AVR Simulator

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Overview

The AVR Simulator is designed to simulate the minimal number of instructions that is required to program the MeggyJr RGB device. The simulator can either run in a batch mode, where the assembly program will run to completion or till a system imposed hop count occurs, or in a gui mode where there is visualization for the stack, heap, registers and program space (there is a planned update to include a visualization of the actual device with button presses). The simulator is entirely written in Java and uses several open source api's. The simulator is distributed as an executable jar and does not require any other files/libraries in order to run.

Using the Simulator

In order to use the simulator you must invoke the java jvm with the jar option:
   java -jar MJSIM.jar
   This will invoke the java jvm and execute the simulator in gui mode. The default behavior is to load the gui, and then a user can open an assembly file within the application, and then step through, or run, the assembly program. The default behavior can be modified with different command line options. The most important of these is the batch mode option and the file option. To invoke the simulator in batch mode add the -b option after MJSIM.jar:
   java -jar MJSIM.jar -b
   This command will invoke the simulator in batch mode. This however will not run. When executing the simulator in batch mode a file is required as well.
   java -jar MJSIM.jar -b -f assem.s
   This command will execute the simulator in batch mode and will load and run the program in assem.s. There are some other command line options that can be used to modify the behavior of the simulator. They can all be found my invoking the simulator with the -h option.
   Some of the additional options include optional debugging output. This output is written to the console as well as an output file named, output.log. This file can be used for additional debugging of an assembly program, but it is really meant for debugging the simulator. If there is ever an error in the simulator this output can be invaluable in determining what went wrong. If such an event occurs email moorer@cs.colostate.edu with the log file and assembly file and a description of what you did to encounter the error and I will attempt to reproduce it and then correct the error. If there are ever any other questions do not hesitate to e-mail me.

Supported Instructions

The following avr instructions are supported in the simulator. If you want additional information on any of these instructions please refer to the avr instruction set writeup - http://www.atmel.com/dyn/resources/prod_documents/doc0856.pdf.

- adc
- add
- and
- breq
- brlo
- brlt
- call
- cp
- eor
- in
- jmp
- ldi
- ld
- lds
- mov
- muls
- neg
- or
- pop
- push
- ret
- sbc
- st
- sub
- tst

Referenced APIs

- Apache Commons CLI
- Apache log4j
- Apache Pivot
- OneJar