

File created: 31-Jul-2023 13:39:50 {WMEDLEY}<library>BIGBITMAPS.;13

edit by: rmk

changes to: (VARS BIGBITMAPSCOMS)  
(FNS BIGBITMAPEQUAL)

previous date: 9-Jul-2022 09:41:26 {WMEDLEY}<library>BIGBITMAPS.;12

Read Table: XCL

Package: INTERLISP

Format: XCCS

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```
(RPAQQ BIGBITMAPSCOMS
  ((DECLARE\ : EVAL@COMPILE DONTCOPY (RECORDS BIGBM)
    (CONSTANTS (|\\MaxBitMapHeight| 65535)
      (|\\MaxBitMapWidth| 65535)
      (|\\MaxBitMapWords| 131066))
    (MACROS |GetNewFragment|)
    (MACROS |\\SFInvert|))
    (INITRECORDS BIGBM)
    (FNS BIGBITMAPP BITBLT.BIGBM BITMAPCREATE.BIGBM BITMAPCREATE BITMAPCOPY BIGBITMAPEQUAL BLTSHADE.BIGBM
      BITBLT \\ORG.BITBLT \\BLTSHADE.DISPLAY \\RESHOWBORDER1)
    (FNS \\DRAWCIRCLE.BIGBM \\FILLCIRCLE.BIGBM \\DRAWELLIPSE.BIGBM \\DRAWCURVE.BIGBM \\DRAWLINE.BIGBM.DASH
      \\DRAWLINE.BIGBM.NODASH)
    (FNS \\GENERIC.DSPCREATE.DESTINATION.BITMAP?.BIGBM)
    (DECLARE\ : DONTEVAL@LOAD DOCOPY (P (MOVD '\\GENERIC.DSPCREATE.DESTINATION.BITMAP?.BIGBM
      '\\GENERIC.DSPCREATE.DESTINATION.BITMAP?)))
    (FNS DSPDESTINATION |\\SFFixY| |\\SFFixDestination| |\\SFFixClippingRegion|)
    (FNS \\SW2BM BITMAPHEIGHT BITMAPWIDTH |\\SFFixFont| BITSPERPIXEL)
    (FNS COLORIZEBITMAP \\BWTOCOLORBLT UNCOLORIZEBITMAP)
    (DECLARE\ : DONTEVAL@LOAD DOCOPY (P (MOVD '\\ORG.BITBLT 'ORG.BITBLT)
      (MOVD? 'BLTSHADE 'ORG.BLTSHADE)
      (MOVD 'BLTSHADE.BIGBM 'BLTSHADE)
      (MOVD 'BITBLT 'BKBITBLT))))))

(DECLARE\ : EVAL@COMPILE DONTCOPY

(DECLARE\ : EVAL@COMPILE

(DATATYPE BIGBM (BIGBMWIDTH BIGBMHEIGHT BIGBMLIST))
)

(/DECLAREDATATYPE 'BIGBM ' (POINTER POINTER POINTER)
  ;; ---field descriptor list elided by lister---
  ' 6)

(DECLARE\ : EVAL@COMPILE

(RPAQQ |\\MaxBitMapHeight| 65535)

(RPAQQ |\\MaxBitMapWidth| 65535)

(RPAQQ |\\MaxBitMapWords| 131066)

(CONSTANTS (|\\MaxBitMapHeight| 65535)
  (|\\MaxBitMapWidth| 65535)
  (|\\MaxBitMapWords| 131066))
)

(DECLARE\ : EVAL@COMPILE

(PUTPROPS |GetNewFragment| MACRO ((LIST)
  (PROG1 (CAR LIST)
    (SETQ LIST (CDR LIST)))))
)

(DECLARE\ : EVAL@COMPILE

(PUTPROPS |\\SFInvert| MACRO ((|BitMap| \\y)

  (* |corrects| |for| |the| |fact| |that| |alto| |bitmaps| |are| |stored| |with| 0\\0 |as| |upper| |left| |while| |lisp| |bitmaps| |have| 0\\0 |as|
  |lower| |left|. |The| |correction| |is| |actually| |off| |by| |one| |(greater)| |because| |a |majority| |of| |the| |places| |that| |it| |is|
  |called| |actually| |need| |one| |more| |than| |corrected| Y |value|.))

  (IDIFFERENCE (|fetch| (BITMAP BITMAPHEIGHT) |of| |BitMap|)
    \\y)))
)

(/DECLAREDATATYPE 'BIGBM ' (POINTER POINTER POINTER)
  ;; ---field descriptor list elided by lister---
```



```

        (SETQ DESTFRAGBOTTOM (- DESTFRAGTOP (BITMAPHEIGHT DESTFRAG))))
        (GO LOOP)
        ;; I hate goto, but this is temporary one

    ))))
(T (PROG NIL
    LOOP2
    (COND
        ((<= SRCEFRAGBOTTOM SRCEBOTTOM)
         ;; bottom edge
         (SETQ SRCE-H (- SRCETOP SRCEBOTTOM))
         ;; BIGBM to BITMAP case

         )
        (T (SETQ SRCE-H (- SRCETOP SRCEFRAGBOTTOM))))
    (SETQ H (MIN HEIGHT SRCE-H))
    (SETQ NEXT-S-TOP (- SRCETOP H))
    (SETQ NEXT-D-TOP (- DESTTOP H))
    (SETQ SBOTTOM (- NEXT-S-TOP SRCEFRAGBOTTOM))
    (ORG.BITBLT SRCEFRAG SRCELEFT SBOTTOM DEST DESTLEFT NEXT-D-TOP WIDTH H SRCETYPE
        OPERATION TEXTURE CLIPPINGREGION)
    (COND
        ((> (SETQ HEIGHT (- HEIGHT H))
            0)
         (SETQ SRCETOP NEXT-S-TOP)
         (SETQ DESTTOP NEXT-D-TOP)
         (COND
             ((<= NEXT-S-TOP SRCEFRAGBOTTOM)
              (SETQ SRCEFRAG (|GetNewFragment| SRCEBMLIST))
              ;; Get next SRCE fragment
              (SETQ SRCEFRAGTOP SRCEFRAGBOTTOM)
              (SETQ SRCEFRAGBOTTOM (- SRCEFRAGTOP (BITMAPHEIGHT SRCEFRAG))))
             (GO LOOP2))
         ;; I hate goto, but this is temporary one

        ))))
    ))))
(OR (|type?| BIGBM DEST))
(PROG NIL
    (SETQ DESTBMLIST (|fetch| (BIGBM BIGBMLIST) |of| DEST))
    (SETQ DESTBIGMHEIGHT (|fetch| (BIGBM BIGBMHEIGHT) |of| DEST))
    (SETQ DESTFRAG (|GetNewFragment| DESTBMLIST))
    (SETQ DESTFRAGTOP DESTBIGMHEIGHT)
    (SETQ DESTFRAGBOTTOM (- DESTFRAGTOP (BITMAPHEIGHT DESTFRAG)))
    (|until| (< DESTFRAGBOTTOM DESTTOP) |do|
        ;; Serch the first fragment of DEST bitmaps
        (SETQ DESTFRAG (|GetNewFragment| DESTBMLIST))
        (SETQ DESTFRAGTOP DESTFRAGBOTTOM)
        (SETQ DESTFRAGBOTTOM (- DESTFRAGTOP (BITMAPHEIGHT
            DESTFRAG))))
    (COND
        ((<= DESTFRAGBOTTOM DESTBOTTOM)
         ;; bottom edge
         (SETQ DEST-H (- DESTTOP DESTBOTTOM))
         (T (SETQ DEST-H (- DESTTOP DESTFRAGBOTTOM))))
    LOOP3
    (COND
        ((<= DESTFRAGBOTTOM DESTBOTTOM)
         (SETQ DEST-H (- DESTTOP DESTBOTTOM))
         (T (SETQ DEST-H (- DESTTOP DESTFRAGBOTTOM))))
        (SETQ H (MIN DEST-H HEIGHT))
        (SETQ NEXT-S-TOP (- SRCETOP H))
        (SETQ NEXT-D-TOP (- DESTTOP H))
        (SETQ DBOTTOM (- NEXT-D-TOP DESTFRAGBOTTOM))
        (ORG.BITBLT SRCE SRCELEFT NEXT-S-TOP DESTFRAG DESTLEFT DBOTTOM WIDTH H SRCETYPE OPERATION
            TEXTURE CLIPPINGREGION)
        (COND
            ((> (SETQ HEIGHT (- HEIGHT H))
                0)
             (SETQ DESTTOP NEXT-D-TOP)
             (SETQ SRCETOP NEXT-S-TOP)
             (COND
                 ((<= NEXT-D-TOP DESTFRAGBOTTOM)
                  (SETQ DESTFRAG (|GetNewFragment| DESTBMLIST))
                  (SETQ DESTFRAGTOP DESTFRAGBOTTOM)
                  (SETQ DESTFRAGBOTTOM (- DESTFRAGTOP (BITMAPHEIGHT DESTFRAG))))
                 (GO LOOP3))
             ;; I hate goto, but this is temporary one

            ))))
    ))))
(T ;; Normal case, use BITBLT
    (ORG.BITBLT SRCE SRCELEFT SRCEBOTTOM DEST DESTLEFT DESTBOTTOM WIDTH HEIGHT SRCETYPE OPERATION

```

TEXTURE CLIPPINGREGION)))))

**(BITMAPCREATE.BIGBM**

```

(LAMBDA (WIDTH HEIGHT BITSPPERPIXEL)
  (LET (H HLEFT BM BIGBM)
    (SETQ H (FLOOR (IQUOTIENT |\\MaxBitMapWords| WIDTH)
                  BITSPPERWORD))
    (SETQ HLEFT HEIGHT)
    (SETQ BIGBM (|create| BIGBM))
    (|freplace| (BIGBM BIGBMWIDTH) OF BIGBM WITH WIDTH)
    (|freplace| (BIGBM BIGBMHEIGHT) OF BIGBM WITH HEIGHT)
    (|freplace| (BIGBM BIGBMLIST) OF BIGBM WITH (|while| (IGREATERP HLEFT 0)
                                                         |collect| (SETQ BM (BITMAPCREATE WIDTH (MIN H HLEFT)
                                                         BITSPPERPIXEL))
                                                         (SETQ HLEFT (- HLEFT H))
                                                         BM)))
    BIGBM)))

```

; Edited 7-Sep-89 18:14 by takeshi  
; slice should be a multiple of 16 so that textures tessellate nicely.

**(BITMAPCREATE**

