

Array Programming in SaC

1 Setting up your account

Make sure you have the SaC compiler available. If you use the lab machines you may:

```
export SACBASE=/home/ss610
export SAC2CBASE=$SACBASE/sac2c
export PATH=$PATH:$SAC2CBASE/bin
```

Alternatively, you can download a binary distribution from

http://www.sac-home.org/index.php?p=.%2F55_Download%2F21_SaC_1.0_Releases

Unpack the archive and follow the instructions in the README.

2 Getting started

Get the SaC tutorial from

<http://www.sac-home.org/publications/tutorial.pdf>

or from the materials section of the summer school. Write a hello world program, compile and run it.

3 Running multi-core

Get the SaC files from the materials section of the summer school. Look at the file `matmul.sac`.

1. Compile `matmul.sac` and measure its execution time.
2. Recompile `matmul.sac` for multi-threaded execution by using the compiler flags `-mt`. Compare the runtimes with varying cores.

4 First programming steps

1. Compile and run the game-of-life example in `gameSDL.sac`.
2. Modify the function `nextGen` in a way that makes your plane behave like a torus, i.e., the elements on any boundary consider the corresponding elements on the opposite boundary to be their direct neighbours.

5 Mandelbrot fun

Perform the mandelbrot exercises from the tutorial using the mandelbrot files in the materials section as a starting point. The relevant exercises are:

1. Exercise 29: 1.-4.
2. Exercise 30
3. Exercise 31 [Note here that StencilTier3.sac is already complete :-)]