Date: 24 Jun 86 14:36 PDT
From: Masinter.pa
Subject: Opcode survey
To: Pedersen.pa
cc: xclispcore↑

edits are in bold. We should meet to review what's in microcode and what the priority list should be. I suggest we do this at the end of the Common Lisp status meeting... does anyone have any objection to discussing it then?

      OPCODES IMPLEMENTED IN MICROCODE BY MACHINE

                                  Jan Pedersen

```
Key: '09 = 12K Dandetiger
     '08 = 4K Dandelion
     '00 = Dolphin
     '32 = Dorado (as reported by Gwan)
     '32L = Dorado (as reported by Larry)
     '86-4 = 4K Daybreak
     '86-8 = 8K Daybreak
     X = Has microcode
     P = Prolog microcode set
     - = Doesn't have microcode
     ? = Don't know
```

Opcodes listed by entry in UFN table

op	'09	'08	'00	'32	'32L	'86-4	'86-8	Name
000	-	-	-	-	-	-	**-X-**	***nobody implements: causes an error!***
001	X	X	X	X	X	X	X	CAR
002	X	X	X	X	X	X	X	CDR
003	X	X	X	X	X	X	X	LISTP
004	X	X	X	X	X	X	X	NTYPX
005	X	X	X	X	X	X	X	TYPEP
006	X	X	X	X	X	X	X	DTEST {new COERCE}
007	-	-	-	-	-	-	-	CDDR {unused}
010	X	X	X	X	X	X	X	FN0
...	X	X	X	X	X	X	X	...
015	X	X	X	X	X	X	X	FNX
016	X	X	X	X	X	X	X	APPLYFN
017	-	-	-	-	X	-	-	CHECKAPPLY{?} [**not 86-8?**]
020	X	X	X	X	X	X	X	RETURN
021	X	X	X	X	X	X	X	BIND
022	X	X	X	X	X	X	X	UNBIND
023	X	X	X	X	X	X	X	DUNBIND
024	X	X	X	X	X	X	X	RPLPTR.N
025	X	X	X	X	X	X	X	GCREF
026	X	-	-	-	-	-	-	ASSOC [**08 but not 86-8?**]
027	X	X	X	X	X	X	X	GVAR←
030	X	-	X	X	X	X	X	RPLACA
031	X	-	X	X	X	X	X	RPLACD [**which cases?**]
032	X	X	X	X	X	X	X	CONS
033	-	-	-	-	-	-	-	{**used for GETPROP**}
034	X	-	-	-	-	-	-	FMEMB
035	-	-	-	-	-	-	-	{**used for GETHASH**}
036	-	-	-	-	-	-	-	{unused, named PUTHASH}
037	X	-	X	X	X	X	X	CREATECELL
040	X	-	X	X	X	X	X	BIN
041	-	-	-	-	-	-	-	BOUT {unused}
042	P	-	-	-	-	-	-	{Prolog}OPFETCHPLUSOPDISP
043	-	-	-	-	-	-	-	{unused, named LIST1}
044	-	-	-	-	-	-	-	DOCOLLECT {unused}
045	-	-	-	-	-	-	-	ENDCOLLECT {unused}
046	X	-	X	-	-	X	X	RPLCONS
047	X	-	-	-	-	-	-	LISTGET
050	-	-	-	-	-	-	-	ELT
051	-	-	-	-	-	-	-	NTHCHC
052	-	-	-	-	-	-	-	SETA

