

File created: 16-Mar-2024 07:51:29 {WMEDLEY}<lispusers>tmax>TMAX-INDEX.;4

edit by: rmk

changes to: (VARS TMAX-INDEXCOMS)
(FNS INDEX.DISPLAYFN)

previous date: 20-Feb-97 17:58:09 {WMEDLEY}<lispusers>tmax>TMAX-INDEX.;1

Read Table: XCL

Package: INTERLISP

Format: XCCS

(RPAQQ **TMAX-INDEXCOMS**

(;; Developed under support from NIH grant RR-00785.

;; Written by Frank Gilmurray and Sami Shaio. Modified by Ron Kaplan

;; INDEX objects are simply inserted into the text stream. Information about them is accumulated only when the displayfn is applied to a
;; hardcopy imagestream, and it is accumulated as a property of the imagestream.

;;; TMAX-INDEX ImageObject functions

(INITVARS (INDEXDISPLAYAPPEARANCE 'BOX))

(FNS INDEXOBJ INDEXOBJP INDEX.DISPLAYFN INDEX.IMAGEBOXFN INDEX.PUTFN INDEX.GETFN INDEX.COPYFN
INDEX.BUTTONEVENTINFN)

;;; Inserting indices

(FNS INSERT.INDEX INSERT.INDEXENTRY INSERT.KNOWN.INDEX SUBITEM.SELECTFN ADD.NEW.INDEX)

;;; Functions to change the Index/Extended Index

(FNS CHANGE.INDEX CHANGE.INDEXENTRY CHANGE.XINDEX.KEY CHANGE.XINDEX.ENTRY CHANGE.XINDEX.FONT
CHANGE.XINDEX.NUMBER)

;;; Other misc functions

(FNS GETHASH.INDEX INDEX.PAGE.NUMBER INDEX.MANUAL.DELIMITER INDEX.STRING GET.INDEXENTRY.NUMBER
INDEX.LIST.REFS LIST.OF.INDEXENTRIES)

;;; Index file functions

(FNS CREATE.INDEX.FILE DUMP.INDEX VIEW.INDEX.FILE GET.INDEX.FILE WRITE.INDEX.FILE
WRITE.INDEX.PAGENUMBERS RESET.INDEX.PAGENUMBERS)
(RECORDS INDEX.ENTRY.RECORD)

;;; Convenient interface--depress the props key to index the current selection

(FNS SELECTION.TO.STRING SELECTION.TO.INDEX)

(MACROS MAKE.INDEXOBJ.IMAGEFNS)

(VARS (\\INDEXOBJ.IMAGEFNS (MAKE.INDEXOBJ.IMAGEFNS)))

(ADDVARS (IMAGEOBJGETFNS (INDEX.GETFN)))

(P

; 533 is the PROPS key on Sun keyboards

(TEDIT.SETSYNTAX "Function,^U" 'FN TEDIT.READTABLE)

(TEDIT.SETFUNCTION "Function,^U" (FUNCTION SELECTION.TO.INDEX)

TEDIT.READTABLE))

;;; IMAGE OBJECT for causing the index to be written, without using the menu

))

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;; INDEX objects are simply inserted into the text stream. Information about them is accumulated only when the displayfn is applied to a hardcopy
;; imagestream, and it is accumulated as a property of the imagestream.

;;; TMAX-INDEX ImageObject functions

(RPAQ? **INDEXDISPLAYAPPEARANCE** 'BOX)

(DEFINEQ

(**INDEXOBJ**

(LAMBDA (KEY INDEXENTRY.PARMS)

(* |fsg| "10-Jul-87 15:59")

(* |Create| |an| |instance| |of| |an| |Index| |or| |Extended| |Index| |imageobject|.

|The| |difference| |between| |the| |two| |is| |the| OBJECTDATUM.

|For| |a| |simple| |Index| OBJECTDATUM |is| NIL. |For| |an| |Extended| |Index| OBJECTDATUM |is| |a| |record| |containing|

|the| |Entry| |Entry's| |font| |and| |Number| |option.| |\\n| |either| |case| |the| INDEX.KEY |property| |is| |the| |hash| |key| |and|
 |is| |also| |the| |text| |to| |index| |for| |a| |simple| |Index.| |NOTE...Extended| |Index| |used| |to| |be| |called| |IndexEntry| |after|
 |the| |Scribe| |cmd| |of| |the| |same| |name.|)

```
(LET ((NEWOBJ (IMAGEOBJCREATE INDEXENTRY.PARMS \\INDEXOBJ.IMAGEFNS)))
  (IMAGEOBJPROP NEWOBJ 'INDEX.KEY KEY)
  (IMAGEOBJPROP NEWOBJ 'TYPE 'INDEXOBJ)
  NEWOBJ)))
```

(INDEXOBJP

(LAMBDA (OBJ)

(* |ss:| "27-Jun-87 15:53")

(* * |Tests| |an| |imageobject| |to| |see| |if| |it| |an| |Index| |or| |Extended| |Index| |imageobject.|
 |By| |convention| |testing| |functions| |for| |an| |imageobject| |are| |named| <CONCAT |type-of-imageobj| "P" >.)

```
(AND OBJ (EQ (IMAGEOBJPROP OBJ 'TYPE)
  'INDEXOBJ)))
```

(INDEX.DISPLAYFN

(LAMBDA (OBJ IMAGESTREAM)

; Edited 16-Mar-2024 07:46 by rmk

; Edited 14-Feb-97 09:30 by rmk:

(* |fsg| "17-Sep-87 11:14")

