

IconTools

Including OptIcon, IconMaker, Icon2c
Edition 1.5 for version 1.42.
6 August 1995

Tobias Ferber

Copyright © 1994 Tobias Ferber, <ukjg@rz.uni-karlsruhe.de>.

Permission is granted to make and distribute verbatim copies of this manual provided the copyright notice and this permission notice are preserved on all copies.

Permission is granted to copy and distribute modified versions of this manual under the conditions for verbatim copying, provided that the entire resulting derived work is distributed under the terms of a permission notice identical to this one.

Permission is granted to copy and distribute translations of this manual into another language, under the above conditions for modified versions, except that this permission notice may be stated in a translation approved by the author.

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright © 1989, 1991 Free Software Foundation, Inc. 675
Mass Ave, Cambridge, MA 02139, USA

Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software—to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

1. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The “Program”, below, refers to any such program or work, and a “work based on the Program” means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term “modification”.) Each licensee is addressed as “you”.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

2. You may copy and distribute verbatim copies of the Program’s source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

3. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
 - a. You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
 - b. You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
 - c. If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

4. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:
 - a. Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
 - b. Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
 - c. Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

5. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
6. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.
7. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.
8. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

9. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
10. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and “any later version”, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

11. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

12. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.
13. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS),

EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the “copyright” line and a pointer to where the full notice is found.

one line to give the program's name and an idea of what it does.
 Copyright (C) 19yy *name of author*

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) 19yy name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details
type 'show w'. This is free software, and you are welcome
to redistribute it under certain conditions; type 'show c'
for details.
```

The hypothetical commands ‘show w’ and ‘show c’ should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than ‘show w’ and ‘show c’; they could even be mouse-clicks or menu items—whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a “copyright disclaimer” for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright
interest in the program 'Gnomovision'
(which makes passes at compilers) written
by James Hacker.

signature of Ty Coon, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

1 Introduction

The `IconTools` are a collection of commands for creating and manipulating Workbench icon images. Before I started calling this project `IconTools` there had been several ‘`OptIcon`’ archives with other tools like `Icon2c` or `IconMaker` included into it. The reason for the the tools included here being so widely spread is last but not least due to the success of Martin Huttenloher’s great `MagicWB` icon collection.

2 OptIcon

2.1 Abstract

Even if some users claim `OptIcon` being the tool of their choice for changing the number of bitplanes in their MagicWB icons, the main idea behind `OptIcon` is and was to optimize icons for size and speed. `OptIcon` reads `.info` files and scans the icon image in order to optimize the `PlanePick` and `PlaneOnOff` fields in the icon's `Image` structure. This is a space-saving mechanism for image data.

```
struct Image {
    /* ... */
    UBYTE PlanePick, PlaneOnOff;
    /* ... */
};
```

Rather than defining the image data for every plane of the `RastPort`, you need define data only for the planes that are not entirely zero or one. As you define your imagery, you will often find that most of the planes **are** just as color selectors. For instance, if you're designing a two-color icon to use colors one and three, and the icon will reside in a five-plane display, bit plane zero of your imagery would be all ones, bit plane one would have data that describes the imagery, and bit planes two through four would be all zeroes. Using these flags avoids wasting all that memory in this way: first, you specify which planes you want your data to appear in using the `PlanePick` variable. For each bit set in the variable, the next 'plane' of your image data is blitted to the display. For each bit clear in this variable, the corresponding bit in `PlaneOnOff` is examined. If that bit is clear, a 'plane' of zeroes will be used. If the bit is set, ones will go out instead. Note that if you want an `Image` that is only a filled rectangle, you can get this by setting `PlanePick` to zero (pick no planes of data) and set `PlaneOnOff` to describe the pen color of the rectangle.

2.2 Installing OptIcon

The `OptIcon` executable comes in two versions: `'OptIcon.000'` for all Amigas and `'OptIcon.030'` for Amigas with a MC-68030 processor. You simply have to copy one of those into your path (e.g. to `'C:.'`) and rename it to `'OptIcon'`:

```
Copy CLONE FROM OptIcon.030 TO C:OptIcon
```

If you want to make use of the recursive-descent ability of the `'OptIcon.rexx'` script then you should copy this into your `'rexx:.'` drawer and make sure the script-flag `'s'` is set:

```
Copy CLONE FROM OptIcon.rexx TO rexx:
Protect FILE rexx:OptIcon.rexx ADD s
```

2.3 Invoking OptIcon

OptIcon uses ReadArgs() to parse the command line arguments with the following template:

