

How to retrieve text under the cursor (mouse pointer)

 devblogs.microsoft.com/oldnewthing/20040423-00

April 23, 2004



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Microsoft Active Accessibility is the technology that exposes information about objects on the screen to accessibility aids such as screen readers. But that doesn't mean that only screen readers can use it.

Here's a program that illustrates the use of Active Accessibility at the most rudimentary level: Reading text. There's much more to Active Accessibility than this. You can navigate the objects on the screen, read various properties, even invoke commands on them, all programmatically.

Start with our [scratch program](#) and change these two functions:

```
BOOL
OnCreate(HWND hwnd, LPCREATESTRUCT lpcs)
{
    SetTimer(hwnd, 1, 1000, RecalcText);
    return TRUE;
}
void
PaintContent(HWND hwnd, PAINTSTRUCT *pps)
{
    if (g_pszText) {
        RECT rc;
        GetClientRect(hwnd, &rc);
        DrawText(pps->hdc, g_pszText, lstrlen(g_pszText),
                &rc, DT_NOPREFIX | DT_WORDBREAK);
    }
}
```

Of course, the fun part is the function `RecalcText`, which retrieves the text from beneath the cursor:

```

#include <oleacc.h>
POINT g_pt;
LPTSTR g_pszText;
void CALLBACK RecalcText(HWND hwnd, UINT, UINT_PTR, DWORD)
{
    POINT pt;
    if (GetCursorPos(&pt) &&
        (pt.x != g_pt.x || pt.y != g_pt.y)) {
        g_pt = pt;
        IAccessible *pacc;
        VARIANT vtChild;
        if (SUCCEEDED(AccessibleObjectFromPoint(pt, &pacc, &vtChild))) {
            BSTR bsName = NULL;
            BSTR bsValue = NULL;
            pacc->get_accName(vtChild, &bsName);
            pacc->get_accValue(vtChild, &bsValue);
            LPTSTR pszResult;
            DWORD_PTR args[2] = { (DWORD_PTR)(bsName ? bsName : L""),
                                (DWORD_PTR)(bsValue ? bsValue : L"") };
            if (FormatMessage(FORMAT_MESSAGE_ALLOCATE_BUFFER |
                             FORMAT_MESSAGE_FROM_STRING |
                             FORMAT_MESSAGE_ARGUMENT_ARRAY,
                             TEXT("Name: %1!ws!\r\n\r\nValue: %2!ws!"),
                             0, 0, (LPTSTR)&pszResult, 0, (va_list*)args)) {
                LocalFree(g_pszText);
                g_pszText = pszResult;
                InvalidateRect(hwnd, NULL, TRUE);
            }
            SysFreeString(bsName);
            SysFreeString(bsValue);
            VariantClear(&vtChild);
            pacc->Release();
        }
    }
}

```

Let's take a look at this function. We start by grabbing the cursor position and seeing if it changed since the last time we checked. If so, then we ask `AccessibleObjectFromPoint` to identify the object at those coordinates and give us an `IAccessible` pointer plus a child identifier. These two pieces of information together represent the object under the cursor.

Now it's a simple matter of asking for the name (`get_accName`) and value (`get_accValue`) of the object and format it nicely.

Note that we handled the NULL case of the BSTR in accordance with [Eric's Complete Guide to BSTR Semantics](#).

For more information about accessibility, check out [Sara Ford's WebLog](#), in particular the bit titled [What is Assistive Technology Compatibility](#).

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