File created: 1-Apr-2024 09:45:47 **{WMEDLEY}<library>TEDIT>TEDIT-STREAM.;690**

edit by: rmk

previous date: 31-Mar-2024 11:44:49 {WMEDLEY}<library>TEDIT>TEDIT-STREAM.;689

Read Table: INTERLISP

Package: INTERLISP

Format: XCCS

```
(RPAQQ TEDIT-STREAMCOMS
       [(DECLARE%: EVAL@COMPILE DONTCOPY
              (EXPORT (RECORDS PIECE TEXTOBJ TEXTSTREAM)
                     (MACROS NEXTPIECE PREVPIECE PLEN PTYPE PCONTENTS PLOOKS PCHARSET PPARALOOKS PPARALAST
                            PFPOS PBYTELEN PNEW PBINABLE PBYTESPERCHAR)
                     (MACROS SETPC FSETPC GETPC FGETPC)
                     (MACROS THINPIECEP)
                     (MACROS VISIBLEPIECEP \NEXT.VISIBLE.PIECE \PREV.VISIBLE.PIECE)
                     (MACROS GETTOBJ SETTOBJ FGETTOBJ FSETTOBJ TEXTLEN TEXTSEL TEXTOBJ!)
                     (CONSTANTS * PTYPES)
                     (GLOBALVARS \TEXTIMAGEOPS \TEXTFDEV)))
        (INITRECORDS PIECE TEXTOBJ TEXTSTREAM)
        (COMS ;; The BIN-level functions
              (FNS \TEDIT.TEXTBIN \TEDIT.TEXTPEEKBIN \TEDIT.TEXTBACKFILEPTR \TEDIT.TEXTBOUT
                   \TEDIT.INSTALL.FILEBUFFER)
              (DECLARE%: EVAL@COMPILE DONTCOPY (MACROS \ENDOFPIECEP \STARTOFPIECEP \ENDOFBUFFERP \STARTOFBUFFERP
                                                       )))
        ;; External format functions:  equivalent to BIN-level except for COUNTP
        (FNS \TEDIT.TEXTOUTCHARFN \TEDIT.TEXTINCCODEFN \TEDIT.TEXTBACKCCODEFN \TEDIT.TEXTFORMATBYTESTREAM
             \TEDIT.TEXTFORMATBYTESTRING)
        ;; High-level stream operations
        (FNS OPENTEXTSTREAM COPYTEXTSTREAM TEDIT.STREAMCHANGEDP TXTFILE)
        (FNS \TEDIT.REOPENTEXTSTREAM \TEDIT.OPENTEXTSTREAM.PIECES \TEDIT.OPENTEXTSTREAM.PROPS
             \TEDIT.OPENTEXTSTREAM.SETUP.SEL \TEDIT.OPENTEXTSTREAM.WINDOW \TEDIT.OPENTEXTSTREAM.DEFAULTLOOKS
             \TEDIT.OPENTEXTFILE \TEDIT.CREATE.TEXTSTREAM \TEDIT.REOPEN.STREAM \TEDIT.TEXTINIT)
        ;; Is this being used:
        (FNS \TEDIT.TTYBOUT)
        [INITVARS (*TEDIT-EXTENSIONS* '(TEDIT TED TXT TEXT BRAVO NIL]
        ;; Low-level generic stream operations
        (FNS \TEDIT.TEXTCLOSEF \TEDIT.TEXTDSPFONT \TEDIT.TEXTEOFP \TEDIT.TEXTGETEOFPTR \TEDIT.TEXTGETFILEPTR
             \TEDIT.TEXTOPENF \TEDIT.TEXTSETEOF \TEDIT.TEXTSETFILEPTR \TEDIT.TEXTDSPXPOSITION
             \TEDIT.TEXTDSPYPOSITION \TEDIT.TEXTLEFTMARGIN \TEDIT.TEXTRIGHTMARGIN \TEDIT.TEXTDSPCHARWIDTH
             \TEDIT.TEXTDSPSTRINGWIDTH \TEDIT.TEXTDSPLINEFEED)
        (COMS ;; Editing support
              (DECLARE%: EVAL@COMPILE DONTCOPY (CONSTANTS (INSERTSTRINGLENGTH 512))
                     (MACROS \INSERTCH.EXTENDABLE))
              (FNS \TEDIT.DELETE.SELPIECES \TEDIT.INSERTCH \TEDIT.INSERTCH.HISTORY \TEDIT.INSERTEOL
                   \TEDIT.INSERTCH.INSERTION \TEDIT.INSERTCH.EXTEND)
              (FNS \SETUPGETCH))
                                                                ; Deprecated, maybe still external callers
        (FNS \TEDIT.INSTALL.PIECE)
        (COMS                                                   ; Support for TEXTPROP
              (FNS GETTEXTPROP PUTTEXTPROP TEXTPROP))
        [COMS ;; Support for error handling:  The old error handler for the stream-not-open error.  This is here, because you only want to do this
              ;; ONCE, even if you load TEXT-STREAM multiple times (as, e.g., in development)
              (INITVARS (*TEDIT-OLD-STREAM-ERROR-HANDLER* (CONDITION-HANDLER 'XCL:STREAM-NOT-OPEN]
        (DECLARE%: DONTEVAL@LOAD DOCOPY (P (\TEDIT.TEXTINIT)))
        (DECLARE%: DONTEVAL@LOAD DOEVAL@COMPILE DONTCOPY COMPILERVARS (ADDVARS (NLAMA)
                                                                              (NLAML)
                                                                              (LAMA TEXTPROP])

(DECLARE%: EVAL@COMPILE DONTCOPY

;; FOLLOWING DEFINITIONS EXPORTED

(DECLARE%: EVAL@COMPILE

(DATATYPE PIECE (                                               ; The piece describes either a string or part of a file.  , or a
                                                                ; generalized OBJECT.
                 PCONTENTS                                      ; The background source of data for this piece (stream, string,
                                                                ; block, object, depending on the PTYPE).
                 (PTYPE BITS 4)                                 ; How the characters are delivered: thinfile, fatstring, object,
                                                                ; substream
                 PBYTELEN                                       ; Length of this character piece in bytes.  PBYTELEN =
                                                                ; PLEN*PBYTESPERCHAR
                 PFPOS                                          ; The FILEPTR of the start of the piece in the file
                 PLEN                                           ; Length of the piece, in characters.
                 NEXTPIECE                                      ; -> Next piece in this textobj.
```

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                (PREVPIECE FULLXPOINTER)                    ; -> Prior piece in this text object.
                PLOOKS                                      ; Character formatting info
                PBYTESPERCHAR                               ; The number of bytes per character, given that all characters in
                                                            ; a piece are the same length.
                (PPARALAST FLAG)                            ; This piece ends paragraph
                PPARALOOKS                                  ; Paragraph looks for this piece
                (PNEW FLAG)                                 ; This text is new here;  used by the tentative edit system, and
                                                            ; anyone else interested.
                (NIL FLAG)                                  ; Was PFATP
                (PBINABLE FLAG)                             ; 8-bit bytes are binable (THINSTRING and THINFILE)
                (PTREENODE XPOINTER)                        ; Points to the PCTB tree-node that contains this piece.
                (PCHARSET BYTE)                             ; High-order charset for FATFILE1 pieces
                (PUTF8BYTESPERCHAR BYTE))                   ; The number of bytes in the UTF-8 encoding of all the Unicode
                                                            ; characters in this piece
        [ACCESSFNS ((POBJ (IMAGEOBJP (PCONTENTS DATUM]
        PFPOS _ 0 PLEN _ 0 PBYTELEN _ 0 PPARALOOKS _ TEDIT.DEFAULT.FMTSPEC)

(DATATYPE TEXTOBJ (;; This is where TEdit stores its state information, and internal data about the text being edited.
                PCTB                                        ; The piece table
                TEXTLEN                                     ; # of chars in the text
                PANES                                       ; A list of panes (subwindows) that are open on this document.
                                                            ; Was INSERTPC: The string-piece that received the last
                                                            ; insertion. Now HINTPC
                LASTPIECE                                   ; The last (end-of-stream) piece of the textstream, for easy
                                                            ; insertion at the end
                NIL                                         ; Was: INSERTNEXTCH CH# of next char which is typed into
                                                            ; that piece. Taken over by HINTPCSTARTCH#
                HINTPC                                      ; Was: Space left in the type-in piece
                HINTPCSTARTCH#                              ; Was # of characters already in the piece.
                INSERTSTRING                                ; A substring of storage that is available for an insertion.
                TXTHISTORYUNDONE                            ; Events that result from undoing other events, for revoking the
                                                            ; UNDO. Was: CH# of first char in the piece.
                (TXTLINELEADINGABOVE FLAG)                  ; NIL for old/existing Tedit files whose lines are formatted with
                                                            ; leading below, T for newer files. Was \INSERTPCVALID. T if
                                                            ; it's OK to use the cached piece.  Set to NIL by people who
                                                            ; require that the next insertion/deletion use a different piece.
                                                            ; Now just set HINTPC to NIL.
                \WINDOW                                     ; The window-pane<s> where this textobj is displayed
                MOUSEREGION                                 ; Section of the window the mouse is in.
                NIL                                         ; Was: A list of lines (parallel to the panes in \WINDOW) each of
                                                            ; which is the top of chain of line descriptors for the part of the
                                                            ; text that is visible in the corresponding pane. Now: each PANE
                                                            ; has its own PLINES.
                DS                                          ; NOTE:  THIS IS ONLY USED INCORRECTLY BY
                                                            ; TEDIT-CHAT Display stream where this textobj is displayed
                SEL                                         ; The current selection within the text
                SCRATCHSEL                                  ; Scratch space for the selection code
                SCRATCHSEL2                                 ; Was MOVESEL: Source for the next MOVE of text
                NIL                                         ; Was SHIFTEDSEL: Source for the next COPY
                NIL                                         ; Was DELETESEL: Text to be deleted imminently
                WRIGHT                                      ; Right edge of the window (or subregion) where this is displayed
                WTOP                                        ; Top of the window/region
                WBOTTOM                                     ; Bottom of the window/region
                WLEFT                                       ; Left edge of the window/region
                TXTFILE                                     ; The original text file we're editing
                (\XDIRTY FLAG)                              ; T => changed since last saved.
                (STREAMHINT FULLXPOINTER)                   ; -> the TEXTOFD stream which gives access to this textobj
                EDITFINISHEDFLG                             ; T => The guy has asked the editor to go way
                CARET                                       ; Describes the flashing caret for the editing window
                CARETLOOKS                                  ; Font to be used for inserted text.
                WINDOWTITLE                                 ; Original title for this window, of there was one.
                THISLINE                                    ; Cache of line-related info, to speed up selection &c
                (MENUFLG FLAG)                              ; T if this TEXTOBJ is a tedit-style menu
                FMTSPEC                                     ; Default Formatting Spec to be used when formatting
                                                            ; paragraphs
                (FORMATTEDP FLAG)                           ; Flag for paragraph formatting.  T if this document is to contain
                                                            ; paragraph formatting information.
                (TXTREADONLY FLAG)                          ; This is only available for shift selection.
                (TXTEDITING FLAG)                           ; T => This document is in a window and there is an edit process
                                                            ; behind it.  For example, it only makes sense to have a caret
                                                            ; show up if you are editing.
                (TXTNOTSPLITTABLE FLAG)                     ; Can't split into panes, split-region not show. Was
                                                            ; TXTNONSCHARS: T => If TEdit rns into a 255, it won't attempt
                                                            ; to convert to NS characters.  Used for REALLY plain-text
                                                            ; manipulation.
                TXTTERMSA                                   ; Special instructions for displaying characters on the screen
                EDITOPACTIVE                                ; T if there is an editing operation in progress.  Used to interlock
                                                            ; the TEdit menu
                DEFAULTCHARLOOKS                            ; The default character looks -- if any -- to be applied to
                                                            ; characters coming into the file from outside.
                TXTRTBL                                     ; The READTABLE to be used by the command loop for
                                                            ; command dispatch
                TXTWTBL                                     ; The READTABLE to be used to decide on word breaks
                EDITPROPS                                   ; The PROPS that were passed into this edit session
                (BLUEPENDINGDELETE FLAG)                    ; T if the next insertion in this document is to be preceded by a
                                                            ; deletion of the then-current selection
```

```
                    TXTHISTORY                                  ; The history list for this edit session.
                    (SELPANE FULLXPOINTER)                      ; The pane in which the last 'real' selection got made for this edit;
                                                                ; used by TEDIT.NORMALIZECAREET
                    PROMPTWINDOW                                ; A window to be used for unscheduled interactions;  normally a
                                                                ; small window above the edit window
                    DISPLAYCACHE                                ; The bitmap to be used when building the image of a line for
                                                                ; display
                    DISPLAYCACHEDS                              ; The DISPLAYSTREAM that is used to build line images
                    DISPLAYHCPYDS                               ; The DISPLAYSTREAM used to build line images of lines that
                                                                ; are displayed in 'hardcopy' simulation mode
                    TXTPAGEFRAMES                               ; A tree of page frames, specifying how the document is to be
                                                                ; laid out.
                    TXTCHARLOOKSLIST                            ; List of all the CHARLOOKSs in the document, so they can be
                                                                ; kept unique
                    TXTPARALOOKSLIST                            ; List of all the FMTSPECs in the document, so they can be kept
                                                                ; unique
                    (TXTNEEDSUPDATE FLAG)                       ; T => Screen invalid, need to run updater
                    (TXTDON'TUPDATE FLAG)                       ; T if we're holding off on screen updates until later.  Used, e.g.,
                                                                ; by the menu-SHOW code so that you don't get piecemeal
                                                                ; updates, but only one at the end of the SHOW.
                    TXTRAWINCLUDESTREAM                         ; NODIRCORE stream used to cache RAW includes (and maybe
                                                                ; later, all includes?)
                    DOCPROPS                                    ; Document properties that are stored with the document (not
                                                                ; used yet)
                    TXTSTYLESHEET                               ; Style sheet local to this document.  Not currently saved as part
                                                                ; of the file.

                    )
        [ACCESSFNS TEXTOBJ ((\DIRTY (ffetch (TEXTOBJ \XDIRTY) of DATUM)
                                    (CL:UNLESS (EQ NEWVALUE (ffetch (TEXTOBJ \XDIRTY) of DATUM))
                                        (\TEDIT.WINDOW.TITLE DATUM NEWVALUE)
                                        (freplace \XDIRTY OF DATUM WITH NEWVALUE))]
        SEL _ (create SELECTION)
        SCRATCHSEL _ (create SELECTION)
        SCRATCHSEL2 _ (create SELECTION)
        TEXTLEN _ 0 WRIGHT _ 0 WTOP _ 0 WLEFT _ 0 WBOTTOM _ 0 TXTFILE _ NIL \XDIRTY _ NIL MOUSEREGION _
        'TEXT THISLINE _ (create THISLINE)
        MENUFLG _ NIL FMTSPEC _ TEDIT.DEFAULT.FMTSPEC FORMATTEDP _ NIL INSERTSTRING _ NIL)

(ACCESSFNS TEXTSTREAM (;; Overlay for the STREAM record to allow mnemonic access to stream fields for Text streams.
                       ;; The # of characters that have already been read from the current piece
                       (TEXTOBJ (fetch (STREAM F3) of DATUM)
                              (REPLACE (STREAM F3) OF DATUM WITH NEWVALUE))
                                                                ; The TEXTOBJ that is editing this text
                       (PIECE (fetch (STREAM F5) of DATUM)
                              (REPLACE (STREAM F5) OF DATUM WITH NEWVALUE))
                                                                ; The PIECE we're currently fetching chars from/putting chars
                                                                ; into
                       (PCCHARSLEFT (fetch (STREAM F1) of DATUM)
                              (replace (STREAM F1) of DATUM with NEWVALUE))
                                                                ; Runs from PLEN to 0: piece exhausted
                       (CURRENTLOOKS (fetch (STREAM F10) of DATUM)
                              (replace (STREAM F10) of DATUM with NEWVALUE))
                                                                ; The CHARLOOKS that are currently applicable to characters
                                                                ; being taken from the stream.
                       (CURRENTPARALOOKS (fetch (STREAM IMAGEDATA) of DATUM)
                              (REPLACE (STREAM IMAGEDATA) of DATUM with NEWVALUE))
                                                                ; The FMTSPEC that is currently applicable to characters being
                                                                ; taken from the stream. This was  the only residual field of
                                                                ; TEXTIMAGEDATA, now gone.
                       (LOOKSUPDATEFN (fetch (STREAM F4) of DATUM)
                              (REPLACE (STREAM F4) OF DATUM with NEWVALUE))
                                                                ; Function to be called at every piece change when
                                                                ; line-formatting.
                       (STARTINGCOFFSET (fetch (STREAM F2) of DATUM)
                              (replace (STREAM F2) of DATUM with NEWVALUE)))
        [TYPE? (AND (type? STREAM DATUM)
                    (type? TEXTOBJ (fetch (TEXTSTREAM TEXTOBJ) of DATUM]
        (CREATE (create STREAM
                        BINABLE _ NIL
                        BOUTABLE _ NIL
                        ACCESS _ 'BOTH
                        USERCLOSEABLE _ T
                        USERVISIBLE _ T
                        DEVICE _ \TEXTFDEV
                        F1 _ NIL
                        F2 _ 0
                        F3 _ NIL
                        F4 _ NIL
                        F5 _ NIL
                        MAXBUFFERS _ 10
                        IMAGEOPS _ \TEXTIMAGEOPS
                        IMAGEDATA _ NIL)))
)

