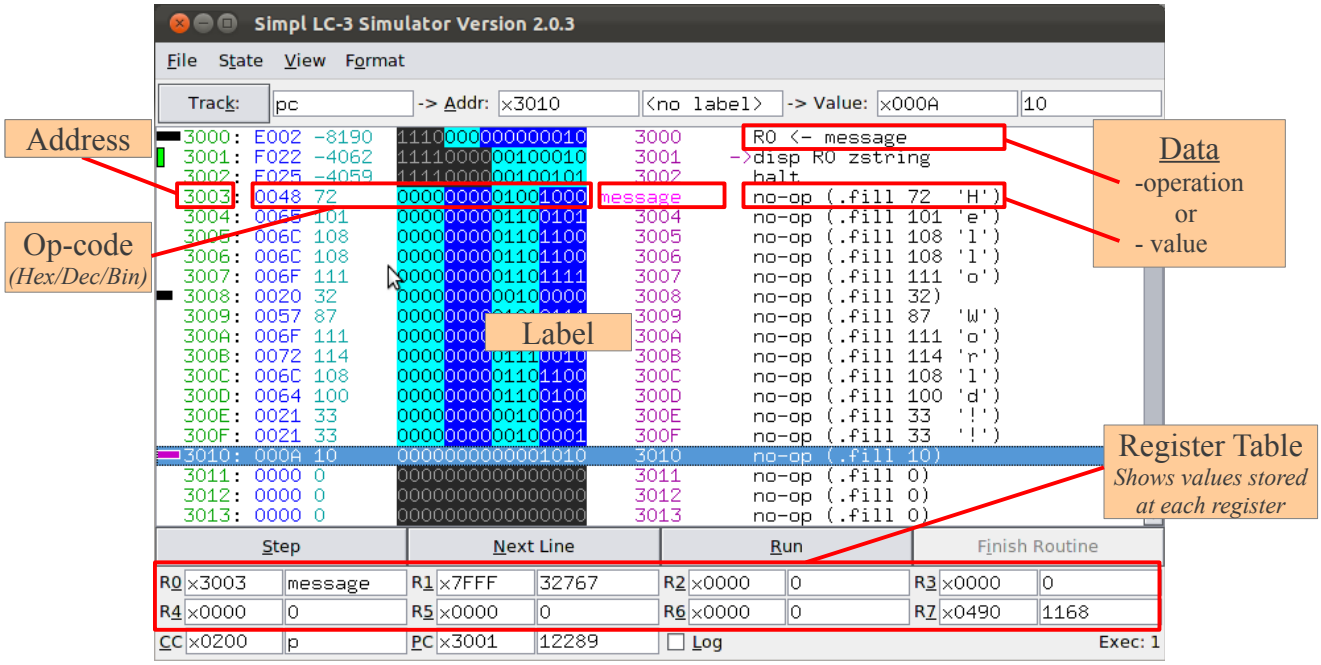
hello.asm

```
            ;; hello world program

            .ORIG x3000

            LEA R0, message      ; store address of start of message in R0
            PUTS                 ; Invokes BIOS routine to output string
            HALT                 ; terminates program execution

            ;; end of code

            ;; data block
message     .STRINGZ   "Hello World!!\n"
                         ; store 'H' in address labelled "message"
                         ; and then one character per memory address

            .END                 ; tells assembler to stop reading & assembling
```

Simpl Window Explained:



Notice:

- every line in .asm file (except pseudo-ops) is stored in memory like above.
- Pseudo-ops are run before the memory table above is filled.
  - See what .STRINGS operator have done.
- Label 'message' refers to the address x3003

Additional Exercises:

Exercise 0.1: Step

- After you run the example code, close simpl window and reopen it by typing: 'simpl hello.asm' again on terminal. (Alternatively, you can press Ctrl+L without closing the window to reload last file)
- Now, instead of clicking on 'Run', click on 'Step' button, this will process only a single line. Now, check the 'new' value of R0 on register table. You can 'Run' again to run the rest of the program.

Exercise 0.2: LEA vs LD

To see the difference between LEA and LD.

- Change LEA to LD in the code and delete PUTS line
- rerun simpl and click 'Step' to see the 'new' value of R0 on Registry Table.
  - what value does it store? is it different from before?
  - Where does that value come from (check the data column and find the value)?