```
(RPAQQ AOFDCOMS
       [
```

;;;; streams (= OpenFileDescriptors)

```
       (COMS (FNS \ADD-OPEN-STREAM \GENERIC-UNREGISTER-STREAM)
             (INITVARS (*ISSUE-CLOSE-WARNINGS* NIL))
             (FNS CLOSEALL CLOSEF EOFCLOSEF INPUT OPENP OUTPUT POSITION RANDACCESSP \IOMODEP WHENCLOSE)
             (FNS STREAMADDPROP)
             (INITVARS (DEFAULTEOFCLOSE 'NILL))
             (GLOBALVARS DEFAULTEOFCLOSE \STREAMSTRING.FDEV))
       (COMS  ;; STREAM interface to Read and Write to random memory

             (DECLARE%: DONTCOPY (EXPORT (RECORDS BASEBYTESTREAM)))
             (FNS \BASEBYTES.IO.INIT \MAKEBASEBYTESTREAM \MBS.OUTCHARFN \BASEBYTES.NAME.FROM.STREAM
                  \BASEBYTES.BOUT \BASEBYTES.SETFILEPTR \BASEBYTES.READP \BASEBYTES.BIN \BASEBYTES.PEEKBIN
                  \BASEBYTES.TRUNCATEFN \BASEBYTES.OPENFN \BASEBYTES.BLOCKIO)
             (GLOBALVARS \BASEBYTESDEVICE)
             (DECLARE%: DONTEVAL@LOAD (P (\BASEBYTES.IO.INIT)))
             (FNS OPENSTRINGSTREAM MAKE-STRING-FORMAT)
             (P (MAKE-STRING-FORMAT)))
       (COMS  ;; STREAM interface for old-style strings.  However (RMK), it appears never to be used, and even commonlisp string-streams are
              ;; created using the Interlisp OPENSTRINGSTREAM above.  For now, keep the function, but don't execute it

             (FNS \STRINGSTREAM.INIT)

             ;; (DECLARE%: DONTEVAL@LOAD DOCOPY (P (\STRINGSTREAM.INIT)))
             )
       (COMS (FNS GETSTREAM \CLEAROFD \GETSTREAM)
             (DECLARE%: DONTCOPY (EXPORT (MACROS \INSTREAMARG \OUTSTREAMARG \STREAMARG)))
             (MACROS GETOFD \GETOFD))
       (LOCALVARS . T)
       (DECLARE%: DONTEVAL@LOAD DOEVAL@COMPILE DONTCOPY COMPILERVARS (ADDVARS (NLAMA)
                                                                             (NLAML)
                                                                             (LAMA WHENCLOSE])
```

;;;; streams (= OpenFileDescriptors)

```
(DEFINEQ
```

(**ADD-OPEN-STREAM**
```
  [LAMBDA (DEVICE STREAM)                                        (* hdj "28-May-86 11:22")
     (if (NOT (STREAMP STREAM))
         then (\ILLEGAL.ARG STREAM))
     (pushnew (fetch (FDEV OPENFILELST) of DEVICE)
              STREAM)
     STREAM])
```

(**GENERIC-UNREGISTER-STREAM**
```
  [LAMBDA (DEVICE STREAM)                                        (* hdj "22-Sep-86 18:30")
```

;;; Remove an open stream from the list of streams kept by DEVICE. Assumes the use of the FDEV's OPENFILELSTto store the streams. Errors if
;;; passed a stream the device doesn't know about if *ISSUE-CLOSE-WARNINGS* is non-NIL.

```
     (DECLARE (GLOBALVARS *ISSUE-CLOSE-WARNINGS*))
     (if (NOT (STREAMP STREAM))
         then (\ILLEGAL.ARG STREAM))
     (LET ((OPENFILELST (fetch (FDEV OPENFILELST) of DEVICE)))
          (if (AND *ISSUE-CLOSE-WARNINGS* (NOT (FMEMB STREAM OPENFILELST)))
              then (ERROR "Closing a stream that's not open!" STREAM))
          (replace (FDEV OPENFILELST) of DEVICE with (DREMOVE STREAM OPENFILELST))
          STREAM])
)
```

```
(RPAQ? *ISSUE-CLOSE-WARNINGS* NIL)
```

```
(DEFINEQ
```

(**CLOSEALL**
```
  [LAMBDA (ALLFLG)                                               ; Edited 28-Apr-2023 20:51 by lmm
     (for STREAM in (OPENP) when [AND (fetch USERVISIBLE of STREAM)
                                      (fetch USERCLOSEABLE of STREAM)
                                      (\IOMODEP STREAM NIL T)
```

```
                                              (OR ALLFLG (NOT (STREAMPROP STREAM 'CLOSEALL]
        collect (CLOSEF STREAM])
```

