

Evan Peterson

Completed:



Original:



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#Project 2 Evan Peterson
#Oldest Wonder of the Ancient World
#543,817 full size of canvas
def collage():
    setMediaPath()
    pic = makePicture(getMediaPath("source.jpg"))
    #explore (pic)
    print getWidth(pic)
    print getHeight(pic)
    negativePic=negative(pic)
    edgePic=edge(pic)
    edgePic2=edge2(pic)
    edgePic3=edge3(pic)
    edgePic4=edge4(pic)
    blendPic=blend(edgePic, edgePic2)
    blendPic2=blend2(edgePic3, edgePic4)
    flippedPic=flipped(pic)
    flippedPic2=flipped2(pic)
    posterizePic=posterize(pic)
    grayPic=grayScale(pic)
    sepiaTintPic=sepiaTint(pic)
    width=2*getWidth(pic)
    height=2*getHeight(pic)
    canvas=makeEmptyPicture(width,height,black)
    copyInto(pic, canvas, 0, 0)
    copyInto(flippedPic2, canvas, 0, 409)
    copyInto(negativePic, canvas, 272, 0)
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copyInto(flippedPic, canvas, 272, 408)
copyInto(blendPic, canvas, 68, 409)
copyInto(blendPic2, canvas, 68, 0)
makeSmaller(negativePic, canvas, 213, 204)
makeSmaller(flippedPic, canvas, 213, 408)
makeSmaller(posterizePic, canvas, 77, 305)
makeSmaller(sepiaTintPic, canvas, 349, 305)
signature= makePicture(getMediaPath("source.jpg"))
SignatureRight=rotateRight(signature)
startX=getWidth(blendPic)+getWidth(pic)
startY=getHeight(pic)
chromakeySig(SignatureRight, canvas, startX, startY)

#explore (canvas)
show(canvas)

def chromakeySig(sourcePic, canvas, targetX, targetY):
    for sX in range(0, getWidth(sourcePic)):
        for sY in range(0, getHeight(sourcePic)):
            sPx=getPixelAt(sourcePic, sX, sY)
            sColor=getColor(sPx)
            targetPx=getPixelAt(canvas, sX, sY)
            if distance(black, sColor)<180:
                setColor(targetPx, red)

def rotateRight(pic):
    newPic=makeEmptyPicture(getHeight(pic), getWidth(pic))
    newX=getWidth(newPic)-1
    for y in range(getHeight(pic)):
        newY=0
        for x in range(getWidth(pic)):
            px=getPixel(pic, x, y)
            newPx=getPixel(newPic, newX, newY)
            setColor(newPx, getColor(px))
            newY+=1
        newX-=1
    return newPic

def sepiaTint(pic):
    newPic = duplicatePicture(grayScale(pic))
    for px in getPixels(newPic):
        redValue = getRed(px)
        blueValue = getBlue(px)
        if (redValue < 63):
            redValue = redValue * 1.1

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    blueValue = blueValue * 0.5
    setBlue(px, blueValue )
    setRed(px, redValue)
    if (redValue > 62 and redValue < 192):
        redValue = redValue * 1.2
        blueValue = blueValue * 0.30
        setBlue(px, blueValue)
        setRed(px, redValue)
    if(redValue> 191):
        redValue = redValue * 1.08
        if (redValue > 255):
            redValue= 255
        blueValue = blueValue * 0.4
        setBlue(px, blueValue)
        setRed(px, redValue)
return newPic

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def grayScale(pic):
    newPic=duplicatePicture(pic)
    for pixel in getAllPixels(newPic):
        newRed=getRed(pixel)*0.299
        newGreen=getGreen(pixel)*0.587
        newBlue=getBlue(pixel)*0.114
        luminance=newRed+newGreen+newBlue
        setColor(pixel,makeColor(luminance,luminance,luminance))
    return newPic

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def posterize(pic):
    newPic=duplicatePicture(pic)
    for px in getPixels(newPic):
        red=getRed(px)
        green=getGreen(px)
        blue=getBlue(px)
        if (red<64):
            setRed(px, 80)
        if (red>63 and red <128):
            setRed(px, 130)
        if (red>127 and red<192):
            setRed(px, 195)
        if (red>191 and red <256):
            setRed(px, 250)
        if (green<64):
            setGreen(px, 45)
        if (green>63 and green<128):

