

File created: 16-Feb-2025 15:02:06 {WMEDLEY}<library>tedit>TEDIT-BUTTONS.;218

edit by: rmk

changes to: (FNS MB.FIELD.CREATE MB.SPEC.REMAINDER MB.NWAY.SIZEFN MB.NWAY.CREATE)  
(VARS TEDIT-BUTTONSCOMS)

previous date: 16-Feb-2025 11:10:40 {WMEDLEY}<library>tedit>TEDIT-BUTTONS.;214

Read Table: INTERLISP

Package: INTERLISP

Format: XCCS

## (RPAQQ TEDIT-BUTTONSCOMS

[;; Implementation of the various kinds of menu buttons: Action, toggle, 3state, N-way, field

(COMS ; Generic functions for the various types of buttons.

(RECORDS MBARG)

(FNS MB.ADD MB.DELETE MB.GET MB.GET.MBARG TEDITMENU.STREAM TEDIT.BACKTOMAIN))

[COMS ; Simple Menu Button support

(FNS MB.BUTTONEVENTINFN MB.DISPLAYFN MB.SETIMAGE MB.SIZEFN MB.WHENOPERATEDONFN MB.COPYFN MB.GETFN  
MB.PUTFN MB.SHOWSELFN MB.CREATE MB.CHANGENAME MB.INIT MB.TRACK.UNTIL MB.DON'T  
MB.SPEC.REMAINDER)

[COMS (DECLARE%: DONTEVAL@LOAD DOCOPY (P (MB.INIT) ; 3STATE

;; ON-OFF-NEUTRAL menu buttons, for, e.g., character properties like BOLD

(FNS MB.3STATE.CREATE MB.3STATE.DISPLAYFN MB.3STATE.SHOWSELFN MB.3STATE.INIT MB.3STATE.SETSTATEFN  
MB.3STATE.BUTTONEVENTINFN)

[COMS (DECLARE%: DONTEVAL@LOAD DOCOPY (P (MB.3STATE.INIT) ; NWAY

;; Mutually exclusive toggles with a single enclosing object

(FNS MB.NWAY.CREATE MB.NWAY.DISPLAYFN MB.NWAY.WHENOPERATEDONFN MB.NWAY.SIZEFN MB.NWAY.SELECT  
MB.NWAY.BUTTONEVENTINFN MB.NWAY.NEWMENUBUTTON MB.NWAY.COPYFN MB.NWAY.INIT  
MB.NWAY.ARRANGEBUTTONS MB.NWAY.ADDITEM MB.NWAY.FINDSUBOBJ MB.NWAY.SETSTATEFN)

[COMS (DECLARE%: DONTEVAL@LOAD DOCOPY (P (MB.NWAY.INIT) ; TOGGLE

(FNS MB.TOGGLE.CREATE MB.TOGGLE.DISPLAYFN MB.TOGGLE.INIT MB.SET.TOGGLE MB.TOGGLE.SETSTATEFN  
MB.TOGGLE.BUTTONEVENTINFN MB.TOGGLE.WHENOPERATEDONFN)

(COMS (DECLARE%: DONTEVAL@LOAD DOCOPY (P (MB.TOGGLE.INIT) ; FIELDS

(FNS MB.FIELD.CREATE MB.FIELD.DISPLAYFN MB.FIELD.IMAGEBOXFN MB.FIELD.PREFIXCREATE  
MB.FIELD.SUFFIXCREATE MB.FIELD.INIT MB.FIELD.WHENOPERATEDONFN MB.FIELD.GETSTATEFN  
MB.FIELD.SETSTATEFN MB.FIELD.BUTTONEVENTINFN MB.FIELD.SIZEFN MB.FIELD.INSURETYPE)  
(DECLARE%: DONTEVAL@LOAD DOCOPY (P (MB.FIELD.INIT]))

;; Implementation of the various kinds of menu buttons: Action, toggle, 3state, N-way, field

;; Generic functions for the various types of buttons.

(DECLARE%: EVAL@COMPILE

(RECORD MBARG (ARGSTATE ARGOBJ ARGSTARTPC ARGENDPC ARGIDPC))  
)

(DEFINEQ

## (MB.ADD

[LAMBDA (MENEDESC MENUTSTREAM WHERE INCREMENTALUPDATES)

; Edited 5-Jan-2025 11:36 by rmk  
; Edited 22-Oct-2024 09:16 by rmk  
; Edited 21-Oct-2024 00:26 by rmk  
; Edited 18-Oct-2024 13:49 by rmk  
; Edited 6-Oct-2024 15:25 by rmk  
; Edited 24-Aug-2024 21:08 by rmk

(DECLARE (SPECVARS MENUTSTREAM))

(SETQ MENUTSTREAM (TEXTSTREAM MENUTSTREAM))

; Edited 22-Aug-2024 11:10 by rmk

;; MENEDESC is a Tedit menu specification, a list of items describing one or more elements to be inserted in TSTREAM after WHERE.

;; This is a user entry for adding items to a Tedit menu.

;; If button-type is a list, it is interpreted as form to be evaluated, with MENUTSTREAM and the current CH# available as free variables. The result  
;; of the evaluation should be the increment in CH#.

;; An item can be of the form (button-type . attribute-values), a number indicating how many spaces, EOL or TAB atoms, or a string to be inserted  
;; as text in the default menu font.

;; CH# can be used freely

;; Returns the textstream character number of the character just after the last inserted character/object.

(RESETLST

(CL:UNLESS INCREMENTALUPDATES (TEDIT.DEFER.UPDATES MENUTSTREAM))

(for DESC TYPE SPEC OBJ [EOL \_ (CONCATCODES (CHARCODE (EOL)

[TAB \_ (CONCATCODES (CHARCODE (TAB)

(CH# \_ (if (NULL WHERE)

then (ADD1 (TEXTLEN (FGETTSTR MENUTSTREAM TEXTOBJ)))

elseif (FIXP WHERE)

```

      else (\ILLEGAL.ARG WHERE)))
in MENUDESC declare (SPECVARS CH#)
do (SETQ DESC (MKLIST DESC)) ; MKLIST for EOL/TAB, FIXP
  (SETQ TYPE (CAR DESC))
  (SETQ SPEC (CDR DESC))
  (SELECTQ TYPE
    (
      (* ; ; NIL)
      ; Ignore comments within menu descriptions
    )
  )
(EOL (TEDIT.INSERT MENUTSTREAM EOL CH# ' (PROTECTED ON))
  (add CH# 1))
(TAB (TEDIT.INSERT MENUTSTREAM TAB CH# ' (PROTECTED ON))
  (add CH# 1))
(ACTION (TEDIT.INSERT.OBJECT (MB.CREATE SPEC)
  MENUTSTREAM CH# ' (PROTECTED OFF))
  (add CH# 1)) ; Hitting calls a function
(3STATE (TEDIT.INSERT.OBJECT (MB.3STATE.CREATE SPEC)
  MENUTSTREAM CH# ' (PROTECTED OFF))
  (add CH# 1)) ; 3-state button; hitting it changes state among ON, OFF, and
  ; NEUTRAL.
(TOGGLE (TEDIT.INSERT.OBJECT (MB.TOGGLE.CREATE SPEC)
  MENUTSTREAM CH# ' (PROTECTED OFF))
  (add CH# 1)) ; TOGGLE button; hitting it switches between ON and OFF.
(NWAY (SETQ OBJ (MB.NWAY.CREATE SPEC))
  (TEDIT.INSERT.OBJECT OBJ MENUTSTREAM CH# ' (PROTECTED OFF))
  (add CH# 1)) ; N-way buttons; choosing one turns the others off.
(TEXT [TEDIT.INSERT MENUTSTREAM (CADR (ASSOC 'STRING SPEC))
  CH#
  (CL:IF (CADR (ASSOC 'FONT SPEC))
    ' (FONT ,(CADR (ASSOC 'FONT SPEC))
    PROTECTED ON)
    ' (PROTECTED ON))]
  [add CH# (NCHARS (CADR (ASSOC 'STRING SPEC)))]
(FIELD (SETQ CH# (MB.FIELD.CREATE SPEC MENUTSTREAM CH#))
(MENU (\TEDIT.THELP "NOT IMPLEMENTED")
  (TEDIT.INSERT.OBJECT (MB.CREATE.FULLMENU (CADR SPEC))
  MENUTSTREAM CH# ' (PROTECTED OFF))
  (add CH# 1))
(if (STRINGP TYPE)
  then (TEDIT.INSERT MENUTSTREAM TYPE CH# ' (PROTECTED ON))
  (add CH# (NCHARS TYPE))
  elseif (FIXP TYPE)
  then ; TYPE spaces
  (TEDIT.INSERT MENUTSTREAM (ALLOCSTRING TYPE (CHARCODE SPACE))
  CH#
  ' (PROTECTED ON))
  (add CH# TYPE)
  elseif (LISTP TYPE)
  then ;; Form to be evaluated
  (add CH# (EVAL TYPE))
  else (\ILLEGAL.ARG DESC))
finally (\TEDIT.SHOWSEL NIL NIL MENUTSTREAM) ; User has to click to get a selection
(SETSEL (TEXTSEL (GETTSTR MENUTSTREAM TEXTOBJ)
  SET NIL)
  (RETURN CH#)))

```

**(MB.DELETE**

```

[LAMBDA (IDENTIFIERS MENUSTREAM) ; Edited 8-Nov-2024 08:58 by rmk
  (for ID CHNOS inside IDENTIFIERS when [SETQ CHNOS (MB.GET ID MENUSTREAM ' (STARTCHNO ENDCHNO)]
  do (TEDIT.DELETE MENUSTREAM (CAR CHNOS)
    (IDIFFERENCE (ADD1 (CADR CHNOS))
    (CAR CHNOS]))

```

**(MB.GET**

```

[LAMBDA (IDENTIFIERS MENUSTREAM RETURNS START BEFORE) ; Edited 11-Jan-2025 20:49 by rmk
  ; Edited 13-Dec-2024 09:24 by rmk
  ; Edited 2-Dec-2024 09:41 by rmk
  ; Edited 7-Nov-2024 22:20 by rmk
  ; Edited 22-Oct-2024 22:02 by rmk
  ; Edited 20-Oct-2024 21:55 by rmk
  ; Edited 18-Oct-2024 23:12 by rmk
  ; Edited 29-Sep-2024 22:53 by rmk
  ; Edited 2-Sep-2024 23:36 by rmk
  ; Edited 28-Aug-2024 20:06 by rmk
  ; Edited 24-Aug-2024 21:23 by rmk
  ; Edited 16-Aug-2024 13:14 by rmk
  ; Edited 12-Aug-2024 10:25 by rmk

```

; Edited 9-Aug-2024 22:52 by rmk  
; Edited 29-Jul-2024 11:00 by rmk  
; Edited 27-Jul-2024 20:48 by rmk

