Ethan Andreshak

Completed

Originals

```
#10/20/2023 Ethan Andreshak
def collage():#don't forget to setMediaPath
 xnum=0#where to begin placing on canvas regarding the width
 ynum=0#where to begin placing on canvas regarding the height
 mfactV=2#where to mirror the picture regarding the x value(vertical mirroring)
 mfactH=2#where to mirror the picture regarding the y value(horizontal mirroring)
 pic1=makePicture(getMediaPath("Cuddly.jpg"))
 s1factW=333.3/getWidth(pic1)#make the scale width of the picture set to exactly 1/3 of the width of the canvas
 s1factH=245.3/getHeight(pic1)#make the scale height of the picture set to exactly 1/3 of the height of the canvas
 #scaled picture to exactly 1/9 of the canvas
 scaledpic1=makeEmptyPicture(int(getWidth(pic1)*s1factW),int(getHeight(pic1)*s1factH))
 pic2=makePicture(getMediaPath("Door.jpg"))
 s2factW=333.3/getWidth(pic2)#make the scale width of the picture set to exactly 1/3 of the width of the canvas
 s2factH=245.3/getHeight(pic2)#make the scale height of the picture set to exactly 1/3 of the height of the canvas
 #scaled picture to exactly 1/9 of the canvas
 scaledpic2=makeEmptyPicture(int(getWidth(pic2)*s2factW),int(getHeight(pic2)*s2factH))
 canvas=makeEmptyPicture(999,736,black)
 scale(1.0/s1factW,1.0/s1factH,pic1,scaledpic1)#works, this is to scale the first pic selected
 scale(1.0/s2factW,1.0/s2factH,pic2,scaledpic2)#works, this is to scale the second pic selected
 TopLeft_Pic=duplicatePicture(scaledpic1)
 TopLeft_PicX=duplicatePicture(TopLeft_Pic)
 TopMiddle_Pic=duplicatePicture(scaledpic2)
 TopMiddle_PicO=duplicatePicture(TopMiddle_Pic)
 TopRight_Pic=duplicatePicture(scaledpic1)
 TopRight_PicO=duplicatePicture(TopRight_Pic)
 MiddleLeft_Pic=duplicatePicture(scaledpic2)
 MiddleLeft_PicO=duplicatePicture(MiddleLeft_Pic)
 MiddleMiddle_Pic=duplicatePicture(scaledpic1)
 MiddleMiddle_PicX=duplicatePicture(MiddleMiddle_Pic)
 MiddleRight_Pic1=duplicatePicture(scaledpic2)
 MiddleRight_Pic2=duplicatePicture(MiddleRight_Pic1)
 BottomLeft_Pic=duplicatePicture(scaledpic1)
 BottomLeft_PicX=duplicatePicture(BottomLeft_Pic)
 BottomMiddle_Pic1=duplicatePicture(scaledpic2)
```

```
BottomMiddle_Pic2=duplicatePicture(BottomMiddle_Pic1)
BottomRight_Pic=duplicatePicture(scaledpic1)
BottomRight_PicX=duplicatePicture(BottomRight_Pic)
sepiatone(TopLeft_Pic)#works
yellowtint(TopLeft_PicX)#works
cyanotype(TopMiddle_PicO)#works
lighter(TopMiddle_Pic)#works
mirrorH(mfactH,TopRight_PicO)#works
mirrorV(mfactV,TopRight_PicO)#works
edgedetect(4,TopRight_Pic,darkGray,red)#works
greentint(MiddleLeft_PicO)#works
darker(MiddleLeft_Pic)#works
edgedetect(4,MiddleMiddle_PicX,orange,lightGray)#works
lighter(MiddleRight_Pic2)#works
greyscale(MiddleRight_Pic1)#works
darker(MiddleRight_Pic1)#works
darker(BottomLeft_PicX)#works
purpletint(BottomLeft_PicX)#works
mirrorH(mfactH,BottomMiddle_Pic2)#works
mirrorV(mfactV,BottomRight_PicX)#works
sepiatone(BottomMiddle_Pic1)#works
darker(BottomMiddle_Pic1)#works
cyanotype(BottomRight_Pic)#works
darker(BottomRight_Pic)#works
crosses(TopLeft_PicX)#works, makes the X's in tic-tac-toe
crosses(MiddleMiddle_PicX)
crosses(BottomLeft_PicX)
crosses(BottomRight_PicX)
circles(TopMiddle_PicO)#works, makes the O's in tic-tac-toe
circles(TopRight_PicO)
circles(MiddleLeft_PicO)
grid(MiddleRight_Pic1,white)#works, puts grid on picture
