Homework 5

`5.15`

```
1110 001 000100000  R1<-0x3121
0010 010 000100000  R2<-Mem[0x3122]=0x4566
1010 011 000100001  R3<Mem[Mem[0x3123]]=0xabcd
0110 100 010 000001 R4<-Mem[R2+0x1]=0xabcd
```

`5.16`

(a). PC-relative mode: bit[8:0] can load value from an address that is less than $\pm 2^8$ locations away.

(b). Indirect mode: the address of the operand can be anywhere in the computer's memory.

(c). Base+offset mode: load an array of sequential addresses.

`5.37`

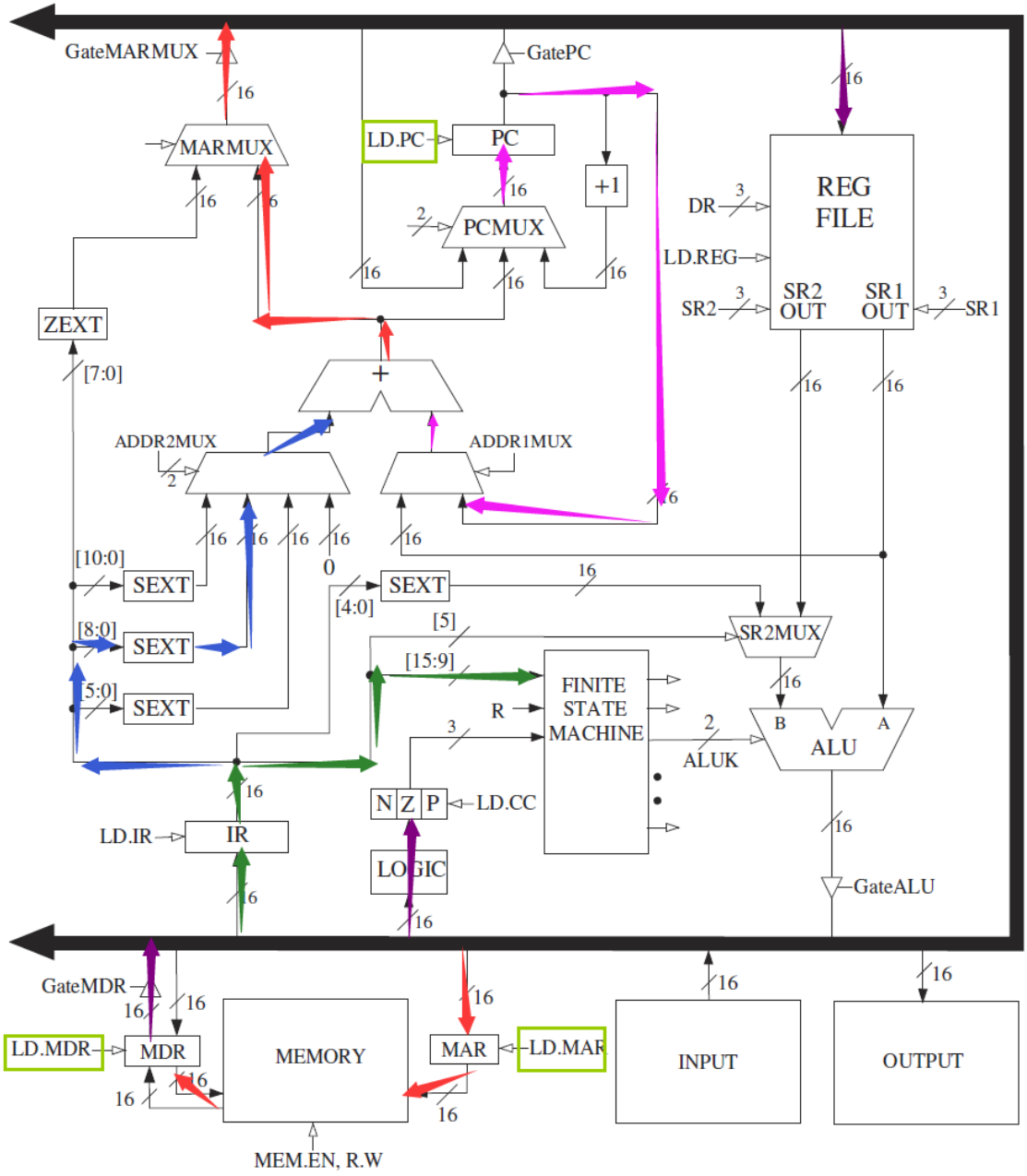

Figure 5.18 The data path of the LC-3.