```

(LAMBDA (WIDTH HEIGHT BITSPPERPIXEL)
  (PROG (RW)
    (OR (AND (IGEQ WIDTH 0)
              (ILEQ WIDTH |\\MaxBitMapWidth|))
        (\\ILLEGAL.ARG WIDTH))
    (OR (AND (IGEQ HEIGHT 0)
              (ILEQ HEIGHT |\\MaxBitMapHeight|))
        (\\ILLEGAL.ARG HEIGHT))
    ;; WIDTH & HEIGHT are now known to be OK.
    (SETQ BITSPPERPIXEL (\\INSUREBITSPPERPIXEL BITSPPERPIXEL))
    (SETQ RW (FOLDHI (ITIMES WIDTH BITSPPERPIXEL)
                    BITSPPERWORD))
    (RETURN (COND
              ((NOT (IGREATERP (ITIMES RW HEIGHT)
                               |\\MaxBitMapWords|))
               (|create| BITMAP
                        BITMAPRASTERWIDTH _ RW
                        BITMAPWIDTH _ WIDTH
                        BITMAPHEIGHT _ HEIGHT
                        BITMAPBITSPPERPIXEL _ BITSPPERPIXEL
                        BITMAPBASE _ (\\ALLOCBLOCK (FOLDHI (ITIMES RW HEIGHT)
                                                            WORDSPERCELL)
                                                    NIL
                                                    (AND (NULL WINDFLG)
                                                          0))))
              (T (BITMAPCREATE.BIGBM WIDTH HEIGHT BITSPPERPIXEL))))))

```

; Edited 1-Nov-91 15:47 by jds  
; creates a bitmap & bigbm data structure.

**(BITMAPCOPY**

```

(LAMBDA (BITMAP)
  ;; makes a copy of an existing BitMap
  (PROG (NEWBITMAP)
    (BITBLT BITMAP 0 0 (SETQ NEWBITMAP (BITMAPCREATE (BITMAPWIDTH BITMAP)
                                                       (BITMAPHEIGHT BITMAP)
                                                       (BITSPPERPIXEL BITMAP)))
            0 0 NIL NIL 'INPUT 'REPLACE 0)
    (RETURN NEWBITMAP)))

```

; Edited 1-Nov-91 15:49 by jds

**(BIGBITMAPEQUAL**

```

(LAMBDA (BM1 BM2)
  ;; Fields may not be SMALLP
  (AND (|type?| BIGBM |of| BM1)
        (|type?| BIGBM |of| BM2)
        (IEQP (|ffetch| (BIGBM BIGBMWIDTH) |of| BM1)
               (|ffetch| (BIGBM BIGBMWIDTH) |of| BM2))
        (IEQP (|ffetch| (BIGBM BIGBMHEIGHT) |of| BM1)
               (|ffetch| (BIGBM BIGBMHEIGHT) |of| BM2))
        (|for| B1 |in| (|ffetch| (BIGBM BIGBMLIST) |of| BM1) |as| B2 |in| (|ffetch| (BIGBM BIGBMLIST) |of| BM2)
          |always| (EQUALBITMAP B1 B2))))

```

; Edited 31-Jul-2023 13:08 by rmk

**(BLTSHADE.BIGBM**

```

(LAMBDA (TEXTURE DESTINATION DESTLEFT DESTBOTTOM WIDTH HEIGHT OPERATION CLIPPINGREGION)
  (LET (H SLITHEIGHT)
    ;; Clippingregion is handled incorrectly (at least in the Y direction).
    (COND
      ((NOT (|type?| BIGBM DESTINATION))
       (ORG.BLTSHADE TEXTURE DESTINATION DESTLEFT DESTBOTTOM WIDTH HEIGHT OPERATION CLIPPINGREGION))
      (T (PROG (DESTTOP DESTBMLIST DESTBIGMHEIGHT DESTFRAG DESTFRAGTOP DESTFRAGBOTTOM DEST-H NEXT-D-TOP

```

; Edited 17-Oct-89 19:01 by takeshi

```

        DBOTTOM)
    (SETQ DESTTOP (IPLUS DESTBOTTOM HEIGHT))
    (SETQ DESTBMLIST (|fetch| (BIGBM BIGBMLIST) |of| DESTINATION))
    (SETQ DESTBIGMHEIGHT (|fetch| (BIGBM BIGMHEIGHT) |of| DESTINATION))
    (SETQ DESTFRAG (|GetNewFragment| DESTBMLIST))
    (SETQ DESTFRAGTOP DESTBIGMHEIGHT)
    (SETQ DESTFRAGBOTTOM (- DESTFRAGTOP (BITMAPHEIGHT DESTFRAG)))
LOOP
    (|until| (<= DESTFRAGBOTTOM DESTTOP) |do| ;; Serch the first fragment of DEST bitmaps
        (SETQ DESTFRAG (|GetNewFragment| DESTBMLIST))
        (SETQ DESTFRAGTOP DESTFRAGBOTTOM)
        (SETQ DESTFRAGBOTTOM (- DESTFRAGTOP (BITMAPHEIGHT
            DESTFRAG))))
    (COND
        ((<= DESTFRAGBOTTOM DESTBOTTOM)
            (SETQ DEST-H (- DESTTOP DESTBOTTOM)))
        (T (SETQ DEST-H (- DESTTOP DESTFRAGBOTTOM))))
    (SETQ NEXT-D-TOP (- DESTTOP DEST-H))
    (SETQ DBOTTOM (- NEXT-D-TOP DESTFRAGBOTTOM))
    (ORG.BLTSHADE TEXTURE DESTFRAG DESTLEFT DBOTTOM WIDTH DEST-H OPERATION CLIPPINGREGION)
    (COND
        ((> (SETQ HEIGHT (- HEIGHT DEST-H))
            0)
            (SETQ DESTTOP NEXT-D-TOP)
            (COND
                ((<= NEXT-D-TOP DESTFRAGBOTTOM)
                    (SETQ DESTFRAG (|GetNewFragment| DESTBMLIST))
                    (SETQ DESTFRAGTOP DESTFRAGBOTTOM)
                    (SETQ DESTFRAGBOTTOM (- DESTFRAGTOP (BITMAPHEIGHT DESTFRAG)))))
                (GO LOOP)
            ))
        ;; I hate goto, but this is temporary one
    )))))))

```

**(BITBLT**

```

(LAMBDA (SOURCE SOURCELEFT SOURCEBOTTOM DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT SOURCETYPE
    OPERATION TEXTURE CLIPPINGREGION)
    (DECLARE (LOCALVARS . T))
    ;; IRM defined defaults
    (OR DESTINATIONLEFT (SETQ DESTINATIONLEFT 0))
    (OR DESTINATIONBOTTOM (SETQ DESTINATIONBOTTOM 0))
    (COND
        ((EQ SOURCETYPE 'TEXTURE)
            (COND
                ((|type?| BITMAP DESTINATION)
                    (\\BLTSHADE.BITMAP TEXTURE DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT OPERATION
                        CLIPPINGREGION))
                ((|type?| BIGBM DESTINATION)
                    (BLTSHADE.BIGBM TEXTURE DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT OPERATION
                        CLIPPINGREGION))
                (T (PROG ((STREAM (\\OUTSTREAMARG DESTINATION)))
                    (RETURN (IMAGEOP 'IMBLTSHADE STREAM TEXTURE STREAM DESTINATIONLEFT DESTINATIONBOTTOM WIDTH
                        HEIGHT OPERATION CLIPPINGREGION))))))
        (T (COND
            ((OR (|type?| BIGBM SOURCE)
                (|type?| BIGBM DESTINATION))
                (BITBLT.BIGBM SOURCE SOURCELEFT SOURCEBOTTOM DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH
                    HEIGHT SOURCETYPE OPERATION TEXTURE CLIPPINGREGION))
            (T (ORG.BITBLT SOURCE SOURCELEFT SOURCEBOTTOM DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH
                HEIGHT SOURCETYPE OPERATION TEXTURE CLIPPINGREGION))))))

```

**(\\ORG.BITBLT**

```

(LAMBDA (SOURCE SOURCELEFT SOURCEBOTTOM DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT SOURCETYPE
    OPERATION TEXTURE CLIPPINGREGION)
    (DECLARE (LOCALVARS . T))
    ;; IRM defined defaults
    (OR DESTINATIONLEFT (SETQ DESTINATIONLEFT 0))
    (OR DESTINATIONBOTTOM (SETQ DESTINATIONBOTTOM 0))
    (COND
        ((EQ SOURCETYPE 'TEXTURE)
            (COND
                ((|type?| BITMAP DESTINATION)
                    (\\BLTSHADE.BITMAP TEXTURE DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT OPERATION
                        CLIPPINGREGION))
                ((|type?| BIGBM DESTINATION)
                    (BLTSHADE.BIGBM TEXTURE DESTINATION DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT OPERATION
                        CLIPPINGREGION))
                (T (PROG ((STREAM (\\OUTSTREAMARG DESTINATION)))
                    (RETURN (IMAGEOP 'IMBLTSHADE STREAM TEXTURE STREAM DESTINATIONLEFT DESTINATIONBOTTOM WIDTH
                        HEIGHT OPERATION CLIPPINGREGION))))))
        (T (PROG (SOURCEDD SOURCEBM CLIPPEDSOURCELEFT CLIPPEDSOURCEBOTTOM)
            (COND

```

; Edited 29-Jun-90 10:43 by matsuda

; Edited 24-Jul-90 16:34 by matsuda