(/DECLAREDATATYPE 'PIECE
```

```
       '(POINTER (BITS 4)
              POINTER POINTER POINTER POINTER FULLXPOINTER POINTER POINTER FLAG POINTER FLAG FLAG FLAG XPOINTER
              BYTE BYTE)
       ;; ---field descriptor list elided by lister---
       '22)

(/DECLAREDATATYPE 'TEXTOBJ
       '(POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER FLAG POINTER POINTER POINTER
              POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER FLAG
              FULLXPOINTER POINTER POINTER POINTER POINTER POINTER FLAG POINTER FLAG FLAG FLAG FLAG POINTER
              POINTER POINTER POINTER POINTER POINTER POINTER FLAG POINTER FULLXPOINTER POINTER POINTER POINTER POINTER
              POINTER POINTER POINTER FLAG FLAG POINTER POINTER POINTER)
       ;; ---field descriptor list elided by lister---
       '96)

(DECLARE%: EVAL@COMPILE

(PUTPROPS NEXTPIECE MACRO ((PC)
                           (ffetch (PIECE NEXTPIECE) of PC)))

(PUTPROPS PREVPIECE MACRO ((PC)
                           (ffetch (PIECE PREVPIECE) of PC)))

(PUTPROPS PLEN MACRO ((PC)
                      (ffetch (PIECE PLEN) of PC)))

(PUTPROPS PTYPE MACRO ((PC)
                       (ffetch (PIECE PTYPE) of PC)))

(PUTPROPS PCONTENTS MACRO ((PC)
                           (ffetch (PIECE PCONTENTS) of PC)))

(PUTPROPS PLOOKS MACRO ((PC)
                        (ffetch (PIECE PLOOKS) of PC)))

(PUTPROPS PCHARSET MACRO ((PC)
                          (ffetch (PIECE PCHARSET) of PC)))

(PUTPROPS PPARALOOKS MACRO ((PC)
                            (ffetch (PIECE PPARALOOKS) of PC)))

(PUTPROPS PPARALAST MACRO ((PC)
                           (ffetch (PIECE PPARALAST) of PC)))

(PUTPROPS PFPOS MACRO ((PC)
                       (ffetch (PIECE PFPOS) of PC)))

(PUTPROPS PBYTELEN MACRO ((PC)
                          (ffetch (PIECE PBYTELEN) of PC)))

(PUTPROPS PNEW MACRO ((PC)
                      (ffetch (PIECE PNEW) of PC)))

(PUTPROPS PBINABLE MACRO ((PC)
                          (ffetch (PIECE PBINABLE) of PC)))

(PUTPROPS PBYTESPERCHAR MACRO ((PC)
                               (ffetch (PIECE PBYTESPERCHAR) of PC)))
)

(DECLARE%: EVAL@COMPILE

(PUTPROPS SETPC MACRO ((PC FIELD NEWVALUE)
                       (replace (PIECE FIELD) of PC with NEWVALUE)))

(PUTPROPS FSETPC MACRO ((PC FIELD NEWVALUE)
                        (freplace (PIECE FIELD) of PC with NEWVALUE)))

(PUTPROPS GETPC MACRO ((PC FIELD)
                       (fetch (PIECE FIELD) of PC)))

(PUTPROPS FGETPC MACRO ((PC FIELD)
                        (ffetch (PIECE FIELD) of PC)))
)

(DECLARE%: EVAL@COMPILE

(PUTPROPS THINPIECEP MACRO ((PC)
                            ;; Assume that objects start out thin, for  CHARSET in \TEDIT.PUT.PCTB. The putfn might immediately change
                            ;; that, but we don't care.
                            (SELECTC (PTYPE PC)
                                 (THIN.PTYPES T)
                                 (UTF8.PTYPE (EQ 1 (FGETPC PC PUTF8BYTESPERCHAR)))
                                 (OBJECT.PTYPE T)
```

```
                                    NIL)))
)

(DECLARE%: EVAL@COMPILE

(PUTPROPS VISIBLEPIECEP MACRO [(PC)
                                   (NOT (OR (EQ 0 (PLEN PC))
                                            (fetch (CHARLOOKS CLINVISIBLE) of (PLOOKS PC])

(PUTPROPS \NEXT.VISIBLE.PIECE MACRO ((PC)
                                         (find NPC inpieces (AND PC (NEXTPIECE PC)) suchthat (VISIBLEPIECEP NPC))))

(PUTPROPS \PREV.VISIBLE.PIECE MACRO ((PC)
                                         (find PPC backpieces (AND PC (PREVPIECE PC)) suchthat (VISIBLEPIECEP PPC))))
)

(DECLARE%: EVAL@COMPILE

(PUTPROPS GETTOBJ MACRO ((TOBJ FIELD)
                             (fetch (TEXTOBJ FIELD) of TOBJ)))

(PUTPROPS SETTOBJ MACRO ((TOBJ FIELD NEWVALUE)
                             (replace (TEXTOBJ FIELD) of TOBJ with NEWVALUE)))

(PUTPROPS FGETTOBJ MACRO ((TOBJ FIELD)
                              (ffetch (TEXTOBJ FIELD) of TOBJ)))

(PUTPROPS FSETTOBJ MACRO ((TOBJ FIELD NEWVALUE)
                              (freplace (TEXTOBJ FIELD) of TOBJ with NEWVALUE)))

(PUTPROPS TEXTLEN MACRO ((TOBJ)
                             (ffetch (TEXTOBJ TEXTLEN) of TOBJ)))

(PUTPROPS TEXTSEL MACRO ((TOBJ)
                             (fetch (TEXTOBJ SEL) of TOBJ)))

(PUTPROPS TEXTOBJ! MACRO ((TOBJ)
                              (\DTEST TOBJ 'TEXTOBJ)))
)

(RPAQQ PTYPES
       ((THINFILE.PTYPE 0)
        (FATFILE1.PTYPE 1)
        (FATFILE2.PTYPE 2)
        (THINSTRING.PTYPE 3)
        (FATSTRING.PTYPE 4)
        (SUBSTREAM.PTYPE 5)
        (OBJECT.PTYPE 6)
        (LOOKS.PTYPE 7)
        (UTF16BE.PTYPE 8)
        (UTF16LE.PTYPE 9)
        (UTF8.PTYPE 11)
        (FILE.PTYPES (LIST THINFILE.PTYPE FATFILE1.PTYPE FATFILE2.PTYPE UTF8.PTYPE UTF16BE.PTYPE UTF16LE.PTYPE))
        (STRING.PTYPES (LIST THINSTRING.PTYPE FATSTRING.PTYPE))
        (BINABLE.PTYPES (LIST THINFILE.PTYPE THINSTRING.PTYPE))
        (THIN.PTYPES (LIST THINFILE.PTYPE THINSTRING.PTYPE))))

(DECLARE%: EVAL@COMPILE

(RPAQQ THINFILE.PTYPE 0)

(RPAQQ FATFILE1.PTYPE 1)

(RPAQQ FATFILE2.PTYPE 2)

(RPAQQ THINSTRING.PTYPE 3)

(RPAQQ FATSTRING.PTYPE 4)

(RPAQQ SUBSTREAM.PTYPE 5)

(RPAQQ OBJECT.PTYPE 6)

(RPAQQ LOOKS.PTYPE 7)

(RPAQQ UTF16BE.PTYPE 8)

(RPAQQ UTF16LE.PTYPE 9)

(RPAQQ UTF8.PTYPE 11)

(RPAQ FILE.PTYPES (LIST THINFILE.PTYPE FATFILE1.PTYPE FATFILE2.PTYPE UTF8.PTYPE UTF16BE.PTYPE UTF16LE.PTYPE))

(RPAQ STRING.PTYPES (LIST THINSTRING.PTYPE FATSTRING.PTYPE))

(RPAQ BINABLE.PTYPES (LIST THINFILE.PTYPE THINSTRING.PTYPE))
```

```
(RPAQ THIN.PTYPES (LIST THINFILE.PTYPE THINSTRING.PTYPE))

(CONSTANTS (THINFILE.PTYPE 0)
       (FATFILE1.PTYPE 1)
       (FATFILE2.PTYPE 2)
       (THINSTRING.PTYPE 3)
       (FATSTRING.PTYPE 4)
       (SUBSTREAM.PTYPE 5)
       (OBJECT.PTYPE 6)
       (LOOKS.PTYPE 7)
       (UTF16BE.PTYPE 8)
       (UTF16LE.PTYPE 9)
       (UTF8.PTYPE 11)
       (FILE.PTYPES (LIST THINFILE.PTYPE FATFILE1.PTYPE FATFILE2.PTYPE UTF8.PTYPE UTF16BE.PTYPE UTF16LE.PTYPE))
       (STRING.PTYPES (LIST THINSTRING.PTYPE FATSTRING.PTYPE))
       (BINABLE.PTYPES (LIST THINFILE.PTYPE THINSTRING.PTYPE))
       (THIN.PTYPES (LIST THINFILE.PTYPE THINSTRING.PTYPE)))
)

(DECLARE%: DOEVAL@COMPILE DONTCOPY

(GLOBALVARS \TEXTIMAGEOPS \TEXTFDEV)
)
)
```

;; END EXPORTED DEFINITIONS

```
(/DECLAREDATATYPE 'PIECE
       '(POINTER (BITS 4)
              POINTER POINTER POINTER POINTER FULLXPOINTER POINTER POINTER FLAG POINTER FLAG FLAG FLAG XPOINTER
              BYTE BYTE)
```

;; ---field descriptor list elided by lister---

```
       '22)

(/DECLAREDATATYPE 'TEXTOBJ
       '(POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER FLAG POINTER POINTER POINTER
              POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER POINTER FLAG
              FULLXPOINTER POINTER POINTER POINTER POINTER POINTER FLAG POINTER FLAG FLAG FLAG FLAG POINTER
              POINTER POINTER POINTER POINTER FLAG POINTER FULLXPOINTER POINTER POINTER POINTER POINTER
              POINTER POINTER POINTER FLAG FLAG POINTER POINTER POINTER)
```

;; ---field descriptor list elided by lister---

```
       '96)
```

;; The BIN-level functions

```
(DEFINEQ
```

(\TEDIT.TEXTBIN

```
  [LAMBDA (TSTREAM)
```

;; Edited 18-Mar-2024 23:34 by rmk

;; Edited 3-Feb-2024 14:27 by rmk

;; Edited 1-Feb-2024 11:44 by rmk

;; Edited 7-Jan-2024 12:00 by rmk

;; Edited 17-Jun-2023 13:47 by rmk

;; Edited 3-May-2023 15:09 by rmk

;; Edited 22-Dec-2021 10:29 by rmk: Return value of OBJECTCHAR property for image objects

;; Edited 28-Mar-94 15:33 by jds

;;; The BIN slow case for a text stream. For the fast, binable (THINFILE, THINSTRING) cases, this is called when an end-of-buffer is reached. If it is not ;;; also an end-of-piece, get a new buffer and continue. Otherwise, get a new piece (which may not be binable).

;;; If the stream is not binable (all other piece types) this gets called on every BIN. Then we start an extra test to distinguish between buffer overflow and ;;; piece overflow.

;;; The external filepointer (GETFILEPTR, SETFILEPTR) is calculated in characters: the total number of characters in all previous pieces, plus the ;;; characters (based on the offset) in the current piece.

```
    (DECLARE (LOCALVARS . T))
    (LET ((PC (ffetch (TEXTSTREAM PIECE) of TSTREAM))
          (PCCHARSLEFT (ffetch (TEXTSTREAM PCCHARSLEFT) of TSTREAM)))
         (PROG1 (if (ffetch (STREAM BINABLE) of TSTREAM)
                    then
```

;; The BIN opcode detected a buffer overflow, move either to the next buffer for this piece, or the next piece. The ;; opcode doesn't manages only COFFSET, so here we have to figure out what4 PCCHARSOFFSET should have ;; been. NOTE: PCCHARSOFFSET cannot be changed in the stream unless the STARTINGCOFFSET is also bumped ;; to the COFFSET.

;; The COFFSET goes from 0 to CBUFFSIZE--when it is = to CBUFSIZE we get an overflow. That maps to 0 in the ;; next buffer. When we come here in that case, we haven't actually read that characte.

```
                        [SETQ PCCHARSLEFT (IDIFFERENCE PCCHARSLEFT (IDIFFERENCE (ffetch (STREAM COFFSET)
                                                                                    of TSTREAM)
```

```
                                                                    (ffetch (TEXTSTREAM STARTINGCOFFSET)
                                                                       of TSTREAM]
                                                          ; 1-byte characters
                (if (\ENDOFPIECEP PCCHARSLEFT)
                    then ;; Move to next piece.  EOF handled below
                         (SETQ PC (\TEDIT.INSTALL.PIECE TSTREAM (NEXTPIECE PC)
                                        0))
                  else ;; Set up for the next buffer in the same piece. We want to set it for the next unread character. We don't SUB1
                       ;; because the character hasn't yet been read.
                       (\TEDIT.INSTALL.FILEBUFFER TSTREAM PCCHARSLEFT))
                (CL:IF PC
                    (BIN TSTREAM)
                    (STREAMOP 'ENDOFSTREAMOP TSTREAM TSTREAM))
       else ;; Not binable, more complicated return values.  Opcode kicked out, didn't test for buffer overflow .
            (CL:WHEN (\ENDOFBUFFERP TSTREAM)
                ;; Buffer overflow. Installers replace PCCHARSLET
                (if (\ENDOFPIECEP PCCHARSLEFT)
                    then (SETQ PC (\TEDIT.INSTALL.PIECE TSTREAM (NEXTPIECE PC)
                                        0))
                  else (\TEDIT.INSTALL.FILEBUFFER TSTREAM (SUB1 PCCHARSLEFT))))
            (if (NOT PC)
                then (STREAMOP 'ENDOFSTREAMOP TSTREAM TSTREAM)
              elseif (ffetch (STREAM BINABLE) of TSTREAM)
                then ;; We are here because BIN punted.  If it punted because it reached the end of a binable piece, then we have
                     ;; just advanced to the next piece.  If it's binnable, then try running the opcode on the new situation.  If it punted
                     ;; because we were not working on a binnable piece then and we are looking at one now, then again we must
                     ;; have advanced.
                     (BIN TSTREAM)
              else (ADD (ffetch (TEXTSTREAM PCCHARSLEFT) of TSTREAM)
                        -1)                          ; Where we will be when the operation completes
                   (SELECTC (PTYPE PC)
                       (FATSTRING.PTYPE              ; This counts offset in characters, not bytes
                           (PROG1 (\GETBASEFAT (ffetch (STREAM CBUFPTR) of TSTREAM)
                                               (ffetch (STREAM COFFSET) of TSTREAM))
                                  (ADD (ffetch (STREAM COFFSET) of TSTREAM)
                                       1)))
                       (FATFILE2.PTYPE
                           (PROG1 (create WORD
                                          HIBYTE _ (BIN (PCONTENTS PC))
                                          LOBYTE _ (BIN (PCONTENTS PC)))
                                  (ADD (ffetch (STREAM COFFSET) of TSTREAM)
                                       2)))
                       (OBJECT.PTYPE
                                     ;; Return the object as BIN's result, and make sure we'll go to the next page next time.
                                     ;; OBJECTBYTE is for callers (like COMPARETEXT) that can't deal with image objects
                                     (PROG1 (OR (GETTEXTPROP (ffetch (TEXTSTREAM TEXTOBJ) of TSTREAM)
                                                             'OBJECTBYTE)
                                                (PCONTENTS PC))
                                            (ADD (ffetch (STREAM COFFSET) of TSTREAM)
                                                 1)))
                       (FATFILE1.PTYPE
                           (PROG1 (create WORD
                                          HIBYTE _ (PCHARSET PC)
                                          LOBYTE _ (BIN (PCONTENTS PC)))
                                  (ADD (ffetch (STREAM COFFSET) of TSTREAM)
                                       1)))
                       (UTF8.PTYPE (PROG1 (UTF8.BINCODE (PCONTENTS PC))
                                          (ADD (ffetch (STREAM COFFSET) of TSTREAM)
                                               (PBYTESPERCHAR PC))))
                       (THINFILE.PTYPE               ; Fall through when the underlying stream is not binable
                           (PROG1 (BIN (PCONTENTS PC))
                                  (ADD (ffetch (STREAM COFFSET) of TSTREAM)
                                       1)))
                       (SUBSTREAM.PTYPE              ; A substream stored as an object
                           (BIN (IMAGEOBJPROP (PCONTENTS PC)
                                              'SUBSTREAM)))
                       (PROGN
                           ;; For pieces not listed because they require more work. Assumes the function updates COFFSET
                           ;; and that multi-byte characters are safe: don't cross buffer boundaries.
                           (HELP "\TEXTBIN UNKNOWN PTYPE" (PTYPE PC])
```

(**TEDIT.TEXTPEEKBIN**

