Programming Task 02

Implement the image transformation techniques (point-processing operations) discussed in class (image negatives, log transformation, gamma correction, contrast stretching, gray-level slicing, and bit-plane slicing) using MATLAB or Python.
Tasks to be implemented
1. Image Negatives: Implement a function to create a negative image of a given grayscale image. Display the original and negative images side-by-side for comparison.
2. Log Transformation: Implement a function to perform log transformation on a grayscale image. Allow the user to specify the base of the logarithm. Display the original and transformed images side-by-side.
3. Gamma Correction: Implement a function to perform gamma correction on a grayscale image. Allow the user to specify the gamma value. Display the original and corrected images side-by-side.
4. Piecewise-Linear Transformation Functions:
a. Contrast Stretching: Implement a function to perform contrast stretching on a grayscale image. Allow the user to specify the minimum and maximum gray levels for the output image.
b. Gray-Level Slicing: Implement a function to perform gray-level slicing on a grayscale image. Allow the user to specify the range of gray levels to be highlighted.

5. Bit-Plane Slicing: Implement a function to perform bit-plane slicing on a grayscale image. Allow the user to specify the bit plane to be extracted.

Note: For each transformation, display the original and transformed images side-by-side for comparison. Use appropriate colormaps or normalization to visualize the results effectively. Consider using interactive plots or sliders to allow the user to explore different parameter values