
Information technology — Programming languages — M Windowing API

*Technologies de l'information — Langages de programmation — Interface
de programme d'application (API) du langage M, utilisant des fenêtres*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 15852 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces*.

Information technology — Programming languages — M Windowing API

1 General

1.1 Scope

The M Windowing API (MWAPI) extends the M programming technology with the addition of capabilities for developing and operating graphical user interface (GUI) applications.

For the purposes of this International Standard, an application is defined as a collection of one or more M routines using MWAPI capabilities and a user is a person utilizing such an application.

1.2 Relation to Environment

The MWAPI may, but is not required to, operate in conjunction with an underlying windowing platform. The MWAPI does not provide a detailed specification of look and feel for applications. Rather, if an underlying windowing platform is present, it is intended that the MWAPI adhere to the platform's look and feel to the extent practicable. If no underlying windowing platform is present, the MWAPI implementation determines look and feel characteristics and carries out actions that would otherwise be carried out by the underlying windowing platform.

1.3 Windows, Elements and Choices

The primary mechanism for communicating with a user is a window. Windows provide a general mechanism for displaying text and graphics, typically enclosed by a border.

Associated with windows, elements perform specialized tasks. Elements include gadgets, menus, and timers.

Gadgets are used for specialized input and output. For instance, there are gadgets designed for text input and gadgets that enable users to select from a list of items.

Menus are used to enable users to select actions to be performed.

Timers provide a means for notification of an application when a specified period of time has elapsed.

Menus and certain gadgets contain a list of choices. For instance, a list box has a list of items that a user can select.

An entity is a window, element, or choice.

1.4 Displays

Windows are shown to the user via a display, a logical surface on which windows are placed. Each M process has its own display(s); displays are not shared, although physical devices may be shared.

There is not necessarily a one-to-one correspondence between a display and the hardware device on which it appears. Multiple displays may appear on the same device and may overlap. A single display may span multiple devices.

Each display has associated input devices, typically a keyboard with alphanumeric, function and other keys, and a pointer such as a mouse.

1.5 Events

Applications are made aware of actions taken by users, such as pressing a key or selecting a menu item, or of other occurrences via events. Applications specify the events about which they wish to be notified and the code to execute when an event occurs.

1.6 Attributes

The characteristics of windows, elements, and choices are specified through attributes in the structured system variable ^\$WINDOW. The characteristics of displays are specified through attributes in the structured system variable ^\$DISPLAY. The characteristics of events that occur are specified through attributes in the structured system variable ^\$EVENT.

1.7 Drawing

Within one type of gadget, the generic box, the MWAPI provides facilities for drawing geometric figures, text, and other graphical objects.

1.8 Parents and Children

Each window and element has a single parent. A window's parent is either the display on which it appears or another window. An element's parent is a window. If P is the parent of C, then C is a child of P.

A is an ancestor of C and C is a descendant of A if

- (i) A is the parent of C, or
- (ii) there exist one or more windows ($B_1 \dots B_n$) such that A is the parent of B_1 , B_n is the parent of C, and, for x equal to B_1 through B_{n-1} , B_x is the parent of B_{x+1} .

A window or element inherits default values for certain attributes from its parent. A window or element cannot be created before its parent is created. A window or element can be created by the same M command that creates its parent.

P is a parent menu of S and S is a submenu of P if S is displayed when a choice in P is activated.

2 Normative Reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ANSI/MDC X11.1-1995, *American National Standard for Information Systems — Programming Languages — M*.

The following terms used in this text have the meaning defined in ANSI/MDC X11.1-1995:

actulist
command
digit
doargument
eol
expr
expratom
function
glvn
gvn
ident
intexpr
intlit
killargument
L
lvn
mnemonicspace
name
namevalue
numexpr
numlit
openargument
postcond
process
routine
setdestination
SP
ssvn
structured system variable
subscript
svn
timeout
tvexpr
useargument
V
xargument

In addition, the syntax metalanguage used in this International Standard is the same as that used in ANSI/MDC X11.1.