053	-	-	-	-	-	-	-	RPLCHARCODE {unused}
054	X	X	X	X	X	X	X	EVAL
055	-	-	-	-	-	-	-	**{used for EVALV}**
056	X	X	-	-	X	X	X	TYPECHECK **{unused}**
057	X	X	X	?	X	X	X	STKSCAN
060	X	-	-	-	-	-	-	BUSBLT
061	X	-	-	-	-	-	-	MISC8{IBLT1 and IBLT2}
062	X	-	-	-	-	-	-	POLY {Poly; Mat. Multiply}
063	X	X	-	-	X	X	X	TYPEMASK.N
064	P	-	-	-	-	-	-	{Prolog}PROLOGREADPTR
065	P	-	-	-	-	-	-	{Prolog}PROLOGREADTAG
066	P	-	-	-	-	-	-	{Prolog}PROLOGWRITETAGPTR
067	P	-	-	-	-	-	-	{Prolog}PROLOGWRITE0PTR
070	X	-	-	-	-	-	-	PSEUDOCOLOR
071	-	-	-	-	-	X	X	DOVEMISC
072	X	X	-	-	X	-	X	EQL
073	X	-	-	-	-	-	X	DRAWLINE
074	X	X	?	?	X	X	X	STOREN
075	X	X	-	-	X	X	X	COPYN
076	X	X	X	X	-	X	X	RAID
077	-	-	-	-	-	-	-	{unused}RETURN FOR LLBREAK
100	X	X	X	X	X	X	X	IVAR0
...	X	X	X	X	X	X	X	...
107	X	X	X	X	X	X	X	IVARX
110	X	X	X	X	X	X	X	PVAR0
...	X	X	X	X	X	X	X	...
117	X	X	X	X	X	X	X	PVARX
120	X	X	X	X	X	X	X	FVAR0
...	X	X	X	X	X	X	X	...
127	X	X	X	X	X	X	X	FVARX
130	X	X	X	X	X	X	X	PVAR0←
...	X	X	X	X	X	X	X	...
137	X	X	X	X	X	X	X	PVARX←
140	X	X	X	X	X	X	X	GVAR
141	X	X	-	-	X	X	X	ARG0
142	X	X	X	X	X	X	X	IVARX←
143	X	X	X	X	X	X	X	FVARX←
144	X	X	X	X	X	X	X	COPY
145	-	-	-	X	X	-	-	MYARGCOUNT **{used}**
146	X	X	X	X	X	X	X	MYALINK
147	X	X	X	X	X	X	X	ACONST
150	X	X	X	X	X	X	X	'NIL
151	X	X	X	X	X	X	X	'T
152	X	X	X	X	X	X	X	'0
153	X	X	X	X	X	X	X	'1
154	X	X	X	X	X	X	X	SIC
155	X	X	X	X	X	X	X	SNIC
156	X	X	X	X	X	X	X	SICX
157	X	X	X	X	X	X	X	GCONST
160	X	X	X	X	X	X	X	ATOMNUMBER **(used?)**
161	X	X	X	X	X	X	X	READFLAGS
162	X	X	X	X	X	X	X	READRP
163	X	X	X	?	-	X	X	WRITEMAP
164	X	-	X	?	X	-	-	READPRINTERPORT
165	X	-	X	?	X	-	-	WRITEPRINTERPORT
166	X	X	X	X	X	X	X	PILOTBITBLT
167	X	X	X	X	X	X	X	RCLK
170	X	X	X	X	X	X	X	MISC1
171	X	X	X	X	-	X	X	MISC2
172	X	X	X	X	-	X	X	RECLAIMCELL
173	X	X	X	X	X	X	X	GCSCAN1
174	X	X	X	X	X	X	X	GCSCAN2
175	X	X	X	X	X	X	X	SUBRCALL {used on 08 86?}
176	X	X	X	X	X	X	X	CONTEXT
177	-	-	?	-	-	-	-	{unused}AUDIO
200	X	X	X	X	X	X	X	JUMP00
...	X	X	X	X	X	X	X	...
207	X	X	X	X	X	X	X	JUMP07

Code	1	2	3	4	5	6	7	Name
210	X	X	X	X	X	X	X	JUMP10
...	X	X	X	X	X	X	X	....
217	X	X	X	X	X	X	X	JUMP17
220	X	X	X	X	X	X	X	FJUMP00
...	X	X	X	X	X	X	X	...
227	X	X	X	X	X	X	X	FJUMP07
230	X	X	X	X	X	X	X	FJUMP10←
...	X	X	X	X	X	X	X	...
237	X	X	X	X	X	X	X	FJUMP17←
240	X	X	X	X	X	X	X	TJUMP00
...	X	X	X	X	X	X	X	...
247	X	X	X	X	X	X	X	TJUMP07
250	X	X	X	X	X	X	X	TJUMP10
...	X	X	X	X	X	X	X	...
257	X	X	X	X	X	X	X	TJUMP17
260	X	X	X	X	X	X	X	JUMPX
261	X	X	X	X	X	X	X	JUMPXX
262	X	X	X	X	X	X	X	FJUMPX
263	X	X	X	X	X	X	X	TJUMPX
264	X	X	X	X	X	X	X	NFJUMPX
265	X	X	X	X	X	X	X	NTJUMPX
266	X	-	-	-	-	-	-	ARRAYINDEX1
267	X	-	-	-	-	-	-	ARRAYINDEX2
270	X	X	X	X	X	X	X	PVAR0←
...	X	X	X	X	X	X	X	...
276	X	X	X	X	X	X	X	PVAR6←
277	X	X	X	X	X	X	X	POP
300	X	X	-	-	-	X	X	POP.N
301	X	X	-	-	-	X	X	ATOMCELL.N
302	X	X	X	X	X	X	X	GETBASEBYTE
303	-	-	-	-	-	-	-	{unused}
304	X	X	X	X	X	X	X	BLT
305	X	-	-	-	-	-	-	PIXELBLT
306	-	-	-	-	-	-	-	{unused}
307	X	X	X	X	X	X	X	PUTBASEBYTE
310	X	X	X	X	X	X	X	GETBASE.N
311	X	X	X	X	X	X	X	GETBASEPTR.N
312	X	X	X	X	X	X	X	GETBITS.N.FD
313	-	-	-	-	-	-	-	**{used for GETBASEFIXP}**
314	-	-	-	-	-	-	-	**{used for PUTBASEFIXP}**
315	X	X	X	X	X	X	X	PUTBASE.N
316	X	X	X	X	X	X	X	PUTBASEPTR.N
317	X	X	X	X	X	X	X	PUTBITS.N.FD
320	X	X	X	X	X	X	X	ADDBASE
321	X	X	X	X	X	X	X	VAG2
322	X	X	X	X	X	X	X	HILOC
323	X	X	X	X	X	X	X	LOLOC
324	X	X	X	X	X	X	X	PLUS2{see notes}
325	X	X	X	X	X	X	X	DIFFERENCE{see notes}
326	X	X	X	X	X	X	X	TIMES2{see notes}
327	X	X	X	X	X	X	X	QUOTIENT{see notes}
330	X	X	X	X	X	X	X	IPLUS2{see notes}
331	X	X	X	X	X	X	X	IDIFFERENCE{see notes}
332	X	X	X	X	X	X	X	ITIMES2{see notes}
333	X	X	X	X	X	X	X	IQUOTIENT{see notes}
334	X	X	X	X	X	X	X	IREMAINDER{see notes}
335	-	-	-	-	-	X	X	{unused}{IPLUS.N}
336	-	-	-	-	-	X	X	{unused}{IDIFFERENCE.N}
337	-	-	-	-	-	-	-	{unused}
340	X	X	X	X	X	X	X	LLSH1{see notes}
341	X	X	X	X	X	X	X	LLSH8{see notes}
342	X	X	X	X	X	X	X	LRSH1{see notes}
343	X	X	X	X	X	X	X	LRSH8{see notes}
344	X	X	X	X	X	X	X	LOGOR2{see notes}
345	X	X	X	X	X	X	X	LOGAND2{see notes}
346	X	X	X	X	X	X	X	LOGXOR2{see notes}
347	-	-	-	-	-	-	-	{unused}{new ALSH}

