

Chapter 9

11. Only changes shown Note: Both LRU and FIFO replacement policies replace the same values for this program.

Instruction	Address	Tag1	Data1	Valid1	Dirty1	Tag2	Data2	Valid2	Dirty2	Comments
LDAC 4234	0	000	01/34/42/0B	1	0					
	1	423	55/29/--/--	1	0					
CLAC	No change									Cache hit
JMPZ 000A	1	423	55/29/--/--	1	0	000	06/0A/00/05	1	0	
INAC	2	000	00/00/0A/03	1	0					
MVAC	No change									Cache hit
ADD	3	000	08/02/27/09	1	0					
STAC 0927		423	55/29/--/--	1	0		--/--/--/02			Hit (instr)
	1					092		1	1	Replace
JUMP 0000	0	000	01/34/42/0B	1	0	001	05/00/00/--	1	0	

21. $h = (T_M - T_P)/(T_C - T_P) = (40 \text{ ns} - 55 \text{ ns}) / (10 \text{ ns} - 55 \text{ ns}) = 0.333 \text{ ns}$

23. (Only changes shown)

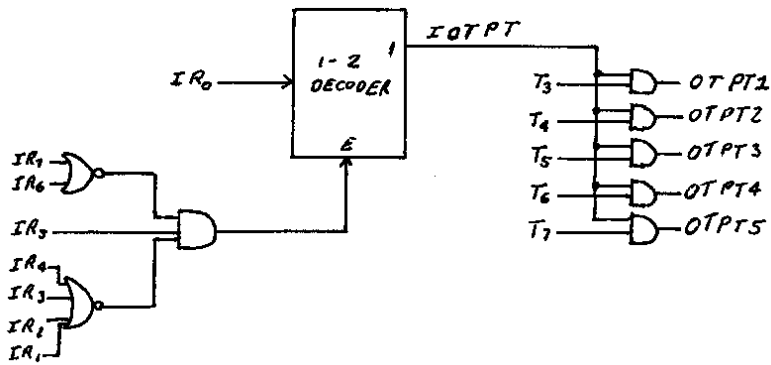
	Address	Frame	Valid	Comments
LDAC 4234	0	0	1	
	4	1	1	
JUMP 1000				No changes
STAC 4235	1	2	1	4235 already in memory
JUMP 2000				No changes
JUMP 0010	2	3	1	
JUMP 3000				No changes
JUMP 0100	3	0	1	
	0	0	0	
JUMP 1100	0	1	0	

24.

LDAC 4234	STAC 4235	JUMP 0010	JUMP 3000	JUMP 0100	JUMP 1100
JUMP 1000	JUMP 2000				
P F V	P F V	P F V	P F V	P F V	P F V
0 0 1	1 2 1	1 2 1	0 0 1	3 0 1	3 0 1
4 1 1	4 1 1	2 3 1	2 3 1	2 3 1	0 1 1

Chapter 10

6.

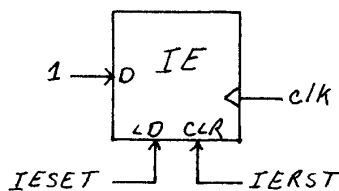


- ARINC = (old value of ARINC) \vee OTPT1
- MEMBUS = (old value of MEMBUS) \vee OTPT1 \vee OTPT2
- BUSMEM = (old value of BUSMEM) \vee OTPT5
- PCINC = (old value of PCINC) \vee OTPT1 \vee OTPT2
- TRLOAD = (old value of TRLOAD) \vee OTPT2
- ARLOAD = (old value of ARLOAD) \vee OTPT3
- DRHBUS = (old value of DRHBUS) \vee OTPT3
- TRBUS = (old value of TRBUS) \vee OTPT3
- DRLBUS = (old value of DRLBUS) \vee OTPT5

13. $IACK_{out} = IACK_{in} \wedge IRQ'$



16.



22.