;; Display an Index imageobject. If the stream-type is display, then just type Index or Extended Index followed by their args. Otherwise the
 ;; stream-type is hardcopy. In this case, type nothing and replace the CAR of the hash array entry with a list of page numbers in which this index
 ;; appears.

```
(SELECTQ (IMAGESTREAMTYPE IMAGESTREAM)
  (DISPLAY (CL-UNLESS (EQ 'INVISIBLE INDEXDISPLAYAPPEARANCE)
    (DSPFONT |GP.DefaultFont| IMAGESTREAM)
    (SELECTQ INDEXDISPLAYAPPEARANCE
      (BOX (TMAX.SHADEOBJ OBJ IMAGESTREAM GRAYSHADE))
      (HIGHLIGHT (TMAX.SHADEOBJ OBJ IMAGESTREAM BLACKSHADE))
      (PROGN (TMAX.SHADEOBJ OBJ IMAGESTREAM)
        (PRIN3 (INDEX.STRING OBJ)
          IMAGESTREAM))))))
  (LET ((PGS/IMOBJS (GETHASH.INDEX OBJ IMAGESTREAM))
    (CURRENT.PAGE (INDEX.PAGE.NUMBER (\\TEDIT.PRIMARYW TEXTOBJ))))
    (COND
      ((LISTP (CAR PGS/IMOBJS))
        (OR (MEMB CURRENT.PAGE (CAR PGS/IMOBJS))
          (RPLACA PGS/IMOBJS (APPEND (CAR PGS/IMOBJS)
            (LIST CURRENT.PAGE))))))
      (T (RPLACA PGS/IMOBJS (LIST CURRENT.PAGE)))))))
```

(INDEX.IMAGEBOXFN

(LAMBDA (OBJ STREAM CURRENTX RIGHTMARGIN)

; Edited 14-Feb-97 09:23 by rmk:

(* |ss:| "27-Jun-87 15:50")

;; Return the ImageBox for an Index or Extended Index.

```
(SELECTQ (IMAGESTREAMTYPE STREAM)
  (DISPLAY (SELECTQ INDEXDISPLAYAPPEARANCE
    (INVISIBLE (CREATE IMAGEBOX
      XSIZE _ 0
      YSIZE _ 0
      YDESC _ 0
      XKERN _ 0))
    ((BOX HIGHLIGHT)
      (CREATE IMAGEBOX
        XSIZE _ (CHARWIDTH (CHARCODE SPACE)
          STREAM)
        YSIZE _ (LRSH (FONTPROP STREAM 'HEIGHT)
          1)
        YDESC _ 0
        XKERN _ 0))
      (CREATE IMAGEBOX
        XSIZE _ (STRINGWIDTH (INDEX.STRING OBJ)
          |GP.DefaultFont|)
        YSIZE _ (FONTPROP |GP.DefaultFont| 'HEIGHT)
        YDESC _ (FONTPROP |GP.DefaultFont| 'DESCENT)
        XKERN _ 0)))
  (CREATE IMAGEBOX
    XSIZE _ 0
    YSIZE _ 0
    YDESC _ 0
    XKERN _ 0)))
```

(INDEX.PUTFN

(LAMBDA (OBJ STREAM)

(* |ss:| "27-Jun-87 15:51")

(* * |Puts| |the| |Index| |or| |Extended| |Index| |imageobject| |in| |a| |file.|)

```
(LET ((DATUM (|fetch| OBJECTDATUM |of| OBJ))
  (INDEX.PUT.ARG (LIST ' |Index| (IMAGEOBJPROP OBJ 'INDEX.KEY))))
```

```
(AND DATUM (NCONC1 INDEX.PUT.ARG DATUM))
(PRIN2 INDEX.PUT.ARG STREAM)))))
```

(INDEX.GETFN

```
(LAMBDA (STREAM COPY.OBJECT)
```

```
; Edited 14-Feb-97 10:10 by rmk:
(* |fsg| "20-Aug-87 14:57")
```

```
;; Create the Index or Extended Index imageobject when it is read from file.
```

```
(APPLY (FUNCTION INDEXOBJ)
  (OR COPY.OBJECT (CDR (READ STREAM))))))
```

(INDEX.COPYFN

```
(LAMBDA (IMAGE.OBJ SOURCE.STREAM TARGET.STREAM)
```

```
(* |fsg| "23-Jul-87 12:01")
```

```
(* * |Here| |to| COPY |an| |Index| |or| |Extended| |Index| |Image| |Object|.|)
```

```
(SELECTQ (IMAGESTREAMTYPE TARGET.STREAM)
  (TEXT (LET ((TEXTOBJ (TEXTOBJ TARGET.STREAM)))
    (APPLY* (IMAGEOBJPROP IMAGE.OBJ 'GETFN)
      TARGET.STREAM
      (LIST (IMAGEOBJPROP IMAGE.OBJ 'INDEX.KEY)
        (|fetch| OBJECTDATUM |of| IMAGE.OBJ))))))
  (ERROR "Unknown TARGET stream type" (IMAGESTREAMTYPE TARGET.STREAM))))))
```

(INDEX.BUTTONEVENTINFN

```
(LAMBDA (OBJ STREAM SEL RELX RELY WINDOW HOSTSTREAM BUTTON)
```

```
; Edited 20-Feb-97 13:53 by rmk:
(* |fsg| "29-Jul-87 10:50")
```

```
;; Process the middle button pressed inside an Index or Extended Index imageobject. This means the user wants to Change this index.
```

```
(AND (MOUSESTATE MIDDLE)
  (LET* ((DATUM (FETCH OBJECTDATUM OF OBJ))
    (NEW.INDEX (MENU (CREATE MENU
      TITLE _ (IMAGEOBJPROP OBJ 'INDEX.KEY)
      ITEMS _ (LIST (COND
        (DATUM '(|Change Extended Index| T "Change Extended
          Index"))
        (T '(|Change Index| T "Change Index"))))
      CENTERFLG _ T))))
    (CL:WHEN (AND NEW.INDEX (CAR (SETQ NEW.INDEX (COND
      (DATUM (CHANGE.INDEXENTRY OBJ STREAM))
      (T (CHANGE.INDEX OBJ STREAM))))))
      (IMAGEOBJPROP OBJ 'INDEX.KEY (CAR NEW.INDEX))
      (AND DATUM (REPLACE OBJECTDATUM OF OBJ WITH (CADR NEW.INDEX)))
      'CHANGED))))))
)
```

```
;;; Inserting indices
```

```
(DEFINEQ
```