```
  [LAMBDA (TSTREAM NOERROR)                          ; Edited 19-Mar-2024 19:14 by rmk
                                                     ; Edited 16-Mar-2024 12:44 by rmk
                                                     ; Edited  1-Feb-2024 11:13 by rmk
                                                     ; Edited  9-Aug-2022 10:19 by rmk
                                                     ; Edited  7-Aug-2022 23:53 by rmk
    ;; Return the next character (object) without advancing TSTREAM.  This may involve moving to the next file buffer or even the next piece.  But
    ;; there is no need to back out that advance, the new position just anticipates what would happen with any following operations.  What is important,
    ;; however, is to make sure that the backing stream for file pieces is left at its original position and thus remains consistent with TSTREAM's
```

```
    ;; parameters.
    (DECLARE (LOCALVARS . T))
    (LET ((PC (fetch (TEXTSTREAM PIECE) of TSTREAM))
          (PCCHARSLEFT (ffetch (TEXTSTREAM PCCHARSLEFT) of TSTREAM))
          PCONTENTS)
         (if (ffetch (STREAM BINABLE) of TSTREAM)
             then ;; Buffered pieces:  thin file or thin string.
                  (CL:WHEN (\ENDOFBUFFERP TSTREAM)                ; Buffer overflow. Recover piece status from buffer parameters
                      [SETQ PCCHARSLEFT (IDIFFERENCE PCCHARSLEFT (IDIFFERENCE (ffetch (STREAM COFFSET)
                                                                                   of TSTREAM)
                                                                              (ffetch (TEXTSTREAM STARTINGCOFFSET)
                                                                                 of TSTREAM]
                      (if (\ENDOFPIECEP PCCHARSLEFT)
                          then (SETQ PC (\TEDIT.INSTALL.PIECE TSTREAM (NEXTPIECE PC)
                                                              0))                ; Also at  piece end

                        else (\TEDIT.INSTALL.FILEBUFFER TSTREAM (SUB1 PCCHARSLEFT))))
                  ;; TSTREAM is now set up for the next character, possibly for the first byte of the next piece or buffer.  That's OK, no need to
                  ;; restore the old ones.


           elseif (\ENDOFPIECEP PCCHARSLEFT)
             then ;; Not binnable so the BIN opcode always punts.  If no chars left, we advance the stream to the next piece, which may also set
                  ;; up the buffer for file pieces.  For file streams, the  backing stream is properly positioned, and we only have to restore it to its
                  ;; initial position .  Covers for fat strings, the "buffer" covers the whole string.
                  (SETQ PC (\TEDIT.INSTALL.PIECE TSTREAM (NEXTPIECE PC)
                                 0)))
         (if PC
             then (if (ffetch (STREAM BINABLE) of TSTREAM)
                      then (\GETBASEBYTE (ffetch (STREAM CBUFPTR) of TSTREAM)
                                         (ffetch (STREAM COFFSET) of TSTREAM))
                    else (SETQ PCONTENTS (PCONTENTS PC))
                         (SELECTC (PTYPE PC)
                              (FATSTRING.PTYPE
                                   (\GETBASEFAT (ffetch (STREAM CBUFPTR) of TSTREAM)
                                                (ffetch (STREAM COFFSET) of TSTREAM)))
                              (FATFILE2.PTYPE
                                   (PROG1 (create WORD
                                                  HIBYTE _ (BIN PCONTENTS)
                                                  LOBYTE _ (\PEEKBIN PCONTENTS))
                                          (\BACKFILEPTR PCONTENTS)))
                              (OBJECT.PTYPE ;; Return the object as BIN's result, and make sure we'll go to the next page next time.
                                            ;; OBJECTBYTE is for callers (like COMPARETEXT) that can't deal with image objects
                                            (OR (GETTEXTPROP (ffetch (TEXTSTREAM TEXTOBJ) of TSTREAM)
                                                             'OBJECTBYTE)
                                                PCONTENTS))
                              (UTF8.PTYPE (UTF8.PEEKCCODEFN PCONTENTS))
                              (FATFILE1.PTYPE
                                   (create WORD
                                           HIBYTE _ (PCHARSET PC)
                                           LOBYTE _ (\PEEKBIN PCONTENTS)))
                              (SUBSTREAM.PTYPE                    ; A substream stored as an object
                                   (\PEEKBIN (IMAGEOBJPROP PCONTENTS 'SUBSTREAM)))
                              (SHOULDNT "UNKNOWN PIECE TYPE")))
           elseif NOERROR
             then NIL
           else (STREAMOP 'ENDOFSTREAMOP TSTREAM TSTREAM])
```

(**TEDIT.TEXTBACKFILEPTR**

```
  [LAMBDA (TSTREAM)                                                  ; Edited  1-Feb-2024 11:25 by rmk
                                                                     ; Edited  5-Jan-2024 17:57 by rmk
                                                                     ; Edited 28-Dec-2023 13:34 by rmk
                                                                     ; Edited 23-Dec-2023 12:19 by rmk
                                                                     ; Edited 15-Oct-2023 12:08 by rmk
                                                                     ; Edited 22-Sep-2023 10:11 by rmk
                                                                     ; Edited 17-Jun-2023 13:47 by rmk
                                                                     ; Edited  3-May-2023 15:05 by rmk
                                                                     ; Edited 12-Oct-2022 15:26 by rmk
                                                                     ; Edited 28-Mar-94 15:32 by jds
    ;; BACKFILEPTR of a text stream backs over a character.
    (LET ((PC (fetch (TEXTSTREAM PIECE) of TSTREAM))
          (PCCHARSLEFT (ffetch (TEXTSTREAM PCCHARSLEFT) of TSTREAM))
          PPC)
         (CL:WHEN (ffetch (STREAM BINABLE) of TSTREAM)
             ;; The stream was keeping track of BINS, we have to recalibrate.
             [SETQ PCCHARSLEFT (IDIFFERENCE PCCHARSLEFT (IDIFFERENCE (ffetch (STREAM COFFSET) of TSTREAM)
                                                                     (ffetch (TEXTSTREAM STARTINGCOFFSET) of TSTREAM])
         ;; Back the offset one character's worth of bytes
         (CL:WHEN (if (\STARTOFPIECEP TSTREAM PCCHARSLEFT)
```

```
                then (CL:WHEN (SETQ PPC (\PREV.VISIBLE.PIECE PC))
                                                        ; Back up to last char of previous piece, if any.
                             (\TEDIT.INSTALL.PIECE TSTREAM PPC (SUB1 (PLEN PPC)))
                             (SETQ PC PPC))
              elseif (AND (MEMB (PTYPE PC)
                                FILE.PTYPES)
                          (\STARTOFBUFFERP TSTREAM))
                then ;; Must be a buffered file, needs to back up 1 character (not bytes)
                     (\TEDIT.INSTALL.FILEBUFFER TSTREAM (ADD1 PCCHARSLEFT))
                else ;; This piece can be backed up at least one character's worth of bytes, back it up
                     (ADD (ffetch (STREAM COFFSET) of TSTREAM)
                          (CL:IF (MEMB (PTYPE PC)
                                       FILE.PTYPES)
                                 (IMINUS (PBYTESPERCHAR PC))
                                 -1))
                     ;; If not binable, PCCHARSLEFT is maintained here.
                     (CL:UNLESS (ffetch (STREAM BINABLE) of TSTREAM)
                         (freplace (TEXTSTREAM PCCHARSLEFT) of TSTREAM with (ADD1 PCCHARSLEFT)))
                     T)
        ;; We have now backed up to a piece that has at least one character. We are supposed to return the character we backed over. These
        ;; special cases are copied from \TEXTPEEKBIN.
        (SELECTC (PTYPE PC)
             (THINFILE.PTYPE
                 (\PEEKBIN (PCONTENTS PC)))
             (THINSTRING.PTYPE
                 (\GETBASEBYTE (ffetch (STREAM CBUFPTR) of TSTREAM)
                               (ffetch (STREAM COFFSET) of TSTREAM)))
             (FATSTRING.PTYPE
                 (\GETBASEFAT (ffetch (STREAM CBUFPTR) of TSTREAM)
                              (ffetch (STREAM COFFSET) of TSTREAM)))
             (FATFILE2.PTYPE
                 (PROG1 (LOGOR (LLSH (BIN (PCONTENTS PC))
                                     8)
                               (\PEEKBIN (PCONTENTS PC)))
                        (\BACKFILEPTR (PCONTENTS PC))))
             (OBJECT.PTYPE ;; Return the object as BIN's result, and make sure we'll go to the next page next time.
                           ;; OBJECTBYTE is for callers (like COMPARETEXT) that can't deal with image objects
                           (OR (GETTEXTPROP (ffetch (TEXTSTREAM TEXTOBJ) of TSTREAM)
                                            'OBJECTBYTE)
                               (PCONTENTS PC)))
             (UTF8.PTYPE (UTF8.PEEKCCODEFN (PCONTENTS PC)))
             (FATFILE1.PTYPE
                 (LOGOR (LLSH (PCHARSET PC)
                              8)
                        (\PEEKBIN (PCONTENTS PC))))
             (SUBSTREAM.PTYPE                           ; A substream stored as an object
                 (BIN (IMAGEOBJPROP (PCONTENTS PC)
                                    'SUBSTREAM)))
             (SHOULDNT "UNKNOWN PIECE TYPE")))])
```

(**TEDIT.TEXTBOUT**

```
  [LAMBDA (TSTREAM CHAR)                                ; Edited 17-Mar-2024 11:59 by rmk
                                                        ; Edited 15-Mar-2024 14:38 by rmk
                                                        ; Edited 23-Dec-2023 12:14 by rmk
                                                        ; Edited 18-Oct-2023 21:14 by rmk
                                                        ; Edited 15-Oct-2023 15:31 by rmk
                                                        ; Edited 17-Jun-2023 12:18 by rmk
                                                        ; Edited 23-Feb-2023 15:26 by rmk
                                                        ; Edited 12-Aug-2022 23:26 by rmk
                                                        ; Edited 10-May-93 16:59 by jds
    ;; Do BOUT to a text stream, which is an insertion at the caret. Unlike EOL's that are typed in at \TEDIT.INSERT, EOL's here don't create
    ;; paragraph breaks.  We would get a new piece after every line of an image stream

    ;; ADD1 to convert from "byte" indexing to TEDIT selection-indexing.

    ;; Seems foolish to use \TEXTGETFILEPTR here to map from the current piece to the absolute character index, just so \INSERTCH can map
    ;; backwards from the character number to the piece.

    (CL:UNLESS (\CHARCODEP CHAR)
           (\ILLEGAL.ARG CHAR))
    (LET ((TEXTOBJ (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM))
          (CH# (ADD1 (\TEDIT.TEXTGETFILEPTR TSTREAM)))
          INSERTPC WINDOW)
         (CL:UNLESS (FGETTOBJ TEXTOBJ TXTREADONLY)      ; Maybe should cause an error--stream not open?
             (CL:WHEN (SETQ WINDOW (FGETTOBJ TEXTOBJ \WINDOW))
                    (\TEDIT.MARK.LINES.DIRTY TEXTOBJ CH# CH#))
             (CL:WHEN (SETQ INSERTPC (\TEDIT.INSERTCH CHAR CH# TEXTOBJ))
                 ;; We inserted 1 char.  Whether or not we introduced a new piece or extended an old one, we want to be positioned at the first
                 ;; character of the next piece.
                 (\TEDIT.INSTALL.PIECE TSTREAM (NEXTPIECE INSERTPC)
                        0)
```

```
                (CL:WHEN WINDOW
                    (\TEDIT.UPDATE.SCREEN TEXTOBJ)
                    (\TEDIT.INSTALL.PIECE TSTREAM (NEXTPIECE INSERTPC)
                           0))))                                    ; Reformatting advances the stream, go back to the insertion.
        CHAR])
```

(\TEDIT.INSTALL.FILEBUFFER

```
  [LAMBDA (TSTREAM PCCHARSLEFT)                                     ; Edited 18-Mar-2024 22:01 by rmk
                                                                    ; Edited 17-Mar-2024 19:37 by rmk
                                                                    ; Edited 28-Dec-2023 17:53 by rmk
                                                                    ; Edited  7-Dec-2023 16:10 by rmk
                                                                    ; Edited  8-Sep-2023 10:40 by rmk
                                                                    ; Edited  8-Sep-2022 14:17 by rmk
                                                                    ; Edited 21-Aug-2022 22:35 by rmk
                                                                    ; Edited  7-Aug-2022 20:35 by rmk
                                                                    ; Edited 31-Jul-2022 20:09 by rmk
    ;; Sets up the buffer and buffering parameters ofTSTREAM and the underlying PFILE of its piece so that the next BIN wlil return the character
    ;; PCCHARSLEFT away from the end of the piece.  PCCHARSLEFT is piecewise, STARTINGCOFFSET and other buffering parameters are
    ;; bufferwise.

    ;; Called on buffer overflow when the piece itself is not exhausted.  .

    ;; A binable stream doesn't track the number of 1-byte chars left in this piece, but COFFSET minus STARTINGCOFFSET enables the
    ;; PCCHARSLEFT to be determined at the end of the buffer.

    (LET* ((PC (fetch (TEXTSTREAM PIECE) of TSTREAM))
           (PFILE (PCONTENTS PC))
           PCBYTESLEFT)
          (CL:UNLESS (MEMB (PTYPE PC)
                           FILE.PTYPES)
              [HELP "FILE BUFFER FOR NON-FILE PIECE" (LIST PC (\TEDIT.PCTOCH PC (TEXTOBJ TSTREAM])
          (CL:UNLESS (AND PFILE (\GETSTREAM PFILE 'INPUT T))        ; The file was closed for some reason;  reopen it.
              (SETQ PFILE (\TEDIT.REOPEN.STREAM TSTREAM PFILE)))
          (CL:UNLESS PCCHARSLEFT                                    ; First character of the piece
              (SETQ PCCHARSLEFT (PLEN PC)))

          ;; PCBYTESLEFT is the number of bytes already covered so that PCCHARSLEFT characters are left in the piece.

          (SETQ PCBYTESLEFT (ITIMES (IDIFFERENCE (PLEN PC)
                                                 PCCHARSLEFT)
                                    (PBYTESPERCHAR PC)))

          ;; Set PFILE to the byte position of the next character of this piece, establishing the PFILE buffer, offset

          (\SETFILEPTR PFILE (IPLUS (PFPOS PC)
                                    PCBYTESLEFT))
          (\PEEKBIN PFILE T)

          ;; PFILE's buffer parameters should now be good; steal the fields needed to simulate that stream.

          ;; The TSTREAM buffersize is reduced so that it only covers bytes that remain in the current piece.

          (freplace (STREAM CPPTR) of TSTREAM with (ffetch (STREAM CPPTR) of PFILE))
          (freplace (STREAM CBUFSIZE) of TSTREAM with (IMIN (IPLUS (ffetch (STREAM COFFSET) of PFILE)
                                                                   (IDIFFERENCE (PBYTELEN PC)
                                                                                PCBYTESLEFT))
                                                            (ffetch (STREAM CBUFSIZE) of PFILE)))
          (freplace (STREAM COFFSET) of TSTREAM with (ffetch (STREAM COFFSET) of PFILE))
          (freplace (TEXTSTREAM STARTINGCOFFSET) of TSTREAM with (fetch (STREAM COFFSET) of TSTREAM))
          (freplace (TEXTSTREAM PCCHARSLEFT) of TSTREAM with PCCHARSLEFT])

)

(DECLARE%: EVAL@COMPILE DONTCOPY

(DECLARE%: EVAL@COMPILE

(PUTPROPS \ENDOFPIECEP MACRO ((PCLEFT)
                              (ILEQ PCLEFT 0)))

(PUTPROPS \STARTOFPIECEP MACRO ((TSTREAM PCLEFT)
                                (IEQP (PLEN (ffetch (TEXTSTREAM PIECE) of TSTREAM))
                                      PCLEFT)))

(PUTPROPS \ENDOFBUFFERP MACRO ((TSTREAM)
                               (IGEQ (ffetch (STREAM COFFSET) of TSTREAM)
                                     (ffetch (STREAM CBUFSIZE) of TSTREAM))))

(PUTPROPS \STARTOFBUFFERP MACRO ((TSTREAM)
                                 (ILEQ (ffetch (STREAM COFFSET) of TSTREAM)
                                       (ffetch (TEXTSTREAM STARTINGCOFFSET) of TSTREAM))))
)
)

;; External format functions:  equivalent to BIN-level except for COUNTP

(DEFINEQ

(\TEDIT.TEXTOUTCHARFN
  [LAMBDA (TSTREAM CHARCODE)                                        ; Edited 17-Mar-2024 11:12 by rmk
```

; Edited 18-Oct-2023 21:05 by rmk
; Edited 22-Jul-2022 19:05 by rmk
; Edited 12-Oct-2021 15:38 by rmk:

;; OUTCHARFN for TEXTSTREAM -- BOUTs the 16-bit CHARCODE (via \TEXTBOUT), because TEdit streams deal in complete charcodes
;; rather than bytes. Updates the CHARPOSITION of the stream, which is used by some code to decide things.

