Clare Endris

Completed

Original


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#Clare Endris, 3/12/2021
#setMediaPath(r"C:\Users\clare\Desktop\CS 120\projects\project2")

#main program
def collage():
  picture= makePicture(getMediaPath("ocean.jpg"))
  signature= makePicture(getMediaPath("signature.jpg"))
  canvas= makeEmptyPicture(getWidth(signature)/10, getHeight(signature)/10)
  #grayscale and mirror(swapping) picture, making smaller canvas w/ picture (canvas_one is original)
  canvas_one= makeEmptyPicture(int(getWidth(picture)*0.6),(int(getHeight(picture)*0.6)))
  mirrorVertical(picture)
  scale(picture,canvas_one,0.6)
  grayScale(picture)
  move(canvas_one,picture,(int(getWidth(picture)*.2)),(int(getHeight(picture)*.2)))
  #making a second canvas from canvas_one, lightening function & sunset function canvas_two
  canvas_two= makeEmptyPicture(int(getWidth(canvas_one)*0.6),(int(getHeight(canvas_one)*0.6)))
  scale(canvas_one,canvas_two,0.6)
  lighten(canvas_two)
  sunSet(canvas_two)
  move(canvas_two,picture,(int(getWidth(canvas_one)*.55)),(int(getHeight(canvas_one)*.55)))
  #making a third canvas from canvas_two, negative function canvas_three
  canvas_three= makeEmptyPicture(int(getWidth(canvas_two)*0.6),(int(getHeight(canvas_two)*0.6)))
  scale(canvas_two,canvas_three,0.6)
  negative(canvas_three)
  move(canvas_three,picture,(int(getWidth(canvas_two)*1.12)),(int(getHeight(canvas_two)*1.12)))
  #making a fourth canvas from canvas_three, cyanotype function canvas_four
  canvas_four= makeEmptyPicture(int(getWidth(canvas_three)*0.6),(int(getHeight(canvas_three)*0.6)))
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    scale(canvas_three,canvas_four,0.6)
    cyanotype(canvas_four)
    move(canvas_four,picture,(int(getWidth(canvas_three)*2.07)),(int(getHeight(canvas_three)*2.07)))
    #adding signature
    scale(signature,canvas,.1)
    chromakey(signature,picture)
    show(picture)


#decomposed functions
def chromakey(signature,source):
  newX= getWidth(source)-getWidth(signature)
  newY= getHeight(source)-getHeight(signature)
  for p in getPixels(signature):
    x= getX(p)
    y= getY(p)
    bgPx= getPixel(source,x+newX,y+newY)
    bgCol= getColor(p)
    if distance(white,bgCol)>230:
      setColor(bgPx,cyan)
  return source

def move(source,target,targetX,targetY):
  targX= targetX
  for x in range(0,getWidth(source)):
    targY= targetY
    for y in range(0,getHeight(source)):
      color= getColor(getPixel(source,x,y))
      setColor(getPixel(target,targX,targY),color)
      targY +=1
    targX +=1

def scale(source,new,scaleFactor):
  sourceX= 0
  for targetX in range(0,int(getWidth(source)*scaleFactor)):
    sourceY= 0
    for targetY in range(0,int(getHeight(source)*scaleFactor)):
      color= getColor(getPixel(source,int(sourceX),int(sourceY)))
      setColor(getPixel(new,targetX,targetY),color)
      sourceY= sourceY+1.0/scaleFactor
    sourceX= sourceX+1.0/ scaleFactor

def mirrorVertical(source):
  mirrorPoint= getWidth(source)/10
  width= getWidth(source)
  for y in range(0,getHeight(source)):
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    for x in range(0,mirrorPoint):
      leftPixel= getPixel(source,x,y)
      leftPixel_one= getPixel(source,x,y)
      rightPixel= getPixel(source,width-x-1,y)
      rightPixel_one= getPixel(source,width-x-1,y)
      color= getColor(rightPixel)
      setColor(leftPixel,color)
      color_one= getColor(leftPixel_one)
      setColor(rightPixel_one,color_one)

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

def cyanotype(source):
  for p in getPixels(source):
    b= getBlue(p)
    if (b<63):
      b1= b*2
    if (61<=b and b<=191):
      b1=b*1.3
    if (b>191):
      b1=b*1.2
    setBlue(p,b1)
    valueR= getRed(p)
    setRed(p,valueR*0.75)
    valueG= getGreen(p)
    setGreen(p,valueG*0.75)

def lighten(source):
  for x in range(0,getWidth(source)):
    for y in range (0,getHeight(source)):
      p= getPixel(source,x,y)
      color= getColor(p)
      color= makeLighter(color)
      #color2= makeLighter(color)
      setColor(p,color)

def negative(source):
  for p in getPixels(source):
    r= getRed(p)
    g= getGreen(p)
    b= getBlue(p)
    negColor= makeColor(255-r,255-g,255-b)
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      setColor(p,negColor)

def sunSet(source):
  for p in getPixels(source):
    value= getBlue(p)
    setBlue(p,value*0.7)
    value= getGreen(p)
    setGreen(p,value*0.7)
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