Package 'tkRplotR'

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Title Display Resizable Plots

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Description Display a plot in a Tk canvas.

License GPL (>= 2)

Depends R (>= 3.5), tcltk, grDevices

SystemRequirements Tcl/Tk (>= 8.6)

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R topics documented:

tkRplotR-package *Display Resizable Plots*

Description

This package contains functions for ploting in a Tk canvas.

Details

Package:	tkRplotR
Type:	Package
License:	GPL (>= 2)

Main Functions

`tkRplot` display a plot in a Tk toplevel window

`tkRreplot` refresh the plot created by tkRplot

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addTkBind *Add Tk Binds*

Description

Add binds to previous defined bindings

Usage

```
addTkBind(win, event, fun = NULL)
```

Arguments

`win`	window
`event`	event
`fun`	a function

Details

This function adds a new bind while keeping the previous defined binds.

Examples

```
## Not run:

tt <- tktoplevel()
tt <- tkRplot(tt, function () plot(1:10))
FUN <- local({
  canPos <-.Tcl(paste(tt$env$canvas, "create text 0 0 "))
    function (x, y) {
        x <- as.numeric(x)
        y <- as.numeric(y)
       tkdelete(tt$env$canvas, tclvalue(canPos))
           xy <- formatC(tk2usr(x, y),
                   digits = 2,
                     format = "f",
                       width = 5)
    canPos <<- .Tcl(
     paste(tt$env$canvas, "create text 40 10 -fill blue -justify left -text { ",
            xy[1], " ", xy[2],
            "} -font {Helvetica -10}"))
  }})

tkbind(tt$env$canvas, "<Motion>", FUN)
tkbind(tt$env$canvas, "<Motion>") #to give current bidings
FUN1 <- function (x,y) print(tk2usr(x,y))
addTkBind(tt$env$canvas, "<Motion>", FUN1)
tkbind(tt$env$canvas, "<Motion>") #to give current bidings

## End(Not run)
```

`setCoef` *Functions to Convert Tk and User Coordinates*

Description

Convert Tk coordinates from/to user coordinates.

Usage

```
setCoef(W, width, height)
getCoef(W)
tk2usr(W, x = NULL, y = NULL)
usr2tk(W, x = NULL, y = NULL)
```

Arguments

`W`	the window (toplevel). If W is missing the getCoef function returns the coefficients for the last toplevel visited.
`width`	width of the canvas (image)

height	height of the canvas (image)
x	x position.
y	y position.

Examples

```
## Not run:

bb <- 1
tt <- tktoplevel()
tt <- tkRplot(tt, function() {
 x <- 1:20 / 20
   plot(
   x,
   x ^ bb,
   col = "#0000ff50",
       xlab = "x",
           ylab = paste0("x^", bb),
               type = "l",
                   axes = FALSE,
                       lwd = 4)
   title(main = bb)
     points(x,
      x ^ bb,
      col = "#ff000050",
      pch = 19,
      cex = 2)
        axis(1)
        axis(2)
          box()
          })

 getCoef()

 tkbind(tt$env$canvas, "<Button-1>", function(x, y)
 print(tk2usr(x, y)))

 # A more complex example
 local({
 canPos <-.Tcl(paste(tt$env$canvas, "create text 0 0 "))
 canPosX <-.Tcl(paste(tt$env$canvas, "create text 0 0 "))
 canPosY <-.Tcl(paste(tt$env$canvas, "create text 0 0 "))
 lineVertical <- .Tcl(paste(tt$env$canvas, "create line 0 0 0 0"))
 lineHorizontal<-.Tcl(paste(tt$env$canvas, "create line 0 0 0 0"))
 tkbind(tt, "<Motion>", function (x, y) {
   x <- as.numeric(x)
     y <- as.numeric(y)
       for (i in c(canPos, lineVertical, lineHorizontal,canPosX,canPosY))
       tkdelete(tt$env$canvas, tclvalue(i))

            xy <- formatC(tk2usr(x, y),
```

```
                            digits = 2,
                             format = "f",
                              width = 5)

xRange <- tt$env$plt[1:2] * tt$env$width
  yRange <- (1 - tt$env$plt[4:3]) * tt$env$height
    canPos <<- .Tcl(
 paste(tt$env$canvas, "create text 40 10 -fill blue -justify left -text { ",
     xy[1], " ", xy[2],
     "} -font {Helvetica -10}"))
      if (x < xRange[1] | x > xRange[2])
         return()
         if (y < yRange[1] | y > yRange[2])
           return()
canPosX <<- .Tcl(paste(tt$env$canvas, "create text ", x, yRange[1]-10,
           " -fill blue -justify center -text { ",xy[1],
           "} -font {Helvetica -10}"))
canPosY <<- .Tcl(paste(tt$env$canvas, "create text ",xRange[2]+10, y,
   " -fill blue -justify center -text { ",xy[2], "} -font {Helvetica -10}"))
           lineVertical <<- .Tcl(paste(tt$env$canvas, "create line ",
                 x,      yRange[1],      x,      yRange[2],
                    "-fill blue -dash 4"))
           lineHorizontal <<- .Tcl(paste(tt$env$canvas,
                 "create line ",
                  xRange[1],  y, xRange[2], y,
                        "-fill blue -dash 4"))})
     tkbind(tt$env$canvas, "<Leave>", function (x, y)
     {tkdelete(tt$env$canvas, tclvalue(canPos))})
     } )


## End(Not run)
```

