Final details for Assignment 2

NOTE 1: deadline postponed to Jan, *15th*, 2021

NOTE 2: *BUG* fixed in the `read_and_write_pgm_image.c`

Test files

In the G. drive repo where the lectures' videos are stored you find an additional folder `Materials for Assignment2` (https://drive.google.com/drive/u/0/folders/1iDXlDuOTxzCcaJAPoHIJ0IYV4rMXt8fs) where there are the test files to be used for automatic validation of your work.

- `test_picture.pgm` is the original picture that you have to blur; it is a small one (~20MB) because not all of you may have a broadband connection during the vacations.
- `test_picture.b_0_101x101.pgm` is the blur with an Average Kernel of size 101 (i.e. radius 50; that is the first kernel mentioned in the Assignment presentation).
- `test_picture.b_1_101x101_02.pgm` is the blur with a Weight Kernel of size 101 and central value of 0.2 (that is the second kernel mentioned).

The **naming convention for the output files** that you must respect is:

```
output file name = original_file_name.b_#TYPE_#XSIZEx#YSIZE<_#CENTRALVALUE>.pgm
```

where:

- the `original_file_name` is the file name of the original file without the `.pgm` (i.e. "`test_picture`" for our example)
- `#TYPE` is an integer that corresponds to the kernel type: Average = 0, Weight = 1, Gaussian = 2.
- `#XSIZE` and `#YSIZE` are the *x*- and *y*- sizes of the kernel (in your case you are allowed to use square kernels, so `#XSIZE` = `#YSIZE`; however, you are free to generalize).
- `#CENTRALVALUE` is meaningful only for the Weight Kernel, and so it will be present in the name only for that case. In the test check that you are given the `_02` is the central value 0.2; since we are considering only values in the range `[0:1]` follow the same convention (challenge not required: can you correctly manage to have central value above 1.0, i.e. to enhance the luminosity ?)

In the case (not required) that you want to challenge yourself and avoid the loss of luminosity at the borders, you find the corresponding results in the sub-folde `border_effect_accounted`.

File for scalability study

In order to have your scalability study, use the slightly more larger file (21600x21600 pixels) `earth-large.pgm` that you find already on the Orfeo cluster in my scratch area `/storage/dssc/tornatore/earth-large.pgm` which should be readable by all of you.
For those that do not have access to the Orfeo cluster, the same file is available in the G. drive under

the subfolder `Materials for Assignment2/Image for scalability study` (https://drive.google.com/drive/u/0/folders/1Ea5N1CUbvVNl-8o4fu6tF2VkhF3XHJ_C).

Assess the scalability of your codes using this image and:

- Weight Kernels of size 11, 101, 501
- from 1 to the maximum number of physical cores on a Orfeo node for the omp version.
- using up to the maximum number of nodes that you are allowed to use on Orfeo.

Of course, **in addition** you may want to generate whatever extremely large image that you want (for instance with just white noise) to perform a better scalability study.

Bug in `read_write_pgm_image.c`

Irealized only now that in the provided example file `read_write_pgm_image.c` there was a bug in the `swap_image()` routine:

```
1 for ( int i = 0; i < size; i+= 2 )
```

must be replaced by

```
1 for ( int i = 0; i < size; i++ )
```

I'm sorry for that. Due to this bug, which may have delayed some of you, the deadline is postponed by 1 week.