GUI Library Functions

The GUI library allows the creation of some basic GUI elements such as buttons, checkboxes, radio buttons, dialog boxes, spinners, dropdown lists, popup menus, and frames. It also has an option to create a keypad for data entry. By default most GUI widgets are drawn at depth 5 except for dialog boxes and popup menus which are drawn at depth zero.
Generally, the functions here return 1 to indicate success and 0 to indicate failure or 1 to indicate TRUE and 0 to indicate FALSE. Where other values are returned, the descriptions give details.
Parameters end with # to indicate a real (floating point) value and $ to indicate a string. Integer values have no special end character. When a widget is disabled, its opacity is set to 128 (50%). All widgets (except traffic lights and frame) are fixed-to-screen and are not affected by zoom or viewoffset settings.

GUIButton

A button displays a three-vertical-frame image sprite (or creates a simple default one) and overlayed text (may be blank). Frame one displays by default, frame two when the pointer is over the button, frame three when the mouse button is pressed. Only frames one and three will be seen on a touch device. Buttons can be made invisible

int CreateGUIButton(x#,y#,w#,h#, g$, t$)	Creates button (dim *w#* x *h#*) at (*x#,y#*) ,img *g$*, txt *t$*. Returns ID assigned to button.	
int DeleteGUIButton(id)	Deletes button *id*. Returns 1: ok, 0:fail	
int GetGUIButtonEnabled(id)	Returns 1: enabled, 0:disabled, -1:fail	
int GetGUIButtonExists(id)	Returns 1: button *id* exists, 0: not exists	
int GetGUIButtonVisible(id)	Returns 1:button *id* visible, 0:invisible -1: not exists	
flt GetGUIButtonX(id)	Returns x-coord of button *id*. -1: not exists	
flt GetGUIButtonY(id)	Returns y-coord of button *id*. -1: not exists	
int HandleGUIButton(id)	Reacts to user. Returns 1: pressed, 0: not pressed/not exists/disabled	
int SetGUIButtonDepth(id, ly)	Button to depth *ly*. Returns 1: ok, 0: fail	*
int SetGUIButtonEnabled(id,fl)	Button dis(*fl*=0)/en(*fl*=1)abled. Returns 1:ok,0:fail	*
int SetGUIButtonPosition(id, x#, y#)	Button position to (*x#,y#*). Returns 1:ok, 0:fail	*
int SetGUIButtonSize(id, w#, h#)	Button size to *w#* by *h#*. Returns 1:ok, 0:fail	*
int SetGUIButtonVisible(id,f)	Button visible (*f*=1)/invisible (*f*=0). Returns 1:ok, 0:fail	*

* Can modify attributes of disabled buttons

GUICheckbox

A checkbox consists of a two-vertical frame image sprite and associated text. Clicking on the image or text will cause the checkbox to flip to its alternate setting (checked/unchecked). Default image used if no image file specified.

int CreateGUICheckbox(x#, y#, w#, g$, t$)	Positions checkbox at (*x#,y#*). Shows image *g$* (*w#* wide) and text *t$*.Returns ID assigned.	
int DeleteGUICheckbox(id)	Deletes checkbox *id*. Returns 1:ok, 0:fail	
int GetGUICheckboxExists(id)	Returns 1:exists, 0:not exists	
int GetGUICheckboxState(id)	Returns current frame (1/2), 0:disabled, -1:not exists	
int HandleGUICheckbox(id)	Makes checkbox reacts to user clicks Returns frame shown by checkbox *id* (1/2).. 0:disabled/deleted/not hit	
int SetGUICheckboxDepth(id, ly)	Places checkbox on depth *ly*. Returns 1:ok, 0:fail	*
int SetGUICheckboxEnabled(id,fl)	Checkbox dis(*fl*=0)/en(*fl*=1)abled. Returns 1:ok, 0:fail	
int SetGUICheckboxPosition(id, x#, y#)	Places checkbox at (*x#,y#*). Returns 1:ok, 0:fail	*
int SetGUICheckboxState(id, s)	Changes frame showing to *s* (1/2). Returns 1:ok, 0:fail	
int SetGUICheckboxTextAlignment(id, al)	Changes text alignment to *al*. Returns 1:ok, 0: fail	*
int SetGUICheckboxTextColor(id, col)	Changes text colour to *col*. Returns 1:ok, 0: fail	*
int SetGUICheckboxTextSize(id, sz#)	Changes text size to *sz#*. Returns 1:ok, 0:fail	*

*Can modify attributes of disabled checkboxes.

