Scientific supercomputing

Practical 1 | Introduction to C++

In this practical, we will develop some code in C++ to become familiar with the basic format of C-style code, use of the standard library and how to write functions. Finally we will write and read data to the file system and measure the performance.

1) Write, compile, and run a basic code in C++ to print “hello world” to the screen
2) Use standard library vector containers to declare an array of 100 elements. Write a C++ function, taking a vector as its argument, to print all the elements of the array to the screen. Make sure that you pass the array by reference, and not by value.
3) Use C++ streams to implement a function that writes the elements of a std::vector to a file.
4) Write a function called read(file, vector) that reads in the numbers for the file in part 3 and stores them in a vector. Verify that the numbers written are read correctly.
5) Using the timing class given in the lecture, time the write and read operations and compare the bandwidth to disk (GB/s). Can you explain your observations? What happens as a function of the number of elements in the array?