

File created: 30-Jun-86 16:44:43 {PHYLUM}<BURTON>MAGNIFIER.;13

changes to: (FNS \SLOWMAGSHOW \EXPANDBITMAPBY4 \SLOWMAGSHOW1 MAGTRACK \FFAST4BIT \SLOWEXPANDBITMAPBY4)
(MACROS MAGSHOW)
(VARS MAGNIFIERCOMS)

previous date: 27-Jun-86 17:39:52 {PHYLUM}<BURTON>MAGNIFIER.;11

Read Table: OLD-INTERLISP-FILE

Package: INTERLISP

Format: XCCS

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(RPAQQ **MAGNIFIERCOMS**

```
((FNS MAGNIFYW MAGTRACK \EXPANDBITMAPBY4SLOW \SLOWMAGSHOW ONFOURGRID \EXPANDBITMAPBY4 \SLOWMAGSHOW1
\FFAST4BIT)
(CURSORS EMPTYCURSOR)
(MACROS MAGSHOW)
(ADDVARS (BackgroundMenuCommands ("Magnifier" (MAGNIFYW)
"for enlarging the screen around the cursor;
click to start, click to stop.")))
(VARS (BackgroundMenu))
(DECLARE: EVAL@COMPILE DONTCOPY DONTVAL@LOAD (FILES (LOADCOMP)
LARRAYELT))))
```

(DEFINEQ

(MAGNIFYW

```
[LAMBDA (WIN) (* rrb "14-Mar-86 10:03")
(PROG NIL
(OR (WINDOWP WIN)
(SETQ WIN (CREATEW (GETREGION 28 28 NIL (FUNCTION ONFOURGRID))
NIL 12)))
(WINDOWPROP WIN (QUOTE BUTTONEVENTFN)
(FUNCTION MAGTRACK))
(WINDOWPROP WIN (QUOTE NEWREGIONFN)
(FUNCTION ONFOURGRID))
```

(* make the background black so that the part of the window that isn't a multiple of 4 is black.)

(DSPTEXTURE BLACKSHADE WIN])

(MAGTRACK

```
[LAMBDA (WIN) (* rrb "30-Jun-86 15:30")
```

(* tracking function for a magnify window)

(* if the mouse goes down in the window, track until it goes down again.)

```
(PROG ((WININTERIOR (DSPCLIPPINGREGION NIL WIN))
(WINEXTERIOR (WINDOWPROP WIN (QUOTE REGION)))
MAGWIDTH MAGHEIGHT WIDTH HEIGHT NEARCORSORBITMAP EXPANDEDBITMAP CURX CURY LFT BTM MOUSEBEENUP WINLFT
WINBTM WINRGHT WINTOP)
(COND
((LASTMOUSESTATE UP)
(RETURN)))
(CLEARW WIN)
(SETQ WINLFT (fetch (REGION LEFT) of WINEXTERIOR))
(SETQ WINBTM (fetch (REGION BOTTOM) of WINEXTERIOR))
(SETQ WINRGHT (fetch (REGION PRIGHT) of WINEXTERIOR))
(SETQ WINTOP (fetch (REGION PTOP) of WINEXTERIOR))
[SETQ NEARCORSORBITMAP (BITMAPCREATE (SETQ WIDTH (QUOTIENT (SETQ MAGWIDTH (fetch (REGION WIDTH)
of WININTERIOR))
4))
(SETQ HEIGHT (QUOTIENT (SETQ MAGHEIGHT (fetch (REGION HEIGHT)
of WININTERIOR))
4))
(SETQ EXPANDEDBITMAP (BITMAPCREATE MAGWIDTH MAGHEIGHT))
[ERSETQ (RESETFORM (CURSOR EMPTYCURSOR)
(until (COND
(MOUSEBEENUP (MOUSESTATE (NOT UP)))
(MOUSESTATE UP)
(SETQ MOUSEBEENUP T)
NIL))
when (OR (NEQ CURX LASTMOUSEX)
(NEQ CURY LASTMOUSEY))
do (AND LFT (DRAWGRAYBOX (DIFFERENCE LFT 2)
(DIFFERENCE BTM 2)
(PLUS LFT WIDTH 2)
(PLUS BTM HEIGHT 2)
(SCREENBITMAP)
BLACKSHADE))
(SETQ CURX LASTMOUSEX)
```

```

(SETQ CURY LASTMOUSEY)
[SETQ LFT (IMAX 0 (IMIN (DIFFERENCE SCREENWIDTH WIDTH)
(DIFFERENCE CURX (IQUOTIENT WIDTH 2]
[SETQ BTM (IMAX 0 (IMIN (DIFFERENCE SCREENHEIGHT HEIGHT)
(DIFFERENCE CURY (IQUOTIENT HEIGHT 2]
(COND
  ((OR (GEQ LFT WINRGHT)
        (GEQ BTM WINTOP)
        (GREATERP WINLFT (PLUS LFT WIDTH))
        (GREATERP WINBTM (PLUS BTM HEIGHT)))
    (* no overlap between cursor box and magnifier window.)
  (T (\SLOWMAGSHOW WIN LFT BTM WIDTH HEIGHT NEARCORSORBITMAP EXPANDEDBITMAP
    WINLFT WINBTM WINRGHT WINTOP)))
(DRAWGRAYBOX (DIFFERENCE LFT 2)
(DIFFERENCE BTM 2)
(PLUS LFT WIDTH 2)
(PLUS BTM HEIGHT 2)
(SCREENBITMAP)
BLACKSHADE]
(* erase box from screen.)
(AND BTM (DRAWGRAYBOX (DIFFERENCE LFT 2)
(DIFFERENCE BTM 2)
(PLUS LFT WIDTH 2)
(PLUS BTM HEIGHT 2)
(SCREENBITMAP)
BLACKSHADE]))

