CS270 - System Software
Lab Assignment #1
Fall 2016

The purpose of this assignment is to give you a better understanding of the run-time environment that a C program operates under.

Write a C program that inputs an array, and sorts it using three different methods - the *bubble sort*, the *insertion sort* and the *quicksort*. Write these three as separate subroutines, and place each of them (as well as main) in their own file. Make the array global (to make it more visible in the ELF file.)

Compile this test program (using Linux) and generate the memory map for each separate function, and for the complete executable. Determine the following:

- The size of each function, in *decimal*.
- The address where each function is loaded into memory.
- The name and location of the *entry point* for the entire program.
- The locations and names of any subroutines from `stdio` or `iostream` that are linked with your file.
- The locations and sizes of the data sections used by your program.

Secondly, recompile your functions using the `-O` ("minus-oh," or optimize) option, then answer the same questions as above.

Because of the extra linking required for C++, it is probably more straight-forward to use C (rather than C++) for this assignment.

For submitting your program, you should create a subdirectory containing your source files and a short report of your findings as outlined above. Create a `tar` file of this subdirectory. Then use `cscheckin` to submit the tar file.

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