

## Lab 3 Instruction Decoder

Instruction Decoder is an element that controls the other components according opcode.

### Test Instructions :

10000000 00000000 00000000 00000000 (LOAD M0 R0)  
 01000000 00000000 00000001 00000000 (STORE M0 R1)  
 00100000 00000010 00000011 00000001 (ADD R2 R3 R1)  
 00001000 00000001 00000010 00000000 (SL R1 2 R0)

### Requirements :

- Please according the Textbook Section 4-4 and Figure 4.22(Fourth Edition) ,or P.311 FIGURE 5.21 and P.312 FIGURE 5.22 (Third Edition) to fill the following table, and attach to your report.

I/O	Signals	Load	Store	ADD	SL
Input	Op7				
	Op6				
	Op5				
	Op4				
	Op3				
	Op2				
	Op1				
	Op0				
Output	RegDst				
	ALUSrc				
	MemtoReg				
	RegWrite				
	MemRead				
	MemWrite				
	ALUOp1				
	ALUOp0				

Notes:

- Input signals are according to previous LAB's instruction format.
  - RegDst, ALUSrc, RegWrite, MemRead and MemWrite signals based on the textbook's figure.  
ALUOp1 and ALUOp0 signals are correspondent to LAB2's spec.
- Environment: Xilinx v13.2, and one person per group.
  - You need to run the test instructions above and snapshot the waveform.
  - Require contents of documentation: **waveform**, **codes** (including comments), and your report.
  - ALU's Input / Output pin names must be the same in I/O pins.

6. Deadline : 17/11/2011 (Thu.)
7. If you have any question, please contact with TAs:  
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### Submission details :

1. Please zip all of the requested files (including codes, reports...) into one file (.rar, .zip), and filename format is (your student ID)\_(index of this lab)\_v(your homework version). Ex: 9817000\_2\_v1.zip. **Note that do not paste your codes on your documentation. Please submit the original .v files.**
2. Please submit your homework before due time (23:59:59 on due day). The submission time is based on e3 platform.
3. If any violation of the rules above is found, -5 grades per violation.

### Late submission :

1. Your grade will be 10% discount for late submission for 1~2 days, 15% discount for 3~4 days, 20% discount for 5~6 days and 40% discount for more than 6 days.
2. **Notice: No cheating! Or your grade will be 0!**

