

Ethan M Johnson

Completed:



Original:



```
#Ethan Michael Johnson
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```
def collage():
    pic=getPic()
    signature=getSign()
    bluePic=makeBlue(pic)
    redPic=makeRed(pic)
    greenPic=makeGreen(pic)
    yellowPic=makeYellow(pic)
    pinkPic=makePink(pic)
    purplePic=makePurple(pic)
    starPic=makeStar(pic)
    canvas=makeEmptyPicture(3*getWidth(pic),3*getHeight(pic))
    for x in range(0, 3*getWidth(pic)):
        for y in range(0, 3*getHeight(pic)):
            setColor(getPixelAt(canvas,x,y), black)
            makeSmallerStar(starPic, canvas, 20, 533)
            makeSmallerStar(starPic, canvas, 36, 524)
            makeSmallerStar(starPic, canvas, 52, 538)
            makeSmallerStar(starPic, canvas, 34, 549)
            makeSmallerStar(starPic, canvas, 41, 563)
            makeSmallerStar(starPic, canvas, 40, 582)
            makeSmallerStar(starPic, canvas, 25, 594)

            makeSmallerOne(bluePic, canvas, 150, 460)
            makeSmallerOne(yellowPic, canvas, 390, 420)
            makeSmallerOne(redPic, canvas, 300, 430)
            makeSmallerOne(redPic, canvas, 100, 440)
            makeSmallerOne(purplePic, canvas, 197, 429)
            makeSmallerOne(greenPic, canvas, 308, 493)
            makeSmallerOne(purplePic, canvas, 69, 490)
            makeSmallerOne(purplePic, canvas, 380, 490)
            makeSmallerOne(greenPic, canvas, 347, 428)
            makeSmallerOne(redPic, canvas, 443, 446)
            makeSmallerOne(yellowPic, canvas, 28, 435)
            makeSmallerOne(purplePic, canvas, 488, 430)
            makeSmallerTwo(greenPic, canvas, 150, 524)
            makeSmallerTwo(greenPic, canvas, 38, 377)
            makeSmallerTwo(bluePic, canvas, 254, 425)
            makeSmallerTwo(purplePic, canvas, 158, 420)
            makeSmallerTwo(redPic, canvas, 448, 400)
            makeSmallerTwo(greenPic, canvas, 110, 390)
            makeSmallerTwo(pinkPic, canvas, 70, 400)
            makeSmallerTwo(bluePic, canvas, 38, 377)
            makeSmallerTwo(yellowPic, canvas, 146, 378)
```

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makeSmallerTwo(redPic, canvas, 186, 391)
makeSmallerTwo(greenPic, canvas, 225, 380)
makeSmallerTwo(bluePic, canvas, 266, 375)
makeSmallerTwo(pinkPic, canvas, 306, 394)
makeSmallerTwo(yellowPic, canvas, 352, 386)
makeSmallerTwo(bluePic, canvas, 394, 387)
makeSmallerTwo(pinkPic, canvas, 424, 370)
makeSmallerTwo(greenPic, canvas, 307, 349)
makeSmallerTwo(purplePic, canvas, 394, 346)
makeSmallerTwo(pinkPic, canvas, 353, 352)
makeSmallerTwo(pinkPic, canvas, 252, 344)
makeSmallerTwo(purplePic, canvas, 225, 348)
makeSmallerTwo(bluePic, canvas, 183, 360)
makeSmallerTwo(purplePic, canvas, 148, 248)
makeSmallerTwo(pinkPic, canvas, 106, 358)
makeSmallerTwo(bluePic, canvas, 78, 362)
makeSmallerTwo(purplePic, canvas, 42, 342)
makeSmallerTwo(greenPic, canvas, 8, 346)
makeSmallerTwo(greenPic, canvas, 141, 342)
makeSmallerTwo(redPic, canvas, 112, 328)
makeSmallerTwo(greenPic, canvas, 83, 332)
makeSmallerTwo(bluePic, canvas, 232, 300)
makeSmallerTwo(yellowPic, canvas, 264, 306)
makeSmallerTwo(purplePic, canvas, 282, 344)
makeSmallerTwo(pinkPic, canvas, 304, 304)
makeSmallerTwo(greenPic, canvas, 350, 310)
makeSmallerTwo(redPic, canvas, 408, 313)
makeSmallerTwo(greenPic, canvas, 438, 332)
makeSmallerTwo(bluePic, canvas, 464, 363)
makeSmallerTwo(pinkPic, canvas, 491, 382)
makeSmallerTwo(purplePic, canvas, 507, 340)
makeSmallerTwo(pinkPic, canvas, 479, 321)
makeSmallerTwo(purplePic, canvas, 505, 300)
makeSmallerTwo(bluePic, canvas, 444, 297)
makeSmallerTwo(pinkPic, canvas, 382, 284)
makeSmallerTwo(purplePic, canvas, 180, 298)
makeSmallerTwo(bluePic, canvas, 148, 299)
makeSmallerTwo(bluePic, canvas, 111, 290)
makeSmallerTwo(purplePic, canvas, 81, 296)
makeSmallerTwo(greenPic, canvas, 50, 308)
makeSmallerTwo(purplePic, canvas, 6, 309)
makeSmallerThree(purplePic, canvas, 208, 329)
makeSmallerThree(pinkPic, canvas, 175, 336)
makeSmallerThree(greenPic, canvas, 210, 296)
makeSmallerThree(yellowPic, canvas, 382, 318)
makeSmallerThree(yellowPic, canvas, 125, 504)
makeSmallerThree(bluePic, canvas, 358, 490)
makeSmallerThree(pinkPic, canvas, 438, 503)
makeSmallerThree(pinkPic, canvas, 76, 453)
makeSmallerThree(pinkPic, canvas, 400, 180)
makeSmallerThree(greenPic, canvas, 200, 160)

