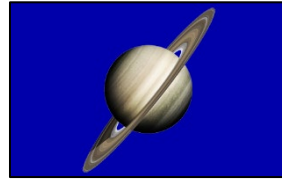
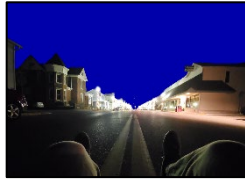
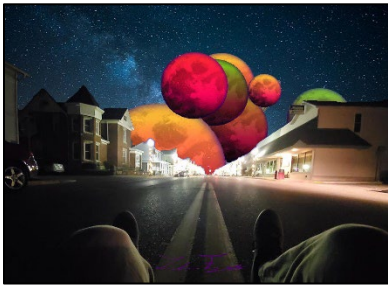


Luke Fugate

Completed

Originals



```
#Luke Fugate  
#03/01/2022
```

```
def Collage():  
    print('Please select the folder project2: ')  
    setMediaPath()  
    #Canvas is the starting blank Canvas  
    canvas = makeEmptyPicture(1000,722)  
    #The legroad is the first image to copy to the canvas  
    legroad = makePicture("Images/main.png")  
    #road then becomes the canvas  
    road = copyToCanvas(legroad,canvas)  
    redplanet = makePicture("Images/redplanet.png")  
    saturn = makePicture("Images\saturn.png")  
    sky = makePicture("Images\sky.png")  
    redplanet0 = halfSize(makePicture('Images/redplanet.png'))  
    redplanet1 = decreaseRed(makePicture('Images/redplanet.png'))  
    redplanet2 = decreaseGreen(makePicture('Images/redplanet.png'))  
    redplanet3 = doubleSize(makePicture('Images/redplanet.png'))  
    redplanet4 = decreaseRed(decreaseBlue(makePicture('Images/redplanet.png')))  
    redplanet5 = Darker(makePicture('Images/redplanet.png'))  
    redplanet6 = Grayscale(makePicture('Images/redplanet.png'))  
    redplanet7 = makePicture('Images/redplanet.png')  
    placePlanet(road, redplanet0)  
    placePlanet(road, redplanet1)  
    placePlanet(road, redplanet2)  
    placePlanet(road, redplanet3)  
    placePlanet(road, redplanet4)  
    placePlanet(road, redplanet5)  
    placePlanet(road, redplanet6)  
    placePlanet(road, redplanet7)  
    placePlanet(road, saturn)  
    placeSky(road,sky)  
    PlaceSignature(road,makePicture('Images/signature.png'))  
    print('The collage has been saved to project2/Collage')  
    show(road)  
    writePictureTo(road, getMediaPath('Collage/Processed_Image.png'))
```

```
#Doubles the size of the image by taking every pixel twice
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```
def doubleSize(picture):
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    #First, it makes an empty canvas 2 times the height and width of the original
```

```

canvas = makeEmptyPicture(getWidth(picture)*2,getHeight(picture)*2)
sourceX = 0
#We do a for loop for the height and width of the final product
for targetX in range(0,getWidth(canvas)):
    sourceY = 0
    for targetY in range(0,getHeight(canvas)):
        sourcepix = getPixel(picture,int(sourceX),int(sourceY))
        color = getColor(sourcepix)
        setColor(getPixel(canvas,targetX,targetY),color)
        #When sourceY and sourceX is added by 0.5, and then taken above and used with
        #the int() function, it is rounded down, then when the next one is added it
        #becomes the next whole number. Doing each pixel twice.
        sourceY = sourceY + 0.5
        sourceX = sourceX + 0.5
return(canvas)

def copypicture(picture_in):
    empty = makeEmptyPicture(getWidth(picture_in),getHeight(picture_in))
    sourceX = 0
    for targetX in range(0,(getWidth(picture_in))):
        sourceY = 0
        for targetY in range(0,(getHeight(picture_in))):
            sourcepixel = getPixel(picture_in,sourceX,sourceY)
            targetpixel = getPixel(empty,targetX,targetY)
            color = getColor(sourcepixel)
            setColor(targetpixel,color)
            sourceY = sourceY + 1
            sourceX = sourceX + 1
    return empty

def placeSky(road,sky):
    for x in range(0,getWidth(sky)):
        for y in range(0,getHeight(sky)):
            roadpix = getPixel(road,x,y)
            skypix = getPixel(sky,x,y)
            if getRed(roadpix) + getGreen(roadpix) <= getBlue(roadpix)-25:
                if getBlue(roadpix)-25 >= getRed(roadpix) + getGreen(roadpix):
                    newcolor = getColor(skypix)
                    setColor(roadpix, newcolor)
    return (road)

def placePlanet(road, planet):
    startx = random.randrange(0,(getWidth(road)-(getWidth(planet))))
    starty = random.randrange(0,200)
    for x in range(0,getWidth(planet)):
        for y in range(0,getHeight(planet)):
            roadpix = getPixel(road,(x + startx),(y + starty))
            planetpix = getPixel(planet,x,y)
            if getRed(roadpix) + getGreen(roadpix) <= getBlue(roadpix)-25:
                if getBlue(roadpix)-25 >= getRed(roadpix) + getGreen(roadpix):
                    newcolor = getColor(planetpix)
                    setColor(roadpix, newcolor)
    return (road)

def PlaceSignature(road, signature):
    startx = 385

