CSA Laboratory Exercise FAQ (updated 18 Feb)

What is the easiest way to read a hexadecimal number from a text file in C?

I suggest that you look at the fscanf( ) library function.

How do we know when we have reached the end of the trace file?

I suggest that you use the feof( ) library function or use the count of 'arguments converted' returned by the fscanf( ) library function.

Should we need to read all the addresses from the trace file before we analyse them?

The addresses can be read and the actions of the cache controller simulated one memory access at a time. This avoids you needing to read them all into a data structure first.

Will all the memory trace files produce the same simulation results?

No. Each memory trace file is unique as so the simulation results will not necessarily be the same.

Which development environment should I use for C programming?

You can use any of the development environments installed on the cluster PCs. VSCode was popular in 2021/22.

Which development environment should I use for C programming on my own laptop?

There are several free multi-platform code development environments available. In 2021/22, the most popular development environment was VS Code using the Microsoft C/C++ extension. See https://code.visualstudio.com/docs/languages/cpp

I have found a flow diagram for a direct mapped cache algorithm on the Internet – can I use this to help me write the cache controller simulator?

Yes, but don't forget to reference it in your report. Please note that several of the flow charts for direct mapped cache algorithms to be found on the Internet are incomplete or contain errors. I suggest that you create your own flowchart.

Can I use a segment of C code that I have found on the Internet?

Yes, but you must credit the Internet source in your program and clearly indicate which lines of code originate from that Internet source. Otherwise, it will be treated as Academic Malpractice. You will not receive credit (marks) for code that you have not written.

Can I use GitHub to build my program?

Yes, but the repository must be private to avoiding sharing of code being viewed as Academic Malpractice.

Why do memory trace files not contain the data transferred to / from the CPU of the embedded system?

There is no reason why the data being written or read could not have been captured along with the memory address. It is not necessary to know the data values in order to simulate the operation of the cache memory controller and it would have significantly increased the size of the memory trace files.

Can I store additional performance parameters in the CSV results file?

Yes, but they must follow the required parameters. They will be ignored when assessing the submitted results files.