grid(BottomMiddle_Pic1,white)
chromakey(TopLeft_PicX,TopLeft_Pic,255,255,255)#chromakey magic ;)
chromakey(MiddleMiddle_PicX,MiddleMiddle_Pic,255,255,255)
chromakey(BottomLeft_PicX,BottomLeft_Pic,255,255,255)
chromakey(BottomRight_PicX,BottomRight_Pic,255,255,255)
chromakey(TopMiddle_PicO,TopMiddle_Pic,255,255,255)
chromakey(TopRight_PicO,TopRight_Pic,255,255,255)
chromakey(MiddleLeft_PicO,MiddleLeft_Pic,255,255,255)
chromakey(MiddleRight_Pic1,MiddleRight_Pic2,255,255,255)
chromakey(BottomMiddle_Pic1,BottomMiddle_Pic2,255,255,255)
copy(xnum,ynum,TopLeft_PicX,canvas)#works, this is to set the picture to the top left corner
copy(xnum+getWidth(scaledpic1),ynum,TopMiddle_PicO,canvas)#works, this is to set the picture to the top middle
copy(xnum+getWidth(scaledpic1)*2,ynum,TopRight_PicO,canvas)#works, this is to set the picture to the top right
```

```
 copy(xnum,ynum+getHeight(scaledpic1),MiddleLeft_PicO,canvas)#works, this is to set the picture to the middle left
 #works, this is to set the picture to the center of the canvas
 copy(xnum+getWidth(scaledpic1),ynum+getHeight(scaledpic1),MiddleMiddle_PicX,canvas)
 #works, this is to set the picture to the middle right
 copy(xnum+getWidth(scaledpic1)*2,ynum+getHeight(scaledpic1),MiddleRight_Pic1,canvas)
 #works, this is to set the picture to the bottom left
 copy(xnum,ynum+getHeight(scaledpic1)*2,BottomLeft_PicX,canvas)
 #works, this is to set the picture to the bottom middle
 copy(xnum+getWidth(scaledpic1),ynum+getHeight(scaledpic1)*2,BottomMiddle_Pic1,canvas)
 #works, this is to set the picture to the bottom right
 copy(xnum+getWidth(scaledpic1)*2,ynum+getHeight(scaledpic1)*2,BottomRight_PicX,canvas)
 TicTacToe(canvas)
 signature1=makePicture(getMediaPath("Signature1.png"))#hopefully the signature is appropriate for you
 signature2=makePicture(getMediaPath("Signature2.png"))
 canvasSans=duplicatePicture(canvas)
 copy(getWidth(canvas)/2-(getWidth(signature1)/2),getHeight(canvas)/3,signature1,canvas)
 copy(getWidth(canvas)/2-(getWidth(signature2)/2),getHeight(canvas)/3*2-50,signature2,canvas)
 chromakey(canvas,canvasSans,255,255,255)
 explore(canvas)

def copy(n1,n2,pic_in,pic_out):#copies the pictures onto the new final canvas
 w=getWidth(pic_in)
 h=getHeight(pic_in)
 tX=n1
 for sX in range(0,w):
   tY=n2
   for sY in range(0,h):
     c=getColor(getPixel(pic_in,sX,sY))
     setColor(getPixel(pic_out,tX,tY),c)
     tY=tY+1
   tX=tX+1
 return(pic_out)

def scale(nW,nH,pic_in,pic_out):#works with any pic and scale
 w=getWidth(pic_out)
 h=getHeight(pic_out)
 sX=0
 for tX in range(0,w):
   sY=0
   for tY in range(0,h):
     c=getColor(getPixel(pic_in,int(sX),int(sY)))
     setColor(getPixel(pic_out,tX,tY),c)
     sY=sY+nH
   sX=sX+nW
 return(pic_out)
```

```
def blur(source,trg):#this does work, even if first glance it doesn't
 for x in range(1,getWidth(source)-1):
   for y in range(1,getHeight(source)-1):
     top=getPixel(source,x,y-1)
     left=getPixel(source,x-1,y)
     bottom=getPixel(source,x,y+1)
     right=getPixel(source,x+1,y)
     center=getPixel(trg,x,y)
     newR=(getRed(top)+getRed(left)+getRed(bottom)+getRed(right)+getRed(center))/5
     newG=(getGreen(top)+getGreen(left)+getGreen(bottom)+getGreen(right)+getGreen(center))/5
     newB=(getBlue(top)+getBlue(left)+getBlue(bottom)+getBlue(right)+getBlue(center))/5