```

((|type?| BITMAP SOURCE)
 (OR SOURCELEFT (SETQ SOURCELEFT 0))
 (OR SOURCEBOTTOM (SETQ SOURCEBOTTOM 0))
 (SETQ SOURCEBM SOURCE)
 (SETQ CLIPPEDSOURCELEFT SOURCELEFT)
 (SETQ CLIPPEDSOURCEBOTTOM SOURCEBOTTOM) ; limit the WIDTH and HEIGHT to the source size.
 (SETQ WIDTH (COND
   (WIDTH (IMIN WIDTH (IDIFFERENCE (|fetch| (BITMAP BITMAPWIDTH) |of| SOURCE)
   SOURCELEFT)))
   (T (|fetch| (BITMAP BITMAPWIDTH) |of| SOURCE))))
 (SETQ HEIGHT (COND
   (HEIGHT (IMIN HEIGHT (IDIFFERENCE (|fetch| (BITMAP BITMAPHEIGHT) |of| SOURCE)
   SOURCEBOTTOM)))
   (T (|fetch| (BITMAP BITMAPHEIGHT) |of| SOURCE))))
 (SETQ SOURCEDD (\\GETDISPLAYDATA SOURCE))
 (OR SOURCELEFT (SETQ SOURCELEFT (|fetch| (REGION LEFT) |of| (|ffetch| (\\DISPLAYDATA
   |DDClippingRegion|)
   |of| SOURCEDD))))
 (OR SOURCEBOTTOM (SETQ SOURCEBOTTOM (|fetch| (REGION BOTTOM) |of| (|ffetch| (\\DISPLAYDATA
   |DDClippingRegion|)
   |of| SOURCEDD))))
 ; do transformations coming out of source
 (SETQ SOURCEBM (|fetch| (\\DISPLAYDATA |DDDestination|) |of| SOURCEDD))
 (SETQ CLIPPEDSOURCELEFT (IMAX (SETQ SOURCELEFT (\\DSPTRANSFORMX SOURCELEFT SOURCEDD))
   (|fetch| (\\DISPLAYDATA |DDClippingLeft|) |of| SOURCEDD)))
 (SETQ CLIPPEDSOURCEBOTTOM (IMAX (SETQ SOURCEBOTTOM (\\DSPTRANSFORMY SOURCEBOTTOM SOURCEDD))
   (|fetch| (\\DISPLAYDATA |DDClippingBottom|) |of| SOURCEDD)))
 ; limit the WIDTH and HEIGHT by the source dimensions.
 (SETQ WIDTH (COND
   (WIDTH (IMIN WIDTH (IDIFFERENCE (|fetch| (\\DISPLAYDATA |DDClippingRight|)
   |of| SOURCEDD)
   CLIPPEDSOURCELEFT)))
   (T (IDIFFERENCE (|fetch| (\\DISPLAYDATA |DDClippingRight|) |of| SOURCEDD)
   CLIPPEDSOURCELEFT))))
 (SETQ HEIGHT (COND
   (HEIGHT (IMIN HEIGHT (IDIFFERENCE (|fetch| (\\DISPLAYDATA |DDClippingTop|)
   |of| SOURCEDD)
   CLIPPEDSOURCEBOTTOM)))
   (T (IDIFFERENCE (|fetch| (\\DISPLAYDATA |DDClippingTop|) |of| SOURCEDD)
   CLIPPEDSOURCEBOTTOM))))
 ; if texture is not given, use the display stream's.
 (OR TEXTURE (SETQ TEXTURE (|ffetch| (\\DISPLAYDATA |DDTexture|) |of| SOURCEDD))))
(COND
  ((OR (IGEQ 0 WIDTH)
    (IGEQ 0 HEIGHT)) ; if either width or height is 0, don't do anything.
    (RETURN)))
  (RETURN (COND
    ((|type?| BITMAP DESTINATION)
      (COND
        ((WINDOWP SOURCE)
          ;; bring source window to the top. Note: this doesn't work if the user passes in a display stream onto the
          ;; screen instead of a window.
          (.WHILE.TOP.DS. (\\OUTSTREAMARG SOURCE)
            (\\BITBLT.BITMAP SOURCEBM SOURCELEFT SOURCEBOTTOM DESTINATION
              DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT SOURCETYPE
              OPERATION TEXTURE CLIPPINGREGION CLIPPEDSOURCELEFT
              CLIPPEDSOURCEBOTTOM)))
          (T (PROG ((DESTNBITS (BITSPPERPIXEL DESTINATION))
            (SRCNBITS (BITSPPERPIXEL SOURCEBM)))
            (COND
              ((NOT (EQ SRCNBITS DESTNBITS))
                (COND
                  ((EQ DESTNBITS 1)
                    (SETQ SOURCEBM (UNCOLORIZEBITMAP SOURCEBM (COLORMAP SRCNBITS)))
                    )))))
            (\\BITBLT.BITMAP SOURCEBM SOURCELEFT SOURCEBOTTOM DESTINATION DESTINATIONLEFT
              DESTINATIONBOTTOM WIDTH HEIGHT SOURCETYPE OPERATION TEXTURE
              CLIPPINGREGION CLIPPEDSOURCELEFT CLIPPEDSOURCEBOTTOM))))
          (T (PROG (STREAM)
            (SETQ STREAM (\\OUTSTREAMARG DESTINATION))
            (COND
              ((AND (NEQ SOURCE DESTINATION)
                (WINDOWP SOURCE))
                ;; both source and destination are windows, see if they overlap and use an intermediate bitmap.
                ;; Note: this doesn't work if the user passes in a display stream onto the screen instead of a window.
                (COND
                  ((WINDOWP DESTINATION)
                    (COND
                      ((WOVERLAPP SOURCE DESTINATION)
                        (RETURN (PROG (SCRATCHBM)
                          (.WHILE.TOP.DS. (\\OUTSTREAMARG SOURCE)
                            (BITBLT SOURCEBM SOURCELEFT SOURCEBOTTOM
                              (SETQ SCRATCHBM (BITMAPCREATE
                                WIDTH HEIGHT

```

```

                                (BITSPERPIXEL
                                SOURCEBM)))
                                0 0 WIDTH HEIGHT 'INPUT 'REPLACE))
                                (RETURN (BITBLT SCRATCHBM 0 0 STREAM
                                DESTINATIONLEFT DESTINATIONBOTTOM
                                WIDTH HEIGHT SOURCETYPE OPERATION
                                TEXTURE CLIPPINGREGION)))))))))
                                ; bring the source to the top. this should be done uninterruptably
                                ; but is better than nothing.
                                (TOTOPW SOURCE)))
                                (IMAGEOP 'IMBITBLT STREAM SOURCEBM SOURCELEFT SOURCEBOTTOM STREAM
                                DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT SOURCETYPE OPERATION
                                TEXTURE CLIPPINGREGION CLIPPEDSOURCELEFT CLIPPEDSOURCEBOTTOM)))))))))
)

```

**(\\BLTSHADE.DISPLAY**

```

(LAMBDA (TEXTURE STREAM DESTINATIONLEFT DESTINATIONBOTTOM WIDTH HEIGHT OPERATION CLIPPINGREGION)

```

```

                                ; Edited 21-Dec-90 10:41 by matsuda
                                ; BLTSHADE to a display stream

```

```

(DECLARE (LOCALVARS . T))

```

```

(PROG (|left| |top| |bottom| |right| DESTINATIONBITMAP DESTDD DESTINATIONNNBITS)

```

```

    (SETQ DESTDD (|fetch| (STREAM IMAGEDATA) |of| STREAM))

```

```

    (SETQ DESTINATIONBITMAP (|fetch| (\\DISPLAYDATA |DDDestination|) |of| DESTDD))

```

```

;; bring it to top so that its TOTOPFNs will get called before the destination information is cached in case one of them moves, reshapes, etc. the
;; window

```

```

;; We'd rather handle the slow case when we are interruptable, so we do it here as a heuristic. But we might get interrupted before we go
;; interruptable, so we do it there too.

```

```

(\\INSURETOPWDS STREAM)

```

```

(SETQ DESTINATIONLEFT (\\DSPTRANSFORMX DESTINATIONLEFT DESTDD))

```

```

(SETQ DESTINATIONBOTTOM (\\DSPTRANSFORMY DESTINATIONBOTTOM DESTDD))

```

```

(PROGN ; compute limits based on clipping regions.

```

```

    (SETQ |left| (|fetch| (\\DISPLAYDATA |DDClippingLeft|) |of| DESTDD))

```

```

    (SETQ |bottom| (|fetch| (\\DISPLAYDATA |DDClippingBottom|) |of| DESTDD))

```

```

    (SETQ |right| (|fetch| (\\DISPLAYDATA |DDClippingRight|) |of| DESTDD))

```

```

    (SETQ |top| (|fetch| (\\DISPLAYDATA |DDClippingTop|) |of| DESTDD))

```

```

(COND

```

```

    (CLIPPINGREGION

```

```

                                ; hard case, two destination clipping regions: do calculations to
                                ; merge them.

```

```

        (PROG (CRLEFT CRBOTTOM)

```

```

            (SETQ |left| (IMAX |left| (SETQ CRLEFT (\\DSPTRANSFORMX (|fetch| (REGION LEFT)
                                |of| CLIPPINGREGION)

```

```

                                DESTDD))))

```

```

            (SETQ |bottom| (IMAX |bottom| (SETQ CRBOTTOM (\\DSPTRANSFORMY
                                (|fetch| (REGION BOTTOM)
                                |of| CLIPPINGREGION)
                                DESTDD))))

```

```

            (SETQ |right| (IMIN |right| (IPLUS CRLEFT (|fetch| (REGION WIDTH) |of|
                                CLIPPINGREGION)
                                )))

```

```

            (SETQ |top| (IMIN |top| (IPLUS CRBOTTOM (|fetch| (REGION HEIGHT) |of|
                                CLIPPINGREGION)
                                ))))

```

```

    (SETQ DESTINATIONNNBITS (BITSPERPIXEL DESTINATIONBITMAP))

```

```

;; left, right top and bottom are the limits in destination taking into account Clipping Regions. Clip to region in the arguments of this call.

```

```

(PROGN (SETQ |left| (IMAX DESTINATIONLEFT |left|))

```

```

    (SETQ |bottom| (IMAX DESTINATIONBOTTOM |bottom|))

```

```

(COND

```

```

    (WIDTH

```

```

        (SETQ |right| (IMIN (IPLUS DESTINATIONLEFT WIDTH)
                                |right|))))

```