```
FROM=NAME/A/M,DEPTH=PLANES/N,NOEXPAND/S,CRITICAL/S,REMAPV37/S,VERBOSE/S,SMART/S,ALL/S
```

FROM=NAME/A/M (required, multiple)

The name of the icon image file. A trailing `.info` is optional but not required. Several icon image files can be specified. If the `'ALL'` switch is given, then OptIcon recursively enters all directories passed via `'FROM'`, collecting all icons.

DEPTH=PLANES/N (numeric)

With this option you can specify the number of bitplanes to save.

NOEXPAND/S (switch)

If the NOEXPAND keyword is **not** present in the command line, then OptIcon will always write as many bitplanes as specified with the DEPTH=PLANES/N option, even if bitplanes have to be added. With the NOEXPAND switch given, OptIcon will not add any new planes.

CRITICAL/S (switch)

Commodore's PutDiskObject() currently [icon.library 40.1 (15.2.93)] re-expands icon images using the PlanePick/PlaneOnOff mechanism and in fact PutDiskObject() has quite a lot of problems doing so! For this reason OptIcon will perform the PlanePick/PlaneOnOff optimization only if the keyword CRITICAL is given in the command line!

REMAPV37/S (switch)

If the REMAPV37 switch is given in the command line, OptIcon will map the colors 4-7 to the last 4 in the palette using the following algorithm:

1. A bitplane mask is generated from all planes > 2 via OR. (This mask has ones at those positions where any of the bitplanes > 2 has a 1 and has zeros only at those positions where all bitplanes > 2 have zeros.)
2. The result is inverted and
3. stamped with plane 2 via AND.
4. The resulting mask is set via OR in all planes > 2

There is obviously no need to expand the image data if the following expression is true for the PlaneOnOff value p10:

```
p10 &~ %111 != 0
```

When expanding an icon **without** the REMAPV37 keyword given in the command line, the last 4 colors of the input image `i` are mapped to the last 4 colors of the output image `o` as follows:

1. A bitplane mask is generated by an OR of all bitplanes but the last. (This mask has zeros only at those positions where all bitplanes but the last have zeros and has ones otherwise.)
2. The resulting mask is stamped via AND with the last bitplane
3. The result is set in all new bitplanes

If any plane of `i` but the last is entirely 1 then we can simply copy the last plane of `i` to all new planes in `o`

VERBOSE/S (switch)

This switch tells OptIcon to print out some information about each icon and what OptIcon is about to do with it.

SMART/S (switch)

With this switch, **OptIcon** will examine **WBDRAWER** and **WBGARBAGE** icons more closely and if there is not really a drawer (or a file) behind the icon then the icon type is changed into **WBTOOL**. This is a great help if you want to use some drag'n drop application to update icon images which would have problems otherwise (bug? feature? hmmm...).

Caution: It is dangerous to call '**opticon ALL SMART**' on '**ENV:**' or '**ENVARC:**' because this would change the type of the default icons '**sys/def_drawer.info**' and '**sys/def_trashcan.info**' (and perhaps some more) making them unusable for their initial purpose!

ALL/S (switch)

If this switch is given, **OptIcon** recursively enters all subdirectories given via '**FROM**', collecting icons.

Example: In order to remove all but the first 3 planes of the icon image for the disk in drive '**DF0:**' without adding any bitplanes you can invoke **OptIcon** as follows:

```
OptIcon DF0:Disk PLANES=3 NOEXPAND
```

2.4 Notes

Since the **IconEdit** from Commodore will always save 8 bitplane icons the above example might be of great use to you. (Note that 3 plane images are not only smaller but also faster!) Coming with **OptIcon** is the script **PatchIcons** which will recursively descend all subdirectories of a given path deleting all but the first 3 planes of all icon images in that path.

OptIcon now also allows you to expand your 8 or more color icons for the use on a 16 or more color Workbench. This is important due to the new color system under OS3.x which always shifts the second four colors to the end of the system palette. Therefore you might want to adapt an icon's color depth to the actual screenmode it is used on.

Note also: **OptIcon** will always overwrite your icon and does not support a recursive descent. This is why we wrote the **ARexx** script **OptIcon.rexx** which offers all this to you. Some people might never even want to use **OptIcon** directly but will always use **OptIcon.rexx**.

Example: I only have 8 colors on my Workbench and I often find icon collections which come up with full 8 bitplane icons and image drawers with no real drawer behind them. Now on the one hand I don't want to waste space and time for 5 bitplanes which I don't really need and on the other hand I want to be able to use MH's drag'n drop tool **IconUpdate** to change my drawer images without having to care about whether these are **really** drawers or not.

Okay, I've downloaded '**pix/mwb/TobiIcons-2.0.lha**' from the Aminet and extracted it into my '**ram:**' disk. A drawer '**ram:Tobi-Icons/**' had been created there. What I do now is I invoke my **OptIcon.rexx** script and change all the icons there into 3 plane icons and I change all the faked **DRAWER** icons into **TOOL** icons:

```
rx rexx:OptIcon.rexx FROM ram:Tobi-Icons ALL SMART PLANES 3
```

The magic happening there can also be achieved without the '**.rexx**' script like that:

```
List >ram:doit ALL FILES DIR ram:Tobi-Icons PAT #?.info +
  LFORMAT "OptIcon *"%p%n*" PLANES=3 NOEXPAND SMART"
Execute ram:doit
```

2.5 OptIcon and MagicWB

In these days, `OptIcon` has become more and more used by people who use Martin Huttenloher's MagicWB icon collection i.e. on Workbench screens with more than only two bitplanes. Due to the problems resulting from the new coloring scheme (first-4/last-4 colors) as introduced with OS3.x these icons look wrong if the number of bitplanes in the icon is less than the number of bitplanes on the Workbench screen. Of course one could avoid this problem by giving each icon all eight bitplanes (this is what Commodore's `IconEdit` does) but this is a waste of space and time since larger icons do not only eat up more disk space but are also **much** slower!

An easy way for solving this problem is `OptIcon` on a ToolManager Dock or AppIcon. (Thanks to Mark Rose, who contributed his nice 'Plane' icon for the `OptIcon` distribution.)

Example: Suppose you have a 16 color Workbench and you find an 8 color icon which looks wrong then you can simply call '`OptIcon PLANES=4`' from within ToolManager by simply dropping the icon on the dock.

3 Icon2c

3.1 Abstract

Tools which manipulate existing icon images are widely spread but actually when it comes to the point there most often is exactly one switch missing: the one you need ;-). `Icon2c` reads a given `.info` file and writes out well documented and directly compilable C code. This code if compiled with a symbol `TEST` defined (usual compiler option: `-DTEST`) will generate an executable which writes back the icon image file to disk. This allows you to modify any icon to your own needs – with a text editor and a C compiler of your choice.

3.2 Installing Icon2c

The `Icon2c` executable comes in two versions: `'Icon2c.000'` for all Amigas and `'Icon2c.030'` for Amigas with a MC-68030 processor. You simply have to copy one of those into your path (e.g. to `'C:.'`) and rename it to `'Icon2c'`:

```
Copy CLONE FROM Icon2c.030 TO C:Icon2c
```

3.3 Invoking Icon2c

`Icon2c` uses `ReadArgs()` to parse the command line arguments with the following template:

```
NAME/A, QUIET/S, TO/K
```

`NAME/A` (required)

Name of the icon image file. A trailing `' .info'` is optional but not required.

`QUIET/S` (switch)

If this switch is given then `Icon2c` will not print any warnings. (More information about `Icon2c`'s warnings can be found in the `DrawerData` discussion further down.)
Note: Warnings are always directed to `stderr` so that they always appear on the console (and not in the source code) even if the output is redirected from `stdout` via `'>'` or `'|'`.

`TO/K` (keyword required)

This option allows you to specify the name of the generated C code file. If not specified the standard output stream will be used which allows piping in a shell. E.g.:

```
icon2c ram:disk.info | more
```

Example: Suppose you want to generate C code from the disk icon of the disk in `'DF0:.'`:

```
Icon2c DF0:Disk QUIET TO RAM:diskicon.c
```

3.4 The Code Generated by Icon2c

The code generated by Icon2c always begins with some `#includes`, which define the structures and constants needed.

