**Experiment-9**

**AIM:** Apply non-linear filters on images and investigate its application in noise-removal.

**Theory:**

Non-linear filters are image processing techniques used for noise removal by considering the local neighborhood of each pixel. Unlike linear filters, non-linear filters modify pixel values based on their relationship with neighboring pixels, allowing them to effectively suppress different types of noise.

**Program**

import cv2

import numpy as np

from google.colab.patches import cv2\_imshow

# Load the noisy image

noisy\_image = cv2.imread('/content/boundary\_image.jpg', 0) # Load as grayscale

# Apply a median filter to remove noise

filtered\_image = cv2.medianBlur(noisy\_image, 5) # 5x5 neighborhood window size (adjust as needed)

# Display the original noisy image and the filtered image

cv2\_imshow(noisy\_image)

cv2\_imshow(filtered\_image)

# Wait for a key press and then close the windows

cv2.waitKey(0)

cv2.destroyAllWindows()

**Output**

**Conclusion**