

File created: 15-Aug-90 17:04:07 {DSK}<usr>local>lde>SOURCES>loops>LIBRARY>GAUGESCALES.;2

changes to: (VARS GAUGESCALES COMS)

previous date: 11-Mar-88 12:05:26 {DSK}<usr>local>lde>SOURCES>loops>LIBRARY>GAUGESCALES.;1

Read Table: INTERLISP

Package: INTERLISP

Format: XCCS

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(RPAQQ **GAUGESCALES COMS**

```
((DECLARE%: DONTCOPY (PROP MAKEFILE-ENVIRONMENT GAUGESCALES)
  (PROP FILETYPE GAUGESCALES))
 (FILES (FROM VALUEOF LOOPSLIBRARYDIRECTORY)
  GAUGEBOUNDEDMIXIN GAUGEINSTRUMENTS)
 (CLASSES HSGraphics VSGraphics)
 (METHODS HSGraphics.ShowLabels HSGraphics.ShowTicks)
 (METHODS VSGraphics.ShowLabels VSGraphics.ShowTicks)
 (CLASSES HorizontalScale VerticalScale)
 (METHODS HorizontalScale.DrawInstrument HorizontalScale.Set HorizontalScale.SetParameters
  HorizontalScale.ShowReading VerticalScale.DrawInstrument VerticalScale.OutOfBounds
  VerticalScale.Set VerticalScale.SetParameters VerticalScale.ShowReading)))
```

(DECLARE%: DONTCOPY

(PUTPROPS **GAUGESCALES MAKEFILE-ENVIRONMENT** (:PACKAGE "IL" :READTABLE "INTERLISP" :BASE 10))

(PUTPROPS **GAUGESCALES FILETYPE** :COMPILE-FILE)

)

(FILESLOAD (**FROM** VALUEOF LOOPSLIBRARYDIRECTORY)
 GAUGEBOUNDEDMIXIN GAUGEINSTRUMENTS)

(DEFCLASSES HSGraphics VSGraphics)

```
(DEFCLASS HSGraphics (MetaClass AbstractClass Edited%: (* edited%: "31-Oct-86 21:12")
  doc "Abstract classes are placeholders in the inheritance network, which cannot
  themselves be instantiated.")
 (Supers StraightScale)
 (InstanceVariables (height 57 doc "a window high enough for 11 labels")
  (scaleBottom 10 doc "bottom edge of scale")
  (scaleLeft 12 min 3 doc "left edge of scale")
  (scaleWidth 120 doc "width of inside of scale")
  (scaleHeight 15 doc "height of scale")
  (width 208)))
```

```
(DEFCLASS VSGraphics (MetaClass AbstractClass Edited%: (* edited%: "31-Oct-86 21:11")
  doc "Abstract classes are placeholders in the inheritance network, which cannot
  themselves be instantiated.")
 (Supers StraightScale)
 (InstanceVariables (height 160 doc "a window high enough for 11 labels")
  (scaleLeft 15 doc "left edge of scale")
  (scaleHeight 120 doc "height of scale")
  (scaleWidth 15 doc "width of inside of scale")
  (scaleBottom 12 doc "bottom edge of scale")
  (width 77)))
```

(\BatchMethodDefs)

(METH HSGraphics ShowLabels NIL "Put labels next to ticks" (category (HSGraphics)))

(METH HSGraphics ShowTicks NIL "Show ticks along top edge of scale" (category (HSGraphics)))

```
[Method ((HSGraphics ShowLabels)
  self) ; edited: 31-Oct-86 21:14
 "Put labels next to ticks"
 (PROG ((ticks (@ ticks))
  (window (@ window)))
  (AND ticks (PROG (xpos (ylabel (IPLUS (@ scaleBottom)
  (@ scaleHeight)
  (@ ticks%:, tickLength)
  8)))
```

