
Subject: How do I implement mouse hover in Ctrl based class

Posted by [awksed](#) on Thu, 15 Jul 2021 13:38:50 GMT

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Hi,

How do I implement mouse hover in a Ctrl based class.

I want to display info on hover in a Ctrl based graph control but cannot find an "OnHover" type facility.

Is there an example of how to do this?

Thanks.

Subject: Re: How do I implement mouse hover in Ctrl based class

Posted by [Xemuth](#) on Thu, 15 Jul 2021 14:32:10 GMT

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Hello Awksed,

Take a look at MOUSEENTER, MOUSEMOVE, MOUSELEAVE function.

```
virtual Image MouseEvent(int event, Point p, int zdelta, dword keyflags)
virtual void MouseEnter(Point p, dword keyflags)
virtual void MouseLeave()
```

[https://www.ultimatepp.org/src\\$CtrlCore\\$Ctrl_en-us.html](https://www.ultimatepp.org/src$CtrlCore$Ctrl_en-us.html)

If you struggle, I can show you an example when I leave my job

Subject: Re: How do I implement mouse hover in Ctrl based class

Posted by [awksed](#) on Thu, 15 Jul 2021 16:33:15 GMT

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Hi Xemuth,

Many thanks.

A working example would be most appreciated.

Subject: Re: How do I implement mouse hover in Ctrl based class

Posted by [Oblivion](#) on Thu, 15 Jul 2021 17:38:24 GMT

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Hello awksed,

Try this:

```
#include <CtrlLib/CtrlLib.h>
```

```
using namespace Upp;
```

```
struct MyApp : TopWindow {
    Point pos;
    Rect area;
    MyApp()
    {
        Sizeable().Zoomable().CenterScreen().SetRect(0,0, 1024, 800);
    }
}
```

```
void Paint(Draw& w) override
{
    w.DrawRect(GetSize(), Black());
    w.DrawRect(area, area.Contains(pos) ? Yellow() : Red());
    w.DrawText(10, 10, AsString(pos), Monospace(16), White());
}
```

```
void MouseMove(Point p, dword keyflags) override
{
    pos = p;
    Tip(area.Contains(p) ? t_("\1This is a [* Rich[/ text tip ]]") : nullptr);
    Refresh();
}
```

```
void Layout() override
{
    area = GetView().CenterRect(GetSize() / 4);
}
};
```

```
GUI_APP_MAIN
{
    MyApp().Run();
}
```

A slightly different version which retrieves the mouse position using a method.

```
#include <CtrlLib/CtrlLib.h>
```

```
using namespace Upp;
```

```
struct MyApp : TopWindow {  
    Rect area;  
    MyApp()  
    {  
        Sizeable().Zoomable().CenterScreen().SetRect(0,0, 1024, 800);  
    }  
};
```

```
void Paint(Draw& w) override  
{  
    Point pt = GetMouseViewPos(); // This method returns the mouse cursor position relative to the  
    Ctrl's view area.  
    w.DrawRect(GetSize(), Black());  
    w.DrawRect(area, area.Contains(pt) ? Yellow() : Red());  
    w.DrawText(10, 10, AsString(pt), Monospace(16), White());  
}
```

```
void MouseMove(Point pt, dword keyflags) override  
{  
    // Dispatched when the mouse cursor moves. It CAN also be used to retrieve and store the  
    mouse position.  
    // ( instead of GetMouseViewPos() )  
    Tip(area.Contains(pt) ? t_("\1This is a [* Rich[/ text tip ]]") : nullptr);  
    Refresh();  
}
```

```
void Layout() override  
{  
    area = GetView().CenterRect(GetSize() / 4);  
}  
};
```

```
GUI_APP_MAIN  
{  
    MyApp().Run();  
}
```

Keep in mind that this is a generic and very rudimentary way. Use the overrideable mouse methods for ctrls for fine grained behaviour (as Xemuth suggested).

U++ ctrls provide a method called Tip() which can take a plain or rich text. If all you need is a tooltip for the existing U++ widgets, you can just set the tip.

Best regards,
Oblivion

Subject: Re: How do I implement mouse hover in Ctrl based class
Posted by [Oblivion](#) on Fri, 16 Jul 2021 08:10:35 GMT
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Here's another one: Same effect but with MouseEnter/MouseLeave pair, using a child ctrl.

```
#include <CtrlLib/CtrlLib.h>

using namespace Upp;

struct MyCtrl : Ctrl {
    void Paint(Draw& w) override
    {
        Point pt = GetMouseViewPos();
        w.DrawRect(GetSize(), GetView().Contains(pt) ? Yellow : Red());
    }

    void MouseEnter(Point p, dword keyflags) override
    {
        Refresh();
    }

    void MouseLeave() override
    {
        Refresh();
    }

    void LeftDouble(Point p, dword keyflags) override
    {
        PromptOK("Ctrl double-clicked");
    }
};
```

```

struct MyApp : TopWindow {
    MyCtrl myctrl;
    MyApp()
    {
        Sizeable().Zoomable().CenterScreen().SetRect(0,0, 1024, 800);
        Add(myctrl.Tip(t_("\1This is a [* Rich[/ text tip ]]"))); // Set tip for child ctrl.
    }

    void Paint(Draw& w) override
    {
        Point pt = GetMouseViewPos(); // This method returns the mouse cursor position within the Ctrl's
view area.
        w.DrawRect(GetSize(), Black());
        w.DrawText(10, 10, AsString(pt), Monospace(16), White());
    }

    void MouseMove(Point pt, dword keyflags) override
    {
        Refresh();
    }

    void Layout() override
    {
        myctrl.SetRect(GetView().CenterRect(GetSize() / 4));
    }
};

GUI_APP_MAIN
{
    MyApp().Run();
}

```

You can also see that the position display will stop if the mouse enters into the child ctrl.