(**CLOSEF**
```
  [LAMBDA (FILE)                                                          ; Edited 11-May-2023 21:18 by lmm
                                                                          ; Edited 13-Jun-2021 11:26 by rmk:
    (PROG ((STREAM (\GETSTREAM FILE)))
          (COND
            ((OR (\OUTTERMP STREAM)
                 (NOT (fetch (STREAM USERCLOSEABLE) of STREAM)))
             (RETURN NIL)))
          [MAPC (STREAMPROP STREAM 'BEFORECLOSE)
                (FUNCTION (LAMBDA (FN)
                            (APPLY* FN STREAM]
          (\CLEAROFD)
          (COND
            ((EQ STREAM *STANDARD-INPUT*)
             (SETQ *STANDARD-INPUT* \LINEBUF.OFD)))
          (COND
            ((EQ STREAM *STANDARD-OUTPUT*)
             (SETQ *STANDARD-OUTPUT* \TERM.OFD)))
    ;; Logical close before physical close;  otherwise, we might have a logically open file with no physically open file behind it.  (Device LPT depends
    ;; on this)
          (\CLOSEFILE STREAM)
          [MAPC (STREAMPROP STREAM 'AFTERCLOSE)
                (FUNCTION (LAMBDA (FN)
                            (APPLY* FN STREAM]
          (RETURN (fetch (STREAM FULLNAME) of STREAM])
```

(**EOFCLOSEF**
```
  [LAMBDA (FILE)                                                          (* bvm%: "15-Jan-85 17:58")
    (DECLARE (LOCALVARS . T))
    (PROG ((STREAM (GETSTREAM FILE)))
          (APPLY* (OR (STREAMPROP STREAM 'EOFCLOSE)
                      DEFAULTEOFCLOSE)
                  STREAM])
```

(**INPUT**
```
  [LAMBDA (FILE)                                                          ; Edited 13-Jun-2021 11:27 by rmk:
    (PROG1 (if (EQ *STANDARD-INPUT* \LINEBUF.OFD)
                 then T
               else (if MULTIPLE.STREAMS.PER.FILE.ALLOWED
                          then *STANDARD-INPUT*
                        else (fetch (STREAM FULLNAME) of *STANDARD-INPUT*)))
           [COND
             (FILE (SETQ *STANDARD-INPUT* (COND
                                            ((EQ FILE T)              ; Check explicitly for T to avoid needless creations
                                             \LINEBUF.OFD)
                                            (T (\GETSTREAM FILE 'INPUT])])
```

(**OPENP**
```
  [LAMBDA (FILE ACCESS)                                                   (* hdj "29-Sep-86 17:41")
    (DECLARE (GLOBALVARS MULTIPLE.STREAMS.PER.FILE.ALLOWED \FILEDEVICES))
    (if (AND FILE (type? STREAM FILE))
          then (\GETSTREAM FILE ACCESS T)
        elseif FILE
          then NIL
        else (\MAP-OPEN-STREAMS (FUNCTION EVQ)
                 \FILEDEVICES NIL])
```

(**OUTPUT**
```
  [LAMBDA (FILE)                                                          ; Edited 13-Jun-2021 11:27 by rmk:
    (PROG1 (if (EQ *STANDARD-OUTPUT* \TERM.OFD)
                 then T
               else (if MULTIPLE.STREAMS.PER.FILE.ALLOWED
                          then *STANDARD-OUTPUT*
                        else (fetch (STREAM FULLNAME) of *STANDARD-OUTPUT*)))
           [COND
             (FILE (SETQ *STANDARD-OUTPUT* (COND
                                            ((EQ FILE T)              ; Check for this special so we don't create a tty window
                                                                      ; needlessly
                                             \TERM.OFD)
                                            (T (\GETSTREAM FILE 'OUTPUT])])
```

(**POSITION**
```
  [LAMBDA (FILE N)                                                        ; Edited 17-Jan-87 16:08 by bvm:
    (PROG [(STRM (COND
                   (FILE (\GETSTREAM FILE))
                   (T *STANDARD-OUTPUT*]
          (RETURN (PROG1 (fetch CHARPOSITION of STRM)
```

```
                          [COND
                            (N (replace CHARPOSITION of STRM with (COND
                                                                    ((IGREATERP N 0)
                                                                     N)
                                                                    (T
                                                                    ; compatible with PDP-10 version
                                                                      0)])])
```

(**RANDACCESSP**
```
  [LAMBDA (FILE)                                          ; Edited 13-Jun-2021 11:28 by rmk:
    (PROG ((STREAM (\GETSTREAM FILE)))
          (RETURN (AND (fetch (FDEV RANDOMACCESSP) of (fetch (STREAM DEVICE) of STREAM))
                       (NEQ STREAM \LINEBUF.OFD)
                       (fetch (STREAM FULLNAME) of STREAM])
```