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350   X     -     X     X     X     -     X     FPLUS2
351   X     -     X     X     X     -     X     FDIFFERENCE
352   X     -     X     X     X     -     X     FTIMES2
353   X     -     X     X     X     -     X     FQUOTIENT
354   X     -     -     -     -     -     -     UBFLOAT2 {UFADD, UFSUB,
                                                UFISUB, UFMULT, UFDIV,
                                                UGREAT, UMAX, UMIN, UREM}
355   X     -     -     -     X     -     -     UBFLOAT1 {UTOB, BTOU, UABS,
                                                UNEG, UFIX}
356   X     -     -     -     -     -     -     ARRAYREAD{GENERAL,UNBOXED}
357   X     -     -     -     -     -     -     ARRAYWRITE{GENERAL,UNBOXED}

360   X     X     X     X     X     X     X     EQ
361   X     X     X     X     X     X     X     IGREATERP
362   X     -     X     X     X     -     X     FGREATERP
363   X     X     X     X     X     X     X     GREATERP
364   X     X     ?     ?     X     -     X     EQUAL
365   X     -     X     X     X     -     X     MAKENUMBER
366   X     -     X     X     X     -     -     BOXIPLUS
367   X     -     X     X     X     -     -     BOXIDIFFERENCE

370   -     -     -     -     -     -     -     MISC5
371   X     -     -     -     -     -     -     FFTSTEP
372   X     -     -     -     -     -     -     MISC3
                                                {Floating Point Array ops:
                                                EXP, MAG, FLOAT, COMPLEX,
                                                BLKMAX, BLKMIN, BLKABSMAX,
                                                BLKABSMIN, FLOATTOBYTE}
373   X     -     -     -     -     -     -     MISC4
                                                {Floating Point Array ops:
                                                TIMES, PERM, PLUS,
                                                DIFFERENCE, MAGIC,
                                                BITMAPBIT}
374   -     -     ?     -     X     -     -     {reserved for DOLPHIN}
375   X     X     X     X     X     X     X     SWAP
376   X     X     X     X     X     X     X     NOP
377   -     -     -     -     -     -     -     {unused}
```

notes:

        4K microcode:
        PLUS2, DIFFERENCE, TIMES2, QUOTIENT will ufn if args not INTEGERS
        IPLUS2, IDIFFERENCE will accept FIXP's as arguments, but will ufn if result is not a smallp or
smallneg
        ITIMES2, IQUOTIENT, IREMAINDER will ufn if both args are not smallp

        12K microcode:
        PLUS2, DIFFERENCE, TIMES2, QUOTIENT will try floating point if args not INTEGERS
        IPLUS2, IDIFFERENCE will accept FIXP's as arguments, and box the result if it is not a smallp or
smallneg
        ITIMES2, IQUOTIENT, IREMAINDER will ufn if both args are not smallp

—*End of message*—