(* in ylabel calculation, 8 is used for 4 pixels of space on either side of tick.
Refer to HorizontalScale.ShowTicks)

```
(SETQ xpos (EvenIntervals (@ scaleLeft)
  (@ scaleWidth)
  (SUB1 ticks)
  T))
 (for x in xpos as lab in (@ labels) bind (font _ (@ font))
```

```

do (MOVETO (IDIFFERENCE x (IQUOTIENT (STRINGWIDTH lab font)
                                     2))
      ylabel window)
(PRIN1 lab window]

```

```

[Method ((HSGraphics ShowTicks)
  self)
; edited: 31-Oct-86 21:14

```

```

"Show ticks along top edge of scale"
(PROG ((ticks (@ ticks))
      (AND ticks (PROG ((tickY (IPLUS (@ scaleBottom)
                                      (@ scaleHeight)
                                      4))
                    (tickXs (EvenIntervals (@ scaleLeft)
                                             (@ scaleWidth)
                                             (SUB1 ticks)
                                             T)))
      (for XT on tickXs do (DrawVTick self (CAR XT)
                                       tickY
                                       (AND (CDR XT)
                                             (IDIFFERENCE (CADR XT)
                                                           (CAR XT]

```

(\UnbatchMethodDefs)

(\BatchMethodDefs)

(METH VSGraphics ShowLabels NIL "Put labels next to ticks" (category (VSGraphics)))

(METH VSGraphics ShowTicks NIL "Show ticks along right edge of scale" (category (VSGraphics)))

```

[Method ((VSGraphics ShowLabels)
  self)
; JRB 30-Jan-87 04:42

```

```

"Put labels next to ticks"
(PROG ((window (@ window))
      (ticks (@ ticks))
      (precision (@ labels%:,precision))
      (font (@ font))
      (labels (@ labels)))
      (AND ticks (PROG (ypos (xlabel (IPLUS (@ scaleLeft)
                                           (@ scaleWidth)
                                           (@ ticks%:,tickLength)
                                           6)))
                    (SETQ ypos (EvenIntervals (IDIFFERENCE (@ scaleBottom)
                                                           (FONTPROP font 'DESCENT))
                                             (@ scaleHeight)
                                             (SUB1 ticks)
                                             T))
      (for y in ypos as lab in labels
        bind minusoff _ (if [OR (MINUSP (MKATOM (CAR labels)))
                              (MINUSP (MKATOM (CAR (LAST labels)
                                                (CHARWIDTH (CHARCODE -)
                                                            font))
          do (MOVETO xlabel y window)
            (if minusoff
              then (if (NOT (MINUSP (MKATOM LAB)))
                    then (RELMOVETO minusoff 0 window)))
            (PRIN1 lab window]

```

```

[Method ((VSGraphics ShowTicks)
  self)
; edited: 31-Oct-86 21:13

```

```

"Show ticks along right edge of scale"
(PROG ((tickX (IPLUS (@ scaleLeft)
                    (@ scaleWidth)
                    4))
      (tickYs (EvenIntervals (@ scaleBottom)
                             (@ scaleHeight)
                             (SUB1 (@ ticks)
                             T)))
      (for YT on tickYs do (DrawHTick self tickX (CAR YT)
                                       (AND (CDR YT)
                                             (IDIFFERENCE (CADR YT)
                                                           (CAR YT]

```

(\UnbatchMethodDefs)

(DEFCLASSES HorizontalScale VerticalScale)

```

(DEFCLASS HorizontalScale (MetaClass Class doc "A labelled bounded scale with a bar which fills to the right"
  Edited%:
  (* edited%: "27-Jan-87 11:27"))
(Supers HSGraphics)

```

```

(DEFCLASS VerticalScale (MetaClass Class doc "A labelled bounded scale with a black bar which rises proportional
  to its reading" Edited%:
  ; Edited 9-Mar-88 16:39 by jrb:
  )
(Supers VSGraphics)
(InstanceVariables (height 160 doc "a window high enough for 11 labels" min 160)
  (width 77)

```

```
(scaleWidth 15 doc "width of inside of scale")
(scaleHeight 120 doc "height of scale")
(scaleLeft 15 doc "left edge of scale")
(scaleBottom 12 doc "bottom edge of scale"))
```

