Subject: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Fri, 30 Nov 2007 16:09:59 GMT
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To cut a long story short, because of some missing windowing events in X11 (notable the equivalent of WM_EXITSIZEMOVE) I've ended up in a position where the only solution to a problem is to imitate a window using a popup. How they expect you to be able to implement anything clever in X11 with such an inadequate messaging system I have no idea

This means I have to implement moving/resizing of the popup, which works fine. What doesn't work is setting the cursor icons. The SizeVert/SizeHorz icons appear when you mouse over the frames at first, but after you move/resize the window the popup seems to stop recieving MOUSEMOVE events to FrameMouseEvent. Additionally, while the popup has mouse capture my CursorImage overload is returning the correct image, but the cursor remains as an arrow.

I've also tried to use OverrideCursor with no effect.

Everything works correctly when the Ctrl is not a popup, so it must be something to do with this.

I've attached my test project and I'd really appreciate it if you'd have a look as I've completely run out of ideas. Sorry to give such a complex test case.

Edit: Click 'OK' on the first window to open the popup.

Cheers,
James

File Attachments

1) LayoutTest.zip, downloaded 636 times

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mirek on Tue, 04 Dec 2007 14:24:21 GMT
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mrjt wrote on Fri, 30 November 2007 11:09To cut a long story short, because of some missing windowing events in X11 (notable the equivalent of WM_EXITSIZEMOVE) I've ended up in a position where the only solution to a problem is to imitate a window using a popup. How they expect you to be able to implement anything clever in X11 with such an inadequate messaging system I have no idea

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I've attached my test project and I'd really appreciate it if you'd have a look as I've completely run out of ideas. Sorry to give such a complex test case.

Edit: Click 'OK' on the first window to open the popup.

Cheers,
James

Well, technically, the problem is that SetCapture does not work correctly for Popup in X11. While that could be fixed (barely), the real trouble is that you CANNOT use popup as main window in X11. The real reason is that X11 window manager knows nothing about popups, therefore clicking on any other windows (outside your app) is not able to change popup's Z.

Mirek

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Wed, 05 Dec 2007 16:00:29 GMT
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Quote:The real reason is that X11 window manager knows nothing about popups, therefore clicking on any other windows (outside your app) is not able to change popup's Z.
Well, the whole point is that I don't want the Window Manager knowing about them, but I would have to find another way of detecting this message with main window and then hiding/Z ordering the windows myself.

My fundamental problem is that to implement dockable windows/toolbars I need to be able to tell when a user stops dragging a window so that I can dock it. Under X11 this seems impossible using normal windows and all the clues from other implementations point to this being acheived either with popups or event redirection (which to my understanding is the same). The clues are - non-standard window decorations, bugs in window resizing (see krita) and obvious handling of the above issue.

I feel like every time I get close to resolving this issue I find another insoluble problem, and it's getting quite annoying. If you have any ideas I would love to hear them.

Perhaps you could set Capture to the parent window and have that do the resizing? That would be really nasty .

Cheers,
James

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Mon, 10 Dec 2007 16:37:33 GMT
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I've found a possible solution to this:

```
#define MWM_HINTS_DECORATIONS (1L << 1)
#define PROP_MWM_HINTS_ELEMENTS 5

typedef struct {
  uint32_t  flags;
  uint32_t  functions;
  uint32_t  decorations;
  int32_t   input_mode;
  uint32_t  status;
} MWMHints;
...
  MWMHints mwmhints;
  Atom prop;
  memset(&mwmhints, 0, sizeof(mwmhints));
  prop = XInternAtom(Xdisplay, "_MOTIF_WM_HINTS", false);
  mwmhints.flags = MWM_HINTS_DECORATIONS;
  mwmhints.decorations = 0;
  XChangeProperty(Xdisplay, wnd.GetWindow(), prop, prop, 32, PropModeReplace,
  (unsigned char *) &mwmhints,
  PROP_MWM_HINTS_ELEMENTS);
```

...This tells the Window Manager not to add decorations to the window which allows me to add my own without redirecting any events. It uses Motif hints, but these are allegedly supported by most WMs. It certainly works on KDE.

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mirek on Mon, 10 Dec 2007 17:06:55 GMT
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mrjt wrote on Mon, 10 December 2007 11:37I've found a possible solution to this:

```
#define MWM_HINTS_DECORATIONS (1L << 1)
#define PROP_MWM_HINTS_ELEMENTS 5

typedef struct {
  uint32_t  flags;
  uint32_t  functions;
  uint32_t  decorations;
  int32_t   input_mode;
  uint32_t  status;
} MWMHints;
...
  MWMHints mwmhints;
  Atom prop;
```

```
memset(&mwmhints, 0, sizeof(mwmhints));
prop = XInternAtom(Xdisplay, "_MOTIF_WM_HINTS", false);
mwmhints.flags = MWM_HINTS_DECORATIONS;
mwmhints.decorations = 0;
XChangeProperty(Xdisplay, wnd.GetWindow(), prop, prop, 32, PropModeReplace,
(unsigned char *) &mwmhints,
PROP_MWM_HINTS_ELEMENTS);
```

...This tells the Window Manager not to add decorations to the window which allows me to add my own without redirecting any events. It uses Motif hints, but these are allegedly supported by most WMs. It certainly works on KDE.

Hm, good find!

Potentially very useful

I guess we should add something like "DecorationLess" to TopWindow?

