LAB 5

Geometric (data) decomposition: heat diffusion equation

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Par2013

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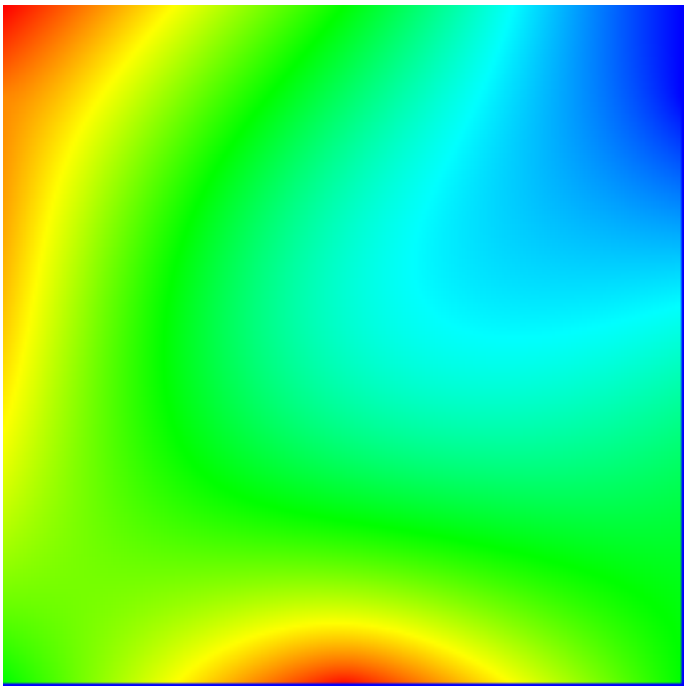
Introduction

Sequential heat diffusion program

First of all, lets execute the sequential versions of heat, one using Jacobi algorithm and an otherone using Gauss-Seidel algorithm.

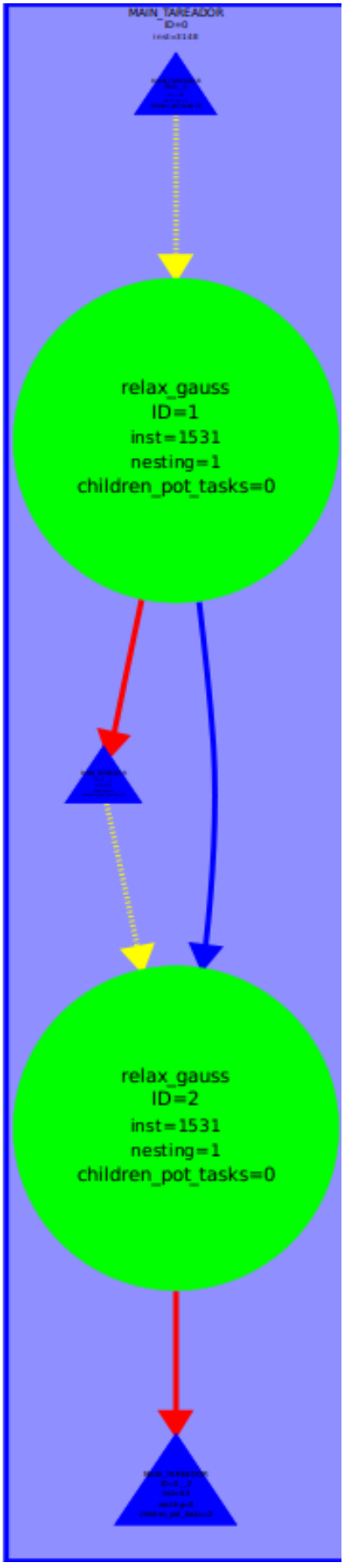
Jacobi solver:

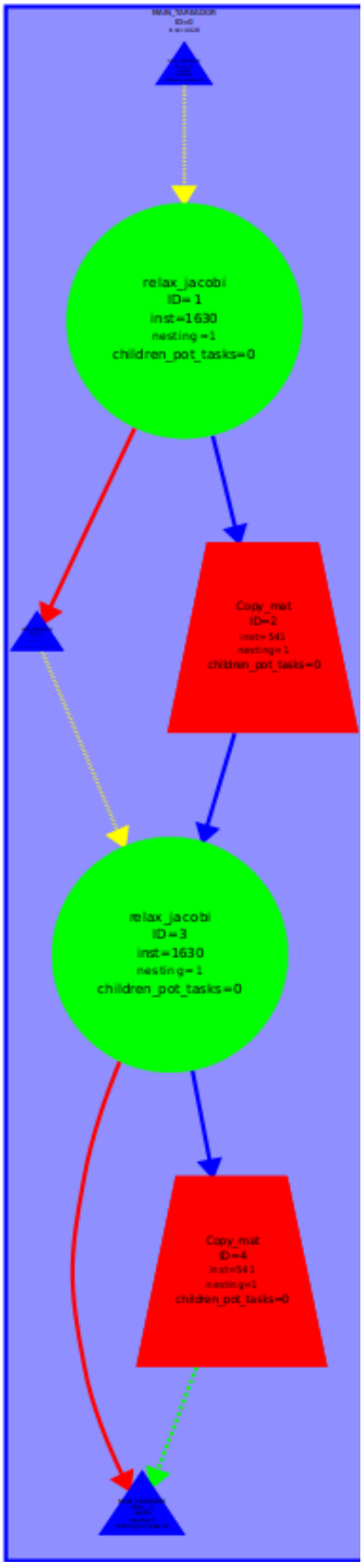
```
Iterations        : 25000
Resolution        : 254
Algorithm         : 0 (Jacobi)
Num. Heat sources : 2
   1: (0.00, 0.00) 1.00 2.50
   2: (0.50, 1.00) 1.00 2.50
Time: 5.365
Flops and Flops per second: (11.182 GFlop => 2084.06 MFlop/s)
Convergence to residual=0.000050: 15756 iterations
```



```
Iterations        : 25000
Resolution        : 254
Algorithm         : 1 (Gauss-Seidel)
Num. Heat sources : 2
   1: (0.00, 0.00) 1.00 2.50
   2: (0.50, 1.00) 1.00 2.50
Time: 6.305
Flops and Flops per second: (8.806 GFlop => 1396.78 MFlop/s)
Convergence to residual=0.000050: 12409 iterations
```

Lets study tareador dependences graphs. We got two diferents gaphs, one with Jacovi solver algorithm and another with Gauss-Seidel algorithm.





Dependnece graph of the program using Gauss-Seidel and Jacovi algorthms.

As we can observe at the graphs