HW01

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problem

1. Write a C/C++ program to perform a 3x3 Gaussian blur
2. Convert C/C++ codes into SystemC processes

Solution algorithms

First Gaussian blur kernel shown below:

```
double filter[filterHeight][filterWidth] =
{
   0.077847, 0.123317, 0.077847,
   0.123317, 0.195346, 0.123317,
   0.077847, 0.123317, 0.077847,
};
```

C/C++ codes

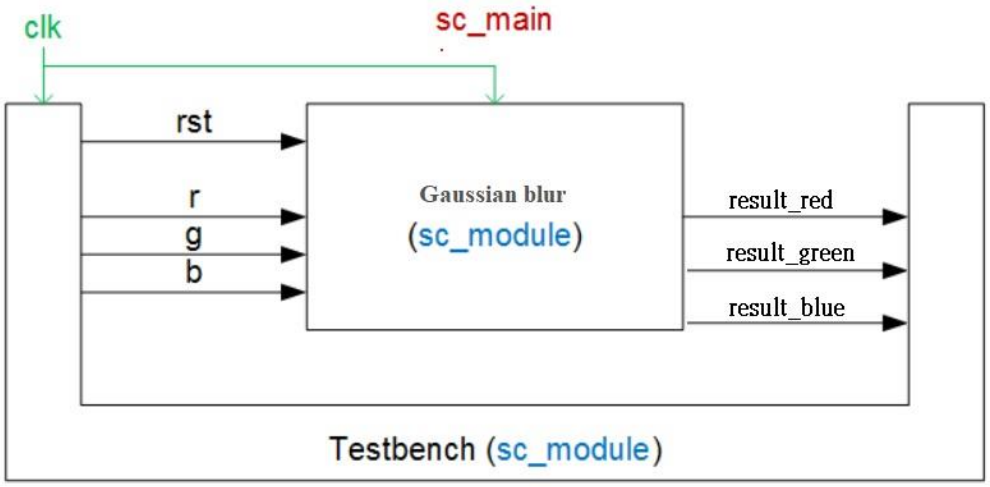
We will do convolution with image to complete process

1. At first we note down image information at header matrix
2. and separate image to R G B, and use above kernel to do convolution with each other
3. in the end create another file to write into result

SystemC processes

A Gaussian blur with FIFO interface

Architecture shown below:



Gaussian_Blur.cpp do filter with sc_module and Testbench.cpp do read/write file with sc_module, after that FIFO will process next operation

Experimental results

Before filter

After filter

Discussions and conclusions

Before this homework I do lab01~02 to learn cmake and the architecture of systemC,and this homework I learn about filter architecture and coding in C

and systemC, I derive much benefit in this class, thanks.