;; Computes the arguments from other image objects as requested by the object at SEL/PC in TEXTOBJ. START can be a piece, a selection, a character number, or NIL. If NIL, the whole menu is scanned from the beginning or the end.  
;; If IDENTIFIERS is a list, this returns a plist keyed by each identifier .  
;; If IDENTIFIERS is a litatom, the triple for that identifier is returned.  
;; RETURNS specifies what information should be returned for each identifier, defaulting to the identified object. If ALL, the value is an instance of the MBARG record. Otherwise RETURNS can be one of OBJECT, STATE, STARTPC, STARTCHNO, ENDP, ENDCHNO, or a list of those. If a list, the components for each identifier are returned in a list parallel to RETURNS.

```
(CL:WHEN IDENTIFIERS
  (CL:UNLESS (OR (type? PIECE START)
                 (type? SELECTION START)
                 (FIXP START)
                 (NULL START))
             (\ILLEGAL.ARG START))
  (SETQ MENUSTREAM (TEXTSTREAM MENUSTREAM))
  (LET ((MENUTEXTOBJ (TEXTOBJ MENUSTREAM))
        RESULT)
    (if (type? SELECTION START)
        then (SETQ START (\TEDIT.CHTOPC (GETSEL START CH#)
                                         MENUTEXTOBJ))
        elseif (FIXP START)
        then (SETQ START (\TEDIT.CHTOPC START MENUTEXTOBJ)))
    [SETQ RESULT (if BEFORE
                    then (for PC ID IDOBJ (REMAINING _ (COPY (MKLIST IDENTIFIERS)))
                            backpieces
                            (CL:IF START
                              (PREVPIECE START)
                              (\TEDIT.LASTPIECE MENUTEXTOBJ))
                            while REMAINING when [SETQ ID (AND (SETQ IDOBJ (POBJ PC))
                                                                (CAR (MEMB (IMAGEOBJPROP IDOBJ
                                                                    'IDENTIFIER)
                                                                    REMAINING])
                                                                REMAINING]
                            join (SETQ REMAINING (DREMOVE ID REMAINING))
                                (MB.GET.MBARG PC MENUSTREAM))
                    else (for PC ID IDOBJ (REMAINING _ (COPY (MKLIST IDENTIFIERS)))
                            inpieces
                            (CL:IF START
                              (NEXTPIECE START)
                              (\TEDIT.FIRSTPIECE MENUTEXTOBJ))
                            while REMAINING when [SETQ ID (AND (SETQ IDOBJ (POBJ PC))
                                                                (CAR (MEMB (IMAGEOBJPROP IDOBJ
                                                                    'IDENTIFIER)
                                                                    REMAINING])
                                                                REMAINING]
                            join (SETQ REMAINING (DREMOVE ID REMAINING))
                                (MB.GET.MBARG PC MENUSTREAM)]
    (CL:UNLESS (EQ RETURNS 'ALL)
      (CL:UNLESS RETURNS
        (SETQ RETURNS 'OBJECT))
      (SETQ RETURNS (MKLIST RETURNS))
      [for ATAIL A on RESULT by (CDDR ATAIL)
        do (SETQ A (CADR ATAIL))
          (RPLACA (CDR ATAIL)
                 (for R in RETURNS collect (SELECTQ R
                                                ((OBJECT NIL)
                                                 (fetch (MBARG ARGOBJ) of A))
                                                 (STATE (fetch (MBARG ARGSTATE) of A))
                                                 (STARTPC (fetch (MBARG ARGSTARTPC) of A))
                                                 (ENDPC (fetch (MBARG ARGENDPC) of A))
                                                 (STARTCHNO (\TEDIT.PCTOCH (fetch (MBARG ARGSTARTPC)
                                                                 of A)
                                                                 MENUTEXTOBJ))
                                                 (ENDCHNO (IPLUS -1 (PLEN (fetch (MBARG ARGENDPC)
                                                                 of A))
                                                                 (\TEDIT.PCTOCH (fetch (MBARG ARGENDPC)
                                                                 of A)
                                                                 MENUTEXTOBJ)))
                                                 (IDPC (fetch (MBARG ARGIDPC) of A))
                                                 (ERROR R " is not a button return"))
                                                finally (CL:UNLESS (CDR RETURNS)
                                                         (RETURN (CAR $$VAL))))))
    (CL:IF (LISTP IDENTIFIERS)
      RESULT
      (CADR RESULT))))))
```

**(MB.GET.MBARG**

[LAMBDA (IDPC MENUSTREAM)

; Edited 17-Dec-2024 11:54 by rmk  
; Edited 4-Dec-2024 16:48 by rmk

;; Returns the full set of properties for the argument identified at IDPC, including (for fields) the starting piece, ending piece, and ID piece itself.

```
(LET ((IDOBJ (POBJ IDPC))
      ENDP STATEFN STATE)
  (if [AND (EQ 'FieldPrefixButton (IMAGEOBJPROP IDOBJ 'IMAGECLASSNAME))
```

```

(NOT (IMAGEOBJPROP IDOBJ 'FIELDSUFFIX]
then ;; Scan forward from prefix to suffix, but don't scan backwards from suffix. Asking for the field ID gets the prefix and everything,
      ;; asking for the suffix just gets the suffix
      (SETQ ENDP (OR [for P inpieces (NEXTPIECE IDPC) suchthat (AND (EQ OBJECT.PTYPE (PTYPE P))
                                                                    (IMAGEOBJPROP (POBJ P)
                                                                    'FIELDSUFFIX]
                                                                    (\TEDIT.THELP "Missing field suffix:"))
      else (SETQ ENDP IDPC))
      (CL:WHEN (SETQ STATEFN (IMAGEOBJPROP IDOBJ 'STATEFN))
              (APPLY* STATEFN IDPC IDOBJ MENUSTREAM))
      (LIST (IMAGEOBJPROP IDOBJ 'IDENTIFIER)
            (create MBARG
              ARGSTATE _ (IMAGEOBJPROP IDOBJ 'STATE)
              ARGOBJ _ IDOBJ
              ARGSTARTPC _ IDPC
              ARGENDPC _ ENDP
              ARGIDPC _ IDPC])

```

**(TEDITMENU.STREAM**

[LAMBDA (TSTREAM)

```

; Edited 29-Sep-2024 15:29 by rmk
; Edited 28-Aug-2024 15:48 by rmk
; Edited 10-Apr-2023 09:53 by rmk
(* jds "13-Aug-84 14:10")

```

;; returns the textstream of the teditmenu attached to this stream if any

```

(for W in (ATTACHEDWINDOWS (\TEDIT.MAINW TSTREAM)) when (TEDITMENUP W "Tedit Menu")
do (RETURN (TEXTSTREAM W])

```

**(TEDIT.BACKTOMAIN**

[LAMBDA (MENUSTREAM)

```

; Edited 20-Oct-2024 10:02 by rmk
; Edited 25-Aug-2024 09:17 by rmk

```

```

;; If MENUSTREAM's window is attached to a main window that is also the window of a running Tedit process, gives the TTY to that main window.
;; Otherwise, gives the TTY to the exec.

```

```

(LET ((MAINW (\TEDIT.MAINW MENUSTREAM))
      (TTY.PROCESS (CL:IF MAINW
                        (WINDOWPROP MAINW 'PROCESS))
      T])
)

```

;; Simple Menu Button support

(DEFINEQ

**(MB.BUTTONEVENTINFN**

[LAMBDA (OBJ MENUSTREAM SEL RELX RELY SELWINDOW HOSTSTREAM BUTTON)

```

; Edited 12-Jan-2025 13:03 by rmk
; Edited 28-Dec-2024 20:21 by rmk
; Edited 22-Aug-2024 16:26 by rmk
; Edited 20-Aug-2024 10:04 by rmk
; Edited 20-Jul-2024 15:26 by rmk
; Edited 9-Apr-2023 18:22 by rmk
; Edited 30-May-91 22:15 by jds

```

```

;; Called when a mouse-button is down inside the object, RELX and RELY are in the objects coordinate system. Decline unless it is a normal
;; left-button selection within the object.

```

```

(TEDIT.PROMPTCLEAR MENUSTREAM)
(if [OR (EQ BUTTON 'RIGHT)
        (SHIFTDOWNP 'CTRL)
        (SHIFTDOWNP 'SHIFT)
        (LET [(OBJBOX (IMAGEOBJPROP OBJ 'BOUNDBOX]
              (OR (ILESSP RELX 0)
                  (ILESSP RELY 0)
                  (IGREATERP RELX (fetch XSIZE of OBJBOX))
                  (IGREATERP RELY (fetch YSIZE of OBJBOX])
              then 'DON'T
              else T])

```

**(MB.DISPLAYFN**

[LAMBDA (OBJ IMAGESTREAM)

```

; Edited 26-Aug-2024 09:35 by rmk
; Edited 19-Jul-2024 23:32 by rmk
; Edited 20-Nov-2023 17:31 by rmk
; Edited 11-Jan-89 16:58 by jds

```

```

;; Display the innards of a menu button. Assumes that the stream is set to the bottom-left corner of the object in stream coordinates (so X,Y
;; instead of 0,0).

```

```

(if (EQ 'DISPLAY (IMAGESTREAMTYPE IMAGESTREAM))
then ;; Going to the display. Use the cached bitmap version of the button
      [LET ((BITMAP (MB.SETIMAGE OBJ))
            (OBJBOX (IMAGEOBJPROP OBJ 'BOUNDBOX))
            (X (DSPXPOSITION NIL IMAGESTREAM))

```

```

(Y (DSPYPOSITION NIL IMAGESTREAM)))
(SETQ Y (IDIFFERENCE Y (fetch YDESC of OBJBOX)))
(BITBLT BITMAP 0 0 IMAGESTREAM X Y) ; Display the button's image
(CL:WHEN (EQ (IMAGEOBJPROP OBJ 'STATE)
             'ON) ; Invert if ON
          (BLTSHADE BLACKSHADE IMAGESTREAM X Y (fetch XSIZE of OBJBOX)
            (fetch YSIZE of OBJBOX)
            'INVERT))) ]

```

else ;; Going to some output image stream. Just print the text (without ON inversion?)

```

(DSPFONT (PROG1 (DSPFONT (FONTCOPY (IMAGEOBJPROP OBJ 'FONT)
                                   'DEVICE IMAGESTREAM)
                               IMAGESTREAM) ; Change to the font for this menu button.
          (PRIN1 (IMAGEOBJPROP OBJ 'LABEL)
                 IMAGESTREAM))) ]

```

**(MB.SETIMAGE**

```

[LAMBDA (OBJ) ; Edited 26-Aug-2024 09:37 by rmk
              ; Edited 21-Jul-2024 16:20 by rmk
              ; Edited 19-Jul-2024 23:27 by rmk
              (* jds "23-Aug-84 13:22")

```

;; Create a bitmap image of the object's text. Assumes that box exists if bitmap exists.

```

(OR (IMAGEOBJPROP OBJ 'BITCACHE)
    (LET ((FONT (IMAGEOBJPROP OBJ 'FONT))
          (BOX (MB.SIZEFN OBJ))
          (BITMAP DS)
          (SETQ BITMAP (BITMAPCREATE (fetch XSIZE of BOX)
                                     (fetch YSIZE of BOX)))
          (IMAGEOBJPROP OBJ 'BITCACHE BITMAP)
          (SETQ DS (DSPCREATE BITMAP))
          (DSPXOFFSET 0 DS)
          (DSPYOFFSET 0 DS)
          (DSPFONT FONT DS)
          (MOVE TO 0 (FONTPROP FONT 'DESCENT)
                  DS)
          (PRIN1 (IMAGEOBJPROP OBJ 'LABEL)
                 DS)
          (BITMAP)))

```

**(MB.SIZEFN**

```

[LAMBDA (OBJ STREAM) ; Edited 26-Aug-2024 09:36 by rmk
                    ; Edited 3-Aug-2024 13:10 by rmk
                    ; Edited 19-Jul-2024 23:26 by rmk
                    ; Edited 11-Oct-2022 22:51 by rmk
                    ; Edited 4-Oct-2022 11:59 by rmk
                    (* jds "30-Aug-84 11:24")

```

;; Create the box for a menu button containing LABEL in font FONT on STREAM (NIL means display).

```

(OR (IMAGEOBJPROP OBJ 'BOUNDBOX)
    (LET ((FONT (IMAGEOBJPROP OBJ 'FONT))
          (BOX)
          (CL:UNLESS (AND STREAM (NOT (DISPLAYSTREAMP STREAM)))
                     (SETQ FONT (FONTCOPY FONT 'DEVICE (IMAGESTREAMTYPE STREAM))))
          (SETQ BOX (create IMAGEBOX
                            XSIZE _ (CL:IF (IMAGEOBJPROP OBJ 'LABEL)
                                             (STRINGWIDTH (IMAGEOBJPROP OBJ 'LABEL)
                                                           FONT)
                                             0)
                            YSIZE _ (FONTPROP FONT 'HEIGHT)
                            YDESC _ (FONTPROP FONT 'DESCENT)
                            XKERN _ 0))
          (IMAGEOBJPROP OBJ 'BOUNDBOX BOX)
          (BOX]))

```

**(MB.WHENOPERATEDONFN**

```

[LAMBDA (OBJ MENUWINDOW OPERATION MENUSEL MENUSTREAM) ; Edited 20-Oct-2024 09:51 by rmk
                                                    ; Edited 18-Oct-2024 14:22 by rmk
                                                    ; Edited 6-Oct-2024 23:29 by rmk
                                                    ; Edited 29-Sep-2024 15:44 by rmk
                                                    ; Edited 26-Jul-2024 15:24 by rmk
                                                    ; Edited 20-Jul-2024 20:57 by rmk
                                                    ; Edited 17-Jul-2024 21:27 by rmk
                                                    ; Edited 27-Mar-2024 13:49 by rmk
                                                    (* jds " 7-Feb-84 14:20")

```

;; HIGHLIGHTED is in OBJ's coordinate system, SELECTED is in PANE's coordinate system.

;; Here we deal only with the button highlighting itself.

```

(SELECTQ OPERATION
  (HIGHLIGHTED (MB.SHOWSELFN OBJ T MENUWINDOW)
               (MB.TRACK.UNTIL OBJ MENUWINDOW)
               (MB.SHOWSELFN OBJ NIL MENUWINDOW))

```

(SELECTED ;; Old code tested for a return of DON'T from the BUTTONFN. That was probably a mistaken carry-over from the description of the BUTTONEVENTINFN, where DON'T meant don't allow the selection. But if we are here, we passed that gate.



