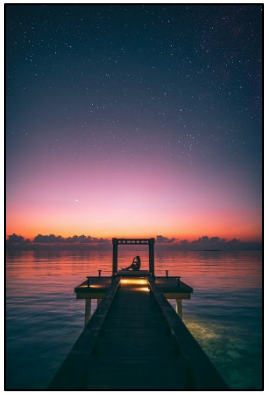
# Joshua Miller

Completed

Originals



```
#Joshua Miller
def collage():
  setMediaPath()
  sig = makePicture(getMediaPath("sig.png"))
  sky = makePicture(getMediaPath("Evening_Sky.jpg"))
  ship = makePicture(getMediaPath("rocket_ship3.jpg"))

  croppedShip = specifiedCrop(ship)

  croppedSky = cropExtra(sky)
  halfedSky = cropHalfway(sky)




  canva =  makeEmptyPicture(getWidth(croppedSky), getHeight(croppedSky))


  copy(croppedSky, canva, 0,0)


  smollSky = makeSmaller(halfedSky)
  smollSky2= makeSmaller(halfedSky)
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  smollSky3 = makeSmaller(halfedSky)
  smollSky4= makeSmaller(halfedSky)


  flippedSmoll = flip(smollSky)
  mirrorSmoll = mirror_flip(smollSky)



  copy(redify(mirrorSmoll), canva, int(getWidth(croppedSky)*.305),int(getHeight(croppedSky)*.20))
  copy(sepiaTint(smollSky2), canva, int(getWidth(croppedSky)*.205),int(getHeight(croppedSky)*.30))

  copy(blueify(smollSky3), canva, int(getWidth(croppedSky)*.17),int(getHeight(croppedSky)*.15))
  copy(grayScale(smollSky4), canva, int(getWidth(croppedSky)*.37),int(getHeight(croppedSky)*.35))

  copy(smollSky, canva, int(getWidth(croppedSky)*.25),int(getHeight(croppedSky)*.25))



  signature(sig, canva, 0, 0)

  #Finalize the pic by adding the final touches!
  finalPic = removePix(croppedShip, canva, int(getWidth(croppedSky) * .37), int(getHeight(croppedSky)* .25) )

  explore(canva)
  filePath = r"c:\project_3\images\Empower_Enlighten_Embolden.jpg"
  writePictureTo(finalPic, "joshua_miller.jpg")




def redify(pic):
  for p in getPixels(pic):
    red = int(getRed(p) * 1.2)
    blue = int(getBlue(p) * .6)
    green = int(getGreen(p) * .7)
    setRed(p, red)
    setBlue(p, blue)
    setGreen(p, green)
  return pic
def blueify(pic):
  for p in getPixels(pic):
    red = int(getRed(p) * .8)
    blue = int(getBlue(p) * 2)
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    green = int(getGreen(p) * .7)
    setRed(p, red)
    setBlue(p, blue)
    setGreen(p, green)
  return pic

def flip(src):
  target = makeEmptyPicture(getWidth(src), getHeight(src))
  targetX = 0
  width = getWidth(src)
  height = getHeight(src)
  for sourceX in range(0, width):
    targetY = 0
    for sourceY in range(0, height):
      color = getColor(getPixel(src, sourceX, sourceY))
      setColor(getPixel(target, width - targetX - 1, height - targetY - 1), color)
      targetY += 1
    targetX += 1
  return target

def mirrorHorizontal(source):
  mirrorPoint = getHeight(source) / 2
  height = getHeight(source)
  for x in range(0, getWidth(source)):
    for y in range(0, mirrorPoint):
      topPixel = getPixel(source,x,y)
      bottomPixel = getPixel(source, x, height-y-1)
      color = getColor(topPixel)
      setColor(bottomPixel,color)
  return source

def mirror_flip(src):
  target = makeEmptyPicture(getWidth(src), getHeight(src))
  targetX = 0
  width = getWidth(src)
  height = getHeight(src)
  for sourceX in range(0, getWidth(src)):
    targetY = 0
    for sourceY in range(0, getHeight(src)):
      color = getColor(getPixel(src, sourceX, sourceY))
      setColor(getPixel(target,targetX, height-targetY-1), color)
      targetY += 1
    targetX += 1
  return target
```

```
def copy(source, target, startX, startY):
  targetX = startX
  for sourceX in range(getWidth(source)):
    targetY = startY
    for sourceY in range(getHeight(source)):