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    setGreen(px,115)
if(green>127 and green<192):
    setGreen(px,195)
if(green>191 and green<256):
    setGreen(px,256)
if(blue<64):
    setBlue(px,15)
if(blue>63 and blue<128):
    setBlue(px,95)
if(blue>127 and blue <192):
    setBlue(px,180)
if(blue>191 and blue <256):
    setBlue(px,230)
return newPic

def flipped2(pic):
    newPic=duplicatePicture(negative(pic))
    width=getWidth(newPic)
    height=getHeight(newPic)
    for y in range(0,height/2):
        for x in range(0,width):
            sourcePixel=getPixel(newPic,x,y)
            targetPixel=getPixel(newPic,x,height-y-1)
            color=getColor(sourcePixel)
            setColor(sourcePixel,getColor(targetPixel))
            setColor(targetPixel,color)
    return(newPic)

def flipped(pic):
    newPic=duplicatePicture(pic)
    width=getWidth(newPic)
    height=getHeight(newPic)
    for y in range(0,height/2):
        for x in range(0,width):
            sourcePixel=getPixel(newPic,x,y)
            targetPixel=getPixel(newPic,x,height-y-1)
            color=getColor(sourcePixel)
            setColor(sourcePixel,getColor(targetPixel))
            setColor(targetPixel,color)
    return(newPic)

def makeSmaller(source,canvas,startX,startY):
    sourceX=0
    for targetX in range(startX,startX+getWidth(source)/2):
        sourceY=0

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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 blend2(edgePic3, edgePic4):
    width=getWidth(edgePic3)+int(getWidth(edgePic4)*0.6)
    height=getHeight(edgePic4)
    targetPic=makeEmptyPicture(width, height, white)
    edgePic3Ending=int(getWidth(edgePic3)*0.6)
    sourceX=0
    for targetX in range(0, edgePic3Ending):
        sourceY=0
        for targetY in range(0, height):
            edgePic3Color=getColor(getPixelAt(edgePic3, sourceX, sourceY))
            setColor(getPixel(targetPic, targetX, targetY), edgePic3Color)
            sourceY+=1
        sourceX+=1
    overLap=getWidth(edgePic3)-edgePic3Ending
    sourceX=0
    for targetX in range(edgePic3Ending, getWidth(edgePic3)):
        sourceY=0
        for targetY in range(0, getHeight(edgePic4)):
            edgePic3Px=getPixel(edgePic3, sourceX+edgePic3Ending, sourceY)
            edgePic4Px=getPixel(edgePic4, sourceX+edgePic3Ending, sourceY)
            mixedRed=0.5*getRed(edgePic3Px)+0.5*getRed(edgePic4Px)
            mixedGreen=0.5*getGreen(edgePic3Px)+0.5*getGreen(edgePic4Px)
            mixedBlue=0.5*getBlue(edgePic3Px)+0.5*getBlue(edgePic4Px)
            mixedColor=makeColor(mixedRed, mixedGreen, mixedBlue)
            setColor(getPixelAt(targetPic, targetX, targetY), mixedColor)
            sourceY+=1
        sourceX+=1
    sourceX=overLap
    for targetX in range(edgePic3Ending+overLap, edgePic3Ending+getWidth(edgePic4)):
        sourceY=0
        for targetY in range(0, getHeight(edgePic4)):
            color=getColor(getPixelAt(edgePic4, sourceX, sourceY))
            setColor(getPixelAt(targetPic, targetX, targetY), color)
            sourceY+=1
        sourceX+=1
    return(targetPic)

