

File created: 15-Jun-90 13:49:37 {DSK}<usr>local>lde>lispcore>internal>library>DICOLOR.;2

changes to: (VARS DICOLORCOMS)

previous date: 15-Aug-85 19:44:58 {DSK}<usr>local>lde>lispcore>internal>library>DICOLOR.;1

Read Table: INTERLISP

Package: INTERLISP

Format: XCCS

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(RPAQQ **DICOLORCOMS**

```
((FNS CNSMENUINIT CNSTOCSL CNSTORGB CSLTOCNS DICOLOR.FROM.USER GETCNS HLSTOCSL CSLTOHLS RGBTOCNS)
 (VARS DICOLOR.hueMapping DICOLOR.lightnessMapping DICOLOR.saturationMapping NEWCOLORITEM)
 (INITVARS (COLORNAMEMENU))
 (FNS DICOLOR.hueN DICOLOR.hueNvalue DICOLOR.hueNname DICOLOR.lightnessN DICOLOR.lightnessNvalue
  DICOLOR.lightnessNname DICOLOR.saturationN DICOLOR.saturationNvalue DICOLOR.saturationNname)
 (DECLARE%: DONTCOPY (*
  (RECORDS hueRecord lightnessRecord saturationRecord)
  (CONSTANTS * DICOLOR.hueConstants)
  (CONSTANTS * DICOLOR.saturationConstants)
  (CONSTANTS * DICOLOR.lightnessConstants))))
```

(DEFINEQ

(**CNSMENUINIT**

```
[LAMBDA NIL (* gbn "9-Aug-85 03:11")
 [SETQ CNSHUEMENU (create MENU
  ITEMS _ (for I in DICOLOR.hueMapping collect (CAR I))
 [SETQ CNSSATURATIONMENU (create MENU
  ITEMS _ (for I in DICOLOR.saturationMapping collect (CAR I))
 (SETQ CNSLIGHTNESSMENU (create MENU
  ITEMS _ (for I in DICOLOR.lightnessMapping collect (CAR I))
```

(**CNSTOCSL**

```
[LAMBDA (hue saturation lightness) (* hdj "12-Apr-85 19:01")
 (PROG ((hueAtom (MKATOM hue))
  (saturationAtom (MKATOM saturation))
  (lightnessAtom (MKATOM lightness))
  c s l)
 (if [NOT (SETQ c (fetch (hueRecord ordering) of (ASSOC hueAtom DICOLOR.hueMapping])
  then (SETQ c DICOLOR.achromatic))
 (if (EQ c DICOLOR.achromatic)
  then (SETQ s DICOLOR.noSaturation)
  else (if [NOT (SETQ s (fetch (saturationRecord ordering) of (ASSOC saturationAtom
  DICOLOR.saturationMapping])
  then (SETQ s DICOLOR.vivid)))
 (SELECTQ hueAtom
  (Black (SETQ l DICOLOR.black))
  (White (SETQ l DICOLOR.white))
  (if [NOT (SETQ l (fetch (lightnessRecord ordering) of (ASSOC lightnessAtom DICOLOR.lightnessMapping])
  then (SETQ l DICOLOR.medium)))
 (RETURN (LIST c s l])
```

(**CNSTORGB**

```
[LAMBDA (saturation lightness hue) (* hdj "15-Jul-85 12:33")
 (LET ((CSL CNSTOCSL hue saturation lightness))
 (HLSTORGB (APPLY (FUNCTION CSLTOHLS)
  CSL])
```

