

Lab Comments:

We have an external memory that is 32 kbytes and is mapped to 8000-FFFF.

We don't have exactly all these addresses because the bootstrap is in the BF page. Don't use it. It is mapped to ROM / interrupt vectors (for later).

Design all software with a nice buffer: avoid BB00 – BFFF

There are things that are specific to the Fox11 that aren't true with this Handy board.

The Fox11 had a memory mapped port that it called PORTB (0x1404). The Handy Board does not have this port, but has a motor command register mapped at 0x7000. If you write 0xf_, to 7000, then the green LEDs respond. Reengineering should be done so that processes that write to port B write to 7000 instead. Consider ORing the value to be written with F in the upper nibble.

Interrupt vectors in BOOTSTRAP mode are the 00 page vectors. Remember these are 3 bytes, just like in CS-384.

The LCD is not wired in the same way – take out all LCD calls at this time. Comment them out.

Those with startup-sounds in their OS: move to pin PA3. Does PA3 have a data direction bit? If so, you'll have to set that to the appropriate value before using PA3 as an output.

Review from Last Time

MODB controls special vs. normal
MODA controls single vs. expanded

Pull-up resistors are generally 4.7k – 100k ohm. A good rule of thumb is 4.7k or 10k. There is no right or wrong answer. Dr. Meier usually uses 4.7k.

The mode of the chip is sampled and stored in the HPRIO – the highest priority interrupt – when the monitor is done and starts to run that little OS, the board is switched back into special test mode so that the 32kbyte chip of memory can be used.

Our Memory Chip

32kx8 62256

As a byte-sized device, we would expect there to be 8 data pins.

Memory is always stated as a power of 2. Period.
Storage, like hard drive space, and frequency, are always stated as powers of 10.

2^{10} kilo

2^{20} mega
 2^{30} giga
 2^{40} tera

$2^5 \cdot 2^{10} = 2^{15}$ Therefore, there are 15 address lines.