```

(\EXPANDBITMAPBY4SLOW

```

[LAMBDA (SOURCE TARGET)
(* rrb "14-Mar-86 14:22")
(* expands a bitmap by a factor of 4 into another bitmap)

```

```

(DECLARE (GLOBALVARS \4BITEXPANSIONTABLE))
(PROG (NUW (BMH (fetch BITMAPHEIGHT of SOURCE))
      (BMW (fetch BITMAPWIDTH of SOURCE)))
(SETQ NUW (ITIMES 4 BMW))
(for I from 0 to (SUB1 BMH) as C from 0 by 4
  do (\FFAST4BIT (\ADDBASE (fetch BITMAPBASE of SOURCE)
    (ITIMES (IDIFFERENCE BMH (ADD1 I))
      (fetch BITMAPPASTERWIDTH of SOURCE)))
    (\ADDBASE (fetch BITMAPBASE of TARGET)
      (ITIMES (IDIFFERENCE (fetch BITMAPHEIGHT of TARGET)
        (ADD1 C))
        (fetch BITMAPPASTERWIDTH of TARGET)))
    (fetch BITMAPPASTERWIDTH of TARGET)
    (fetch (ARRAYP BASE) of \4BITEXPANSIONTABLE))
    (* copy line once.)
  (BITBLT TARGET 0 C TARGET 0 (IPLUS C 1)
    NUW 1 (QUOTE INPUT)
    (QUOTE REPLACE))
    (* copy both those lines.)
  (BITBLT TARGET 0 C TARGET 0 (IPLUS C 2)
    NUW 2 (QUOTE INPUT)
    (QUOTE REPLACE)))
(RETURN TARGET])

```

(\SLOWMAGSHOW

```

[LAMBDA (WIN X Y WID HGHT NEARCORSORBITMAP EXPANDEDBITMAP WINLFT WINBTM WINRIGHT WINTOP)
(* rrb "30-Jun-86 16:35")

```

```

(* * displays a magnified image of the area X Y in WIN but knows that there is an overlap)
(* FOR NOW NOT IMPLEMENTED)
(PROG ((SAVEBM (WINDOWPROP WIN (QUOTE IMAGECOVERED)))
  BOTTOMHEIGHT LEFTWIDTH)
(COND
  [(GREATERP WINBTM Y)
    (* bottom of nearcursor overlaps window.)
    (* display the area below the overlap)
    (\SLOWMAGSHOW1 WIN (SCREENBITMAP)
      X Y NEARCORSORBITMAP WID (SETQ BOTTOMHEIGHT (DIFFERENCE WINBTM Y))
      0 0 EXPANDEDBITMAP)
  (COND
    ((GREATERP WINLFT X)
      (* there is part of the screen to display before the window.)
      (\SLOWMAGSHOW1 WIN (SCREENBITMAP)
        X
        (PLUS Y BOTTOMHEIGHT)
        NEARCORSORBITMAP
        (SETQ LEFTWIDTH (DIFFERENCE WINLFT X))
        (DIFFERENCE HGHT BOTTOMHEIGHT)
        0
        (LLSH BOTTOMHEIGHT 2)
        EXPANDEDBITMAP)
      (* display the part under the window)
      (\SLOWMAGSHOW1 WIN SAVEBM 0 0 NEARCORSORBITMAP (DIFFERENCE WID LEFTWIDTH)
        (DIFFERENCE HGHT BOTTOMHEIGHT)
        (LLSH LEFTWIDTH 2)
        (LLSH BOTTOMHEIGHT 2)
        EXPANDEDBITMAP))
    ((LESSP WINRIGHT (PLUS X WID))
      (* there is screen to display after the window.)
      (* display the part under the window)

