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Multics LISP

From: Alex Sunguroff 9/8/72

The purpose of this sheet is to enable people who are acquainted with the LISP found on the AI and MAC PDP-10's, to use the new Multics LISP. Since the basic goal of designing this LISP was compatibility with the LISP found on the 10's there are only a few differences due to the fact that the LISP resides in a different time-sharing system with a differently constructed file system and that consoles are different causing trivial but annoying keyboard considerations. There are also some different internal strategies, such as a compacting garbage collector, but these will be covered later in a complete document on this LISP. The following instructions should enable one to sit down at a console and work with LISP.

1) There are three characters that are seen by Multics before they get to LISP and that have significance to the module that sees them. The character " # " (where the double-quote is meta-linguistic) erases the previous character. The " @ " kills the whole line. And the " ¢ " is the escape character. See the MPM for a description.

2) File names on ITS have two components but on Multics file names are a single string with no blanks but with components separated by " . "s. So that programs written for use on the 10's can run on Multics, it was decided that inside LISP, files would be referenced by two names and that this would be mapped into a dotted file name in the Multics file system. Thus whereas on the 10 one would say (UREAD FOO BAR) on Multics one would say (uread foo bar) and it would read from a segment called "foo.bar". Ufile works similarly. On ITS one has a "device" and a "sname" that specify the directory in which a file resides while on Multics there exists a tree of directories. It has been decided that the "device" name be of no significance while the "sname" position of the crunit (the "current unit") be the pathname of the directory to which one wants to refer. When one enters LISP the crunit is set to the current working directory. One may change this with sstatus or with additional arguments to uread or to uwrite. If one says (uread foo zoo disk >udd>ap>d) to LISP then it will attempt to open the segment >udd>ap>d>foo.zoo for reading. If this succeeds then (status uread) will give the value (foo zoo disk >udd>ap>d) and (status crunit) will give the value (disk >udd>ap>d). Relative pathnames such as <<Smith>r are allowed.

3) If one has to type a control character and one is at a 2741, then hit the ATTN key and LISP will respond with "CTRL/", to which one responds with the appropriate character. Control "z" gives one a Multics command level above LISP so that one may do what one pleases at that level and then reenter LISP by typing either "pi" or "sr" to Multics. The other control characters work as on the 10's.

4) Since Multics attempts to use the full ascii set and in addition the other language processors besides LISP use lower case as a standard, it was decided not to map the cases of the alphabet together but instead to keep them separated and to use lower case as standard. System subrs have lower case names.

5) The character double-quote starts out as being in syntax category 10, which delimits LISP-strings, a new data-type added to Multics LISP. If one needs this character then change it to category 2, extended alphabetic, which is its category on the 10's.

6) If one wants to save one's LISP environment then type (save foo) and LISP will save it in the segment foo.lisp and then it will quit. To start up that environment type "lisp foo" to Multics and it will appear.

7) The normal way to quit out of LISP is to evaluate (quit).

8) The value of an atom and its pname are not on the p-list. Reference them with the appropriate functions.

9) Five or six functions or features are not yet (completely) implemented- including random, alarmclock, the gctwa feature, a clear floating point output, bignums and the compiler.

10) The LISP that we have been referring to is not the standard installed version on Multics that lives in the system library. We have been referring to the new "MACLISP" type of LISP that for now has the full pathname of >udd>AutoProg>Reed>installed>lisp. Either link to it or call it by its full pathname. If you end up with the wrong one, remember to terminate it, by saying "tmc (lisp lisp_standard_environment_)" to Multics.

11) Saved environments (see 6) for plnr, cnvr, doctor, and trace are available. To use them type "lisp >udd>ap>dpr>installed>XXXX" to Multics, where XXXX is in the set (plnr, cnvr, doctor, trace). Source for these programs is in the same directory. An editor stolen from the BBN PDP-1, is available in source form there also. Comments in the source file explain its use. A better editor may be available soon.

12) Mail questions or complaints to Moon, Reed, or Sunguroff whose directories are in AutoProg. Or if any of us is logged in then send a message. Or our phones and offices are:

Dave Reed	538	253-6018
Dave Moon	537	253-6017
Alex Sunguroff	501	253-6020

More documentation to follow.