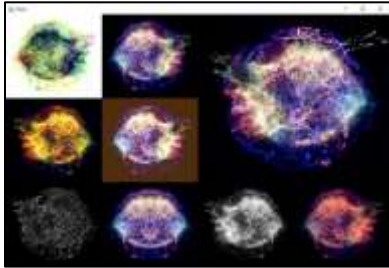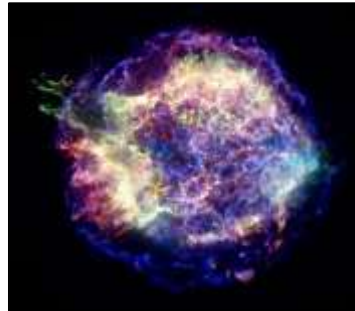# Landen Finlinson

Completed

Original


```
#Project2
#Landen Finlinson
def collage():
  setMediaPath()
  Super=makePicture ("Project_2_Picture.jpg")
  Super2=makePicture ("Project_2_Picture.jpg")
  signature=makePicture("signature.jpg")
  mirrorPic=mirrorRight(Super)#function 1
  mapBackColor=changeBackColor(Super, Super2)#function 2
  reverseMapBackColorPic=reverse(mapBackColor)#function 3
  posterizePic=posterize(Super)#function 4
  reversePosterizePic=reverse(posterizePic)#function 4
  largePic=makeLarger(Super)#function 6
  grayPic=grayScale(Super)#function 7
  sunsetPic=makeSunset(Super)#function 8
  sepiaTintPic=sepiaTint(Super)#function 9
  negativePic=negative(Super)#function 10
  reverseNegativePic=reverse(negativePic)#function 11
  edgePic=edge(Super)#function 12
  reverSunsetPic=reverse(sunsetPic)#function 13
  canvas = makeEmptyPicture(getWidth(Super) * 4, getHeight(Super) * 3)
  startX=0; startY=0
  copy(reverseNegativePic, canvas, startX, startY)
  startX= 0; startY=getHeight(Super)*2
  copy(edgePic, canvas, startX, startY)
  startX=getWidth(Super); startY=getHeight(Super)*2
  copy(mirrorPic, canvas, startX, startY)
```

```
    startX= getWidth(Super); startY=0
    copy(reverseMapBackColorPic, canvas, startX, startY)
    startX= 0; startY=getHeight(Super)
    copy(sepiaTintPic, canvas, startX, startY)
    startX= getWidth(Super); startY=getHeight(Super)
    copy(reversePosterizePic, canvas, startX, startY)
    startX=getWidth(Super)*2; startY=0
    copy(largePic, canvas, startX, startY)
    startX=getWidth(Super)*2; startY=getHeight(Super)*2
    copy(grayPic, canvas, startX, startY)
    startX=getWidth(Super)*3; startY=getHeight(Super)*2
    copy(reverSunsetPic, canvas, startX, startY)
    startX=getWidth(canvas)-getWidth(signature)
    startY=0
    chromakeySig(signature, canvas, startX, startY)
    show (canvas)
    writePictureTo(canvas,r"C:\Users\michaelmk\Documents\cs120\project2\Landen Finlinson\Landen FinlinsonP2.jpg")


def edge(picture):
    newPic=duplicatePicture(picture)
    for px in getAllPixels(newPic):
        x = getX(px)
        y = getY(px)
        if y < getHeight(newPic) - 1 and x < getWidth(newPic) - 1:
            colorSum1 = getRed(px)+getGreen(px)+getBlue(px)
            pixelOverOne = getPixelAt(newPic, x+1, y+1)
            colorSumOverOne= getRed(pixelOverOne)+getGreen(pixelOverOne)+getBlue(pixelOverOne)
            colorDifference = abs(colorSumOverOne-colorSum1)
            newcolor = makeColor(colorDifference, colorDifference, colorDifference)
            setColor(px,newcolor )
    return (newPic)


def makeSunset(picture):
    newPic = duplicatePicture(picture)
    for px in getAllPixels(newPic):
        gvalue = getGreen(px)
        bvalue = getBlue(px)
        setGreen(px, gvalue * 0.60)
        setBlue(px, bvalue * 0.60)
    return newPic

def grayScale(picture):
    newPic = duplicatePicture(picture)
```

```
    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

def mirrorRight(source):
  newPic=duplicatePicture(source)
  mirrorPoint = getWidth(newPic) /2
  width=getWidth(newPic)
  height = getHeight(newPic)
  for x in range(0, mirrorPoint):
    for y in range(0,height):
      rightPixel = getPixelAt(newPic,width-1-x, y)
      leftPixel = getPixelAt(newPic,x, y)
      rightColor = getColor(rightPixel)
      setColor(leftPixel,rightColor)
    return newPic

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 + targetX, sY + targetY)
      if distance (black, sColor) < 180:
        setColor(targetPx, white)


def negative(picture):
  newPic=duplicatePicture(picture)
  for x in range(0,getWidth(newPic)):
    for y in range(0,getHeight(newPic)):
      pixel = getPixel (newPic, x, y)
      red = getRed(pixel)
      green = getGreen(pixel)
      blue = getBlue(pixel)
      negColor = makeColor(255 - red, 255 - green, 255 - blue)
      setColor(pixel, negColor)
    return newPic


def reverse(sourcePic):
```

```python
  width=getWidth(sourcePic)
  height=getHeight(sourcePic)
  targetPic=makeEmptyPicture(width, height,white)
  targetX = width-1
  for x in range(0, getWidth(sourcePic)):
    targetY = 0
    for y in range(0, getHeight(sourcePic)):
      pixel = getPixelAt(sourcePic,x,y)
      tx = getPixel(targetPic,targetX,targetY)
      setColor(tx,getColor(pixel))
      targetY = targetY+1
    targetX = targetX-1
  return (targetPic)

def makeLarger(source):
  width=getWidth(source) *2
  height=getHeight(source)*2
  targetPic=makeEmptyPicture(width, height,white)
  sourceX = 0
  for targetX in range(0, int(getWidth(source)*2)):
    sourceY = 0
    for targetY in range(0, int(getHeight(source))*2):
      sourcePx=getPixel(source, int(sourceX), int(sourceY))
      sourceColor=getColor(sourcePx)
      targetPx=getPixelAt(targetPic, targetX, targetY)
      setColor(targetPx, sourceColor)
      sourceY=sourceY+ 1.0/2
    sourceX=sourceX+ 1.0/2
  return( targetPic)

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

def changeBackColor(sourcePic, backGroundPic):
  newPic=duplicatePicture(sourcePic)
  for x in range(0,getWidth(newPic)):
    for y in range(0,getHeight(newPic)):
```

```
        sourcePx = getPixelAt(newPic,x,y)
        bgPx=getPixelAt(backGroundPic,x,y)
        sourceColor=getColor(sourcePx)
        bgColor=getColor(bgPx)

        if (distance(sourceColor, blue)<190):
            setColor(sourcePx, bgColor)
    return newPic

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

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):
        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

collage()
```