

# First steps on the grid

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This chapter will show you how to port a simple serial application to the Grid. Only very simple use cases (and toy programs!) will be presented here, just to "get your feet wet", but you may already do some very interesting work with just that, and it provides pointers for the more advanced topics of later chapters.

It is assumed here that you have read the [Certificates and proxies]<sup>2</sup> chapter, so that you already know how to create a valid proxy certificate to operate on the Grid. If you do not, please read [Certificates and proxies]<sup>2</sup> and come back here.

Prerequisite

*Throughout this chapter, it is assumed that you have created a proxy and that it is still valid.*

## Running applications on the Grid: a constant pattern

Running applications on the Grid is no different from running batch jobs on a local cluster; if are used to batch jobs, you will find little differences with batch job processing.

To run an application on the Grid, one follows always the same series of steps:

1. *gather application and data input your on the UI*
  1. (optionally) browse for characteristics of available resources
  2. compile source code into executable form
  3. (optionally) load input data into the Grid
2. *run the application on the Grid*
  1. schedule the application for execution on the Grid
  2. monitor execution to know when the application has done
3. download output data

The examples below will follow this pattern.

## A detailed breakthrough

Warning

FIXME

*Write this!*

Draft idea: for each item on the list above, write one paragraph explaining what one does at this stage and why.

## A serial standalone application

Warning

FIXME

*Write this!*

Draft idea: use a program source with hard-coded constants; for instance, compute the zero point of some function in an interval with the bisection method. Both the interval endpoints and the function could be hard-coded in the source.

## **Bundling the executable with data**

Warning

FIXME

*Write this!*

Draft idea: use a program source processing input from a file. For instance, linear least squares fitting: the program reads a file containing (x,y) pairs as input, and outputs the fitting line slope and intercept.

If fitting a curve other than a line, matrix algebra should be used, which could serve to illustrate how to compile and submit programs making use of external function libraries.