GUIColorPicker

The ColorPicker widget allows the user to select any colour shown on the ColorPicker sprite. Only a single ColorPicker widget can exist at any one time. The last colour picked is saved and its value can be accessed.

CreateGUIColorPicker(x#,y#,w#,h#,fg$)	Creates sprite of image *fg$* at (*x#,y#*) with size *w#* by *h#*.
int DeleteGUIColorPicker()	Deletes ColorPicker. Returns 1: ok, 0: fail
int GetGUIColorPickerBlue()	Returns blue value of last colour picked, -1:fail
int GetGUIColorPickerExists()	Returns 1: exists 0: not exists
int GetGUIColorPickerGreen()	Returns green value of last colour picked, -1:fail
int GetGUIColorPickerRed()	Returns red value of last colour picked, -1:fail
int HandleGUIColorPicker()	Returns colour selected as integer (0xFFBBGGRR). -1:none
int SetGUIColorPickerDepth(d)	Draws the ColorPickers sprite on layer *d*. Returns 1:ok, 0:fail
int SetGUIColorPickerPosition(x#, y#)	ColorPicker position to (*x#,y#*). Returns 1:ok, 0:fail

GUIDialogBox

A dialog box consists of an image sprite and a single button by default (more can be added). Pressing a dialog box button causes the dialog box to be deleted and the pressed button's number is returned (1,2,3, etc.). Only a single Dialog widget can exist at any one time.

int CreateGUIDialogBox(x#, y#, w#, h#, g$, t$, bg$, bt$)	Creates a dialog box *w#* x *h#*, at (*x#,y#*),box framed by image *g$* and title *t$*. Button images *bg$* (\| separated) showing *bt$* (| separated).
int GetGUIDialogBoxExists()	Returns 1: exists, 0: not exists
int HandleGUIDialogBox()	Deletes dialog box. Returns no. of button pressed,0:fail
int SetGUIDialogBoxButtonPosition(n, x#, y#)	Repositions button *n* to (*x#,y#*). Returns 1:okay, 0:fail
int SetGUIDialBoxButtonSize(n, w#,h#)	Resizes button *n* to *w#* by *h#*. Returns 1:okay, 0:fail.

GUIDropdown

A dropdown list is related to the edit box. The data placed in the field must be selected from a drop-down list which is itself activated by pressing the integrated DOWN button.

int CreateGUIDropdown(x#,y#,op$,df$,lf$)	Creates a dropdown list at (*x#,y#*). *op$* lists the contents of the dropdown list options (separated by a pipe (\|)). *df$* is the filename for the down button image (3 frames). *lf$* is the filename for the option list image (3 frames). Returns the ID assigned to the newly created widget
int DeleteGUIDropdown(id)	Deletes dropdown. Returns 1:ok, 0:fail
int GetGUIDropdownEnabled(id)	Returns 1: enabled, 0: disabled; -1: fail
int GetGUIDropdownExists(id)	Returns 1: exists, 0: not exists
str GetGUIDropdownValue(id)	Returns value showing in dropdown, "":fail.
int HandleGUIDropdown(id)	Reacts to the user clicking. Returns 1:click 0:no click/fail
int SetGUIDropdownBorderColor(id,col)	Changes border colour to *col*. Returns 1:ok, 0:fail
int SetGUIDropdownDepth(id, ly)	Sets depth to *ly*. Returns 1:ok, 0:fail.
int SetGUIDropdownEnabled(id fl)	Dropdown dis(*fl*=0)/en(*fl*=1) abled. Returns 1:ok, 0:fail
int SetGUIDropdownFieldColor(id,col)	Changes field colour of *id* to *col*. Returns 1:ok, 0:fail
int SetGUIDropdownPosition(id, x#, y#)	Sets *id*'s position to (*x#,y#*). Returns 1:ok, 0:fail