(**CSLTOCNS**

```
[LAMBDA (c s l) (* hdj "15-Jul-85 12:37")
 (PROG (hue saturation lightness)
 [if (EQ c DICOLOR.achromatic)
  then (SETQ saturation "")
 [SELECTC l
  (DICOLOR.black
  (SETQ hue "Black")
  (SETQ lightness ""))
  (DICOLOR.white
  (SETQ hue "White")
  (SETQ lightness ""))
  (PROGN (SETQ hue "Gray")
  (SETQ lightness (MKSTRING (fetch (lightnessRecord name) of (DICOLOR.lightnessN l))
  else (SETQ hue (fetch (hueRecord name) of (DICOLOR.hueN c)))
  (SETQ saturation (fetch (saturationRecord name) of (DICOLOR.saturationN s)))
  (SETQ lightness (fetch (lightnessRecord name) of (DICOLOR.lightnessN l))
 (RETURN (LIST saturation lightness hue])
```

(DICOLOR.FROM.USER

[LAMBDA (NAMES?)

(* gbn " 9-Aug-85 04:51")

(* * returns an RGB triple. If NAMES? prompts the user first with the global color name menu. She can then choose NEWCOLOR which can be specified as RGB or CNS)

(PROG (NAME RGB)

(if NAMES?

then

(* first try to get a color name)

[SETQ NAME (MENU (OR COLORNAMEMENU (SETQ COLORNAMEMENU

(CREATE MENU

ITEMS _ (CONS NEWCOLORITEM

(FOR ENTRY IN COLORNAMES

COLLECT (CAR ENTRY]

(if (NOT NAME)

then

(* the user clicked outside the menu)

(RETURN))

[SETQ RGB (SELECTQ NAME

(RGB (READCOLOR1 "specify new color"))

(CNS (APPLY (FUNCTION CNSTORGB)

(GETCNS)))

(RETURN (CDR (ASSOC NAME COLORNAMES]

(if (NOT (SETQ NAME (TTYIN "New color name? ")))

then

(* user must have decided that she didn't want to keep (name) the color)

(RETURN))

(push COLORNAMES (CONS (CAR NAME)

RGB))

(SETQ COLORNAMEMENU NIL)

(* invalidate the menu)

(RETURN RGB))

(GETCNS

[LAMBDA NIL

(* gbn " 9-Aug-85 03:13")

(LIST (MENU CNSLIGHTNESSMENU)

(MENU CNSSATURATIONMENU)

(MENU CNSHUEMENU])

(HLSTOCSL

[LAMBDA (hue lightness saturation)

(* hdj "15-Jul-85 12:14")

(LET ((ISLHue (FQUOTIENT (MOD (PLUS hue 240)

360)

360)))

(PROG (c s l)

(for old s from DICOLOR.noSaturation to DICOLOR.vivid

do (if (EQ s DICOLOR.vivid)

then (RETURN))

(if (LEQ saturation (PLUS (DICOLOR.saturationNvalue s)

(QUOTIENT (DIFFERENCE (DICOLOR.saturationNvalue (ADD1 s))

(DICOLOR.saturationNvalue s))

2)))

then (RETURN)))

[if (EQ s DICOLOR.noSaturation)

then (SETQ c DICOLOR.achromatic)

(for old l from DICOLOR.black to DICOLOR.white

do (if (EQ l DICOLOR.white)

then (RETURN))

(if (LEQ lightness (PLUS (DICOLOR.lightnessNvalue l)

(QUOTIENT (DIFFERENCE (DICOLOR.lightnessNvalue (ADD1 l))

(DICOLOR.lightnessNvalue l))

2)))

then (RETURN)))

else (for old c from DICOLOR.red to DICOLOR.purplishRed

do (* (HELP c)

(if (EQ c DICOLOR.purplishRed)

then (if (GREATERP ISLHue (PLUS (DICOLOR.hueNvalue c)

(QUOTIENT (DIFFERENCE 1 (DICOLOR.hueNvalue c))

2)))

then (SETQ c DICOLOR.red))

(RETURN))

(if (LEQ ISLHue (PLUS (DICOLOR.hueNvalue c)

(QUOTIENT (DIFFERENCE (DICOLOR.hueNvalue (ADD1 c))

(DICOLOR.hueNvalue c))

2)))

then (RETURN)))