     setColor(center,makeColor(newR,newG,newB))
 return(trg)

def lighter(pic):#makes the picture lighter
 for x in range(0,getWidth(pic)):
   for y in range(0,getHeight(pic)):
     p=getPixel(pic,x,y)
     c=getColor(p)
     setColor(p,makeLighter(c))
 return(pic)

def darker(pic):#makes the picutre darker
 for x in range(0, getWidth(pic)):
   for y in range(0, getHeight(pic)):
     p=getPixel(pic,x,y)
     c=getColor(p)
     setColor(p,makeDarker(c))
 return(pic)

def mirrorV(n,pic):#mirrors the picture along the x axis
 mp=getWidth(pic)/n
 w=getWidth(pic)
 for y in range(0,getHeight(pic)):
   for x in range(0,int(mp)):
     lp=getPixel(pic,x,y)
     rp=getPixel(pic,w-x-1,y)
     c=getColor(lp)
     setColor(rp,c)
 return(pic)

def mirrorH(n,pic):#mirrors the picture along the y axis
 mp=getHeight(pic)/n
 h=getHeight(pic)
```

```
 for x in range(0,getWidth(pic)):
   for y in range(0,int(mp)):
     tp=getPixel(pic,x,y)
     bp=getPixel(pic,x,h-y-1)
     c=getColor(tp)
     setColor(bp,c)
 return(pic)

def luminance(pixel):#luminance for edgedetect
 r=getRed(pixel)
 g=getGreen(pixel)
 b=getBlue(pixel)
 return (r+g+b)/3

def edgecolor(source,n):#puts a single color along the border of the picture
 c=pickAColor()
 for p in getPixels(source):
   x=getX(p)
   y=getY(p)
   if x<n or y<n:
     setColor(p,c)
   if x>getWidth(source)-n or y>getHeight(source)-n:
     setColor(p,c)
 return(source)

def TicTacToe(source):#makes the hashtag grid for tic-tac-toe
 for y in range(8,getHeight(source)-8):
   for x in range(getWidth(source)/3-10,getWidth(source)/3+10):
     setColor(getPixel(source,x,y),pink)
   for x in range(getWidth(source)/3*2-10,getWidth(source)/3*2+10):
     setColor(getPixel(source,x,y),cyan)
 for x in range(8,getWidth(source)-8):
   for y in range(getHeight(source)/3-10,getHeight(source)/3+10):
     setColor(getPixel(source,x,y),yellow)
   for y in range(getHeight(source)/3*2-10,getHeight(source)/3*2+10):
     setColor(getPixel(source,x,y),orange)
 return(source)

def edgedetect(n,source,c1,c2):#detects certain color values of pixels and decides to set it to one of two colors
 pixels=getPixels(source)
 for p in pixels:
   x=getX(p)
   y=getY(p)
   if y<getHeight(source)-1 and x<getWidth(source)-1:
     botrt=getPixel(source,x+1,y+1)
```

```
      thislum=luminance(p)
      brlum=luminance(botrt)
      if abs(brlum-thislum)>n:
        setColor(p,c1)
      if abs(brlum-thislum)<=n:
        setColor(p,c2)
 return(source)

def purpletint(pic):#tints the picture purple
 greyscale(pic)
 for p in getPixels(pic):
   r=getRed(p)
   g=getGreen(p)
   b=getBlue(p)
   if (r<63):
     r=(r*1.5)
   elif (63<=r<=191):
     r=(r*1.2)
   elif (r>191):
     r=(r*1.1)
   setGreen(p,g*.3)
   setRed(p,r)
   setBlue(p,b*1.2)
 return(pic)

def yellowtint(pic):#tints the picture yellow
 greyscale(pic)
 for p in getPixels(pic):
   r=getRed(p)
   g=getGreen(p)
   b=getBlue(p)
   if (g<63):
     g=(g*1.5)
   elif (63<=g<=191):
     g=(g*1.2)
   elif (g>191):
     g=(g*1.1)
   setGreen(p,g)
   setRed(p,r*1.2)
   setBlue(p,b*.3)
 return(pic)

def greentint(pic):#tints the picture green
 greyscale(pic)
 for p in getPixels(pic):
```

```
    r=getRed(p)
    g=getGreen(p)
    b=getBlue(p)
    if (g<63):
      g=(g*1.5)
    elif (63<=g<=191):
      g=(g*1.2)
    elif (g>191):
      g=(g*1.1)
    setGreen(p,g)
    setRed(p,r*.85)