GUIFrame

A frame is an area to which other elements can be added. The frame may be filled with a background image and have a title. Elements positioned within a frame have positions relative to the top-left corner of the frame. Added elements are given an index number starting at 1. Moving a frame automatically moves the elements within the frame. Deleting a frame also deletes all the elements it contains.

int CreateGUIFrame(x#,y#,w#,h#,g$)	Creates frame (size *w#* x *h#*) at (*x#,y#*) filled with image *g$*. Returns frame ID.
int AddButtonToGUIFrame(frm,x#,y#,w#,h#,g$,t$)	Creates button in frame at *(x#,y#)*. size:*(w#xh#);* image(3 frames):*g$;* text:*t$*. Returns button's frame index,0:fail
int AddCheckboxToGUIFrame(frm,x#,y#,w#,g$,t$)	Creates a checkbox in frame at *(x#,y#)*. image width: *w#*,image(2 frame):*g$;* text:*t$*. Returns checkbox's frame index, 0:fail
int AddColorPickerToGUIFrame(frm, x#, y#, w#, h#,g$)	Creates colorpicker in frame at (*x#,y#*). Size: *w#* by *h#* Image : *g$*. Returns button's frame index,0:fail
int AddDropdownToGUIFrame(frm,x#,y#,op$,g1$,g2$)	Creates dropdown in frame at (*x#,y#*). Dropdown list contains entries from *op$* (\| separated). Uses *g1$* as image for drop button; *g2$* for image in each option. Returns checkbox's frame index, 0:fail
int AddEditboxToGUIFrame(frm, x#, y#, w#, h#)	Creates edit box in frame at (*x#,y#*). Size: *w#* x *h#*. Returns edit box's frame index; 0:fail
int AddKeyPadToGUIFrame(frm,x#,y#,k$,kw#,kr,g$)	Creates a keypad in frame at (x#,y#). *k$* holds keys (\| sep arated). *kw#*: key width. *kr*: keys in one row. *g$*:key image(3 frames). Returns edit box's frame index; 0:fail
int AddRadioButtonToGUIFrame(frm,x#,y#,g$,t$,gp)	Creates radio button in frame at *(x#,y#)*. image(2 frame):*g$;* text:*t$*. In group *gp*. Returns RB's frame index, 0:fail
int AddSpinnerToGUIFrame(frm,x#y#,w#,h#,g$)	Creates spinner (size: *w#* x *h#*) in frame at (*x#,y#*). Buttons loaded from "up"+*g$* and *"down"+g$*. Returns RB's frame index., 0:fail
int AddSpriteToGUIFrame(frm,x#,y#,w#,h#,g$)	Creates a sprite with image *g$* in frame. Size: *w#* x *h#* at (*x#,y#*). Returns sprite's frame index, 0:fail
int AddTextToGUIFrame(frm,x#,y#,sz#,t$,col,al)	Creates a text in frame at *(x#,y#).* size:*sz#;* colour:*col* text:*t$;* alignment:*al*. Returns text's frame index, 0:fail
int DeleteGUIFrame(frm)	Deletes frame *frm*. Returns 1:okay, 0:fail.
int GetGUIFrameElementDetails(frm,idx)	Returns details of the *idx*th added widget. (element type *100000 + true id), 0: fail
int GetGUIFrameExists(frm)	Returns 1: exists, 0: not exists
flt GetGUIFrameHeight(frm)	Returns height of frame, -1: fail
flt GetGUIFrameWidth(frm)	Returns width of frame, -1: fail
flt GetGUIFrameX(frm)	Returns x-coord (top-left) of frame , -1: fail
flt GetGUIFrameY(frm)	Returns x-coord (top-left) of frame , -1: fail
int HandleGUIFrame(frm)	Returns frame index of any frame element clicked by user.
int SetGUIFrameDepth(frm,ly)	Places frame on depth *ly*. Returns 1: okay, 0: fail
int SetGUIFramePosition(frm,x#,y#)	Positions frame at (*x#,y#*). Returns 1: okay, 0: fail

