

## Assignment 6 Suggestions

I recommend that you accomplish assignment 6 in steps. After you implement each step, compare your output with the output generated by my executable. For each step compare your output with the output generated by my executable using the Unix *diff* command to ensure your output exactly matches mine.

- (1) Copy the `~whalley/cda3101exec/trace.config` file to your test directory. Read in this configuration file, calculate the number of index and offset bits for the different portions of the memory hierarchy, and print out the configuration information. Change the information in the configuration file and retest to ensure that the correct configuration information is printed.
- (2) Take as input the `~whalley/cda3101exec/trace.dat` file. Enhance your program to print out the headings, the reference number, the access type, and the address.
- (3) Still take as input the `~whalley/cda3101exec/trace.dat` file. Enhance your program to also print out the tag, index, and offset.
- (4) Use the same configuration and create your own trace data sets, where all references are reads. Implement the simulation of the data cache for a direct-mapped organization (set size 1). Print out the result and number of memory references for each reference. Be sure to test for some conflicts to the same line.
- (5) Enhance the data cache simulation to deal with associativity levels that are greater than 1, where all references are still reads. Be sure to have more references to a single set than the specified set size in the *trace.config* file.
- (6) Implement the simulation of the data cache where some of the references include writes.
- (7) Increment counters during the simulation and print out the summary statistics at the end of the simulation.
- (8) Test for error conditions, such as an invalid reference size or an invalid reference alignment.