

This C program processes bitmap image files by performing quarter reduction and a subsequent merged transformation. It includes functionalities to read, manipulate, and write bitmap images. The program defines a custom header structure (Header) representing the format of a bitmap file and provides functions to print this header (print_header) and write a bitmap image file (write_image_file). The main function starts by reading a bitmap image file specified as a command-line argument. It then performs the following operations:

1. Image Reduction: Reduces the image dimensions by half and copies every other pixel to create a smaller version of the image (reduced_imageData).

2. Merged Transformation: Combines the reduced image with the original image to create a larger merged image (merged_imageData). This involves copying pixels into four quadrants of the merged image based on specific calculations. After processing, the program prints the header information for the input image, reduced image, and merged image. It then writes the reduced and merged images to new bitmap files. This program demonstrates basic bitmap file operations including header parsing, pixel manipulation, and file I/O for image processing tasks like resizing and merging.

There are some problems I encounter during the process:

1. I wanted to draw the grid at first but then I realized it would be too difficult to figure out the position for each line so I decided to color the whole plane at the beginning then put on the four quadrants of pictures.

2. I did not understand how to input variables into the main function but then I found out I could simply input the variables in the parameters which is a built-in tool in DevC++.