(for old l from DICOLOR.veryDark to DICOLOR.veryLight

do (if (EQ l DICOLOR.veryLight)

then (RETURN))

(if (LEQ lightness (PLUS (DICOLOR.lightnessNvalue l)

(QUOTIENT (DIFFERENCE (DICOLOR.lightnessNvalue (ADD1 l))

(DICOLOR.lightnessNvalue l))

2)))

then (RETURN])

(RETURN (LIST c s l])

(CSLTOHLS

```
[LAMBDA (c s l)
  (PROG (hue saturation lightness)
    (if (EQ c DICOLOR.achromatic)
      then (SETQ hue 0.0)
          (SETQ saturation 0.0)
          (SETQ lightness (DICOLOR.lightnessNvalue l))
      else (SETQ hue (DICOLOR.hueNvalue c))
          (SETQ saturation (DICOLOR.saturationNvalue s))
          (SETQ lightness (DICOLOR.lightnessNvalue l)))
    (RETURN (LIST (MOD (FPLUS 120 (FTIMES hue 360))
                      360)
                  lightness saturation])
```

(* hdj "15-Jul-85 12:23")

(RGBTOCNS

```
[LAMBDA (Red Green Blue)
  (APPLY (FUNCTION CSLTOCNS)
    (APPLY (FUNCTION HLSTOCSL)
      (RGBTOHLS Red Green Blue])
```

(* hdj "15-Jul-85 12:36")

(RPAQQ DICOLOR.hueMapping

```
((Achromatic 0.0 -1)
 (Red 0.0 0)
 (OrangishRed 0.01 1)
 (RedOrange 0.02 2)
 (ReddishOrange 0.03 3)
 (Orange 0.04 4)
 (YellowishOrange 0.07 5)
 (OrangeYellow 0.1 6)
 (OrangishYellow 0.13 7)
 (Yellow 0.1673 8)
 (GreenishYellow 0.2073 9)
 (YellowGreen 0.2473 10)
 (YellowishGreen 0.2873 11)
 (Green 0.3333 12)
 (BluishGreen 0.4133 13)
 (GreenBlue 0.4933 14)
 (GreenishBlue 0.5733 15)
 (Blue 0.6666 16)
 (PurplishBlue 0.6816 17)
 (BluePurple 0.6966 18)
 (BluishPurple 0.7116 19)
 (Purple 0.73 20)
 (ReddishPurple 0.8 21)
 (PurpleRed 0.87 22)
 (PurplishRed 0.94 23)
 (BrownishRed 0.01 24)
 (RedBrown 0.02 25)
 (ReddishBrown 0.03 26)
 (Brown 0.04 27)
 (YellowishBrown 0.07 28)
 (BrownYellow 0.1 29)
 (BrownishYellow 0.13 30)))
```

(RPAQQ DICOLOR.lightnessMapping

```
((Black 0.0 0)
 (VeryDark 0.1666 1)
 (Dark 0.3333 2)
 (Medium 0.5 3)
 (Light 0.6666 4)
 (VeryLight 0.8333 5)
 (White 1.0 6)))
```

(RPAQQ DICOLOR.saturationMapping

```
((NoSaturation 0.0 0)
 (Grayish 0.25 1)
 (Moderate 0.5 2)
 (Strong 0.75 3)
 (Vivid 1.0 4)))
```

(RPAQQ NEWCOLORITEM

```
(New% Color 'CNS "Allows specification of a new color" (SUBITEMS (RGB 'RGB "Specify a new
color using Red,
Green, Blue
sliders")
(CNS 'CNS "Specify a new
color using English")))
```

(RPAQQ? COLORNAMEMENU)

(DEFINEQ

(DICOLOR.hueN

```
[LAMBDA (N)
  (DECLARE (GLOBALVARS DICOLOR.hueMapping))
```

(* hdj "17-Apr-85 13:38")

(for ELT in DICOLOR.hueMapping suchthat (EQ (fetch (hueRecord ordering) of ELT) N])

