Task 1:

Create a filter that mimics a portrait mode on a smartphone, where the subject is in focus but the background is artistically blurred.

Here is some help:

1. Load an image with a clear subject in the foreground (person_with_background.jpg).
2. Create an elliptical mask where the ellipse covers the subject you want to keep sharp. The area outside the ellipse should be white, and inside should be black. (*Hint: You might need to use* cv2.ellipse *and* bitwise_not).
3. Create a heavily blurred version of the entire original image using a large kernel for Gaussian Blur.
4. Use the power of **bitwise operations**:
   o Use bitwise_and with the original image and the mask to extract the sharp subject.
   o Use bitwise_and with the blurred image and the inverted mask to extract the blurred background.
   o Combine these two results using bitwise_or to create your final "selective focus" image.

Task 2:

Your goal is to write a program that converts a photograph into a pencil-sketch-like drawing.

Here is some help:

1. Load a color image (portrait.jpg).
2. Invert and Blur: Convert the image to grayscale and invert it using bitwise_not. Apply a Gaussian blur to this inverted image.
3. Create the Sketch: Blend the grayscale image with the blurred, inverted image using the "Color Dodge" blend mode. In OpenCV, this can be approximated by: sketch = cv2.divide(gray_img, 255 - blurred_inverted, scale=256). Experiment with the amount of blur to change the sketch's texture.
4. Alternative Method: Now, try to create a sketch using edge detection. Use the Canny edge detector. How do the two results compare? Which method produces a more artistic result and which is better for technical line extraction?