; Edited 31-Jul-2024 22:00 by rmk  
; Edited 25-Jul-2024 23:42 by rmk  
; Edited 24-Jul-2024 08:30 by rmk  
; Edited 21-Jul-2024 22:58 by rmk  
; Edited 19-Jul-2024 11:00 by rmk  
; Edited 11-Jan-89 16:10 by jds

;; Create a MENU BUTTON image object, and fill in its image and function-hook fields.

```
(for S PROP VAL IDENTIFIER LABEL (OBJ _ (IMAGEOBJCREATE NIL (OR IMAGEFNS (CADR (ASSOC 'IMAGEFNS SPEC))
MB.IMAGEFNS)))
  in SPEC eachtime (SETQ PROP (MKATOM (CAR S)))
    (SETQ VAL (CADR S))
  unless (EQ PROP 'IMAGEFNS) do (SELECTQ PROP
    (FONT [SETQ VAL (FONTCREATE (FONTCREATE VAL NIL NIL NIL 'DISPLAY))
(LABEL (SETQ LABEL (SETQ VAL (MKSTRING VAL))))
(IDENTIFIER (SETQ IDENTIFIER VAL)
(GO $$ITERATE))
NIL)
    (IMAGEOBJPROP OBJ PROP VAL)
  finally (CL:UNLESS (IMAGEOBJPROP OBJ 'FONT)
    (IMAGEOBJPROP OBJ 'FONT (FONTCREATE '(HELVETICA 8 BOLD)
NIL NIL NIL 'DISPLAY)))
    (if (NULL IDENTIFIER)
      then (if LABEL
        then [SETQ IDENTIFIER (U-CASE (MKATOM (CL:STRING-TRIM '(#\Space #\Tab #\Newline #\:)
LABEL)
        else (ERROR (ERROR "Missing both IDENTIFIER and LABEL" SPEC))
      elseif (OR (LITATOM IDENTIFIER)
        (SMALLP IDENTIFIER))
      elseif (STRINGP IDENTIFIER)
        then (SETQ IDENTIFIER (MKATOM IDENTIFIER))
      else (\ILLEGAL.ARG VAL))
    (IMAGEOBJPROP OBJ 'IDENTIFIER IDENTIFIER)
    (CL:WHEN (IMAGEOBJPROP OBJ 'INITSTATE)
      (IMAGEOBJPROP OBJ 'STATE (IMAGEOBJPROP OBJ 'INITSTATE)))
    (MB.SETIMAGE OBJ)
    (RETURN OBJ])
```

**(MB.CHANGENAME**

[LAMBDA (TEXTOBJ OBJ NEWNAME)

; Edited 26-Aug-2024 09:31 by rmk  
(\* jds "23-Aug-84 13:26")

(\* Change the text that appears in a button, and redisplay the button if it's visible)

```
(PROG (BOX BITMAP DS)
  (IMAGEOBJPROP OBJ 'LABEL NEWNAME)
  (MB.SETIMAGE OBJ)
  (TEDIT.OBJECT.CHANGED TEXTOBJ OBJ])
```

**(MB.INIT**

[LAMBDA NIL

; Edited 7-Jan-2025 22:49 by rmk  
; Edited 7-Dec-2024 09:05 by rmk  
; Edited 28-Aug-2024 23:34 by rmk  
; Edited 24-Aug-2024 11:00 by rmk  
; Edited 20-Aug-2024 15:23 by rmk  
; Edited 18-Feb-2024 14:15 by rmk  
(\* jds "12-Feb-85 14:32")

```
(DECLARE (GLOBALVARS MB.IMAGEFNS))
(SETQ MB.IMAGEFNS (IMAGEFNSCREATE (FUNCTION MB.DISPLAYFN)
  (FUNCTION MB.SIZEFN)
  (FUNCTION MB.PUTFN)
  (FUNCTION MB.GETFN)
  (FUNCTION MB.COPYFN)
  (FUNCTION MB.BUTTONEVENTINFN)
  'NIL
  'NIL
  'NIL
  (FUNCTION MB.DON'T)
  'NIL
  (FUNCTION MB.WHENOPERATEDONFN)
  (FUNCTION NIL)
  'TEditMenuButton])
```

**(MB.TRACK.UNTIL**

[LAMBDA (OBJ PANE)

; Edited 23-Oct-2024 10:10 by rmk  
; Edited 18-Oct-2024 11:57 by rmk

;; Track the mouse untill either it leaves the object or the buttons come up. Returns DON'T if it leaves, NIL if buttons are up.

```
(do (BLOCK)
  (GETMOUSESTATE)
  (CL:WHEN (EQ 'DON'T (MB.BUTTONEVENTINFN OBJ PANE NIL (LASTMOUSEX PANE)
(LASTMOUSEY PANE)
PANE))
    (RETURN 'DON'T))
```

(CL:WHEN (ALLBUTTONSUP)
(RETURN NIL))

(MB.DON'T

[LAMBDA (OBJ)

; Edited 16-Dec-2024 13:31 by rmk
; Edited 7-Dec-2024 08:58 by rmk

(CL:UNLESS (IMAGEOBJPROP OBJ 'DELETABLE)
'DON'T])

(MB.SPEC.REMAINDER

[LAMBDA (SPEC IGNORE OBJ)

; Edited 16-Feb-2025 13:07 by rmk

:: Reduces SPEC to properties that not to be IGNORED because they have been dealt with separately. If OBJ, those properties are installed as
:: IMAGEOBJPROP's.

(for s in SPEC unless (MEMB (CAR S)
IGNORE)

collect (CL:WHEN OBJ
(IMAGEOBJPROP OBJ (CAR S)
(CADR S)))
S])

)

(DECLARE%: DONTEVAL@LOAD DOCOPY

(MB.INIT)

)

:: 3STATE

:: ON-OFF-NEUTRAL menu buttons, for, e.g., character properties like BOLD

(DEFINEQ

(MB.3STATE.CREATE

[LAMBDA (SPEC)

; Edited 6-Oct-2024 17:08 by rmk
; Edited 5-Oct-2024 17:00 by rmk
; Edited 2-Aug-2024 23:51 by rmk
; Edited 21-Jul-2024 00:52 by rmk
; Edited 19-Jul-2024 10:48 by rmk
(\* jds "24-Sep-86 00:49")

(CL:UNLESS (ASSOC 'INITSTATE SPEC)
(push SPEC (LIST 'INITSTATE 'NEUTRAL)))
(push SPEC (LIST 'SETSTATEFN (FUNCTION MB.3STATE.SETSTATEFN)))
(MB.CREATE SPEC MB.3STATE.IMAGEFNS])

(MB.3STATE.DISPLAYFN

[LAMBDA (OBJ IMAGESTREAM)

; Edited 5-Oct-2024 16:49 by rmk
; Edited 25-Aug-2024 23:11 by rmk
; Edited 24-Aug-2024 00:25 by rmk
; Edited 26-Jul-2024 16:29 by rmk
; Edited 20-Jul-2024 23:57 by rmk
; Edited 20-Nov-2023 14:27 by rmk
(\* jds "30-Aug-84 13:53")

:: IMAGEFNS function called from DISPLAYLINE

(MB.3STATE.SHOWSELFN OBJ IMAGESTREAM (IMAGEOBJPROP OBJ 'STATE)
(DSPXPOSITION NIL IMAGESTREAM)
(DSPYPOSITION NIL IMAGESTREAM])

(MB.3STATE.SHOWSELFN

[LAMBDA (OBJ IMAGESTREAM SHOWSTATE X Y)

; Edited 5-Oct-2024 16:33 by rmk
; Edited 25-Aug-2024 15:01 by rmk
; Edited 24-Aug-2024 00:44 by rmk
; Edited 20-Jul-2024 23:52 by rmk
; Edited 18-Jul-2024 22:41 by rmk
; Edited 17-Jul-2024 22:09 by rmk
; Edited 20-Nov-2023 14:31 by rmk
; Edited 30-May-91 22:16 by jds

:: Shows the label of OBJ highlighted according to SHOWSTATE. X and Y are not provided if PANE is already in the object's coordinate system
:: (bottom-left at (0,0).

(LET\* ((BITMAP (MB.SETIMAGE OBJ))
(OBJBOX (MB.SIZEFN OBJ IMAGESTREAM))
(XSIZE (fetch XSIZE of OBJBOX))
(YSIZE (fetch YSIZE of OBJBOX)))
(CL:UNLESS X
(SETQ X 0))
(SETQ Y (CL:IF Y
(IDIFFERENCE Y (fetch YDESC of OBJBOX))
0))

; What about kerning?

:: Put down the neutral label, then modify



```
(BITBLT BITMAP 0 0 IMAGESTREAM X Y XSIZE YSIZE 'INPUT 'REPLACE)
(SELECTQ SHOWSTATE
  (ON ; Display as white text on black background
    (BLTSHADE BLACKSHADE IMAGESTREAM X Y XSIZE YSIZE 'INVERT))
  (OFF ; Mark with a diagonal line thru it.
    (DRAWLINE X Y (SUB1 (IPLUS X XSIZE))
      (SUB1 (IPLUS Y YSIZE))
      1
      'PAINT IMAGESTREAM))
  NIL))
```

**(MB.3STATE.INIT**

```
[LAMBDA NIL ; Edited 7-Jan-2025 22:49 by rmk
; Edited 7-Dec-2024 12:38 by rmk
; Edited 18-Oct-2024 11:40 by rmk
; Edited 25-Aug-2024 23:11 by rmk
; Edited 20-Aug-2024 15:36 by rmk
(* jds " 9-Feb-86 15:17")
```

;; Initialize the IMAGEFNS for 3-state menu button IMAGEOBJs

```
(DECLARE (GLOBALVARS MB.3STATE.IMAGEFNS))
(SETQ MB.3STATE.IMAGEFNS (IMAGEFNSCREATE (FUNCTION MB.3STATE.DISPLAYFN)
  (FUNCTION MB.SIZEFN)
  (FUNCTION MB.PUTFN)
  (FUNCTION MB.GETFN)
  (FUNCTION MB.COPYFN)
  (FUNCTION MB.3STATE.BUTTONEVENTINFN)
  'NIL
  'NIL
  'NIL
  (FUNCTION MB.DON'T)
  'NIL NIL 'NIL '3StateMenuButton])
```

**(MB.3STATE.SETSTATEFN**

```
[LAMBDA (PC NEWVALUE TSTREAM) ; Edited 5-Oct-2024 17:04 by rmk
; Edited 25-Aug-2024 12:22 by rmk
; Edited 5-Aug-2024 10:06 by rmk
; Edited 3-Aug-2024 00:12 by rmk
```

```
(IMAGEOBJPROP (PCONTENTS PC)
  'STATE
  (SELECTQ NEWVALUE
    ((NIL OFF)
     'OFF)
    (NEUTRAL 'NEUTRAL)
    'ON))
PC])
```

**(MB.3STATE.BUTTONEVENTINFN**

```
[LAMBDA (OBJ MENUDS SEL RELX RELY MENUWINDOW MENUTSTREAM BUTTON)
; Edited 22-Dec-2024 22:45 by rmk
; Edited 7-Dec-2024 13:11 by rmk
; Edited 5-Dec-2024 21:53 by rmk
; Edited 18-Oct-2024 12:00 by rmk
; Edited 5-Oct-2024 22:42 by rmk
; Edited 25-Aug-2024 12:50 by rmk
; Edited 6-Aug-2024 10:55 by rmk
; Edited 25-Jul-2024 20:13 by rmk
; Edited 19-Jul-2024 10:43 by rmk
; Edited 18-Jul-2024 10:11 by rmk
; Edited 29-Apr-2024 13:30 by rmk
; Edited 25-Feb-2024 23:40 by rmk
; Edited 21-Oct-2022 18:45 by rmk
; Edited 30-May-91 22:16 by jds
```

;; BUTTONEVENTINFN for 3STATE buttons. This run's in the coordinate system of the object.