makeSmaller(pic, canvas, 210, 480)
signCollage=signPic(signature, canvas, 380, 540)
finalProduct=crop(signCollage, 0, 539, 287, 599)
makeSmallerStar(starPic, finalProduct, 32, 112)
makeSmallerStar(starPic, finalProduct, 23, 129)
makeSmallerStar(starPic, finalProduct, 4, 145)
makeSmallerStar(starPic, finalProduct, 8, 114)
makeSmallerStar(starPic, finalProduct, 197, 206)
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makeSmallerStar (starPic, finalProduct, 208, 216)
makeSmallerStar (starPic, finalProduct, 191, 240)
makeSmallerStar (starPic, finalProduct, 107, 264)
makeSmallerStar (starPic, finalProduct, 125, 282)
makeSmallerStar (starPic, finalProduct, 168, 282)
makeSmallerStar (starPic, finalProduct, 200, 288)
makeSmallerStar (starPic, finalProduct, 300, 262)
makeSmallerStar (starPic, finalProduct, 322, 282)
makeSmallerStar (starPic, finalProduct, 355, 265)
makeSmallerStar (starPic, finalProduct, 418, 189)
makeSmallerStar (starPic, finalProduct, 439, 161)
makeSmallerStar (starPic, finalProduct, 469, 154)
makeSmallerStar (starPic, finalProduct, 435, 142)
makeSmallerStar (starPic, finalProduct, 440, 123)
makeSmallerStar (starPic, finalProduct, 150, 180)
makeSmallerStar (starPic, finalProduct, 474, 230)
makeSmallerStar (starPic, finalProduct, 517, 248)
makeSmallerStar (starPic, finalProduct, 295, 127)
makeSmallerStar (starPic, finalProduct, 300, 204)
makeSmallerStar (starPic, finalProduct, 248, 182)
makeSmallerStar (starPic, finalProduct, 272, 186)
makeSmallerStar (starPic, finalProduct, 246, 148)
makeSmallerStar (starPic, finalProduct, 221, 123)
makeSmallerStar (starPic, finalProduct, 174, 127)
makeSmallerStar (starPic, finalProduct, 136, 147)
makeSmallerStar (starPic, finalProduct, 148, 126)
makeSmallerStar (starPic, finalProduct, 116, 148)
makeSmallerStar (starPic, finalProduct, 105, 121)
makeSmallerStar (starPic, finalProduct, 13, 180)
makeSmallerStar (starPic, finalProduct, 121, 205)
makeSmallerStar (starPic, finalProduct, 76, 74)
makeSmallerStar (starPic, finalProduct, 64, 205)
makeSmallerStar (starPic, finalProduct, 22, 212)
makeSmallerStar (starPic, finalProduct, 62, 142)
makeSmallerStar (starPic, finalProduct, 80, 156)
makeSmallerStar (starPic, finalProduct, 292, 152)
makeSmallerStar (starPic, finalProduct, 293, 169)
makeSmallerStar (starPic, finalProduct, 332, 197)
makeSmallerStar (starPic, finalProduct, 348, 174)
makeSmallerStar (starPic, finalProduct, 354, 136)
makeSmallerStar (starPic, finalProduct, 337, 110)
makeSmallerStar (starPic, finalProduct, 305, 97)
makeSmallerStar (starPic, finalProduct, 226, 89)
makeSmallerStar (starPic, finalProduct, 205, 67)
makeSmallerStar (starPic, finalProduct, 176, 88)
makeSmallerStar (starPic, finalProduct, 140, 94)
makeSmallerStar (starPic, finalProduct, 438, 203)
makeSmallerStar (starPic, finalProduct, 389, 195)
makeSmallerStar (starPic, finalProduct, 494, 202)
makeSmallerStar (starPic, finalProduct, 519, 208)
makeSmallerStar (starPic, finalProduct, 388, 124)
makeSmallerStar (starPic, finalProduct, 397, 96)
makeSmallerStar (starPic, finalProduct, 378, 100)
makeSmallerStar (starPic, finalProduct, 391, 68)
makeSmallerStar (starPic, finalProduct, 374, 242)
makeSmallerStar (starPic, finalProduct, 378, 22)
makeSmallerStar (starPic, finalProduct, 344, 88)
makeSmallerStar (starPic, finalProduct, 338, 59)
makeSmallerStar (starPic, finalProduct, 346, 30)
makeSmallerStar (starPic, finalProduct, 312, 54)

