Aaron Vaughan

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PRELAB 3

1. What are some differences between the debugging mode and run mode of the AVR simulator? What do you think are some benefits of each mode?

a) Debugging mode allows you to set stop points and check to see what the variable values are at any given instance.

Run mode only allows you to run the entire program and see if it will compile.

2. What are breakpoints, and why are they useful when you are simulating your code?

a) Breakpoints are stoppers that halt the code during execution so that the programmer may observe values of relevant variables. This will allow for some ability to sanity check the output and operation of smaller chunks of code.

3. Explain what the I/O View and Processor windows are used for. Can you provide input to the simulation via these windows?

Page 9 of the AVR starterguide state: "The IO View tab contains all the configuration registers associated with the simulated chip. By default, this window should automatically be displayed when simulation is run in lineby-line mode." Inputs can be provided in the I/O view window to simulate inputs.

Also the AVR starterguide states: "The Processor tab displays the current contents of the Program Counter, Stack Pointer, the 16-bit pointer registers X, Y, and Z, and the Status Register."

4. The ATmega128 microcontroller features three different types of memory: data memory, program memory, and EEPROM. Which of these memory types can you access by using the Memory window of the simulator?

(a) Data memory only

(b) Program memory only

(c) Data and program memory

(d) EEPROM only

(e) All three types

The answer is (e). All three types of memory are displayed in the bottom right of the simulation in a memory window.