```

```

starty = 635
for x in range(0, getWidth(signature)):
    for y in range(0, getHeight(signature)):
        roadpix = getPixel(road, (x + startx), (y + starty))
        sigpix = getPixel(signature, x, y)
        if 70 <= getRed(sigpix) < 178:
            if 0 <= getGreen(sigpix) < 100:
                if 100 <= getBlue(sigpix) < 120:
                    newcolor = getColor(sigpix)
                    setColor(roadpix, newcolor)
return(road)

def decreaseRed(picture):
    for px in getPixels(picture):
        if getRed(px) + getGreen(px) >= 100:
            if getBlue >= 150:
                value = getRed(px)
                setRed(px, value*0.5)
    return (picture)

def decreaseBlue(picture):
    for px in getPixels(picture):
        if getRed(px) + getGreen(px) >= 100:
            if getBlue >= 150:
                value = getBlue(px)
                setBlue(px, value*0.5)
    return(picture)

def decreaseGreen(picture):
    for px in getPixels(picture):
        if getRed(px) + getGreen(px) >= 100:
            if getBlue >= 150:
                value = getGreen(px)
                setGreen(px, value*0.2)
    return(picture)

def halfSize(picture):
    canvas = makeEmptyPicture(getWidth(picture)/2, getHeight(picture)/2)
    sourcex = 0
    for x in range(0, getWidth(canvas)):
        sourcey = 0
        for y in range(0, getHeight(canvas)):
            sourcepix = getPixel(picture, sourcex, sourcey)
            targetpix = getPixel(canvas, x, y)
            color = getColor(sourcepix)
            setColor(targetpix, color)
            sourcey = sourcey + 2
            sourcex = sourcex + 2
    return(canvas)

def Darker(picture):
    for x in range(0, getWidth(picture)):
        for y in range(0, getHeight(picture)):
            pixel = getPixel(picture, x, y)
            color = getColor(pixel)

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    newcolor = makeDarker(color)
    setColor(pixel,newcolor)
return (picture)
```

```
def Grayscale(picture):
    for px in getPixels(picture):
        if getRed(px) + getGreen(px) >= 100:
            if getBlue(px) <= 150:
                rd = getRed(px)
                gr = getGreen(px)
                bl = getBlue(px)
                grayvalue = (rd + gr + bl)/3
                newcolor = makeColor(grayvalue, grayvalue, grayvalue)
                setColor(px,newcolor)
    return (picture)
```

```
def copyToCanvas(picture, canvas):
    for x in range(getWidth(picture)):
        for y in range(getHeight(picture)):
            sourcepix = getPixel(picture,x,y)
            targetpix = getPixel(canvas,x,y)
            color = getColor(sourcepix)
            setColor(targetpix,color)
    return (canvas)
```