COSC 1437 Graded Exercise #5 Due 11:45PM, Sunday, November 24, 2013

Internet References:
Information on BMP file format

Objective: Write a program that reads and processes a command file in order to make modifications to a BMP file.

By default, your program will create BMP files with the following requirements and characteristics.

1. Your BMP files must be viewable in the Irfanview Portable file viewer.

2. Your BMP file will display a 10 by 10 grid of colored cells. There are 100 cells.

3. Each cell in the 10 by 10 grid will be 50 pixels by 50 pixels, or 2500 pixels. All 2500 pixels in each cell will have the same color and alpha values.

4. The overall size of your default BMP image will be 500 pixels by 500 pixels or 250,000 total pixels.

5. You may choose the red, green, and blue color values and alpha values for each of the 100 cells in your grid. If I were to save and display your default BMP file before making any modifications, I should see something resembling the first letter of your first name as a block letter in the 10 by 10 grid of cells.

6. Your program only needs to support BMP images up to 1000 pixels by 1000 pixels (20 by 20 grid or 400 cells or 1,000,000 pixels).

When your program runs, it will read and process a command file. The command file is a text file that will contain commands that could: change the default values; make insertions, deletions and modifications to your default BMP file; save the file to disk; or instruct the program to quit. The command file may have six different commands. These commands may occur in any order and may occur multiple times. The six commands are: default, insert, delete, modify, write, and quit.

In the commands below, rows and columns in the image are numbered just like you would number them in a two-dimensional array. Row 0 is at the top and column 0 is at the left. Note that this numbering does not correspond to the way the rows and columns of the image are actually stored in the BMP file.

The default command sets default values for the red, green, blue, and alpha values which are used in insert and modify commands to supply missing values. If insert and modify command are used before the default command is used, a white cell should be used as the

default. Four required arguments, which may appear in any order, are used with the default command.

Sample default command: Set default color to red with alpha value of 128

```
default r 255 g 0 b 0 a 128
```

The insert command may be used to insert a row or column. The command must use either the row or column argument as shown below. Any or all of the r, g, b, and a-values may be specified in any order.

Sample insert command: inserts new row 3 containing blue cells before existing row 3. Rows are numbered starting at 0. Columns can be inserted in a similar fashion using the col argument.

```
insert row 3 b 255 r 0 g 0 a 255
```

The delete command can be used to delete a row or column. Either row or col and the row or col number must be specified. No colors or alpha value are specified.

Sample delete command: Delete row 4. All rows after 3 will be moved up. For example the old row 5 will become the new row 4.

```
delete row 4
```

The modify command changes a single cell, not a complete row or column. The syntax is as follows:

```
modify row 2 col 3 r 255 b 0 g 0 a 128
```

The row and col arguments are required.

The write command has a required argument which is the file name to use to save the BMP file to disk.

```
write bmpmod1.bmp
```

The quit command instructs the program to end processing.

```
quit
```

When the program is run, a required command line argument is used to specify the name of the command file to use.

```
GE5 testcommand1.txt
```