(**\IOMODEP**
```
  [LAMBDA (STREAM ACCESS NOERROR)                          (* rmk%: "21-OCT-83 11:10")

    ;; Returns STREAM if it represents a File open with access mode ACCESS

    (COND
        ([COND
            ((NOT ACCESS)
             (fetch ACCESS of STREAM))
            ((EQ ACCESS (fetch ACCESS of STREAM)))
            [(EQ (fetch ACCESS of STREAM)
                 'BOTH)
             (FMEMB ACCESS '(INPUT OUTPUT]
            ((EQ (fetch ACCESS of STREAM)
                 'APPEND)
             (EQ ACCESS 'OUTPUT]
          STREAM)
        (T (\FILE.NOT.OPEN STREAM NOERROR]))
```

(**WHENCLOSE**
```
  [LAMBDA NARGS                                           ; Edited 28-Apr-2023 21:19 by lmm
                                                          (* lmm " 2-Sep-84 16:07")
    (DECLARE (LOCALVARS . T))
    (PROG [(STREAM (AND (IGREATERP NARGS 0)
                        (GETSTREAM (ARG NARGS 1]
          [for I FN from 2 to NARGS by 2 do [SETQ FN (AND (IGREATERP NARGS I)
                                                          (ARG NARGS (ADD1 I]
                                             (SELECTQ (ARG NARGS I)
                                                 (CLOSEALL [STREAMPROP STREAM 'CLOSEALL
                                                                 (SELECTQ FN
                                                                     (NO T)
                                                                     (YES NIL)
                                                                     (ERRORX (LIST 27 FN])
                                                 (BEFORE (COND
                                                             (FN (STREAMADDPROP STREAM 'BEFORECLOSE FN))))
                                                 (AFTER (COND
                                                            (FN (STREAMADDPROP STREAM 'AFTERCLOSE FN))))
                                                 (STATUS (STREAMPROP STREAM 'STATUSFN FN))
                                                 (EOF (STREAMPROP STREAM 'EOFCLOSE FN))
                                                 (ERRORX (LIST 27 (ARG NARGS I]
          (RETURN STREAM])
)

(DEFINEQ
```

(**STREAMADDPROP**
```
  [LAMBDA (STREAM PROP VAL)
    (STREAMPROP STREAM PROP (CONS VAL (STREAMPROP STREAM PROP])
)

(RPAQ? DEFAULTEOFCLOSE 'NILL)

(DECLARE%: DOEVAL@COMPILE DONTCOPY

(GLOBALVARS DEFAULTEOFCLOSE \STREAMSTRING.FDEV)
)
```

;; STREAM interface to Read and Write to random memory

```
(DECLARE%: DONTCOPY
```

;; FOLLOWING DEFINITIONS EXPORTED

```
(DECLARE%: EVAL@COMPILE

[RECORD BASEBYTESTREAM STREAM (SUBRECORD STREAM)
        (ACCESSFNS ((BIASOFFST (fetch (STREAM FW6) of DATUM)
```

```
                                        (replace (STREAM FW6) of DATUM with NEWVALUE))
                         (BBSNCHARS (fetch (STREAM FW7) of DATUM)
                                        (replace (STREAM FW7) of DATUM with NEWVALUE))
                         (WRITEXTENSIONFN (fetch (STREAM F1) of DATUM)
                                        (replace (STREAM F1) of DATUM with NEWVALUE]
)
)
```

;; END EXPORTED DEFINITIONS

```
(DEFINEQ
```

(\\\BASEBYTES.IO.INIT
```
  [LAMBDA NIL
     (DECLARE (GLOBALVARS \BASECHARDEVICE))                                    ; Edited 13-Sep-90 16:27 by jds
```

   ;; Initialize the FDEV for base-bytes type devices (e.g. string streams).

```
     (SETQ \BASEBYTESDEVICE
       (create FDEV
               DEVICENAME _ 'BASEBYTES
               RESETABLE _ T
               RANDOMACCESSP _ T
               PAGEMAPPED _ NIL
               FDBINABLE _ T
               FDBOUTABLE _ T
               FDEXTENDABLE _ NIL
               CLOSEFILE _ (FUNCTION NILL)
               DELETEFILE _ (FUNCTION NILL)
               DIRECTORYNAMEP _ (FUNCTION NILL)
               EVENTFN _ (FUNCTION NILL)
               GENERATEFILES _ (FUNCTION \GENERATENOFILES)
               GETFILEINFO _ (FUNCTION NILL)
               GETFILENAME _ (FUNCTION \BASEBYTES.NAME.FROM.STREAM)
               HOSTNAMEP _ (FUNCTION NILL)
               OPENFILE _ (FUNCTION \BASEBYTES.OPENFN)
               READPAGES _ (FUNCTION NILL)
               REOPENFILE _ [FUNCTION (LAMBDA (FILE ACCESS RECOG OTHERINFO FDEV STREAM)
                                          STREAM]
               SETFILEINFO _ (FUNCTION NILL)
               TRUNCATEFILE _ [FUNCTION (LAMBDA (STREAM I]
               WRITEPAGES _ (FUNCTION \ILLEGAL.DEVICEOP)
               BIN _ (FUNCTION \BASEBYTES.BIN)
               BOUT _ (FUNCTION \BASEBYTES.BOUT)
               PEEKBIN _ (FUNCTION \BASEBYTES.PEEKBIN)
               READP _ (FUNCTION \BASEBYTES.READP)
               BACKFILEPTR _ [FUNCTION (LAMBDA (STREAM)
```