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makeSmallerStar(starPic, finalProduct, 290, 50)
makeSmallerStar(starPic, finalProduct, 262, 48)
makeSmallerStar(starPic, finalProduct, 235, 54)
makeSmallerStar(starPic, finalProduct, 161, 48)
makeSmallerStar(starPic, finalProduct, 136, 34)
makeSmallerStar(starPic, finalProduct, 109, 38)
makeSmallerStar(starPic, finalProduct, 79, 51)
makeSmallerStar(starPic, finalProduct, 37, 32)
makeSmallerStar(starPic, finalProduct, 40, 80)
makeSmallerStar(starPic, finalProduct, 7, 54)
makeSmallerStar(starPic, finalProduct, 5, 84)
makeSmallerStar(starPic, finalProduct, 490, 140)
makeSmallerStar(starPic, finalProduct, 486, 108)
makeSmallerStar(starPic, finalProduct, 522, 101)
makeSmallerStar(starPic, finalProduct, 525, 136)
makeSmallerStar(starPic, finalProduct, 527, 95)
makeSmallerStar(starPic, finalProduct, 504, 71)
makeSmallerStar(starPic, finalProduct, 496, 90)
makeSmallerStar(starPic, finalProduct, 475, 60)
makeSmallerStar(starPic, finalProduct, 478, 26)
makeSmallerStar(starPic, finalProduct, 84, 303)
makeSmallerStar(starPic, finalProduct, 208, 266)
makeSmallerStar(starPic, finalProduct, 192, 156)
makeSmallerStar(starPic, finalProduct, 52, 9)
makeSmallerStar(starPic, finalProduct, 14, 20)
makeSmallerStar(starPic, finalProduct, 72, 7)
makeSmallerStar(starPic, finalProduct, 106, 6)
makeSmallerStar(starPic, finalProduct, 145, 10)
makeSmallerStar(starPic, finalProduct, 168, 3)
makeSmallerStar(starPic, finalProduct, 201, 8)
makeSmallerStar(starPic, finalProduct, 209, 5)
makeSmallerStar(starPic, finalProduct, 234, 7)
makeSmallerStar(starPic, finalProduct, 256, 8)
makeSmallerStar(starPic, finalProduct, 276, 14)
makeSmallerStar(starPic, finalProduct, 298, 11)
makeSmallerStar(starPic, finalProduct, 300, 33)
makeSmallerStar(starPic, finalProduct, 325, 7)
makeSmallerStar(starPic, finalProduct, 352, 12)
makeSmallerStar(starPic, finalProduct, 370, 2)
makeSmallerStar(starPic, finalProduct, 416, 12)
makeSmallerStar(starPic, finalProduct, 438, 24)
makeSmallerStar(starPic, finalProduct, 440, 42)
makeSmallerStar(starPic, finalProduct, 430, 66)
makeSmallerStar(starPic, finalProduct, 455, 86)
makeSmallerStar(starPic, finalProduct, 460, 104)
makeSmallerStar(starPic, finalProduct, 500, 11)
makeSmallerStar(starPic, finalProduct, 263, 123)
makeSmallerStar(starPic, finalProduct, 451, 3)
makeSmallerStar(starPic, finalProduct, 480, 6)
makeSmallerStar(starPic, finalProduct, 526, 8)
makeSmallerStar(starPic, finalProduct, 6, 6)
makeSmallerStar(starPic, finalProduct, 26, 9)
makeSmallerStar(starPic, finalProduct, 429, 232)
makeSmallerStar(starPic, finalProduct, 50, 50)
makeSmallerStar(starPic, finalProduct, 252, 88)
makeSmallerStar(starPic, finalProduct, 512, 296)
makeSmallerStar(starPic, finalProduct, 368, 305)
makeSmallerStar(starPic, finalProduct, 462, 256)
makeSmallerFour(yellowPic, finalProduct, 494, 217)
show (finalProduct)
```