```
(COND
   ((EQ CHARCODE (CHARCODE EOL))
    (\TEDIT.TEXTBOUT TSTREAM (CHARCODE CR))
    (freplace (STREAM CHARPOSITION) of TSTREAM with 0))
   (T (\TEDIT.TEXTBOUT TSTREAM CHARCODE)
      (freplace (STREAM CHARPOSITION) of TSTREAM with (PROGN    ; Ugh. Don't overflow
                                                      (IPLUS16 (ffetch (STREAM CHARPOSITION) of TSTREAM)
                                                            1])
```

(\TEDIT.TEXTINCCODEFN

```
[LAMBDA (STREAM COUNTP)
```

; Edited 31-Jan-2024 16:34 by rmk
; Edited 7-Aug-2022 22:25 by rmk
; Edited 22-Jul-2022 18:47 by rmk
; Edited 6-Aug-2021 15:57 by rmk:

;;; Returns a 16 bit character code.

;;; If COUNTP is non-NIL, the variable *BYTECOUNTER* is set freely to 1, since we only read 1 16-bit "byte".

```
    (DECLARE (USEDFREE *BYTECOUNTER*))
    (CL:WHEN COUNTP (SETQ *BYTECOUNTER* 1))
    (BIN STREAM])
```

(\TEDIT.TEXTBACKCCODEFN

```
[LAMBDA (STREAM COUNTP)
```

; Edited 17-Mar-2024 11:11 by rmk
; Edited 22-Jul-2022 19:01 by rmk
; Edited 19-Jul-2022 17:12 by rmk
; Edited 13-Aug-2021 14:08 by rmk:

```
    (DECLARE (USEDFREE *BYTECOUNTER*))
    (CL:WHEN COUNTP (SETQ *BYTECOUNTER* -1))
    (\TEDIT.TEXTBACKFILEPTR STREAM])
```

(\TEDIT.TEXTFORMATBYTESTREAM

```
[LAMBDA (STREAM BYTESTREAM)
```

; Edited 19-Mar-2024 16:13 by rmk
; Edited 24-Jun-2021 16:47 by rmk:

;; BYTESTREAM might come in with a textstream external format, but that's presumably a mistake. If STREAM is a text stream, then it traffics in
;; XCCS characters, it's format should be relatively vanilla.

```
    (HELP)
    (REPLACE (STREAM CHARSET) OF BYTESTREAM WITH (FETCH (STREAM CHARSET) OF STREAM])
```

(\TEDIT.TEXTFORMATBYTESTRING

```
[LAMBDA (TSTREAM STRING SCRATCHSTREAM)
```

; Edited 19-Mar-2024 18:22 by rmk

;; The FORMATBYTESTRINGFN for Text streams. STRING is presumably in internal XCCS character codes, and those are the codes that
;; TSTREAM will match against, independent of however its backing stream characters might be encoded. So we can just return STRING

```
    (MKSTRING STRING])

)

;; High-level stream operations

(DEFINEQ
```

(OPENTEXTSTREAM

```
[LAMBDA (TEXT WINDOW START END PROPS)
```

;; Edited 31-Mar-2024 11:43 by rmk
;; Edited 17-Mar-2024 12:05 by rmk
;; Edited 15-Mar-2024 14:23 by rmk
;; Edited 10-Mar-2024 22:10 by rmk
;; Edited 21-Jan-2024 10:31 by rmk
;; Edited 20-Dec-2023 10:47 by rmk
;; Edited 11-Dec-2023 09:50 by rmk
;; Edited 26-Oct-2023 10:59 by rmk
;; Edited 23-Oct-2023 22:14 by rmk
;; Edited 21-Oct-2023 12:21 by rmk
;; Edited 12-Oct-2023 23:44 by rmk
;; Edited 31-Jan-2022 17:25 by rmk: A string TEXT is converted here to a stream
;; Edited 4-May-93 14:38 by jds
;; Create a TEXTSTREAM to describe the segment of TEXT between START and END. Optionally, connect that to WINDOW for display. This is

```
    ;; the user entry for creating a (sub) textstream.
    ;;
    ;; If TEXT designates a file, we want to make sure that the file exists and can be opened before bothering the user to do anything else (like define a
    ;; window region).
    ;;
    ;; If TEXT is already a text stream, that stream and its text are reused.  But if START and/or END are non-NIL, the pieces before START and after
    ;; END are deleted from the given text stream.  (An alternative interpretation would be to create a new textstream and insert characters from
    ;; START to END into it.)
    ;;
    ;; If the WINDOW argument is non-NIL, this is responsible for reusing or creating a window and associating it with the text.  To avoid needless user
    ;; interaction, we ask for a region and create the window after we have been able to open the text stream. But we do the other Tedit window
    ;; initiallization after the textstream and textobj have been populated.  Note that we do need to make sure the TEXTOBJ exists before we actually
    ;; get the file, so that the window and its promptwindow are available for messages as the file is read.
    ;;
    ;;  Finally, WINDOW is passed as T (e.g. from TEDIT) to say that a region must be obtained for a required window.
    (CL:WHEN (EQ 0 (NCHARS TEXT))                          ; Empty string means empty document, not illegal file name
        (SETQ TEXT NIL))
    (RESETLST
        (LET ((TSTREAM (TEXTSTREAMP TEXT))
              TEXTOBJ TEDIT.GET.FINISHEDFORMS PRIMARYW)
             (DECLARE (SPECVARS TEDIT.GET.FINISHEDFORMS))  ; Undocumented, but available for special-purpose actions
                                                           ; specified somewhere below.
             (if TSTREAM
                 then (SETQ TEXTOBJ (TEXTOBJ TSTREAM))
                      (CL:WHEN (OR START END)               ; Do the end first
                          (CL:WHEN (AND END (ILESSP END (TEXTLEN TEXTOBJ)))
                              (\TEDIT.DELETEPIECES (\TEDIT.SELPIECES (ADD1 END)
                                                                     (TEXTLEN TEXTOBJ)
                                                                     TEXTOBJ)
                                                   TEXTOBJ))
                          (CL:WHEN (AND START (IGREATERP START 1))
                              (\TEDIT.DELETEPIECES (\TEDIT.SELPIECES 1 (SUB1 START)
                                                                     TEXTOBJ)
                                                   TEXTOBJ)))
                      (\TEDIT.OPENTEXTSTREAM.PROPS TEXTOBJ PROPS)
                      (SETQ PRIMARYW (WINDOWP (\TEDIT.PRIMARYW TSTREAM)))
                      (if [AND WINDOW (NEQ WINDOW PRIMARYW)
                               (NEQ WINDOW (CAR (WINDOWPROP PRIMARYW 'TYPED-REGION]
                          then (SETQ WINDOW (\TEDIT.CREATEW WINDOW TSTREAM PROPS))
                                                           ; Set up a new window
                               (\TEDIT.OPENTEXTSTREAM.WINDOW WINDOW TSTREAM PROPS)
                        elseif PRIMARYW
                          then (OPENW PRIMARYW)
                               (\TEDIT.MARK.LINES.DIRTY TEXTOBJ 1 -1)
                                                           ; Clean and reuse the existing window
                               (\TEDIT.UPDATE.SCREEN TEXTOBJ)
                               (SETTOBJ TEXTOBJ \DIRTY NIL))
                      (\TEDIT.REOPENTEXTSTREAM TSTREAM)
                  else (SETQ TSTREAM (\TEDIT.CREATE.TEXTSTREAM PROPS))
                       (SETQ TEXTOBJ (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM))
                       (CL:WHEN TEXT                       ; Verify/open the file before the window
                           (SETQ TEXT (\TEDIT.OPENTEXTFILE TEXT PROPS))
                           (FSETTOBJ TEXTOBJ TXTFILE TEXT))
                   ;; Get the window before populating pieces, so that the local promptwindow is availabe for messages and queries
                       (CL:WHEN WINDOW                     ; If NIL, don't create a window.  It's Tedit on call from TEDIT
                           (SETQ WINDOW (\TEDIT.CREATEW WINDOW TSTREAM PROPS)))
                       (CL:WHEN TEXT
                            ;; TEXT is a stream. The fresh TEXTSTREAM is updated to hold that text, ready for window and process attachments.
                            (\TEDIT.OPENTEXTSTREAM.PIECES TEXT TSTREAM START END PROPS))
                       ;; We now have all the pieces, even for TEXT=NIL (empty document) case.
                       (CL:WHEN WINDOW                     ; Connect to the window
                           (\TEDIT.OPENTEXTSTREAM.WINDOW WINDOW TSTREAM PROPS))
                       (\TEDIT.OPENTEXTSTREAM.SETUP.SEL TSTREAM))
             (for FORM in TEDIT.GET.FINISHEDFORMS do (EVAL FORM))
             (\TEDIT.TEXTSETFILEPTR TSTREAM 0)
             TSTREAM))])

(COPYTEXTSTREAM
  [LAMBDA (ORIGINAL CROSSCOPY)                             ; Edited 17-Mar-2024 12:41 by rmk
                                                           ; Edited 16-Mar-2024 10:03 by rmk
                                                           ; Edited 16-Jan-2024 12:27 by rmk
                                                           ; Edited 22-Sep-2023 20:48 by rmk
                                                           ; Edited 18-Sep-2023 08:21 by rmk
                                                           ; Edited 16-Sep-2023 13:06 by rmk
                                                           ; Edited 21-Jun-2023 00:02 by rmk
                                                           ; Edited  7-May-2023 11:42 by rmk
                                                           ; Edited 25-Apr-2023 18:07 by rmk
                                                           ; Edited 18-Mar-2023 21:15 by rmk
                                                           ; Edited 24-Apr-95 12:02 by sybalsky:mv:envos
```

```
    ;; Given a stream, textobj or window, returns a new textstream with the same contents.  CROSSCOPY is a documented argument, but it doesn't
    ;; control what happens.  It is supposed to force a copy of a file piece to a new underlying source (a string or nodircore piece), so that there is no
    ;; sharing between the original and the copy so that future edits in one stream are independent and safe even if the original file is deleted or
    ;; modified by operations on the other stream.  But edit operations don't change the source file until the file is saved, and tne you get a new version
    ;; anyway.  In any event, CROSSCOPY is T in all calls within TEDIT (e.g. for installing edit menus).

    (LET ((TEXTOBJ (TEXTOBJ ORIGINAL))
          NEWSTREAM NEWTEXTOBJ)                                    ; Create an empty textstream into which the pieces can be
                                                                   ; hammered
         [SETQ NEWSTREAM (OPENTEXTSTREAM NIL NIL NIL NIL (COPY (FGETTOBJ TEXTOBJ EDITPROPS]
         (SETQ NEWTEXTOBJ (TEXTOBJ NEWSTREAM))
         (for PC inpieces (\TEDIT.FIRSTPIECE TEXTOBJ) do (\TEDIT.INSERTPIECE (\TEDIT.COPYPIECE PC TEXTOBJ
                                                                                NEWTEXTOBJ NIL 'COPY)
                                                                 NIL NEWTEXTOBJ))
         (FSETTOBJ NEWTEXTOBJ FORMATTEDP (FGETTOBJ TEXTOBJ FORMATTEDP))
         (FSETTOBJ NEWTEXTOBJ DEFAULTCHARLOOKS (FGETTOBJ TEXTOBJ DEFAULTCHARLOOKS))
         (FSETTOBJ NEWTEXTOBJ FMTSPEC (FGETTOBJ TEXTOBJ FMTSPEC))
         (FSETTOBJ NEWTEXTOBJ TXTRTBL (FGETTOBJ TEXTOBJ TXTRTBL))
         (FSETTOBJ NEWTEXTOBJ TXTWTBL (FGETTOBJ TEXTOBJ TXTWTBL))
         (FSETTOBJ NEWTEXTOBJ TXTSTYLESHEET (FGETTOBJ TEXTOBJ TXTSTYLESHEET))
         (FSETTOBJ NEWTEXTOBJ TXTPAGEFRAMES (FGETTOBJ TEXTOBJ TXTPAGEFRAMES))
         (FSETTOBJ NEWTEXTOBJ TXTPARALOOKSLIST (FGETTOBJ TEXTOBJ TXTPARALOOKSLIST))
         (FSETTOBJ NEWTEXTOBJ TXTCHARLOOKSLIST (FGETTOBJ TEXTOBJ TXTCHARLOOKSLIST))
         (FSETTOBJ NEWTEXTOBJ MENUFLG (FGETTOBJ TEXTOBJ MENUFLG))
         NEWSTREAM])
```

(TEDIT.STREAMCHANGEDP

```
  [LAMBDA (STREAM RESET?)                                          ; Edited 31-May-91 13:57 by jds
    (PROG1 (fetch (TEXTOBJ \DIRTY) of (TEXTOBJ STREAM))
        (COND
           (RESET? (replace (TEXTOBJ \DIRTY) of (TEXTOBJ STREAM) with NIL)))])
```

(TXTFILE

```
  [LAMBDA (TEXTOBJ)                                                ; Edited 13-Jul-2023 19:49 by rmk
                                                                   ; Edited 31-May-91 13:58 by jds
    ;; This function is for compiled access to the TXTFILE field in RESETSAVE expressions.  But maybe user functions should be able to call it, hence
    ;; the call to TEXTOBJ

    (fetch (TEXTOBJ TXTFILE) of (TEXTOBJ TEXTOBJ])

)

(DEFINEQ
```

(\TEDIT.REOPENTEXTSTREAM

```
  [LAMBDA (TSTREAM)                                                ; Edited 17-Mar-2024 11:12 by rmk
                                                                   ; Edited 10-Mar-2024 00:36 by rmk
                                                                   ; Edited 22-Jan-2024 10:20 by rmk
    ;; RMK:  Not sure whether this should operate on any stream, or just (by virtue of its name) a text stream.  I put in the TEXTSTREAMP test.
                                                                   ; Edited 31-May-91 14:18 by jds
    (SETQ TSTREAM (TEXTSTREAM TSTREAM T))
    (CL:WHEN TSTREAM
        (LET ((TEXTOBJ (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM)))
             (SETTOBJ TEXTOBJ EDITFINISHEDFLG NIL)
             (replace (STREAM ACCESS) of TSTREAM with (CL:IF (GETTOBJ TEXTOBJ TXTREADONLY)
                                                             'INPUT
                                                             'BOTH))
            ;; Not sure why these are needed, and not the rest of the Text external format
             (replace (STREAM STRMBINFN) of TSTREAM with (FUNCTION \TEDIT.TEXTBIN))
             (replace (STREAM STRMBOUTFN) of TSTREAM with (FUNCTION \TEDIT.TEXTBOUT))))
    TSTREAM])
```

(\TEDIT.OPENTEXTSTREAM.PIECES

```
  [LAMBDA (TEXT TSTREAM START END PROPS)                           ; Edited 20-Mar-2024 10:58 by rmk
                                                                   ; Edited 27-Dec-2023 13:33 by rmk
                                                                   ; Edited 23-Oct-2023 13:47 by rmk
                                                                   ; Edited 28-Sep-2023 10:17 by rmk
                                                                   ; Edited 27-Sep-2023 00:13 by rmk
                                                                   ; Edited 18-Sep-2023 17:15 by rmk
                                                                   ; Edited 17-Sep-2023 15:13 by rmk
                                                                   ; Edited 12-Sep-2023 16:46 by rmk
                                                                   ; Edited  9-Sep-2023 16:41 by rmk
    ;; Don't set TXTFILE here, because TEDIT.GET still needs it.  WINDOW is available for size information, but it has not yet been setup for TEDIT.

    ;; The intent is that the window's promptwindow is available for local messages during the fetch, and the RESETSAVE of PROMPTWINDOW would
    ;; make even messages to the global promptwindow appear locally.  An example is the mouseconfirm in READIMAGEOBJ that asks whether the
    ;; imageobj code should be loaded from a given file.  The problem is that the Tedit prompt window is usually just 1 line hight and doesn't
    ;; automatically grow to show multiple lines, so key information may not be displayed.  If the Tedit prompt grows (and it can be determined when/if it
    ;; should later shrink), then this feature can be enabled.