      px=getPixel(source,sourceX,sourceY)
      tx=getPixel(target,targetX,targetY)
      setColor(tx, getColor(px))
      targetY=targetY+1
    targetX=targetX+1
  return target


def cropHalfway(pic):
  cropCanva = makeEmptyPicture(getWidth(pic), int(getHeight(pic)/2))
  cropPoint = getHeight(pic) / 2
  height = getHeight(pic)
  for x in range(0, getWidth(pic)):
    for y in range(0, cropPoint):
      px = getPixel(pic,x,y)
      tx = getPixel(cropCanva,x,y)
      color = getColor(px)
      setColor(tx,color)
  return cropCanva

def cropExtra(pic):
  cropCanva = makeEmptyPicture(getWidth(pic), int(getHeight(pic) / 2 + getHeight(pic) / 8))
  cropPoint = getHeight(pic) / 2 + getHeight(pic) / 8
  height = getHeight(pic)
  for x in range(0, getWidth(pic)):
    for y in range(0, cropPoint):
      px = getPixel(pic,x,y)
      tx = getPixel(cropCanva,x,y)
      color = getColor(px)
      setColor(tx,color)
  return cropCanva

def specifiedCrop(pic):
  cropCanva = makeEmptyPicture(getWidth(pic), int(getHeight(pic) / 2))
  cropPointBottom = getHeight(pic) / 2 - getHeight(pic)/32
  cropPointTop = getHeight(pic)/8 + getHeight(pic)/16
  height = getHeight(pic)
  for x in range(0, getWidth(pic)):
    for y in range(cropPointTop, cropPointBottom):
      px = getPixel(pic,x,y)
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      tx = getPixel(cropCanva,x,y)
      color = getColor(px)
      setColor(tx,color)
  return cropCanva

def makeSmaller(pic):
  canva = makeEmptyPicture(getWidth(pic)/2, getHeight(pic)/2)
  sourceX = 0
  for targetX in range(0, getWidth(pic)/2):
    sourceY = 0
    for targetY in range(0, getHeight(pic)/2):
      color = getColor(getPixel(pic, sourceX, sourceY))
      setColor(getPixel(canva, targetX, targetY), color)
      sourceY = sourceY + 2
    sourceX = sourceX + 2
  return canva

#Remove the background px for an image
def removePix(source, target, targetX, targetY):
  for x in range(0, getWidth(source)):
    for y in range(0, getHeight(source)):
      px = getPixel(source, x, y)
      colorTest = getColor(px)
      targ = getPixel(target, x + targetX, y + targetY)
      if distance(red, colorTest) < 180 or distance(blue, colorTest) < 200 or distance(white, colorTest) == false:
        setColor(targ, getColor(targ))
      else:


        newColor = setColor(targ, makeColor(getRed(px) * 1.7, getBlue(px), getGreen(px)*1.4))
  return target

#Similar to removePix but specifically for signatures on a green background
def signature(source, target, targetX, targetY):
  for x in range(0, getWidth(source)):
    for y in range(0, getHeight(source)):
      px = getPixel(source, x, y)
      colorTest = getColor(px)
      targ = getPixel(target, x + targetX, y + targetY)
      if distance (black, colorTest) < 150:
        setColor(targ, white)
  return target
```

```
def sepiaTint(pic):
  grayScale(pic)
  for p in getPixels(pic):
    red = getRed(p)
    blue = getBlue(p)
    if (red <63):
      red = red * 1.1
      blue = blue * 0.9

    elif (red > 62 and red < 192):
      red = red * 1.15
      blue = blue * 0.85

    elif (red > 191):
      red = red*1.08
      if(red > 255):
        red = 255
      blue = blue * 0.93
    setBlue(p, blue)
    setRed(p, red)
  return(pic)
def grayScale(src):
  for pix in getPixels(src):
    intensity = (getRed(pix)+getGreen(pix)+getBlue(pix))/3
    setColor(pix ,makeColor(intensity, intensity, intensity))
  return(src)
collage()
```