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?


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            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
```

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}

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*—