

What happens if I don't paint when I get a WM_PAINT message?

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Suppose your window procedure doesn't paint when it gets a `WM_PAINT` message. What happens?

It depends on how you don't paint.

If you have an explicit handler for the `WM_PAINT` message that does nothing but return without painting, then the window manager will turn around and put a new `WM_PAINT` message in your queue. "And try harder this time." Remember that the rules for the `WM_PAINT` message are that the window manager will generate a `WM_PAINT` message for any window that has a dirty region. If you fail to remove the dirty region in your `WM_PAINT` message handler, well, then the rules state that you get another `WM_PAINT` message. (The most common way of clearing the dirty region is to call `BeginPaint`, but there are other less common ways, like `ValidateRect` or `RedrawWindow` with the `RDW_VALIDATE` flag.)

The other case is that you simply don't have a `WM_PAINT` handler and let the message fall through to `DefWindowProc`. In that case, `DefWindowProc` will do a blank paint for you. In other words, `DefWindowProc` contains the logical equivalent of

```
case WM_PAINT:
{
    PAINTSTRUCT ps;
    if (BeginPaint(hwnd, &ps))
        EndPaint(hwnd, &ps);
}
return 0;
```

In the case where you pass the `WM_PAINT` to `DefWindowProc`, the dirty region is cleared because `DefWindowProc` will call `BeginPaint` for you.

There are some quirks in the handling of the `WM_PAINT` message by the `DefWindowProc` function to handle various application compatibility cases, but the above is the basic idea.

To avoid tripping over the weird application compatibility cases, decide up front how you want to deal with `WM_PAINT` messages delivered to your window procedure.

- Handle them completely by calling `BeginPaint` and `EndPaint`, then returning 0. (Do not pass the message to `DefWindowProc`.)
- Pass them all to `DefWindowProc`, and let it do the `BeginPaint` and `EndPaint`.

Don't try playing fancy games like "Oh, I'm going to call `BeginPaint` and `EndPaint`, but sometimes I'm *also* going to pass the message to `DefWindowProc` afterwards." Just pick one plan and stick to it. It's a lot simpler for everybody that way.

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