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def blend(edgePic,edgePic2):
    width=getWidth(edgePic)+int(getWidth(edgePic2)*0.6)
    height=getHeight(edgePic2)
    targetPic=makeEmptyPicture(width,height,white)
    edgePicEnding=int(getWidth(edgePic)*0.6)
    sourceX=0
    for targetX in range(0,edgePicEnding):
        sourceY=0
        for targetY in range(0,height):
            edgePicColor=getColor(getPixelAt(edgePic,sourceX,sourceY))
            setColor(getPixel(targetPic,targetX,targetY),edgePicColor)
            sourceY+=1
        sourceX+=1
    overLap=getWidth(edgePic)-edgePicEnding
    sourceX=0
    for targetX in range(edgePicEnding,getWidth(edgePic)):
        sourceY=0
        for targetY in range(0,getHeight(edgePic2)):
            edgePicPx=getPixel(edgePic,sourceX+edgePicEnding,sourceY)
            edgePic2Px=getPixel(edgePic2,sourceX+edgePicEnding,sourceY)
            mixedRed=0.5*getRed(edgePicPx)+0.5*getRed(edgePic2Px)
            mixedGreen=0.5*getGreen(edgePicPx)+0.5*getGreen(edgePic2Px)
            mixedBlue=0.5*getBlue(edgePicPx)+0.5*getBlue(edgePic2Px)
            mixedColor=makeColor(mixedRed,mixedGreen,mixedBlue)
            setColor(getPixelAt(targetPic,targetX,targetY),mixedColor)
            sourceY+=1
        sourceX+=1
    sourceX=overLap
    for targetX in range(edgePicEnding+overLap,edgePicEnding+getWidth(edgePic2)):
        sourceY=0
        for targetY in range(0,getHeight(edgePic2)):
            color=getColor(getPixelAt(edgePic2,sourceX,sourceY))
            setColor(getPixelAt(targetPic,targetX,targetY),color)
            sourceY+=1
        sourceX+=1
    return(targetPic)

def edge4(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        x=getX(px)
        y=getY(px)
        if y<getHeight(newPic)-1 and x<getWidth(newPic)-1:
            colorSum=getRed(px)+getGreen(px)+getBlue(px)
            pixelOverOne=getPixelAt(newPic,x+1,y+1)

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    colorSumOverOne=getRed(pixelOverOne)+getGreen(pixelOverOne)+getBlue(pixelOverOne)
    colorDifference=abs(colorSum-colorSumOverOne)
    newColor=makeColor(colorDifference, colorDifference,colorDifference)
    if colorDifference>15:
        setColor(px,black)
    if colorDifference<=15:
        setColor(px,yellow)
return newPic

def edge3(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        x=getX(px)
        y=getY(px)
        if y<getHeight(newPic)-1 and x<getWidth(newPic)-1:
            colorSum=getRed(px)+getGreen(px)+getBlue(px)
            pixelOverOne=getPixelAt(newPic,x+1,y+1)
            colorSumOverOne=getRed(pixelOverOne)+getGreen(pixelOverOne)+getBlue(pixelOverOne)
            colorDifference=abs(colorSum-colorSumOverOne)
            newColor=makeColor(colorDifference, colorDifference,colorDifference)
            if colorDifference>15:
                setColor(px,black)
            if colorDifference<=15:
                setColor(px,red)
    return newPic

def edge2(pic):
    newPic=duplicatePicture(pic)
    for px in getAllPixels(newPic):
        x=getX(px)
        y=getY(px)
        if y<getHeight(newPic)-1 and x<getWidth(newPic)-1:
            colorSum=getRed(px)+getGreen(px)+getBlue(px)
            pixelOverOne=getPixelAt(newPic,x+1,y+1)
            colorSumOverOne=getRed(pixelOverOne)+getGreen(pixelOverOne)+getBlue(pixelOverOne)
            colorDifference=abs(colorSum-colorSumOverOne)
            newColor=makeColor(colorDifference, colorDifference,colorDifference)
            if colorDifference>15:
                setColor(px,black)
            if colorDifference<=15:
                setColor(px,red)
    return newPic

def edge(pic):
    newPic=duplicatePicture(pic)

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for px in getAllPixels(newPic):
    x=getX(px)
    y=getY(px)
    if y<getHeight(newPic)-1 and x<getWidth(newPic)-1:
        colorSum=getRed(px)+getGreen(px)+getBlue(px)
        pixelOverOne=getPixelAt(newPic,x+1,y+1)
        colorSumOverOne=getRed(pixelOverOne)+getGreen(pixelOverOne)+getBlue(pixelOverOne)
        colorDifference=abs(colorSum-colorSumOverOne)
        newColor=makeColor(colorDifference, colorDifference,colorDifference)
        if colorDifference>15:
            setColor(px,black)
        if colorDifference<=15:
            setColor(px,yellow)
return newPic

def negative(pic):
    newPic=duplicatePicture(pic)
    for px in getPixels(newPic):
        r=getRed(px)
        b=getBlue(px)
        g=getGreen(px)
        neg=makeColor(255-r,255-g,255-b)
        setColor(px,neg)
    return newPic

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