(INSERT.INDEX

```
(LAMBDA (STREAM)
```

```
; Edited 14-Feb-97 09:15 by rmk:
(* |fsg| "10-Mar-87 14:02")
```

```
;; Process the 'Index' function in the ImageObjects menu.
```

```
(LET ((NEWINDEX.KEY (MKATOM (CONVERT.TABS.TO.SPACES (TEDIT.GETINPUT STREAM "Index Key:"))))
  (AND NEWINDEX.KEY (LET ((NEW.INDEX.OBJ (INDEXOBJ NEWINDEX.KEY))
    (TEDIT.INSERT.OBJECT NEW.INDEX.OBJ STREAM)))
    (TEDIT.PROMPTPRINT STREAM " " T))))
```

(INSERT.INDEXENTRY

```
(LAMBDA (STREAM WINDOW)
```

```
; Edited 14-Feb-97 09:15 by rmk:
(* |fsg| "19-Mar-87 11:56")
```

```
;; Process the 'Extended Index' function in the ImageObjects menu. NOTE...Extended Index use to be called IndexEntry after the Scribe cmd of
;; the same name.
```

```
(LET ((NEWINDEX.KEY (MKATOM (CONVERT.TABS.TO.SPACES (TEDIT.GETINPUT STREAM "Extended Index Key:"))))
  (AND NEWINDEX.KEY (LET ((NEW.INDEX.OBJ (INDEXOBJ NEWINDEX.KEY
    (CREATE INDEX.ENTRY.RECORD
      INDEX.ENTRY _
      (OR (MKATOM (CONVERT.TABS.TO.SPACES
        (TEDIT.GETINPUT STREAM "Extended
          Index Entry:" (MKSTRING
            NEWINDEX.KEY
            ))))
      NEWINDEX.KEY)
    INDEX.ENTRYFONT _
    (LET (NEWINDEX.FONT)
      (TEDIT.PROMPTPRINT STREAM "Extended Index
        Entry font..." T)
      (UNTIL (SETQ NEWINDEX.FONT (GET.TSP.FONT
```

```

                                WINDOW
                                |GP.DefaultFont|)
                                )
                                DO (TEDIT.PROMPTPRINT STREAM "Invalid
                                font specification...try
                                again." T))
                                NEWINDEX.FONT)
                                INDEX.NUMBER _ (PROGN (TEDIT.PROMPTPRINT STREAM
                                "Extended Index
                                Number option..." T)
                                (GET.INDEXENTRY.NUMBER))))))
                                )
                                (TEDIT.INSERT.OBJECT NEW.INDEX.OBJ STREAM)))
                                (TEDIT.PROMPTPRINT STREAM "" T))))

```

(INSERT.KNOWN.INDEX

(LAMBDA (STREAM WINDOW)

; Edited 14-Feb-97 17:24 by rmk:

(* |fsg| "16-Sep-87 11:31")

;; Process the 'Known Indices' function in the ImageObjects menu. A menu of all the known Indices and Extended Indices pops up and the user
;; may button one of these to insert the corresponding Index or Extended Index.

```

(HELP "NEED TO DO TEDIT.MAPPIECES INSTEAD OF INDEX.LIST.REFS")
(LET* ((PREVINDICES (INDEX.LIST.REFS STREAM))
      (NEWINDEX.KEY (COND
        (PREVINDICES (LET ((MENU.SELECTION (MENU (|create| MENU
          TITLE _ "Index Keys"
          ITEMS _ PREVINDICES
          MENUCOLUMNS _
          (FIX (SQRT (LENGTH PREVINDICES)))
          CENTERFLG _ T
          WHENSELECTEDFN _
          (FUNCTION SUBITEM.SELECTFN))))))
        (AND MENU.SELECTION (OR (LISTP MENU.SELECTION)
          (LIST MENU.SELECTION)))))
      (T (TEDIT.PROMPTPRINT STREAM "There are no Indices/Extended Indices in this
        document." T)
        NIL))))
  (AND NEWINDEX.KEY (LET ((NEWINDEX.OBJ (APPLY 'INDEXOBJ NEWINDEX.KEY)))
    (TEDIT.INSERT.OBJECT NEWINDEX.OBJ STREAM)
    (TEDIT.PROMPTPRINT STREAM "" T))))))

```

(SUBITEM.SELECTFN

(LAMBDA (ITEM MENU KEY)

(* |fsg| "16-Sep-87 13:28")

(* * |Function| |to| |handle| |multiple| |column| |menu| |when| |some| |items| |have| |subitems|.|)

```

(PROG (SUBMENU SUBITEMS (SUBMENUS (GETMENUPROP MENU 'SUBMENUS)))
  (|if| (AND (LISTP ITEM)
    (SETQ SUBITEMS (CDR (ASSOC 'SUBITEMS (CDDDR ITEM)))))
    |then| (|if| (SETQ SUBMENU (CDR (SASSOC SUBITEMS SUBMENUS)))
      |else| (SETQ SUBMENU (|create| MENU
        ITEMS _ SUBITEMS
        CENTERFLG _ T))
      (PUTMENUPROP MENU 'SUBMENUS (CONS (CONS SUBITEMS SUBMENU)
        SUBMENUS)))
    (RETURN (MENU SUBMENU))
    |else| (RETURN (DEFAULTWHENSELECTEDFN ITEM MENU KEY)))))

```

(ADD.NEW.INDEX

(LAMBDA (IMAGESTREAM INDEXKEY OBJ)

; Edited 14-Feb-97 09:08 by rmk:

(* |ss| "27-Jun-87 15:44")