Mirek

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Mon, 10 Dec 2007 17:27:42 GMT
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Certainly, if you think anyone else could use it. Some more testing might be wise though

---

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mirek on Mon, 10 Dec 2007 17:49:16 GMT
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mrjt wrote on Mon, 10 December 2007 12:27Certainly, if you think anyone else could use it. Some more testing might be wise though

IMO this feature is really missing.

In fact, I might perhaps want to reimplement popups this way too... (there are some small glitches with current implementation).

Mirek

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Tue, 11 Dec 2007 11:45:04 GMT
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After some more experimentation I would advise against using this method, it's non-standard and KDE doesn't seem to cope with window redrawing very well.

There is some good news though . Did you know that if you call Popup on a TopWindow then mouse capture works correctly? I would guess that this is because of something happenning in TopWindow::EventProc. There is still some sort of problem with the popup taking capture on opening but this may be either due to the special popup grabbing code or an error in my code. I've attached a modified version of my package to illustrate this (click OK on first window, then OK on the popup).

The only problem that remains is the persistence of the popup when the main window is minimised, but it seems that this shouldn't be too hard to fix.

Additionally, I believe there is a mistake in TopWindow::SyncCaption:

```
        if(GetOwner())
   wina[n++] = XAtom("_NET_WM_WINDOW_TYPE_DIALOG");
  if(tool)
   wina[n++] = XAtom("_NET_WM_WINDOW_TYPE_TOOLBAR");
  wina[n++] = XAtom("_NET_WM_WINDOW_TYPE_NORMAL");
```

should be:

```
  if(tool)
   wina[n++] = XAtom("_NET_WM_WINDOW_TYPE_TOOLBAR");
  if(GetOwner())
   wina[n++] = XAtom("_NET_WM_WINDOW_TYPE_DIALOG");
  wina[n++] = XAtom("_NET_WM_WINDOW_TYPE_NORMAL");
```

As the window types should be listed in order of preference the TOOLBAR type should go first.

James

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mirek on Sat, 29 Dec 2007 17:55:46 GMT
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mrjt wrote on Fri, 30 November 2007 11:09To cut a long story short, because of some missing windowing events in X11 (notable the equivalent of WM_EXITSIZEMOVE)

BTW, why not XConfigureNotify? It might be called more often, but IMO for your purpose, it is OK.

Mirek

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Thu, 03 Jan 2008 10:09:22 GMT
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Sorry about the late reply, I've been holidaying all festive season

The reason for not using XConfigureNotify is that there is no way to identify the final move/resize event (ie when the user has moved the window and then released the mouse button).

I'm pretty sure I have a decent solution to all this though (at least temporarily), and I'm hoping to release my updated/rewritten docking stuff as soon as I get my arse in gear and finish it off.

Happy new year.
James

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mirek on Thu, 03 Jan 2008 17:01:45 GMT
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mrjt wrote on Thu, 03 January 2008 05:09Sorry about the late reply, I've been holidaying all festive season

The reason for not using XConfigureNotify is that there is no way to identify the final move/resize event (ie when the user has moved the window and then released the mouse button).

Do you mean that the problem is that you cannot tell which XConfigureNotify is final?

What about simply testing global mouse button status? When all mouse buttons are released, XConfigureNotify is final, IMO.

Mirek

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Thu, 03 Jan 2008 17:29:40 GMT
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That was the first thing I tried

Problem is that Upp (or indeed any client app) doesn't get notified of mouse events in the title bar since it's technically a different window. The only alternative is to call XQueryPointer which has two further problems:
- Knowing the mouse state wouldn't be enough since there is no way of telling if the XConfigureNotify is from a user action. You would have to guess at the size of the decoration and see if the mouse is in it.

- It requires Server<-->Client communication, which I believe should be avoided on such a frequent event.

Please suggest any other ideas, but I'm reasonably sure it's not possible. I've spent quite a lot of time looking at this, logging events etc.

James

Subject: Re: Problems with CursorImage/Popups/Frames on X11
Posted by mrjt on Tue, 22 Jan 2008 09:52:29 GMT
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Well, turns out I was completely wrong and it *is* possible (at least on KDE) to implement X11 docking with native windows. You have to SetFocus on the window when it's moved so that X11 passes back focus when the move stops. It's pure luck that I did that *and* had an EventDump going at the same time

However, during my studies I did find the solution to two of the problems I was having with using pop-ups as main windows.
1) CursorImage not working. In X11Wnd.cpp (ln. 590, SetMouseCursor) there is the following code:
Quote: if(IsPopUp()) {
  Ctrl *tw = GetTopWindow();
  if(tw)
   w = tw->GetWindow();
  w = GetTopCtrl()->GetWindow();
 }This effectively passes all CursorImage events to the owner of the pop-up, and commenting it out makes them work correctly. Presumably there is a good reason for this, but I can't think of a case where this would be necessary at the cost of breaking the behaviour of all other pop-ups. Could it be removed?
2) Popups not overlapping each other properly (not moving to foreground). This can be fixed by replacing line 192/192 in CtrlKbd.cpp (SetFocus0) with:
Quote: Ptr<Ctrl> topctrl = GetTopCtrl();
Ptr<Ctrl> topwindow = topctrl->IsPopUp() ? topctrl : GetTopWindow();This is not a serious issue though, since you can manually call SetForground on the popup when it gets focus.

The only remaining problem is the managing of popups (which I thougt would be the easy bit)- ie hiding/showing in accordance to changing in window stacking order, minization etc. - I'm pretty sure you should do this using CirculateRequest/CirculateNotify, but I can't persuade X11 to send me the events even though the eventmask is correct.

I'm now much happier. Thanks for your help.
