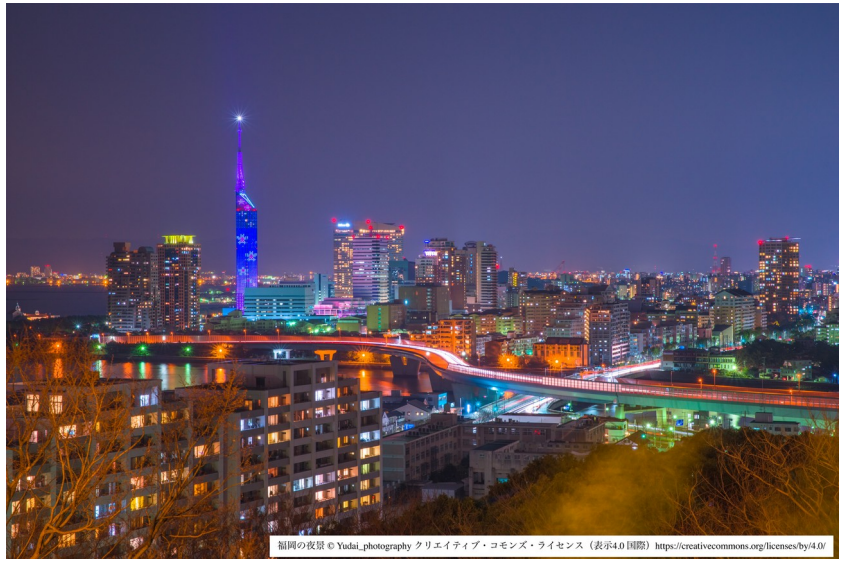
Report2

Thread

What you should do

- Read some colour image jpg files and convert them to grayscale images in parallel (May use thread or fork).



Sample program

- sample.c
  - opens a colour jpg, converts it to grayscale image and same it.
  - the colour image file can be specified as the 1st argument of main() function.

- JpegReadWrite.c
  - includes four functions;
    - (1)reads a jpg file
    - (2)converts to grayscale
    - (3)saves a jpg file
    - (4)releases memory space which is used in these functions.

How to run sample program

1. Launch a terminal
2. % ./sample XX.jpg
   - XX.jpg is a jpg file.
     - sample.c accepts jpg file only.
   - sample file generates XX_gray.jpg.

How to compile sample file

1. Launch a terminal
2. Type *make sample*

   An executable file(main), main.o and JpegReadWrite.o will be created

   1. if you can't *make,* install make (sudo apt install make)
   2. If compile error occurs, install libjpeg (sudo apt install libjpeg-dev)

3. When you type *make allclean*

   main sample sample.o, *~ and *gray* will be removed.

Data and variables

```
typedef struct{
    unsigned char *data;  //Original data of
image
    unsigned int width;   //Width of image
    unsigned int height;  // Height of image
    unsigned int ch;   // Number of channel of
image
} RAWDATA_t;
```

main.c

- Save your program as main.c
- To compile your file, type make all
- To run, type ./main…
  - (example 1) ./make 1.jpg 2.jpg 3.jpg
    - converts each of jpg to grayscale in parallel by calling pthread_create() or fork()
    - generates 1_gray.jpg, 2_gray.jpg and 3_gray.jpg

Reference

- https://daeudaeu.com/programming/c-language/image-data/