```

(COND

```

```

    (HEIGHT

```

```

        (SETQ |top| (IMIN (IPLUS DESTINATIONBOTTOM HEIGHT)
                                |top|))))

```

```

(COND

```

```

    ((OR (ILEQ |right| |left|)
        (ILEQ |top| |bottom|))

```

```

                                ; there is nothing to move.

```

```

    (RETURN)))

```

```

(SETQ TEXTURE (SELECTQ (TYPENAME TEXTURE)

```

```

    (LITATOM (COND

```

```

        ((NULL TEXTURE) ; NIL case. default texture to background texture.

```

```

        (|ffetch| (\\DISPLAYDATA |DDTexture|) |of| DESTDD))

```

```

        ((NOT (EQ DESTINATIONNNBITS 1))

```

```

                                ; should be a color name

```

```

        (OR (COLORNUMBERP TEXTURE DESTINATIONNNBITS T)

```

```

            (\\ILLEGAL.ARG TEXTURE)))

```

```

        (T (\\ILLEGAL.ARG TEXTURE))))

```

```

    ((SMALLP FIXP)

```

```

        (LOGAND TEXTURE (MAXIMUMSHADE DESTINATIONNNBITS)))

```

```

    (BITMAP TEXTURE)

```

```

    (LISTP

```

```

                                ; should be a list of levels rgb or hls.

```

```

        (OR (AND (NOT (EQ DESTINATIONNNBITS 1))

```

```

            (COLORNUMBERP TEXTURE DESTINATIONNNBITS))

```

```

            (\\ILLEGAL.ARG TEXTURE)))

```

```

                (\\ILLEGAL.ARG TEXTURE)))
(COND
  (NOT (EQ DESTINATIONNBITS 1))
  (COND
    ((NOT (|type?| BIGBM DESTINATIONBITMAP))
      (SETQ |left| (ITIMES DESTINATIONNBITS |left|))
      (SETQ |right| (ITIMES DESTINATIONNBITS |right|)))
    (SETQ TEXTURE (COLORTEXTUREFROMCOLOR# TEXTURE DESTINATIONNBITS)))
  (.WHILE.TOP.DS. STREAM (COND
    ((NOT (|type?| BIGBM DESTINATIONBITMAP))
      (PROG (HEIGHT)
        (SETQ HEIGHT (IDIFFERENCE |top| |bottom|))
        (|replace| (PILOTBBT PBTWIDTH) |of| \\SYSPILOTBBT |with| (IDIFFERENCE
          |right| |left|))
        (|replace| (PILOTBBT PBTHEIGHT) |of| \\SYSPILOTBBT |with| HEIGHT)
        (\\BITBLTSUB \\SYSPILOTBBT NIL |left| NIL DESTINATIONBITMAP |left|
          (|\\SFInvert| DESTINATIONBITMAP |top|)
          HEIGHT
          'TEXTURE
          (OR OPERATION (|fetch| (\\DISPLAYDATA DDOPERATION) |of| DESTDD))
          TEXTURE
          (ITIMES DESTINATIONNBITS (|fetch| (\\DISPLAYDATA DDXOFFSET)
            |of| DESTDD))
          (|fetch| (\\DISPLAYDATA DDYOFFSET) |of| DESTDD))))
      (T (PROG (HEIGHT)
        (SETQ HEIGHT (IDIFFERENCE |top| |bottom|))
        (BLTSHADE.BIGBM TEXTURE DESTINATIONBITMAP |left| |bottom|
          (IDIFFERENCE |right| |left|)
          (IDIFFERENCE |top| |bottom|)
          (OR OPERATION (|fetch| (\\DISPLAYDATA DDOPERATION)
            |of| DESTDD))
          CLIPPINGREGION))))))
  (RETURN T))))

```

**(\\RESHOWBORDER1**

(LAMBDA (NEWBORDER OLDBORDER WINDOW)

; Edited 26-Jul-90 12:52 by matsuda

;; redisplay the border of a window. Is called by RESHOWBORDER and RESHOWTITLE. It doesn't check for equality between the new and old borders because it is also used when a title is added or deleted.

```

(PROG ((REGION (|fetch| (WINDOW REG) |of| WINDOW))
  (OLDSAVE (|fetch| (WINDOW SAVE) |of| WINDOW))
  NUSAV DELTA NUWIDTH NUHEIGHT)
  (SETQ DELTA (IDIFFERENCE NEWBORDER OLDBORDER))
  (SETQ NUWIDTH (IPLUS (|fetch| (REGION WIDTH) |of| REGION)
    (ITIMES DELTA 2)))
  (SETQ NUHEIGHT (IDIFFERENCE (IPLUS (|fetch| (REGION HEIGHT) |of| (DSPCLIPPINGREGION NIL
    (|fetch| (WINDOW DSP) |of| WINDOW)))
    (ITIMES NEWBORDER 2))
    (COND
      ((|fetch| (WINDOW WTITLE) |of| WINDOW)
        (DSPLINEFEED NIL (|fetch| (SCREEN SCTITLED) |of| (|fetch| (WINDOW SCREEN)
          |of| WINDOW))))
      (T 0))))
  (SETQ NUSAV (BITMAPCREATE NUWIDTH NUHEIGHT (BITSERPPIXEL OLDSAVE)))
  (.WHILE.TOP.DS. WINDOW ; Save window image
    (\\SW2BM (|fetch| (SCREEN SCDESTINATION) |of| (|fetch| (WINDOW SCREEN) |of| WINDOW))
      REGION
      (|fetch| (WINDOW SAVE) |of| WINDOW)
      NIL) ; put new save image into window
    (|replace| (WINDOW SAVE) |of| WINDOW |with| NUSAV)
    (|replace| (WINDOW WBORDER) |of| WINDOW |with| NEWBORDER) ; create a region that corresponds to the old region with the new
    ; border.
    (|replace| (WINDOW REG) |of| WINDOW |with| (|create| REGION
      LEFT _ (IDIFFERENCE (|fetch| (REGION LEFT)
        |of| REGION)
        DELTA)
      BOTTOM _ (IDIFFERENCE (|fetch| (REGION BOTTOM)
        |of| REGION)
        DELTA)
      WIDTH _ NUWIDTH
      HEIGHT _ NUHEIGHT))
    (UPDATE/SCROLL/REG WINDOW) ; draw border in the new image.
    (SHOWWFRAME WINDOW) ; copy the visible part from the old image into the new one.
    (BITBLT OLDSAVE OLDBORDER OLDBORDER NUSAV NEWBORDER NEWBORDER (IDIFFERENCE (BITMAPWIDTH
      OLDSAVE)
      (ITIMES 2 OLDBORDER))
      (|fetch| (REGION HEIGHT) |of| (DSPCLIPPINGREGION NIL (|fetch| (WINDOW DSP) |of| WINDOW)))
      'INPUT
      'REPLACE) ; put the new image up on the screen.
    (\\SW2BM (|fetch| (SCREEN SCDESTINATION) |of| (|fetch| (WINDOW SCREEN) |of| WINDOW))
      (|fetch| (WINDOW REG) |of| WINDOW)
      (|fetch| (WINDOW SAVE) |of| WINDOW)
      NIL))))

```



(DEFINEQ

## (\DRAWCIRCLE.BIGBM

```

(LAMBDA (DISPLAYSTREAM CENTERX CENTERY RADIUS BRUSH DASHING) ; Edited 29-Jan-91 16:25 by matsuda
  (DECLARE (LOCALVARS . T))
  (PROG ((DD (|fetch| IMAGEDATA |of| DISPLAYSTREAM))
    BITMAP)
    (SETQ BITMAP (|fetch| (\\DISPLAYDATA |DDDestination|) |of| DD))
    (COND
      ((|type?| BIGBM BITMAP)
        (PROG (BIGBMLIST HEIGHT BOTTOM BM |ClippingTop| |ClippingBottom| |CTop| |CBottom|)
          (SETQ BIGBMLIST (|fetch| (BIGBM BIGBMLIST) |of| BITMAP))
          (SETQ HEIGHT (BITMAPHEIGHT BITMAP))
          (SETQ |ClippingTop| (|ffetch| (\\DISPLAYDATA |DDClippingTop|) |of| DD))
          (SETQ |ClippingBottom| (|ffetch| (\\DISPLAYDATA |DDClippingBottom|) |of| DD))
          (SETQ BM (|GetNewFragment| BIGBMLIST))
          (|while| (AND BM (IGREATERP HEIGHT |ClippingBottom|))
            |do| (SETQ BOTTOM (IDIFFERENCE HEIGHT (BITMAPHEIGHT BM)))
              (SETQ |CTop| (COND
                ((IGREATERP |ClippingTop| HEIGHT)
                  (IDIFFERENCE HEIGHT BOTTOM))
                (T (IDIFFERENCE |ClippingTop| BOTTOM))))))
            (COND
              ((IGEQ |CTop| 0)
                (SETQ |CBottom| (COND
                  ((ILESSP |ClippingBottom| BOTTOM)
                    0)
                  (T (IDIFFERENCE |ClippingBottom| BOTTOM))))
                (|replace| (\\DISPLAYDATA |DDDestination|) |of| DD |with| BM)
                (|replace| (\\DISPLAYDATA |DDClippingTop|) |of| DD |with| |CTop|)
                (|replace| (\\DISPLAYDATA |DDClippingBottom|) |of| DD |with| |CBottom|)
                (\\DRAWCIRCLE.DISPLAY DISPLAYSTREAM CENTERX (IDIFFERENCE CENTERY BOTTOM)
                  RADIUS BRUSH DASHING)
                (SETQ BM (|GetNewFragment| BIGBMLIST))
                (SETQ HEIGHT BOTTOM)))
              (|replace| (\\DISPLAYDATA |DDDestination|) |of| DD |with| BITMAP)
              (|replace| (\\DISPLAYDATA |DDClippingTop|) |of| DD |with| |ClippingTop|)
              (|replace| (\\DISPLAYDATA |DDClippingBottom|) |of| DD |with| |ClippingBottom|)
              (MOVETO CENTERX CENTERY DISPLAYSTREAM)
              (RETURN NIL)))
            (T (\\DRAWCIRCLE.DISPLAY DISPLAYSTREAM CENTERX CENTERY RADIUS BRUSH DASHING))))))

```

## (\FILLCIRCLE.BIGBM