```
#include <intuition/intuition.h>
#include <workbench/workbench.h>
#include <workbench/icon.h>
```

We will now discuss the generated output using a WBDISK icon with two images: one for the ‘normal’ state and one for the ‘selected’ state of the icon. The icon type WBDISK is quite suitable for this tutorial purpose because it needs all the structures an icon can have. I’ve created the code in the following examples by invoking Icon2c like that:

```
icon2c ram:disk.info >ram:diskinfo.c
```

3.4.1 The Image Data

For the ‘normal’ icon image `image` (the one which we see if the icon is not selected), an array `gr_data` is generated. Each line in the code represents one line of pixels in the image. As usual in the image data, bitplanes are stored in ascending order:

```
UWORD gr_data[] = {

    /* plane 0 */

    0x0000, 0x0000, 0x0000, ...
    0x0000, 0x0000, 0x0000, ...
    ...

    /* plane 1 */

    ...
};
```

This array `gr_data` is pointed to by the `Image` structure `gr` which – as we will see later – is pointed to by the `do_Gadget.GadgetRender` field of the `DiskObject` structure. (This is why we use ‘`gr`’ here.)

```
struct Image gr = {
    0,0,          /* LeftEdge, TopEdge    */
    47,36,3,     /* Width, Height, Depth */
    gr_data,     /* ImageData            */
    7,0,        /* PlanePick, PlaneOnOff */
    NULL,       /* NextImage            */
};
```

If the given icon has an alternate image, an array `sr_data` and its `Image` structure `sr` are generated analog to `gr_data` and `gr`. The `sr` structure is pointed to by the `do_Gadget.SelectRender` field of the `DiskObject` structure.

3.4.2 The ToolTypes Array

The icon ToolTypes are stored into `tt`, a `(char *)NULL`-terminated array of strings. Since our `WBDISK` icon does not really need ToolTypes, we only have a dummy here:

```
char *tt[] = {
    ">>>>> Icon by Martin Huttenloher <<<<<<",
    NULL
};
```

If there are no ToolTypes at all in the given icon, both is possible: The `tt` array is created and contains only one `NULL` entry or the `do_ToolTypes` field in the `DiskObject` structure contains a `NULL` pointer.

3.4.3 The DrawerData structure

Icons of type `WBDISK`, `WBDRAWER` and `WBGARBAGE` have a `DrawerData` structure which holds the information about the window which opens when double-clicking the icon. Icons of a different type do not have such a structure but a `NULL` pointer in the `DiskObject`'s `do_DrawerData` field.

The `dd_NewWindow.FirstGadget` field holds a non-`NULL` pointer every now and then. `Icon2c` will print a warning message in these cases and initialize the `dd.dd_NewWindow.FirstGadget` field to `NULL` in the generated code. The `Gadget` structure will be included into the generated code like this:

```
#ifdef UNDEFINED
    struct Gadget <unknown> = {

        /* ... some strange stuff in here ... */

    };
#endif /* UNDEFINED */
```

There also happens to be a non-`NULL` pointer in the `dd_NewWindow.Title` field every now and then. In this case as well a warning message will be printed and the field in the generated code will be initialized to `NULL`. However, the original string value will be available in a comment if it is printable.

Here is the `DrawerData` structure of our `WBDISK` icon:

```
struct DrawerData dd = {
    151,          /* dd_NewWindow.LeftEdge   */
    54,          /* dd_NewWindow.TopEdge   */
    347,        /* dd_NewWindow.Width     */
```

```

150,          /* dd_NewWindow.Height */
255,          /* dd_NewWindow.DetailPen */
255,          /* dd_NewWindow.BlockPen */
NULL,        /* dd_NewWindow.IDCMPFlags */
WFLG_SIZEGADGET
| WFLG_DRAGBAR
| WFLG_DEPTHGADGET
| WFLG_CLOSEGADGET
| WFLG_SIZEBRIGHT
| WFLG_SIZEBBOTTOM
| WFLG_SIMPLE_REFRESH
| WFLG_REPORTMOUSE
| WFLG_ACTIVATE
| WFLG_WBENCHWINDOW, /* dd_NewWindow.Flags */
NULL,        /* dd_NewWindow.FirstGadget */
NULL,        /* dd_NewWindow.CheckMark */
NULL,        /* dd_NewWindow.Title */
NULL,        /* dd_NewWindow.Screen */
NULL,        /* dd_NewWindow.BitMap */
92,          /* dd_NewWindow.MinWidth */
68,          /* dd_NewWindow.MinHeight */
65535,       /* dd_NewWindow.MaxWidth */
92,          /* dd_NewWindow.MaxHeight */
WBENCHSCREEN, /* dd_NewWindow.Type */
0,           /* dd_CurrentX */
0,           /* dd_CurrentY */
3,           /* dd_Flags */
0,           /* dd_ViewModes */
};

```

The values of the `dd_Flags` and `dd_ViewModes` fields are not documented in the includes. Playing around with these values however has revealed some information. The `dd_Flags` field is usually set to one of the following:

- 1 If only files with an icon should be visible in this window.
- 2 or 3 If all files should be visible, using the `'def_#?.info'` default icons from `'env:sys/'`.

The `dd_ViewModes` field represents the sorting criteria of the files and drawers listed in the window:

- 1 Graphical, view by icon
- 2 Textual, lexicographically sorted by name
- 3 Textual, sorted by date
- 4 Textual, sorted by size

3.4.4 The DiskObject structure

The `DiskObject` structure `icon` is the holder of all the other data.