;; This brings up the display for the next state, tracks the mouse until either it leaves the object or the buttons come up. If the mouse leaves, the original highlighting is restored. Otherwise the state of the obj is advanced to its next state. Either way, we report that the "selection" didn't succeed.

```
(CL:UNLESS (EQ 'DON'T (MB.BUTTONEVENTINFN OBJ MENUDS SEL RELX RELY MENUWINDOW MENUTSTREAM BUTTON))
  (LET [(NEXTSTATE (SELECTQ (IMAGEOBJPROP OBJ 'STATE)
    (ON 'OFF)
    (OFF 'NEUTRAL)
    (NEUTRAL 'ON)
    (\TEDIT.HELP "ILLEGAL 3STATE" (IMAGEOBJPROP OBJ 'STATE]
    (RESETLST
      ;; In case of an error or interrupt, make the display consistent with the state
      [RESETSAVE NIL `(PROGN (CL:WHEN RESETSTATE
        (MB.3STATE.SHOWSELFN ,OBJ ,MENUDS (IMAGEOBJPROP ,OBJ 'STATE)))]
        (MB.3STATE.SHOWSELFN OBJ MENUDS NEXTSTATE)
        [if (EQ 'DON'T (MB.TRACK.UNTIL OBJ MENUDS))
          then ; Mouse moved out of object
            (MB.3STATE.SHOWSELFN OBJ MENUDS (IMAGEOBJPROP OBJ 'STATE))
          else ; Buttons came up: do it
```



```

finally (RETURN (IPLUS $$VAL (ITIMES SPACING (SUB1 MAXITEMS/LINE)
  (IMAGEOBJPROP OBJ 'SUBOBJECTS SUBOBJECTS)
  (IMAGEOBJPROP OBJ 'ITEMSPACE SPACING)
  (IMAGEOBJPROP OBJ 'BUTTONHEIGHT HEIGHT)
  (IMAGEOBJPROP OBJ 'FONT FONT)
  (IMAGEOBJPROP OBJ 'IDENTIFIER IDENTIFIER)
  (IMAGEOBJPROP OBJ 'STATECHANGEFN STATECHANGEFN)
  (IMAGEOBJPROP OBJ 'STATEFN STATEFN)
  (IMAGEOBJPROP OBJ 'DONTAPPLY DONTAPPLY)
  (IMAGEOBJPROP OBJ 'SETSTATEFN (FUNCTION MB.NWAY.SETSTATEFN))
  (CL:IF (CADR (ASSOC 'IGNORE SPEC))
    (IMAGEOBJPROP OBJ 'IGNORE T))
  OBJ])

```

**(MB.NWAY.DISPLAYFN**

[LAMBDA (OBJ STREAM)

; Edited 22-Jul-2024 10:31 by rmk  
; Edited 18-Jul-2024 17:02 by rmk  
(\* jds "28-Aug-84 15:07")

:: Each of the subobjects has its own positions relative to X and Y and its own displayfn. Each object also knows whether it is on or off.

```

for SOBJ (X _ (DSPXPOSITION NIL STREAM))
  (Y _ (DSPYPOSITION NIL STREAM)) in (IMAGEOBJPROP OBJ 'SUBOBJECTS)
  do (DSPXPOSITION (IPLUS X (IMAGEOBJPROP SOBJ 'X))
    STREAM)
    (DSPYPOSITION (IPLUS Y (IMAGEOBJPROP SOBJ 'Y))
    STREAM)
    (APPLY* (IMAGEOBJPROP SOBJ 'DISPLAYFN)
    SOBJ STREAM])

```

**(MB.NWAY.WHENOPERATEDONFN**

[LAMBDA (OBJ PANE OPERATION SEL)

; Edited 21-Oct-2024 00:26 by rmk  
; Edited 24-Aug-2024 23:38 by rmk  
; Edited 13-Aug-2024 23:43 by rmk  
; Edited 2-Aug-2024 00:36 by rmk  
; Edited 21-Jul-2024 13:17 by rmk  
; Edited 17-Jul-2024 21:51 by rmk  
; Edited 9-Apr-2023 15:57 by rmk  
; Edited 13-Sep-2022 12:09 by rmk  
; Edited 30-May-91 22:16 by jds

:: Perhaps the selected subobject should be stored here, as the state?

:: Mouse tracking and highlighting happens in the BUTTONEVENTINFN (MB.NWAYBUTTON.SELFN). The code here applies the  
:: STATECHANGEFN on the main object

```

(NOTUSED)
(SELECTQ OPERATION
  (SELECTED [AND NIL (\TEDIT.THELP)
    (LET [(SELECTED (IMAGEOBJPROP OBJ 'SELECTED)
      (if (IMAGEOBJPROP OBJ 'STATECHANGEFN)
        then (\TEDIT.THELP)
        (APPLY* (IMAGEOBJPROP OBJ 'STATECHANGEFN)
          OBJ SELECTED SEL PANE)
        elseif (AND NIL SELECTED (IMAGEOBJPROP SELECTED 'STATECHANGEFN))
          then ;; This is nuked out: the selected object may be should have done its own thing?
            (APPLY* (IMAGEOBJPROP SELECTED 'STATECHANGEFN)
              OBJ SELECTED SEL PANE)])
    ((HIGHLIGHTED UNHIGHLIGHTED DESELECTED))
  NIL])

```

**(MB.NWAY.SIZEFN**

[LAMBDA (OBJ STREAM CURX RIGHTMARGIN)

; Edited 20-Aug-2024 15:12 by rmk  
; Edited 22-Jul-2024 11:31 by rmk  
(\* jds "6-Sep-84 14:19")  
; Tell the size of an n-way menu

```

(OR (IMAGEOBJPROP OBJ 'BOUNDBOX)
  (LET ((OLDBOX (IMAGEOBJPROP OBJ 'BOUNDBOX))
    (SUBOBJECTS (IMAGEOBJPROP OBJ 'SUBOBJECTS))
    (MAXITEMS/LINE (IMAGEOBJPROP OBJ 'MAXITEMS/LINE))
    (MAXWIDTH (IMAGEOBJPROP OBJ 'MAXWIDTH))
    (MINHEIGHT (IMAGEOBJPROP OBJ 'MINHEIGHT))
    (BUTTONHEIGHT (IMAGEOBJPROP OBJ 'BUTTONHEIGHT))
    (SPACING (IMAGEOBJPROP OBJ 'ITEMSPACE))
    (SLACK (IDIFFERENCE RIGHTMARGIN CURX))
    BOX XSIZE YSIZE LINES)
    if (AND (IGEQ SLACK MAXWIDTH)
      (EQ MAXITEMS/LINE (LENGTH SUBOBJECTS)))
      then
        (SETQ XSIZE MAXWIDTH)
        (SETQ YSIZE MINHEIGHT)
        (for SO (X _ 0) in SUBOBJECTS do (IMAGEOBJPROP SO 'X X)
          (add X (fetch XSIZE of (IMAGEOBJPROP SO 'BOUNDBOX))
            SPACING)
          (IMAGEOBJPROP SO 'Y 0))
        elseif (ILEQ SLACK (IMAGEOBJPROP OBJ 'MINWIDTH))

```

; All the subobjects fit on one line.

```

then
  (for SO (Y _ (ITIMES BUTTONHEIGHT (LENGTH SUBOBJECTS))) in SUBOBJECTS
    do (add Y (IMINUS BUTTONHEIGHT)
      (IMAGEOBJPROP SO 'Y Y)
      (IMAGEOBJPROP SO 'X 0))
  ; Stack them vertically.

else
  (SETQ LINES (MB.NWAY.ARRANGEBUTTONS SLACK SUBOBJECTS SPACING MAXITEMS/LINE))
  (SETQ XSIZE (for LINE LASTSO in LINES largest (SETQ LASTSO (CAR (LAST LINE)))
    [IPLUS (IMAGEOBJPROP LASTSO 'X)
      (fetch XSIZE of (IMAGEOBJPROP LASTSO
        'BOUNDBOX])
  ; Divide them into lines

  finally (RETURN $$EXTREME))
  (SETQ YSIZE (ITIMES BUTTONHEIGHT (LENGTH LINES)))
  (for LINE (Y _ YSIZE) in LINES do (add Y (IMINUS BUTTONHEIGHT)
    (for SO in LINE do (IMAGEOBJPROP SO 'Y Y)
      (fetch XSIZE of (IMAGEOBJPROP LASTSO
        'BOUNDBOX])
  ; Nothing changed.

then
  ;; Nothing changed.

else
  (SETQ BOX (create IMAGEBOX
    XSIZE _ XSIZE
    YSIZE _ YSIZE
    YDESC _ (fetch YDESC of (IMAGEOBJPROP (CAR SUBOBJECTS)
      'BOUNDBOX))
    XKERN _ 0))
  (IMAGEOBJPROP OBJ 'BOUNDBOX BOX)
  BOX])

```

**(MB.NWAY.SELECT**

```

[LAMBDA (OBJ SELECTED MENUWINDOW SEL)
  ; Edited 3-Jan-2025 12:56 by rmk
  ; Edited 1-Jan-2025 12:30 by rmk
  ; Edited 29-Sep-2024 12:44 by rmk
  ; Edited 24-Aug-2024 15:28 by rmk
  ; Edited 20-Aug-2024 15:13 by rmk
  ; Edited 2-Aug-2024 00:28 by rmk
  ; Edited 22-Jul-2024 23:55 by rmk
  ; Edited 29-Apr-2024 13:31 by rmk
  ; Edited 25-Feb-2024 23:43 by rmk
  ; Edited 21-Oct-2022 18:46 by rmk
  ; Edited 30-May-91 22:16 by jds

  ;; SELECTED, if any, is the new subobject that should replace the old selection. If T, just turn off the old (neutralize).
  (LET [(OLDSELECTED (IMAGEOBJPROP OBJ 'SELECTED)
    (CL:WHEN (AND SELECTED (NEQ SELECTED T)
      (LITATOM SELECTED))
      (SETQ SELECTED (MB.NWAY.FINDSUBOBJ SELECTED OBJ)))
    (if (AND NIL (EQ OLDSELECTED SELECTED))
      then (IMAGEOBJPROP OBJ 'STATE 'OFF)
      ; Reclicking the current selection turns it off.
      (IMAGEOBJPROP OBJ 'SELECTED NIL)
      (CL:WHEN MENUWINDOW
        (BITBLT (IMAGEOBJPROP OLDSELECTED 'BITCACHE)
          0 0 MENUWINDOW (IMAGEOBJPROP OLDSELECTED 'X)
          (IMAGEOBJPROP OLDSELECTED 'Y)
          NIL NIL 'INPUT 'REPLACE))
      else (CL:WHEN (AND OLDSELECTED SELECTED)
        ; Turn the old one off if it's changing
        (IMAGEOBJPROP OLDSELECTED 'STATE 'OFF)
        (CL:WHEN MENUWINDOW
          (BITBLT (IMAGEOBJPROP OLDSELECTED 'BITCACHE)
            0 0 MENUWINDOW (IMAGEOBJPROP OLDSELECTED 'X)
            (IMAGEOBJPROP OLDSELECTED 'Y)
            NIL NIL 'INPUT 'REPLACE))
          (IMAGEOBJPROP OBJ 'STATE NIL)
          (IMAGEOBJPROP OBJ 'SELECTED NIL)
          (CL:WHEN (AND SELECTED (NEQ T SELECTED))
            ; Turn on the new one.
            (IMAGEOBJPROP SELECTED 'STATE 'ON)
            (CL:WHEN MENUWINDOW
              (BITBLT (IMAGEOBJPROP SELECTED 'BITCACHE)
                0 0 MENUWINDOW (IMAGEOBJPROP SELECTED 'X)
                (IMAGEOBJPROP SELECTED 'Y)
                NIL NIL 'INVERT 'REPLACE))
              (IMAGEOBJPROP OBJ 'SELECTED SELECTED)
              (IMAGEOBJPROP OBJ 'STATE (IMAGEOBJPROP SELECTED 'IDENTIFIER))
              (CL:WHEN (IMAGEOBJPROP OBJ 'STATECHANGEFN)
                (APPLY* (IMAGEOBJPROP OBJ 'STATECHANGEFN)
                  OBJ SELECTED SEL MENUWINDOW))))))

```

**(MB.NWAY.BUTTONEVENTINFN**

```

[LAMBDA (OBJ MENUCLS SEL RELX RELY SELWINDOW MENUTSTREAM BUTTON)
  ; Edited 5-Dec-2024 21:09 by rmk
  ; Edited 25-Aug-2024 11:31 by rmk
  ; Edited 22-Aug-2024 16:29 by rmk
  ; Edited 20-Aug-2024 16:41 by rmk
  ; Edited 22-Jul-2024 11:32 by rmk
  ; Edited 29-Apr-2024 13:31 by rmk

```

; Edited 25-Feb-2024 23:43 by rmk  
; Edited 21-Oct-2022 18:46 by rmk  
; Edited 30-May-91 22:16 by jds

;; The BUTTONEVENTINFN for NWAY buttons. The mouse clicked in OBJ's box  
;; Could be making a new selection, or maybe just throwing away an old one (all off).  
;; The window is mapped to the object's coordinate system (the baseline-left is 0,0. We have to figure out which of the subobjects the mouse is in,  
;; given that their coordinates are relative to the main object's coordinates. Then make the selection.

```
(PROG1 (if (OR (MEMB BUTTON '(MIDDLE RIGHT))
              (EQ 'DON'T (MB.BUTTONEVENTINFN OBJ MENU DS SEL RELX RELY SELWINDOW MENUTSTREAM BUTTON)))
        then 'DON'T
        else (MB.NWAY.SELECT OBJ (find SOBJ in (IMAGEOBJPROP OBJ 'SUBOBJECTS)
                                             suchthat (INSIDE? [create REGION
                                                                    LEFT _ (IMAGEOBJPROP SOBJ 'X)
                                                                    BOTTOM _ (IMAGEOBJPROP SOBJ 'Y)
                                                                    WIDTH _ (fetch XSIZE of (IMAGEOBJPROP SOBJ 'BOUNDBOX))
                                                                    HEIGHT _ (fetch YSIZE of (IMAGEOBJPROP SOBJ 'BOUNDBOX))
                                                                    RELX RELY))
                                             MENUDS SEL)
          T)
        (TEDIT.BACKTOMAIN MENUTSTREAM]))
```