(\BatchMethodDefs)

```
(METH HorizontalScale DrawInstrument NIL "Draw a horizontal tube for instrument" (category (HorizontalScale)))
```

```
(METH HorizontalScale Set (newReading)
"show reading on horizontal scale"
(category (HorizontalScale)))
```

```
(METH HorizontalScale SetParameters NIL "Set scale width from width" (category (Internal)))
```

```
(METH HorizontalScale ShowReading NIL "dgb: 9-JUN-83 22:37" (category (HorizontalScale)))
```

```
(METH VerticalScale DrawInstrument NIL "Draw a vertical tube for instrument" (category (VerticalScale)))
```

```
(METH VerticalScale OutOfBounds (outFlg)
"Print ? if out, space other wise"
(category (VerticalScale)))
```

```
(METH VerticalScale Set (reading)
"show reading on vertical scale"
(category (VerticalScale)))
```

```
(METH VerticalScale SetParameters NIL "Set scale height from height" (category (Internal)))
```

```
(METH VerticalScale ShowReading NIL "show the line at initial level. intrnal displayVal is really line heigt"
(category (VerticalScale)))
```

```
(Method ((HorizontalScale DrawInstrument)
self) ; dgb: 21-FEB-83 11:39
"Draw a horizontal tube for instrument"
(DrawBox (@ scaleLeft)
(@ scaleBottom)
(ADD1 (@ scaleWidth))
(@ scaleHeight)
1
'PAINT
(@ window)))
```

```
[Method ((HorizontalScale Set)
self newReading) ; edited: 15-May-86 00:53
"show reading on horizontal scale"
(_@
reading newReading)
(PROG ((y (ADD1 (@ scaleBottom)))
(w (SUB1 (@ scaleHeight)))
(displayVal (@ displayVal))
(newSetting (_ self ComputedDisplayVal newReading))
(window (@ window))
(shade (@ shade)))
(_@
displayVal newSetting)
(COND
((GREATERP displayVal newSetting)
(LineLeft displayVal newSetting y window w))
((GREATERP newSetting displayVal)
(LineRight displayVal newSetting y window w shade]
```

```
[Method ((HorizontalScale SetParameters)
self) ; edited: 28-Jan-87 21:59
"Set scale width from width"
(PROG [(mxStrWidth (MAXSTRINGWIDTH (@ labels)
(@ font]
(_Super)
(_@
scaleBottom
(@ spaceForLabelScale))
[_@
width%:,min
(WIDTHIFWINDOW (IMAX [PLUS [TIMES 2 (_@
scaleLeft
(IMAX (PLUS 2 (QUOTIENT mxStrWidth 2))
(@ scaleLeft%:,min]
(TIMES (COND
((@ ticks)
(SUB1 (@ ticks)))
(T 1))
(PLUS mxStrWidth (CHARWIDTH (CHARCODE 0)
(@ font]
(@ font]
(StringWidth "x-10-00 ??") (@ font]
(_@
width
(IMAX (@ width)
```

```

      (@ width%:,min))
  [_@
  range
  (_@
  scaleWidth
  (IPLUS (InteriorWidth self)
  -2
  (ITIMES -2 (@ scaleLeft]
  [_@
  displayVal
  (_@
  lower
  (ADD1 (@ scaleLeft]
  [_@
  height%:,min
  (HEIGHTIFWINDOW (IPLUS (@ spaceForLabelScale)
  (@ scaleHeight)
  (COND
  ((@ ticks) (* add 8 to tickLength for extra space on each end of tick.)
  (PLUS 8 (@ ticks%:,tickLength)))
  (T 3)
  (FONTHEIGHT (@ font)))
  (@ title)))
  (_@
  height
  (IMAX (@ height)
  (@ height%:,min]