`setVariable` *Set, Get, and Remove Variables*

Description

Define, get, and remove variables

Usage

```
setVariable(name, value = NULL)
getVariable(name, value = NULL)
rmVariable(name)
```

Arguments

`name`	name of the variable
`value`	the value of the variable

Examples

```
setVariable("var1", 1)
exists("var1")
getVariable("var1")
rmVariable("var1")
getVariable("var1")
getVariable("tkRplotR_pngType")
```

---

tkBinds *Define Tk Binds To Allow Automatic Resizing*

Description

Add binds to automatically resize the graph

Usage

```
tkBinds(parent, expose = TRUE, configure = TRUE)
```

Arguments

parent	parent Tk toplevel window
expose	if TRUE update graph when the window is expose
configure	if TRUE update the graph when the window is update

Details

This function adds the binds needed to automatically resize the graph

Examples

```
## Not run:
tkbb <- tclVar(1)
tt <- tktoplevel()
tt <- tkRplot(tt, function() {
b <- .tcl2num(tkbb)
 x <- 1:20 / 20
   plot(
   x,
   x ^ b,
   col = "#0000ff50",
       xlab = "x",
           ylab = paste0("x^", b),
               type = "l",
                   axes = FALSE,
                       lwd = 4)
```

```
    title(main = b)
      points(x,
       x ^ b,
       col = "#ff000050",
       pch = 19,
       cex = 2)
         axis(1)
         axis(2)
           box()
           })

       s <-
       tkscale(
       tt,
       from = 0.05,
       to = 2.00,
       variable = tkbb,
       showvalue = FALSE,
       resolution = 0.05,
       orient = "horiz"
       )

       tkpack(s,
       side = "bottom",
       before = tt$env$canvas,
       expand = FALSE,
       fill = "both")

  # to disable the automatic resizing of the graph
    tkBinds(parent = tt, expose = FALSE, configure = FALSE)

  # to enable again the automatic resising
  # tkBinds(parent = tt, expose = TRUE, configure = TRUE)

 ## End(Not run)
```

`tkLocator` *Gives the Position*

Description

Gives the position when the left mouse button is pressed + "Ctrl" button.

Usage

```
tkLocator(parent, n = 1)
```

Arguments

`parent`	Tk toplevel window
`n`	the number of points to locate

Value

A list with x and y components which are the coordinates of the identified points.