(DICOLOR.hueNvalue

[LAMBDA (N) (* hdj "18-Apr-85 09:58") (fetch (hueRecord value) of (DICOLOR.hueN N])

(DICOLOR.hueNname

[LAMBDA (N) (* hdj "18-Apr-85 10:07") (fetch (hueRecord name) of (DICOLOR.hueN N])

(DICOLOR.lightnessN

[LAMBDA (N) (* hdj "17-Apr-85 13:40") (DECLARE (GLOBALVARS DICOLOR.lightnessMapping) (for ELT in DICOLOR.lightnessMapping suchthat (EQ (fetch (lightnessRecord ordering) of ELT) N])

(DICOLOR.lightnessNvalue

[LAMBDA (N) (* hdj "17-Apr-85 13:36") (fetch (lightnessRecord value) of (DICOLOR.lightnessN N])

(DICOLOR.lightnessNname

[LAMBDA (N) (* hdj "17-Apr-85 14:02") (fetch (lightnessRecord name) of (DICOLOR.lightnessN N])

(DICOLOR.saturationN

[LAMBDA (N) (* hdj "17-Apr-85 13:39") (DECLARE (GLOBALVARS DICOLOR.saturationMapping) (for ELT in DICOLOR.saturationMapping suchthat (EQ (fetch (saturationRecord ordering) of ELT) N])

(DICOLOR.saturationNvalue

[LAMBDA (N) (* hdj "17-Apr-85 13:36") (fetch (saturationRecord value) of (DICOLOR.saturationN N])

(DICOLOR.saturationNname

[LAMBDA (N) (* hdj "17-Apr-85 14:02") (fetch (saturationRecord name) of (DICOLOR.saturationN N])

)

(DECLARE%: DONTCOPY

(DECLARE%: EVAL@COMPILE

(RECORD hueRecord (name value ordering))

(RECORD lightnessRecord (name value ordering))

(RECORD saturationRecord (name value ordering))

)

(RPAQQ DICOLOR.hueConstants

(DICOLOR.achromatic DICOLOR.blue DICOLOR.bluePurple DICOLOR.bluishGreen DICOLOR.bluishPurple DICOLOR.brown DICOLOR.brownYellow DICOLOR.brownishRed DICOLOR.brownishYellow DICOLOR.green DICOLOR.greenBlue DICOLOR.greenishBlue DICOLOR.greenishYellow DICOLOR.orange DICOLOR.orangeYellow DICOLOR.orangishRed DICOLOR.orangishYellow DICOLOR.purple DICOLOR.purpleRed DICOLOR.purplishBlue DICOLOR.purplishRed DICOLOR.red DICOLOR.redBrown DICOLOR.redOrange DICOLOR.reddishBrown DICOLOR.reddishOrange DICOLOR.reddishPurple DICOLOR.yellow DICOLOR.yellowGreen DICOLOR.yellowishBrown DICOLOR.yellowishGreen DICOLOR.yellowishOrange))

(DECLARE%: EVAL@COMPILE

(RPAQQ DICOLOR.achromatic -1)

(RPAQQ DICOLOR.blue 16)

(RPAQQ DICOLOR.bluePurple 18)

(RPAQQ DICOLOR.bluishGreen 13)

(RPAQQ DICOLOR.bluishPurple 19)

(RPAQQ DICOLOR.brown 27)

(RPAQQ DICOLOR.brownYellow 29)

(RPAQQ DICOLOR.brownishRed 24)

