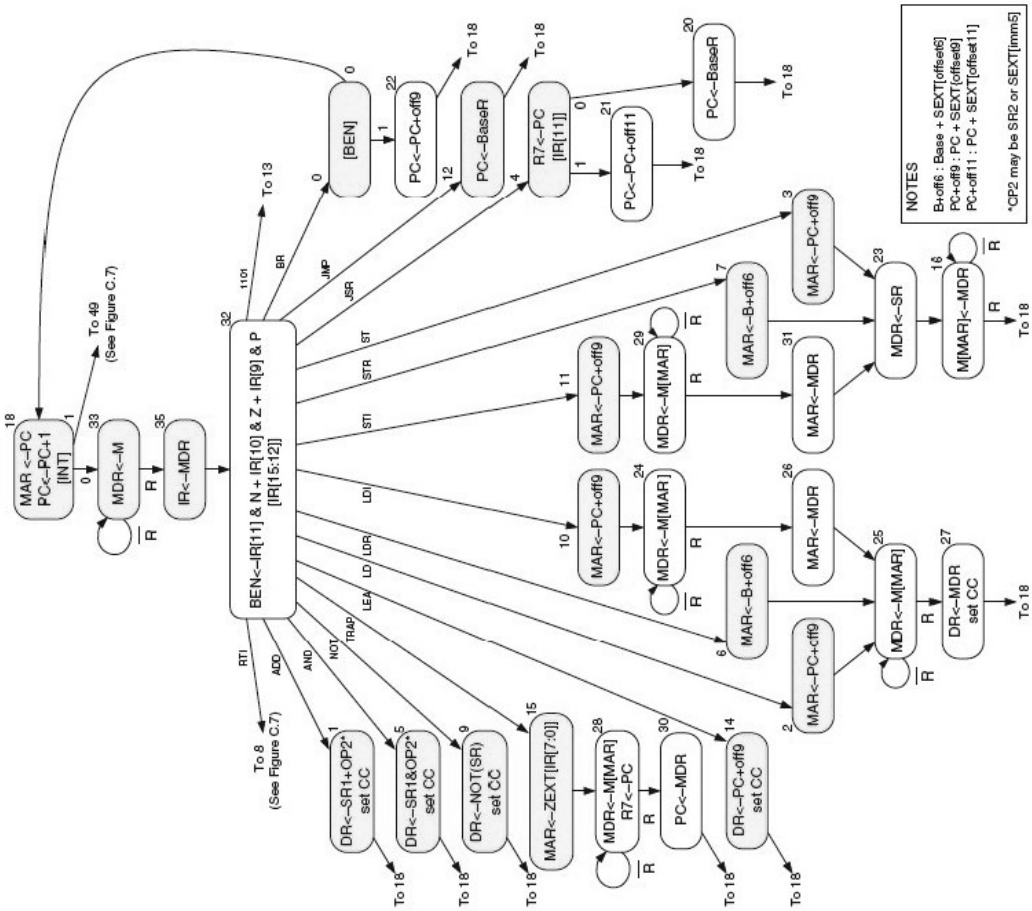
LC-3 FSM



LC-3 Instructions

NOTES: RTL corresponds to execution (after fetch!); JSRR not shown

ADD	0001	DR	SR1	0	00	SR2	ADD DR, SR1, SR2
	DR ← SR1 + SR2, Setcc						
ADD	0001	DR	SR1	1	imm5		ADD DR, SR1, *imm5*
	DR ← SR1 + SEXT(imm5), Setcc						
AND	0101	DR	SR1	0	00	SR2	AND DR, SR1, SR2
	DR ← SR1 AND SR2, Setcc						
AND	0101	DR	SR1	1	imm5		AND DR, SR1, *imm5*
	DR ← SR1 AND SEXT(imm5), Setcc						
BR	0000	n	z	p	PCoffset9		BR{nzp} *PCoffset9*
	((n AND N) OR (z AND Z) OR (p AND P)): PC ← PC + SEXT(PCoffset9)						
JMP	1100	000	BaseR	000000			JMP BaseR
	PC ← BaseR						
JSR	0100	1	PCoffset11				JSR *PCoffset11*
	R7 ← PC, PC ← PC + SEXT(PCoffset11)						
TRAP	1111	0000	trapvect8				TRAP *trapvect8*
	R7 ← PC, PC ← M[ZEXT(trapvect8)]						

LD	0010	DR	PCoffset9		LD DR, *PCoffset9*
	DR ← M[PC + SEXT(PCoffset9)], Setcc				
LDI	1010	DR	PCoffset9		LDI DR, *PCoffset9*
	DR ← M[M[PC + SEXT(PCoffset9)]], Setcc				
LDR	0110	DR	BaseR	offset6	LDR DR, BaseR, *offset6*
	DR ← M[BaseR + SEXT(offset6)], Setcc				
LEA	1110	DR	PCoffset9		LEA DR, *PCoffset9*
	DR ← PC + SEXT(PCoffset9), Setcc				
NOT	1001	DR	SR	111111	NOT DR, SR
	DR ← NOT SR, Setcc				
ST	0011	SR	PCoffset9		ST SR, *PCoffset9*
	M[PC + SEXT(PCoffset9)] ← SR				
STI	1011	SR	PCoffset9		STI SR, *PCoffset9*
	M[M[PC + SEXT(PCoffset9)]] ← SR				
STR	0111	SR	BaseR	offset6	STR SR, BaseR, *offset6*
	M[BaseR + SEXT(offset6)] ← SR				