

Lab 7

LC-3 Instruction Set Architecture

Machine  $\rightarrow$  Assembly  $\rightarrow$  High Language

X = -  
y = +  
X = +  
y = -  
Overflow  
3/24/17

Addr

Assembler

Action / Comment

|       |       |            |  |
|-------|-------|------------|--|
| x7FFF | LD    | R0, 9      | R0 $\leftarrow$ M[x8009] = 12          |
| x8000 | LD    | R1, 9      | R1 $\leftarrow$ M[x8004] = 12          |
| x8001 | LDR   | R2, R1, 0  | R2 $\leftarrow$ M[R1-0] = 12           |
| x8002 | LRA   | R4, 8      | R4 $\leftarrow$ x800B                  |
| x8003 | STR   | R2, R4, 0  | M[R4+0] $\leftarrow$ R2 = 12           |
| x8004 | AND   | R3, R3, 0  | R3 $\leftarrow$ 0                      |
| x8005 | STR   | R3, R4, 1  | M[R4+1] $\leftarrow$ R3 = 0            |
| x8006 | ADD   | R5, R0, R0 | R5 $\leftarrow$ R0 + R0 = 12 + 12 = 24 |
| x8007 | STI   | R5, 2      | mem[mem[2]] $\leftarrow$ R5 = 24       |
| x8008 | TRAP  | x25 = Halt |  |
| x8009 | .FILL | 10         |  |
| x800A | .FILL | x800D      |  |
| x800B | .FILL | 0          | mem[x800B] = 0                         |
| x800C | .FILL | -1         | mem[x800C] = -1                        |
| x800D | .FILL | 18         | mem[x800D] = 18                        |
| x800E | .FILL | 0          |  |