```

(LAMBDA (DISPLAYSTREAM CENTERX CENTERY RADIUS TEXTURE) ; Edited 29-Jan-91 16:21 by matsuda
  (DECLARE (LOCALVARS . T))
  (COND
    ((OR (NOT (NUMBERP RADIUS))
      (ILESSP (SETQ RADIUS (FIXR RADIUS))
        0))
      (\\ILLEGAL.ARG RADIUS))
    (T (PROG ((DD (|fetch| IMAGEDATA |of| DISPLAYSTREAM))
      BITMAP)
      (SETQ BITMAP (|fetch| (\\DISPLAYDATA |DDDestination|) |of| DD))
      (COND
        ((|type?| BIGBM BITMAP)
          (PROG (BIGBMLIST HEIGHT BOTTOM BM |ClippingTop| |ClippingBottom| |CTop| |CBottom|)
            (SETQ BIGBMLIST (|fetch| (BIGBM BIGBMLIST) |of| BITMAP))
            (SETQ HEIGHT (BITMAPHEIGHT BITMAP))
            (SETQ |ClippingTop| (|ffetch| (\\DISPLAYDATA |DDClippingTop|) |of| DD))
            (SETQ |ClippingBottom| (|ffetch| (\\DISPLAYDATA |DDClippingBottom|) |of| DD))
            (SETQ BM (|GetNewFragment| BIGBMLIST))
            (|while| (AND BM (IGREATERP HEIGHT |ClippingBottom|))
              |do| (SETQ BOTTOM (IDIFFERENCE HEIGHT (BITMAPHEIGHT BM)))
                (SETQ |CTop| (COND
                  ((IGREATERP |ClippingTop| HEIGHT)
                    (IDIFFERENCE HEIGHT BOTTOM))
                  (T (IDIFFERENCE |ClippingTop| BOTTOM))))
                (COND
                  ((IGEQ |CTop| 0)
                    (SETQ |CBottom| (COND
                      ((ILESSP |ClippingBottom| BOTTOM)
                        0)
                      (T (IDIFFERENCE |ClippingBottom| BOTTOM))))
                    (|replace| (\\DISPLAYDATA |DDDestination|) |of| DD |with| BM)
                    (|replace| (\\DISPLAYDATA |DDClippingTop|) |of| DD |with| |CTop|)
                    (|replace| (\\DISPLAYDATA |DDClippingBottom|) |of| DD |with| |CBottom|)
                    (\\FILLCIRCLE.DISPLAY DISPLAYSTREAM CENTERX (IDIFFERENCE CENTERY BOTTOM)
                      RADIUS TEXTURE)
                    (SETQ BM (|GetNewFragment| BIGBMLIST))
                    (SETQ HEIGHT BOTTOM)))
                  (|replace| (\\DISPLAYDATA |DDDestination|) |of| DD |with| BITMAP)
                  (|replace| (\\DISPLAYDATA |DDClippingTop|) |of| DD |with| |ClippingTop|)
                  (|replace| (\\DISPLAYDATA |DDClippingBottom|) |of| DD |with| |ClippingBottom|)
                  (MOVETO CENTERX CENTERY DISPLAYSTREAM)
                  (RETURN NIL)))
                (T (\\FILLCIRCLE.DISPLAY DISPLAYSTREAM CENTERX CENTERY RADIUS TEXTURE))))))

```

```
(replace (\\DISPLAYDATA DDDestination) | of DD with BM)
(replace (\\DISPLAYDATA DDClippingTop) | of DD with |CTop|)
(replace (\\DISPLAYDATA DDClippingBottom) | of DD with |CBottom|)
(SETQ POINTS (for KNOT in KNOTS collect (create POSITION
XCOORD - (CAR KNOT)
```

```

                                YCOORD _ (DIFFERENCE (CDR KNOT)
                                                BOTTOM)))
(\\DRAWCURVE.DISPLAY DISPLAYSTREAM POINTS CLOSED BRUSH DASHING)
  (SETQ BM (|GetNewFragment| BIGBMLIST))
  (SETQ HEIGHT BOTTOM)))
(|replace| (\\DISPLAYDATA |DDestination|) |of| DD |with| BITMAP)
(|replace| (\\DISPLAYDATA |DDClippingTop|) |of| DD |with| |ClippingTop|)
(|replace| (\\DISPLAYDATA |DDClippingBottom|) |of| DD |with| |ClippingBottom|)
  (RETURN DISPLAYSTREAM)))
(T (\\DRAWCURVE.DISPLAY DISPLAYSTREAM KNOTS CLOSED BRUSH DASHING))))))

```

**(\\DRAWLINE.BIGBM.DASH**

(LAMBDA (DISPLAYSTREAM X1 Y1 X2 Y2 BRUSH DASHING OPERATION) ; Edited 13-Jun-2021 14:02 by rmk:

```

  (GLOBALRESOURCES \\BRUSHBBT (LET ((DD (|fetch| IMAGEDATA |of| DISPLAYSTREAM))
    BITMAP BIGBMLIST HEIGHT BOTTOM BM YY1 YY2 |ClippingTop| |ClippingBottom|
    |CTop| |CBottom|)
    (SETQ BITMAP (|ffetch| |DDestination| |of| DD))
    (SETQ BIGBMLIST (|fetch| (BIGBM BIGBMLIST) |of| BITMAP))
    (SETQ HEIGHT (BITMAPHEIGHT BITMAP))
    (SETQ |ClippingTop| (|ffetch| |DDClippingTop| |of| DD))
    (SETQ |ClippingBottom| (|ffetch| |DDClippingBottom| |of| DD))
    (SETQ BM (|GetNewFragment| BIGBMLIST))
    (|while| (AND BM (IGREATERP HEIGHT |ClippingBottom|))
      |do| (SETQ BOTTOM (IDIFFERENCE HEIGHT (BITMAPHEIGHT BM)))
        (SETQ |CTop| (COND
          ((IGREATERP |ClippingTop| HEIGHT)
            (IDIFFERENCE HEIGHT BOTTOM))
          (T (IDIFFERENCE |ClippingTop| BOTTOM))))
        (|if| (IGEQ |CTop| 0)
          |then| (SETQ |CBottom| (COND
            ((ILESSP |ClippingBottom| BOTTOM)
              0)
            (T (IDIFFERENCE |ClippingBottom| BOTTOM)
              )))
          (|replace| |DDestination| |of| DD |with| BM)
          (|replace| |DDClippingTop| |of| DD |with| |CTop|)
          (|replace| |DDClippingBottom| |of| DD |with| |CBottom|)
          (\\LINEWITHBRUSH X1 (IDIFFERENCE Y1 BOTTOM)
            X2
            (IDIFFERENCE Y2 BOTTOM)
            BRUSH
            (\\GOOD.DASHLST DASHING BRUSH)
            DISPLAYSTREAM \\BRUSHBBT OPERATION)
          (SETQ BM (|GetNewFragment| BIGBMLIST))
          (SETQ HEIGHT BOTTOM)))
    (|freplace| |DDDestination| |of| DD |with| BITMAP)
    (|freplace| |DDClippingTop| |of| DD |with| |ClippingTop|)
    (|freplace| |DDClippingBottom| |of| DD |with| |ClippingBottom|))))))

```

**(\\DRAWLINE.BIGBM.NODASH**

(LAMBDA (DISPLAYSTREAM X1 Y1 X2 Y2 WIDTH OPERATION COLOR) ; Edited 13-Jun-2021 13:59 by rmk:

```

  (LET ((DD (|fetch| IMAGEDATA |of| DISPLAYSTREAM))
    BITMAP BIGBMLIST HEIGHT BOTTOM BM |CTop| |CBottom| |ClippingTop| |ClippingBottom| YY1 YY2)
    (SETQ BITMAP (|ffetch| |DDDestination| |of| DD))
    (SETQ BIGBMLIST (|fetch| (BIGBM BIGBMLIST) |of| BITMAP))
    (SETQ HEIGHT (BITMAPHEIGHT BITMAP))
    (SETQ BM (|GetNewFragment| BIGBMLIST))
    (SETQ |ClippingTop| (|ffetch| |DDClippingTop| |of| DD))
    (SETQ |ClippingBottom| (|ffetch| |DDClippingBottom| |of| DD))
    (SETQ YY1 (\\DSPTRANSFORMY (OR (FIXP Y1)
      (FIXR Y1))
      DD))
    (SETQ YY2 (\\DSPTRANSFORMY (OR (FIXP Y2)
      (FIXR Y2))
      DD))
    (|while| (AND BM (IGREATERP HEIGHT |ClippingBottom|))
      |do| (SETQ BOTTOM (IDIFFERENCE HEIGHT (BITMAPHEIGHT BM)))
        (SETQ |CTop| (COND
          ((IGREATERP |ClippingTop| HEIGHT)
            (IDIFFERENCE HEIGHT BOTTOM))
          (T (IDIFFERENCE |ClippingTop| BOTTOM))))
        (COND
          ((IGEQ |CTop| 0)
            (SETQ |CBottom| (COND
              ((ILESSP |ClippingBottom| BOTTOM)
                0)
              (T (IDIFFERENCE |ClippingBottom| BOTTOM)
                )))
            (\\CLIPANDDRAWLINE (\\DSPTRANSFORMX (OR (FIXP X1)
              (FIXR X1))
              DD)
              (IDIFFERENCE YY1 BOTTOM)
              (\\DSPTRANSFORMX (OR (FIXP X2)
              (FIXR X2))
              DD)
              (IDIFFERENCE YY2 BOTTOM)

```

```

(COND
  ( (NULL WIDTH)
    1)
  ((OR (FIXP WIDTH)
        (FIXR WIDTH))))
(SELECTQ OPERATION
  (NIL (|ffetch| DDOPERATION |of| DD))
  ((REPLACE PAINT INVERT ERASE)
    OPERATION)
  (\\ILLEGAL.ARG OPERATION))
BM
(|ffetch| |DDClippingLeft| |of| DD)
(SUB1 (|ffetch| |DDClippingRight| |of| DD))
|CBottom|
(SUB1 |CTop|)
DISPLAYSTREAM COLOR)))
(SETQ BM (|GetNewFragment| BIGBMLIST))
(SETQ HEIGHT BOTTOM))))
)

```

(DEFINEQ

(\\GENERIC.DSPCREATE.DESTINATION.BITMAP?.BIGBM

; Edited 9-Jul-2022 09:24 by rmk

