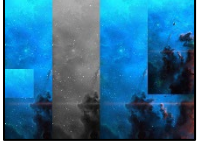


Ark Agunbiade

Completed



Original



```
from jes4py import *

def collage():
    setMediaPath()
    image_path = getMediaPath("Retry.jpg")

    picture = makePicture(image_path)

    canvas = makeEmptyPicture(1000, 736)

    grayscale_image = grayscale_copy(picture)
    blur_image = blurred_copy(picture)
    scaled_image = scale_copy(picture, 0.5)
    cropped_image = cropped_copy(picture, 50, 50, 200, 200)
    sepia_image = sepiaTint_copy(picture)

    copyInto(picture, canvas, 0, 0)
    copyInto(grayscale_image, canvas, 250, 0)
    copyInto(blur_image, canvas, 500, 0)
    copyInto(scaled_image, canvas, 750, 0)
    copyInto(cropped_image, canvas, 0, 368)
    copyInto(sepia_image, canvas, 1000, 0)

    explore(canvas)

def grayscale_copy(picture):
    new_picture = duplicatePicture(picture)
    for pixel in getPixels(new_picture):
        intensity = int((getRed(pixel) + getGreen(pixel) + getBlue(pixel)) / 3)
        setColor(pixel, makeColor(intensity, intensity, intensity))
    return new_picture

def blurred_copy(picture):
    blur_picture = duplicatePicture(picture)
    width, height = getWidth(picture), getHeight(picture)

    for x in range(1, width - 1):
        for y in range(1, height - 1):
            center = getPixel(blur_picture, x, y)
            neighbors = [getPixel(picture, x-1, y), getPixel(picture, x+1, y),
                        getPixel(picture, x, y-1), getPixel(picture, x, y+1)]
            new_red = sum(getRed(pixel) for pixel in neighbors + [center]) // 5
            new_green = sum(getGreen(pixel) for pixel in neighbors + [center]) // 5
            new_blue = sum(getBlue(pixel) for pixel in neighbors + [center]) // 5
            setColor(center, makeColor(new_red, new_green, new_blue))
    return blur_picture

def scale_copy(picture, scale):
    original_width, original_height = getWidth(picture), getHeight(picture)
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new_width, new_height = int(original_width * scale), int(original_height * scale)
new_picture = makeEmptyPicture(new_width, new_height)

for new_x in range(new_width):
    for new_y in range(new_height):
        source_x = min(int(new_x / scale), original_width - 1)
        source_y = min(int(new_y / scale), original_height - 1)
        color = getColor(getPixel(picture, source_x, source_y))
        setColor(getPixel(new_picture, new_x, new_y), color)
return new_picture

def cropped_copy(picture, start_x, start_y, end_x, end_y):
    width, height = end_x - start_x, end_y - start_y
    cropped_picture = makeEmptyPicture(width, height)

    for x in range(width):
        for y in range(height):
            color = getColor(getPixel(picture, start_x + x, start_y + y))
            setColor(getPixel(cropped_picture, x, y), color)
    return cropped_picture

def sepiaTint_copy(picture):
    sepia_picture = duplicatePicture(picture)
    for pixel in getPixels(sepia_picture):
        red_value = getRed(pixel)
        green_value = getGreen(pixel)
        blue_value = getBlue(pixel)

        if blue_value < 63:
            blue_value *= 2
            red_value *= 0.75
            green_value *= 0.75
        elif 63 <= blue_value <= 191:
            blue_value *= 1.3
            red_value *= 0.75
            green_value *= 0.75
        else:
            blue_value *= 1.2
            red_value *= 0.75
            green_value *= 0.75

        setRed(pixel, int(red_value))
        setBlue(pixel, int(blue_value))
        setGreen(pixel, int(green_value))
    return sepia_picture

def copyInto(picture, canvas, start_x, start_y):
    picture_width, picture_height = getWidth(picture), getHeight(picture)
    canvas_width, canvas_height = getWidth(canvas), getHeight(canvas)

    for x in range(picture_width):
        for y in range(picture_height):
            if start_x + x < canvas_width and start_y + y < canvas_height:
                color = getColor(getPixel(picture, x, y))
                setColor(getPixel(canvas, start_x + x, start_y + y), color)

```