    (RESETLST
        (LET* [(TEXTOBJ (TEXTOBJ! (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM)))
               (PWINDOW (GETTOBJ TEXTOBJ PROMPTWINDOW))
```

```
                (READONLY (GETTEXTPROP TEXTOBJ 'READONLY]          ; READONLY only after creation, if specified
               (AND NIL (CL:WHEN PWINDOW (RESETSAVE PROMPTWINDOW PWINDOW)))
               (FSETTOBJ TEXTOBJ TXTREADONLY NIL)
               (FSETTOBJ TEXTOBJ TXTDON'TUPDATE T)                 ; Don't display or record histories until done
               (FSETTOBJ TEXTOBJ TXTHISTORY 'DON'T)
               [if (OR (GETTEXTPROP TEXTOBJ 'CACHE)
                       (NOT (RANDACCESSP TEXT)))
                   then                                            ; If the file device isn't random access, cache the file locally.
                                                                   ; Also do this if he asks for a local cache.
                        (SETQ TEXT (\TEDIT.CACHEFILE TEXT TEXTOBJ START END))
                        ;; Since we only copied the relevant part of the file into the cache, the whole file is now relevant.
                        (SETQ START 0)
                        (SETQ END (GETEOFPTR TEXT))
                 else (SETQ START (IMAX 0 (OR START 0)))
                      (SETQ END (IMIN (GETEOFPTR TEXT)
                                      (OR END (GETEOFPTR TEXT]
               (if (OR (GETTEXTPROP TEXTOBJ 'CLEARGET)
                       (GETTEXTPROP TEXTOBJ 'UNFORMATTED?)
                       (GETTEXTPROP TEXTOBJ 'UNFORMATTED)
                       (GETTEXTPROP TEXTOBJ 'PLAINTEXT))
                   then (\TEDIT.GET.UNFORMATTED.FILE TEXT TSTREAM START END PROPS)
                 elseif (\TEDIT.GET.FORMATTED.FILE TEXT TSTREAM START END PROPS)
                 elseif (\TEDIT.GET.FOREIGN.FILE TEXT TSTREAM START END PROPS)
                 else (\TEDIT.GET.UNFORMATTED.FILE TEXT TSTREAM START END))
               (FSETTOBJ TEXTOBJ TXTREADONLY READONLY)
               (FSETTOBJ TEXTOBJ TXTHISTORY NIL)
               (FSETTOBJ TEXTOBJ TXTHISTORYUNDONE NIL)
               (\TEDIT.HISTORYADD TEXTOBJ (create TEDITHISTORYEVENT
                                                 THACTION _ :Get))
               (FSETTOBJ TEXTOBJ TXTDON'TUPDATE NIL)))
    TSTREAM])
```

(\TEDIT.OPENTEXTSTREAM.PROPS

```
  [LAMBDA (TEXTOBJ PROPS)                                          ; Edited 23-Jan-2024 08:36 by rmk
                                                                   ; Edited 22-Sep-2023 21:57 by rmk
                                                                   ; Edited 17-Sep-2023 09:41 by rmk
```

;; Install the props, reversing to get the priorities right (overrides, including NILs, come later.

;; After this, all values should be retrieved by GETTEXTPROP

```
    (for PROPTAIL on (REVERSE (APPEND PROPS TEDIT.DEFAULT.PROPS)) by (CDDR PROPTAIL)
       do (PUTTEXTPROP TEXTOBJ (CADR PROPTAIL)
                       (CAR PROPTAIL)))
    (\TEDIT.OPENTEXTSTREAM.DEFAULTLOOKS TEXTOBJ)
    (CL:WHEN (GETTEXTPROP TEXTOBJ 'PAGEFORMAT)                     ; Impose the default page formatting, if specified.
        (TEDIT.PAGEFORMAT TEXTOBJ (GETTEXTPROP TEXTOBJ 'PAGEFORMAT)))])
```

(\TEDIT.OPENTEXTSTREAM.SETUP.SEL

```
  [LAMBDA (TSTREAM)                                                ; Edited 15-Mar-2024 13:38 by rmk
                                                                   ; Edited 15-Dec-2023 23:05 by rmk
                                                                   ; Edited 12-Oct-2023 22:48 by rmk
                                                                   ; Edited 17-Sep-2023 12:52 by rmk
                                                                   ; Edited 12-Sep-2023 11:26 by rmk
                                                                   ; Edited  9-Sep-2023 13:43 by rmk
                                                                   ; Edited  1-Sep-2023 23:02 by rmk
```

;; This sets up the initial SEL for TEXTOBJ according to the SEL PROPS entry. If SELPROP is NIL, the default is 1-0-LEFT--just before the first ;; character. This doesn't show the selection--this stream may not yet have a window.

```
    (LET ((TEXTOBJ (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM))
          SELPROP SEL)
         (SETQ SELPROP (GETTEXTPROP TEXTOBJ 'SEL))
         (for S in (\TEDIT.COLLECTSELS TEXTOBJ) do (FSETSEL S SELTEXTOBJ TEXTOBJ)
                                                   (FSETSEL S SET NIL))
         (SETQ SEL (FGETTOBJ TEXTOBJ SEL))
         (FSETSEL SEL SET T)
         (\TEDIT.SHOWSEL SEL NIL)
         (CL:UNLESS (EQ SELPROP 'DON'T)
             (if (type? SELECTION SELPROP)
                 then                                              ; We came in with an explicit initial selection.  Set it up.
                      (\TEDIT.COPYSEL SELPROP SEL)
                      (FSETSEL SEL SELTEXTOBJ TEXTOBJ)
               elseif (LISTP SELPROP)
                 then ;; Default to POINT selection
                      (\TEDIT.UPDATE.SEL SEL (CAR SELPROP)
                             (OR (CADR SELPROP)
                                 0)
                             (OR (CADDR SELPROP)
                                 'LEFT))
                      (FSETSEL SEL SELKIND 'CHAR)
               else ;; Default to before the first character
                    (\TEDIT.UPDATE.SEL SEL (OR (FIXP SELPROP)
                                               1)
                          0
```

```
                    'LEFT)
                (FSETSEL SEL SELKIND 'CHAR))
            [FSETTOBJ TEXTOBJ CARETLOOKS (if (FGETSEL SEL SET)
                                             then                ; An initial selection implies initial caret looks.
                                                  (\TEDIT.GET.INSERT.CHARLOOKS TEXTOBJ SEL)
                                            else (\TEDIT.CARETLOOKS.VERIFY TEXTOBJ (GETTOBJ TEXTOBJ
                                                                                           DEFAULTCHARLOOKS]
            (CL:WHEN (FGETTOBJ TEXTOBJ TXTREADONLY)              ; Don't blink for read-only, but do highlighting
                (FSETSEL SEL HASCARET NIL))
            (\TEDIT.SHOWSEL SEL T))
        SEL])
```

(\TEDIT.OPENTEXTSTREAM.WINDOW

```
[LAMBDA (WINDOW TSTREAM PROPS)                                   ; Edited 17-Mar-2024 12:06 by rmk
                                                                 ; Edited 15-Mar-2024 14:38 by rmk
                                                                 ; Edited 26-Oct-2023 11:02 by rmk
                                                                 ; Edited 18-Sep-2023 23:22 by rmk
                                                                 ; Edited 17-Sep-2023 11:53 by rmk
```

;; Associates WINDOW with TSTREAM. Brute force, doesn't let this window stuff change the fileptr

```
(LET ((TEXTOBJ (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM))
      (FILEPTR (\TEDIT.TEXTGETFILEPTR TSTREAM)))
     (if WINDOW
         then (\TEDIT.WINDOW.SETUP WINDOW TSTREAM PROPS)
              (\TEDIT.UPDATE.SCREEN TEXTOBJ)
              (SETTOBJ TEXTOBJ \DIRTY NIL)
              (CL:IF (FGETTOBJ TEXTOBJ TXTREADONLY)
                  (for CARET in (GETTOBJ TEXTOBJ CARET) do (\TEDIT.UPCARET CARET))
                  (TEDIT.NORMALIZECARET TEXTOBJ))
              (\TEDIT.TEXTSETFILEPTR TSTREAM FILEPTR)
        elseif (GETTEXTPROP TEXTOBJ 'PROMPTWINDOW)
          then ;; There is no window for the session, but he has passed in a promptwindow to use, install it in the textobj
               (SETTOBJ TEXTOBJ PROMPTWINDOW (GETTEXTPROP TEXTOBJ 'PROMPTWINDOW])
```

(\TEDIT.OPENTEXTSTREAM.DEFAULTLOOKS

```
[LAMBDA (TEXTOBJ)                                                ; Edited 11-Nov-2023 16:13 by rmk
                                                                 ; Edited 17-Sep-2023 07:43 by rmk
                                                                 ; Edited  3-Aug-2023 23:02 by rmk
                                                                 ; Edited 26-Apr-2023 14:29 by rmk
```

;; The default looks must be created before the first piece, so that they can provide field-defaults.

```
(LET (FONT CHARLOOKS PARALOOKS)
```

;; Find the default font for this TEXTOBJ -- either what the guy tells us, the one from TEDIT.DEFAULT.PROPS, or his DEFAULTFONT.

```
     (SETQ FONT (GETTEXTPROP TEXTOBJ 'FONT))
     (SETQ CHARLOOKS (GETTEXTPROP TEXTOBJ 'LOOKS))
     (SETQ CHARLOOKS (OR (AND CHARLOOKS (\TEDIT.PARSE.CHARLOOKS.LIST CHARLOOKS NIL TEXTOBJ))
                         (AND (type? CHARLOOKS FONT)
                              FONT)
                         (AND FONT (CHARLOOKS.FROM.FONT (FONTCREATE FONT)))
                         (CHARLOOKS.FROM.FONT DEFAULTFONT)))
     (SETQ CHARLOOKS (\TEDIT.UNIQUIFY.CHARLOOKS CHARLOOKS TEXTOBJ))
     (SETQ PARALOOKS (\TEDIT.UNIQUIFY.PARALOOKS (\TEDIT.PARSE.PARALOOKS.LIST (OR (GETTEXTPROP TEXTOBJ
                                                                                               'PARALOOKS)
                                                                                  (create FMTSPEC using
                                                                                          TEDIT.DEFAULT.FMTSPEC
                                                                                          )))
                                                TEXTOBJ))
     (SETTOBJ TEXTOBJ DEFAULTCHARLOOKS CHARLOOKS)
     (SETTOBJ TEXTOBJ CARETLOOKS CHARLOOKS)
     (SETTOBJ TEXTOBJ FMTSPEC PARALOOKS])
```

(\TEDIT.OPENTEXTFILE

```
[LAMBDA (TEXT PROPS)                                             ; Edited 20-Dec-2023 10:49 by rmk
                                                                 ; Edited 28-Oct-2023 10:33 by rmk
                                                                 ; Edited 26-Sep-2023 18:00 by rmk
                                                                 ; Edited 24-Sep-2023 23:13 by rmk
                                                                 ; Edited 18-Sep-2023 22:40 by rmk
                                                                 ; Edited 17-Sep-2023 21:29 by rmk
  (CL:WHEN TEXT
      (if (OR (LITATOM TEXT)
              (STRINGP TEXT)
              (CL:PATHNAMEP TEXT))
          then                                                   ; String detects empty extension
               [OPENSTREAM (OR (if (OR (CL:PATHNAMEP TEXT)
                                       (FILENAMEFIELD.STRING TEXT 'EXTENSION))
                                   then (FINDFILE TEXT T)
                                 elseif (FINDFILE-WITH-EXTENSIONS TEXT NIL *TEDIT-EXTENSIONS*))
                               TEXT)
                     'INPUT
                     'OLD
                     `((TYPE TEXT)
                       (FORMAT ,(LISTGET PROPS 'FORMAT]
```

```
          elseif (\GETSTREAM TEXT 'INPUT T)
          else ;; Perhaps this should be an error--remove T from the \GETSTREAM?
               TEXT))])
```

(\TEDIT.CREATE.TEXTSTREAM

```
  [LAMBDA (PROPS)                                                    ; Edited 16-Mar-2024 09:52 by rmk
                                                                     ; Edited 21-Jan-2024 15:16 by rmk
                                                                     ; Edited 17-Sep-2023 00:38 by rmk
                                                                     ; Edited 12-Sep-2023 11:27 by rmk
```

;; Creates and initializes an empty, windowless textstream

```
(LET (TSTREAM (TEXTOBJ (create TEXTOBJ)))
     (SETQ TSTREAM (create TEXTSTREAM
                           TEXTOBJ _ TEXTOBJ))
     (SETTOBJ TEXTOBJ STREAMHINT TSTREAM)
     (\TEDIT.OPENTEXTSTREAM.PROPS TEXTOBJ PROPS)
     (\TEDIT.MAKEPCTB TEXTOBJ)
     (\TEDIT.INSTALL.PIECE TSTREAM (FGETTOBJ TEXTOBJ LASTPIECE)
          0)
     TSTREAM])
```

(\TEDIT.REOPEN.STREAM

```
  [LAMBDA (TSTREAM PIECESTREAM)                                      ; Edited 16-Mar-2024 10:03 by rmk
                                                                     ; Edited 23-Jan-2024 00:28 by rmk
                                                                     ; Edited  9-Nov-2023 17:05 by rmk
                                                                     ; Edited  8-Sep-2023 00:23 by rmk
                                                                     ; Edited 15-Sep-2022 22:56 by rmk
                                                                     ; Edited 11-Jun-99 15:12 by rmk:
                                                                     ; Edited 15-Apr-93 15:53 by jds
```

;; Re-open a backing file stream, and propogate the change thru the entire piece table. Also, if TXTFILE is set to the closed stream, fill it in as well.
;; If there is a reopen operation that simply smashes the existing stream-datum, we wouldn't have to do the sweep.

```
(LET ((TEXTOBJ (TEXTOBJ TSTREAM))
      NEWSTREAM)
     (CL:UNLESS PIECESTREAM
         (SETQ PIECESTREAM (FGETTOBJ TEXTOBJ TXTFILE)))
     [SETQ NEWSTREAM (OPENSTREAM PIECESTREAM 'INPUT NIL `((TYPE TEXT)
                                                          (FORMAT ,(STREAMPROP PIECESTREAM :EXTERNAL-FORMAT]
```

;; Run thru the pieces, correcting any that used this stream to use the new one:

```
     (for PC inpieces (\TEDIT.FIRSTPIECE TEXTOBJ) when (EQ (PCONTENTS PC)
                                                           PIECESTREAM)
        do (FSETPC PC PCONTENTS NEWSTREAM))
```

;; Check the TXTFILE, and if it uses the closed stream, fix it as well:

```
     (CL:WHEN (EQ (FGETTOBJ TEXTOBJ TXTFILE)
                  PIECESTREAM)
          (FSETTOBJ TEXTOBJ TXTFILE NEWSTREAM))
```

;; Return the new value for the stream:

```
     NEWSTREAM])
```

(\TEDIT.TEXTINIT

```
  [LAMBDA NIL                                                        ; Edited 19-Mar-2024 18:16 by rmk
                                                                     ; Edited 17-Mar-2024 12:25 by rmk
                                                                     ; Edited 10-Mar-2024 13:50 by rmk
                                                                     ; Edited  7-Mar-2023 15:01 by rmk
                                                                     ; Edited 28-Aug-2022 22:19 by rmk
                                                                     ; Edited 22-Jul-2022 20:02 by rmk
                                                                     ; Edited  3-Jul-2022 00:34 by rmk
                                                                     ; Edited  5-May-2022 15:12 by rmk
                                                                     ; Edited  7-Oct-2021 08:40 by rmk:
                                                                     ; Create the FDEV and STREAM prototypes for TEXT streams.
```

;; TEXT streams make use of the following STREAM fields:

;; (DEVICE (* FDEV of this guy -- The TEXT device)

;; F1 Number of characters to the end of the current piece

;; F2 Starting offset for the character in this piece end of underlying file's page

;; F3 The TEXTOBJ for this stream

;; F4 LOOKSUPDATEFN

;; F5 The PIECE we're currently inside

;; (FW6 WORD) (* CPAGE for the start of the piece, for BACKFILEPTR)

;; (FW7 WORD) (* COFFSET for the start of the piece, for BACKFILEPTR)

;; (FW8 WORD)

```
[SETQ \TEXTIMAGEOPS (create IMAGEOPS
                            IMAGETYPE _ 'TEXT
                            IMXPOSITION _ (FUNCTION \TEDIT.TEXTDSPXPOSITION)
                            IMYPOSITION _ (FUNCTION \TEDIT.TEXTDSPYPOSITION)
                            IMLEFTMARGIN _ (FUNCTION \TEDIT.TEXTLEFTMARGIN)
```

