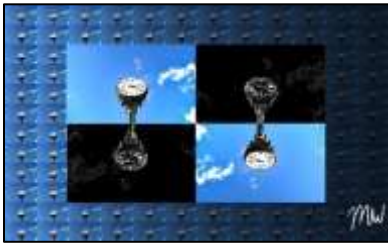# Mars Williams

Completed

Originals


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#Project 3 - CS120
#10/14/2021
#Mars Williams

def collage():
  setMediaPath()
  original=makePicture(getMediaPath("clock.jpg"))

  #Making Tile Background
  tMod = makePicture(getMediaPath("clock.jpg"))
  tile = scaleDown(tMod,12)
  tWidth=getWidth(tile)
  tHeight=getHeight(tile)
  tile_canvas=makeEmptyPicture(tWidth*12,tHeight*12)
  for x in range(12):
    for y in range(12):
      if x>1 and y%5==0:
        makeNight(tile)
      copy(tile,tile_canvas,x*tWidth,y*tHeight)

  #Making More Pictures + Empty Canvas
  collage = makeEmptyPicture(getWidth(tile_canvas), getHeight(tile_canvas))
  sig = makePicture(getMediaPath("signature.jpg"))
  mod1 = makePicture(getMediaPath("clock.jpg"))
  mod2=makePicture(getMediaPath("clock.jpg"))
  mod3=makePicture(getMediaPath("clock.jpg"))
  mod4=makePicture(getMediaPath("clock.jpg"))
  flip_canvas=makeEmptyPicture(getWidth(mod1),getHeight(mod2))
  flip_canvas2=makeEmptyPicture(getWidth(mod1),getHeight(mod2))

  #Modifications
  lighten(mod1)
  edge(mod2)
  edge(mod3)
  mod3 = flip(mod3,flip_canvas2)
  lighten(mod4)
  mod4 = flip(mod4,flip_canvas)

  #Scaling Down Modified Pictures
  mod1 = scaleDown(mod1,3)
  mod2 = scaleDown(mod2,3)
  mod3 = scaleDown(mod3,3)
  mod4 = scaleDown(mod4,3)
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    #Copying Modified Pictures+Signature to Canvas
    copy(tile_canvas,collage,0,0)
    copy(mod1,collage,144,92)
    copy(mod2,collage,getWidth(mod1)+144,92)
    copy(mod3,collage,144,getHeight(mod2)+92)
    copy(mod4,collage,getWidth(mod1)+144,getHeight(mod1)+92)
    chromaSig(sig,collage,800,460)

    show(collage)
    writePictureTo(collage,"Mars_Williams.jpg")

def makeNight(pic):
    for pixels in getPixels(pic):
        redValue=getRed(pixels)
        setRed(pixels,redValue*0.95)
        greenValue=getGreen(pixels)
        setGreen(pixels,greenValue*0.95)
        blueValue=getBlue(pixels)
        setBlue(pixels,blueValue*0.95)

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

def lighten(pic):
    for px in getPixels(pic):
        color = getColor(px)
        color = makeLighter(color)
        setColor(px,color)
    return pic

def flip(src, target):
    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,width-targetX-1,height-targetY-1),color)
            targetY+=1
        targetX+=1
    return target

def copy(pic,target,targX,targY):
    targetX=targX
    for x in range(int(getWidth(pic))):
        targetY = targY
        for y in range(int(getHeight(pic))):
            pixel = getPixel(pic,x,y)
            tx = getPixel(target, targetX, targetY)
            setColor(tx,getColor(pixel))
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      targetY+=1
    targetX+=1
  return target

def scaleDown(pic,factor):
  canvas = makeEmptyPicture(int(getWidth(pic)/factor), int(getHeight(pic)/factor))
  scale(pic,canvas,1.0/factor)
  return canvas

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

def chromaSig(source,target,targetX,targetY):
  for x in range(0,getWidth(source)):
    for y in range(0, getHeight(source)):
      px = getPixel(source,x,y)
      color = getColor(px)
      targ = getPixel(target, x+targetX,y+targetY)
      if distance(black,color)<200:
        setColor(targ,white)

collage()
```