GUIKeyPad

A keypad widget is a set of buttons each representing a single keyboard key. The keys to be shown, the size of a single key, the number of keys per row and the key image used can be specified. The keyboard widget maintains a keyboard buffer containing the keys entered since the previous *Enter* key press. Once *Enter* has been pressed the buffer contents is moved to a *last-entry* space and the buffer emptied.

int CreateGUIKeyPad(x#,y#,ky$,kw#,kir,g$)	Creates a keypad widget at (x#,y#). Keys created determined by *ky$* (\| *separated)*. Keys are *kw* units square. Each row consists of *kir* keys. *g$*: filename of key image. Returns 1:ok, 0: fail.
int DeleteGUIKeyPad()	Deletes the keypad. Returns 1:ok, 0:fail
str GetGUIKeyPadBuffer()	Returns contents of keypad buffer, "": fail
int GetGUIKeyPadEnabled()	Returns 1: enabled, 0: disabled, -1: fail
str GetGUIKeyPadEntry()	Returns the last complete entry, "": fail
int GetGUIKeyPadExists()	Returns 1: exists, 0: not exists
int HandleGUIKeyPad()	Reacts to user. Returns 0: no press, 1: press, 2: *Enter* pressed
int SetGUIKeyPadDepth(ly)	Places keypad on depth *ly*. Returns 1: ok, 0: fail
int SetGUIKeyPadEnabled(fl)	Keypad dis(*fl*=0)/ en (*fl*=1) abled. Returns 1:ok, 0: fail
int SetGUIKeyPadKeysEnabled(ky$, fl)	Keys in *ky$ dis*(*fl*=0)/en(*fl*=1)abled. Returns 1:ok, 0: fail
int SetGUIKeyPadPosition(x#, y#)	Moves keypad to (*x#,y#*). Returns 1: ok, 0: fail

GUIPopUpMenu

The popup menu is created from a combination of vertically-aligned buttons. The dimensions of the popup menu are determined automatically. A disabled menu is invisible and unresponsive. The best approach is to create all necessary popup menu and only enable them when required. This minimises the creation and deletion of the buttons used. When creating a menu all options are specified in a single string with the pipe (|) character separating options, Each option consists of two parts text (which will appear in the menu) and an integer value (the two elements are comma-separated). The integer value is returned when the user selects a menu option.

int CreateGUIPopUpMenu(op$,g$)	Creates a popup menu off-screen. *op$* contains \| separated menu options. Each option has format \|*string,number*\|. *g$* is the image used by each option when the menu is displayed. The menu is initially disabled. Returns the ID of the menu.
int DeleteGUIPopUpMenu(id)	Deletes the menu. Returns 1: ok, 0: fail
int GetGUIPopUpEnabled(id)	Returns 1: enabled, 0: disabled, -1: fail
int GetGUIPopUpExists(id)	Returns 1: exists, 0: not exists
int HandleGUIPopUpMenu(id)	Reacts to user. Returns value of option selected, 0:fail
int SetGUIPopUpEnabled(id, fl)	Popup dis(*fl*=0)/en (*fl*=1)abled. Returns 1:ok, 0: fail
int SetGUIPopUpPosition(id,x#,y#)	Moves popup to (*x#,y#*). Returns 1: ok, 0: fail

GUIRadioButton

A radio button consists of a two-vertical frame image sprite and associated text. Radio buttons are associated with a group number. Clicking on the image or text will cause an unselected radio button to become selected and all other radio buttons in that group to be unselected. In the parameters below *id* refers to an integer value of the *ggxxx* where *gg* represents the radio button group and *xxx* represents the index of the radio button within that group.