                                        ;; Back up the file pointer

```
                                        (AND (NEQ (fetch COFFSET of STREAM)
                                                  (fetch BIASOFFST of STREAM))
                                             (\PAGEDBACKFILEPTR STREAM))
```

                                        ;; And fix charposition.

```
                                        (replace BBSNCHARS of STREAM with (IDIFFERENCE (fetch COFFSET of STREAM)
                                                                                       (fetch BIASOFFST of STREAM]
               SETFILEPTR _ (FUNCTION \BASEBYTES.SETFILEPTR)
               GETFILEPTR _ [FUNCTION (LAMBDA (STREAM)
                                          (IDIFFERENCE (fetch COFFSET of STREAM)
                                                       (fetch BIASOFFST of STREAM]
               GETEOFPTR _ [FUNCTION (LAMBDA (STREAM)
                                          (IDIFFERENCE (fetch EOFFSET of STREAM)
                                                       (fetch BIASOFFST of STREAM]
               EOFP _ [FUNCTION (LAMBDA (STREAM)
                                    (IGEQ (fetch COFFSET of STREAM)
                                          (fetch EOFFSET of STREAM]
               BLOCKIN _ [FUNCTION (LAMBDA (STREAM BASE OFFST N)
                                       (\BASEBYTES.BLOCKIO STREAM BASE OFFST N 'INPUT]
               BLOCKOUT _ [FUNCTION (LAMBDA (STREAM BASE OFFST N)
                                        (\BASEBYTES.BLOCKIO STREAM BASE OFFST N 'OUTPUT]
               RENAMEFILE _ (FUNCTION \ILLEGAL.DEVICEOP)))
     (\DEFINEDEVICE NIL \BASEBYTESDEVICE])
```

(\\\MAKEBASEBYTESTREAM
```
  [LAMBDA (BASE OFFST LEN ACCESS WRITEXTENSIONFN OSTREAM)              ; Edited 13-Jun-2021 11:33 by rmk:
```

   ;; If an error is to occur due to non-numeric arg or range restrictions, then let it happen outside the UNINTERRUPTABLY

```
     (OR BASE (EQ LEN 0)
         (SHOULDNT))
     (OR (AND (SMALLP OFFST)
              (SMALLP LEN)
              (SMALLP (add LEN OFFST)))
         (SHOULDNT "Currently can't support fixp-sized offsets"))
     (SELECTQ ACCESS
         (NIL (SETQ ACCESS 'INPUT))
         ((INPUT OUTPUT BOTH))
         (\ILLEGAL.ARG ACCESS))
```

```
        (if (type? STREAM OSTREAM)
            then (if (EQ (ffetch (STREAM DEVICE) of OSTREAM)
                          \BASEBYTESDEVICE)
                     then (replace (STREAM ACCESS) of OSTREAM with NIL)
                     else (CLOSEF OSTREAM)
                          (SETQ OSTREAM (create BASEBYTESTREAM
                                               DEVICE _ \BASEBYTESDEVICE smashing OSTREAM)))
            else (SETQ OSTREAM (create BASEBYTESTREAM
                                       DEVICE _ \BASEBYTESDEVICE)))
        (UNINTERRUPTABLY
            (freplace (STREAM USERCLOSEABLE) of OSTREAM with NIL)
            (freplace (STREAM USERVISIBLE) of OSTREAM with NIL)
            (freplace (STREAM BYTESIZE) of OSTREAM with BITSPERBYTE)
            (freplace (STREAM CPAGE) of OSTREAM with (freplace (STREAM EPAGE) of OSTREAM with 0))
            (freplace (STREAM CBUFPTR) of OSTREAM with BASE)
            (freplace (STREAM COFFSET) of OSTREAM with (freplace (BASEBYTESTREAM BIASOFFST) of OSTREAM with OFFST))
            (freplace (STREAM CBUFSIZE) of OSTREAM with (freplace (STREAM EOFFSET) of OSTREAM with LEN))
            (replace (STREAM ACCESS) of OSTREAM with ACCESS)
```

