

EET364 Microcontroller Systems

OIT Portland West, Winter 2010

Homework Assignment #6 Due February 15

Homework #6 is actually the first homework assignment that isn't a lab. So you don't need your Dragon12 board for this one!

In this homework assignment which concerns our MC9S12DG256 microcontroller, a *physical* address is 20 bits, providing a 1 megabyte address space. The *CPU* address is the 16-bit address space that we have access to in our HCS12 instruction set (with the exception of the *call* and *rtc* instructions)

1. What range of values in PPAGE will access the flash ROM?
2. From what two CPU addresses is it possible to see the interrupt vector table?
3. If PPAGE=\$3D and the CPU reads location \$8100, what physical address is accessed?
4. How would you access physical memory location \$C1234? Provide the instruction sequence that will load the contents of memory location \$C1234 into accumulator A.
5. How would you call a subroutine at physical memory location \$C1234? Provide the instruction or instruction sequence that will do this.
6. When implementing buffering for an interrupt driven input device, what should you do if the buffer is full and a new byte of data arrives?
7. When implementing buffering for an interrupt driven output device, what should you do if the buffer is full and the function is called to put another byte of data in the buffer?
8. When implementing buffering for an interrupt driven output device, what should you do if the buffer is empty when the interrupt occurs because the transmitter data buffer (not your circular buffer) is also empty?
9. Using the implementation method shown in class and in the text, why does an N byte buffer only hold N-1 bytes of data?
10. Will doubling the size of the buffer allow processing data at twice the rate?