Assignment No. 4

Problem Statement: Implement different Morphological Operations on an image using OpenCV. (Note: Morphological Transformations: Dilatation, Opening, closing and erosion)

Objective:

1. To study and implement

Theory: Student expected to write all functions used

Algorithm / Implementation:

```
import cv2
from google.colab.patches import cv2_imshow
image=cv2.imread("ALPHA.jpg")
cv2_imshow(image)
```

```
[ ]  ret, thresh = cv2.threshold(img, 127, 255, cv2.THRESH_BINARY)
     cv2_imshow(thresh)
```


```
[ ]  # prompt: invert imag e

     inverted_image = cv2.bitwise_not(thresh)
     cv2_imshow(inverted_image)
```


```
# prompt: erode image and dilute image

import numpy as np
kernel = np.ones((5, 5), np.uint8)
img_erosion = cv2.erode(inverted_image, kernel, iterations=1)
cv2_imshow(img_erosion)
```


```
[ ]  img_dilation = cv2.dilate(img_erosion, kernel, iterations=1)
     cv2_imshow(img_dilation)
```


```
[ ]  # prompt: do dilation and erosion not using binarization but only inversion

     import numpy as np
     kernel = np.ones((5, 5), np.uint8)
     img_erosion = cv2.erode(inverted_image, kernel, iterations=1)
     cv2_imshow(img_erosion)
```


```
[ ] img_dilation = cv2.dilate(inverted_image, kernel, iterations=1)
    cv2_imshow(img_dilation)
```


```
# prompt:  morphological open
#  image

opening = cv2.morphologyEx(inverted_image, cv2.MORPH_OPEN, kernel)
cv2_imshow(opening)
```

Platform: Python, OpenCV

FAQs

1. What is morphological operation in image processing?
2. What is need of structuring element?
3. Define image opening and closing.