**(MB.NWAY.NEWMENUBUTTON**

[LAMBDA (TEXTOBJ CH# OLDBUTTON NEWBUTTON)

; Edited 22-Jul-2024 10:08 by rmk  
(\* jds "8-Feb-84 19:41")

;; Not called?  
;; Given a hook on an existing button, and an insertion point, insert a new button

```
(PROG ((ARBITRATOR (IMAGEOBJPROP OLDBUTTON 'ARBITRATOR))
      BUTTON)
      (IMAGEOBJPROP BUTTON 'ARBITRATOR ARBITRATOR)
      (TEDIT.INSERT.OBJECT BUTTON TEXTOBJ CH#)
      (TEDIT.INSERT TEXTOBJ " " (ADD1 CH#))
      (TEDIT.LOOKS TEXTOBJ '(PROTECTED ON)
        (ADD1 CH#)
        2)
      (RETURN BUTTON))
```

**(MB.NWAY.COPYFN**

[LAMBDA (OBJ)

; Edited 11-Aug-2024 17:11 by rmk  
; Edited 21-Jul-2024 10:34 by rmk  
(\* jds "23-May-84 11:32")  
; Copy an NWAY menu button.

```
(LET [(NEWOBJ (MB.COPYFN OBJ))
      (SELECTED (IMAGEOBJPROP OBJ 'SELECTED))]
  ;; MB.COPYFN copies the property list.
  (for SOTAIL SUBOBJ SCOPY on (IMAGEOBJPROP NEWOBJ 'SUBOBJECTS) do
    (SETQ SUBOBJ (CAR SOTAIL))
    (SETQ SCOPY (APPLY* (IMAGEOBJPROP SUBOBJ 'COPYFN)
                      SUBOBJ))
    (CL:WHEN (EQ SUBOBJ SELECTED)
      (IMAGEOBJPROP NEWOBJ 'SELECTED SCOPY))
    (RPLACA SOTAIL SCOPY))
  NEWOBJ))
```

**(MB.NWAY.INIT**

[LAMBDA (BUTTONS FONT INITSTATE)

; Edited 7-Jan-2025 22:50 by rmk  
; Edited 7-Dec-2024 09:05 by rmk  
; Edited 24-Aug-2024 23:11 by rmk  
; Edited 20-Aug-2024 16:41 by rmk  
; Edited 11-Aug-2024 17:13 by rmk  
(\* jds "9-Feb-86 15:17")

;; Selection happens in the BUTTEVENTINFN, no WHENOPERATEDONFN

```
(DECLARE (GLOBALVARS MB.NWAY.IMAGEFN))
(SETQ MB.NWAY.IMAGEFN (IMAGEFNSCREATE (FUNCTION MB.NWAY.DISPLAYFN)
                                       (FUNCTION MB.NWAY.SIZEFN)
                                       (FUNCTION MB.PUTFN)
                                       (FUNCTION MB.GETFN)
                                       (FUNCTION MB.NWAY.COPYFN)
                                       (FUNCTION MB.NWAY.BUTTONEVENTINFN)
                                       'NIL
                                       'NIL
                                       'NIL
                                       (FUNCTION MB.DON'T)
                                       'NIL))
```

```
'NIL
'NIL
'NWayButton])
```

**(MB.NWAY.ARRANGEBUTTONS**

```
[LAMBDA (WIDTH SUBOBJECTS SPACING MAXITEMS/LINE)
```

; Edited 21-Jul-2024 20:18 by rmk
(\* jds "24-Oct-84 17:42")

;;; Pack the subobjects, separated by SPACING, into lines WIDTH wide. Each line is a list of subobjects, and the X of each one is set to reflect its new
;;; position in the larger object.

```
(for SO XSIZE LINES LINEOBJECTS (NLINEOBJECTS _ 0)
  (X _ 0) in SUBOBJECTS do [SETQ XSIZE (fetch XSIZE of (IMAGEOBJPROP SO 'BOUNDBOX)
    (CL:WHEN (OR (ILESSP WIDTH (IPLUS X XSIZE))
      (AND MAXITEMS/LINE (IGEQ NLINEOBJECTS MAXITEMS/LINE)))
      ; Time for a new line
      (push LINES (DREVERSE LINEOBJECTS))
      ; Add a new line, reset for next line
      (SETQ X 0)
      (SETQ LINEOBJECTS NIL)
      (SETQ NLINEOBJECTS 0))
    (push LINEOBJECTS SO)
    (IMAGEOBJPROP SO 'X X)
    (add X XSIZE SPACING) ; Position of the next object
    (add NLINEOBJECTS 1)
  ]
  finally (CL:WHEN LINEOBJECTS
    (push LINES (DREVERSE LINEOBJECTS)))
    (RETURN (DREVERSE LINES)) ; Add a final partial line
```

**(MB.NWAY.ADDITEM**

```
[LAMBDA (OBJ NEWBUTTON)
```

; Edited 9-Jan-2025 11:38 by rmk
; Edited 20-Oct-2024 00:13 by rmk
; Edited 29-Sep-2024 12:47 by rmk
; Edited 26-Aug-2024 09:36 by rmk
; Edited 20-Aug-2024 15:46 by rmk
; Edited 16-Aug-2024 00:04 by rmk
; Edited 13-Aug-2024 19:33 by rmk
; Edited 27-Jul-2024 23:28 by rmk
; Edited 22-Jul-2024 13:34 by rmk
(\* jds "11-Jul-85 12:44")

;; Given an existing n-way choice menu button, add another choice to the list. The items are arranged in alphabetical order by their labels.
;; MAXITEMS/LINE is goofy: it should flow with reshaping of the window.

```
(CL:WHEN NEWBUTTON
  (LET* [(SUBOBJECTS (IMAGEOBJPROP OBJ 'SUBOBJECTS))
    (NEWSOBJ (MB.TOGGLE.CREATE `((IDENTIFIER ,NEWBUTTON)
      (LABEL ,NEWBUTTON)
      (FONT ,(IMAGEOBJPROP OBJ 'FONT))
      (MAXITEMS/LINE (IMAGEOBJPROP OBJ 'MAXITEMS/LINE))
    ] (SETQ SUBOBJECTS (SORT (CONS NEWSOBJ SUBOBJECTS)
      (FUNCTION (LAMBDA (S1 S2)
        (ALPHORDER (IMAGEOBJPROP S1 'LABEL)
          (IMAGEOBJPROP S2 'LABEL))
      )
      (IMAGEOBJPROP OBJ 'SUBOBJECTS SUBOBJECTS)
      [IMAGEOBJPROP OBJ 'MINWIDTH (IMAX (IMAGEOBJPROP OBJ 'MINWIDTH)
        (fetch XSIZE of (IMAGEOBJPROP NEWSOBJ 'BOUNDBOX))
      ]
      (CL:WHEN (ILESSP (LENGTH SUBOBJECTS)
        MAXITEMS/LINE)
        [IMAGEOBJPROP OBJ 'MAXWIDTH (for SOBJ in [SORT (COPY SUBOBJECTS)
          (FUNCTION (LAMBDA (A B)
            (IGEQ (fetch XSIZE
              of (IMAGEOBJPROP
                A
                'BOUNDBOX))
            (fetch XSIZE
              of (IMAGEOBJPROP
                B
                'BOUNDBOX))
          )
          as I from 1 to MAXITEMS/LINE
          sum (fetch XSIZE of (IMAGEOBJPROP SOBJ 'BOUNDBOX))
          finally (RETURN (IPLUS $$VAL (ITIMES (IMAGEOBJPROP OBJ
            'ITEMSPACE)
            (SUB1 MAXITEMS/LINE))
          ]
        ]
        (IMAGEOBJPROP OBJ 'MAXHEIGHT (ITIMES (IMAGEOBJPROP OBJ 'BUTTONHEIGHT)
          (LENGTH SUBOBJECTS)))
        (IMAGEOBJPROP OBJ 'BOUNDBOX NIL) ; OBJ's original bound box is no longer valid.
        NEWSOBJ))] )
```

**(MB.NWAY.FINDSUBOBJ**

```
[LAMBDA (TEXT OBJ)
```

; Edited 26-Aug-2024 09:31 by rmk
; Edited 22-Jul-2024 13:29 by rmk

```
(find SOBJ in (IMAGEOBJPROP OBJ 'SUBOBJECTS) suchthat (STRING.EQUAL TEXT (IMAGEOBJPROP SOBJ 'LABEL]))
```

**(MB.NWAY.SETSTATEFN**

[LAMBDA (PC NEWVALUE MENUSTREAM)

; Edited 20-Oct-2024 00:02 by rmk  
; Edited 29-Sep-2024 12:45 by rmk  
; Edited 31-Aug-2024 14:46 by rmk  
; Edited 9-Aug-2024 13:36 by rmk  
; Edited 5-Aug-2024 09:42 by rmk  
; Edited 3-Aug-2024 12:15 by rmk

:: If NEWVALUE is OFF, the selection is turned off. Otherwise, the button for NEWVALUE (perhaps added if it wasn't there already) is turned on  
and all the others are turned off..

```
(CL:WHEN (type? SELECTION PC)
  (SETQ PC (\TEDIT.CHTOPC (FGETSEL PC CH#)
    (TEXTOBJ MENUSTREAM)))
  (LET ((OBJ (PCONTEXTS PC))
    (CL:UNLESS (OR (EQ NEWVALUE 'OFF)
      (MB.NWAY.FINDSUBOBJ NEWVALUE OBJ)
      (MB.NWAY.ADDITEM OBJ NEWVALUE))
      (MB.NWAY.SELECT OBJ NEWVALUE)
      (TEDIT.OBJECT.CHANGED MENUSTREAM OBJ PC))
    PC])
  )
```

(DECLARE%: DONTEVAL@LOAD DOCOPY

**(MB.NWAY.INIT**

)

:: TOGGLE

(DEFINEQ

**(MB.TOGGLE.CREATE**

[LAMBDA (SPEC)

; Edited 19-Oct-2024 09:13 by rmk  
; Edited 6-Oct-2024 22:22 by rmk  
; Edited 28-Aug-2024 18:39 by rmk  
; Edited 25-Jul-2024 16:00 by rmk  
; Edited 22-Jul-2024 00:04 by rmk  
(\* gbn "24-Sep-84 14:45")

:: Creates a TOGGLE menu button, that turns off and on alternately

```
(CL:UNLESS (ASSOC 'INITSTATE SPEC)
  (push SPEC (LIST 'INITSTATE 'OFF)))
(CL:UNLESS (CADR (ASSOC 'SETSTATEFN SPEC))
  (push SPEC (LIST 'SETSTATEFN (FUNCTION MB.TOGGLE.SETSTATEFN))))
(MB.CREATE SPEC MB.TOGGLE.IMAGEFNS])
```

**(MB.TOGGLE.DISPLAYFN**

[LAMBDA (OBJ STREAM MODE)

; Edited 25-Aug-2024 23:13 by rmk  
; Edited 24-Aug-2024 16:02 by rmk  
; Edited 21-Jul-2024 00:41 by rmk  
; Edited 19-Jul-2024 10:57 by rmk  
; Edited 20-Nov-2023 14:35 by rmk  
(\* gbn "27-Sep-84 01:23")  
; '27-Sep-84 01:11' gbn

:: Display the innards of a menu toggle

```
(LET ((BITMAP (MB.SETIMAGE OBJ))
  (OBJBOX (MB.SIZEFN OBJ))
  (X (DSPXPOSITION NIL STREAM))
  (Y (DSPYPOSITION NIL STREAM))
  (XSIZE YSIZE)
  (SETQ Y (IDIFFERENCE Y (fetch YDESC of OBJBOX)))
  (SETQ XSIZE (fetch XSIZE of OBJBOX))
  (SETQ YSIZE (fetch YSIZE of OBJBOX))
  (BITBLT BITMAP 0 0 STREAM X Y XSIZE YSIZE 'INPUT 'REPLACE)
  (CL:WHEN (EQ 'ON (IMAGEOBJPROP OBJ 'STATE))
    (BLTSHADE BLACKSHADE STREAM X Y XSIZE YSIZE 'INVERT)))
  ; Display white text on black background
```

