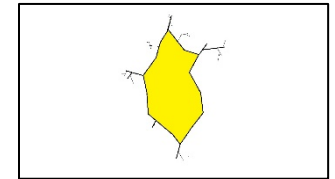
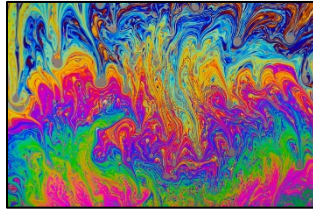


# Max Rollo

Completed



Originals



```
#Max Rollo 03/15/2021
```

```
def collage():  
    picture=makePicture(getMediaPath("back.jpg"))  
    final=makeEmptyPicture(getWidth(picture),getHeight(picture))  
    handPicture=makePicture(getMediaPath("hand.jpg"))  
    crackPicture=makePicture(getMediaPath("crack.jpg"))  
    eyePicture=makePicture(getMediaPath("eye.jpg"))  
    signaturePicture=makePicture(getMediaPath("signature.jpg"))  
    average(picture,final)  
    sepia(picture,final)  
    swap(picture,final)  
    edgeDetect(picture,final)  
    negative(picture,final)  
    bigHand=scale(handPicture,.85)  
    hand(bigHand,final)  
    smallPicture=scale(picture,2.5)  
    smallCrackPicture=scale(crackPicture,4.15)  
    crack(smallCrackPicture,smallPicture,final)  
    smallEye=scale(eyePicture,13)  
    eye(smallEye,final)  
    smallSignature=scale(signaturePicture,5)  
    signature(smallSignature,final)  
    show(final)
```

```
#creates a smaller canvas to edit section of picture
```

```
def rect(picture,startX,startY,endX,endY):  
    canvas=makeEmptyPicture(endX-startX,endY-startY)  
    for x in range(startX,endX):
```

```

    for y in range(startY,endY):
        color=getColor(getPixel (picture,x,y))
        setColor(getPixel (canvas,x-startX,y-startY),color)
return canvas

#averages rgb values
def average (picture,final):
    source=rect (picture,0,0,799,533)
    for x in range(0,getWidth (source)):
        for y in range(0,getHeight (source)):
            newRed=(getRed (getPixel (source,x,y))+127)/2
            newBlue=(getBlue (getPixel (source,x,y))+63)/2
            newGreen=(getGreen (getPixel (source,x,y))+181)/2
            setColor (getPixel (final,x,y),makeColor (newRed,newBlue,newGreen))

#changes r and b values based on original r values to make sepia
def sepia (picture,final):
    source=rect (picture,50,50,749,483)
    for x in range(0,getWidth (source)):
        for y in range(0,getHeight (source)):
            red=getRed (getPixel (source,x,y))
            blue=getBlue (getPixel (source,x,y))
            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 (getPixel (final,x+50,y+50),blue)
            setRed (getPixel (final,x+50,y+50),red)

#swaps rgb values
def swap (picture,final):
    source=rect (picture,100,100,699,433)
    for x in range(0,getWidth (source)):
        for y in range(0,getHeight (source)):
            redS=getRed (getPixel (source,x,y))
            blueS=getBlue (getPixel (source,x,y))
            greenS=getGreen (getPixel (source,x,y))
            setColor (getPixel (final,x+100,y+100),makeColor (blueS,redS,greenS))

```

```

#finds average between rgb values
def luminance(pixel):
    r=getRed(pixel)
    g=getGreen(pixel)
    b=getBlue(pixel)
    return (r+g+b)/3

#creates an outline(edge detect)
def edgeDetect (picture, final):
    source=rect (picture, 150, 150, 649, 383)
    for px in getPixels (source):
        x=getX (px)
        y=getY (px)
        if y < getHeight (source)-1 and x< getWidth (source)-1:
            botrt=getPixel (source, x+1, y+1)
            thislum=luminance (px)
            brlum=luminance (botrt)
            if abs (brlum-thislum)>30:
                setColor (getPixel (final, x+150, y+150), yellow)
            if abs (brlum-thislum)<=20:
                setColor (getPixel (final, x+150, y+150), blue)

#takes away rgb value from 255 to create negative
def negative (picture, final):
    source=rect (picture, 200, 200, 599, 333)
    for x in range (0, getWidth (source)):
        for y in range (0, getHeight (source)):
            newRed=255-getRed (getPixel (source, x, y))
            newGreen=255-getGreen (getPixel (source, x, y))
            newBlue=255-getBlue (getPixel (source, x, y))
            setColor (getPixel (final, x+200, y+200), makeColor (newRed, newGreen, newBlue))

#makes image larger or smaller
def scale (picture, factor):
    canvas=makeEmptyPicture (int (getWidth (picture)/factor), int (getHeight (picture)/factor))
    sourceX=0
    for targetX in range (0, int (getWidth (picture)/factor)):
        sourceY=0
        for targetY in range (0, int (getHeight (picture)/factor)):
            color=getColor (getPixel (picture, int (sourceX), int (sourceY)))
            setColor (getPixel (canvas, targetX, targetY), color)
            sourceY=sourceY+factor
        sourceX=sourceX+factor
    return canvas

```

```

#chromakeys + places hand in final image
def hand(handPicture, final):
    for x in range(0,getWidth(handPicture)):
        for y in range(0,getHeight(handPicture)):
            colorB=getBlue(getPixel(handPicture,x,y))
            if (colorB<200):
                color=getColor(getPixel(handPicture,x,y))
                setColor(getPixel(final,x-32,y+43),color)

#chromakeys + place crack picture in final image
def crack(picture,back,final):
    for x in range(0,getWidth(picture)):
        for y in range(0,getHeight(picture)):
            greenP=getGreen(getPixel(picture,x,y))
            if (greenP<10):
                color=getColor(getPixel(picture,x,y))
                setColor(getPixel(final,x+245,y+200),color)
            if (greenP>11) and (greenP<250):
                color=getColor(getPixel(back,x,y))
                setColor(getPixel(final,x+245,y+200),color)

#combines eyepicture + background into final image
def eye(picture,final):
    for x in range(0,getWidth(picture)):
        for y in range(0,getHeight(picture)):
            r1=getRed(getPixel(picture,x,y))
            g1=getGreen(getPixel(picture,x,y))
            b1=getBlue(getPixel(picture,x,y))
            r2=getRed(getPixel(final,x+364,y+265))
            g2=getGreen(getPixel(final,x+364,y+265))
            b2=getBlue(getPixel(final,x+364,y+265))
            setColor(getPixel(final,x+364,y+265),makeColor((r1+r2)/2,(g1+g2)/2,(b1+b2)/2))

#chromakeys + places picture in final image
def signature(picture,final):
    for x in range(0,getWidth(picture)):
        for y in range(0,getHeight(picture)):
            if (getRed(getPixel(picture,x,y))<100):
                color=getColor(getPixel(picture,x,y))
                setColor(getPixel(final,x,y),color)

```