int CreateGUIRadioButton(x#,y#,w#,g$,t$,gp)	Positions RB at (*x#, y#*). Shows image *g$* (*w#* wide) & text *t$* Belongs to group *gp*. Returns ID assigned
int DeleteGUIRadioButtonGroup(gp)	Deletes all RBs in group *gp*. Returns 1:ok, 0: fail
int GetGUIRadioButtonExists(id)	Returns 1: exists, 0: not exists
int GetGUIRadioButtonSelectedInGroup(gp)	Returns no. of selected button in group, -2: fail,-1:no RBs in group
int HandleGUIRadioButtonGroup(gp)	Reacts to user. Returns 1:RB clicked, 0:no click/fail
int SelectGUIRadioButton(id)	Selects RB *id* (calcs *gp* & idx from *id*). Returns 1: ok, 0:fail
int SetGUIRadioButtonDepth(gp, ly)	Sets depth of all RBs in group *gp* to *ly*. Returns 1: ok, 0: fail
int SetGUIRadioButtonEnabled(id,fl)	RB dis(*fl*=0)/en(*fl*=1)abled. Returns 1:ok, 0:fail
int SetGUIRadioButtonGroupEnabled(gp,fl)	Group *gp* dis(*fl*=0)/en(*fl*=1)abled. Returns 1: ok, 0: fail
int SetGUIRadioButtonPosition(id, x#, y#)	Places RB at (*x#,y#*). Returns 1: ok, 0: fail
int SetGUIRadioButtonTextAlignment(id,al)	Text alignment to *al (0:L,1:C,2:R)*. Returns 1: ok,0:fail
int SetGUIRadioButtonTextColor(id,col)	Sets text colour of RB *id* to *col*. Returns 1: ok, 0:fail
int SetGUIRadioButtonTextSize(id,sz#)	Sets text size of RB *id* to *sz#*. Returns 1: ok, 0: fail

GUISpinner

A spinner is a limited type of editbox where a displayed integer value can be incremented or decremented using associated UP and DOWN buttons. The widget border and field containing the integer value can be recoloured. The images used to create the UP and DOWN buttons can also be specified.

int CreateGUISpinner(x#,y#,w#,h#,min, max,bf$)	Creates a spinner at (*x#,y#*) size: *w#* by *h#*. Separates *bf$* into *path* + *filename*. Uses file *path*+"up"+*filename* and *path* + "down"+*filename* as images for buttons. Range of acceptable values *min* to *max*. Returns spinner ID
int DeleteGUISpinner(id)	Deletes spinner *id*. Returns 1: ok, 0:fail
int GetGUISpinnerEnabled(id)	Returns 1: enabled; 0: disabled, -1:fail
int GetGUISpinnerExists(id)	Returns 1: exists, 0: not exists
int GetGUISpinnerValue(id)	Returns the value displayed in spinner, -1: fail
int HandleGUISpinner(id)	Reacts to user; updates display. Returns 1:clicked, 0: no click
int SetGUISpinerBorderColor(id, col)	Changes border colour *col*. Returns 1:ok, 0: fail
int SetGUISpinnerDepth(id,ly)	Redraws spinner at depth *ly*. Returns 1: ok, 0: fail
int SetGUISpinnerEnabled(id, fl)	Spinner dis(*fl*=0)/en(*fl*=1)abled. Returns 1:ok, 0: fail
int SetGUISpinnerFieldColor(id, col)	Changes field colour of spinner to *col*. Returns 1:ok, 0: fail
int SetGUISpinnerLimits(id,min,max)	Sets spinner range to *min* to *max*. Returns 1: ok, 0: fail, -2: current value to new max, -1: current value to new min.
int SetGUISpinnerPosition(id,x#,y#)	Moves spinner to (*x#,y#*). Returns 1: ok, 0: fail
int SetGUISpinnerSize(id,w#,h#)	Resizes spinner to *w#* by *h#*. Returns 1: ok, 0: fail
int SetGUISpinnerValue(id,v)	Sets displayed value of spinner to *v*. Returns 1:ok, 0: fail

GUIStopwatch

The Stopwatch widget allows the elapsed time to be shown in minutes and seconds (internally recorded in milliseconds). The visuals are created by four images and a text label. Although in theory the programmer can create their own images this may prove difficult because of the hard-wired code for positioning and sizing the various elements when the watch is created. It is best to use the default images supplied. The user can control the starting and stopping of the stopwatch as well as resetting its time to zero by pressing the displayed watch buttons. This ability can be disabled.