```

```

(Method ((HorizontalScale ShowReading)
  self)
  "dgb: 9-JUN-83 22:37"
  (LineRight (ADD1 (@ scaleLeft))
  (_@
  displayVal
  (_ self ComputeDisplayVal (@ reading)))
  (ADD1 (@ scaleBottom))
  (@ window)
  (SUB1 (@ scaleHeight))
  (@ shade)))
; edited: 15-May-86 00:45
; show the line at initial level. intrnal displayVal is really line
; height

```

```

(Method ((VerticalScale DrawInstrument)
  self)
  "Draw a vertical tube for instrument"
  (DrawBox (@ scaleLeft)
  (@ scaleBottom)
  (@ scaleWidth)
  (ADD1 (@ scaleHeight))
  1
  'PAINT
  (@ window)))
; dgb: 30-JAN-83 12:40

```

```

[Method ((VerticalScale OutOfBounds)
  self outFlg)
  "Print ? if out, space other wise"
  (LET* ((font (@ font))
  (strWidth (STRINGWIDTH "??" font))
  (leftPos (IDIFFERENCE (@ width%:,min)
  (PLUS (TIMES 2 (WINDOWPROP (@ window)
  'BORDER))
  strWidth)))
  (window (@ window)))
  (COND
  (outFlg (MOVETO leftPos 1 window)
  (PRIN1 "??" (@ window)))
  (T (BITBLT NIL NIL window leftPos 0 strWidth (FONTHEIGHT font)
  'TEXTURE
  'REPLACE WHITESHAE]
  )))
; edited: 27-Jan-87 11:38

```

```

[Method ((VerticalScale Set)
  self reading)
  "show reading on vertical scale"
  (_@
  reading reading)
  (PROG ((x (ADD1 (@ scaleLeft)))
  (w (SUB1 (@ scaleWidth)))
  (displayVal (@ displayVal))
  (newSetting (_ self ComputeDisplayVal reading)))
  (_@
  displayVal newSetting)
  (COND
  ((GREATERP displayVal newSetting)
  (LineLower x displayVal newSetting (@ window)
  w)
  ((GREATERP newSetting displayVal)
  (LineRaise x displayVal newSetting (@ window)
  w)
  )))
; edited: 15-May-86 00:54

```

(@ shade]

[Method ((VerticalScale SetParameters)

; edited: 28-Oct-86 16:59

```

self
"Set scale height from height"
(_Super)
(_@
height%:,min
(HEIGHTIFWINDOW [PLUS (@ spaceForLabelScale)
(TIMES (ADD1 (@ ticks))
(FONTHEIGHT (@ font]
(@ title)))

```

; need to ADD1 here to make sure that lowest label does not run
; into label scale.

```

(_@
height
(IMAX (@ height)
(@ height%:,min)))
(_@
scaleBottom
(PLUS (IQUOTIENT (FONTHEIGHT (@ font))
2)
(@ spaceForLabelScale)))

```

```

[_@
range
(_@
scaleHeight
(IDIFFERENCE (InteriorHeight self)
(IPLUS (FONTHEIGHT (@ font))
(@ scaleBottom]

```

```

[_@
displayVal
(_@
lower
(ADD1 (@ scaleBottom]

```

```

[_@
width%:,min
(WIDTHIFWINDOW (IMAX (IPLUS (@ scaleLeft)
(@ scaleWidth)
(COND
((@ ticks)
(IPLUS (@ ticks%:,tickLength)
8))
(T 4))
(MAXSTRINGWIDTH (@ labels)
(@ font)))
(STRINGWIDTH "x-10-00 ???" (@ font]

```

```

(_@
width
(IMAX (@ width)
(@ width%:,min]

```

(Method ((VerticalScale ShowReading)

; edited: 15-May-86 01:06

```

self
"show the line at initial level. intrnal displayVal is really line heigt"
(ChangeVerticalSetting (ADD1 (@ scaleLeft))
(ADD1 (@ scaleBottom))
(_@
displayVal
(_ self ComputeDisplayVal (@ reading)))
(@ window)
(SUB1 (@ scaleWidth))
(@ shade)))

```

(\UnbatchMethodDefs)

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PROPERTY INDEX

GAUGESCALES1