**(MB.TOGGLE.INIT**

[LAMBDA NIL

; Edited 7-Jan-2025 22:50 by rmk  
; Edited 7-Dec-2024 12:33 by rmk  
; Edited 19-Oct-2024 23:21 by rmk  
; Edited 18-Oct-2024 13:27 by rmk  
; Edited 6-Oct-2024 23:43 by rmk  
; Edited 25-Aug-2024 23:13 by rmk  
; Edited 24-Aug-2024 10:56 by rmk  
; Edited 20-Aug-2024 15:47 by rmk  
(\* jds "9-Feb-86 15:18")

```
(DECLARE (GLOBALVARS MB.TOGGLE.IMAGEFNS))
(SETQ MB.TOGGLE.IMAGEFNS (IMAGEFNSCREATE (FUNCTION MB.TOGGLE.DISPLAYFN)
  (FUNCTION MB.SIZEFN)
  (FUNCTION MB.PUTFN)
  (FUNCTION MB.GETFN)
  (FUNCTION MB.COPYFN)
```

```
(FUNCTION MB.TOGGLE.BUTTONEVENTINFN)
'NILL
'NILL
'NILL
(FUNCTION MB.DON'T)
'NILL
(FUNCTION MB.TOGGLE.WHENOPERATEDONFN)
'NILL
'ToggleButton])
```

**(MB.SET.TOGGLE**

```
[LAMBDA (IDENTIFIER VALUE MENUSTREAM) ; Edited 22-Oct-2024 09:17 by rmk
; Edited 26-Aug-2024 09:35 by rmk
; Edited 20-Aug-2024 15:26 by rmk
; Edited 11-Aug-2024 13:13 by rmk
; Edited 21-Jul-2024 01:03 by rmk
; Edited 6-Jul-2024 16:57 by rmk
; Edited 6-Aug-2022 18:18 by rmk
; Edited 12-Jun-90 19:02 by mitani
```

;;; Finds the button with IDENTIFIER in TEXTSTREAM and sets its state to VALUE

```
(LET [(OBJ (OR (MB.GET IDENTIFIER MENUSTREAM)
(ERROR IDENTIFIER " was not found as a button."))
(IMAGEOBJPROP OBJ 'STATE VALUE)
(\TEDIT.FILL.PANES MENUSTREAM)
VALUE])
```

**(MB.TOGGLE.SETSTATEFN**

```
[LAMBDA (PC NEWVALUE MENUSTREAM) ; Edited 20-Oct-2024 18:14 by rmk
; Edited 18-Oct-2024 23:17 by rmk
; Edited 6-Oct-2024 22:54 by rmk
; Edited 8-Aug-2024 14:34 by rmk
; Edited 3-Aug-2024 00:10 by rmk
```

```
(CL:WHEN (type? SELECTION PC)
(SETQ PC (\TEDIT.CHTOPC (FGETSEL PC CH#)
(GETTSTR MENUSTREAM TEXTOBJ))))
(IMAGEOBJPROP (POBJ PC)
'STATE NEWVALUE)
(TEDIT.OBJECT.CHANGED MENUSTREAM (POBJ PC)
PC)
PC])
```

**(MB.TOGGLE.BUTTONEVENTINFN**

```
[LAMBDA (OBJ MENUDS MENUSEL RELX RELY MENUWINDOW MENUTSTREAM BUTTON) ; Edited 7-Dec-2024 13:11 by rmk
; Edited 19-Oct-2024 19:52 by rmk
; Edited 5-Oct-2024 22:42 by rmk
; Edited 25-Aug-2024 12:50 by rmk
; Edited 6-Aug-2024 10:55 by rmk
; Edited 25-Jul-2024 20:13 by rmk
; Edited 19-Jul-2024 10:43 by rmk
; Edited 18-Jul-2024 10:11 by rmk
; Edited 29-Apr-2024 13:30 by rmk
; Edited 25-Feb-2024 23:40 by rmk
; Edited 21-Oct-2022 18:45 by rmk
; Edited 30-May-91 22:16 by jds
```

;; BUTTONEVENTINFN for toggle buttons. This run's in the coordinate system of the object.

;; This brings up the display for the next state, tracks the mouse until either it leaves the object or the buttons come up. If the mouse leaves, the original highlighting is restored. Otherwise the state of the obj is advanced to its next state. Either way, we report that the "selection" didn't succeed.

```
(if (EQ 'DON'T (MB.BUTTONEVENTINFN OBJ MENUDS MENUSEL RELX RELY MENUWINDOW MENUTSTREAM BUTTON))
then 'DON'T
else (LET ([NEXTSTATE (SELECTQ (IMAGEOBJPROP OBJ 'STATE)
(OFF T)
'OFF)
(OFF NIL)
'ON)
(\TEDIT.THELP "ILLEGAL TOGGLE" (IMAGEOBJPROP OBJ 'STATE)
STATECHANGEFN)
(RESETLST
; In case of an error or interrupt, make the display consistent with the state
[RESETSAVE NIL `(PROGN (CL:WHEN RESETSTATE
(MB.SHOWSELFN ,OBJ (IMAGEOBJPROP ,OBJ 'STATE)
,MENUDS))]
(MB.SHOWSELFN OBJ NEXTSTATE MENUDS)
(if (EQ 'DON'T (MB.TRACK.UNTIL OBJ MENUDS))
then ; Mouse moved out of object
(MB.SHOWSELFN OBJ (IMAGEOBJPROP OBJ 'STATE)
MENUDS)
NIL
else ; Buttons came up: do it
```



```
(SETQ STATECHANGEFN (IMAGEOBJPROP OBJ 'STATECHANGEFN))
(if (OR (NULL STATECHANGEFN)
      (NEQ 'DON'T (APPLY* STATECHANGEFN OBJ NEXTSTATE (fetch (TEXTWINDOW WTEXTSTREAM)
                                                                of MENUDS)
                                                                MENUSEL)))
    then (IMAGEOBJPROP OBJ 'STATE NEXTSTATE)
        ; SELECTFN value: WHENOPERATEDONFN will run it in
        ; window's coordinate system
      (IMAGEOBJPROP OBJ 'SELECTFN)
    else (MB.SHOWSELFN OBJ (IMAGEOBJPROP OBJ 'STATE)
                        MENUDS)
        ; NIL value: object is ignored
      NIL)))
```

**(MB.TOGGLE.WHENOPERATEDONFN**

```
[LAMBDA (OBJ MENUDS OPERATION MENUSEL MENUSTREAM)
```

```
; Edited 20-Oct-2024 22:11 by rmk
; Edited 6-Oct-2024 21:34 by rmk
; Edited 24-Aug-2024 10:48 by rmk
; Edited 20-Aug-2024 15:46 by rmk
; Edited 9-Feb-2024 10:52 by rmk
; Edited 28-Jan-2024 23:32 by rmk
; Edited 30-May-91 22:16 by jds
```

```
:: Run's the SELECTFN of a toggle in the window's coordinate system, after it has been selected (mouse buttons came up). The buttoneventfn
;; manages the STATECHANGEFN and highlighting in the object's coordinate system
```

```
(SELECTQ OPERATION
 (SELECTED (CL:WHEN (IMAGEOBJPROP OBJ 'SELECTFN)
              (APPLY* (IMAGEOBJPROP OBJ 'SELECTFN)
                    OBJ MENUDS MENUSEL MENUSTREAM))
            (TEDIT.BACKTOMAIN MENUSTREAM))
 ((DESELECTED HIGHLIGHTED UNHIGHLIGHTED))
 NIL])
```

)

```
(DECLARE%: DONTEVAL@LOAD DOCOPY
```

**(MB.TOGGLE.INIT)**

)

:: FIELDS

```
(DEFINEQ
```

**(MB.FIELD.CREATE**

```
[LAMBDA (SPEC MENUSTREAM CH#)
```

```
; Edited 16-Feb-2025 15:01 by rmk
; Edited 11-Jan-2025 09:59 by rmk
; Edited 9-Jan-2025 16:52 by rmk
; Edited 5-Jan-2025 12:09 by rmk
; Edited 16-Dec-2024 13:33 by rmk
; Edited 9-Dec-2024 21:53 by rmk
; Edited 4-Dec-2024 15:57 by rmk
; Edited 20-Oct-2024 23:43 by rmk
; Edited 29-Sep-2024 12:52 by rmk
; Edited 29-Aug-2024 09:41 by rmk
; Edited 22-Aug-2024 23:22 by rmk
; Edited 21-Aug-2024 09:55 by rmk
; Edited 15-Aug-2024 23:13 by rmk
; Edited 14-Aug-2024 00:25 by rmk
; Edited 7-Aug-2024 23:48 by rmk
; Edited 2-Aug-2024 12:21 by rmk
; Edited 30-Jul-2024 13:31 by rmk
; Edited 27-Jul-2024 21:16 by rmk
; Edited 26-Jul-2024 13:37 by rmk
; Edited 24-Jul-2024 18:20 by rmk
```

```
:: Installs a FIELDPREFIX image objects with preceding text followed by "{" and a post-field string piece with "}" followed by the postlabel.
```

```
(LET ((INITSTATE (CADR (ASSOC 'INITSTATE SPEC)))
      (PRELABEL (CADR (ASSOC 'PRELABEL SPEC)))
      (POSTLABEL (CADR (ASSOC 'POSTLABEL SPEC)))
      (IDENTIFIER (CADR (ASSOC 'IDENTIFIER SPEC)))
      [LABELFONT (FONTCREATE (OR (CADR (ASSOC 'LABELFONT SPEC))
                                '(HELVETICA 8))
                              (FIELDFONT (FONTCREATE (OR (CADR (ASSOC 'FIELDFONT SPEC))
                                                            '(HELVETICA 8))
                                                    PRE POST FIELDLOOKS PREFIXOBJ SUFFIXOBJ REMAINDER)
      (if (NULL IDENTIFIER)
          then (if PRELABEL
                then [SETQ IDENTIFIER (U-CASE (MKATOM (CL:STRING-TRIM ' (#\Space #\Tab #\Newline #\:)
                                                                PRELABEL]
                else (ERROR (ERROR "Missing both IDENTIFIER and PRELABEL" SPEC)))
          elseif (OR (LITATOM IDENTIFIER)
                    (SMALLP IDENTIFIER))
          elseif (STRINGP IDENTIFIER)
            then (SETQ IDENTIFIER (MKATOM IDENTIFIER))
          else (\ILLEGAL.ARG IDENTIFIER))
```

```
(push SPEC (LIST ' IDENTIFIER IDENTIFIER))
;; SPEC could specify a prelabel font different from a field font
[SETQ PRE `((,FIELDFONT " {"]
(CL:WHEN PRELABEL
  (push PRE (LIST LABELFONT PRELABEL)))
(CL:WHEN POSTLABEL
  [SETQ POST `((,LABELFONT ,POSTLABEL)]
  (push POST (LIST FIELDFONT " } ")))
;;
(SETQ FIELDLOOKS (\TEDIT.CHARLOOKS.FROM.FONT FIELDFONT))
(SETQ PREFIXOBJ (MB.FIELD.PREFIXCREATE SPEC PRE FIELDLOOKS))
(SETQ SUFFIXOBJ (MB.FIELD.SUFFIXCREATE SPEC POST FIELDLOOKS))
(IMAGEOBJPROP PREFIXOBJ 'SUFFIXOBJ SUFFIXOBJ)
[SETQ REMAINDER (MB.SPEC.REMAINDER SPEC '(INITSTATE PRELABEL POSTLABEL IDENTIFIER LABELFONT FIELDFONT))
(for S in REMAINDER do (IMAGEOBJPROP PREFIXOBJ (CAR S)
  (CADR S)))
;; Let the suffixobj have the same extras as the prefix ? E.g. DELETABLE ?
(for S in REMAINDER do (IMAGEOBJPROP SUFFIXOBJ (CAR S)
  (CADR S)))
;;
(TEDIT.INSERT.OBJECT PREFIXOBJ MENUTSTREAM CH# FIELDFONT)
(add CH# 1)
(CL:WHEN (AND INITSTATE (NEQ INITSTATE '**EMPTY**)) ; Initial entry
  (add CH# (if (EQ 'IMAGEOBJ (CADR (ASSOC 'FIELDTYPE SPEC)))
    then [TEDIT.INSERT.OBJECT INITSTATE MENUTSTREAM CH# `(FONT ,FIELDFONT)
    1
    else [TEDIT.INSERT MENUTSTREAM INITSTATE CH# `(FONT ,FIELDFONT)
    (NCHARS INITSTATE))])
(TEDIT.INSERT.OBJECT SUFFIXOBJ MENUTSTREAM CH# FIELDFONT)
(add CH# 1])
```

**(MB.FIELD.DISPLAYFN**

```
[LAMBDA (OBJ IMAGESTREAM) ; Edited 4-Dec-2024 16:11 by rmk
; Edited 4-Dec-2021 08:24 by rmk
; Edited 1-Dec-2021 14:18 by rmk:
(for X in (IMAGEOBJPROP OBJ 'OBJECTDATUM) do (DSPFONT (OR (FONTP (CAR X))
  (FONTCREATE (CAR X)
    NIL NIL NIL IMAGESTREAM))
  IMAGESTREAM)
(for I in (CDR X) do (PRIN3 I IMAGESTREAM])
```