```

```

(\SLOWMAGSHOW1 WIN SAVEBM (DIFFERENCE X WINLFT)
  0 NEARCORSORBITMAP (SETQ LEFTWIDTH (DIFFERENCE WINRIGHT X))
  (DIFFERENCE HGHT BOTTOMHEIGHT)
  0
  (LLSH BOTTOMHEIGHT 2)
  EXPANDEDBITMAP) (* display the part to the right of the mag window.)
(\SLOWMAGSHOW1 WIN (SCREENBITMAP)
  WINRIGHT
  (PLUS Y BOTTOMHEIGHT)
  NEARCORSORBITMAP
  (DIFFERENCE WID LEFTWIDTH)
  (DIFFERENCE HGHT BOTTOMHEIGHT)
  (LLSH LEFTWIDTH 2)
  (LLSH BOTTOMHEIGHT 2)
  EXPANDEDBITMAP))
(T (* the width of the nearcursor area is completely within the
    magnifier window;)
  (\SLOWMAGSHOW1 WIN SAVEBM (DIFFERENCE X WINLFT)
    0 NEARCORSORBITMAP WID (DIFFERENCE HGHT BOTTOMHEIGHT)
    0
    (LLSH BOTTOMHEIGHT 2)
    EXPANDEDBITMAP]
  [(GREATERP (PLUS Y HGHT)
    WINTOP) (* top of nearcursor overlaps the magnifier window.)
    (* display the area above the overlap)
  (\SLOWMAGSHOW1 WIN (SCREENBITMAP)
    X WINTOP NEARCORSORBITMAP WID (DIFFERENCE HGHT (SETQ BOTTOMHEIGHT (DIFFERENCE WINTOP Y)))
    0
    (LLSH BOTTOMHEIGHT 2)
    EXPANDEDBITMAP)
  (COND
    ((GREATERP WINLFT X) (* there is part of the screen to display before the window.)
      (\SLOWMAGSHOW1 WIN (SCREENBITMAP)
        X Y NEARCORSORBITMAP (SETQ LEFTWIDTH (DIFFERENCE WINLFT X))
        BOTTOMHEIGHT 0 0 EXPANDEDBITMAP) (* display the part under the window)
      (\SLOWMAGSHOW1 WIN SAVEBM 0 (DIFFERENCE Y WINBTM)
        NEARCORSORBITMAP
        (DIFFERENCE WID LEFTWIDTH)
        BOTTOMHEIGHT
        (LLSH LEFTWIDTH 2)
        0 EXPANDEDBITMAP))
      ((LESSP WINRIGHT (PLUS X WID)) (* there is screen to display after the window.)
        (* display the part under the window)
        (\SLOWMAGSHOW1 WIN SAVEBM (DIFFERENCE X WINLFT)
          (DIFFERENCE Y WINBTM)
          NEARCORSORBITMAP
          (SETQ LEFTWIDTH (DIFFERENCE WINRIGHT X))
          BOTTOMHEIGHT 0 0 EXPANDEDBITMAP) (* display the part to the right of the mag window.)
        (\SLOWMAGSHOW1 WIN (SCREENBITMAP)
          WINRIGHT Y NEARCORSORBITMAP (DIFFERENCE WID LEFTWIDTH)
          BOTTOMHEIGHT
          (LLSH LEFTWIDTH 2)
          0 EXPANDEDBITMAP))
      (T (* the width of the nearcursor area is completely within the
          magnifier window;)
        (\SLOWMAGSHOW1 WIN SAVEBM (DIFFERENCE X WINLFT)
          (DIFFERENCE Y WINBTM)
          NEARCORSORBITMAP WID BOTTOMHEIGHT 0 0 EXPANDEDBITMAP]
          (* whole height of nearcursor overlaps the magnifier window.)
        (T
          (COND
            ((GREATERP WINLFT X) (* there is part of the screen to display before the window.)
              (\SLOWMAGSHOW1 WIN (SCREENBITMAP)
                X Y NEARCORSORBITMAP (SETQ LEFTWIDTH (DIFFERENCE WINLFT X))
                HGHT 0 0 EXPANDEDBITMAP) (* display the part under the window)
              (\SLOWMAGSHOW1 WIN SAVEBM 0 (DIFFERENCE Y WINBTM)
                NEARCORSORBITMAP
                (DIFFERENCE WID LEFTWIDTH)
                HGHT
                (LLSH LEFTWIDTH 2)
                0 EXPANDEDBITMAP))
              ((LESSP WINRIGHT (PLUS X WID)) (* there is screen to display after the window.)
                (* display the part under the window)
                (\SLOWMAGSHOW1 WIN SAVEBM (DIFFERENCE X WINLFT)
                  (DIFFERENCE Y WINBTM)
                  NEARCORSORBITMAP
                  (SETQ LEFTWIDTH (DIFFERENCE WINRIGHT X))
                  HGHT 0 0 EXPANDEDBITMAP) (* display the part to the right of the mag window.)
                (\SLOWMAGSHOW1 WIN (SCREENBITMAP)
                  WINRIGHT Y NEARCORSORBITMAP (DIFFERENCE WID LEFTWIDTH)
                  HGHT
                  (LLSH LEFTWIDTH 2)
                  0 EXPANDEDBITMAP))
              (T (* the width of the nearcursor area is completely within the
                  magnifier window;)
                (\SLOWMAGSHOW1 WIN SAVEBM (DIFFERENCE X WINLFT)
                  (DIFFERENCE Y WINBTM)
                  NEARCORSORBITMAP WID HGHT 0 0 EXPANDEDBITMAP]

