Menu Verify Handling

by John Orr and Peter Cherna

Menu verify has been a part of Intuition for a long time, so it may seem a bit odd to see an Amiga Mail article on the subject. Unfortunately, the ``Intuition Menus'' chapter of the *Amiga ROM Kernel Reference Manual: Libraries* is a bit unclear on the subject. It does not sufficiently cover why an application would need to use this feature and how an application should handle it.

Menu Verify

When the user tries to pull down the active window's menu, Intuition offers applications a chance to prepare for the menu operation. Intuition delays displaying any menus until the application has finished its preparations for the menu operation. This feature is known as *menu verify*.

Menu verification works using the IDCMP mechanism. For an Intuition screen, when the user triggers Intuition into drawing the menu, Intuition sends an `IDCMP_MENUVERIFY` message to every window on that screen that asked to hear about menu verify events. Intuition will not display the menus until it gets back all the `IDCMP_MENUVERIFY` messages.

If the active window uses menu verification, Intuition gives that window the option to cancel the menu operation. This allows the application to selectively use the menu button to activate the menu or to perform some other function.

Beginning with V36, Intuition introduced a time out on menu verify operations. If the active window's application takes too long to respond to the `IDCMP_MENUVERIFY` message, Intuition will cancel the menu operation. This feature helps avoid some deadlocks that can occur while Intuition is waiting on the active window. This feature applies only to the active window; Intuition will wait indefinitely for the `IDCMP_MENUVERIFY` message from an inactive window.

Reasons to Use Menu Verify

The primary purpose of the menu verify feature is to arbitrate access to screen resource There are really only two screen resources that an application might need to use directly the palette and the bitmap.

Some applications need as many pens as possible, so they change the color values of the pens that Intuition uses to render the menus. This can present a problem if the applicat happens to alter the menu pen colors so that the menu's foreground color is difficult (if impossible) to see against the background color. The menu items will be unreadable to user.

To prevent this problem, the application has to restore the original pen colors when the user pulls down the menu. The application can do this using menu verify. When the us hits the menu button, Intuition sends the application a menu verify message. When the application receives this message, it restores the menu colors and then returns the `IDCMP_MENUVERIFY` **message so Intuition can properly render the menus. When the menu operation is over, Intuition will send a ``conclusion'' IDCMP message. The ``conclusion message is covered later in this article.**

Another reason to use menu verify is to arbitrate rendering access to an Intuition Scree bitmap. While Intuition is displaying the menus, the application must not render direct to the screen's bitmap because the application could draw over the menus. The applicat must wait until the menu operation is over to resume rendering.

This raises some important questions. Why render into a screen's bitmap (Screen-> RastPort.BitMap)? Shouldn't I render into a window instead?

The quick answer is: ``render into a window's rastport instead of rendering directly into screen's bitmap''. Rendering to a window's rastport offers several advantages over rendering directly to the screen's bitmap. The window offers the application efficient clipping, making the application simpler because it doesn't need to worry about renderi into rectangular bounds. The window also supports a layered display, so the application can ignore the consequences of arbitrating access to the screen's bitmap.

There are some cases where, arguably, it might be advantageous for an application to render directly into a screen's bitmap. Rendering into a screen's bitmap versus renderi to a window's rastport offers a slight improvement in performance. Part of this improvement is due to the lack of clipping on a screen's bitmap, which the window provides, so the performance improvement is questionable if you still need to perform clipping.

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Reasons Not to Use Menu Verify

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Some applications use the menu verify feat
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Although this method works, it should not
Almost all applications should be able to k
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ResetMenuStrip() for more details.

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meaning to the right mouse button. For ex
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using `WFLG_RMBTRAP`. This flag is from the I
this flag disables menu operations for the w
Intuition sends the window `IDCMP_MOUSEBU`

To use `WFLG_RMBTRAP` as an alternative to m
movement using `IDCMP_MOUSEMOVE`. While t
application makes sure the `WFLG_RMBTRAP` fl
while `WFLG_RMBTRAP` is set, Intuition sends t
pointer is inside the screen's title bar, the a

e case where an application has to render into a screen's bitmap is when graphics ctions that operate below the layers level. For example blitter objects (BOBs) operate w the layers level. If the application is operating below the layers level, it can't render

asons Not to Use Menu Verify

e feature of Intuition menus is that the user can toggle a menu item between a selected ecked'' state and an unselected ``unchecked'' state. Intuition keeps track of the state, he application only has to read the state from the MenuItem structure. In some cases, state of the menu item can be affected by something besides the user performing menu rations, so the application has to explicitly change the state of the menu item.