;; Insures that the BINABLE BOUTABLE and EXTENDABLE bits are setup setup, and that the correct BIN and BOUT fns are 'inherited' from
;; the FDEV as well

```
            (freplace (STREAM FULLFILENAME) of OSTREAM with NIL)
            (freplace (STREAM OUTCHARFN) of OSTREAM with (FUNCTION \MBS.OUTCHARFN))
            (freplace (STREAM LINELENGTH) of OSTREAM with 0)
            (freplace (STREAM CHARPOSITION) of OSTREAM with 0)
            (freplace (BASEBYTESTREAM WRITEXTENSIONFN) of OSTREAM with (SELECTQ ACCESS
                                                                          ((OUTPUT BOTH)
                                                                           WRITEXTENSIONFN)
                                                                          NIL))
            (freplace (BASEBYTESTREAM BBSNCHARS) of OSTREAM with 0))
        OSTREAM])
```

(**MBS.OUTCHARFN**
```
  [LAMBDA (STREAM CHAR)                                        (* JonL " 7-NOV-83 21:54")
    (BOUT (SETQ STREAM (\DTEST STREAM 'STREAM))
          CHAR)                                                ; The BBSNCHARS field *may* just be paralleling the
                                                               ; CHARPOSITION field of the stream.
    (add (ffetch BBSNCHARS of STREAM)
         1])
```

(**BASEBYTES.NAME.FROM.STREAM**
```
  [LAMBDA (STREAM)                                             ; Edited 17-Jan-87 16:08 by bvm:
```

;; STRING streams have a FULLFILENAME which is just the string itself; other random basebytes streams have this field null

```
    (OR (fetch FULLFILENAME of STREAM)
        (LIST (fetch CBUFPTR of STREAM)
              (fetch BIASOFFST of STREAM)
              (GETEOFPTR STREAM])
```

(**BASEBYTES.BOUT**
```
  [LAMBDA (STREAM BYTE)                                        ; Edited 17-Jan-87 16:08 by bvm:
    (PROG (CO)
      A    (if (IGEQ (SETQ CO (fetch COFFSET of STREAM))
                     (fetch EOFFSET of STREAM))
               then (if (SETQ CO (fetch (BASEBYTESTREAM WRITEXTENSIONFN) of STREAM))
                        then (APPLY* CO STREAM)
                             (GO A)
                        else (ERROR "Attempt to write past end of bytes block")))
           (RETURN (\PUTBASEBYTE (fetch CBUFPTR of STREAM)
                                 (PROG1 CO
                                        (freplace COFFSET of STREAM with (ADD1 CO)))
                                 BYTE])
```

(**BASEBYTES.SETFILEPTR**
```
  [LAMBDA (STREAM I)                                           ; Edited 13-Sep-90 16:30 by jds
```

;; SETFILEPTR for string streams &c.

```
    (PROG ((I' I))
          (add I' (fetch BIASOFFST of STREAM))
          (if (IGREATERP I' (fetch EOFFSET of STREAM))
              then (ERROR "Beyond end of byte range" I)
              else ;; Fix both FILEPTR and CHARPOSITION to match.

                   (replace COFFSET of STREAM with I')
                   (replace BBSNCHARS of STREAM with I'])
```

(**BASEBYTES.READP**
```
  [LAMBDA (STREAM FLG)                                         ; Edited 17-Jan-87 16:08 by bvm:
    (PROG ((CO (fetch COFFSET of STREAM))
           (%#LEFT (fetch EOFFSET of STREAM)))
          (add %#LEFT (IMINUS CO))
          (RETURN (OR (IGEQ %#LEFT 2)
```

```
                    (if (EQ %#LEFT 0)
                        then NIL
                      elseif FLG
                        else (NEQ (\GETBASEBYTE (fetch CBUFPTR of STREAM)
                                                (fetch COFFSET of STREAM))
                                  (CHARCODE CR))
```

(\BASEBYTES.BIN

```
 [LAMBDA (STREAM)                                              (* JonL " 7-NOV-83 22:49")
```

;; Normally, the microcoded version of BIN will handle this, since the BINABLE flag is set and since the COFFSET etc fields are setup appropriately

;; Remember also that the VAX version installs a different STRMBINFN for the stringstream case

```
   (PROG1 (\BASEBYTES.PEEKBIN STREAM)
          (add (fetch COFFSET of STREAM)
               1))])
```

(\BASEBYTES.PEEKBIN

```
 [LAMBDA (STREAM NOERRORFLG)                                   ; Edited 13-Jun-2021 11:34 by rmk:
   (PROG ((CO (fetch (STREAM COFFSET) of STREAM)))
         (SELECTQ (SYSTEMTYPE)
             (VAX (if (fetch (STREAM FULLNAME) of STREAM)
                      then                                     ; Aha, it's a string stream
                         (RETURN (\STRINGPEEKBIN STREAM NOERRORFLG))))
             NIL)
         (RETURN (if (IGEQ CO (fetch (STREAM EOFFSET) of STREAM))
                     then (if (NOT NOERRORFLG)
                              then (STREAMOP 'ENDOFSTREAMOP STREAM STREAM))
                   else (\GETBASEBYTE (fetch (STREAM CBUFPTR) of STREAM)
                                      CO])
```