```
                              IMRIGHTMARGIN _ (FUNCTION \TEDIT.TEXTRIGHTMARGIN)
                              IMFONT _ (FUNCTION \TEDIT.TEXTDSPFONT)
                              IMCLOSEFN _ (FUNCTION NILL)
                              IMFONTCREATE _ 'DISPLAY
                              IMLINEFEED _ (FUNCTION \TEDIT.TEXTDSPLINEFEED)
                              IMCHARWIDTH _ (FUNCTION \TEDIT.TEXTDSPCHARWIDTH)
                              IMSTRINGWIDTH _ (FUNCTION \TEDIT.TEXTDSPSTRINGWIDTH)
                              IMSCALE _ (FUNCTION (LAMBDA NIL 1]
    ;; Maybe more functions later. The INCODE and BACK functions possibly need to count.  If \TEXTBACKFILEPTR takes a count variable, the extra
    ;; level wouldn't be needed.  But INCCODE wants to go through the BIN opcode
    (MAKE-EXTERNALFORMAT :TEXTSTREAM (FUNCTION \TEDIT.TEXTINCCODEFN)
           (FUNCTION \TEDIT.TEXTPEEKBIN)
           (FUNCTION \TEDIT.TEXTBACKCCODEFN)
           (FUNCTION \TEDIT.TEXTOUTCHARFN)
           (FUNCTION \TEDIT.TEXTFORMATBYTESTREAM)
           'CR NIL (FUNCTION \TEDIT.TEXTFORMATBYTESTRING))
    (SETQ \TEXTFDEV (create FDEV
                            DEVICENAME _ 'TEXT
                            RESETABLE _ T
                            RANDOMACCESSP _ T
                            PAGEMAPPED _ NIL
                            GETFILENAME _ (FUNCTION NILL)
                            BIN _ (FUNCTION \TEDIT.TEXTBIN)
                            BOUT _ (FUNCTION \TEDIT.TEXTBOUT)
                            CLOSEFILE _ (FUNCTION \TEDIT.TEXTCLOSEF)
                            OPENFILE _ (FUNCTION \TEDIT.TEXTOPENF)
                            DELETEFILE _ (FUNCTION NILL)
                            DIRECTORYNAMEP _ (FUNCTION NILL)
                            EVENTFN _ (FUNCTION NILL)
                            GENERATEFILES _ (FUNCTION \GENERATENOFILES)
                            GETFILEINFO _ (FUNCTION NILL)
                            HOSTNAMEP _ (FUNCTION NILL)
                            READPAGES _ (FUNCTION NILL)
                            REOPENFILE _ [FUNCTION (LAMBDA (FILE ACCESS RECOG OTHERINFO FDEV STREAM)
                                                           (replace (STREAM ACCESS) of STREAM with 'BOTH)
                                                           STREAM]
                            SETFILEINFO _ (FUNCTION NILL)
                            BACKFILEPTR _ (FUNCTION \TEDIT.TEXTBACKFILEPTR)
                            SETFILEPTR _ (FUNCTION \TEDIT.TEXTSETFILEPTR)
                            PEEKBIN _ (FUNCTION \TEDIT.TEXTPEEKBIN)
                            GETEOFPTR _ (FUNCTION \TEDIT.TEXTGETEOFPTR)
                            GETFILEPTR _ (FUNCTION \TEDIT.TEXTGETFILEPTR)
                            EOFP _ (FUNCTION \TEDIT.TEXTEOFP)
                            FDBINABLE _ T
                            FDBOUTABLE _ NIL
                            FDEXTENDABLE _ NIL
                            TRUNCATEFILE _ (FUNCTION NILL)
                            WRITEPAGES _ (FUNCTION NILL)
                            DEFAULTEXTERNALFORMAT _ :TEXTSTREAM))
    (CL:SETF (CONDITION-HANDLER 'XCL:STREAM-NOT-OPEN)
           (FUNCTION (LAMBDA (CONDITION)
                       (LET ((STREAM (STREAM-ERROR-STREAM CONDITION)))
                            (COND
                               [(AND (BOUNDP 'ERRORPOS)
                                     (TEXTSTREAMP STREAM))       ; This happened in the error handler, and it happened to a TEdit
                                                                 ; stream, so try the fix:
                                (LET ((XCL::RESULT (\TEDIT.REOPENTEXTSTREAM STREAM)))
                                     (CL:WHEN XCL::RESULT
                                         (ENVAPPLY (STKNAME ERRORPOS)
                                                   (SUBST XCL::RESULT STREAM (STKARGS ERRORPOS))
                                                   (STKNTH -1 ERRORPOS ERRORPOS)
                                                   ERRORPOS T T))]
                               (*TEDIT-OLD-STREAM-ERROR-HANDLER*
                                                                 ; Some other kind of stream, so punt to the old handler (if there is
                                                                 ; one):
                                     (APPLY* *TEDIT-OLD-STREAM-ERROR-HANDLER* CONDITION])

)

;; Is this being used:

(DEFINEQ

(\TEDIT.TTYBOUT
  [LAMBDA (TSTREAM BYTE)                                         ; Edited 17-Mar-2024 11:39 by rmk
                                                                 ; Edited 18-Mar-2023 20:08 by rmk
                                                                 ; Edited 31-May-91 14:18 by jds
    ;; Do BOUT to a text stream, which is an insertion at the caret.

    ;; IS THIS BEING USED ??  INSTEAD, SPECIAL CASES IN \TEDIT.TEXTOUTCHARFN

    (LET ((TEXTOBJ (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM)))
         (if (EQ BYTE ERASECHARCODE)
             then (\TEDIT.CHARDELETE TEXTOBJ (fetch (TEXTOBJ SEL) of TEXTOBJ))
           elseif (EQ IGNORE.CCE (fetch CCECHO of (\SYNCODE (OR (fetch (TEXTOBJ TXTTERMSA) of TEXTOBJ)
                                                                \PRIMTERMSA)
```

```
                                                    BYTE)))
          else (\TEDIT.TEXTOUTCHARFN TSTREAM BYTE])

)

(RPAQ? *TEDIT-EXTENSIONS* '(TEDIT TED TXT TEXT BRAVO NIL))
```

;; Low-level generic stream operations

```
(DEFINEQ
```

(\TEDIT.TEXTCLOSEF

```
  [LAMBDA (TSTREAM)                                                    ; Edited 16-Mar-2024 10:03 by rmk
                                                                       ; Edited 28-Aug-2023 13:12 by rmk
                                                                       ; Edited 26-Oct-2022 11:17 by rmk
                                                                       ; Edited 22-Aug-2022 14:18 by rmk
                                                                       ; Edited  8-Aug-2022 14:56 by rmk
                                                                       ; Edited 15-Apr-93 16:43 by jds
                                                                       ; Close the files underlying a stream
    (LET ((TEXTOBJ (TEXTOBJ TSTREAM)))
         (for PC inpieces (\TEDIT.FIRSTPIECE TEXTOBJ) when (AND (MEMB (PTYPE PC)
                                                                      FILE.PTYPES)
                                                               (PCONTENTS PC))
            do (CLOSEF? (PCONTENTS PC)))
         ;; And close the REAL file as well, in case we'd made a local cache.
         (CLOSEF? (GETTOBJ TEXTOBJ TXTFILE])
```

(\TEDIT.TEXTDSPFONT

```
  [LAMBDA (TSTREAM NEWFONT)                                            ; Edited 17-Mar-2024 11:49 by rmk
                                                                       ; Edited 15-Oct-2023 17:13 by rmk
                                                                       ; Edited  8-Sep-2022 14:16 by rmk
                                                                       ; Edited 31-May-91 14:02 by jds
    ;; Set the font for a TEdit window.  Need change the caret looks, for character insertion, and the WINDOW's looks, so that TEXEC type-out to the
    ;; window does the right thing.
    (LET ((TEXTOBJ (TEXTOBJ TSTREAM)))
         (PROG1 (fetch (CHARLOOKS CLFONT) of (FGETTOBJ TEXTOBJ CARETLOOKS))
             (CL:WHEN NEWFONT
                 (TEDIT.CARETLOOKS TSTREAM (\GETFONTDESC NEWFONT 'DISPLAY))
                 (for PANE inpanes (PROGN TEXTOBJ) do (DSPFONT NEWFONT PANE))))])
```

(\TEDIT.TEXTEOFP

```
  [LAMBDA (TSTREAM)                                                    ; Edited 18-Mar-2024 22:43 by rmk
                                                                       ; Edited 23-Dec-2023 11:53 by rmk
                                                                       ; Edited  1-Jun-2023 17:07 by rmk
                                                                       ; Edited 10-Aug-2022 12:41 by rmk
                                                                       ; Edited  5-Aug-2022 16:37 by rmk
                                                                       ; Edited 31-May-91 14:18 by jds
    ;; Test for EOF on a text stream: At end of a piece, and there are no more pieces (visible or not).  This assumes that there are no zero-length
    ;; pieces.
    (OR (ZEROP (FGETTOBJ (TEXTOBJ TSTREAM)
                         TEXTLEN))
        (CL:WHEN (\ENDOFBUFFERP TSTREAM)
            [LET ((PCCHARSLEFT (ffetch (TEXTSTREAM PCCHARSLEFT) of TSTREAM)))
                 (CL:WHEN (ffetch (STREAM BINABLE) of TSTREAM)
                     [SETQ PCCHARSLEFT (IDIFFERENCE PCCHARSLEFT (IDIFFERENCE (ffetch (STREAM COFFSET)
                                                                                    of TSTREAM)
                                                                             (ffetch (TEXTSTREAM STARTINGCOFFSET)
                                                                                of TSTREAM])
                 (AND (\ENDOFPIECEP PCCHARSLEFT)
                      (NULL (NEXTPIECE (fetch (TEXTSTREAM PIECE) of TSTREAM])])
```

(\TEDIT.TEXTGETEOFPTR

```
  [LAMBDA (TSTREAM)                                                    ; Edited 17-Mar-2024 12:27 by rmk
                                                                       ; Edited 31-May-91 13:58 by jds
    (GETTOBJ (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM)
           TEXTLEN])
```

(\TEDIT.TEXTGETFILEPTR

```
  [LAMBDA (TSTREAM)                                                    ; Edited 19-Mar-2024 14:19 by rmk
                                                                       ; Edited 17-Mar-2024 00:25 by rmk
                                                                       ; Edited 21-Oct-2023 20:57 by rmk
                                                                       ; Edited  2-Sep-2022 17:45 by rmk
                                                                       ; Edited 30-Jul-2022 00:07 by rmk
                                                                       ; Edited 28-Mar-94 15:32 by jds
    ;; GETFILEPTR fn for text streams.  Measured in characters (and objects), not 8-bit bytes.
    (LET ((TEXTOBJ (ffetch (TEXTSTREAM TEXTOBJ) of TSTREAM))
          (PC (ffetch (TEXTSTREAM PIECE) of TSTREAM))
          PCCHARSLEFT)
         (if (OR (NULL PC)
```

```
            (\LASTPIECEP PC TEXTOBJ))
        then ;; Not set or off the end
            (FGETTOBJ TEXTOBJ TEXTLEN)
    else                                                    ; Somewhere inside the document
        (SETQ PCCHARSLEFT (ffetch (TEXTSTREAM PCCHARSLEFT) of TSTREAM))
        (CL:WHEN (ffetch (STREAM BINABLE) of TSTREAM)
            ;; PCCHARSLEFT may lag. If binable, everything is thin, no need to multiply. We don't change anything in TSTREAM
            [SETQ PCCHARSLEFT (IDIFFERENCE PCCHARSLEFT (IDIFFERENCE (ffetch (STREAM COFFSET) of TSTREAM)
                                                                    (ffetch (TEXTSTREAM STARTINGCOFFSET)
                                                                       of TSTREAM]
            ;; -1 to go from TEDIT-selection character-indexing back to nominal "byte" positions. SETFILEPTR goes the other way.
            (IPLUS -1 (\TEDIT.PCTOCH PC TEXTOBJ)
                   (IDIFFERENCE (PLEN PC)
                          PCCHARSLEFT])
```

(\TEDIT.TEXTOPENF

```
[LAMBDA (TSTREAM ACCESS)                                    ; Edited 16-Mar-2024 10:03 by rmk
                                                            ; Edited  7-Dec-2023 21:01 by rmk
                                                            ; Edited 22-Aug-2022 15:16 by rmk
                                                            ; Edited 31-May-91 13:58 by jds
                                                            ; Return the stream, opened for input
  (for PC inpieces (\TEDIT.FIRSTPIECE (TEXTOBJ TSTREAM)) when [AND (MEMB (PTYPE PC)
                                                                        FILE.PTYPES)
                                                                   (EQ NoBits (fetch (STREAM ACCESSBITS)
                                                                                 of (PCONTENTS PC]
     DO (\TEDIT.REOPEN.STREAM TSTREAM (PCONTENTS PC)))
  TSTREAM])
```

(\TEDIT.TEXTSETEOF

```
[LAMBDA (TSTREAM EOFPTR)                                    ; Edited 17-Mar-2024 12:28 by rmk
                                                            ; Edited 31-May-91 14:19 by jds
                                                            ; Set the EPAGE/EOFFSET of the stream to be (SUB1 of
                                                            ; EOFPTR)
  (replace (STREAM EPAGE) of TSTREAM with (fetch (BYTEPTR PAGE) of EOFPTR))
  (replace (STREAM EOFFSET) of TSTREAM with (fetch (BYTEPTR OFFSET) of EOFPTR])
```

(\TEDIT.TEXTSETFILEPTR

```
[LAMBDA (TSTREAM FILEPOS)                                   ; Edited 20-Mar-2024 10:58 by rmk
                                                            ; Edited 17-Mar-2024 00:27 by rmk
                                                            ; Edited 23-Dec-2023 12:14 by rmk
                                                            ; Edited 22-Oct-2023 16:14 by rmk
                                                            ; Edited  2-Sep-2022 11:34 by rmk
                                                            ; Edited  8-Aug-2022 23:55 by rmk
                                                            ; Edited 22-Apr-93 13:44 by jds
                                                            ; Sets the file ptr for a text stream.
    ;; FILEPOS is known to be a positive number.  For other filedevices there is no error if the ptr is set beyond the EOF, and GETFILEPTR will return
    ;; the new position.  But the length of an input file doesn't change and a BIN at any position after the EOF causes the error.  An output file grows.
    ;; Filepos is a "byte" position, have to add 1 to get to the notion of character in a Tedit selection.
    (LET ((TEXTOBJ (TEXTOBJ! (fetch (TEXTSTREAM TEXTOBJ) of TSTREAM)))
          START-OF-PIECE PC CH#)
         (DECLARE (SPECVARS START-OF-PIECE))
         (CL:WHEN (IGREATERP FILEPOS (FGETTOBJ TEXTOBJ TEXTLEN)) ; If the fileptr is not within the text, punt. OR: SET IT TO EOF?
             (\ILLEGAL.ARG FILEPOS))
         (CL:UNLESS (ZEROP (FGETTOBJ TEXTOBJ TEXTLEN))
             (SETQ CH# (ADD1 FILEPOS))
             (SETQ PC (\TEDIT.CHTOPC CH# TEXTOBJ T))
             (\TEDIT.INSTALL.PIECE TSTREAM PC (- CH# START-OF-PIECE)))])
```

(\TEDIT.TEXTDSPXPOSITION

```
[LAMBDA (TSTREAM XPOSITION)                                 ; Edited 17-Mar-2024 12:15 by rmk
                                                            ; Edited  3-Jan-2001 17:27 by rmk:
                                                            ; Edited 24-Oct-88 23:09 by rmk:; Edited 26-Sep-85 16:30 by ajb:
    ;; Simply returns the XPOSITION of the primary window's display stream, this is a read-only function
    (LET ((WINDOW (\TEDIT.PRIMARYW TSTREAM)))               ; If there is no window, estimate from character position
         (CL:IF WINDOW
             (DSPXPOSITION NIL WINDOW)
             (TIMES (CHARWIDTH (CHARCODE SPACE)
                               TSTREAM)
                    (POSITION TSTREAM)))])
```

(\TEDIT.TEXTDSPYPOSITION

```
[LAMBDA (TSTREAM YPOSITION)                                 ; Edited 17-Mar-2024 12:15 by rmk
                                                            ; Edited 31-May-91 13:59 by jds
    ;; Simply returns the YPOSITION of the primary window's display stream, this is a read-only function
    (LET ((WINDOW (\TEDIT.PRIMARYW TSTREAM)))
         (IF WINDOW
```

```
            THEN (DSPYPOSITION NIL WINDOW)
          ELSEIF (AND \#DISPLAYLINES (NEQ \CURRENTDISPLAYLINE -1))
            THEN (DIFFERENCE \#DISPLAYLINES \CURRENTDISPLAYLINE])
```

(\TEDIT.TEXTLEFTMARGIN

```
  [LAMBDA (TSTREAM XPOSITION)                                    ; Edited 17-Mar-2024 12:30 by rmk
                                                                 ; Edited 31-May-91 14:03 by jds
    (IPLUS 8 (fetch (FMTSPEC LEFTMAR) of (FGETTOBJ (TEXTOBJ TSTREAM)
                                                   FMTSPEC])
```

(\TEDIT.TEXTRIGHTMARGIN

```
  [LAMBDA (TSTREAM XPOSITION)                                    ; Edited 21-Sep-2023 12:38 by rmk
                                                                 ; Edited 31-May-91 14:03 by jds
```

;;; Returns the right margin of the textstream's default paralooks. If XPOSITION is given, the default looks and the linelength of the string are updated.

