

PostScript Quick Tips: Creating a Mirror Image Font

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Have you ever needed mirror image of a symbol from the Zapf Dingbats font? Perhaps you've needed a hand or arrow pointing to the left rather than to the right. In this month's Quick Tips column, we'll create a Zapf Dingbats Mirror font containing a mirror image of each character in the Zapf Dingbats font. Figure 1 shows selected characters from the Zapf Dingbats font in the top row, with the corresponding figures from the Zapf Dingbats Mirror font directly below them. Once you understand the process, you'll be able to use this same technique to create additional mirror fonts.

Before we begin, let's establish a few ground rules. This technique will work with any PostScript font except the new Multiple Master fonts. (We'll talk about Multiple Master fonts in a future column.) This technique will **not** work with TrueType fonts or bitmap fonts. (This is, after all, a PostScript column.) Although many of the techniques described here are platform-independent, the fonts we'll build are intended for Apple Macintosh systems.

This technique assumes that the base font (Zapf Dingbats) is in the printer's memory (RAM or ROM) or on the printer's hard disk when the mirror font is used. This is a potential problem only on a few printers (such as Apple's LaserWriter IIg) that do not have the Zapf Dingbats font in ROM. If the base font (Zapf Dingbats) is used on the same page as the mirror font, Apple's LaserWriter will normally download the base font automatically, and everything will work correctly. If you still have problems using this font on such printers, manually download the Zapf Dingbats font into memory before printing a document using the Zapf Dingbats Mirror font.

```
%!PS-Adobe-1.0
%%Creator: Copyright (C) 1993 Herb Weiner. All rights
reserved.
%%Title: /FontName /ZapfDingbMir
%%CreationDate: March 25, 1993
%%DocumentFonts: ZapfDingbats
%%Pages: 0
%%EndComments
/ZapfDingbMir /ZapfDingbats
10 dict dup begin exch /BaseFont exch findfont def
/FontName 2 index def
/FontType 3 def
/FontMatrix [-1 0 0 1 0 0] def
/FontBBox [0 0 0 0] def
/Encoding BaseFont /Encoding get def
/OneChar 1 string def
/BuildChar
{
    exch begin OneChar exch 0 exch put BaseFont setfont
    OneChar stringwidth exch neg exch 2 copy
    2 copy moveto OneChar true charpath pathbbox
    setcachedevice moveto OneChar show end
} def
end definefont pop
```

The print quality of the font we build will be equal to that of our base font. Since our base font (Adobe's Zapf Dingbats) is a high quality Type 1 font with hints to improve print quality on lower resolution (300 DPI) printers, our mirror font will also be hinted. However, our mirror font will be a Type 3 rather than a Type 1 font; therefore, it will **not** work with ATM (Adobe Type Manager). Furthermore, the bitmap (screen) font we build will use the same characters as the base font. This means that we will **not** see mirrored characters on screen. The font metrics of the bitmap (screen) font will be correct, however. Since the amount of mirrored text in a document is typically very limited, these restrictions will typically not present a major problem.

We'll begin by constructing the PostScript (outline) font. Next, we'll construct the bitmap (screen) font. Then, we'll talk about installing these fonts in your system. Finally, we'll talk about applying these techniques to other fonts.

Constructing the PostScript font

- Double click on Apple's TeachText application to launch it. An Untitled window opens. **Carefully** type in the PostScript code shown in Figure 2. Be sure to press the return key at the end of the last line. Choose "Save" from the File menu and save this file as ZapfDinMir, then choose "Quit"

from the File menu.

- Double click on the ResEdit application (version 2.1 or later) to launch it. Click once in the About ResEdit dialog box to close it, then choose "Cancel" if an Open dialog box appears.
- Choose "Get File/Folder Info..." from the File menu. Choose the ZapfDinMir file you just created and click "Get Info." ResEdit opens the "Info for ZapfDinMir" dialog box. Change the Type from "TEXT" to "LWFN" and change the Creator from "ttxt" to "LWRT". Uncheck the Inited check box if it is checked. Choose "Save", then "Close" from the File menu.
- Choose "Open..." from the File menu. Choose the "ZapfDinMir" file and click "Open." Click "OK" in response to the alert "The file 'ZapfDinMir' has no resource fork. Opening it will add one. Do you wish to open it?"
- Choose "Create New Resource" from the Resource menu. Choose "POST" from the scrolling list in the "Select New Type" dialog box. Two new windows will open. Choose "Close" from the File menu to close the front window. Then choose "Open Using Hex Editor" from the Resource menu. Choose "Select All" from the Edit menu, then type in "0400". Choose "Get Resource Info"



from the Resource menu, and change the ID from 128 to 501. Choose “Close” twice from the File menu.

- Choose “Create New Resource” from the Resource menu. Two new windows will open. Choose “Close” from the File menu to close the front window. Then choose “Open Using Hex Editor” from the Resource menu. Choose “Select All” from the Edit menu, then type in “0500”. Choose “Get Resource Info” from the Resource menu, and change the ID from 128 to 502. Choose “Close” twice from the File menu.
- Choose “Save”, then “Close”, then “Close” again from the File menu. Do not quit from ResEdit.