```

(LAMBDA (DESTINATION)
  (\\DTEST (COND
    ((|type?| BIGBM DESTINATION)
      (CAR (|fetch| (BIGBM BIGBMLIST) OF DESTINATION)))
    (T DESTINATION))
    'BITMAP)))
)

```

(DECLARE\ : DONTVAL@LOAD DOCOPY

```

(MOVD ' \\GENERIC.DSPCREATE.DESTINATION.BITMAP?.BIGBM ' \\GENERIC.DSPCREATE.DESTINATION.BITMAP?)
)

```

(DEFINEQ

(DSPDESTINATION

; Edited 22-Sep-89 13:53 by takeshi

```

(LAMBDA (DESTINATION DISPLAYSTREAM)
  (DECLARE (GLOBALVARS \\DISPLAYIMAGEOPS \\4DISPLAYIMAGEOPS \\8DISPLAYIMAGEOPS \\24DISPLAYIMAGEOPS))
  (PROG (DD)
    (SETQ DD (\\GETDISPLAYDATA DISPLAYSTREAM DISPLAYSTREAM))
    (RETURN (PROG1 (|ffetch| (\\DISPLAYDATA |DDDestination|) |of| DD)
      (COND
        (DESTINATION
          ; (SETQ DESTINATION (OR (\\DTEST DESTINATION 'BITMAP)
          ; (\\DTEST DESTINATION 'BIGBM)))
          (COND
            ((|type?| BITMAP DESTINATION)
              (UNINTERRUPTABLY
                (|replace| (STREAM DEVICE) |of| DISPLAYSTREAM
                  |with| (SELECTQ (|fetch| (BITMAP BITMAPBITSPIXEL) |of| DESTINATION)
                    (1 |DisplayFDEV|)
                    (4 \\4DISPLAYFDEV)
                    (8 \\8DISPLAYFDEV)
                    (24 \\24DISPLAYFDEV)
                    (SHOULDNT))))
                (|replace| (STREAM IMAGEOPS) |of| DISPLAYSTREAM
                  |with| (SELECTQ (|fetch| (BITMAP BITMAPBITSPIXEL) |of| DESTINATION)
                    (1 \\4DISPLAYIMAGEOPS)
                    (4 \\4DISPLAYIMAGEOPS)
                    (8 \\8DISPLAYIMAGEOPS)
                    (24 \\24DISPLAYIMAGEOPS)
                    (SHOULDNT))))
                (|replace| (\\DISPLAYDATA |DDDestination|) |of| DD |with| DESTINATION)
                (|SFFixDestination| DD DISPLAYSTREAM)))
            ((|type?| BIGBM DESTINATION)
              (UNINTERRUPTABLY
                (|replace| (STREAM DEVICE) |of| DISPLAYSTREAM |with| \\8DISPLAYFDEV)
                ;; I'll add the bpp slot in BIGBM
                (|replace| (STREAM IMAGEOPS) |of| DISPLAYSTREAM |with| \\8DISPLAYIMAGEOPS)
                (|replace| (\\DISPLAYDATA |DDDestination|) |of| DD |with| DESTINATION)
                (|SFFixDestination| DD DISPLAYSTREAM))))))))))
)

```

(\\SFFixY|

; Edited 6-Jul-90 10:13 by matsuda

```

(LAMBDA (DISPLAYDATA CSINFO)
  ;; makes that part of the bitblt table of a display stream which deals with the Y information consistent. This is called from \\BLTCHAR whenever a
  ;; character is being printed and the charset/y-position caches are invalid ; assumes DISPLAYDATA has already been type checked.
  (PROG ((PBT (|ffetch| DDPILOTBBT |of| DISPLAYDATA))
    (Y (\\DSPTRANSFORMY (|ffetch| DDYPOSITION |of| DISPLAYDATA)
      DISPLAYDATA))
    TOP CHARTOP BM)
    (SETQ CHARTOP (IPLUS Y (|replace| DDCHARSETASCENT |of| DISPLAYDATA |with| (|ffetch| CHARSETASCENT

```

```

(|\\SFFixY| cont.)
(|of| CSINFO)))
(SETQ BM (|ffetch| |DDDestination| |of| DISPLAYDATA))
(COND
  ((|type?| BIGBM BM)
    (SETQ TOP (IMAX (IMIN (|ffetch| |DDClippingTop| |of| DISPLAYDATA)
      CHARTOP)
    0))
    (|freplace| PBTDEST |of| PBT |with| NIL)
    (|freplace| PBTSOURCE |of| PBT |with| (\\ADDBASE (|ffetch| BITMAPBASE |of| (SETQ BM (|ffetch| (CHARSETINFO
      CHARSETBITMAP)
      |of| CSINFO)))
      (ITIMES (|ffetch| BITMAPRASTERWIDTH |of| BM)
        (|freplace| DDCHARHEIGHTDELTA |of| DISPLAYDATA
          |with| (IMIN (IMAX (IDIFFERENCE CHARTOP TOP)
            0)
            MAX.SMALL.INTEGER))))))
    (|freplace| PBTHEIGHT |of| PBT |with| (IMAX (IDIFFERENCE TOP (IMAX (IDIFFERENCE Y
      (|freplace| DDCHARSETDESCENT
      |of| DISPLAYDATA
      |with| (|ffetch| CHARSETDESCENT
      |of| CSINFO)))
      (|ffetch| |DDClippingBottom|
      |of| DISPLAYDATA)))
    0)))
  (T (|freplace| PBTDEST |of| PBT |with| (\\ADDBASE (|ffetch| BITMAPBASE |of| BM)
    (ITIMES (|ffetch| BITMAPRASTERWIDTH |of| BM)
      (|\\SFInvert| BM
        (SETQ TOP (IMAX (IMIN (|ffetch| |DDClippingTop|
          |of| DISPLAYDATA)
          CHARTOP)
        0))))))
    (|freplace| PBTSOURCE |of| PBT |with| (\\ADDBASE (|ffetch| BITMAPBASE |of| (SETQ BM (|ffetch| (CHARSETINFO
      CHARSETBITMAP)
      |of| CSINFO)))
      (ITIMES (|ffetch| BITMAPRASTERWIDTH |of| BM)
        (|freplace| DDCHARHEIGHTDELTA |of| DISPLAYDATA
          |with| (IMIN (IMAX (IDIFFERENCE CHARTOP TOP)
            0)
            MAX.SMALL.INTEGER))))))
    (|freplace| PBTHEIGHT |of| PBT |with| (IMAX (IDIFFERENCE TOP
      (IMAX (IDIFFERENCE Y (|freplace| DDCHARSETDESCENT
      |of| DISPLAYDATA
      |with| (|ffetch| CHARSETDESCENT
      |of| CSINFO)))
      (|ffetch| |DDClippingBottom| |of| DISPLAYDATA)))
    0))))))

```

## (|\\SFFixDestination|

(LAMBDA (DISPLAYDATA DISPLAYSTREAM)

; Edited 6-Jul-90 13:55 by matsuda

;; fixes up those parts of the bitblt array which are dependent upon the destination

```

(PROG ((PBT (|ffetch| (\\DISPLAYDATA DDPILOTBTT) |of| DISPLAYDATA))
  (BM (|ffetch| (\\DISPLAYDATA |DDDestination|) |of| DISPLAYDATA)))
  (|replace| (PILOTBTT PBTDESTBPL) |of| PBT |with| (UNFOLD (COND
    ((|type?| BITMAP BM)
      (|ffetch| (BITMAP BITMAPRASTERWIDTH) |of| BM))
    (T (|ffetch| (BITMAP BITMAPRASTERWIDTH)
      |of| (CAR (|ffetch| (BIGBM BIGBMLIST)
        OF BM))))))
    BITSPERWORD))
  ; line width information will be updated by \\SFFixFont
  (|\\SFFixClippingRegion| DISPLAYDATA)
  (\\INVALIDATEDISPLAYCACHE DISPLAYDATA)
  (|\\SFFixFont| DISPLAYSTREAM DISPLAYDATA)
  (RETURN)))

```

## (|\\SFFixClippingRegion|

(LAMBDA (DISPLAYDATA)

; Edited 6-Jul-90 13:55 by matsuda

;; compute the top, bottom, left and right edges of the clipping region in destination coordinates to save computation every BltChar and coordinate  
;; transformation taking into account the size of the bit map as well as the clipping region.

```

(PROG ((CLIPREG (|ffetch| (\\DISPLAYDATA |DDClippingRegion|) |of| DISPLAYDATA))
  (BM (|ffetch| (\\DISPLAYDATA |DDDestination|) |of| DISPLAYDATA)))
  (|freplace| (\\DISPLAYDATA |DDClippingRight|) |of| DISPLAYDATA
    |with| (IMAX 0 (IMIN (\\DSPTRANSFORMX (IPLUS (|ffetch| (REGION LEFT) |of| CLIPREG)
      (|ffetch| (REGION WIDTH) |of| CLIPREG))
      DISPLAYDATA)
      (BITMAPWIDTH BM))))
  (|freplace| (\\DISPLAYDATA |DDClippingLeft|) |of| DISPLAYDATA
    |with| (IMIN (IMAX (\\DSPTRANSFORMX (|ffetch| (REGION LEFT) |of| CLIPREG)
      DISPLAYDATA)
      0)
      MAX.SMALL.INTEGER))
  (|freplace| (\\DISPLAYDATA |DDClippingTop|) |of| DISPLAYDATA

```

