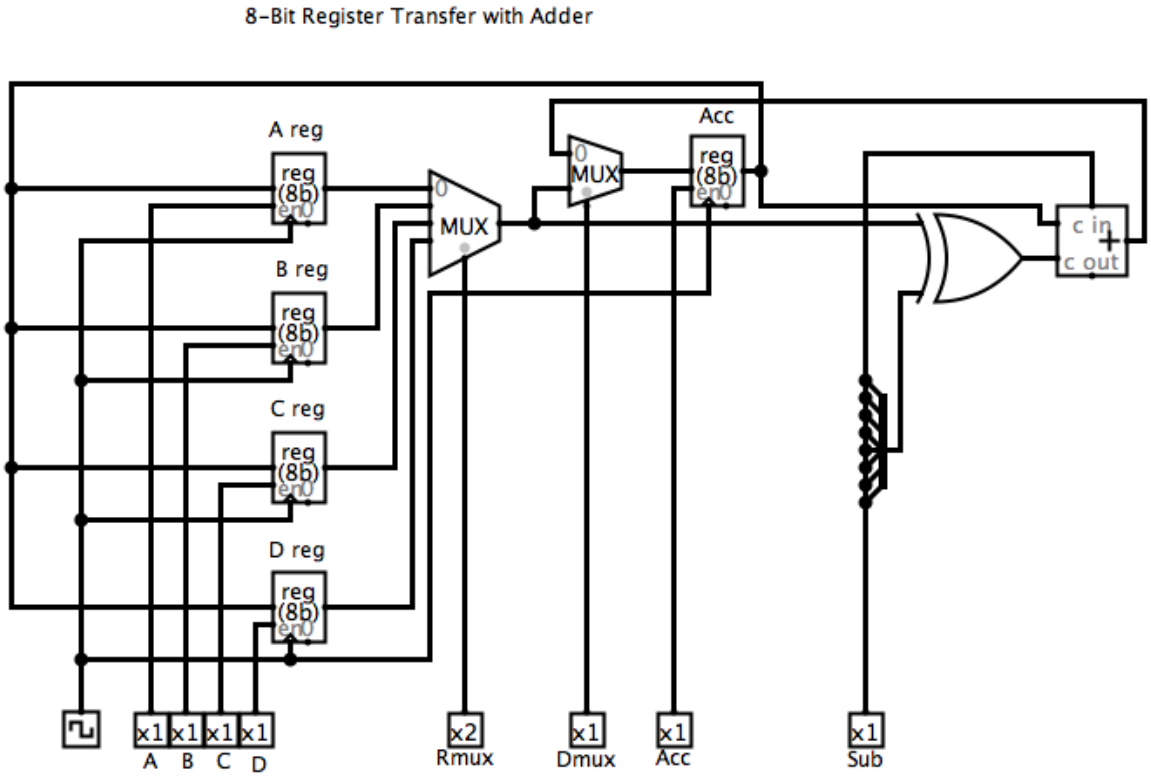
LAB 5 – Eli Sobylak

PART I:



Control Code

ABCD	Rmux	Dmux	Acc	Sub
4-bits	2-bits	1-bit	1-bit	1-bit

Total = 9 control bits

PART II:

1. A_{reg} ➔Acc
2. Add B_{reg} to Acc ➔Mem(Acc)
3. Subtract C from Acc ➔ Mem(Acc)
4. Add D_{reg} to Acc ➔Mem(Acc)

Control codes:

1. ABCD	Rmux	Dmux	Acc	Sub
0000	00	1	1	0

2. ABCD	Rmux	Dmux	Acc	Sub
0000	01	0	1	0

3. ABCD	Rmux	Dmux	Acc	Sub
0000	10	0	1	1

4. ABCD	Rmux	Dmux	Acc	Sub
0000	11	0	1	0

0x13 to decimal: 19

0x5b to decimal: 91

0x3a to decimal: 58

0xf0 to decimal: -16

The end value in Acc would be 0x24 which in decimal is 36.

An overflow did not occur during this process

The data flow is as follows;

1. Take value A_{reg} and move to Acc
2. Add value in B_{reg} to Acc and save in Acc
3. Subtract C_{reg} from Acc and store in Acc
4. Add D_{reg} to Acc and store in Acc
5. Done

PART III:

Machine State Trace:

TIME	A-B-C-D	Rmux	Dmux	Acc	Sub	Action	Acc Value
0	13-5b-3a-f0	00	0	0	0	-	00
1	13-5b-3a-f0	00	1	1	0	A_{reg} ➔Acc	13
2	13-5b-3a-f0	01	0	1	0	Add B_{reg} to Acc ➔Mem(Acc)	6e
3	13-5b-3a-f0	10	0	1	1	Subtract C from Acc ➔ Mem(Acc)	34
4	13-5b-3a-f0	11	0	1	0	Add D_{reg} to Acc ➔Mem(Acc)	24