;; Add an Index or Extended Index imageobject to our index array. If at least one already exists for this index key, then just append this
;; imageobject to the list. Otherwise create a new array entry for this imageobject. The list contains three elements; a string, a list of Index
;; imageobjects, and a list of Extended Index imageobjects.

```

(LET ((CODE.ARRAY (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY))
      HASH.VALUE INDEX.OBJS ENTRY.OBJS)
  (CL:UNLESS (HASHARRAYP CODE.ARRAY)
    (SETQ CODE.ARRAY (HASHARRAY 100))
    (STREAMPROP IMAGESTREAM 'TSP.CODE.ARRAY CODE.ARRAY)
    (CL:UNLESS (HASHARRAYP (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY))
      (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY (HASHARRAY 100))))
  (SETQ HASH.VALUE (GETHASH INDEXKEY CODE.ARRAY))
  (SETQ INDEX.OBJS (CADR HASH.VALUE))
  (SETQ ENTRY.OBJS (CADDR HASH.VALUE))
  (COND
    ((FETCH OBJECTDATUM OF OBJ)
      (SETQ ENTRY.OBJS (APPEND ENTRY.OBJS (LIST OBJ))))
    (T (SETQ INDEX.OBJS (APPEND INDEX.OBJS (LIST OBJ)))))
  (PUTHASH INDEXKEY (LIST NIL INDEX.OBJS ENTRY.OBJS)
    CODE.ARRAY)))

```

)

;;; Functions to change the Index/Extended Index

(DEFINEQ

(CHANGE.INDEX

(LAMBDA (OBJ STREAM)

(* |ss:| "27-Jun-87 15:44")

(* * |Here| |when| CHANGE |buttoned| |inside| |an| |Index| |ImageObject.|)

```
(LIST (MKATOM (CONVERT.TABS.TO.SPACES (TEDIT.GETINPUT STREAM (CONCAT "Change Index key \"
                                                                    (IMAGEOBJPROP OBJ 'INDEX.KEY)
                                                                    \"\" to:")))))
```

(CHANGE.INDEXENTRY

(LAMBDA (OBJ STREAM)

(* |fsg| "10-Mar-87 11:52")

```
(* * |Here| |when| CHANGE |buttoned| |inside| |an| |Extended| |Index| |ImageObject.|
|NOTE...Extended| |Index| |used| |to| |be| |called| |IndexEntry| |after| |the| |Scribe| |cmd| |of| |the| |same| |name.|)
```

```
(PROG1 (LIST (CHANGE.XINDEX.KEY OBJ STREAM)
              (|create| INDEX.ENTRY.RECORD
                        INDEX.ENTRY _ (CHANGE.XINDEX.ENTRY OBJ STREAM)
                        INDEX.ENTRYFONT _ (CHANGE.XINDEX.FONT OBJ STREAM)
                        INDEX.NUMBER _ (CHANGE.XINDEX.NUMBER OBJ STREAM)))
        (TEDIT.PROMPTPRINT STREAM "" T)))
```

(CHANGE.XINDEX.KEY

(LAMBDA (OBJ STREAM)

(* |ss:| "27-Jun-87 15:45")

(* * |Change| |the| |key| |of| |an| |Extended| |Index.|)

```
(LET ((OLDINDEX.KEY (IMAGEOBJPROP OBJ 'INDEX.KEY)))
      (OR (MKATOM (CONVERT.TABS.TO.SPACES (TEDIT.GETINPUT STREAM (CONCAT "Change Extended Index Key \"
                                                                    OLDINDEX.KEY \"\" to:")))))
      OLDINDEX.KEY)))
```

(CHANGE.XINDEX.ENTRY

(LAMBDA (OBJ STREAM)

(* |fsg| "10-Mar-87 11:31")

(* * |Change| |the| |entry| |of| |an| |Extended| |Index.|)

```
(LET ((OLDINDEX.ENTRY (|fetch| INDEX.ENTRY |of| (|fetch| OBJECTDATUM |of| OBJ))))
      (OR (MKATOM (CONVERT.TABS.TO.SPACES (TEDIT.GETINPUT STREAM (CONCAT "Change Extended Index Entry \"
                                                                    OLDINDEX.ENTRY \"\" to:")))))
      OLDINDEX.ENTRY)))
```

(CHANGE.XINDEX.FONT

(LAMBDA (OBJ STREAM)

(* |fsg| " 8-Jul-87 16:42")

(* * |Change| |the| |font| |of| |an| |Extended| |Index.|)

```
(LET ((OLDINDEX.FONT (|fetch| INDEX.ENTRYFONT |of| (|fetch| OBJECTDATUM |of| OBJ)))
      NEWINDEX.FONT)
      (TEDIT.PROMPTPRINT STREAM (CONCAT "Change Extended Index Entry's font " (ABBREVIATE.FONT OLDINDEX.FONT)
                                          " to...")
      T)
      (|until| (SETQ NEWINDEX.FONT (GET.TSP.FONT (\\TEDIT.MAINW STREAM)
                                                  (OR OLDINDEX.FONT |GP.DefaultFont|)))
              |do| (TEDIT.PROMPTPRINT STREAM "Invalid font specification...try again." T))
      NEWINDEX.FONT)))
```

(CHANGE.XINDEX.NUMBER

(LAMBDA (OBJ STREAM)

(* |fsg| "19-Mar-87 11:51")

(* * |Change| |the| |number| |option| |of| |an| |Extended| |Index.|)

```
(LET ((OLDINDEX.NBR (|fetch| INDEX.NUMBER |of| (|fetch| OBJECTDATUM |of| OBJ)))
      (TEDIT.PROMPTPRINT STREAM (CONCAT "Change Extended Index Number option \"\" OLDINDEX.NBR \"\" to...")
      T)
      (GET.INDEXENTRY.NUMBER OLDINDEX.NBR)))
```

)

;;; Other misc functions

(DEFINEQ

(GETHASH.INDEX

(LAMBDA (OBJ IMAGESTREAM)

```
; Edited 14-Feb-97 09:28 by rmk:
(* |fsg| "13-Jul-87 11:09")
```

