

# Echo Clanton

Completed



Originals



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#Echo Clanton CS120 Project 2
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#3/23/2023
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#All photos used are mine that I took and therefore own them
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def collage():
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    pic1 = makePicture(getMediaPath("Colorado.jpg"))
    pic2 = makePicture(getMediaPath("Henry.jpg"))
    sign = makePicture(getMediaPath("echo.jpg"))
    canvas=makeEmptyPicture(684,910)
    pic1Factor = 0.125
    pic2Factor = 0.108
    pic1 = scale(pic1,pic1Factor)
    #explore(pic1)
    pic2 =scale(pic2,pic2Factor)
    pic2Factor = 0.7
    pic2 =scale(pic2,pic2Factor)
    picA = duplicatePicture(pic1)
    picB = duplicatePicture(pic2)
    picC = posterize(picB)
    picD = duplicatePicture(pic2)
    picE = outline(picD)
    picF = duplicatePicture(pic2)
    picG = tint(picF)
    picH = duplicatePicture(pic2)
    picI = makelighter(picH)
    picJ = duplicatePicture(pic2)
    picK = makelighter(picJ)
    picL = duplicatePicture(pic2)
    picM = tint(picL)
    picN = duplicatePicture(pic1)
    picO = mirrorHorizontal(picN)
    #explore(pic2)
    #width = getWidth(pic1)
    #height = getHeight(pic1)
    #width2 = getWidth(pic2)
    #height2 = getWidth(pic2)
    #print "Pic 1 Width: " , width
    #print "Pic 1 Height: " , height
    #print "Pic 2 Width: " , width2
    #print "Pic 2 Height: " , height2
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,0,0)#Top Left
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,228,0)#Top Center
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,456,0)#Top Right
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,0,303)#Middle Left
    copy(pic1,0,0,getWidth(pic1),getHeight(pic1),canvas,228,303)#Middle
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,456,303)#Middle Right
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,0,606)#Bottom Left
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,228,606)#Bottom Center
    copy(pic2,0,0,getWidth(pic2),getHeight(pic2),canvas,456,606)#Bottom Right
    copy(picO,0,0,getWidth(picO),getHeight(picO),canvas,228,303)
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copy(picC,0,0,getWidth(picC),getHeight(picC),canvas,0,0)
copy(picE,0,0,getWidth(picE),getHeight(picE),canvas,456,606)
copy(picG,0,0,getWidth(picG),getHeight(picG),canvas,228,0)
copy(picI,0,0,getWidth(picI),getHeight(picI),canvas,456,0)
copy(picK,0,0,getWidth(picK),getHeight(picK),canvas,0,606)
copy(picM,0,0,getWidth(picM),getHeight(picM),canvas,228,606)
picHold = scale(sign,0.20)
addSign(canvas, picHold, 10, 480, red)
explore(canvas)

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def copy(source, srcXB, srcYB, srcXE, srcYE, target, targXB, targYB):
    targetX = targXB
    for sourceX in range(srcXB, srcXE):
        targetY = targYB
        for sourceY in range(srcYB, srcYE):
            srcPx = getPixel(source, sourceX, sourceY)
            targPx = getPixel(target, targetX, targetY)
            setColor(targPx, getColor(srcPx))
            targetY = targetY + 1
        targetX = targetX + 1

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def scale(pictIn, factor):
    pictOut = makeEmptyPicture(int(getWidth(pictIn)*factor),int(getHeight(pictIn)*factor))
    inX = 0
    for outX in range(0, int(getWidth(pictIn) * factor)):
        inY = 0
        for outY in range(0, int(getHeight(pictIn) * factor)):
            color = getColor(getPixel(pictIn, int(inX), int(inY)))
            setColor(getPixel(pictOut, outX, outY), color)
            inY = inY + 1.0 / factor
            inX = inX + 1.0 / factor
    return pictOut

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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

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def makelighter(picture):
    for x in range(0,getWidth(picture)):
        for y in range(0,getHeight(picture)):
            px = getPixel(picture,x,y)
            color = getColor(px)
            color = makeLighter(color)
            setColor(px,color)
    return picture

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def tint(picture):
    gS(picture)
    for p in getPixels(picture):
        red = getRed(p)
        blue = getBlue(p)
        if (red < 63):
            red = red*1.1

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    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)
    return picture

def gS(picture):
    for px in getPixels(picture):
        newRed = getRed(px) * 0.299
        newGreen = getGreen(px) * 0.587
        newBlue = getBlue(px) * 0.114
        luminance = newRed+newGreen+newBlue
        setColor(px,makeColor(luminance,luminance,luminance))
    return picture

def outline(source):
    for px in getPixels(source):
        x = getX(px)
        y = getY(px)
        if y < getHeight(source)-1 and x < getWidth(source)-1:
            sum = getRed(px)+getGreen(px)+getBlue(px)
            botrt = getPixel(source,x+1,y+1)
            sum2 = getRed(botrt)+getGreen(botrt)+getBlue(botrt)
            diff = abs(sum2-sum)
            newcolor = makeColor(diff,diff,diff)
            setColor(px,newcolor)
    return source

def posterize(pic):
    for p in getPixels(pic):
        r = getRed(p)
        g = getGreen(p)
        b = getBlue(p)
        luminance = (r+g+b)/3
        if luminance < 64:
            setColor(p,black)
        if luminance >= 64:
            setColor(p,white)
    return pic

def addSign(target, sign, toX, toY, color):
    toYStart = toY
    for x in range(0,getWidth(sign)):
        toY = toYStart
        for y in range(0,getHeight(sign)):
            p = getPixel(sign,x,y)
            if(getRed(p) < 225 and getGreen(p) < 225 and getBlue(p) < 225):
                setColor(getPixel(target,toX,toY),color)
            toY = toY + 1
        toX = toX + 1
    return target

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