(\BASEBYTES.TRUNCATEFN

```
 [LAMBDA (STREAM I)                                            (* JonL " 7-NOV-83 22:20")
   ([LAMBDA (I' BO EO)
       (add I' BO)
       (if (ILESSP I 0)
           then (add I' EO))
       (if (OR (ILESSP I BO)
               (IGREATERP I' EO))
           then (ERROR "Beyond end of byte range" I)
         else (replace EOFFSET of STREAM with I']
    I
    (fetch BIASOFFST of STREAM)
    (fetch EOFFSET of STREAM])
```

(\BASEBYTES.OPENFN

```
 [LAMBDA (NAME ACCESS RECOG OTHERINFO FDEV)                    ; Edited  8-May-2023 14:05 by rmk
                                                               ; Edited 17-Jan-87 16:08 by bvm:

   (if (STREAMP NAME)
       then (CL:UNLESS (\IOMODEP NAME ACCESS T)
                       (\SETACCESS NAME ACCESS))
            (\SETFILEPTR NAME 0)
            NAME
     elseif (fetch FULLFILENAME of NAME)
       then (OPENSTRINGSTREAM NAME ACCESS)
     else (\MAKEBASEBYTESTREAM (fetch CBUFPTR of NAME)
                 (fetch BIASOFFST of NAME)
                 (GETEOFPTR NAME)
                 ACCESS
                 (fetch WRITEXTENSIONFN of NAME)
                 NAME])
```

(\BASEBYTES.BLOCKIO

```
 [LAMBDA (STREAM BASE OFFST N DIRECTION)                       ; Edited 17-Jan-87 16:08 by bvm:
   (PROG (SBASE CO EO)
     A   (if (ILEQ N 0)
             then (RETURN))
         (SETQ SBASE (fetch CBUFPTR of STREAM))
         (SETQ CO (fetch COFFSET of STREAM))
         (SETQ EO (fetch EOFFSET of STREAM))
         (if (IGREATERP N (IDIFFERENCE EO (SUB1 CO)))
             then (if (EQ DIRECTION 'INPUT)
                      then (STREAMOP 'ENDOFSTREAMOP STREAM STREAM)
                    else                                       ; Do a single BOUT to see if the WRITEXTENSIONFN will fix it
                                                               ; up
                         (BOUT STREAM (\GETBASEBYTE BASE OFFST))
                         (add OFFST 1)
                         (add N -1)
                         (GO A)))
         (replace COFFSET of STREAM with (IPLUS CO N))
         (if (EQ DIRECTION 'OUTPUT)
             then (swap SBASE BASE)
                  (swap CO OFFST))
```

```
            (\MOVEBYTES SBASE CO BASE OFFST N])
)

(DECLARE%: DOEVAL@COMPILE DONTCOPY

(GLOBALVARS \BASEBYTESDEVICE)
)

(DECLARE%: DONTEVAL@LOAD
```

(**BASEBYTES.IO.INIT**)
)

```
(DEFINEQ
```

(**OPENSTRINGSTREAM**
```
  [LAMBDA (STR ACCESS)                                          ; Edited  8-Aug-2021 00:02 by rmk:
                                                                (* rmk%: "28-Mar-85 08:40")
```

;; We fatten thin strings at the start so that the byte-level functions (bin, bout, getfileptr, setfrileptr) give the same (2-bytes per character) picture of
;; the byte sequence even if we started out thin.

;; Does not register the stream on \OPENFILES, nor does it search \OPENFILES for a previously opened stream.

```
    (SELECTQ ACCESS
        ((INPUT OUTPUT BOTH))
        (NIL (SETQ ACCESS 'INPUT))
        (\ILLEGAL.ARG ACCESS))
    (CL:UNLESS (STRINGP STR)
        (\ILLEGAL.ARG STR))
    (LET (STREAM
        (IF (AND (EQ ACCESS 'INPUT)
                 (NOT (ffetch (STRINGP FATSTRINGP) of STR)))
            THEN (\FATTENSTRING STR)
          ELSE (\SMASHABLESTRING STR T))
```

;; String storage is now fat

```
        (SETQ STREAM (\MAKEBASEBYTESTREAM (OR (ffetch (STRINGP BASE) of STR)
                                              T)
                                          (UNFOLD (ffetch (STRINGP OFFST) of STR)
                                                  BYTESPERWORD)
                                          (UNFOLD (ffetch (STRINGP LENGTH) of STR)
                                                  BYTESPERWORD)
                                          ACCESS))
```

;; Differences between a basebytestream and a stringstream

```
        (\EXTERNALFORMAT STREAM :STRING)
        (freplace USERCLOSEABLE of STREAM with T)
        (freplace USERVISIBLE of STREAM with T)
        STREAM])
```

