

Memory Mapping

Steps

It is always important to first ask “can I solve this problem?” Ex: does a 1kb boundary exist after 0x0200 and before 0x0FFF?

1. Determine the boundaries for that size memory, starting with 0.
2. Create chip select from the upper, constant map bits. CS is the AND of these bits.

Sample quiz question:

Choose the number that is not a on an X-kb boundary, without a calculator.

ROM Memories

ROM memory serves a large role in embedded systems. They can hold programs and constant data, like lookup tables that do not need to be changed by the user. Ex: car engine timing tables.

They have chip select and output enable pins, but no direction pin, as they cannot be written.

| CS | RW | E | OE | |
|----|----|---|----|-----------------------------|
| 1 | - | - | 1 | Different Chip |
| 0 | 0 | 0 | 1 | Write! Not allowed to ROM |
| 0 | 0 | 1 | 1 | Write! Not allowed to ROM |
| 0 | 1 | 0 | 1 | Address phase to the memory |
| 0 | 1 | 1 | 0 | Data phase to this memory |

Quiz tomorrow will include chip select logic.