Subject: Re: widgets and objects
Posted by mirko_vukovic on Fri, 14 Aug 1998 07:00:00 GMT
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In article <35D32FC5.568C67E5@astro.uni-bonn.de>, Reinhold Schaaf <schaaf@astro.uni-bonn.de> wrote:

!!!!!NOTE

I (Mirko Vukovic) recieved the following e-mail from Reinhold with the request to post it as he had trouble reaching his news-server. I see his message on the group, but in an intelligable font. Thus, I am reposting his email to me.

And now, heeere's REINHOLD!!

I worked quite a bit in this sort of programming and came up with the following scheme, which was initialized by a remark of Mark Rivers from the University of Chicago:

The first part of the scheme is to put a reference of the object into the widget's UVALUE. The

following part of the implementation of the class CWidget (which is used as an abstract base

class for all sorts of other widget classes) shows how this can be done during initialization.

Whenever the widget is needed, the method CWidget::GetBase returns it, also for all classes

derived from CWidget (unless you override GetBase, what you should'nt).

```
XSIZE=fXSize, $
                                   ; in pixels
                YOFFSET=fYOffset, $ ; in pixels relative
to parent
                YSIZE=fYSize
                                   ; in pixels
  ;some checks deleted
   wParent = oParent->GetBase()
   self.wBase = WIDGET BASE(wParent, $
                  FRAME=bFrame. $
                  XOFFSET=fXOffset, $
                  XSIZE=fXSize. $
                  YOFFSET=fYOffset, $
                  YSIZE=fYSize)
   WIDGET_CONTROL, self.wBase, SET_UVALUE=self
   self.oFrame = oParent->GetFrame()
                                                  ; <= it
happens here
   RETURN, 1
  END
  FUNCTION CWidget::GetBase
    RETURN, self.wBase
  END
The second part is event handling: This is all done in a central
event-handling routine, named
CFrame Event, which must be declared as the event handler in all
XMANAGER calls. This is of
course a global function, but its only purpose is to distribute the
events to member functions
of CFrame:
  PRO CFrame_Event, sEvent
   stEventName = TAG_NAMES(sEvent, /STRUCTURE_NAME)
   oFrame = CFrame GetFrame(sEvent.top)
   bEventHandled = 0B
   CASE stEventName OF
     ; Events from base widgets
     'WIDGET BASE': $
      BEGIN
```

sEvent.y)

bEventHandled = oFrame->OnResize(sEvent.id, sEvent.x,

```
oFrame->OnUpdate
   END
  'WIDGET_KBRD_FOCUS': $
   CASE sEvent.enter OF
    0: bEventHandled = oFrame->OnLooseKbrdFocus(sEvent.id)
    1: bEventHandled = oFrame->OnGainKbrdFocus(sEvent.id)
    ELSE:
   ENDCASE
  'WIDGET KILL REQUEST': $
   bEventHandled = oFrame->OnKillRequest(sEvent.id)
  Events from button widgets
  'WIDGET_BUTTON': $
   CASE sEvent.select OF
    ; The frame handles all events, could be solved differently
    0: bEventHandled = oFrame->OnButtonRelease(sEvent.id)
    1: bEventHandled = oFrame->OnButtonPress(sEvent.id)
    ELSE:
   ENDCASE
etc etc
```

The class CFrame, which is used as an abstract base class for other classes, which implement concrete frames, provides only non-functional event-handlers:

```
FUNCTION CFrame::OnResize, wID, iX, iY
 RETURN, 0B
END
FUNCTION CFrame::OnButtonPress, wID
 bEventHandled = 0B
END
etc.
```

The real work is done in the OnResize function of the concrete frame:

```
FUNCTION CMainFrame::OnResize, wID, iX, iY
 ;the work is done here:
 IXSizeReg = LONG(iX - self.oDraw->GetXOffset() - self->GetXPad())
```

```
IYSizeReg = LONG(iY - self.oDraw->GetYOffset() - self->GetYPad())
   IXSize = self.IXSizeMin > IXSizeReq
   IYSize = self.IYSizeMin > IYSizeReq
   self.oDraw->SetXSize, IXSize
   self.oDraw->SetYSize, IYSize
   RETURN, 1B
  END
  FUNCTION CMainFrame::OnButtonPress, wID
   WIDGET_CONTROL, wID, GET_UVALUE=stButtID; the ID of the button
pressed
   CASE stButtID OF
     'wButtSetMen': $
      BEGIN
       IF NOT self->bModeIsSet() THEN BEGIN
        oData = self->GetData()
   etc.
```

This scheme has the advantage that all routine work with event handling is concentrated in the

Class CFrame. If one implements a concrete frame class, one has only to provide the functions

CMyFrame::OnResize etc with the functionality, which is needed for this concrete class. One

can forget all the trouble in CFrame, once it is implemented prooperly!

I hope that my answer gives you some idea how one could procede. I have developed with this (and some other) concepts the first stage of a quite complex user interface. But still a lot of work (e.g. with positioning of widgets) has to be invested into this framework. And so (sad enough, but that's life), since IDL 5.1 supports ActiveX, I will almost certainly abbandon widget-object programming in IDL and switch to VC++ + IDL as ActiveX server.

Best regards

Reinhold

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