```

(RETURN))

(ONFOURGRID

[LAMBDA (FIXPT MOVEPT)

(* rrb "14-Mar-86 10:08")

(* makes sure that both points are on a mod of 4 grid.)

(COND

```
(MOVEPT (replace (POSITION XCOORD) of MOVEPT with (DIFFERENCE (fetch (POSITION XCOORD) of MOVEPT)
                                                                (IMOD (fetch (POSITION XCOORD) of MOVEPT)
                                                                4)))
```

```
(replace (POSITION YCOORD) of MOVEPT with (DIFFERENCE (fetch (POSITION YCOORD) of MOVEPT)
                                                                (IMOD (fetch (POSITION YCOORD) of MOVEPT)
                                                                4)))
```

MOVEPT)

```
(T (replace (POSITION XCOORD) of FIXPT with (DIFFERENCE (fetch (POSITION XCOORD) of FIXPT)
                                                                (IMOD (fetch (POSITION XCOORD) of FIXPT)
                                                                4)))
```

```
(replace (POSITION YCOORD) of FIXPT with (DIFFERENCE (fetch (POSITION YCOORD) of FIXPT)
                                                                (IMOD (fetch (POSITION YCOORD) of FIXPT)
                                                                4)))
```

FIXPT))

(EXPANDBITMAPBY4

[LAMBDA (SOURCE TARGET WIDTH HEIGHT)

(* rrb "30-Jun-86 16:39")

(* expands a bitmap by a factor of 4 into another bitmap)

(DECLARE (GLOBALVARS \4BITEXPANSIONTABLE))

(PROG ((NUW (ITIMES 4 WIDTH))

(NUH (ITIMES 4 HEIGHT))

(SOURCEBASE (fetch BITMAPBASE of SOURCE))

(TARGETBASE (fetch BITMAPBASE of TARGET))

(TARGETRASTERWIDTH (fetch BITMAPRASTERWIDTH of TARGET))

(TABLEBASE (fetch (ARRAYP BASE) of \4BITEXPANSIONTABLE)))

(* clear out the part of the target that will be used.)

