Task: Kidney Stone Detection using Image Processing in any language (preferably in MATLAB)

Problem Statement:
The key task is to develop an image processing system to detect the presence of kidney stones in medical images. The project is divided into two parts:

Part 1: Image Preprocessing

- Design a process to input kidney images using any programming language (preferably MATLAB).
- Convert the input image to grayscale and apply filtering techniques to remove noise.
- Perform image segmentation to isolate areas of interest that may contain kidney stones.

Requirements for Part 1:

- ✓ The system should have functionality to upload kidney images in formats such as .png, .jpg, etc.
- ✓ Preprocess the image by applying filtering techniques like median filtering and thresholding to enhance visibility.
- ✓ Morphological operations should be used to fill holes and eliminate small artifacts.

Part 2: Kidney Stone Detection

- The system should identify potential stone regions based on pixel intensity and shape analysis.
- Analyze segmented regions to determine if a kidney stone is present in the image.
- Display the detection result (i.e., whether a stone is detected or not).

Requirements for Part 2:

- ✓ The system should analyze the processed image and detect regions with properties consistent with kidney stones.
- ✓ Display the final detection result.

Note:

- ➢ Images with and without kidney stones will be provided for testing and validation purposes.
- ➢ You may use any programming language for this task, but **MATLAB** is preferred for its image processing capabilities.