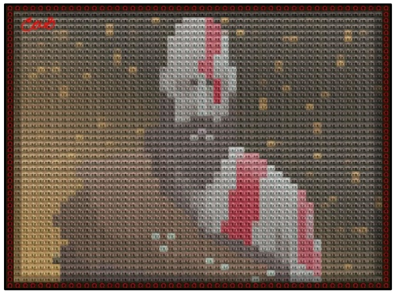
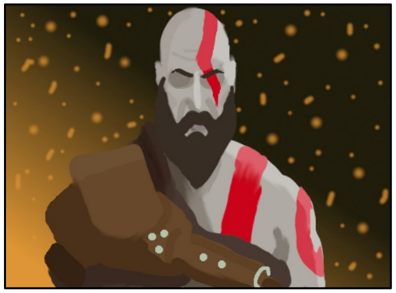
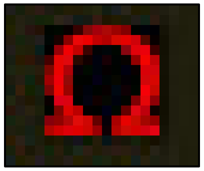
Cameron Granger

Completed



Originals





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#Cameron Granger, March 14, 2021. Title: Echoes of an Old Life

#This function runs all of the subordinate functions
def collage():

  #Assigns picture files
  temple = makePicture(getMediaPath("newTemple.jpg"))
  kratos = makePicture(getMediaPath("kratos.jpg"))
  omega = makePicture(getMediaPath("omega.jpg"))
  signature = makePicture(getMediaPath("signature.jpg"))
  canvas = makeEmptyPicture(1000, 736)

  #Scales the Kratos image down and back up, resulting in a pixelated look
  #The pixel sizes are the same dimensions as the temple picture
  modKratos = scale(kratos, 0.05, 0.063)
  modKratos = scale(modKratos, 20, 16)

  #Converts the temple picture to grayscale, than tiles it.
  grayScale(temple)
  tiledTemple = tile(temple, canvas, 0, 48, 0, 44)
  tint(tiledTemple, modKratos)

  #Tiles the Omega symbol on the x and y axis
  tiledOmegaX = tile(omega, canvas, 0, 1, 0, 46)
  tiledOmegaY = tile(omega, canvas, 0, 50, 0, 1)
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#Copies the tiled temple image and tiled omega images into the canvas
  copy(tiledTemple, canvas, 20, 16)
  copy(tiledOmegaX, canvas, 0, 0)
  copy(tiledOmegaX, canvas, 980, 0)
  copy(tiledOmegaY, canvas, 0, 0)
  copy(tiledOmegaY, canvas, 0, 720)

  #Darkens an area around the canvas, but after the border
  dark(canvas, 20, 980, 16, 32)
  dark(canvas, 20, 980, 704, 720)
  dark(canvas, 20, 40, 32, 704)
  dark(canvas, 960, 980, 32, 704)

  signatureCopy(signature, canvas, 30, 16)

  explore(canvas)

#Copies the picture passed to it.
def copy(picture, canvas, shiftX, shiftY):

  targetX = shiftX
  for x in range(0, getWidth(picture)):
    targetY = shiftY
    for y in range(0, getHeight(picture)):

      color = getColor(getPixel(picture, x, y))
      setColor(getPixel(canvas, targetX, targetY), color)
      targetY = targetY + 1
    targetX = targetX + 1

  return(canvas)

#Tiles the copied picture from copy.
def tile(picture, canvas, startX, endX, startY, endY):

  #Creates an empty picture the size of the end X and end Y multiplied by the width and height of the
  #tiles respectively
  tiledPic = makeEmptyPicture(endX * 20, endY * 16)

  for x in range(startX, endX): #The for loops below make a tiling effect
    shiftX = x * 20
    for y in range(startY, endY):
      shiftY = y * 16
      tiled = copy(picture, tiledPic, shiftX, shiftY)
  return(tiled)

#Converts image to grayscale
def grayScale(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))

#Takes a picture and creates a tint mask using the refPic
def tint(picture, refPic):

  for x in range(0, getWidth(picture)):
    for y in range(0, getHeight(picture)):

      #Assignment of RGB color values for the picture and the refPicture
      px = getPixel(picture, x, y)
      px2 = getPixel(refPic, x, y)
      iRed = getRed(px)
      iGreen = getGreen(px)
      iBlue = getBlue(px)
      refRed = getRed(px2)
      refGreen = getGreen(px2)
      refBlue = getBlue(px2)

      if(iRed < 63):
        newColor = makeColor((refRed+iRed)*0.25,(refGreen+iGreen)*0.4, (refBlue+iBlue)*0.4)
        setColor(px, newColor)

      if (iRed > 62 and iRed < 192):
        newColor = makeColor((refRed+iRed)*0.5,(refGreen+iGreen)*0.5, (refBlue+iBlue)*0.5)
        setColor(px, newColor)

      if (iRed > 191):
        newColor = makeColor((refRed+iRed)*0.75,(refGreen+iGreen)*0.6, (refBlue+iBlue)*0.6)
        setColor(px, newColor)

#Scales the picture up or down depending on the factor
def scale(picture_in,factor, factor2):

  picture_out = makeEmptyPicture(int(getWidth(picture_in)*factor),int(getHeight(picture_in)*factor2))
  sourceX = 0
  for targetX in range(0,int(getWidth(picture_in)*factor)):
    sourceY = 0
    for targetY in range(0,int(getHeight(picture_in)*factor2)):

      srcpx = getPixel(picture_in,int(sourceX),int(sourceY))
      color = getColor(srcpx)
      setColor(getPixel(picture_out,targetX,targetY), color)
      sourceY = sourceY + (1/float(factor2))
    sourceX = sourceX + (1/float(factor))

  return(picture_out)

#Darkens an area around the canvas, this area is after the border
def dark(canvas, startX, endX, startY, endY):

  for count in range(0, 1):
    for x in range(startX, endX): #The for loops below make a tiling effect
      for y in range(startY, endY):
        px = getPixel(canvas, x, y)
        color = getColor(px)
        color = makeDarker(color)
        setColor(px, color)

#Chroma keys a signature
def signatureCopy(sig, canvas, shiftX, shiftY):

  sig = scale(sig, 0.5, 0.5)
  targetX = shiftX
  for x in range(0, getWidth(sig)):
    targetY = shiftY
    for y in range(0, getHeight(sig)):

      refRed = getRed(getPixel(sig, x, y))
      refGreen = getGreen(getPixel(sig, x, y))
      refBlue = getBlue(getPixel(sig, x, y))
      color = getColor(getPixel(sig, x, y))

      if refGreen < 50 and refBlue < 50:
        setColor(getPixel(canvas, targetX, targetY), color)
      targetY = targetY + 1
    targetX = targetX + 1
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