**(MB.FIELD.IMAGEBOXFN**

```
[LAMBDA (OBJ IMAGESTREAM CURRENTX RIGHTMARGIN) ; Edited 4-Dec-2024 08:36 by rmk
; Edited 9-Dec-2021 23:02 by rmk
; Edited 7-Dec-2021 10:50 by rmk
; Edited 5-Dec-2021 23:52 by rmk
; Edited 4-Dec-2021 08:24 by rmk
; Edited 1-Dec-2021 13:27 by rmk:
```

;; Calculates the image box for a sequence of (font string/atom) items.

```
(SETQ IMAGESTREAM (GETSTREAM IMAGESTREAM 'OUTPUT))
(for X FONT (XSIZE _ 0)
  (ASCENT _ 0)
  (DESCENT _ 0) in (IMAGEOBJPROP OBJ 'OBJECTDATUM) do (SETQ FONT (FONTCREATE (CAR X)
  NIL NIL NIL IMAGESTREAM))
[SETQ DESCENT (IMAX DESCENT (FONTPROP FONT
  'DESCENT)]
[SETQ ASCENT (IMAX ASCENT (FONTPROP FONT
  'ASCENT)]
  (add XSIZE (for I in (CDR X)
    sum (STRINGWIDTH I FONT)))
finally (RETURN (create IMAGEBOX
  XSIZE _ XSIZE
  YSIZE _ (IPLUS ASCENT DESCENT)
  YDESC _ DESCENT
  XKERN _ 0])
```

**(MB.FIELD.PREFIXCREATE**

```
[LAMBDA (SPEC PRE FIELDLOOKS) ; Edited 11-Jan-2025 09:58 by rmk
; Edited 4-Jan-2025 16:53 by rmk
; Edited 9-Dec-2024 21:53 by rmk
; Edited 7-Dec-2024 09:01 by rmk
; Edited 4-Dec-2024 17:48 by rmk
; Edited 8-Nov-2024 08:36 by rmk
; Edited 22-Oct-2024 12:54 by rmk
; Edited 20-Oct-2024 17:25 by rmk
; Edited 6-Oct-2024 17:43 by rmk
; Edited 29-Sep-2024 21:45 by rmk
; Edited 29-Aug-2024 09:40 by rmk
; Edited 21-Aug-2024 09:48 by rmk
```

:: Create a FIELDPREFIX image object, and fill in its image and function-hook fields. This displays its own text, but returns the characters of the  
:: following unprotected text field when selected

```
(CL:UNLESS (CADR (ASSOC 'SETSTATEFN SPEC))
  (push SPEC (LIST 'SETSTATEFN (FUNCTION MB.FIELD.SETSTATEFN))))
(LET ((INITSTATE (CADR (ASSOC 'INITSTATE SPEC)))
      (EMPTYVALUE (ASSOC 'EMPTYVALUE SPEC))
      (FIELDTYPE OBJ)
      (CL:WHEN EMPTYVALUE ; Put it in a list, so we can distinguish NIL
        (SETQ SPEC (CONS (LIST 'EMPTYVALUE (CDR EMPTYVALUE))
                          (REMOVE EMPTYVALUE SPEC)))))
  (CL:UNLESS (SETQ FIELDTYPE (CADR (ASSOC 'FIELDTYPE SPEC)))
    [push SPEC (LIST 'FIELDTYPE (SETQ FIELDTYPE 'STRING])
    (SETQ OBJ (IMAGEOBJCREATE PRE MB.FIELD.IMAGEFNS))
    (IMAGEOBJPROP OBJ 'STATEFN (FUNCTION MB.FIELD.GETSTATEFN))
    (CL:UNLESS (CADR (ASSOC 'SETSTATEFN SPEC))
      (IMAGEOBJPROP OBJ SPEC 'SETSTATEFN (FUNCTION MB.FIELD.SETSTATEFN)))
    (IMAGEOBJPROP OBJ 'FIELDLOOKS FIELDLOOKS)
    (for s in SPEC unless (MEMB (CAR S)
      ' (PRELABEL POSTLABEL LABELFONT IDENTIFIER FIELDFONT))
      do (IMAGEOBJPROP OBJ (CAR S)
        (CADR S)))
    (CL:WHEN (AND EMPTYVALUE (EQ INITSTATE (CADR EMPTYVALUE)))
      (SETQ INITSTATE '**EMPTY**))
    (CL:WHEN (AND INITSTATE (NEQ INITSTATE '**EMPTY**))
      (CL:UNLESS (SELECTQ FIELDTYPE
        (NUMBER (NUMBERP INITSTATE))
        (SYMBOL (LITATOM INITSTATE))
        (POSITIVENUMBER
          (AND (NUMBERP INITSTATE)
                (IGEQ INITSTATE 1)))
        (CARDINAL (AND (NUMBERP INITSTATE)
                       (IGEQ INITSTATE 0)))
        ((TEXT STRING)
          (STRINGP INITSTATE))
        (IMAGEOBJ (IMAGEOBJP INITSTATE))
        (SELECTION (OR (ATOM INITSTATE)
                      (STRINGP INITSTATE)))
          NIL)
        (\ILLEGAL.ARG INITSTATE))
      (IMAGEOBJPROP OBJ 'INITSTATE INITSTATE))
    (IMAGEOBJPROP OBJ 'IDENTIFIER (CADR (ASSOC 'IDENTIFIER SPEC)))
    (IMAGEOBJPROP OBJ 'FIELDPREFIX T)
    OBJ])
```

**(MB.FIELD.SUFFIXCREATE**

[LAMBDA (SPEC POST FIELDLOOKS)

```
; Edited 9-Dec-2024 21:53 by rmk
; Edited 7-Dec-2024 09:02 by rmk
; Edited 4-Dec-2024 11:58 by rmk
; Edited 8-Nov-2024 08:36 by rmk
; Edited 22-Oct-2024 12:54 by rmk
; Edited 20-Oct-2024 17:25 by rmk
; Edited 6-Oct-2024 17:43 by rmk
; Edited 29-Sep-2024 21:45 by rmk
; Edited 29-Aug-2024 09:40 by rmk
; Edited 21-Aug-2024 09:48 by rmk
```

:: Creates the FIELDSUFFIX image object. This displays the POST strings, but otherwise just moves the caret to its right when selected. All the  
:: action is in the FIELDPREFIX on the other side of the field.

```
(LET (OBJ)
  (SETQ OBJ (IMAGEOBJCREATE POST MB.FIELD.IMAGEFNS))
  (IMAGEOBJPROP OBJ 'FIELDSUFFIX T)
  (IMAGEOBJPROP OBJ 'FIELDLOOKS FIELDLOOKS)
  (IMAGEOBJPROP OBJ 'IDENTIFIER (PACK* (CADR (ASSOC 'IDENTIFIER SPEC))
    ". SUFFIX"))
  OBJ])
```

**(MB.FIELD.INIT**

[LAMBDA NIL

```
; Edited 7-Jan-2025 22:51 by rmk
; Edited 7-Dec-2024 09:05 by rmk
; Edited 4-Dec-2024 16:09 by rmk
; Edited 22-Aug-2024 10:07 by rmk
; Edited 20-Aug-2024 16:03 by rmk
; Edited 23-Jul-2024 14:49 by rmk
; Edited 18-Feb-2024 14:15 by rmk
(* jds "12-Feb-85 14:32")
```

:: The displayfn is NILL--field prefixes don't display

```
(DECLARE (GLOBALVARS MB.FIELD.IMAGEFNS))
(SETQ MB.FIELD.IMAGEFNS (IMAGEFNSCREATE (FUNCTION MB.FIELD.DISPLAYFN)
  (FUNCTION MB.FIELD.IMAGEBOXFN)
  (FUNCTION MB.PUTFN)
  (FUNCTION MB.GETFN)
  (FUNCTION MB.COPYFN)
  (FUNCTION MB.FIELD.BUTTONEVENTINFN))
```

```
'NILL
'NILL
'NILL
(FUNCTION MB.DON'T)
'NILL
(FUNCTION MB.FIELD.WHENOPERATEDONFN)
(FUNCTION NILL)
'FieldPrefixButton])
```

**(MB.FIELD.WHENOPERATEDONFN**

```
[LAMBDA (OBJ PANE OPERATION SEL TSTREAM)
```

```
; Edited 5-Dec-2024 15:12 by rmk
; Edited 8-Nov-2024 08:37 by rmk
; Edited 26-Jul-2024 00:17 by rmk
; Edited 24-Jul-2024 00:02 by rmk
; Edited 20-Jul-2024 20:57 by rmk
; Edited 17-Jul-2024 21:27 by rmk
; Edited 27-Mar-2024 13:49 by rmk
```

;; If the buttoneventfn didn't take care of this.

```
(SELECTQ OPERATION
 (SELECTED (if (IMAGEOBJPROP OBJ 'FIELDPREFIX)
              then (FSETSEL SEL POINT 'RIGHT)
              else (FSETSEL SEL POINT 'LEFT))
           (FSETSEL SEL SELOBJ NIL)
           (FSETSEL SEL DCH 0))
 (\TEDIT.FIXSEL
  SEL (GETTSTR TSTREAM TEXTOBJ))
 ((DESELECTED HIGHLIGHTED UNHIGHLIGHTED)
  NIL)
 NIL])
```

**(MB.FIELD.GETSTATEFN**

```
[LAMBDA (PREFIXPC PREFIXOBJ TSTREAM)
```

```
; Edited 18-Dec-2024 14:01 by rmk
; Edited 4-Dec-2024 16:41 by rmk
; Edited 8-Nov-2024 08:37 by rmk
; Edited 22-Oct-2024 10:43 by rmk
; Edited 29-Sep-2024 12:46 by rmk
; Edited 29-Aug-2024 11:05 by rmk
; Edited 27-Mar-2024 13:49 by rmk
```

;; Piece PREFIXPC contains a FIELDPREFIX image object. This extracts the field-value from the following unprotected pieces, and stores in as the STATE of OBJ. Crucially, it returns the last piece of the field, the corresponding SUFFIXPC. Higher iterations can continue with that value.

;; This also records the starting CHNO and length of the field--intuitively, the field is part of the object. Can't save it at insertion time, because it might change.

```
(LET* ((TEXTOBJ (TEXTOBJ TSTREAM))
       (FIELDSTART (ADD1 (\TEDIT.PCTOCH PREFIXPC TEXTOBJ)))
       (ENDPC PREFIXPC)
       (FIELDLENGTH FSEL FIELDTYPE VAL) ; FSEL selects the field
       (SETQ FIELDLENGTH (for PC inpieces (NEXTPIECE PREFIXPC) sum (CL:WHEN (AND (EQ OBJECT.PTYPE
                                                                                     (PTYPE PC))
                                                                                     (IMAGEOBJPROP (POBJ PC)
                                                                                     'FIELDSUFFIX))
                                                                                     (SETQ ENDPC PC)
                                                                                     (RETURN $$VAL))
                                                                                     (PLEN PC))))
       (SETQ FSEL (create SELECTION
                          SET _ T))
       (\TEDIT.UPDATE.SEL FSEL FIELDSTART FIELDLENGTH 'RIGHT)
       (SETQ FIELDTYPE (IMAGEOBJPROP PREFIXOBJ 'FIELDTYPE))
       (SETQ VAL (SELECTQ FIELDTYPE
                        (IMAGEOBJ (if (EQ FIELDLENGTH 1)
                                      then (IMAGEOBJ (FGETSEL FSEL SELOBJ))
                                      elseif (EQ FIELDLENGTH 0)
                                      else (TEDIT.PROMPTPRINT TSTREAM (CONCAT (L-CASE (IMAGEOBJPROP PREFIXOBJ
                                                                                       'IDENTIFIER)
                                                                                       T)
                                                                                       " field does not contain an image
                                                                                       object"))
                                      T T)
                        (NIL))
              (SELECTION FSEL)
              (MB.FIELD.INSURETYPE FIELDTYPE (TEDIT.SEL.AS.STRING TSTREAM FSEL)
              TSTREAM)))
       (CL:WHEN (EQ VAL '**EMPTY**')
        (if (IMAGEOBJPROP PREFIXOBJ 'EMPTYVALUE)
            then (SETQ VAL (IMAGEOBJPROP PREFIXOBJ 'EMPTYVALUE))
            else (SELECTQ FIELDTYPE
                       ((STRING TEXT)
                        (SETQ VAL (CONCAT)))
                       (SYMBOL (SETQ VAL NIL))
                       NIL)))
       (IMAGEOBJPROP PREFIXOBJ 'STATE VAL)
       (IMAGEOBJPROP PREFIXOBJ 'FIELDSTART FIELDSTART)
       (IMAGEOBJPROP PREFIXOBJ 'FIELDLENGTH FIELDLENGTH)
       ENDPC])
```

