

Comp 170 Programming Assignment

BMP Files

Purposes

- To give the student practice working with binary file IO. Bitmap files are being used as a means of keeping your interest. Just like any file that conforms to a standard file format, a bit-map file can be read and manipulated as long as the programmer understands that format.
- To give the student practice working with C++ structs.
- To give students practice working with dynamic memory allocation

You will specifically be working with 24-bit bit-map files made in MSPAINT. Not all bit-map files are made alike. Depending on the number of colors and the resolution of the image the bit-map file format will vary.

The specification of the bit-map file format can be found at:

<http://www.fortunecity.com/skyscraper/windows/364/bmpffrmt.html>

Remember to only consider the 24-bit version.

Program Requirements

- Ask for a bit-map file name from the user.
- Open the file. Close the file when appropriate.
- If the file does not exist give the user an error message then exit the program.
- If the file exists give the user the options to:
 1. Display File Specifications. (The file headers displayed neatly with labels.)
 2. Rotate Image 90 deg (clockwise)
 3. Rotate Image 180 deg
 4. Rotate Image 270 deg (clockwise)
 5. Flip image horizontal
 6. Flip image vertical
 7. Reverse order of all of the pixels in the picture.
 8. Invert Colors
 9. Add salt and pepper
 10. Double the size of the Picture (Same image, 4 times the pixels)
 11. Exit the Program
- Use the numbers above as the menu options for the user commands.
- The user should be able to perform multiple file operations to a single image before exiting the program.
- Use good variable names and functions where appropriate.

Grading

- You start with 100 points
- -10 points per file operation that does not work correctly
- -10 points if the menus do not match the ones given above
- -10 points if you forget to check to see if the file exists
- Points will be deducted for poor variable names, function names, and/or poor structure of the code.

Examples:

[Kids.bmp](#)

[KidsDoubleSize.bmp](#)

[KidsFlipHorizontal.bmp](#)

[KidsFlipVertical.bmp](#)

[KidsInvertColors.bmp](#)

[KidsReverse.bmp](#)

[KidsRotate90.bmp](#)

[KidsRotate180.bmp](#)

[KidsRotate270.bmp](#)

[KidsSaltAndPepper.bmp](#)