

STAT40780 Data Programming with C (online)

Lab Sheet 3

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This week's lab requires you to modify the `cube()` function you wrote last week to make it callable from R through the `.C` interface.

1 The `.C` interface

In last week's lab, the first task was to write a function in C++ that would accept as input a variable of type `double`, and return its value cubed. A possible solution is shown below.

`cube()` function

```
1
2 double cube( double x )
3 {
4     return( x * x * x );
5 }
```

Task 1: Modify the `cube()` function above to a form that can be called from R, through the `.C` interface. Save the `cube()` function in a `.cpp` file, (as `cube.cpp`).

Task 2: Compile the `.cpp` function from the command line to produce a `.dll` (on Windows) or `.so` (on MAC).

Task 3: Load the `.dll` or `.so` file into R. Call the `cube()` function from R through the `.C()` interface. Experiment with different input arguments. Before passing an argument to the function, be sure that it is of the correct type! Note: since the `cube` function expects input of type `double`, you should make sure the argument passed from R is a numeric vector of length 1 (corresponding to C++ type `double`).

Task 4: Unload the `cube()` function from R