D1265154 曾郁珊 assignment3 Report

1. Identifying Frame Boundaries:
Challenge: At the outset, determining the precise boundaries for the frame within the image posed a significant challenge. I needed to ensure that the frame was correctly positioned relative to the image dimensions and frame width.
Solution: To address this challenge, I conducted a thorough analysis of the frame width and its position within the image. Through rigorous testing and experimentation, I accurately identified the boundaries where the frame should be applied.

2. Ensuring Frame Color Consistency:
Challenge: Maintaining consistent frame color throughout the image was crucial, but challenging. Inconsistencies in color could lead to visual artifacts or an uneven appearance of the frame.
Solution: To ensure frame color consistency, I meticulously set the RGB values of pixels within the frame boundaries to match the specified frame color (B, G, R). This involved precise indexing and manipulation of pixel data within the designated frame areas.

3. Handling Edge Cases:
Challenge: Dealing with edge cases, such as when the frame overlaps with the image boundaries or extends beyond them, required special attention. Mishandling these cases could result in unexpected behavior or image distortion.
Solution: I implemented conditional checks to address edge cases effectively. By verifying if the current row or column was within the frame boundaries, I adjusted the frame application accordingly. This ensured that issues related to overlapping or extending frames beyond image boundaries were mitigated.

4.Handling Pixel Data Transformation:
Difficulty: Converting pixel data from the original image to a reduced size, including considerations for sampling or resampling, mirror reflection, cropping, and frame padding.
Solution: I careful implementation of pixel index calculations and transformation algorithms, alongside thorough testing to ensure accurate results.
By addressing these challenges through thorough research, careful implementation, and systematic testing, the development of the image processing program was successfully completed. The resulting program demonstrates the ability

to process bitmap images efficiently, including resizing, mirror reflection, and frame padding, while adhering to the specifications of the bitmap file format.