**(MB.FIELD.SETSTATEFN**

```
[LAMBDA (PREFIXPC NEWVALUE TSTREAM) ; Edited 9-Dec-2024 22:14 by rmk
; Edited 4-Dec-2024 20:31 by rmk
; Edited 20-Oct-2024 17:20 by rmk
; Edited 29-Sep-2024 12:46 by rmk
; Edited 31-Aug-2024 11:33 by rmk
; Edited 26-Aug-2024 09:23 by rmk
; Edited 22-Aug-2024 10:04 by rmk
; Edited 8-Aug-2024 22:07 by rmk
; Edited 6-Aug-2024 12:09 by rmk
; Edited 5-Aug-2024 09:57 by rmk
```

:: Piece PREFIXPC contains a FIELDPREFIX image object. The following (unprotected) field begins at the next character position and ends just before the following SUFFIXPC. This replaces the current contents of that field with NEWVAL. Returns the last piece of the new value, PREFIXPC if NEWVALUE is NIL=empty value.

```
(PROG* ((TEXTOBJ (GETTSTR TSTREAM TEXTOBJ))
(PREFIXOBJ (PCONTENTS PREFIXPC))
(FIELDSTART (ADD1 (\TEDIT.PCTOCH PREFIXPC TEXTOBJ)))
(FIELDTYPE (IMAGEOBJPROP PREFIXOBJ 'FIELDTYPE))
(EMPTYVALUE (IMAGEOBJPROP PREFIXOBJ 'EMPTYVALUE))
FIELDLENGTH FSEL)
(CL:WHEN (AND EMPTYVALUE (EQ NEWVALUE (CAR EMPTYVALUE)))
(SETQ NEWVALUE '**EMPTY**))
(SELECTQ FIELDTYPE
(IMAGEOBJ (CL:WHEN (AND NEWVALUE (NOT (IMAGEOBJP NEWVALUE))))
; must be an image object
(TEDIT.PROMPTPRINT (CONCAT "Invalid value for " (L-CASE (IMAGEOBJPROP PREFIXOBJ
'IDENTIFIER)
" field")
T)
T T)
(RETURN NIL)))
(SELECTION (\ILLEGAL.ARG NEWVALUE))
(SETQ NEWVALUE (MB.FIELD.INSURETYPE FIELDTYPE NEWVALUE TSTREAM)))
```

:: NEWVALUE is valid for this type of field

```
(SETQ FIELDLENGTH (for PC inpieces (NEXTPIECE PREFIXPC) until (AND (EQ OBJECT.PTYPE (PTYPE PC))
(IMAGEOBJPROP (POBJ PC)
'FIELDSUFFIX)))
sum (PLEN PC))
(SETQ FSEL (create SELECTION
SET _ T)) ; FSEL selects the field to the right of PREFIXPC
(\TEDIT.UPDATE.SEL FSEL FIELDSTART FIELDLENGTH 'LEFT)
(CL:UNLESS (EQ 0 FIELDLENGTH) ; Clear the old value
(\TEDIT.DELETE TEXTOBJ FSEL)
(SETQ FIELDLENGTH 0))
(SETQ FIELDLENGTH (if (EQ NEWVALUE '**EMPTY**')
then 0
elseif (EQ 'IMAGEOBJ FIELDTYPE)
then (TEDIT.INSERT.OBJECT NEWVALUE TSTREAM FSEL)
1
else (SETQ NEWVALUE (MKSTRING NEWVALUE))
(\TEDIT.INSERT NEWVALUE FSEL TSTREAM T T)
(NCHARS NEWVALUE)))
(\TEDIT.UPDATE.SEL FSEL FIELDSTART FIELDLENGTH 'LEFT)
(\TEDIT.CHANGE.CHARLOOKS TSTREAM (IMAGEOBJPROP PREFIXOBJ 'FIELDLOOKS)
FSEL)
(IMAGEOBJPROP PREFIXOBJ 'FIELDLENGTH FIELDLENGTH)
(IMAGEOBJPROP PREFIXOBJ 'STATE NEWVALUE)
```

:: Maybe the insert jiggled the pieces, scan again for the end piece

```
(RETURN (find PC inpieces (NEXTPIECE PREFIXPC) suchthat (AND (EQ OBJECT.PTYPE (PTYPE PC))
(IMAGEOBJPROP (POBJ PC)
'FIELDSUFFIX]))
```

**(MB.FIELD.BUTTONEVENTINFN**

```
[LAMBDA (OBJ STREAM SEL RELX RELY SELWINDOW TEXTSTREAM BUTTON) ; Edited 17-Dec-2024 10:26 by rmk
; Edited 9-Dec-2024 21:55 by rmk
; Edited 7-Dec-2024 12:16 by rmk
; Edited 5-Dec-2024 21:10 by rmk
; Edited 20-Jul-2024 15:26 by rmk
; Edited 9-Apr-2023 18:22 by rmk
; Edited 30-May-91 22:15 by jds
```

:: Called when a mouse-button is down inside the object, RELX and RELY are in the objects coordinate system. Decline the selection if the mouse isn't in the object. Otherwise, make sure that the selection is a point selection to the right. if this is a prefix, or left if a suffix.

```
(LET [(OBJBOX (IMAGEOBJPROP OBJ 'BOUNDBOX))
(CUSTOMFN (IMAGEOBJPROP OBJ 'CUSTOMBUTTONEVENTFN))
(ISPREFIX (IMAGEOBJPROP OBJ 'FIELDPREFIX))
if (AND (EQ BUTTON 'LEFT)
(IGEQ RELX 0)
(IGEQ RELY 0)
(ILEQ RELX (fetch XSIZE of OBJBOX))
(ILEQ RELY (fetch YSIZE of OBJBOX)))
```

```

then (if (AND CUSTOMFN (EQ 'DON'T (APPLY* CUSTOMFN OBJ STREAM SEL RELX RELY SELWINDOW TEXTSTREAM
                                BUTTON ISPREFIX)))
        then 'DON'T
        else (FSETSEL SEL POINT (CL:IF ISPREFIX
                                'RIGHT
                                'LEFT))
              (FSETSEL SEL SELOBJ NIL)
              (FSETSEL SEL DCH 0)
              (FSETTOBJ (GETTSTR TEXTSTREAM TEXTOBJ)
                        CARETLOOKS
                        (IMAGEOBJPROP OBJ 'FIELDLOOKS))
              T)
else 'DON'T])

```

**(MB.FIELD.SIZEFN**

```

[LAMBDA (OBJ STREAM)
  (create IMAGEBOX
    XSIZE _ 0
    YSIZE _ 0
    YDESC _ 0
    XKERN _ 0])

```

; Edited 31-Jul-2024 21:22 by rmk

**(MB.FIELD.INSURETYPE**

```

[LAMBDA (FIELDTYPE STR TSTREAM)

```

; Edited 4-Dec-2024 20:09 by rmk  
; Edited 8-Nov-2024 08:37 by rmk  
; Edited 29-Sep-2024 21:52 by rmk  
; Edited 31-Aug-2024 12:46 by rmk  
; Edited 29-Aug-2024 10:28 by rmk  
; Edited 20-Aug-2024 23:23 by rmk  
; Edited 9-Aug-2024 11:47 by rmk

;; Coerce string field selections to atoms or numbers, promptprinting and returning nIL if type is wrong. Returns \*\*EMPTY\*\* for atom and number  
;; cases, if the trimmed field is in fact empty.

```

(if (STRING.EQUAL STR '**EMPTY**')
  then '**EMPTY**'
  else (LET ((TRIMMED (CL:IF (STRINGP STR)
                             (CL:STRING-TRIM '(\Space #\Newline)
                             STR)
                             VAL)
            (SELECTQ FIELDTYPE
              ((TEXT STRING)
                (SETQ VAL (OR STR '**EMPTY**'))
                ; String should be a string, not NIL atom
              ((NUMBER PICAS POSITIVENUMBER SIGNEDNUMBER CARDINAL)
                (SETQ TRIMMED (MKATOM TRIMMED))
                (if (OR (EQ 0 (NCHARS TRIMMED))
                        (NULL STR))
                    then (SETQ VAL '**EMPTY**')
                    elseif (NUMBERP TRIMMED)
                    then (SETQ VAL TRIMMED)
                (SELECTQ FIELDTYPE
                  (POSITIVENUMBER
                    (CL:UNLESS (GREATERP VAL 0)
                              (TEDIT.PROMPTPRINT TSTREAM (CONCAT STR " is not a positive
                                                                number")
                                                                T T)
                    (SETQ VAL NIL)))
                  (SIGNEDNUMBER (SETQ VAL (LIST [CAR (MEMB (NTHCHAR TRIMMED) 1)
                                                         '(+ -)]
                                                         VAL)))
                  (NATURALNUMBER
                    (CL:UNLESS (IGEQ VAL 0)
                              (TEDIT.PROMPTPRINT TSTREAM (CONCAT STR " is not a natural number")
                                                            T T)))
                  (PICAS ;; Convert picas to points
                    (SETQ VAL (FIXR (TIMES PTSPERPICA VAL))))
                  NIL)
                (CL:WHEN (AND (IGEQ (NCHARS VAL)
                                   3)
                            (EQ (CHARCODE 0)
                                (NTHCHARCODE VAL -1))
                            (EQ (CHARCODE %)
                                (NTHCHARCODE VAL -2)))
                          ;xxx.0 -> xxx
                (SETQ VAL (FIX VAL)))
            else (TEDIT.PROMPTPRINT TSTREAM (CONCAT STR " is not a number")
            T T)
            (CL:UNLESS VAL (ERROR!)))
            (SYMBOL (SETQ VAL (CL:IF (OR (EQ 0 (NCHARS TRIMMED))
                                        (NULL STR))
                                    '**EMPTY**'
                                    (MKATOM TRIMMED))))
            (\TEDIT.THELP "UNRECOGNIZED FIELD TYPE" FIELDTYPE)
            VAL])

```

```
{MEDLEY}<library>tedit>TEDIT-BUTTONS.;1
```

```
)
```

```
(DECLARE%: DONTEVAL@LOAD DOCOPY
```

```
(MB.FIELD.INIT)
```

```
)
```

---

**FUNCTION INDEX**

MB.3STATE.BUTTONEVENTINFN	9	MB.FIELD.INSURETYPE	22	MB.NWAY.SETSTATEFN	15
MB.3STATE.CREATE	8	MB.FIELD.PREFIXCREATE	18	MB.NWAY.SIZEFN	11
MB.3STATE.DISPLAYFN	8	MB.FIELD.SETSTATEFN	21	MB.NWAY.WHENOPERATEDONFN	11
MB.3STATE.INIT	9	MB.FIELD.SIZEFN	22	MB.PUTFN	6
MB.3STATE.SETSTATEFN	9	MB.FIELD.SUFFIXCREATE	19	MB.SET.TOGGLE	16
MB.3STATE.SHOWSELFN	8	MB.FIELD.WHENOPERATEDONFN	20	MB.SETIMAGE	5
MB.ADD	1	MB.GET	2	MB.SHOWSELFN	6
MB.BUTTONEVENTINFN	4	MB.GET.MBARG	3	MB.SIZEFN	5
MB.CHANGENAME	7	MB.GETFN	6	MB.SPEC.REMAINDER	8
MB.COPYFN	6	MB.INIT	7	MB.TOGGLE.BUTTONEVENTINFN	16
MB.CREATE	6	MB.NWAY.ADDITEM	14	MB.TOGGLE.CREATE	15
MB.DELETE	2	MB.NWAY.ARRANGEBUTTONS	14	MB.TOGGLE.DISPLAYFN	15
MB.DISPLAYFN	4	MB.NWAY.BUTTONEVENTINFN	12	MB.TOGGLE.INIT	15
MB.DON'T	8	MB.NWAY.COPYFN	13	MB.TOGGLE.SETSTATEFN	16
MB.FIELD.BUTTONEVENTINFN	21	MB.NWAY.CREATE	10	MB.TOGGLE.WHENOPERATEDONFN	17
MB.FIELD.CREATE	17	MB.NWAY.DISPLAYFN	11	MB.TRACK.UNTIL	7
MB.FIELD.DISPLAYFN	18	MB.NWAY.FINDSUBOBJ	14	MB.WHENOPERATEDONFN	5
MB.FIELD.GETSTATEFN	20	MB.NWAY.INIT	13	TEDIT.BACKTOMAIN	4
MB.FIELD.IMAGEBOXFN	18	MB.NWAY.NEWMENUBUTTON	13	TEDITMENU.STREAM	4
MB.FIELD.INIT	19	MB.NWAY.SELECT	12		

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**RECORD INDEX**

MBARG	1
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