
Icon Resources

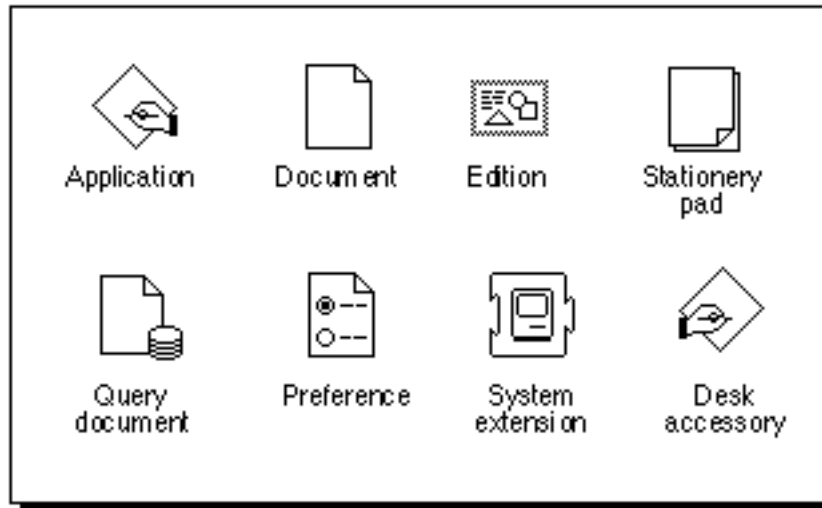
The **Finder** represents your files as icons. To distinguish your product on the desktop, you can design your own icons for all the files associated with your application, including

- your application file itself
- standard documents created by your application
- stationery pads that users create from your application's documents
- data-sharing editions that users create from your application's documents
- other special documents, such as read-only, graphics, and query documents, which are either created by your Macintosh application or provided by you for use by other Macintosh applications

For most effective display, you should create an icon family for each of your files. An **icon family** is the set of icons that represent a single object, such as an application or document, on the desktop. An entire icon family consists of

- a large (32-by-32 pixel) black-and-white icon and mask (resource type 'ICN#')
- a small (16-by-16 pixel) black-and-white icon and mask (resource type 'ics#')
- a large (32-by-32 pixel) color icon with 4 bits of color data per pixel (resource type 'icl4')
- a small (16-by-16 pixel) color icon with 4 bits of color data per pixel (resource type 'ics4')
- a large (32-by-32 pixel) color icon with 8 bits of color data per pixel (resource type 'icl8')
- a small (16-by-16 pixel) color icon with 8 bits of color data per pixel (resource type 'ics8')

If you do not design your own icons, the **Finder** uses a set of its own default application and document icons for display. The following figure shows the **Finder**'s default large black-and-white icons. Note that the **Finder** in System 7.0 also displays desk accessories with icons.



Default large black-and-white icons

If you do not want the **Finder** to display the default icons for your application, desk accessory, or documents, you must at least define an 'ICN#' resource (called an *icon list*) for each icon. The two icons defined in the 'ICN#' resource are a 32-by-32 pixel, black-and-white icon and its mask. You can also define color and 16-by-16 pixel icons in other resources described in this section. (If you do not define color icons, the **Finder** displays the black-and-white icon defined in your 'ICN#' resource on all displays, and if you do not define 16-by-16 pixel icons, the **Finder** algorithmically reduces the 32-by-32 pixel icon to half size when needed.)

An 'ICN#' resource defines one desktop icon. It contains two icon descriptions: the actual icon for display on the desktop and an all-black mask that shows the area covered by the icon. The **Finder** uses the mask to crop the icon's outline into whatever background color or pattern is on the desktop. The **Finder** then draws the icon into this shape. Therefore, it's important that the mask be exactly the same shape as the icon. The mask also defines the area that users need to click to select the icon. Therefore, it's best not to have any holes in the mask; otherwise, users may have trouble selecting your icon. The following figure shows an application icon and its mask.



An application icon and its mask

An 'ICN#' resource is defined to be an array of String[128]. Typically, you use a high-level tool like the ResEdit application, which is available through APDA, to create your 'ICN#' resources.

The following is a partial listing of the Rez input for the 'ICN#' resources shown in this figure. This listing and those that follow use Rez format to help you understand the format of the resources and see how they work together.

