canvas_four  
    canvas_four= makeEmptyPicture(int(getWidth(canvas_three)*0.6),(int(getHeight(canvas_three)*0.6)))
scale(canvas_three, canvas_four, 0.6)
cyanotype(canvas_four)
move(canvas_four, picture, (int(getWidth(canvas_three)*2.07)), (int(getHeight(canvas_three)*2.07)))
# adding signature
scale(signature, canvas, .1)
chromakey(signature, picture)
show(picture)

# decomposed functions

def chromakey(signature, source):
    newX = getWidth(source) - getWidth(signature)
    newY = getHeight(source) - getHeight(signature)
    for p in getPixels(signature):
        x = getX(p)
        y = getY(p)
        bgPx = getPixel(source, x+newX, y+newY)
        bgCol = getColor(p)
        if distance(white, bgCol) > 230:
            setColor(bgPx, cyan)
    return source

def move(source, target, targetX, targetY):
    targX = targetX
    for x in range(0, getWidth(source)):
        targY = targetY
        for y in range(0, getHeight(source)):
            color = getColor(getPixel(source, x, y))
            setColor(getPixel(target, targX, targY), color)
        targY += 1
        targX += 1

def scale(source, new, scaleFactor):
    sourceX = 0
    for targetX in range(0, int(getWidth(source) * scaleFactor)):
        sourceY = 0
        for targetY in range(0, int(getHeight(source) * scaleFactor)):
            color = getColor(getPixel(source, int(sourceX), int(sourceY)))
            setColor(getPixel(new, targetX, targetY), color)
        sourceY = sourceY + 1.0 / scaleFactor
        sourceX = sourceX + 1.0 / scaleFactor

def mirrorVertical(source):
    mirrorPoint = getWidth(source) / 10
    width = getWidth(source)
    for y in range(0, getHeight(source)):
for x in range(0,mirrorPoint):
    leftPixel= getPixel(source,x,y)
    leftPixel_one= getPixel(source,x,y)
    rightPixel= getPixel(source,width-x-1,y)
    rightPixel_one= getPixel(source,width-x-1,y)
    color= getColor(rightPixel)
    setColor(leftPixel,color)
    color_one= getColor(leftPixel_one)
    setColor(rightPixel_one,color_one)

def grayScale(source):
    for p in getPixels(source):
        intensity= (getRed(p)+getGreen(p)+getBlue(p))/3
        setColor(p,makeColor(intensity,intensity,intensity))

def cyanotype(source):
    for p in getPixels(source):
        b= getBlue(p)
        if (b<63):
            b1= b*2
        if (61<=b and b<=191):
            b1=b*1.3
        if (b>191):
            b1=b*1.2
        setBlue(p,b1)
        valueR= getRed(p)
        setRed(p,valueR*0.75)
        valueG= getGreen(p)
        setGreen(p,valueG*0.75)

def lighten(source):
    for x in range(0,getWidth(source)):
        for y in range (0,getHeight(source)):
            p= getPixel(source,x,y)
            color= getColor(p)
            #color2= makeLighter(color)
            setColor(p,color)

def negative(source):
    for p in getPixels(source):
        r= getRed(p)
        g= getGreen(p)
        b= getBlue(p)
        negColor= makeColor(255-r,255-g,255-b)
setColor(p, negColor)

def sunSet(source):
    for p in getPixels(source):
        value = getBlue(p)
        setBlue(p, value * 0.7)
        value = getGreen(p)
        setGreen(p, value * 0.7)