he applications use the menu verify feature as a mechanism for updating the state of the nu items. When such an application receives the `IDCMP_MENUVERIFY` message, it updates checked flag of the menu items and then returns the menu verify message. Some lications also use this method to manage the enabled and disabled state of a menu item.

hough this method works, it should not be necessary to interrupt the menu event. ost all applications should be able to keep their menu states current using etMenuStrip(). It is also possible to use SetMenuStrip(), but since ResetMenuStrip() is siderably faster than SetMenuStrip(), ResetMenuStrip() is better. See the Autodoc for etMenuStrip() for more details.

he people may think one potential use for menu verify is to assign an alternative ning to the right mouse button. For example, when the pointer is not within the title of a screen, some paint packages use the right mouse button to paint using the kground color. Using menu verify, it is possible for a application to intercept the menu fy event, checking to see if the pointer is within the title bar. If it isn't, the application cels the menu event. After cancelling the menu event, Intuition will send a right button n event, which the application can interpret.

s mechanism may work, but it is not very efficient. There is a better way to do this g `WFLG_RMBTRAP`. This flag is from the Flags field in the Window structure. When set, flag disables menu operations for the window. When the user hits the menu button, ition sends the window `IDCMP_MOUSEBUTTONS` events instead of menu events.

se `WFLG_RMBTRAP` as an alternative to menu verify, the application tracks mouse vement using `IDCMP_MOUSEMOVE`. While the pointer is outside of the screen's title bar, the lication makes sure the `WFLG_RMBTRAP` flag is set. If the user hits the right mouse button le `WFLG_RMBTRAP` is set, Intuition sends the application a mouse button event. While the nter is inside the screen's title bar, the application makes sure the `WFLG_RMBTRAP` flag is

clear. If the user hits the right mouse button while `WFLG_RMBTRAP` **is clear, Intuition generates a normal menu event for the window.**

`WFLG_RMBTRAP` **is an exception to most fields in Intuition structures because it is legal for a application to directly modify this flag. Note that this change must take place as an ator operation so that Exec cannot perform a task switch in the middle of the change. If you are unsure your compiler will do this, use a Forbid()/Permit() pair to prevent a task swi**

There are cases where an application is too busy to handle any menu event so it needs to prevent menu operations for a while. This is another case where menu verify is inappropriate. A better way to block menus is to remove the menu with the Intuition function ClearMenuStrip() and restore it later with ResetMenuStrip(). Another potenti useful way to block menu operations is using a requester.

Will I Ever Need to Cancel a Menu Operation?

When the active window receives an `IDCMP_MENUVERIFY` **message, it has the option of cancelling the menu operation. Although this feature may have some possible uses, for t moment there is no recommended use for it.**

Handling Menu Verify Events

Typically, an application uses menu verify because the application needs to know when menus are down. This goes for the menus of any window on the screen, not just the application's window. When the application receives its `IDCMP_MENUVERIFY` **message, it performs some minor processing (restoring menu pen colors, for example) and records t fact that the display is in a ``menu processing'' state (i.e. Intuition is going to display the menus). The application then returns the menu verify message so Intuition can continu with the menu operation. The application cannot utilize the screen's resources until the menu processing state is over.**

There are two types of events that can end the menu processing state. A cancellation or menu pick can terminate the menu processing state.

There are several events that can cancel a menu operation. Some possibilities include Intuition timing out waiting for an outstanding `IDCMP_MENUVERIFY`**, the active window cancelling the menu operation, and Intuition failing to allocate enough resources to disp the menus. The ``Intuition Menus'' chapter of the *Amiga ROM Kernel Manual: Librarie* attempts to interpret these causes based on the IDCMP messages that arrive after the**

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CMP messages that arrive after the

application returns the IDCMP_MENUVERIFY

The book should not have mentioned how
The reasoning for the cancellation is not re
menu cancellation is a bad idea (especially
book; it's wrong). The only important fact
terminated and the application can resume

Any of the following message combination
processing'' state:

