# Lleyton Parsons

Completed

Originals

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#Lleyton Parsons, 10/16/2023
#"An Idea Made of Ideas"
def collage():
  setMediaPath()
  original = makePicture(getMediaPath('lightbulb.jpg'))
  secondary = makePicture(getMediaPath('broken bulb.jpg'))
  Ssignature = makePicture(getMediaPath('signature.jpg'))
  canvas = makeEmptyPicture(736,1000,makeColor(0,51,102))
  smallPic = makeEmptyPicture(int(getWidth(original)*1.0/2.5),int(getHeight(original)*1.0/2.5))
  largePic = makeEmptyPicture(int(getWidth(secondary)*2.2),int(getHeight(secondary)*2.2))
  sig_canvas = makeEmptyPicture(int(getWidth(Ssignature)*1.0/12.5),int(getHeight(Ssignature)*1.0/12.5))
  drawLight(canvas)
#The broken lightbulb's code. The image is only being used as part of the background (in a way).
  scale(secondary,largePic,2.2)
  chromakeyX(largePic,canvas,0,255)
  brokenBulb(largePic,canvas)
#The main, original picture: A working lightbulb.
  scale(original,smallPic,1.0/2.5)
  chromakeyX(smallPic,canvas,765,765)
  original_Lightbulb(smallPic,canvas,275,210)
#Modification No.1: Grayscale
  scale(original,smallPic,1.0/2.5)
  grayScale(smallPic)
  chromakeyX(smallPic,canvas,765,765)
  original_Lightbulb(smallPic,canvas,37,55)
#Modification No.2: Color Inversion
  scale(original,smallPic,1.0/2.5)
  negative(smallPic)
  chromakeyX(smallPic,canvas,0,0)
  original_Lightbulb(smallPic,canvas,483,55)
#Modification No.3: Color Swap
  scale(original,smallPic,1.0/2.5)
  colorSwap(smallPic)
  chromakeyX(smallPic,canvas,765,765)
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  original_Lightbulb(smallPic,canvas,37,400)
#Modification No.4: Sepia Tone
  scale(original,smallPic,1.0/2.5)
  sepiaTone(smallPic)
  chromakeyX(smallPic,canvas,747,747)
  original_Lightbulb(smallPic,canvas,483,400)
#The Signature.
  scale(Ssignature,sig_canvas,1.0/12.5)
  chromakeyX(sig_canvas,canvas,765,765)
  signature(sig_canvas,canvas,0,0)
  explore(canvas)

def drawLight(canvas):
  color = makeColor(204,204,0)
  pixels = getPixels(canvas)
  for x in range(0,getWidth(canvas)):
    for y in range(0,882):
      setColor(getPixel(canvas,x,y),color)

def scale(in_put,canvas,factor):
  src = in_put
  sourceX = 0
  for x in range(0,int(getWidth(src)*factor)):
    sourceY = 0
    for y in range(0,int(getHeight(src)*factor)):
      color = getColor(getPixel(src,int(sourceX),int(sourceY)))
      setColor(getPixel(canvas,x,y),color)
      sourceY = sourceY + 1.0/factor
    sourceX = sourceX + 1.0/factor

def grayScale(picture):
  for p in getPixels(picture):
    intensity = (getRed(p)+getGreen(p)+getBlue(p))/3
    setColor(p,makeColor(intensity,intensity,intensity))

def negative(input):
  for px in getPixels(input):
    red=getRed(px)
    green=getGreen(px)
    blue=getBlue(px)
    negColor=makeColor(255-red,255-green,255-blue)
    setColor(px,negColor)
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def colorSwap(input):
  for px in getPixels(input):
    red=getRed(px)
    green=getGreen(px)
    blue=getBlue(px)
    swapped=makeColor(red=green,green=blue,blue=red)
    setColor(px,swapped)

def sepiaTone(input):
  grayScale(input)
  for p in getPixels(input):
    red = getRed(p)
    blue = getBlue(p)
    if (red < 63):
      red = red*1.1
      blue = blue*0.9
    if (red > 62 and red < 192):
      red = red*1.15
      blue = blue*0.85
    if (red > 191):
      red = red*1.08
      if (red > 255):
        red = 255
        blue = blue*0.93
    setBlue(p, blue)
    setRed(p, red)

def brokenBulb(in_put,canvas):
  src = in_put
  targetX = 81
  for sourceX in range(307,876):
    targetY = 706
    for sourceY in range(336,630):
      color = getColor(getPixel(src,sourceX,sourceY))
      setColor(getPixel(canvas,targetX,targetY), color)
      targetY = targetY + 1
    targetX = targetX + 1

def original_Lightbulb(in_put,canvas,x_position,y_position):
  src = in_put
  targetX = x_position
  for sourceX in range(94,274):
    targetY = y_position
    for sourceY in range(22,334):
      color = getColor(getPixel(src,sourceX,sourceY))
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      setColor(getPixel(canvas,targetX,targetY), color)
      targetY = targetY + 1
    targetX = targetX + 1

def signature(in_put,canvas,x_position,y_position):
  src = in_put
  targetX = x_position
  for sourceX in range(0,getWidth(src)):
    targetY = y_position
    for sourceY in range(0,getHeight(src)):
      color = getColor(getPixel(src,sourceX,sourceY))
      setColor(getPixel(canvas,targetX,targetY), color)
      targetY = targetY + 1
    targetX = targetX + 1

def chromakeyX(source,bg,dark,light):
  for px in getPixels(source):
    x = getX(px)
    y = getY(px)
    bright = getRed(px) + getBlue(px) + getGreen(px)
    if (bright >= dark and bright <= light ):
      bgpx = getPixel(source,x,y)
      setColor(px,makeColor(204,204,0))
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