ECE 375 PRELAB 2

Lab Time: Tuesday 4-6

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QUESTIONS

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?

   The two ways to simulate the chip are the debugging mode and run mode. Debugging mode allows line-by-line simulation, allowing the programmer to verify data in registers and memory. Data can be altered and changed inside the microcontroller. This is helpful, as it allows the user to easily take control of their simulation and find any potential errors. Run mode allows the user to continuously run their program, providing output. Run mode is helpful for testing to see if your simulator provides expected output.

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

   Breakpoints are to be used to halt the simulation at areas that may be buggy or contain an error. They are very useful as they allow the user to intentionally stop the program as an attempt to find or detect where an error may lie within the simulation.

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

The I/O View tab contains all the configuration registers associated with the simulated chip. This includes port registers and their subcomponents, such as the data register, data direction register, and port input pins. You can also view information like the current bit values and addresses. The processor window displays the current contents of the Program Counter, Stack Pointer, the 16-bit pointer registers X,Y, and Z, and the Status Register. It also shows the current values contained in the general purpose registers. In the I/O View Tab, you can simulate input on the ports.

4. The ATmega 128 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

You may access all three types of memory.

REFERENCE

https://web.engr.oregonstate.edu/~jangha/ece375/pdf/starterguide.pdf