MDC Approves 1993 Language Enhancements

by Thomas C. Salander

At the June meeting of the MTA, the MUMPS Development Committee gave final approval for the 1993 set of standards that make up M Technology. This approval capped five years of effort begun with the completion of the current language standard in 1988. The goal of the present effort was to add the technological enhancements needed to make M Technology the preferred development environment of the 1990s. What follows is a brief list of the various enhancements and additions that now make up M Technology. (Items defined in the M Windowing Application Program Interface Standard X11.6 are marked as MWAPI.)

Improvements to the Technology

Commands

- DO command parameter passing: allow missing parameters
- DO command parameter passing: elimination of duplicate parameters
- ESTART to begin event handling (MWAPI)
- ESTOP to end event handling (MWAPI)
- ETRIGGER causes an event to occur (MWAPI)
- MERGE command for array manipulation
- OPEN command partial standardization of device parameters
- OPEN command specification of mnemonicspace(s)
- QUIT command indirection
- READ into a global
- TCOMMIT to end a transaction and file
- TRESTART to restart a transaction
- TROLLBACK to end a transaction without filing
- TSTART to begin a transaction
- USE command partial standardization of device parameters
- USE command specification of current *mnemonic space*

Special Variables

- ^$CHARACTER structured system variable (ssvn) contains information on available character sets
- $DEVICE contains the status of the current device
- ^$DEVICE ssvn contains information about existence, operational characteristics and availability of devices
- ^$DISPLAY contains information about the current display (MWAPI)
- $ECODE contains information about the current error condition
- $ESTACK contains the stack depth within the scope of the current error processor
- $ETRAP contains the current error processor
- ^$EVENT contains information about the current event (MWAPI)
- ^$GLOBAL ssvn contains information about the existence and characteristics of globals
- $JOB ssvn contains information about the existence and characteristics of processes
- $KEY contains the key sequence that ended the last READ for the current device
- ^$LOCK ssvn contains information on the existence and operational characteristics of lock table entries
- $PDISPLAY identifies the process's principal display (MWAPI)
- $PRINCIPAL identifies the process's principal device
- $QUIT is true if the current level of the stack must be terminated by an argumented QUIT
- ^$ROUTINE ssvn contains information about the existence and characteristics of routines
- $STACK contains the current stack depth
- $SYSTEM identifies the local system
- ^$SYSTEM ssvn contains information about the characteristics of systems
- $TLEVEL contains the current depth of nested transactions
- $TRESTART contains the number of restarts for the current transaction
- ^$WINDOW contains information about windows of the current process (MWAPI)
- $X setable
- $Y setable

Functions

- $EXTRACT setable
- $FNUMBER lower case specifiers
- $GET default specification
- $NAME to return a fully evaluated array reference name
- $NEXT removed
- $ORDER to handle reverse collation

- $QLENGTH to return the number of subscripts in an array reference
- $QSUBSCRIPT to return a specific part (subscript, name, or environment) from an array reference
- $REVERSE to return the characters in a string in reverse order
- $STACK returns information about to process stack
- $TEXT allows absolute offset references in a remote routine
- $WFONT returns information about a specified font (MWAPI)
- $WTFIT returns the number of characters that will fit in a specified font (MWAPI)
- $WTWIDTH returns the width of a string within a specified font (MWAPI)

Operators

- Exponentiation
- Pattern match clarification of patcode E
- Pattern match includes logical or
- Sorts-after

Portability

- Local variable table size increased
- Nesting levels increased and contents changed
- Routine and global transfer convention
- Routine size increased
- Significant digits increased
- Subscript limits increased and formula changed
- Transaction size limitation
- Windowing limitations - many (MWAPI)

Networking and Environment

- Environment reference added for globals
- Environment reference added for routines
- External routine calls
- Functions modified to return environment when appropriate
- Open M Interconnect

Bindings

- GKS
- SQL
- X-Window
- X3.64

Miscellaneous

- Routine identification
- Representation of complex numbers
- Error names

Sweeping Changes

This is not a minor update of the M language standard. The windowing API (MWAPI) alone is larger than the original 1975 standard and took more time to produce. Add to this error processing, transaction processing, multiple character sets, and bindings to other standards: nothing about the way we currently produce software will remain the same.

Over the next few months we will have in-depth articles on all of the changes listed above. Many of these features already exist in commercially available systems. Some of you are already using them. Let us know what your experiences have been and how these new features have changed your coding style or development process. Address your letters to me in care of *M Computing*, and refer to "MDC 1993 standards." We will try to include some of the comments in future articles.

Welcome to the 1990s! M

Thomas C. Salander has led the MUMPS Development Committee (MDC) since 1988. He also is the vice chair of MTA and its representative to the International Organization for Standardization, and a Review Board member for *M Computing*.

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