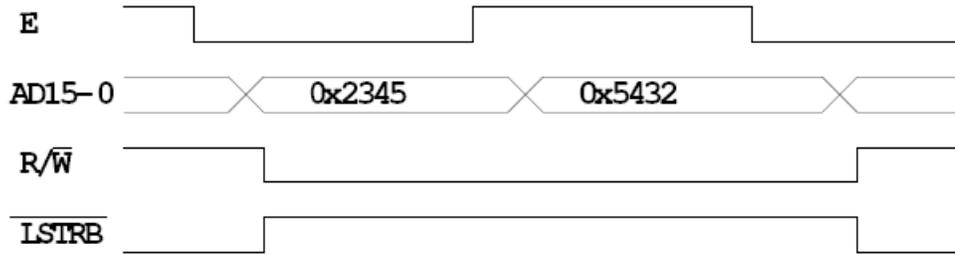
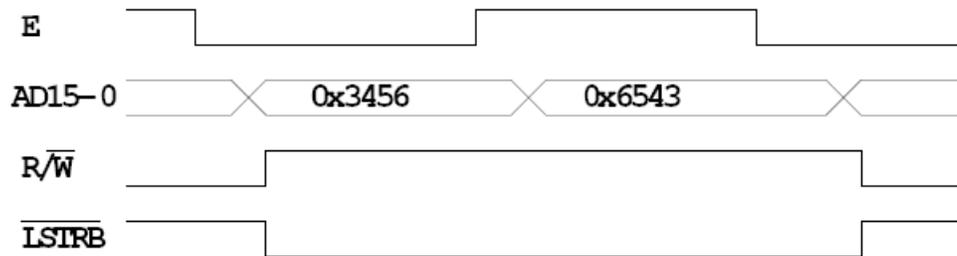


(20) 1. The figures below show some things which might be on the HCS12 bus in normal expanded wide mode. For each figure, indicate if that combination of signals can occur. If so, explain what the memory cycle does — read or write, 8-bit or 16-bit access, what data is read from or written to, what memory address(es) are accessed. If the combination of signals cannot occur, explain why not.

(a)



(b)



(20) 2. The following table shows some values in the HC12 memory:

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
4080	01	3F	C6	80	5B	86	C6	03	5B	8D	C6	FF	5B	02	4C	80

Show what will be on the address/data bus and the control lines when the HC12 does the following:

(a) Writes a 0xAA to address 0x4080.

(b) Writes a 0x55AA to the two bytes at addresses 0x4082 and 0x4083.

(20) 3. Immediately upon coming out of reset, an HCS12 is operating in Normal Expanded Wide mode. How did the HCS12 know it should run in this mode — i.e. what pins did it check, and what was the state of those pins?

(20) 4. Immediately upon coming out of reset, an HCS12 is operating in Normal Single Chip mode. How did the HCS12 know it should run in this mode — i.e. what pins did it check, and what was the state of those pins?

(20) 5. Immediately upon coming out of reset, an HCS12 is operating in Normal Single Chip mode. How can you switch the chip into Normal Expanded Wide mode? Write some code to do this.