;; Get the hash array entry for this Index or Extended Index.

```
(LET ((HARRAY (HASHARRAYP (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY))))
  (CL:UNLESS HARRAY
    (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY (SETQ HARRAY (HASHARRAY 100))))
  (OR (GETHASH (IMAGEOBJPROP OBJ 'INDEX.KEY)
    HARRAY)
    (ADD.NEW.INDEX IMAGESTREAM (IMAGEOBJPROP OBJ 'INDEX.KEY)
      OBJ))))
```

(INDEX.PAGE.NUMBER

(LAMBDA (WINDOW)

; Edited 14-Feb-97 09:58 by rmk:
(* |fsg| "16-Jul-87 10:08")

;; Return the index page number; either the page number or manual-style page number.

```
(MKATOM (COND
  ((MANUALINDEX.ENABLED? WINDOW)
    (LET ((INDEX.PAGE ""))
      (TEMPLATE.LIST (APPEND (WINDOWPROP WINDOW 'MANUALTEMPLATES)))
      INDEX.TEMPLATE)
    (WHILE (SETQ INDEX.TEMPLATE (POP TEMPLATE.LIST))
      DO (WITH NGTEMPLATE INDEX.TEMPLATE (SETQ INDEX.PAGE (CONCAT INDEX.PAGE (OR
        NG.TEXT-BEFORE
        (NGROUP.CHARTYPE.CONVERT
          NG.CHARTYPE NG.CURRENTVAL)
        INDEX.MANUAL.DELIMITER
        NG.TEXT-AFTER
        (CAR TEMPLATE.LIST))))))
      (CONCAT INDEX.PAGE (CAR FORMATTINGSTATE))))
  (T (CAR FORMATTINGSTATE)))))
```

(INDEX.MANUAL.DELIMITER

(LAMBDA (AFTER.DELIMITER NEXT.TEMPLATE)

(* |fsg| "16-Jul-87 10:00")

(* * |Return| |the| |delimiter| |between| |NGroups| |and| |the| |page| |number| |for| |a| |Manual| |Index| |page| |reference.|)

```
(OR (COND
  (NEXT.TEMPLATE (COND
    ((|fetch| (NGTEMPLATE NG.TEXT-BEFORE) |of| NEXT.TEMPLATE)
      "")
    (T NIL)))
  (T (COND
    ((OR (NULL AFTER.DELIMITER)
      (STREQUAL AFTER.DELIMITER ""))
      ".")
    (T NIL))))
  AFTER.DELIMITER)))
```

(INDEX.STRING

(LAMBDA (INDEX.OBJ)

(* |ss:| "27-Jun-87 15:52")

(* * |Returns| |the| |display| |imagestream| |text| |for| |an| |Index| |or| |Extended| |Index| |ImageObject.|)

```
(LET ((OBJDATUM (|fetch| OBJECTDATUM |of| INDEX.OBJ))
  (INDEXKEY (MKATOM (IMAGEOBJPROP INDEX.OBJ 'INDEX.KEY))))
  (COND
    (OBJDATUM (<with| INDEX.ENTRY.RECORD OBJDATUM (CONCAT "{Index Key=" INDEXKEY ",Entry=" INDEX.ENTRY
      (SELECTQ INDEX.NUMBER
        (YES "Yes")
        (NO "No")
        (CONCAT ", " INDEX.NUMBER "}}))))
    (T (CONCAT "{Index " INDEXKEY "}}))))
```

(GET.INDEXENTRY.NUMBER

(LAMBDA (DEFAULTNUMBER)

(* |ss:| "27-Jun-87 15:47")

(* * |Get| |the| NUMBER |argument| |for| |an| |IndexEntry| |ImageObject.|
|The| NUMBER |can| |be| "YES" \, "NO" \, |or| |an| |integer.|)

```
(OR (MENU (|create| MENU
  TITLE _ "Number?"
  CENTERFLG _ T
  ITEMS _ ' (YES NO VALUE)
  WHENSELECTEDFN _ (FUNCTION (LAMBDA (ITEM)
    (COND
      ((EQ ITEM 'VALUE)
        (NUMBERPAD.READ (CREATE.NUMBERPAD.READER "NUMBER value?"
          NIL NIL NIL T)))
      (T ITEM)))))
  DEFAULTNUMBER
  'YES)))
```

(INDEX.LIST.REFS

(LAMBDA (IMAGESTREAM)

; Edited 14-Feb-97 09:09 by rmk:

(* |ss:| "27-Jun-87 15:51")

;; Return a sorted list of the Index and Extended Index keys. Simple Index keys are just added to the list. For an Extended Index key, there are
 ;; SUBITEMS for each Extended Index for this key. This list can be used as the ITEMS field in the Known Indices menu or for creating the index
 ;; file.

```
(LET ((INDEX.ARRAY (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY))
      (INDEX.KEYLIST NIL)
      (INDEX.ITEMS (CONS))
      INDEX.VALUE)
  (MAPHASH INDEX.ARRAY (FUNCTION (LAMBDA (VAL KY)
                                   (SETQ INDEX.KEYLIST (CONS KY INDEX.KEYLIST))))))
  (FOR KEY IN (SORT INDEX.KEYLIST 'UALPHORDER)
    DO (SETQ INDEX.VALUE (GETHASH KEY INDEX.ARRAY))
      (AND (CADR INDEX.VALUE)
        (NCONC INDEX.ITEMS (LIST KEY)))
      (AND (CADDR INDEX.VALUE)
        (NCONC INDEX.ITEMS (LIST (LIST KEY NIL "Select an Extended Index subitem."
                                   (CONS 'SUBITEMS (LIST.OF.INDEXENTRIES KEY (CADDR INDEX.VALUE)
                                   ))))))))
  (CDR INDEX.ITEMS)))
```

(LIST.OF.INDEXENTRIES

(LAMBDA (KEY OBJLIST)

(* |fsg| "8-Jul-87 16:46")