(RPAQQ **DICOLOR.brownishYellow** 30)
 (RPAQQ **DICOLOR.green** 12)
 (RPAQQ **DICOLOR.greenBlue** 14)
 (RPAQQ **DICOLOR.greenishBlue** 15)
 (RPAQQ **DICOLOR.greenishYellow** 9)
 (RPAQQ **DICOLOR.orange** 4)
 (RPAQQ **DICOLOR.orangeYellow** 6)
 (RPAQQ **DICOLOR.orangishRed** 1)
 (RPAQQ **DICOLOR.orangishYellow** 7)
 (RPAQQ **DICOLOR.purple** 20)
 (RPAQQ **DICOLOR.purpleRed** 22)
 (RPAQQ **DICOLOR.purplishBlue** 17)
 (RPAQQ **DICOLOR.purplishRed** 23)
 (RPAQQ **DICOLOR.red** 0)
 (RPAQQ **DICOLOR.redBrown** 25)
 (RPAQQ **DICOLOR.redOrange** 2)
 (RPAQQ **DICOLOR.reddishBrown** 26)
 (RPAQQ **DICOLOR.reddishOrange** 3)
 (RPAQQ **DICOLOR.reddishPurple** 21)
 (RPAQQ **DICOLOR.yellow** 8)
 (RPAQQ **DICOLOR.yellowGreen** 10)
 (RPAQQ **DICOLOR.yellowishBrown** 28)
 (RPAQQ **DICOLOR.yellowishGreen** 11)
 (RPAQQ **DICOLOR.yellowishOrange** 5)

(CONSTANTS DICOLOR.achromatic DICOLOR.blue DICOLOR.bluePurple DICOLOR.bluishGreen DICOLOR.bluishPurple
 DICOLOR.brown DICOLOR.brownYellow DICOLOR.brownishRed DICOLOR.brownishYellow DICOLOR.green
 DICOLOR.greenBlue DICOLOR.greenishBlue DICOLOR.greenishYellow DICOLOR.orange DICOLOR.orangeYellow
 DICOLOR.orangishRed DICOLOR.orangishYellow DICOLOR.purple DICOLOR.purpleRed DICOLOR.purplishBlue
 DICOLOR.purplishRed DICOLOR.red DICOLOR.redBrown DICOLOR.redOrange DICOLOR.reddishBrown
 DICOLOR.reddishOrange DICOLOR.reddishPurple DICOLOR.yellow DICOLOR.yellowGreen DICOLOR.yellowishBrown
 DICOLOR.yellowishGreen DICOLOR.yellowishOrange)
)

(RPAQQ **DICOLOR.saturationConstants** (DICOLOR.noSaturation DICOLOR.grayish DICOLOR.moderate DICOLOR.strong
 DICOLOR.vivid))

(DECLARE%: EVAL@COMPILE

(RPAQQ **DICOLOR.noSaturation** 0)
 (RPAQQ **DICOLOR.grayish** 1)
 (RPAQQ **DICOLOR.moderate** 2)
 (RPAQQ **DICOLOR.strong** 3)
 (RPAQQ **DICOLOR.vivid** 4)

(CONSTANTS DICOLOR.noSaturation DICOLOR.grayish DICOLOR.moderate DICOLOR.strong DICOLOR.vivid)
)

(RPAQQ **DICOLOR.lightnessConstants** (DICOLOR.black DICOLOR.veryDark DICOLOR.dark DICOLOR.medium DICOLOR.light
 DICOLOR.veryLight DICOLOR.white))

(DECLARE%: EVAL@COMPILE

(RPAQQ **DICOLOR.black** 0)
 (RPAQQ **DICOLOR.veryDark** 1)
 (RPAQQ **DICOLOR.dark** 2)
 (RPAQQ **DICOLOR.medium** 3)

```
{MEDLEY}<obsolete>internal>library>DICOLOR.;1
```

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```
(RPAQQ DICOLOR.light 4)
```

```
(RPAQQ DICOLOR.veryLight 5)
```

```
(RPAQQ DICOLOR.white 6)
```

```
(CONSTANTS DICOLOR.black DICOLOR.veryDark DICOLOR.dark DICOLOR.medium DICOLOR.light DICOLOR.veryLight  
DICOLOR.white)
```

```
)  
)
```

```
(PUTPROPS DICOLOR COPYRIGHT ("Venue & Xerox Corporation" 1985 1990))
```

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