5.39

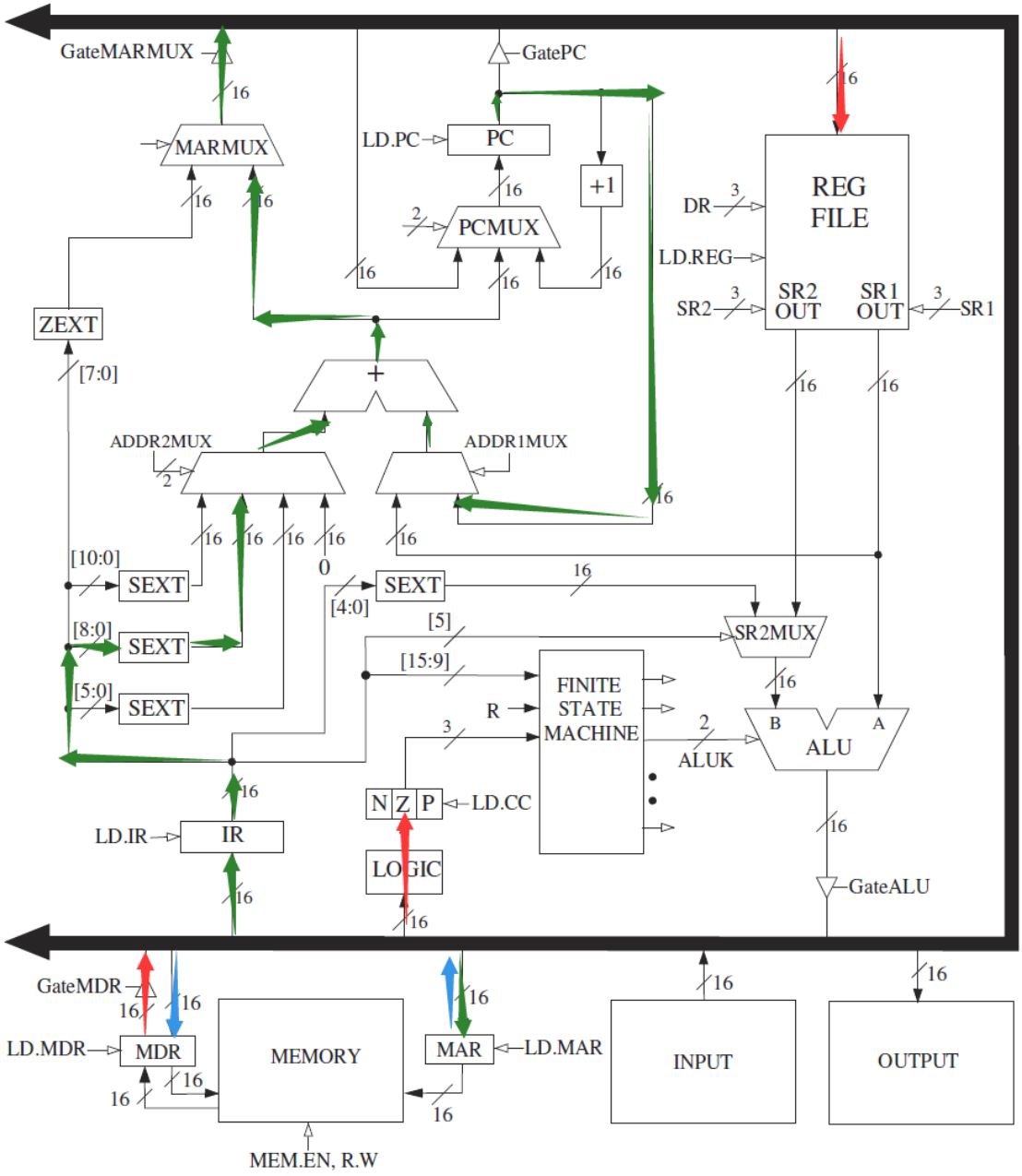

Figure 5.18 The data path of the LC-3.

`5.50` MAR

`6.9`

```
0011 0000 0000 0000     ;start at x3000
0010 000 0 0000 0101    ;LD z
0010 001 0 0000 0101    ;LD #100
1111 0000 0010 0001     ;trap 21
0001 001 001 1 11111    r1=r1-1
0000 001 1 1111 1101    BRp
1111 0000 0010 0101     ;HALT
0000 0000 0101 1010     ;.fill z
0000 0000 0110 0100     ;.fill #100
```

`6.10`

```
;if r2 is odd,then r1 is 1,else r1 is 0
0011 0000 0000 0000     ;start at x3000
0101 001 001 1 00000    ;AND r1,r1,#0
0101 000 010 1 00001    ;AND r0,r2,#1
0000 010 000000001      ;BRz
0001 001 001 1 00001    ;ADD r1,r1,#1
1111 0000 0010 0101     ;HALT(trap25)
```