(* * |Returns| \a |list| |of| |the| |Extended| |Indices| |of| |the| |given| |key| |sorted| |by| |Entry.|)

```
(LET ((ENTRY.LIST (CONS))
      DATUM)
  (|for| OBJ |in| OBJLIST |do| (SETQ DATUM (|fetch| OBJECTDATUM |of| OBJ))
    (NCONC ENTRY.LIST (LIST (LIST (CONCAT (|fetch| INDEX.ENTRY |of| DATUM)
                                         " "
                                         (ABBREVIATE.FONT (|fetch| INDEX.ENTRYFONT
                                                             |of| DATUM))
                                         " "
                                         (|fetch| INDEX.NUMBER |of| DATUM))
                          (KWOTE (LIST KEY DATUM))))))
  (SORT (INTERSECTION (CDR ENTRY.LIST)
                      (CDR ENTRY.LIST))
    (FUNCTION (LAMBDA (A B)
               (UALPHORDER (CAADR (CADADR A))
                           (CAADR (CADADR B)))))))
```

)

;;; Index file functions

(DEFINEQ

(CREATE.INDEX.FILE

(LAMBDA (TEXTSTREAM IMAGESTREAM INDEXFILE INDEX.FONT NOTITLE)

; Edited 14-Feb-97 11:10 by rmk:

(* |fsg| "13-Aug-87 09:05")

;; Writes the indices and their corresponding page numbers to the index file. The indices are sorted alphabetically regardless of case.

```
(LET ((INDEX.ARRAY (IF IMAGESTREAM
                       THEN (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY)
                       ELSE ;; Menu call should do a hardcopy to a nodircore image stream, which can then be passed in for us to
                           ;; interrogate.
                           ;; (STREAMPROP WINDOW 'TSP.INDEX.ARRAY)
                           (HELP "Trying to write index when not hard-copying")))
      (INDEX.LIST (INDEX.LIST.REFS IMAGESTREAM))
      (INDEX.FILE (OUTFILEP INDEXFILE))
      (INDEX.STREAM (OPENTEXTSTREAM)))
  (COND
    ((AND INDEX.LIST INDEX.FILE)
     (TEDIT.PROMPTPRINT TEXTSTREAM (CONCAT "Putting Indices into file " INDEX.FILE "... ")
      T)
     (CL:UNLESS NOTITLE
      (DSPFONT (FONTCREATE '(HELVETICA 14 BRR))
        INDEX.STREAM)
      (PRINTOUT INDEX.STREAM "Index" T T))
     (WRITE.INDEX.FILE INDEX.STREAM INDEX.LIST INDEX.ARRAY INDEX.FONT)
     (CLOSEF? (TEDIT.PUT INDEX.STREAM INDEX.FILE))
     INDEX.FILE)
    (INDEX.LIST (TEDIT.PROMPTPRINT TEXTSTREAM "Specify a file name for the Indices first." T)
      NIL)
    (T (TEDIT.PROMPTPRINT TEXTSTREAM "There are no Indices/Extended Indices in this document." T)
      NIL))))
```

(DUMP.INDEX

(LAMBDA (INDEXFILE)

; Edited 14-Feb-97 11:12 by rmk:

;; Dumps the current index to INDEXFILE without a title and in the font of the current image stream. Convenient to call in an EVALObject context.
 ;; By default, indexfile will be placed on the same directory as the text file underlying the textstream

```
(DECLARE (USEDFREE TEXTSTREAM WINDOW IMAGESTREAM))
(LET ((TEXTFILE (FETCH (TEXTOBJ TXTFILE) OF (TEXTOBJ TEXTSTREAM))))
  (IF TEXTFILE
    THEN (SETQ TEXTFILE (FULLNAME TEXTFILE)))
    (CREATE.INDEX.FILE TEXTSTREAM IMAGESTREAM (IF INDEXFILE
      THEN (PACKFILENAME 'VERSION NIL 'BODY INDEXFILE
        'HOST
        (FILENAMEFIELD TEXTFILE 'HOST)
        'DIRECTORY
        (FILENAMEFIELD TEXTFILE 'DIRECTORY)))
      ELSEIF TEXTFILE
        THEN (PACKFILENAME 'VERSION NIL 'EXTENSION 'INDEX
          'BODY TEXTFILE)
      ELSEIF (GET.INDEX.FILE (WINDOWPROP WINDOW 'IMAGEOBJ.MENUW))
      ELSE (HELP "No file for index"))
    (DSPFONT NIL IMAGESTREAM)
    T))))
```

(VIEW.INDEX.FILE

(LAMBDA (STREAM WINDOW DONTSHOW)

; Edited 14-Feb-97 17:15 by rmk:
(* |fsg| "12-Aug-87 16:34")

;; Writes out the index file via CREATE.INDEX.FILE and then opens another TEdit window where this new file is displayed.
 ;; First, do a dummy hardcopy to get the page numbers. Use the type of the current defaultprintinghost as the imagestream type

```
(LET* ((IMAGESTREAM (OPENIMAGESTREAM '{NULL}))
  (INDEX.FILE (CREATE.INDEX.FILE STREAM (PROGN (TEDIT.FORMAT.HARDCOPY STREAM IMAGESTREAM)
    IMAGESTREAM)
    (GET.INDEX.FILE (WINDOWPROP WINDOW 'IMAGEOBJ.MENUW))))))
  (AND INDEX.FILE (NOT DONTSHOW)
    (PROGN (OR (WINDOWPROP WINDOW 'INDEX.WINDOW)
      (WINDOWPROP WINDOW 'INDEX.WINDOW (CREATEW NIL (CONCAT "Viewing Index file " INDEX.FILE)
        ))))
      (TEDIT INDEX.FILE (WINDOWPROP WINDOW 'INDEX.WINDOW))))))
```

(GET.INDEX.FILE

(LAMBDA (MENUW)

; Edited 29-Sep-87 14:34 by fsg

(* * |Return| |the| |user| |specified| |index| |file| |name|.|)

```
(LET ((FILENAME (FM.ITEMPROP (FM.GETITEM 'INDEX.FILE NIL MENUW)
  'LABEL)))
  (AND (NOT (STREQUAL FILENAME ""))
    (MKATOM FILENAME))))
```