(**MAKE-STRING-FORMAT**
```
  [LAMBDA NIL                                                   ; Edited  8-Aug-2021 00:10 by rmk:
```

;; We are looking at an in-core string, we know that EOL is CR, that the characters have the internal (XCCS) encoding, and that the string is fat.

```
    (MAKE-EXTERNALFORMAT :STRING [FUNCTION (LAMBDA (STRM COUNTP)
                                              (DECLARE (USEDFREE *BYTECOUNTER*))
                                              (CL:WHEN COUNTP (SETQ *BYTECOUNTER* 2))
                                              (\WIN STRM]
              [FUNCTION (LAMBDA (STRM NOERROR)
                           (CL:WHEN (\PEEKBIN STRM NOERROR)
```

;; This guards against the EOF error

```
                              (PROG1 (LOGOR (LLSH (\BIN STRM)
                                                  8)
                                            (\PEEKBIN STRM NOERROR))
                                     (\BACKFILEPTR STRM)))]
              [FUNCTION (LAMBDA (STRM COUNTP)
                           (DECLARE (USEDFREE *BYTECOUNTER*))
                           (CL:WHEN (\BACKFILEPTR STRM)
                              (IF (\BACKFILEPTR STRM)
                                  THEN (CL:WHEN COUNTP (SETQ *BYTECOUNTER* 2))
                                       T
                                ELSEIF COUNTP
                                  THEN (SETQ *BYTECOUNTER* 1)))]
              [FUNCTION (LAMBDA (STRM CODE)
                           (\WOUT STRM CODE)
                           CODE]
              NIL
              'CR])
)
```

(**MAKE-STRING-FORMAT**)

;; STREAM interface for old-style strings. However (RMK), it appears never to be used, and even commonlisp string-streams are created using the
;; Interlisp OPENSTRINGSTREAM above. For now, keep the function, but don't execute it

(DEFINEQ

(**STRINGSTREAM.INIT**
  [LAMBDA NIL   ; Edited 9-Aug-2021 23:30 by rmk:

    ;; RMK: This is described as creating a file device for "old style" strings. But the variable that it sets is never referenced. The common lisp
    ;; functions that treat strings as streams all seem to go through OPENSTRINGSTREAM, which now has a proper external format.

    ;; Moreover, it appears that the BIN function defined here, in terms of GNC, would have had the effect of updating the string pointer of the string as
    ;; visible using ordinary string functions.

    ;; Finally, this appears to be read only. No BOUT is provided.

    ;;

    ;; In sum: this is a candidate for removal.

    (SETQ \STRINGSTREAM.FDEV (**create** FDEV
                                        DEVICENAME _ 'STRING
                                        CLOSEFILE _ (FUNCTION NILL)
                                        DELETEFILE _ (FUNCTION NILL)
                                        DIRECTORYNAMEP _ (FUNCTION NILL)
                                        EVENTFN _ (FUNCTION NILL)
                                        GENERATEFILES _ (FUNCTION \NULLFILEGENERATOR)
                                        GETFILEINFO _ (FUNCTION NILL)
                                        GETFILENAME _ (FUNCTION NILL)
                                        HOSTNAMEP _ (FUNCTION NILL)
                                        OPENFILE _ (FUNCTION NILL)
                                        READPAGES _ (FUNCTION \ILLEGAL.DEVICEOP)
                                        REOPENFILE _ [FUNCTION (LAMBDA (FILE ACCESS RECOG OTHERINFO FDEV STREAM)
                                                                  STREAM]
                                        SETFILEINFO _ (FUNCTION NILL)
                                        TRUNCATEFILE _ (FUNCTION NILL)
                                        WRITEPAGES _ (FUNCTION \ILLEGAL.DEVICEOP)
                                        BIN _ [FUNCTION (LAMBDA (STREAM)
                                                          (**replace** F2 **of** STREAM
                                                              with (COND
                                                                       ((**fetch** F1 **of** STREAM)
                                                                        (PROG1 (**fetch** F1 **of** STREAM)
                                                                               (**replace** F1 **of** STREAM **with** NIL)))
                                                                       ((GNCCODE (**fetch** FULLFILENAME **of** STREAM)))
                                                                       (T (\EOF.ACTION STREAM]
                                        PEEKBIN _ [FUNCTION (LAMBDA (STREAM NOERRORFLG)
                                                              (OR (**fetch** F1 **of** STREAM)
                                                                  (CHCON1 (**fetch** FULLFILENAME **of** STREAM))
                                                                  (AND (NOT NOERRORFLG)
                                                                       (\EOF.ACTION STREAM]
                                        READP _ [FUNCTION (LAMBDA (STREAM)
                                                            (NOT (EOFP STREAM]
                                        BACKFILEPTR _ [FUNCTION (LAMBDA (STREAM)
                                                                  (**replace** F1 **of** STREAM **with** (**fetch** F2 **of** STREAM]
                                        EOFP _ (FUNCTION (LAMBDA (STREAM)
                                                           (AND (NOT (**fetch** F1 **of** STREAM))
                                                                (EQ (NCHARS (**fetch** FULLFILENAME **of** STREAM))
                                                                    0])
)

