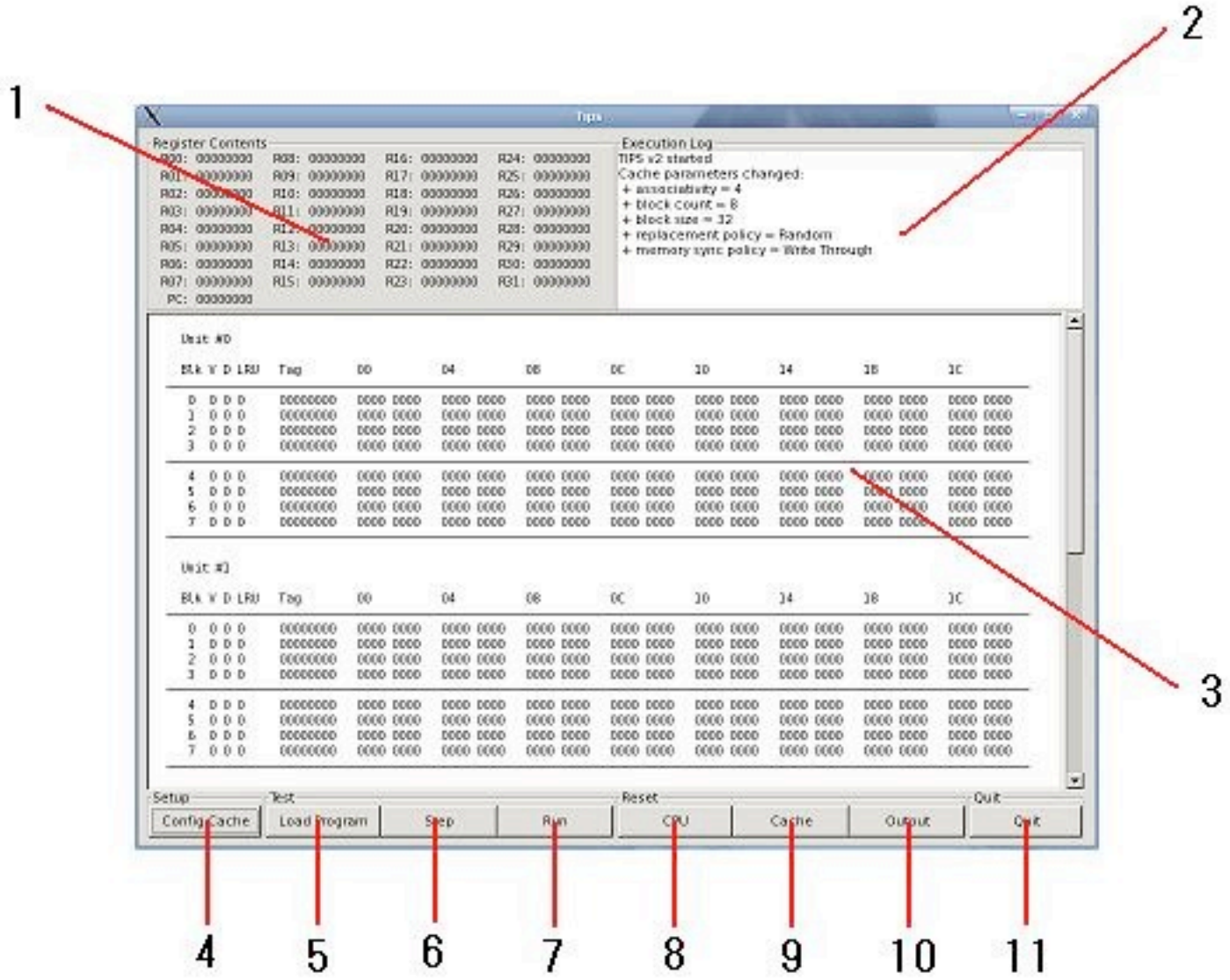
# Cache Logic Implementation

Provided is a MIPS simulator called **TIPS** (Thousands of Instructions Per Second), that will be able to run MIPS instructions. It relies on an implementation of the cache logic behind the cache so that TIPS can make use of the many benefits caching entails.

## GUI Walkthrough

The GUI was designed to be straightforward. There are four main components to the GUI interface: register display, execution log, cache display, and control panel.



A description of each of the GUI widgets are described as follows:

1. Register display -- detailed view of the current state of the registers
2. Execution log -- log of actions by **TIPS**. Messages can be displayed in this box using the `append_log()` function.
3. Cache display -- current snapshot of the state of the cache. The meaning of the column headings on each unit are:
    - Blk - block number
    - V - valid bit
    - D - dirty bit
    - LRU - LRU data
    - Tag - Tag for the block
    - Numbers (00, 04, etc.) - offset in the cache block data
4. Config Cache -- configure the cache parameters
5. Load Program -- loads a dump file for execution
6. Step -- execute one instruction
7. Run -- automate execution
8. CPU -- reset the PC and reinitialize registers
9. Cache -- flush the cache
10. Output -- clear the execution log
11. Quit -- exit **TIPS**

There is also a text-based version of the GUI for those who prefer it. You can run it with the following call:

```
$ ./tips -nogui
```

Type help at the TIPS prompt to get a list of commands usable in this mode.

Included are dump files for testing and their corresponding .s file that the dump files originated from.

Dump files and the .s files that they originated from are contained within the folder marked Testing_Resources.