

Table I: Quantities concerning instructions fed through simulator

	Instr. Input	Look-Ahead Ready Register	Look-Ahead Unit Levels	Instr. Fetch	Arithmetic Unit	Index Arith. Unit
Instr. Number	II 1	LR 3	LAU 8	SIMRS (fetch) IRUM (return)	IPI NRAU 1	(II 1)
Op. Code	II 2	LR 1	LAU 2	ICAN (constant fetch)	NRAU 2	(IST = "state")
Instr. Location	II 3		LAU 1	ICR 1 ICR 2		
*I Index Addr.	II 4					IRO
*II Index Addr.	II 5					IRO
Data Addr.	II 6	LR 2	LAU 3	IBU 2		IRO
Special Designator	II 7					
Return Tag	II 8					
Spec. Spec. Desig.	II 9					
Compare Bit			LAU 4			
Forwarding Addr.			LAU 5			
O.K. Bit			LAU 6			IROI (fetch) IRI (return)
Forwarding Bit			LAU 7			
Memory Bring Bit			LAU 9			
Unit Clock					JAUT	INS
	Main of Inst. Mem.	Index Core Mem.	Central Control Decode	Bus to Mem.	Bus from Mem.	Exchanges
Instr. Number	IMM 2	IXM 4	IBD 1 (a 6)	JF 1	NF 1	(90, 91, 92, 93)
Return Address	IMM 1	IXM 2	IBD (a 5)	JF	NF	32
Bring Bit	IMM 3	IXM 6	IBD 2 (a 7)	JF 2		1 a 0
Read out Clock	IMM 4	IXM 8				
End Sig. Clock	IMM 5					
Mem. Cy. Clock	IMM 6	IXM 10	IBD 4 (a 9)	JF 4	NF 2	CLC
Total Cycle Clock						
Mem. Res. Bit	IMM 7					
Mem. Box No. Number			IBD 3 (a 8)	JF 3		IOM

(a 5 M) for main mem.
 (a 2 M) for main mem.
 JF = fast mem.
 JM = main mem.
 NF = fast mem.
 NM = main mem.

SIM-2 : List of Symbols (cont.)
Table II, Control and Tally Quantities.

1. Look-Ahead Symbols :

- NCTRA Instr. Fetch counter
- NCTRB Data Fetch counter
- NCTRC Data Store counter
- NSTOB Store Bit (an unexecuted store)
- NLH No. of look-ahead levels
- NBFR Modular value of NCTRC

2. Conflict Counters & Tallies

- CTT Total Time Tally
- CAU Arith. Unit Tally
- CIAU Indexing A. U. Tally
- CADLA Ave. depth of look-ahead tally
- CLAF Look-Ahead full Tally
- CWI A. U. waiting on Instr. tally
- CWM A. U. waiting on Data tally
- CDLA Lock-Ahead level use tally
- CIF In-Bus from Fast Mem. tally
- CIM In-Bus from Main Mem. tally
- COF Out-Bus (Read) to Mem. tally
- COM Out-Bus (Write) to Mem. tally
- CIST Index State tally
- CIMM Memory use tallies
- CMML Main Memory conflict tally
- CFMC Fast Memory conflict tally
- CXMC Index Memory conflict tally

3. MISC. Symbols

- MARK Time counter for Listing
- BIB Break-in Bit on wrong-way branches
- SKIP signal to "run dry" at end
- TALLY Count of Number of executed ops.
- A, B, AD, THINK temporary locations
- IDR, IDW, LDA pseudo-op controls, etc.
- PBIT, CBIT, PHDB } controls for printing
- TBIT, WBIT
- IB Block for input from control cards
- IP, RP, SIP, SSP Various printing blocks

LASCB Self-compare bit

Table III. Input Constants appearing on Summary Listing.

Symbol on Listing	Name in Code	Description
LA	NLH	No. levels of look-ahead
FM	NUFM	No. of fast mem. boxes
MM	NUMM	No. of main mem. boxes
IR	INX-4	Index reset IAU state 4
IS	INX-3	Index Store -1 IAU state 3
IA	INX-2	Index Add -1 IAU state 2
ID	INX-1	Index Decode IAU state 1
	INX	(not used)
MB	NMBT	Main (or write) bus time
FB	NFBT	Fast (or read) bus time
FD	IDMT	Fast Mem. bus decode time (ccu)
HM	IDMT+1	Hamming check Time
HE	IDMT+2	High Speed Exchange word rate
X1	IDMT+3	Index Memory read-out time
X2	IDMT+4	Index Memory cycle time
MD	IDMT+5	Main Mem. bus decode Time (ccu)
F1	MFT1	Fast Mem. read-out Time
F2	MFT2	Fast Mem. end signal Time
F3	MFT3	Fast Mem. Total cycle time
M1	MMT1	Main Mem. read-out Time
M2	MMT2	Main Mem. end signal Time
M3	MMT3	Main Mem. Total cycle time
15	JT-15	Op. Code 15 Square Root
14	JT-14	14 Divide
13	JT-13	13
12	JT-12	12 Cumulative Mpy.
11	JT-11	11 Mpy.
10	JT-10	10
9	JT-9	9 Add
8	JT-8	8
7	JT-7	7 Load
6	JT-6	6
5	JT-5	5
4	JT-4	4 Immediate op

Table III. Input Constants on Summary Listing (cont)

Symbol on Listing	Name in Code	Description
3	JT-3	Op. Code 3 Immediate Ops.
2	JT-2	2 "
1	JT-1	1 "
LE	JT	Low Speed Exchange word rate.

Table IV. Output Results on Summary Listing

XMC	(CXMC)	Index Mem. Conflicts (in % of Total Time)
TT	CTT	Total Time of problem (XXX.X microseconds)
AU	(CAU)	Arithmetic Unit busy (in % of TT)
IAU		Indexing Arith. Unit busy
ADLA		Average depth of look-ahead
LAF		Look-ahead full
WI		Arith. Unit waiting on instructions
WM		" " " " data
DLA-		% Time Look-ahead has depth specified
IBF		In bus from fast mem. busy.
IBM		In bus from main mem. busy.
RB		Read bus to mem. busy.
WB		Write bus to mem. busy.
IS-	IST	Time spent in Indexing State specified
M-		Time Mem. Box specified is busy (M12 to M5 are Main Mem. M4 to M1 are Inst. Mem ^{Inst. Mem})
MMC		Main Memory conflicts
FMC		Fast Memory conflicts
WBC		Write bus conflicts
RBC		Read bus conflicts

- Op codes: (1) 1 thru 4 Immediate (1 - memory, 2 - branch)
 (2) 5 thru 34 bring type (see Table III)
 (3) 35 indexing type
 (4) 36 to 97 store type
 (5) Instr No. 98 Stop in AU + Tr to Summary

- Return Addresses: (1) 20 = IAU data (4) 32 = exchange
 (2) 21 = Instr. fetch
 (3) 1, 2, 3...8 = Look-ahead levels