(WRITE.INDEX.FILE

(LAMBDA (INDEX.STREAM INDEX.LIST INDEX.ARRAY INDEX.FONT PAGE.FONT)

; Edited 20-Feb-97 17:58 by rmk:
(* |fsg| "13-Aug-87 10:43")

;; For each Index, the Key is printed followed by the list of page numbers in which this Index Key appears. Each Extended Index is printed on a
 ;; separate line and the page number depends on the Extended Index Number option.

```
(CL:UNLESS INDEX.FONT (SETQ INDEX.FONT |GP.DefaultFont|))
(CL:UNLESS PAGE.FONT (SETQ PAGE.FONT INDEX.FONT))
```

;; For some reason, the first line doesn't format properly after an Include object. Kludge to fix it here: put out a blank line. Perhaps a better thing
 ;; would be to somehow fix the include object, or perhaps to have the DUMP.INDEX take a flag to control this.

```
(PRINTOUT INDEX.STREAM " " T)
(FOR INDEX.ITEM IN INDEX.LIST DO (COND
  ((LISTP INDEX.ITEM)
    ;; Extended Index
    (FOR INDEX.SUBITEM (PGS.AND.IMOBS _ (GETHASH (CAR INDEX.ITEM)
      INDEX.ARRAY))
      IN (CDR (CADDR INDEX.ITEM))
      DO (FOR INDEX.ENTRYARGS FONT IN (CDR (CADADR INDEX.SUBITEM))
        DO (DSPFONT (SETQ FONT (FONTCREATE (CADR INDEX.ENTRYARGS)))
          INDEX.STREAM)
          (PRINTOUT INDEX.STREAM (MKSTRING (CAR INDEX.ENTRYARGS)))
          (WRITE.INDEX.PAGENUMBERS INDEX.STREAM PGS.AND.IMOBS
            (CADR INDEX.ENTRYARGS)
            PAGE.FONT)
          (DSPFONT FONT INDEX.STREAM)
          (PRINTOUT INDEX.STREAM T))))))
  (T
    ;; Simple Index
    (DSPFONT INDEX.FONT INDEX.STREAM)
    (PRINTOUT INDEX.STREAM (MKSTRING INDEX.ITEM))
    (WRITE.INDEX.PAGENUMBERS INDEX.STREAM (GETHASH INDEX.ITEM
      INDEX.ARRAY)
      NIL PAGE.FONT)
    (PRINTOUT INDEX.STREAM T))))))
```


(WRITE.INDEX.PAGENUMBERS

(LAMBDA (STREAM PAGES/IMOBJS NUMBER.OPTION PAGEFONT)

; Edited 2-Feb-97 17:04 by rmk:
(* |fsg| "11-Mar-87 11:04");; Here to write the actual pages nubers that this Index or Extended Index appears in. NUMBER.OPTION is the Number field of an Extended
;; Index.

```

(DSPFONT PAGEFONT STREAM)
(LET ((PAGE.NBRS (COND
  (NUMBER.OPTION (SELECTQ NUMBER.OPTION
    (NO "")
    (YES (CAR PAGES/IMOBJS))
    (MKSTRING NUMBER.OPTION)))
  (T (CAR PAGES/IMOBJS))))
  (PAGE.STRING " ")))
(COND
  ((LISTP PAGE.NBRS)
   (SETQ PAGE.STRING (CONCAT PAGE.STRING (CAR PAGE.NBRS)))
   (|for| PAGE |in| (CDR PAGE.NBRS) |do| (SETQ PAGE.STRING (CONCAT PAGE.STRING ", " PAGE))
    |finally| (PRINTOUT STREAM PAGE.STRING)))
  (T (PRINTOUT STREAM (CONCAT PAGE.STRING PAGE.NBRS))))))

```

(RESET.INDEX.PAGENUMBERS

(LAMBDA (IMAGESTREAM)

; Edited 14-Feb-97 09:11 by rmk:
(* |fsg| "13-Aug-87 10:43");; Here before hardcopying the TMAX/Tedit window. Reset the page number list to NIL so the hardcopy DISPLAYFN will create a new list of index
;; page numbers.

```

(LET ((INDEX.ARRAY (STREAMPROP IMAGESTREAM 'TSP.INDEX.ARRAY)))
  (AND INDEX.ARRAY (MAPHASH INDEX.ARRAY (FUNCTION (LAMBDA (VAL KEY)
    (RPLACA VAL NIL)))))))

```

)

(DECLARE\ : EVAL@COMPILE

```

(RECORD INDEX.ENTRY.RECORD (INDEX.ENTRY INDEX.ENTRYFONT INDEX.NUMBER))
)

```

;;; Convenient interface--depress the props key to index the current selection

(DEFINEQ

(SELECTION.TO.STRING

(LAMBDA (TEXTSTREAM)

; Edited 27-Jan-97 12:53 by rmk:

```

(LET (PREFIX ENDPOS NEXTESCAPE (SEL (TEDIT.GETSEL TEXTSTREAM))
  (POINT (TEDIT.GETPOINT TEXTSTREAM))
  STARTPOS ENDPOS)
  (SETQ STARTPOS (SUB1 (FETCH CH# OF SEL)))
  (SETQ ENDPOS (SUB1 (FETCH CHLIM OF SEL)))
  (IF (EQ 'CHAR (FETCH SELKIND OF SEL))
    THEN

```

;; Stretch out to at least a word selection.

