CS120B – Homework #3

Given November 28, 2001. Due December 6, 2001

1. Connect an external 4K EPROM to the 8051 so that the lowest address for the EPROM is at \$6000 hex. All the addresses must be unique. Use only one each of the following ICs: 8051 cpu, 8282 latch, 2732 EPROM, 74LS138 decoder.

Answer

The 2732 requires 12 address lines (A0 to A11) and they are decoded internally. To have unique addresses, all address lines must be used. Therefore, we need the 74LS138 to decode the remaining 4 address lines (A12 to A15). There are several ways to do connect A12-A15 to the 138 IC. Below are two ways:

\$6000 hex is

| A15 | A14 | A13 | A12 | A11 | A10 | A9 | A8 | A7 | A6 | A5 | A4 | A3 | A2 | A1 | A0 |
|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|
| 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Connect A12 to A, A13 to B and A14 to C will assert Y6' for the address \$6000 as shown below



Another way is to connect A13 to A, A14 to B, and A15 to C. This will assert Y3' for the address \$6000. With this connection, you need to connect Y3' to CE instead of connecting Y6'.