```
    (CL:WHEN XPOSITION                                           ; Error if not NIL or greater than 1, implicit NUMBERP test
        (IGEQ XPOSITION 1))
    ;; If RIGHTMAR is 0 and there is no window (WRIGHT), estimate from the stream's linelength.
    ;; If \TEDIT.MINIMAL.WINDOW.SETUP sets WRIGHT, maybe that's enough?  I.e. the right margin is either the width of the window or calculated
    ;; from the LINELENGTH.  It wouldn't depend on the default FMTSPEC or the FMTSPEC of the current piece.
    (LET ((TEXTOBJ (TEXTOBJ TSTREAM)))
         (if (FGETTOBJ TEXTOBJ \WINDOW)
             then (LET* ((FMTSPEC (FGETTOBJ TEXTOBJ FMTSPEC))
                         (RIGHTMAR (fetch (FMTSPEC RIGHTMAR) of FMTSPEC))
                         LEFTMAR NEWPOS)
                        (CL:WHEN (ZEROP RIGHTMAR)
                            (SETQ RIGHTMAR (fetch (TEXTOBJ WRIGHT) of TEXTOBJ)))
                        (CL:WHEN (AND XPOSITION (NEQ XPOSITION RIGHTMAR))
                                                                 ; Changing the default FMTSPEC
                            (SETQ LEFTMAR (fetch (FMTSPEC LEFTMAR) of FMTSPEC))
                            (CL:WHEN (ILEQ RIGHTMAR LEFTMAR)
                                   (\ILLEGAL.ARG XPOSITION))
                            (FSETTOBJ TEXTOBJ FMTSPEC (\TEDIT.UNIQUIFY.PARALOOKS (create FMTSPEC
                                                                                         using FMTSPEC RIGHTMAR _
                                                                                               XPOSITION)
                                                                                 TEXTOBJ))
                            (LINELENGTH (IQUOTIENT (IDIFFERENCE RIGHTMAR XPOSITION)
                                                   (CHARWIDTH (CHARCODE A)
                                                              TSTREAM))
                                        TSTREAM))
                        RIGHTMAR)
           elseif XPOSITION
             then ;; Even
                  (LINELENGTH (IQUOTIENT XPOSITION (CHARWIDTH (CHARCODE A)
                                                              TSTREAM))
                              TSTREAM)
           else (TIMES (CHARWIDTH (CHARCODE A)
                                  TSTREAM)
                       (LINELENGTH NIL TSTREAM])
```

(\TEDIT.TEXTDSPCHARWIDTH

```
  [LAMBDA (TSTREAM CHARCODE)                                     ; Edited 17-Mar-2024 12:23 by rmk
                                                                 ; Edited  9-Feb-99 12:59 by kaplan
    (CHARWIDTH CHARCODE (\TEDIT.TEXTDSPFONT TSTREAM])
```

(\TEDIT.TEXTDSPSTRINGWIDTH

```
  [LAMBDA (TSTREAM STRING)                                       ; Edited 17-Mar-2024 12:32 by rmk
                                                                 ; Edited  9-Feb-99 13:00 by kaplan
    (STRINGWIDTH STRING (\TEDIT.TEXTDSPFONT TSTREAM])
```

(\TEDIT.TEXTDSPLINEFEED

```
  [LAMBDA (TSTREAM VALUE)                                        ; Edited 17-Mar-2024 12:25 by rmk
    ;; Read only
    (FONTPROP (\TEDIT.TEXTDSPFONT TSTREAM)
           'HEIGHT])

)

;; Editing support

(DECLARE%: EVAL@COMPILE DONTCOPY

(DECLARE%: EVAL@COMPILE

(RPAQQ INSERTSTRINGLENGTH 512)

(CONSTANTS (INSERTSTRINGLENGTH 512))
```

```
)

(DECLARE%: EVAL@COMPILE

(PUTPROPS \INSERTCH.EXTENDABLE MACRO [(PREVPC INSERTION INSERTPTYPE)
                                        ;; Is INSERTION physcially adjacent to the PCONTENTS of PREVPC ?
                                        (AND (EQ INSERTPTYPE (PTYPE PREVPC))
                                             (EQ (ffetch (STRINGP BASE) of INSERTION)
                                                 (ffetch (STRINGP BASE) of (PCONTENTS PREVPC)))
                                             (IEQP (IPLUS (PLEN PREVPC)
                                                          (ffetch (STRINGP OFFST) of (PCONTENTS PREVPC)))
                                                   (ffetch (STRINGP OFFST) of INSERTION])
)
)

(DEFINEQ
```

(\TEDIT.DELETE.SELPIECES

```
  [LAMBDA (TEXTOBJ TARGETSEL)                                   ; Edited 17-Mar-2024 00:22 by rmk
                                                                ; Edited 13-Feb-2024 00:13 by rmk
                                                                ; Edited 11-Dec-2023 09:51 by rmk
                                                                ; Edited 21-Oct-2023 23:50 by rmk
                                                                ; Edited  3-Jun-2023 22:31 by rmk
                                                                ; Edited 29-Jan-99 17:28 by kaplan
    ;; Delete the characters selected by TARGETSEL.  If any of the pieces contains an objecting object, nothing is done.
    (CL:UNLESS (fetch (TEXTOBJ TXTREADONLY) of TEXTOBJ)
        ;; Only delete characters if changes are permitted.
        (\TEDIT.BTVALIDATE '\TEDIT.DELETE.SELPIECES 'START TEXTOBJ)
        (LET (SELPIECES PREVPC)
             (SETQ SELPIECES (\TEDIT.SELPIECES TARGETSEL))
             (CL:WHEN (AND (fetch (SELPIECES SPFIRST) of SELPIECES)
                           (for PC inselpieces SELPIECES always (OBJECT.ALLOWS PC 'DELETE TEXTOBJ)))
                 ;; First deleted piece still points back into the TEXTOBJ sequence
                 (SETQ PREVPC (PREVPIECE (ffetch (SELPIECES SPFIRST) of SELPIECES)))
                 (\TEDIT.DELETEPIECES SELPIECES TEXTOBJ)
                 (FSETTOBJ TEXTOBJ \DIRTY T)
                 ;; If the the effect of the deletion is to concatenate a (non-empty) prefix of one paragraph with a (non-empty) suffix of another,
                 ;; propagate the prefix PARALOOKS all the way through to the end of the newly combined paragraph. All the pieces of a
                 ;; paragraph must have the same PARALOOKS.
                 (CL:WHEN (AND PREVPC (NOT (PPARALAST PREVPC)))  ; Retained a non-empty prefix
                     (for PC (PPLOOKS _ (PPARALOOKS PREVPC))
                         inpieces
                         (NEXTPIECE PREVPC) do ;; (NEXTPIECE PREVPC) is the first retained piece linked in after the deletion
                                               (FSETPC PC PPARALOOKS PPLOOKS)
                        repeatuntil (PPARALAST PC)))
                 (\TEDIT.BTVALIDATE '\TEDIT.DELETE.SELPIECES 'END TEXTOBJ)
                 ;;
                 ;; The pieces are now properly linked with the proper looks.  For the history, SELPIECES knows where it came from
                 (\TEDIT.HISTORYADD TEXTOBJ (create TEDITHISTORYEVENT
                                                    THACTION _ :Delete
                                                    THCH# _ (FGETSEL TARGETSEL CH#)
                                                    THLEN _ (FGETSEL TARGETSEL DCH)
                                                    THDELETEDPIECES _ SELPIECES))
                 T)))])
```

(\TEDIT.INSERTCH

```
  [LAMBDA (CH CH# TEXTOBJ PARALAST)                             ; Edited 17-Mar-2024 12:41 by rmk
                                                                ; Edited 21-Jan-2024 14:06 by rmk
                                                                ; Edited  9-Dec-2023 13:14 by rmk
                                                                ; Edited 18-Oct-2023 21:16 by rmk
                                                                ; Edited 15-Oct-2023 15:59 by rmk
                                                                ; Edited 18-Aug-2023 14:36 by rmk
                                                                ; Edited  2-Aug-2023 13:12 by rmk
                                                                ; Edited 25-May-2023 09:14 by rmk
                                                                ; Edited 23-May-2023 22:44 by rmk
                                                                ; Edited 25-Oct-2022 12:48 by rmk
    ;; This inserts CH (a character code or string) into the text just in front of character CH#. After execution the first character of CH will be CH# in the
    ;; text, the previous CH# char is at CH#+ (NCHARS CH).  If PARALAST, PARALAST will be set for the piece that ends in CH.

    ;; This is optimized for the common case that the next character to be inserted is at the position one beyond the position of the previously inserted
    ;; character.

    ;;   1.  \INSERTCH.INSERTION allocates a string to contain the new character, by chomping the next character from the TEXTOBJ's
    ;; INSERTSTRING resource.

    ;;   2.  The insertion will go into a piece at position CH#, and this stores that piece in the HINTPC field of the TEXTOBJ, together with its starting
    ;; position.  If the next insertion comes immediately have that piece, \CHTOPC can find that piece without searching the BTREE.

    ;;   3.  If the piece just before the target is a string piece whose string ends at the position in the same string just before the insertion, then the
    ;; insertion can be accomplished by extending the string of the previous piece, by adjusting the string offset and length of that piece's string and
    ;; compensating by shrinking the INSERTIONSTRING resource.
```

```
;;
;; The net effect is that typically the target piece is found quickly, and that a sequence of characters that are inserted individually end up in a single
;; string in a single piece (until a paragraph break, or some jumping around that eliminates the string contiguity).
;;
;; In the nonoptimal, atypical case, the next insertion point is unrelated to the last one, a jump to a new place in the stream.  In which case it might
;; be between 2 existing pieces, or it might come in the middle of an existing piece that has to be split.  At that point a new string piece can be
;; introduced to hold the insertion, maybe still sucking from the existing insertion string.
;;
(\TEDIT.BTVALIDATE '\TEDIT.INSERTCH 'BEGIN TEXTOBJ)
;;
[SETQ CH# (MIN CH# (ADD1 (FGETTOBJ TEXTOBJ TEXTLEN]
(PROG (PREVPC INSERTPTYPE INSERTPC INSERTION (ILEN (CL:IF (type? STRINGP CH)
                                                         (NCHARS CH)
                                                         1)))
      (CL:WHEN (ZEROP ILEN)                                    ; Nothing to insert, really!
          (RETURN))
;;
;; Step 1:  Construct the insertion string, presumably chomping the TEXTOBJ resource. May or may not be contiguous with last insertion.
      (SETQ INSERTION (\TEDIT.INSERTCH.INSERTION CH TEXTOBJ))
      (SETQ INSERTPTYPE (CL:IF (fetch (STRINGP FATSTRINGP) of INSERTION)
                               FATSTRING.PTYPE
                               THINSTRING.PTYPE))
;;
;; Step 2:  Find or create a piece with CH#at offset 0. This may involve splitting off an initial substring into a separate previous piece.
      (SETQ INSERTPC (\TEDIT.ALIGNEDPIECE CH# TEXTOBJ))
;;
;; Step 3: Insert the insertion, with luck, just by extending the previous piece, otherwise the insertion goes into its own new previous piece.
      (FSETTOBJ TEXTOBJ HINTPC NIL)                            ; The hint has been used, but becomes invalid until the updates
                                                               ; are complete.
      (SETQ PREVPC (PREVPIECE INSERTPC))
      (if (AND PREVPC (\INSERTCH.EXTENDABLE PREVPC INSERTION INSERTPTYPE)
               (EQ (PLOOKS PREVPC)
                   (FGETTOBJ TEXTOBJ CARETLOOKS))
               (NOT (PPARALAST PREVPC)))
          then ;; Heuristic optimization: avoid a new piece if it is clear that won't get us into trouble. We can't append to a paralast candidate
               ;; piece, because the new material would become part of a new paragraph that may or may not eventually end a different
               ;; paragraph.
               (\TEDIT.INSERTCH.EXTEND PREVPC ILEN TEXTOBJ)
        else (SETQ PREVPC (create PIECE
                                  PTYPE _ INSERTPTYPE
                                  PCONTENTS _ INSERTION
                                  PLEN _ ILEN
                                  PLOOKS _ (FGETTOBJ TEXTOBJ CARETLOOKS)
                                  PPARALOOKS _ (PPARALOOKS INSERTPC)
                                  PNEW _ T))
             (SELECTC INSERTPTYPE
                  (THINSTRING.PTYPE
                       (FSETPC PREVPC PBYTESPERCHAR 1)
                       (FSETPC PREVPC PBYTELEN ILEN)
                       (FSETPC PREVPC PBINABLE T)
                       (FSETPC PREVPC PCHARSET 0))
                  (FATSTRING.PTYPE
                       (FSETPC PREVPC PBYTESPERCHAR 2)
                       (FSETPC PREVPC PBYTELEN (UNFOLD ILEN 2))
                       (FSETPC PREVPC PBINABLE NIL)
                       (FSETPC PREVPC PCHARSET \NORUNCODE))
                  NIL)
             (\TEDIT.INSERTPIECE PREVPC INSERTPC TEXTOBJ))
;; The insertion is done and the pieces are properly integrated into the stream.
;;
;;  Register this event in the TEDIT history.
      (\TEDIT.INSERTCH.HISTORY TEXTOBJ PREVPC CH# ILEN)
;; Finally, as a heuristic for continuous typing, set up the TEXTOBJ hint  to speed up the \CHTOPC piece search if  the next insertion comes just
;; after this one (and this one is not PARALAST). This really doesn't matter for typing, but may make it noticeaby faster for programmatic
;; insertions..
      (if PARALAST
          then (FSETPC PREVPC PPARALAST T)
        else (FSETTOBJ TEXTOBJ HINTPCSTARTCH# (IPLUS ILEN CH#))
             (FSETTOBJ TEXTOBJ HINTPC INSERTPC))
      (\TEDIT.BTVALIDATE '\TEDIT.INSERTCH 'END TEXTOBJ)
      (RETURN INSERTPC])

(\TEDIT.INSERTCH.HISTORY
  [LAMBDA (TEXTOBJ PREVPC CH# ILEN)                            ; Edited  8-Jun-2023 08:39 by rmk
```

```
                                                                    ; Edited 28-May-2023 00:01 by rmk
                                                                    ; Edited 25-May-2023 09:13 by rmk
```

;; Fix the history to reflect the character/string insertion by extending the event for previous characters in an insertion run. Backspace removes ;; individual characters, Undo removes the whole sequence.

```
(LET ((EVENT (\TEDIT.LASTEVENT TEXTOBJ)))                           ; Immediately prior edit event.
     (CL:UNLESS (type? TEDITHISTORYEVENT EVENT)                     ; Don't do composites, fall thru to add.
         (SETQ EVENT NIL))
     (if [AND EVENT (EQ PREVPC (GETTH EVENT THFIRSTPIECE))
             (FMEMB (GETTH EVENT THACTION)
                    '(:Insert :Replace]
         then ;; We're continuing a prior insertion, just continue the old history event too. Critical that insertions and replacements save
              ;; PREVPC as THFIRSTPIECE
              (add (GETTH EVENT THLEN)
                   ILEN)
       else                                                         ; A new insertion/replacemen requires a new history event.
            (if (AND EVENT (EQ (GETTH EVENT THACTION)
                               :Delete)
                     (IEQP CH# (GETTH EVENT THCH#)))
              then (SETTH EVENT THACTION :Replace)                  ; Upgrade the deletion to a replacement
                   (SETTH EVENT THCH# CH#)
                   (SETTH EVENT THLEN (PLEN PREVPC))
                   (SETTH EVENT THPOINT 'RIGHT)
                   (SETTH EVENT THFIRSTPIECE PREVPC)
              else ;; This insertion is unrelated to the previous user action, we push a new event to support undo sequences.
                   ;; A deletion followed by a first insertion got converted to a replace above. We are now adding a character to the end. We
                   ;; want to start where it started before, and end one beyond where it ended before. Why aren't we in the above :Replace
                   ;; case?
                   ;; In the replace case above, maybe the PREVPC test isn't right?
                   (\TEDIT.HISTORYADD TEXTOBJ (create TEDITHISTORYEVENT
                                                      THACTION _ :Insert
                                                      THLEN _ (PLEN PREVPC)
                                                      THCH# _ CH#
                                                      THFIRSTPIECE _ PREVPC
                                                      THPOINT _ 'RIGHT])
```

(**TEDIT.INSERTEOL**

```
[LAMBDA (CH CH# TEXTOBJ)                                            ; Edited 17-Mar-2024 11:41 by rmk
                                                                    ; Edited 11-Aug-2023 15:49 by rmk
                                                                    ; Edited  5-May-2023 17:00 by rmk
                                                                    ; Edited 31-May-91 14:00 by jds
```

;; Handle insertion of EOL and meta-EOL. The former causes a paragraph break, while the latter doesn't. Note that inserting a meta-EOL causes ;; the document to become formatted. \INSERTEOL might add this on to an extendable insertion piece, but a subsequent extension is foreclosed ;; by setting PPARALAST.

;;

;; RMK: Is it really necessary to convert to formatted? If \FORMATLINE forces a line break when it seems a meta-EO, then it is only EOL that ;; forces the PARALAST for paragraph formatting and paragraph selection. meta-EOL can be treated just as an ordinary character and not come ;; through (if meta-EOL can appear with the same significance in an otherwise plain-text file.

