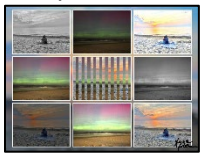
# Sarah Fieldhouse

Completed



Originals

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# Sarah E. Fieldhouse, 2/17/2026 - 3/10/2026
# CS 120
# Project 2 Art Show Submission

from mediaComp import *

def collage():

    source = makePicture(getMediaFolder() + "sitting.jpg") # dimensions: 300 x 225
    sky = makePicture(getMediaFolder() + "aurora.jpg") # dimensions:300 x 225
    bg = makePicture(getMediaFolder() + "bg.jpg") # dimensions: 981 x 736
    name = makePicture(getMediaFolder() + "my_signature.jpg") #dimensions: 130 x 69


    background = transformBG(bg) # Creates background

    pic1 = transform1(source)
    paste(pic1, background, 30, 20) # Top left

    pic2 = transformSource1(source)
    paste(pic2, background, 651, 491) # Bottom right

    pic3 = transform3(source)
    paste(pic3, background, 651, 20) # Top right

    pic4 = transform4(source)
    paste(pic4, background, 30, 491) # Bottom left

    pic5 = transform5(sky)
    paste(pic5, background, 651, 256) # Right middle

    pic6 = transformSky1(sky)
    paste(pic6, background, 30, 256) # Left middle

    pic7 = transform7(sky)
    paste(pic7, background, 341, 491) # Bottom middle

    pic8 = transform8(sky)
    paste(pic8, background, 341, 20) # Top middle

    pic9 = transform9(source, sky) # Center
    paste(pic9, background, 341, 256)

    name_ = chromakey(name, background) # Bottom right, signature
    paste(name_, background, 851, 667)

    pictureTool(background)
```

```
# Creates background
def transformBG(bg):
    picture = duplicatePicture(bg)
    return picture

# Adds simple white border to source picture (beach)
def transformSource1(source):
    pic = duplicatePicture(source)
    border(pic)
    return pic

# Adds simple white border to source picture (sky), original picture
def transformSky1(sky):
    pic = duplicatePicture(sky)
    border(pic)
    return pic

# Grayscale beach
def transform1(source):
    pic = duplicatePicture(source)
    grayscale(pic)
    border(pic)
    return pic

# Ligthen beach
def transform3(source):
    pic3 = duplicatePicture(source)
    pic = lighten(pic3)
    border(pic3)
    return pic3

# Darken Beach
def transform4(source):
    pic4 = duplicatePicture(source)
    pic = darken(pic4)
    border(pic4)
    return pic4

# Grayscale sky
def transform5(sky):
    pic = duplicatePicture(sky)
    grayscale(pic)
    border(pic)
    return pic

# Lighten sky
def transform7(sky):
    pic7 = duplicatePicture(sky)
    pic = lighten(pic7)
    border(pic7)
    return pic7

# Darken sky
def transform8(sky):
    pic8 = duplicatePicture(sky)
    pic = darken(pic8)
    border(pic8)
    return pic8
```

```
# Merge two images (beach and sky) with vertical bars
def transform9(source, sky):
    pic1 = duplicatePicture(source)
    pic2 = duplicatePicture(sky)
    pic9 = bars(pic1, pic2)
    border(pic9)
    return pic9

# Determine the target colors (of bars) to be pasted onto background
def copyBars(pic1, pic2, startX, endX, targetX):
    height = getHeight(pic1)
    for x in range(startX, endX):
        for y in range(height):
            sourcePixel = getPixelAt(pic1, x, y)
            color = getColor(sourcePixel)
            newX = targetX + (x - startX)
            targetPixel = getPixelAt(pic2, newX, y)
            setColor(targetPixel, color)

# Calculate the dimensions of bars, paste onto background
def bars(pic1, pic2):
    height = getHeight(pic1)
    sliceOf1 = getWidth(pic1) // 20
    sliceOf2 = getWidth(pic2) // 20
    targetWidth = (10*sliceOf1 + 10*sliceOf2)
    canvas = makeEmptyPicture(targetWidth, height)
    targetX = 0
    for i in range(10):
        startX = i * sliceOf1
        endX = startX + sliceOf1
        copyBars(pic1, canvas, startX, endX, targetX)
        targetX += sliceOf1
        startX = i * sliceOf2
        endX = startX + sliceOf2
        copyBars(pic2, canvas, startX, endX, targetX)
        targetX += sliceOf2
    return canvas

# Lighten
def lighten(picture):
    for pixel in getPixels(picture):
        color = getColor(pixel)
        color = makeLighter(color)
        setColor(pixel, color)

# Darken
def darken(picture):
    for pixel in getPixels(picture):
        color = getColor(pixel)
        color = makeDarker(makeDarker(color))
        setColor(pixel, color)

# Graysacle
def grayscale(picture):
    for pixel in getPixels(picture):
        newRed = getRed(pixel) * .299
        newGreen = getGreen(pixel) * .587
        newBlue = getBlue(pixel) * .114
        intensity = newRed + newGreen + newBlue
        setColor(pixel, makeColor(intensity, intensity, intensity))
```

```
# Paste a photo
def paste(pic, canvas, targetX, targetY):
    for x in range(getWidth(pic)):
        for y in range(getHeight(pic)):
            setColor(getPixelAt(canvas, x + targetX, y + targetY),
                getColor(getPixelAt(pic, x, y)))

# White image border; applies to all images & image variations
def border(pic):
    borderThickness = 4
    bottom = getHeight(pic) - borderThickness
    side = getWidth(pic) - borderThickness
    for pixel in getPixels(pic):
        x = getX(pixel)
        y = getY(pixel)
        if (y < borderThickness or
            y >= bottom or
            x < borderThickness or
            x >= side):
            setColor(pixel, white)

# Calculate and paste signature to background
def chromakey(signature, background):
    signature = duplicatePicture(signature)
    for pixel in getPixels(signature):
        x = getX(pixel)
        y = getY(pixel)
        red_value = getRed(pixel)
        green_value = getGreen(pixel)
        blue_value = getBlue(pixel)
        luminance = (red_value + green_value + blue_value) // 3
        if luminance < 150:
            setColor(pixel, black)
        else:
            background_pixel = getPixelAt(background, x +851, y + 667)
            background_color = getColor(background_pixel)
            setColor(pixel, background_color)
    return signature
```