- IDCMP_MOUSEBUTTONS (IntuiMessag
- IDCMP_MENUPICK (IntuiMessage.Co
- IDCMP_MOUSEBUTTONS (IntuiMessag
  (IntuiMessage.Code is equal to ME
- IDCMP_MENUPICK (IntuiMessage.Co
  IDCMP_MOUSEBUTTONS (IntuiMessag

Since the active window can cancel menu c
determine if its window is the active windo
IntuiMessage.Code field of the menu verify
(defined in <*intuition/intuition.h*>) the win
to MENUHOT (defined in <*intuition/intuition.h*
operation by changing the Code field of th
defined in <*intuition/intuition.h*>). If the a
will send the active window an IDCMP_MOUS

The following are possible cases signifying
because the user successfully pulled down
cancellation):

- IDCMP_MENUPICK (IntuiMessage.Co
- (spurious) IDCMP_MOUSEBUTTONS (I
  IDCMP_MENUPICK (IntuiMessage.Co

Note that the menu code could be MENUNULL
have the same meaning as the IDCMP_MENUP
``menu processing'' state.

There are rare cases in 3.0 and prior, when

lication returns the IDCMP_MENUVERIFY **message.**

book should not have mentioned how to interpret the cause of a menu cancellation. reasoning for the cancellation is not really relevant. Trying to interpret the cause of a u cancellation is a bad idea (especially if you interpret based on the information in the k; it's wrong). The only important fact is that the ``menu processing'' state has inated and the application can resume normal operations.

of the following message combinations signify the cancellation of the ``menu

- IDCMP_MOUSEBUTTONS **(IntuiMessage.Code is equal to** MENUUP**) only**
- IDCMP_MENUPICK **(IntuiMessage.Code is equal to** MENUNULL**) only**
- IDCMP_MOUSEBUTTONS **(IntuiMessage.Code is equal to** MENUUP**) then** IDCMP_MENUPICK **(IntuiMessage.Code is equal to** MENUNULL**)**
- IDCMP_MENUPICK **(IntuiMessage.Code is equal to** MENUNULL**) then** IDCMP_MOUSEBUTTONS **(IntuiMessage.Code is equal to** MENUUP**)**

e the active window can cancel menu operations, the application may need to rmine if its window is the active window. The application can do this by examining the iMessage.Code field of the menu verify message. If that field is equal to MENUWAITING **ined in <*intuition/intuition.h*>) the window is not active. However, if that field is equal** ENUHOT **(defined in <*intuition/intuition.h*>) the window is active and can cancel the menu ration by changing the Code field of the menu verify message to** MENUCANCEL **(also ned in <*intuition/intuition.h*>). If the application cancels the menu operation, Intuition send the active window an** IDCMP_MOUSEBUTTONS **event about the right mouse button.**

following are possible cases signifying that the ``menu processing'' state is over use the user successfully pulled down and released the menu (there was no

- IDCMP_MENUPICK **(IntuiMessage.Code is equal to the menu code)**
- **(spurious)** IDCMP_MOUSEBUTTONS **(IntuiMessage.Code is equal to** MENUUP**) then** IDCMP_MENUPICK **(IntuiMessage.Code is equal to the menu code)**

e that the menu code could be MENUNULL **if no item was selected.** IDCMP_MENUHELP **events e the same meaning as the** IDCMP_MENUPICK **messages when it comes to terminating the enu processing'' state.**

re are rare cases in 3.0 and prior, where Intuition does not send the application an

IDCMP message after the user picks a menu item. The result is the application does not know that the ``menu processing'' state is over. The only notable case is when the user types a menu keyboard shortcut, and Intuition times out waiting for the application to respond to the menu verify message.

V40 should fix the lack of a terminating event in those rare cases, as well as eliminate th spurious `IDCMP_MOUSEBUTTONS` **event that can occur for successful menu picks.**

About Double Menu Requesters

Intuition has a feature that allows an application to put up a special type of requester wh the user double clicks the right mouse button. This requester is known as a *Double Men Requester*. Unfortunately, the double menu requester is considered to be inconsistant w the Amiga's user interface, so using them in any capacity is strongly discouraged. Using them in conjunction with menu verify is even more strongly discouraged because they significantly complicate processing menu verify events. *For this reason, never use doubl menu requester and menu verify together!*

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