int CreateGUIStopwatch(x#,y#,w#,h#,f$)	Positions stopwatch at (*x#,y#*); dimensions (w# by h#) Constructed from image file f$ and related named files. Returns ID assigned to watch
int DeleteGUIStopwatch(id)	Deletes watch *id*. Returns 1: ok, 0: fail
int GetGUIStopwatchExists(id)	Returns 1 if watch with ID id exists, else 0 returned
int GetGUIStopwatchResetEnabled(id)	Returns 1:reset button enabled, 0: disabled, -1: fail
int GetGUIStopwatchStartEnabled(id)	Returns 1:start/stop button enabled, 0: disabled, -1: fail
int GetGUIStopwatchState(id)	Returns 0: watch stopped, 1: watch ticking, -1: fail
int GetGUIStopwatchTime(id)	Returns the time recorded in watch (msecs), -1: fail
int HandleGUIStopwatch	Reacts to user Returns -1: stop, 1: start, 2: reset, 0: none
int ResetGUIStopwatch(id)	Sets time to 0; stops watch. Returns 1: ok, 0: fail
int SetGUIStopwatchControls(id,fl)	fl=1:enable s/s disable reset. fl= 2 disable s/s enable reset fl = 3 enable both, fl=0: disable both. Returns 1: ok, 0: fail
int SetGUIStopwatchDepth(id, ly)	Sets depth to *ly* (second hand: *ly*-1). Returns 1: ok, 0: fail
int SetGUIStopwatchPosition(id,x#,y#)	Positions top-left at (*x#,y#*). Returns 1: ok, 0: fail
int SetGUIStopwatchSize(id,w#,h#)	Resizes to *w#* by *h#* (best w#/h# as -1). Returns 1: ok, 0: fail
int StartGUIStopwatch(id)	Starts watch running. Returns 1: ok, 0: fail
int StopGUIStopwatch(id)	Stops watch(disp'd time unchanged). Returns 1: ok, 0: fail
int UpdateGUIStopwatch(id)	Updates display. Returns 1: ok, 0: fail

GUITrafficLights

The trafficlight widget cycles through the colours red, amber, green, changing to the next colour when a mouse click occurs over the widget. Unlike other widgets, this one may be used as part of a game screen layout and therefore will relocate when the view-offset is changed and will change size in response to zooming unless *FixGUITrafficLightsToScreen()* called.

int CreateGUITrafficLights(x#,y#,w#,g$)	Creates a trafficlights widget at (*x#,y#*); width : *w#*, height: dependant on image *g$* (four vertical frames). Returns ID.
int DeleteGUITrafficLights(id)	Deletes lights *id*. Returns 1: ok, 0:fail
int FixGUITrafficLightsToScreen(id, fl)	Fixes size & position of lights on screen. Returns 1:ok, 0: fail
int GetGUITrafficLightsEnabled(id)	Returns 1: enabled; 0: disabled, -1:fail
int GetGUITrafficLightsExists(id)	Returns 1: exists, 0: not exists
int GetGUITrafficLightsState(id)	Returns 1,2,3: current frame, -1: not exists, 0: disabled
int HandleGUITrafficLights(id)	Click moves to next frame. Returns 1:clicked, 0: no click
int SetGUITrafficLightsColor(id, cf)	Sets frame displayed to *cf*. Returns 1: ok, 0: fail
int SetGUITrafficLightsDepth(id,ly)	Redraws lights at depth *ly*. Returns 1: ok, 0: fail
int SetGUITrafficLightsEnabled(id, fl)	Lights dis(*fl*=0)/en(*fl*=1)abled. Returns 1:ok, 0: fail
int SetGUITrafficLightsPosition(id,x#,y#)	Moves lights to (*x#,y#*). Returns 1: ok, 0: fail

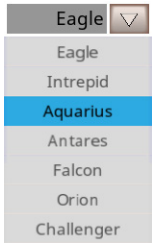
Widget Examples

Button

Checkbox

ColorPicker

Dropdown List



Keypad

Radiobutton

Spinner

Stopwatch

TrafficLights

for

Hands On AppGameKit Studio

Volume 2

User-Defined GUI Library Functions

The functions listed here are created by various book activities and become a library of user-defined routines for use in other projects.

November 2020

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