

Course 60-256  
 Instructor Dr. B. Boufama  
 Assignment 03  
 Due date October 27, 11am

October 9, 2014

Using the standard I/O library functions (*fopen()*, *fseek()*, *fread()*, etc), write a C program to transform a given picture into an up-side-down picture. In particular, your program should reverse the image by directly reading from one file and writing to another, without the need of a two-dimensional array.



The input image is a grayscale picture, where each pixel has a value between 0(black) and 255(white). The image is simply an  $nbLines \times nbCols$  matrix of bytes, where each byte store the gray-level of the corresponding pixel.

$nbLines$  is the number of lines and  $nbCols$  is the number of columns.

To help you understand the structure of the binary file containing the image, here is the function that was used to store the image in a file.

```
void saveImage(char **image, int nbLines, int nbCols, FILE *fd){
    int i;

    fputs("P5\n", fd);           // just a code
    fprintf(fd, "%d %d\n", nbLines, nbCols);
    fputs("255\n", fd);         // another code

    for(i=0; i<nbLines; i++)
        fwrite(image[i], nbCols, fd);
}
```

### Notes :

- The image(the input file to your program) has to be downloaded from <http://boufama.myweb.cs.uwindsor.ca/256/assignments/Assign03/m1.pgm>
- Many image reader can be used to view your images (input and output). You can, for example, use the UltraFileOpener that can be downloaded from <http://www.ultrafileopener.com>.
- You should e-mail your source file to [sood111@uwindsor.ca](mailto:sood111@uwindsor.ca)