Best regards,
Oblivion

Subject: Re: How do I implement mouse hover in Ctrl based class
 Posted by [awksed](#) on Fri, 16 Jul 2021 20:17:02 GMT
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Hi Xemuth & Oblivion,

Thanks for your suggestions.

This is what I wrote:

```
void MyGraph::Hover()
{
    if(m_bTrackingHover)
    {
        m_bTrackingHover = false;

        Point P = GetMouseViewPos();

        if(P == m_MousePos)
        {
            // Mouse is hovering

            // TODO: Call ShowHint() with text
        }
    }
}

Image MyGraph::MouseEvent(int event, Point p, int zdelta, dword keyflags)
{
    switch(event)
    {
        case Ctrl::MOUSELEAVE:

            if(m_bTrackingHover)
            {
                m_bTrackingHover = false;

                KillTimeCallback(HOVER_TIMER);
            }
            else
            {
                if(!m_pHint)
                    CloseHint();

                break;
            }

        case Ctrl::MOUSEMOVE:

            if(!m_pHint)
            {
                m_MousePos.x    = p.x;
                m_MousePos.y    = p.y;
                m_bTrackingHover = true;

                KillSetTimeCallback(1000, THISBACK(Hover), HOVER_TIMER);
            }
    }
}
```

```
}  
  
break;  
}  
  
return Image::Arrow();  
}
```

Subject: Re: How do I implement mouse hover in Ctrl based class

Posted by [Oblivion](#) on Fri, 16 Jul 2021 21:47:30 GMT

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Hello awksed,

I am glad that your solution works. I am curious, however: Is there anything that Ctrl::Tip can't do for you in this particular situation?

Because you seem to be recreating, using the lower level methods, such as Ctrl::MouseEvents, what Ctrl::Tip does. (Don't get me wrong, there is nothing wrong with your method, but it seems just duplicating code in old fashioned way.).

P.s. Since Ctrl::Tip (And many such U++ methods) can use richtext, they can display anything you can display with qtf (including images).

Best regards,
Oblivion

Subject: Re: How do I implement mouse hover in Ctrl based class

Posted by [awksed](#) on Fri, 23 Jul 2021 15:44:55 GMT

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Hi Oblivion,

When hover occurs at a graph point, I search one of several lists which include the x,y coordinates of that graph line point, process the relevant data and display it.

I am curious to know how you would use Tip() to do that. I'm always eager to learn new methods, especially if it saves me writing a lot of code.

Best regards.

Subject: Re: How do I implement mouse hover in Ctrl based class

Posted by [Oblivion](#) on Fri, 23 Jul 2021 17:19:08 GMT

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Hello awksed,

The example below simulates a similar situation in a crude way. What you need to do is set the tip when a target mouse position/area is hovered.

Tip can do this for you. But if you need more control over the popup window, you can also use a Popup window (but it can complicate things...)

```
#include <CtrlLib/CtrlLib.h>
```

```
using namespace Upp;
```

```
struct RectArea : Moveable<RectArea> {  
    Rect r;  
    String text;  
};
```

```
struct MyApp : TopWindow {  
    Vector<RectArea> ra;  
    MyApp()  
    {  
        Sizeable().Zoomable().CenterScreen().SetRect(0,0, 1024, 800);  
  
        for(int i = 0; i < 50; i++) {  
            RectArea& r = ra.Add();  
            r.r = RectC(20 * i, 20 * i, 20, 20);  
            r.text << "\1[* Index: ]" << i << " &[* Random number: ]" << Random();  
        }  
    }  
};
```

```
void Paint(Draw& w) override  
{  
    w.DrawRect(GetSize(), Black());  
    for(const RectArea& r : ra)  
        w.DrawRect(r.r, Red());  
}
```

```
void MouseMove(Point pt, dword keyflags) override  
{  
    // Dont forget to call the parent ctrl's MouseMove, if it is utilized!
```

```
    if(HasFocus() && ra.GetCount()) {  
        for(const RectArea& r : ra)  
            if(r.r.Contains(pt)) {
```



```
        Tip(r.text);
        return;
    }
    Tip(nullptr);
}
};

GUI_APP_MAIN
{
    MyApp().Run();
}
```

Now, this example is using rectangles and precalculation of areas. But the idea is the same: Do the checking in MouseMove and set or reset the Tip(), depending on the conditions, and don't forget to call the parent ctrl's MouseMove.

(In principle, this is how I display the hyperlink URLs in tips, in our TerminalCtrl)

Best regards,
Oblivion

Subject: Re: How do I implement mouse hover in Ctrl based class
Posted by [awksed](#) on Sat, 24 Jul 2021 12:48:16 GMT
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Hi Oblivion,

I tried Tip() with my now perfectly working hover code but it was unreliable.

I now have a working hover system and when I find out why my TopWindow derived Hint class is stubbornly centering on its parent control instead of the absolute screen position I passed to SetRect() before calling Show() (to be modeless), it will all be working perfectly.

Best regards.