Examples

```
## Not run:
bb <- 1
tt <- tktoplevel()
tt <- tkRplot(tt, function() {
 x <- 1:20 / 20
   plot(
   x,
   x ^ bb,
   col = "#0000ff50",
       xlab = "x",
           ylab = paste0("x^", bb),
               type = "l",
                   axes = FALSE,
                       lwd = 4)
   title(main = bb)
     points(x,
      x ^ bb,
      col = "#ff000050",
      pch = 19,
      cex = 2)
        axis(1)
        axis(2)
          box()
          })
 tkLocator(tt, 2)

## End(Not run)
```

---

tkRplot *Tk Rplot With Resizing*

Description

Displays a plot in a Tk toplevel window.

Usage

```
tkRplot(W, fun, width = 490, height = 490, ...)
tkRreplot(W, fun, width, height,  ...)
.tkRreplot(W)
```

Arguments

W	Tk toplevel window
fun	function to produce the plot
width	image width
height	image height
...	additional arguments

Examples

```
## Not run:
#Example 1 without using tkReplot function (tkRplotR version > 0.1.6)
tk_b <- tclVar(1)
tk_x <- tclVar(10)
tk_main <- tclVar('...')

tt0 <- tktoplevel()
tt0 <- tkRplot(tt0, function(...) {
# get values of tclvariables
  x <- .tcl2num(tk_x)
  x <- 1:x
  b <- .tcl2num(tk_b)
  main <- .tcl2String(tk_main)

  plot(
    x,
    x ^ b ,
    col = "#0000ff50",
    xlab = "x",
    ylab = expression(x^b),
    type = "l",
    axes = FALSE,
    lwd = 4)
  title(main = main)
  points(x,
         x ^ b,
         col = "#ff000050",
         pch = 19,
         cex = 2)
  axis(1)
  axis(2)
  box()
})

s01 <- tkscale(
  tt0,
  #command = function(...) .tkRreplot(tt0),
  from = 10,
  to = 60,
  label = 'x',
```

```
  variable = tk_x,
  showvalue = TRUE,
  resolution = 1,
  repeatdelay = 200,
  repeatinterval = 100,
  orient = "hor"
)

s02 <- tkscale(
  tt0,
  #command = function(...) .tkRreplot(tt0),
  from = 0.05,
  to = 2.00,
  label = 'b',
  variable = tk_b,
  showvalue = TRUE,
  resolution = 0.01,
  repeatdelay = 200,
  repeatinterval = 100,
  orient = "ver"
)


e01 <- tkentry(tt0,
               textvariable = tk_main,
               validate = 'all', validatecommand="")
tkpack(s02,
       side = "left",
       expand = FALSE,
       #'anchor = "c",
       before = tt0$env$canvas,
       fill = "both")

tkpack(s01,
       side = "bottom",
       expand = FALSE,
       #'anchor = "c",
       before = tt0$env$canvas,
       fill = "both")

tkpack(e01,
       side = "top",
       expand = FALSE,
       #'anchor = "c",
       before = tt0$env$canvas,
       fill = "both")


#Example 2 using tkReplot function (tkRplotR version < 0.1.7)
bb <- 1
tkbb <- tclVar(1)
tt <- tktoplevel()
f <- function(...) {
```

```
 b <- as.numeric(tclvalue(tkbb))
   if (b != bb) {
       bb <<- b
           tkRreplot(tt)
             }
     }

tt <- tkRplot(tt, function() {
 x <- 1:20 / 20
   plot(
   x,
   x ^ bb,
   col = "#0000ff50",
       xlab = "x",
           ylab = paste0("x^", bb),
               type = "l",
                   axes = FALSE,
                       lwd = 4)
   title(main = bb)
     points(x,
      x ^ bb,
      col = "#ff000050",
      pch = 19,
      cex = 2)
        axis(1)
        axis(2)
          box()
          })

  s <- tkscale(
       tt,
       command = f,
       from = 0.05,
       to = 2.00,
       variable = tkbb,
       showvalue = TRUE,
       resolution = 0.01,
       repeatdelay = 50,
       repeatinterval = 100,
       orient = "horiz"
       )

       tkpack(s,
       side = "bottom",
       expand = FALSE,
       before = tt$env$canvas,
       fill = "both")


## End(Not run)
```

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