



## Part 2 - Coding your Register Transfer Sequence

1. Use the Register Transfer Notation discussed in the text to specify the following sequence of data transfers for the datapath you built in the previous part of this lab. (See the right side of the table at the end of Section 5.7 as an example).

1) Transfer Register A to the Acc register

Give A reg value, Rmux = 00, Acc = 1, Clock

2) Add the B register to the Acc register and store the results in the Acc

Give A reg value, Rmux = 01, Acc = 1, Clock

3) Subtract the C register from the Acc register and store the results in the Acc.

Give C reg value, Rmux = 10, Acc = 1, Sub = 1, Clock

4) Add the D register to the Acc register and store the results in the Acc

Give D reg value, Rmux = 11, Acc = 1, Clock

2. Translate each of the above RT actions into the appropriate control code for each action. (See the left side of the table at the end of Section 5.7 as an example).

Control Code								Action
A	B	C	D	Rmux	Dmux	Acc	Sub	
				00				
				01				
				10				
				11				

3. Initialize registers A,B,C,D to the values 0x13,0x5B,0x3A,0xF0 respectively. You'll initialize these registers only once at the beginning of the sequence of actions. Translate the initial value of each of the registers into decimal.

A	B	C	D
0x13	0x5B	0x3A	0xF0
00010011	01011011	00111010	11110000
19	91	58	240

4. Set the control codes in your circuit to the control code given in the time row 1 of the table, the control code for the first RT action. Single step your circuit through one complete clock cycle. That will be two clicks on the Clk button -- one click for the rising edge of the cycle and one click for the falling edge of the cycle. Record the register values in your Execution Trace table for the time row 1. You have just completed the first step of execution trace.