```

|with| (IMAX 0 (IMIN (\\DSPTRANSFORMY (IPLUS (|ffetch| (REGION BOTTOM) |of| CLIPREG)
(|ffetch| (REGION HEIGHT) |of| CLIPREG)
DISPLAYDATA)
(BITMAPHEIGHT BM))))
(|freplace| (\\DISPLAYDATA |DDClippingBottom|) |of| DISPLAYDATA
|with| (IMIN (IMAX (\\DSPTRANSFORMY (|ffetch| (REGION BOTTOM) |of| CLIPREG)
DISPLAYDATA)
0)
MAX.SMALL.INTEGER))))))
)
(DEFINEQ
(\\SW2BM
(LAMBDA (P PR Q QR)
(* |Switches| |the| |areas| |of| P |and| Q |defined| |by| |the| |regions| PR |and| QR |respectively|)
(PROG (PL PH PW PB QL QH QW QB)
(COND
(PR (SETQ PL (|ffetch| (REGION LEFT) |of| PR))
(SETQ PB (|ffetch| (REGION BOTTOM) |of| PR))
(SETQ PH (|ffetch| (REGION HEIGHT) |of| PR))
(SETQ PW (|ffetch| (REGION WIDTH) |of| PR)))
(T (SETQ PL (SETQ PB 0))
(COND
((|type?| BITMAP P)
(SETQ PW (|ffetch| (BITMAP BITMAPWIDTH) |of| P))
(SETQ PH (|ffetch| (BITMAP BITMAPHEIGHT) |of| P)))
(T (SETQ PW (|ffetch| (BIGBM BIGBMWIDTH) |of| P))
(SETQ PH (|ffetch| (BIGBM BIGBMHEIGHT) |of| P))))))
(COND
(QR (SETQ QL (|ffetch| (REGION LEFT) |of| QR))
(SETQ QB (|ffetch| (REGION BOTTOM) |of| QR))
(SETQ QW (|ffetch| (REGION WIDTH) |of| QR))
(SETQ QH (|ffetch| (REGION HEIGHT) |of| QR)))
(T (SETQ QL (SETQ QB 0))
(COND
((|type?| BITMAP Q)
(SETQ QW (|ffetch| (BITMAP BITMAPWIDTH) |of| Q))
(SETQ QH (|ffetch| (BITMAP BITMAPHEIGHT) |of| Q)))
(T (SETQ QW (|ffetch| (BIGBM BIGBMWIDTH) |of| Q))
(SETQ QH (|ffetch| (BIGBM BIGBMHEIGHT) |of| Q))))))
(PROG ((CL (IMAX (IMINUS PL)
(IMINUS QL)
0))
(CB (IMAX (IMINUS PB)
(IMINUS QB)
0)))
(PROG ((XP (IPLUS CL PL))
(YP (IPLUS CB PB))
(XQ (IPLUS CL QL))
(YQ (IPLUS CB QB))
(CW CH)
(SETQ CW (IMIN (COND
((|type?| BITMAP P)
(IDIFFERENCE (IMIN (|ffetch| (BITMAP BITMAPWIDTH) |of| P)
(IPLUS PL PW))
XP))
(T (IDIFFERENCE (IMIN (|ffetch| (BIGBM BIGBMWIDTH) |of| P)
(IPLUS PL PW))
XP)))
(COND
((|type?| BITMAP Q)
(IDIFFERENCE (IMIN (|ffetch| (BITMAP BITMAPWIDTH) |of| Q)
(IPLUS QL QW))
XQ))
(T (IDIFFERENCE (IMIN (|ffetch| (BIGBM BIGBMWIDTH) |of| Q)
(IPLUS QL QW))
XQ))))))
(SETQ CH (IMIN (IDIFFERENCE (IMIN (COND
((|type?| BITMAP P)
(|ffetch| (BITMAP BITMAPHEIGHT) |of| P))
(T (|ffetch| (BIGBM BIGBMHEIGHT) |of| P))
(IPLUS PB PH))
YP)
(IDIFFERENCE (IMIN (COND
((|type?| BITMAP Q)
(|ffetch| (BITMAP BITMAPHEIGHT) |of| Q))
(T (|ffetch| (BIGBM BIGBMHEIGHT) |of| Q))
(IPLUS QB QH))
YQ))))))
(UNINTERRUPTABLY
(BITBLT P XP YP Q XQ YQ CW CH 'INPUT 'INVERT)
(BITBLT Q XQ YQ P XP YP CW CH 'INPUT 'INVERT)
(BITBLT P XP YP Q XQ YQ CW CH 'INPUT 'INVERT))))))

```

; Edited 8-Sep-89 16:14 by takeshi

**(BITMAPHEIGHT**

(LAMBDA (BITMAP)

; Edited 22-Sep-89 14:05 by takeshi

;; returns the height in pixels of a bitmap.

```
(COND
  ((|type?| BITMAP BITMAP)
   (|ffetch| (BITMAP BITMAPHEIGHT) |of| BITMAP))
  ((|type?| WINDOW BITMAP)
   (WINDOWPROP BITMAP 'HEIGHT))
  ((|type?| BIGBM BITMAP)
   (|ffetch| (BIGBM BIGBMHEIGHT) |of| BITMAP))
  (T (\\ILLEGAL.ARG BITMAP))))
```

**(BITMAPWIDTH**

(LAMBDA (BITMAP)

; Edited 22-Sep-89 14:07 by takeshi

;; returns the width of a bitmap in pixels

```
(COND
  ((|type?| BITMAP BITMAP)
   (|ffetch| (BITMAP BITMAPWIDTH) |of| BITMAP))
  ((|type?| WINDOW BITMAP)
   (WINDOWPROP BITMAP 'WIDTH))
  ((|type?| BIGBM BITMAP)
   (|ffetch| (BIGBM BIGBMWIDTH) |of| BITMAP))
  (T (\\ILLEGAL.ARG BITMAP))))
```

**(|\\SFFixFont|**

(LAMBDA (DISPLAYSTREAM DISPLAYDATA)

; Edited 6-Jul-90 10:11 by matsuda

;; used to fix up those parts of the bitblt table which depend upon the FONT. DISPLAYDATA is the IMAGEDATA for DISPLAYSTREAM, for convenience.

```
(PROG (PILOTBBT (|ffetch| (\\DISPLAYDATA DDPILOTBBT) |of| DISPLAYDATA))
  (FONT (|ffetch| (\\DISPLAYDATA DDFONT) |of| DISPLAYDATA))
  (BITSPERPIXEL (BITSPERPIXEL (|ffetch| (\\DISPLAYDATA |DDestination|) |of| DISPLAYDATA)))
  (|freplace| (\\DISPLAYDATA |DDSlowPrintingCase|) |of| DISPLAYDATA
    |with| (OR (NOT (EQ BITSPERPIXEL 1))
              (NOT (EQ (|ffetch| (FONTDESCRIPTOR ROTATION) |of| FONT)
                       0)))))
  (\\INVALIDATEDISPLAYCACHE DISPLAYDATA)
  (\\SFFIXLINELENGTH DISPLAYSTREAM)))
```

**(BITSPERPIXEL**

(LAMBDA (BITMAP)

; Edited 29-Jun-90 10:15 by matsuda

;; returns the height in pixels of a bitmap.

```
(COND
  ((|type?| BITMAP BITMAP)
   (|fetch| (BITMAP BITMAPBITSPERPIXEL) |of| BITMAP))
  ((|type?| BIGBM BITMAP)
   (|fetch| (BITMAP BITMAPBITSPERPIXEL) |of| (CAR (|fetch| (BIGBM BIGBMLIST) |of| BITMAP))))
  ((|type?| SCREEN BITMAP)
   (BITSPERPIXEL (|fetch| (SCREEN SCDESTINATION) |of| BITMAP)))
  ((|type?| WINDOW BITMAP)
   (BITSPERPIXEL (|fetch| (WINDOW SCREEN) |of| BITMAP)))
  (ARRAYP BITMAP)
  (SELECTQ (ARRAYSIZE BITMAP)
    (256 8)
    (16 4)
    (LISPERROR "ILLEGAL ARG" BITMAP)))
  (T (LISPERROR "ILLEGAL ARG" BITMAP))))
```

; Consider array to be a colormap.

(DEFINEQ

**(COLORIZEBITMAP**

(LAMBDA (BITMAP 0COLOR 1COLOR BITSPERPIXEL)

; Edited 26-Oct-2021 14:23 by larry

; Edited 13-Jul-90 14:42 by matsuda

;; creates a copy of BITMAP that is in color form allowing BITSPERPIXEL per pixel. 0COLOR and 1COLOR are the color numbers that get translated from 0 and 1 respectively.

```
(PROG (COLORBITMAP)
  (SETQ COLORBITMAP (BITMAPCREATE (|fetch| (BITMAP BITMAPWIDTH) |of| BITMAP)
    (|fetch| (BITMAP BITMAPHEIGHT) |of| BITMAP)
    BITSPERPIXEL))
  (COND
    ((NOT (|type?| BIGBM COLORBITMAP))
     (\\BWTOCOLORBLT BITMAP 0 0 COLORBITMAP 0 0 (|fetch| (BITMAP BITMAPWIDTH) |of| BITMAP)
      (|fetch| (BITMAP BITMAPHEIGHT) |of| BITMAP)
      (COLORNUMBERP 0COLOR BITSPERPIXEL)
      (COLORNUMBERP 1COLOR BITSPERPIXEL)
      BITSPERPIXEL))
```

```

(T (PROG (DESTBMLIST DESTBITMAP SOURCEBOOTTOM)
  (SETQ DESTBMLIST (|fetch| (BIGBM BIGBMLIST) |of| COLORBITMAP))
  (SETQ DESTBM (|GetNewFragment| DESTBMLIST))
  (SETQ SOURCEBOOTTOM (|fetch| (BITMAP BITMAPHEIGHT) |of| BITMAP))
  (|while| DESTBM |do| (SETQ DESTBMHEIGHT (|fetch| (BITMAP BITMAPHEIGHT) |of| DESTBM))
    (SETQ SOURCEBOOTTOM (- SOURCEBOOTTOM DESTBMHEIGHT))
    (\\BWTOCOLORBLT BITMAP 0 SOURCEBOOTTOM DESTBM 0 0 (|fetch| (BITMAP
      BITMAPWIDTH
      )
      |of| BITMAP)
      DESTBMHEIGHT
      (COLORNUMBERP 0COLOR BITSPERPIXEL)
      (COLORNUMBERP 1COLOR BITSPERPIXEL)
      BITSPERPIXEL)
    (SETQ DESTBM (|GetNewFragment| DESTBMLIST))))))
(RETURN COLORBITMAP)))

```

**(\\BWTOCOLORBLT**