    setBlue(p,b*.8)
  return(pic)

def sepiatone(pic):#tints the picture red/brown
  greyscale(pic)
  for p in getPixels(pic):
    r=getRed(p)
    g=getGreen(p)
    b=getBlue(p)
    if (r<63):
      r=(r*1.5)
    elif (63<=r<=191):
      r=(r*1.2)
    elif (r>191):
      r=(r*1.1)
    setRed(p,r)
    setBlue(p,b*.8)
    setGreen(p,g*.8)
  return(pic)

def cyanotype(pic):#tints the picture blue
  greyscale(pic)
  for p in getPixels(pic):
    r=getRed(p)
    g=getGreen(p)
    b=getBlue(p)
    if (b<63):
      b=(b*2)
    elif (63<=b<=191):
      b=(b*1.3)
    elif (b>191):
      b=(b*1.2)
    setBlue(p,b)
    setRed(p,r*.75)
```

```
    setGreen(p,g*.75)
  return(pic)

def greyscale(pic):#tints the picture grey
  for p in getPixels(pic):
    intensity=(getRed(p)+getGreen(p)+getBlue(p))/3
    setColor(p,makeColor(intensity,intensity,intensity))
  return(pic)

#background magic, works like a green/blue screen for the signature and the X's and O's
def chromakey(pic_for,pic_back,rValue,gValue,bValue):
  for p in getPixels(pic_for):
    x=getX(p)
    y=getY(p)
    if (getRed(p)==rValue and getGreen(p)==gValue and getBlue(p)==bValue):
      backp=getPixel(pic_back,x,y)#background pixel at x,y
      backc=getColor(backp)#background color at background pixel
      setColor(p,backc)#sets a pixel to the background color
  return(pic_for)

def crosses(pic):#this is the X's for tic-tac-toe
  for x in range(getWidth(pic)/5,(int(getWidth(pic)/3.5)+12)):
    a=0
    for y in range(getHeight(pic)/5,int(getHeight(pic)/1.25)):
      setColor(getPixel(pic,int(x+a),y),white)
      a=a+1
  for x in range(int(getWidth(pic)/1.55-2),int(getWidth(pic)/1.3-3)):
    a=0
    for y in range(getHeight(pic)/5,int(getHeight(pic)/1.25)):
      setColor(getPixel(pic,x-a,y),white)
      a=a+1
  return(pic)

def circles(pic):#this is the original formula for drawing the circle, it is the O's for tic-tac-toe
  x=getWidth(pic)/2
  y=getHeight(pic)/2
  n=10
  r=80-(n/2)
  for count in range(0,360):#more x's and y's mean fuller circle
    x1=x+r*(math.sin(math.radians(count)))
    y1=y+r*(math.cos(math.radians(count)))
    x2=(x+1)+r*(math.sin(math.radians(count)))
    y2=(y+1)+r*(math.cos(math.radians(count)))
    x3=(x-1)+r*(math.sin(math.radians(count)))
    y3=(y-1)+r*(math.cos(math.radians(count)))
```

```
   for thick in range(0,n):
     setColor(getPixel(pic,int(x1)+thick,int(y1)+thick),white)
     setColor(getPixel(pic,int(x1)-thick,int(y1)-thick),white)
     setColor(getPixel(pic,int(x2)+thick,int(y2)+thick),white)
     setColor(getPixel(pic,int(x2)-thick,int(y2)-thick),white)
     setColor(getPixel(pic,int(x3)+thick,int(y3)+thick),white)
     setColor(getPixel(pic,int(x3)-thick,int(y3)-thick),white)
 for p in getPixels(pic):
   x=getX(p)
   y=getY(p)
   #this rounds out the circle and fills in spots to make it look less spotty
   if (getRed(p)==255 and getGreen(p)==255 and getBlue(p)==255):
     setColor(getPixel(pic,x+3,y),white)
     setColor(getPixel(pic,x,y+3),white)
     setColor(getPixel(pic,x+6,y),white)
     setColor(getPixel(pic,x,y+6),white)
     setColor(getPixel(pic,x+9,y),white)
     setColor(getPixel(pic,x,y+9),white)
 return(pic)

def grid(pic,c):#striped stuff
  for x in range(0,getWidth(pic),4):
    for y in range(0,getHeight(pic),4):
      setColor(getPixel(pic,x,y),c)
  return(pic)
```