;; (DECLARE%: DONTEVAL@LOAD DOCOPY (P (\STRINGSTREAM.INIT)))

(DEFINEQ

(**GETSTREAM**
  [LAMBDA (FILE ACCESS NOERROR)   (* rrb "31-Oct-85 09:36")
                                                                          ; USER ENTRY

    (**GETSTREAM** FILE ACCESS NOERROR])

(**CLEAROFD**
  [LAMBDA NIL   (* lmm "30-SEP-80 20:08")
                                                                         ; If GETOFD caches its args, this can clear the cache

    NIL])

(**GETSTREAM**
  [LAMBDA (X ACCESS NOERROR)   ; Edited 17-Jan-87 16:08 by bvm:

    ;; \GETSTREAM accepts a stream, NIL, T, or a window, and returns a corresponding stream. ACCESS is INPUT, OUTPUT, APPEND, BOTH or
    ;; NIL. NOERROR, if non-NIL, means to return NIL if the file is not open in the specified access mode; otherwise, an error is caused.

    (**DECLARE** (GLOBALVARS \DEFAULTLINEBUF \DEFAULTTTYDISPLAYSTREAM))
    (COND
      ((NULL X)
       (SELECTQ ACCESS
           (INPUT (COND
                    ((AND (EQ *STANDARD-INPUT* \DEFAULTLINEBUF)
                          (EQ \KEYBOARD.STREAM (**fetch** (LINEBUFFER KEYBOARDSTREAM) **of** \LINEBUF.OFD)))
                     (\CREATE.TTYDISPLAYSTREAM)))
                  STANDARD-INPUT)
           (OUTPUT (COND

```
                            ((AND \DEFAULTTTYDISPLAYSTREAM (EQ *STANDARD-OUTPUT* \DEFAULTTTYDISPLAYSTREAM))
                               (\CREATE.TTYDISPLAYSTREAM)))
                        *STANDARD-OUTPUT*)
              (\IOMODEP (COND
                          ((NOT (EQ *STANDARD-INPUT* \LINEBUF.OFD))
                           *STANDARD-INPUT*)
                          (T *STANDARD-OUTPUT*))
                        ACCESS NOERROR)))
          ((EQ X T)
           (SELECTQ ACCESS
                (INPUT (COND
                         ((EQ \LINEBUF.OFD \DEFAULTLINEBUF)
                          (\CREATE.TTYDISPLAYSTREAM)))
                     \LINEBUF.OFD)
                ((OUTPUT NIL)
                    (COND
                      ((AND \DEFAULTTTYDISPLAYSTREAM (EQ \TERM.OFD \DEFAULTTTYDISPLAYSTREAM))
                       (\CREATE.TTYDISPLAYSTREAM)))
                    \TERM.OFD)
                (\FILE.NOT.OPEN X NOERROR)))
          ((type? STREAM X)
           (\IOMODEP X ACCESS NOERROR))
          ((LITATOM X)
           (AND (NOT NOERROR)
                (ERROR "LITATOM 'streams' no longer supported" X)))
          ((AND (OR (EQ ACCESS 'OUTPUT)
                    (NULL ACCESS))
                (type? WINDOW X))
           (fetch (WINDOW DSP) of X))
          (T (\FILE.NOT.OPEN X NOERROR])

)

(DECLARE%: DONTCOPY

;; FOLLOWING DEFINITIONS EXPORTED

(DECLARE%: EVAL@COMPILE

(PUTPROPS \INSTREAMARG MACRO ((STRM NOERRORFLG)
                             (\GETSTREAM STRM 'INPUT NOERRORFLG)))

(PUTPROPS \OUTSTREAMARG MACRO ((STRM NOERRORFLG)
                              (\GETSTREAM STRM 'OUTPUT NOERRORFLG)))

(PUTPROPS \STREAMARG MACRO [OPENLAMBDA (STRM NOERRORFLG)
                             (COND
                               (NOERRORFLG (\GETSTREAM STRM NIL T))
                               (T (\DTEST STRM 'STREAM])
)
)

;; END EXPORTED DEFINITIONS

(DECLARE%: EVAL@COMPILE

(PUTPROPS GETOFD MACRO (= . GETSTREAM))

(PUTPROPS \GETOFD MACRO (= . \GETSTREAM))
)

(DECLARE%: DOEVAL@COMPILE DONTCOPY

(LOCALVARS . T)
)

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

(ADDTOVAR NLAMA )

(ADDTOVAR NLAML )

(ADDTOVAR LAMA WHENCLOSE)
)
```

FUNCTION INDEX

MACRO INDEX

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