```

(LAMBDA (SOURCEBWM SLEFT SBOTTOM DESTCOLORBM DLEFT DBOTTOM WIDTH HEIGHT 0COLOR 1COLOR DESTNBITS)

```

```

; Edited 26-Oct-2021 14:36 by larry
; Edited 26-Oct-2021 14:32 by larry
; Edited 26-Oct-2021 14:26 by larry
; Edited 8-May-2021 22:31 by rmk:

```

;; blits from a black and white bitmap into a color bitmap which has DESTNBITS bits per pixel. DESTCOLORBM is a pointer to the color bitmap.  
 ;; assumes all datatypes and bounds have been checked

```

(SELECTQ DESTNBITS
  (4 (PROG (MAP SRCBASE SRCHEIGHT SRCRW SRCWRD SRCOFFSET DESBASE DESHEIGHT DESRW DESWRD DESOFF NBITS
    DESALIGNLEFT SCR)
    (SETQ MAP (|fetch| (ARRAYP BASE) |of| (\\MAP4 0COLOR 1COLOR)))
    (SETQ SRCBASE (|fetch| (BITMAP BITMAPBASE) |of| SOURCEBWM))
    (SETQ SRCHEIGHT (|fetch| (BITMAP BITMAPHEIGHT) |of| SOURCEBWM))
    (SETQ SRCRW (|fetch| (BITMAP BITMAPRASTERWIDTH) |of| SOURCEBWM))
    (SETQ SRCWRD (FOLDLO SLEFT BITSPERWORD))
    (SETQ SRCOFFSET (MOD SLEFT BITSPERWORD))
    (SETQ DESBASE (|fetch| (BITMAP BITMAPBASE) |of| DESTCOLORBM))
    (SETQ DESHEIGHT (|fetch| (BITMAP BITMAPHEIGHT) |of| DESTCOLORBM))
    (SETQ DESRW (|fetch| (BITMAP BITMAPRASTERWIDTH) |of| DESTCOLORBM))
    (SETQ DESWRD (FOLDLO DLEFT 4))
    (SETQ DESOFF (MOD DLEFT 4))
    (SETQ NBITS 4)

```

;; DESTCOLORBM is used to allow one bit per pixel bitblt operations on the bitmap.

```

(COND
  ((NOT (EQ 0 DESOFF))
    ;; save the left bits of the destination bitmap so it can be word aligned.
    (SETQ SCR (BITMAPCREATE 4 HEIGHT 4))
    (BITBLT DESTCOLORBM (SETQ DESALIGNLEFT (LLSH DESWRD 2))
      DBOTTOM SCR 0 0 DESOFF HEIGHT 'INPUT 'REPLACE))
  (|for| LINECOUNTER |from| 1 |to| HEIGHT
    |do|
      ;; linecounter goes from 1 to height because bitmaps are stored internally with top first so subtracting height is
      ;; necessary to get offset of line and the 1 corrects for height difference.
      (\\4BITLINEBLT (\\ADDBASE SRCBASE (IPLUS (ITIMES (IDIFFERENCE SRCHEIGHT (IPLUS
        LINECOUNTER
        SBOTTOM))
        SRCRW)
        SRCOFFSET
        (\\ADDBASE DESBASE (IPLUS (ITIMES (IDIFFERENCE DESHEIGHT (IPLUS LINECOUNTER
        DBOTTOM))
        DESRW)
        DESWRD))
        WIDTH MAP 0COLOR 1COLOR))

```

```

(COND
  (DESALIGNLEFT
    ;; move the color bits to the right and restore the saved color bits.
    (BITBLT DESTCOLORBM DESALIGNLEFT DBOTTOM DESTCOLORBM (IPLUS DESALIGNLEFT DESOFF)
      DBOTTOM WIDTH HEIGHT 'INPUT 'REPLACE)
    (BITBLT SCR 0 0 DESTCOLORBM DESALIGNLEFT DBOTTOM DESOFF HEIGHT 'INPUT 'REPLACE))))
(8 (SUBRCALL COLORIZE-BITMAP SOURCEBWM SLEFT SBOTTOM DESTCOLORBM DLEFT DBOTTOM WIDTH HEIGHT 0COLOR
  1COLOR DESTNBITS))
(24 (PROG (SRCBASE SRCHEIGHT SRCRW DESBASE DESHEIGHT DESRW)
  (SETQ SRCBASE (|fetch| (BITMAP BITMAPBASE) |of| SOURCEBWM))
  (SETQ SRCHEIGHT (|fetch| (BITMAP BITMAPHEIGHT) |of| SOURCEBWM))
  (SETQ SRCRW (|fetch| (BITMAP BITMAPRASTERWIDTH) |of| SOURCEBWM))
  (SETQ DESBASE (|fetch| (BITMAP BITMAPBASE) |of| DESTCOLORBM))
  (SETQ DESHEIGHT (|fetch| (BITMAP BITMAPHEIGHT) |of| DESTCOLORBM))
  (SETQ DESRW (|fetch| (BITMAP BITMAPRASTERWIDTH) |of| DESTCOLORBM))
  (|for| LINECOUNTER |from| 1 |to| HEIGHT |do|

```

;; linecounter goes from 1 to height because bitmaps are stored internally with top first so subtracting  
 ;; height is necessary to get offset of line and the 1 corrects for height difference.

```

(\\24BITLINEBLT (\\ADDBASE SRCBASE

```



(SHOULDNT) ) ) )

## (LAMBDA (BITMAP COLORMAP))

```

(PROG (BITSPPERPIXEL MAXCOLOR MAXX MAXY BWMITMAP TABLE RGB R G B BIT BASE BWBASE RASTERWIDTH BWRASTERWIDTH
      WORD)
  (SETQ MAXX (SUB1 (BITMAPWIDTH BITMAP)))
  (SETQ MAXY (SUB1 (BITMAPHEIGHT BITMAP)))
  (SETQ BITSPPERPIXEL (BITSPPERPIXEL BITMAP))
  (SETQ COLORMAP (OR COLORMAP (COLORMAP BITSPPERPIXEL)))
  (SETQ MAXCOLOR (MAXIMUMCOLOR BITSPPERPIXEL))
  (SETQ BWMITMAP (BITMAPCREATE (ADD1 MAXX)
                                (ADD1 MAXY)
                                1))
  (SETQ TABLE (\\ALLOCBLOCK (FOLDHI (ADD1 MAXCOLOR)
                                     2)))
  (|for| I |from| 0 |to| MAXCOLOR |do| (SETQ RGB (ELT COLORMAP I))
    (SETQ R (|fetch| (RGB RED) |of| RGB))
    (SETQ G (|fetch| (RGB GREEN) |of| RGB))
    (SETQ B (|fetch| (RGB BLUE) |of| RGB))
    (SETQ BIT (IDIFFERENCE 1 (IQUOTIENT (IPLUS R G B)
                                           384)))
    (\\PUTBASE TABLE I BIT))
  (COND
    ((|type?| BITMAP BITMAP)
     (SETQ BASE (|fetch| (BITMAP BITMAPBASE) |of| BITMAP))
     (SETQ BWBASE (|fetch| (BITMAP BITMAPBASE) |of| BWMITMAP))
     (SETQ RASTERWIDTH (|fetch| (BITMAP BITMAPRASTERWIDTH) |of| BITMAP))
     (SETQ BWRASTERWIDTH (|fetch| (BITMAP BITMAPRASTERWIDTH) |of| BWMITMAP))))
  (SELECTQ BITSPPERPIXEL
    (4 (|for| Y |from| 0 |to| MAXY |do| (SETQ WORD 0)
      (|for| X |from| 0 |to| MAXX
        |do| (SETQ WORD (LOGOR (LLSH WORD 1)
                               (\\GETBASE TABLE (\\GETBASENYBBLE BASE X)
                                                    )))
          (COND
            ((EQ (LOGAND X 15)
                 15)
             (\\PUTBASE BWBASE (FOLDLO X 16)
                               WORD)
             (SETQ WORD 0))))
        (COND
          ((NOT (EQ (LOGAND MAXX 15)
                   15))
           (SETQ WORD (LLSH WORD (IDIFFERENCE 15 (LOGAND MAXX 15))))
           (\\PUTBASE BWBASE (FOLDLO MAXX 16)
                             WORD)))
          (COND
            ((NOT (EQ Y MAXY))
             (SETQ BASE (\\ADDBASE BASE RASTERWIDTH))
             (SETQ BWBASE (\\ADDBASE BWBASE BWRASTERWIDTH))))))
      (8 (COND
        ((NOT (|type?| BIGBM BITMAP))
         (SUBRCALL UNCOLORIZE-BITMAP BITMAP BWMITMAP TABLE))
        (T (PROG ((SRCBIGBMLIST (|fetch| (BIGBM BIGBMLIST) |of| BITMAP))
                  SRCBITMAP
                  (WIDTH (ADD1 MAXX))
                  HEIGHT
                  (DESBOTTOM (ADD1 MAXY))
                  (TEMPBM (BITMAPCREATE (ADD1 MAXX)
                                         (ADD1 MAXY)
                                         1)))
          (SETQ SRCBITMAP (|GetNewFragment| SRCBIGBMLIST))
          (|while| SRCBITMAP |do| (SETQ DESBTOTTOM (IDIFFERENCE DESBTOTTOM
                                                                (SETQ HEIGHT (|fetch| (BITMAP
                                                                                      BITMAPHEIGHT
                                                                                      )
                                                                |of| SRCBITMAP))))
            (SUBRCALL UNCOLORIZE-BITMAP SRCBITMAP TEMPBM TABLE)
            (BITBLT TEMPBM 0 (IDIFFERENCE (ADD1 MAXY)
                                           HEIGHT)

```

```

                                BWBITMAP 0 DESTBOTTOM WIDTH HEIGHT 'INPUT 'REPLACE)
                                (SETQ SRCBITMAP (|GetNewFragment| SRCBIGBMLIST))))))
      NIL)
    (RETURN BWBITMAP)))
)

(DECLARE\ : DONTEVAL@LOAD DOCOPY
(MOVD ' \ \ORG.BITBLT 'ORG.BITBLT)
(MOVD? 'BLTSHADE 'ORG.BLTSHADE)
(MOVD 'BLTSHADE.BIGBM 'BLTSHADE)
(MOVD 'BITBLT 'BKBITBLT)
)

(PUTPROPS BIGBITMAPS COPYRIGHT ("Venue" 1991 1993 1994))
```

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