(BITBLT NIL NIL NIL TARGET 0 0 NUW NUH (QUOTE TEXTURE)

(QUOTE REPLACE)

0)

```
(for I from 1 to HEIGHT as SOURCEADDR from (TIMES (DIFFERENCE (fetch (BITMAP BITMAPHEIGHT) of SOURCE)
                                                                HEIGHT)
                                                                (fetch BITMAPRASTERWIDTH of SOURCE)))
```

by (fetch BITMAPRASTERWIDTH of SOURCE) as TARGETADDR

from (ITIMES (PLUS (DIFFERENCE (fetch (BITMAP BITMAPHEIGHT) of TARGET)

NUH)

3)

TARGETRASTERWIDTH)

by (ITIMES 4 TARGETRASTERWIDTH) do (\FFAST4BIT (\ADDBASE SOURCEBASE SOURCEADDR)

(\ADDBASE TARGETBASE TARGETADDR)

(QUOTIENT (PLUS WIDTH 3)

4)

TABLEBASE))

(* copy single lines once.)

(BITBLT TARGET 0 0 TARGET 0 1 NUW NUH (QUOTE INPUT)

(QUOTE PAINT))

(* copy both those lines.)

(BITBLT TARGET 0 0 TARGET 0 2 NUW NUH (QUOTE INPUT)

(QUOTE PAINT))

(RETURN TARGET])

(SLOWMAGSHOW1

[LAMBDA (MAGW SOURCEBM SOURCEX SOURCEY TEMPBM WIDTH HEIGHT MAGWX MAGWY EXPANDEDBITMAP)

(* rrb "30-Jun-86 16:41")

(* rrb "27-Jun-86 17:27")

(PROGN

(* * displays a magnified image of the area SOURCEX SOURCEY in MAGW)

(BITBLT SOURCEBM SOURCEX SOURCEY TEMPBM 0 0 WIDTH HEIGHT)

(BITBLT (\EXPANDBITMAPBY4 TEMPBM EXPANDEDBITMAP WIDTH HEIGHT)

0 0 MAGW MAGWX MAGWY (LLSH WIDTH 2)

(LLSH HEIGHT 2)

(QUOTE INPUT)

(QUOTE REPLACE])

(FFAST4BIT

[LAMBDA (A B N MAPBASE)

(* rrb "14-Mar-86 14:22")

(* DECLARATIONS: (BLOCKRECORD NIBBLE

((N1 BITS 4) (N2 BITS 4) (N3 BITS 4)

(N4 BITS 4))))

(* homebrew version of \FAST4BIT that removes ELT and is 60

percent faster.)

(bind AW (I _ 0) for J from 0 do (SETQ AW (\ADDBASE A J))

(OR (IGREATERP N I)

(RETURN))

(\PUTBASE B I (\GETBASE MAPBASE (fetch N1 of AW)))

(OR (IGREATERP N (add I 1))

(RETURN))

(\PUTBASE B I (\GETBASE MAPBASE (fetch N2 of AW)))

```

      (OR (IGREATERP N (add I 1))
        (RETURN))
      (\PUTBASE B I (\GETBASE MAPBASE (fetch N3 of AW)))
      (OR (IGREATERP N (add I 1))
        (RETURN))
      (\PUTBASE B I (\GETBASE MAPBASE (fetch N4 of AW)))
      (add I 1))
)

(RPAQ EMPTYCURSOR (CURSORCREATE (READBITMAP)
                                0 7))

(16 16 "####" "####" "####" "####" "####" "####" "####" "####" "####" "####" "####" "####" "####" "####" "####"
"####")

(DECLARE: EVAL@COMPILE

(PUTPROPS MAGSHOW MACRO ((WIN X Y WID HGHT NEARCUSORBITMAP EXPANDEDBITMAP)
                        (* rrb "27-Jun-86 17:27"))

(* * displays a magnified image of the area X Y in WIN)

      (BITBLT (SCREENBITMAP)
        X Y NEARCUSORBITMAP 0 0 WID HGHT)
      (BITBLT (\EXPANDBITMAPBY4 NEARCUSORBITMAP EXPANDEDBITMAP WID HGHT)
        0 0 WIN 0 0 (LLSH WID 2)
        (LLSH HGHT 2))))
)

(ADDTOVAR BackgroundMenuCommands ("Magnifier" (MAGNIFYW)
      "for enlarging the screen around the cursor;
      click to start, click to stop.))

(RPAQ BackgroundMenu NIL)

(DECLARE: EVAL@COMPILE DONTCOPY DONTVAL@LOAD

(FILESLoad (LOADCOMP)
  LLARRAYELT)
)

(PUTPROPS MAGNIFIER COPYRIGHT ("Xerox Corporation" 1986))

```

FUNCTION INDEX

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