```
(CL:UNLESS (fetch (TEXTOBJ TXTREADONLY) of TEXTOBJ)
    (LET (INPC)
         (CL:UNLESS (OR (fetch (TEXTOBJ FORMATTEDP) of TEXTOBJ)
                        (EQ (CHARCODE EOL)))                        ; Inserting a meta-EOL into an unformatted document. Start by
                                                                    ; setting up para breaks.
             (\TEDIT.CONVERT.TO.FORMATTED TEXTOBJ))
         (SETQ INPC (\TEDIT.INSERTCH (CHARCODE EOL)
                                     CH# TEXTOBJ))                  ; Put the EOL in
         (CL:WHEN (AND (EQ CH (CHARCODE EOL))
                       (PREVPIECE INPC))                            ; It's really an EOL, rather than a meta-EOL so do para breaking.
             (freplace (PIECE PPARALAST) of (PREVPIECE INPC) with T)
             T)
         INPC)])
```

(**TEDIT.INSERTCH.INSERTION**

```
[LAMBDA (CH TEXTOBJ)                                                ; Edited 20-Oct-2023 23:57 by rmk
                                                                    ; Edited 15-Oct-2023 14:45 by rmk
                                                                    ; Edited 12-Apr-2023 16:55 by rmk
                                                                    ; Edited 13-Aug-2022 12:48 by rmk
```

;; Find string-storage that can hold the insertion, and stick it in. Try to chomp from the current INSERTSTRING resource held in the TEXTOBJ, if ;; any.

```
(LET ((INSERTSTRING (FGETTOBJ TEXTOBJ INSERTSTRING))
      LEN FATP INSERTION)
     (if (type? STRINGP CH)
         then (SETQ LEN (ffetch (STRINGP LENGTH) of CH))
              [SETQ FATP (AND (ffetch (STRINGP FATSTRINGP) of CH)
                              (for C instring CH never (IGREATERP C \MAXTHINCHAR]
       else (SETQ LEN 1)
            (SETQ FATP (IGREATERP CH \MAXTHINCHAR)))
     [if (AND INSERTSTRING (EQ FATP (fetch (STRINGP FATSTRINGP) of INSERTSTRING))
             (ILEQ LEN (ffetch (STRINGP LENGTH) of INSERTSTRING)))
```

```
            then (SETQ INSERTION (SUBSTRING INSERTSTRING 1 LEN))
                                                        ; Chunk it off, keep whatever might be left
                 (FSETTOBJ TEXTOBJ INSERTSTRING (SUBSTRING INSERTSTRING (ADD1 LEN)
                                                        -1 INSERTSTRING))
          else ;; Allocate a string of the right type, to avoid an extra fattening pass
               (if (IGREATERP LEN INSERTSTRINGLENGTH)
                   then ;; Don't throw out the current cached resource if our new one is already full
                        (SETQ INSERTION (ALLOCSTRING LEN NIL NIL FATP))
                 else (SETQ INSERTSTRING (ALLOCSTRING INSERTSTRINGLENGTH NIL NIL FATP))
                      (SETQ INSERTION (SUBSTRING INSERTSTRING 1 LEN))
                                                        ; Let the old one go--we may be starting a new sequential run
                      (FSETTOBJ TEXTOBJ INSERTSTRING (SUBSTRING INSERTSTRING (ADD1 LEN)
                                                        -1 INSERTSTRING]
    ;; INSERTION can now hold the insertion, smash it in
    (CL:IF (type? STRINGP CH)
        (RPLSTRING INSERTION 1 CH)
        (RPLCHARCODE INSERTION 1 CH))
    INSERTION])
```

(\TEDIT.INSERTCH.EXTEND

```
  [LAMBDA (PC ILEN TEXTOBJ)                             ; Edited 16-Mar-2024 09:56 by rmk
                                                        ; Edited 21-Jan-2024 14:09 by rmk
                                                        ; Edited 12-Apr-2023 09:37 by rmk
                                                        ; Edited  1-Sep-2022 08:26 by rmk
                                                        ; Edited 30-Aug-2022 11:13 by rmk
                                                        ; Edited 21-Aug-2022 08:50 by rmk
    ;; Since INSERTION is physically adjacent to the PCONTENTS of PC, we can smash it on and adjust the lengths above.  We also have to adjust
    ;; the DLEN for PC in its node.
    (add (PLEN PC)
         ILEN)
    (FSETPC PC PBYTELEN (ITIMES (PLEN PC)
                                (PBYTESPERCHAR PC)))
    (add (ffetch (STRINGP LENGTH) of (PCONTENTS PC))
         ILEN)
    (add (ffetch (BTSLOT DLEN) of (\FINDSLOT (ffetch (PIECE PTREENODE) of PC)
                                             PC))
         ILEN)
    (\TEDIT.UPDATEPCNODES PC ILEN TEXTOBJ])

)

(DEFINEQ
```

(\SETUPGETCH

```
  [LAMBDA (CH# TEXTOBJ)                                 ; Edited 17-Mar-2024 00:27 by rmk
                                                        ; Edited 23-Dec-2023 12:14 by rmk
                                                        ; Edited 22-Aug-2022 13:04 by rmk
                                                        ; Edited 10-Aug-2022 17:20 by rmk
                                                        ; Edited  8-Aug-2022 15:07 by rmk
                                                        ; Edited 31-Jul-2022 21:27 by rmk
                                                        ; Edited 14-Apr-93 17:14 by jds
```

;;; Set up TEXTOBJ so that the next \GETCH will retrieve character # CH#

```
    ;; NB that 1st char in the textobj is #1.
    ;; NOBODY CALLS IT WITH A PIECE.  CALLS |INSTALL.PIECE INSTEAD
    (COND
       ((TYPE? PIECE CH#)
        (HELP "\SETUPGETCH CALLED WITH PIECE")
        (\TEDIT.INSTALL.PIECE (ffetch (TEXTOBJ STREAMHINT) of TEXTOBJ)
               CH# 0))
       (T (LET (START-OF-PIECE PC)
               (DECLARE (SPECVARS START-OF-PIECE))
               (SETQ PC (\TEDIT.CHTOPC CH# TEXTOBJ T))
               (\TEDIT.INSTALL.PIECE (ffetch (TEXTOBJ STREAMHINT) of TEXTOBJ)
                      PC
                      (- CH# START-OF-PIECE])

)

;; Deprecated, maybe still external callers

(DEFINEQ
```

(\TEDIT.INSTALL.PIECE

```
  [LAMBDA (TSTREAM PC CHOFFSET)                         ; Edited 18-Mar-2024 22:26 by rmk
                                                        ; Edited  1-Feb-2024 00:23 by rmk
                                                        ; Edited 21-Jan-2024 13:00 by rmk
                                                        ; Edited  5-Jan-2024 10:30 by rmk
                                                        ; Edited 28-Dec-2023 10:59 by rmk
                                                        ; Edited 23-Dec-2023 12:16 by rmk
```

```
                                                                    ; Edited  7-Dec-2023 15:46 by rmk
                                                                    ; Edited 26-Nov-2023 20:47 by rmk
                                                                    ; Edited  3-May-2023 15:10 by rmk
                                                                    ; Edited 11-Oct-2022 18:14 by rmk
                                                                    ; Edited  8-Sep-2022 20:46 by rmk
```

;; Makes PC be the current piece in TSTREAM. set up so that the next character is at CHOFFSET relative to the start of the piece.

;; Note that, since we are setting up the TSTREAM looks here, the LOOKSUPDATEFN doesn't need to do that part.

;; SHOULD PARTS OF THIS BE UNINTERRUPTABLE?

```
(CL:WHEN PC
    (PROG (PCCHARSLEFT (PCONTENTS (PCONTENTS PC))
                (PLEN (PLEN PC))
                (LOOKSUPDATEFN (ffetch (TEXTSTREAM LOOKSUPDATEFN) of TSTREAM)))
```

;; The LOOKSUPDATEFN is non-NIL only for calls from \FORMATLINE and \TEDIT.HARDCOPY.FORMATLINE. It updates their formatting
;; variables and skips invisible pieces.

```
          (if LOOKSUPDATEFN
              then (SETQ PC (APPLY* LOOKSUPDATEFN TSTREAM PC))
                   (CL:UNLESS PC                              ; Invisible to the end?
                       (RETURN NIL))
            else (freplace (TEXTSTREAM CURRENTLOOKS) of TSTREAM with (PLOOKS PC))
                 (freplace (TEXTSTREAM CURRENTPARALOOKS) of TSTREAM with (PPARALOOKS PC)))
```

;; Install PC and its looks in TSTREAM.

```
          (freplace (TEXTSTREAM PIECE) of TSTREAM with PC)
```

;;

;; Now set up for binning.

```
          (SETQ PCCHARSLEFT (IDIFFERENCE PLEN CHOFFSET))
          (freplace (STREAM COFFSET) of TSTREAM with 0)
          (SELECTC (PTYPE PC)
              (FILE.PTYPES ;; Sets up the buffers and positions the underlying stream.  Unless thinfile, the BIN opcode punts everything.
                           (\TEDIT.INSTALL.FILEBUFFER TSTREAM PCCHARSLEFT))
              (STRING.PTYPES
                   (freplace (STREAM CPPTR) of TSTREAM with (ffetch (STRINGP BASE) of PCONTENTS))
                   (freplace (STREAM COFFSET) of TSTREAM with (IPLUS (ffetch (STRINGP OFFST) of PCONTENTS)
                                                                     CHOFFSET))
                   (freplace (STREAM CBUFSIZE) of TSTREAM with (IPLUS (ffetch (STRINGP OFFST) of PCONTENTS)
                                                                      PLEN)))
              (OBJECT.PTYPE (freplace (STREAM CBUFSIZE) of TSTREAM with 1))
              (SUBSTREAM.PTYPE                                  ; Maybe just set PC to the piece of the (freplace (STREAM
                                                                ; BINABLE) of TSTREAM with NIL)substream?
                   (CL:UNLESS LOOKSUPDATEFN
                       (freplace (TEXTSTREAM CURRENTPARALOOKS) of TSTREAM with (ffetch (TEXTSTREAM
                                                                                        CURRENTPARALOOKS)
                                                                                   of PCONTENTS))
                       (freplace (TEXTSTREAM CURRENTLOOKS) of TSTREAM with (ffetch (TEXTSTREAM CURRENTLOOKS)
                                                                                   of PCONTENTS))))
                   NIL)
              (freplace (STREAM BINABLE) of TSTREAM with (PBINABLE PC))
              (freplace (TEXTSTREAM STARTINGCOFFSET) of TSTREAM with (ffetch (STREAM COFFSET) of TSTREAM))
              (freplace (TEXTSTREAM PCCHARSLEFT) of TSTREAM with PCCHARSLEFT)
              (CL:WHEN (ILESSP PCCHARSLEFT 0)
                       (HELP "INSTALL.PIECE PCCHARSLEFT LESS THAN 0"))
              (RETURN PC)))])

)

;; Support for TEXTPROP

(DEFINEQ

(GETTEXTPROP
  [LAMBDA (TEXTOBJ PROP)                                        ; Edited 20-Mar-2024 10:58 by rmk
                                                                ; Edited  2-Mar-2024 07:09 by rmk
                                                                ; Edited 14-Jan-2024 16:35 by rmk
                                                                ; Edited 31-Oct-2023 23:32 by rmk
                                                                ; Edited 21-Sep-2023 09:48 by rmk
                                                                ; Edited  9-Feb-89 11:20 by jds
```

;; Gets values for document properties. Used by TEXTPROP.

```
    (TEXTOBJ! TEXTOBJ)
    (SELECTQ PROP
        ((READONLY READ-ONLY)
            (FGETTOBJ TEXTOBJ TXTREADONLY))
        ((BEING-EDITED ACTIVE)
            (FGETTOBJ TEXTOBJ TXTEDITING))
        (READTABLE (FGETTOBJ TEXTOBJ TXTRTBL))
        (BOUNDTABLE (FGETTOBJ TEXTOBJ TXTWTBL))
        (DON'TUPDATE (FGETTOBJ TEXTOBJ TXTDON'TUPDATE))
        (NOTSPLITTABLE
            (FGETTOBJ TEXTOBJ TXTNOTSPLITTABLE))
        (\WINDOW (FGETTOBJ TEXTOBJ \WINDOW))
        (DIRTY (FGETTOBJ TEXTOBJ \XDIRTY))
```

```
        (LENGTH (FGETTOBJ TEXTOBJ TEXTLEN))
        (LISTGET (FGETTOBJ TEXTOBJ EDITPROPS)
               PROP])
```

(PUTTEXTPROP

```
  [LAMBDA (TEXTOBJ PROP VALUE)                                    ; Edited 20-Mar-2024 10:59 by rmk
                                                                  ; Edited 15-Mar-2024 18:08 by rmk
                                                                  ; Edited  9-Mar-2024 22:18 by rmk
                                                                  ; Edited  2-Mar-2024 07:09 by rmk
                                                                  ; Edited 14-Jan-2024 16:35 by rmk
                                                                  ; Edited 31-Oct-2023 23:33 by rmk
                                                                  ; Edited 21-Sep-2023 09:48 by rmk
                                                                  ; Edited  9-Feb-89 11:19 by jds
    ;; Put a value on prop list for a textobj.  Some properties affect the fields of TEXTOBJ, but all go into EDITPROPS so that they can be retrieved as
    ;; a whole.

    (TEXTOBJ! TEXTOBJ)
    (CL:UNLESS (LISTP (FGETTOBJ TEXTOBJ EDITPROPS))               ; Make sure we have a list to smash, no matter what.
        (FSETTOBJ TEXTOBJ EDITPROPS (LIST PROP NIL)))
    (PROG1 (GETTEXTPROP TEXTOBJ PROP)
        (SELECTQ PROP
             ((READONLY READ-ONLY)
                 (FSETTOBJ TEXTOBJ TXTREADONLY VALUE)
                 (CL:WHEN NIL                                     ; This has to be done after the file is initially read in
                     (replace (STREAM ACCESS) of (FGETTOBJ TEXTOBJ STREAMHINT) with 'INPUT)))
             ((BEING-EDITED ACTIVE)
                 (FSETTOBJ TEXTOBJ TXTEDITING VALUE))
             (READTABLE (FSETTOBJ TEXTOBJ TXTRTBL VALUE))
             (TERMTABLE (FSETTOBJ TEXTOBJ TXTTERMSA (fetch (TERMTABLEP TERMSA) of VALUE)))
             (BOUNDTABLE (FSETTOBJ TEXTOBJ TXTWTBL VALUE))
             (DON'TUPDATE (FSETTOBJ TEXTOBJ TXTDON'TUPDATE VALUE))
             (NOTSPLITTABLE
                 (FSETTOBJ TEXTOBJ TXTNOTSPLITTABLE T))
             (\WINDOW ;; If VALUE is a window, we really should do a full set up.  And if NIL, detach it.
                      (FSETTOBJ TEXTOBJ \WINDOW (MKLIST VALUE)))
             (DIRTY (FSETTOBJ TEXTOBJ \DIRTY VALUE))
             (LENGTH (ERROR "TEXT property LENGTH is read-only"))
            NIL)
        (LISTPUT (FGETTOBJ TEXTOBJ EDITPROPS)
               PROP VALUE))])
```

(TEXTPROP

```
  [LAMBDA X                                                       ; Edited 21-Sep-2023 09:54 by rmk
                                                                  ; Edited  9-Feb-89 11:20 by jds
    (CL:UNLESS (IGEQ X 2)
           (\ILLEGAL.ARG X))
    (LET [(TEXTOBJ (TEXTOBJ (ARG X 1]
         (PROG1 (GETTEXTPROP TEXTOBJ (ARG X 2))
             (CL:UNLESS (EQ X 2)
                 (PUTTEXTPROP TEXTOBJ (ARG X 2)
                        (ARG X 3)))))])

)

;; Support for error handling:  The old error handler for the stream-not-open error.  This is here, because you only want to do this ONCE, even if you load
;; TEXT-STREAM multiple times (as, e.g., in development)

(RPAQ? *TEDIT-OLD-STREAM-ERROR-HANDLER* (CONDITION-HANDLER 'XCL:STREAM-NOT-OPEN))

(DECLARE%: DONTEVAL@LOAD DOCOPY

(\TEDIT.TEXTINIT)
)

(DECLARE%: DONTEVAL@LOAD DOEVAL@COMPILE DONTCOPY COMPILERVARS

(ADDTOVAR NLAMA )

(ADDTOVAR NLAML )

(ADDTOVAR LAMA TEXTPROP)
)
```

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