Constructing the Bitmap Font

- Make a copy of the Zapf Dingbats font suitcase. Change the name of the copy to Zapf Dingbats Mirror.
- In ResEdit, choose “Open...” from the File menu. Choose the Zapf Dingbats Mirror file you just created and click “Open.”
- Double click on the FOND resource to open it. Be sure that there is only one FOND (Zapf Dingbats) in the list. Choose “Get Resource Info” from the Resource menu. Change the name of the Font from “Zapf Dingbats” to “Zapf Dingbats Mirror”. Choose “Close” from the File menu.
- Choose “Open Using Hex Editor” from the Resource menu. Choose “Find ASCII...” from the Find menu. Enter “ZapfDingbats” in the “Find ASCII:” box and “ZapfDingbMir” in the “Change To:” box. Click “Find Next”, then click “Change.” Choose “Close” three times from the File menu.
- The file will have either “FONT” resources or “NFNT” resources (in addition to the “FOND” resource). (Adobe’s bitmap font files have FONT resources, but some utilities, such as Apple’s Font/DA Mover, may convert FONT resources to NFNT resources.) If the file has NFNT resources, skip the remainder of this step. If the file has FONT resources, double click on the FONT resources to open them. Choose “Get Resource Info” from the Resource menu, and change the name from “Zapf Dingbats” to “Zapf Dingbats Mirror”. Choose “Close” twice from the File menu.

- Choose “Save”, then “Close”, then “Quit” from the File menu.

Installing the Font in your System

- First, make a backup copy of the ZapfDinMir PostScript (outline) font and the Zapf Dingbats Mirror bitmap (screen) fonts.
- Next, make sure that the Zapf Dingbats font is already installed. The Zapf Dingbats Mirror font we have created uses the same Font ID number as Zapf Dingbats, since we did not change this number using ResEdit. Therefore, to avoid a Font ID conflict, the system automatically assigns a new Font ID number for Zapf Dingbats Mirror when we install this font, provided that Zapf Dingbats is already installed.
- To install the font in System 6 or earlier, drag the ZapfDinMir PostScript (outline) font into your System Folder, and use the Font/DA Mover to install the Zapf Dingbats Mirror bitmap (screen) font into your System File.
- To install the font in System 7 or newer, drag both the ZapfDinMir PostScript (outline) font and the Zapf Dingbats Mirror bitmap (screen) font into your System Folder. The system will place these font files in the correct location for your system version.
- You can install the ZapfDinMir PostScript (outline) font on your printer’s hard disk, using Apple’s LaserWriter Utility or Adobe’s Downloader, just as you would for any other PostScript font. If you don’t have a hard disk on your printer, or if this font is not installed on your printer’s hard disk, Apple’s LaserWriter driver will download the

font automatically as needed.

- If you need to provide these fonts to a service bureau, be sure to provide both the ZapfDinMir PostScript (outline) font and the Zapf Dingbats Mirror bitmap (screen) font. Note that this is not a violation of any license agreements, since Adobe allows bitmap (screen) fonts to be freely distributed, and since the ZapfDinMir PostScript (outline) font we created does not contain a copy of the character outlines (the service bureau will not be able to use this font unless they already have a copy of Zapf Dingbats).

Creating Additional Mirror Fonts

When creating additional mirror fonts, be aware of the four names associated with every PostScript font:

- The bitmap (screen) font name. This is the name that appears in the Font menu (Zapf Dingbats Mirror).
- The name of the suitcase file containing the bitmap (screen) font. You may use any name you choose, although we made this name the same as the font name.
- The name of the PostScript font. In order to simplify the editing of the FOND resource, the name of the mirror font (ZapfDingbMir) **must** have the same number of characters as the name of the PostScript base font (ZapfDingbats).
- The name of the file containing the PostScript font (ZapfDinMir). In order for Apple’s LaserWriter driver to find and download your font, you **must** construct this name from the first five characters from the first part of the name followed by the first three characters of each remaining part of the name.

Where to Get ResEdit

ResEdit is available for a nominal charge from many user groups. It can also be downloaded from many online services:

- Internet users can use anonymous ftp to obtain a copy from ftp.apple.com (130.43.2.3) in dts/mac/tools/resedit/resedit-2-1-1.hqx.
- AppleLink users can obtain a copy from Developer Support:Developer Services:Tools & Apps:ResEdit:ResEdit 2.1.1.

You can purchase a copy *ResEdit™ Reference for ResEdit version 2.1* with a disk containing the software from many bookstores (Addison Wesley, © 1991, ISBN 0-201-57768-2). Note that this book is also available **without** the software (ISBN 0-201-57767-4).

You can order the ResEdit software and/or Reference Manual from APDA (Apple Programmers and Developers Association) at (800) 282-2732 or (716) 871-6555.