```

def getPic():
    setMediaPath()
    pic=makePicture(getMediaPath("original.jpg"))
    return pic

def getSign():
    setMediaPath()
    pic=makePicture(getMediaPath("signature.jpg"))
    return pic

#Shrink Functions
def makeSmaller(source, canvas, startX, startY):
    sourceX=0
    for targetX in range(startX, startX+getWidth(source)/2):
        sourceY=0
        for targetY in range(startY, startY+getHeight(source)/2):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(canvas, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+1.0/0.5
        sourceX=sourceX+1.0/0.5

def makeSmallerOne(source, canvas, startX, startY):
    sourceX=0
    for targetX in range(startX, startX+getWidth(source)/4):
        sourceY=0
        for targetY in range(startY, startY+getHeight(source)/4):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(canvas, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+1.0/0.25
        sourceX=sourceX+1.0/0.25

def makeSmallerTwo(source, canvas, startX, startY):
    sourceX=0
    for targetX in range(startX, startX+getWidth(source)/6):
        sourceY=0
        for targetY in range(startY, startY+getHeight(source)/6):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(canvas, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+1.0/0.1667
        sourceX=sourceX+1.0/0.1667

def makeSmallerThree(source, canvas, startX, startY):
    sourceX=0
    for targetX in range(startX, startX+getWidth(source)/8):
        sourceY=0
        for targetY in range(startY, startY+getHeight(source)/8):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(canvas, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+1.0/0.125
        sourceX=sourceX+1.0/0.125

```

```

def makeSmallerFour(source, canvas, startX, startY):
    sourceX=0
    for targetX in range(startX, startX+getWidth(source)/12):
        sourceY=0
        for targetY in range(startY, startY+getHeight(source)/12):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(canvas, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+1.0/0.0833
        sourceX=sourceX+1.0/0.0833

```

```

def makeSmallerStar(source, canvas, startX, startY):
    sourceX=0
    for targetX in range(startX, startX+getWidth(source)/60):
        sourceY=0
        for targetY in range(startY, startY+getHeight(source)/60):
            sourcePx=getPixel(source, int(sourceX), int(sourceY))
            sourceColor=getColor(sourcePx)
            targetPx=getPixelAt(canvas, targetX, targetY)
            setColor(targetPx, sourceColor)
            sourceY=sourceY+1.0/0.016667
        sourceX=sourceX+1.0/0.016667

```

#Change Color Functions

```

def makeBlue(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        redValue=getRed(px)
        setBlue(px, redValue*1)
        setRed(px, redValue*0.5)
    return (newPic)

```

```

def makePink(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        redValue=getRed(px)
        setBlue(px, redValue*0.5)
    return (newPic)

```

```

def makePurple(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        redValue=getRed(px)
        setBlue(px, redValue*1.5)
    return (newPic)

```

```

def makeRed(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        blueValue=getBlue(px)
        greenValue=getGreen(px)
        redValue=getRed(px)
        setRed(px, redValue*2)
        setBlue(px, blueValue*0.5)
        setGreen(px, greenValue*0.8)
    return (newPic)

```

```

def makeYellow(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        redValue=getRed(px)
        setGreen(px, redValue*1)
    return (newPic)

def makeGreen(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        redValue=getRed(px)
        setGreen(px, redValue*1.40)
    return (newPic)

def makeStar(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        setGreen(px, 255)
        setBlue(px, 255)
        setRed(px, 255)
    return (newPic)

def signPic(sourcePic, markPic, targetX, targetY):
    targetPic=duplicatePicture(markPic)
    for sX in range(0, getWidth(sourcePic)):
        for sY in range(0, getHeight(sourcePic)):
            sPx=getPixelAt(sourcePic, sX, sY)
            sColor=getColor(sPx)
            targetPx=getPixelAt(targetPic, sX+targetX, sY+targetY)
            if distance(black, sColor)<180:
                setColor(targetPx, white)
    return targetPic

def crop(pic, startX, endX, startY, endY):
    targetPic= makeEmptyPicture(endX - startX, endY - startY)
    for sourceX in range(startX, endX):
        for sourceY in range(startY, endY):
            color = getColor(getPixelAt(pic, sourceX, sourceY))
            targetPx=getPixelAt(targetPic,sourceX -startX, sourceY - startY)
            setColor(targetPx, color)
    return targetPic

```