'ICN#' resources for an application and its documents

```
resource 'ICN#' (128, purgeable) {           /* application icon and mask */
{                                           /* array: 2 elements */
                                           /* first element: the application icon */
```

```

$"00 11 E2 00"          /* each line holds 4 bytes (32 bits) */

/* 32 lines total for icon */

$"00 00 0F 00"          /* 32nd line of icon */
,                        /* second element: the mask */
$"00 00 FF 00

/* 32 lines total for icon */

$"00 00 0F 00"          /* 32nd line of mask */
}
};
resource 'ICN#' (129, purgeable) {          /* text document icon and mask */
{
/* icon data goes here */
}
};
resource 'ICN#' (130, purgeable) { /* stationery document icon and mask */
{
/* icon data goes here */
}
};
resource 'ICN#' (131, purgeable) { /* edition document icon and mask */
{
/* icon data goes here */
}
};

```

You can also define a small (16-by-16 pixel) version of your icon in the 'ics#' resource. The **Finder** displays the small icon in windows when the user chooses by Small Icon from the View menu. It also appears in the Application menu after the user launches your application and in the Apple menu if the user places your application or an alias to it in the Apple Menu Items folder. (Alias files and the Apple Menu Items folder are described, respectively, in **Aliases and the Finder** and **The System Folder and Its Related Directories**.)

You can define color versions of both large and small icons by using several resource types. The resource for each icon variation has the same resource ID as the 'ICN#' resource that defines the large black-and-white icon. For example, if the resource ID of your application icon's 'ICN#' resource is 128, its small black-and-white icon resource, 'ics#', should have a resource ID of 128; and the 'icl4', 'ics4', 'icl8', and 'ics8' resources should also have resource ID's of 128.

Do not define masks for your color icon resources. The 'icl4' and 'icl8' resources use the black-and-white icon mask defined in their companion 'ICN#' resource, and the 'ics4' and 'ics8' resources use the black-and-white icon mask defined in their companion 'ics#' resource. Because of this, the outline shapes of your color icons should exactly match those defined in your 'ICN#' and 'ics#' resources.

ResEdit 2.1 includes an icon family editor to help you easily manage the creation of these related resources. See the *ResEdit Reference* (available from APDA) for details.

See the **User Interface Guidelines** description for information about the

most effective use of color and shape for your icons. Choose your colors from the 36 recommended icon colors in the system palette. (If you use ResEdit 2.1, these colors appear in a palette when you choose Apple Icon Colors from the Color menu.) Note that you cannot specify your own color table for these as you can with the 'cicn' resources described in the **Color QuickDraw** text.

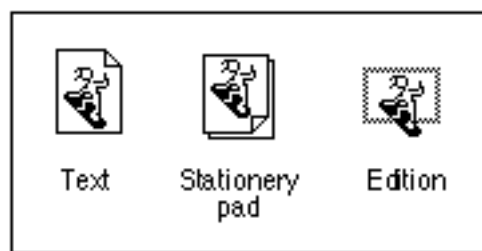
For more information about color palettes, see the **Graphics Overview**, **Color QuickDraw**, and **Palette Manager**. While the **Palette Manager** allows you to define a palette for the system to use when it needs to define the color environment, you should rely on the system palette colors for your icon family. Remember that users may often use the **Finder** when your application is not running and that the user can switch to another application when your application is running. Relying on the system palette gives your icons a more consistent look in the **Finder** regardless of what the active application is. And because users can change the desktop color and pattern, your application also gives users more control over their work environment if your icons rely on the system palette. Users can always alter your color definitions by selecting an icon and choosing a color from the Label menu. The **Finder** then blends the chosen color into those of the selected icon. To restore the original colors, users must choose None from the Label menu.

If your application creates documents, it should also define at least two additional icon families: one to be displayed for documents created by your application, and another to be displayed when the user creates stationery pads from one of your application's documents.

Your application might also define icons for other types of documents. If your application supports data sharing through the **Edition Manager**, your application should also define an icon family for editions. If your Macintosh application is a database program or serves as a source for data (as a spreadsheet program often does), you might wish to create query documents so that other Macintosh applications can gain access to that data through the **Data Access Manager**. In this case, your application should also define an icon family for its query documents.

If your application creates other variations of its documents, you can assist your users by providing different icons for the different documents. For example, **TeachText** has separate icon families to distinguish its read-only and graphics documents.

The following figure shows the large black-and-white icons for the various documents that sample application creates: text, stationery pad, and edition.



Examples of document icons

Defining icon resources is not enough to display your icons. In addition, you must follow one of two sets of procedures:

- If you are an application developer, you must define file reference resources and a bundle resource for your application as described in these sections.
- If you are an information provider or database developer-that is, you provide documents that are used by other applications-you do not need to create file reference resources or a bundle resource to provide document icons on Macintosh computers running System 7.0. You can instead create customized icons for your documents as described in Customized Icons. (However, if you want your document to appear with its own icons on earlier versions of system software, you must create a file reference resource and a bundle resource as described in the next two sections.)

Note: In System 7.0, the **Finder** no longer uses the **PlotIcon** and **PlotClcon** procedures to draw icons. If you use these procedures, note that they draw only those icons defined by 'ICN#' and 'cicn' resources. These procedures will not draw any icons that are defined by the icon resources new to System 7.0-namely, the 'ics#', 'icl4', 'ics4', 'icl8', and 'ics8' resources.