;; Look backwards, then forwards. 22 seems to be white-space, 21 is alphabetic, 20 is punctuation

```

  (FOR OLD STARTPOS C BC FROM (SUB1 STARTPOS) BY -1 TO 0
    WHILE (PROGN (SETFILEPTR TEXTSTREAM STARTPOS)
      (AND (SMALLP (SETQ C (BIN TEXTSTREAM)))
        (SELECTQ (TEDIT.WORDGET C)
          (22 NIL)
          (20 ; Include hyphens as alphabets
            (EQ C (CHARCODE -))))
      T)))

```

```

  FINALLY (ADD STARTPOS 1) ; Fileptr of first character

```

```

  (SETFILEPTR TEXTSTREAM ENDPOS)
  (WHILE (PROGN (AND (NOT (EOFP TEXTSTREAM))
    (SMALLP (SETQ C (BIN TEXTSTREAM)))
    (SELECTQ (TEDIT.WORDGET C)
      (22 NIL)
      (20 ; Include hyphens as alphabets
        (EQ C (CHARCODE -))))
    T))))

```

(SETQ ENDPOS (GETFILEPTR TEXTSTREAM))

```

  (CL:UNLESS (EOFP TEXTSTREAM) ; Have to back up over the ending space
    (SETQ ENDPOS (SUB1 ENDPOS))))

```

;; Always move the point to the right, so that the insert happens after the selection

```

(SETQ STARTPOS (ADD1 STARTPOS))
(TEDIT.SETSEL TEXTSTREAM STARTPOS (- (ADD1 ENDPOS)
  STARTPOS))

```

'RIGHT NIL T 'NORMAL)

```

(IF (CAR (NLSETQ (TEDIT.SEL.AS.STRING TEXTSTREAM)))
  ELSE (TEDIT.PROMPTPRINT TEXTSTREAM "Invalid index term--contains image object?" T)
  (ERROR!))))

```

(SELECTION.TO.INDEX

(LAMBDA (STREAM)

; Edited 14-Feb-97 09:56 by rmk:
(* |fsg| "10-Mar-87 14:02")

;; The index key has been depressed. Index on the current selection

```

(LET ((NEWINDEX.KEY (MKATOM (CL:STRING-TRIM ' (#\Space)
                                     (CONVERT.TABS.TO.SPACES (SELECTION.TO.STRING STREAM))))))
  (TEXTOBJ (TEXTOBJ STREAM)))
(IF (AND NEWINDEX.KEY (NEQ 0 (NCHARS NEWINDEX.KEY)))
    THEN (LET ((OBJ (INDEXOBJ NEWINDEX.KEY)))
            (REPLACE BLUEPENDINGDELETE OF TEXTOBJ WITH NIL)
            (TEDIT.INSERT.OBJECT OBJ STREAM (TEDIT.GETPOINT STREAM))
            (TEDIT.SETSEL STREAM (ADD1 (TEDIT.GETPOINT STREAM))
                                0
                                'RIGHT NIL T 'NORMAL)
            (TEDIT.PROMPTPRINT STREAM (CONCAT "Index term: " NEWINDEX.KEY)
                                      T))
      ELSE (TEDIT.PROMPTPRINT STREAM "No index term selected" T)
            (ERROR!))))

```

)

(DECLARE\ : EVAL@COMPILE

```

(PUTPROPS MAKE.INDEXOBJ.IMAGEFNS MACRO (LAMBDA NIL
                                          (IMAGEFNSCREATE (FUNCTION INDEX.DISPLAYFN)
                                                            (FUNCTION INDEX.IMAGEBOXFN)
                                                            (FUNCTION INDEX.PUTFN)
                                                            (FUNCTION INDEX.GETFN)
                                                            (FUNCTION INDEX.COPYFN)
                                                            (FUNCTION INDEX.BUTTONEVENTINFN)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL)
                                                            (FUNCTION NIL))))

```

)

(RPAQ \INDEXOBJ.IMAGEFNS (MAKE.INDEXOBJ.IMAGEFNS))

(ADDTovar IMAGEOBJGETFNS (INDEX.GETFN))

;; 533 is the PROPS key on Sun keyboards

(TEDIT.SETSYNTAX "Function,^U" 'FN TEDIT.READTABLE)

```

(TEDIT.SETFUNCTION "Function,^U" (FUNCTION SELECTION.TO.INDEX)
  TEDIT.READTABLE)

```

;;; IMAGE OBJECT for causing the index to be written, without using the menu

FUNCTION INDEX

ADD.NEW.INDEX	4	GET.INDEX.FILE	8	INDEX.MANUAL.DELIMITER ..	6	LIST.OF.INDEXENTRIES	7
CHANGE.INDEX	5	GET.INDEXENTRY.NUMBER ...	6	INDEX.PAGE.NUMBER	6	RESET.INDEX.PAGENUMBERS .	9
CHANGE.INDEXENTRY	5	GETHASH.INDEX	5	INDEX.PUTFN	2	SELECTION.TO.INDEX	10
CHANGE.XINDEX.ENTRY	5	INDEX.BUTTONEVENTINFN ...	3	INDEX.STRING	6	SELECTION.TO.STRING	9
CHANGE.XINDEX.FONT	5	INDEX.COPYFN	3	INDEXOBJ	1	SUBITEM.SELECTFN	4
CHANGE.XINDEX.KEY	5	INDEX.DISPLAYFN	2	INDEXOBJP	2	VIEW.INDEX.FILE	8
CHANGE.XINDEX.NUMBER ...	5	INDEX.GETFN	3	INSERT.INDEX	3	WRITE.INDEX.FILE	8
CREATE.INDEX.FILE	7	INDEX.IMAGEBOXFN	2	INSERT.INDEXENTRY	3	WRITE.INDEX.PAGENUMBERS .	9
DUMP.INDEX	7	INDEX.LIST.REFS	7	INSERT.KNOWN.INDEX	4		

VARIABLE INDEX

IMAGEOBJGETFNS	10	INDEXDISPLAYAPPEARANCE ..	1	\\INDEXOBJ.IMAGEFNS	10
----------------------	----	---------------------------	---	--------------------------	----

MACRO INDEX

MAKE.INDEXOBJ.IMAGEFNS .	10
--------------------------	----

RECORD INDEX

INDEX.ENTRY.RECORD	9
--------------------------	---