```

struct DiskObject icon = {
    WB_DISKMAGIC,                /* do_Magic                */
    WB_DISKVERSION,             /* do_Version              */
    NULL,                       /* do_Gadget.NextGadget   */
    5,                          /* do_Gadget.LeftEdge     */
    7,                          /* do_Gadget.TopEdge      */
    47,                         /* do_Gadget.Width        */
    37,                         /* do_Gadget.Height       */
    GFLG_GADGHIMAGE|GFLG_GADGIMAGE, /* do_Gadget.Flags       */
    GACT_RELVERIFY|GACT_IMMEDIATE, /* do_Gadget.Activation   */
    GTYP_BOOLGADGET,           /* do_Gadget.GadgetType   */
    (APTR)&gr,                  /* do_Gadget.GadgetRender */
    (APTR)&sr,                  /* do_Gadget.SelectRender */
    NULL,                       /* do_Gadget.GadgetText   */
    0,                          /* do_Gadget.MutualExclude */
    NULL,                       /* do_Gadget.SpecialInfo  */
    0,                          /* do_Gadget.GadgetID     */
    (APTR)WB_DISKREVISION,     /* do_Gadget.UserData     */
    WBDISK,                    /* do_Type                */
    "SYS:System/DiskCopy",     /* do_DefaultTool         */
    &tt[0],                    /* do_ToolTypes           */
    NO_ICON_POSITION,         /* do_CurrentX            */
    NO_ICON_POSITION,         /* do_CurrentY            */
    &dd,                       /* do_DrawerData          */
    NULL,                      /* do_ToolWindow           */
    8192,                      /* do_StackSize           */
};

```

3.4.5 The TEST code

When compiling the generated code with a symbol `TEST` defined, then an executable will be generated which writes the icon to disk via `PutDiskObject()`. Together with a C compiler and a text editor of your choice we now have the most powerful tool for manipulating Workbench icons you can think of. (-:

Example: Let's assume you called `Icon2c` and saved your Ram Disk icon to `'ram:foo.c'`:

```
Icon2c ram:disk.info >ram:foo.c
```

Now you compile the file `'foo.c'` with Dice C:

```
dcc -2.0 -DTEST ram:foo.c
```

and the resulting executable `'ram:foo'` can be used to write the icon back to `'ram:disk.info'`

```
ram:foo ram:disk
```

Here is the `main()` procedure of `'foo.c'`:

```
#ifdef TEST
#include <intuition/intuitionbase.h>
#include <stdlib.h>
#include <stdio.h>

extern struct Library *OpenLibrary(STRPTR, ULONG);
extern void CloseLibrary(struct Library *);
extern LONG IoErr(void);
extern BOOL PrintFault(LONG, STRPTR);
extern BOOL PutDiskObject(char *, struct DiskObject *);

struct IconBase *IconBase;

int main(int argc, char **argv)
{
    if(argc == 2)
    {
        if( (IconBase= (struct IconBase *)OpenLibrary(ICONNAME,36)) )
        {
            if( !PutDiskObject(argv[1],&icon) )
                PrintFault(IoErr(),argv[1]);
            CloseLibrary(IconBase);
        }
        else printf("%s: no %s.\n",*argv,ICONNAME);
    }
    else printf("usage: %s <filename>\n",*argv);

    return IoErr();
}
#endif /* TEST */
```

4 IconMaker

4.1 Abstract

Suppose you painted some brushes and now you want to make icons from them. Or let's assume you've downloaded some brushes and you don't know how they look like. This is where it comes to IM – the IconMaker. IM creates icons from brushes and offers you the best possibility for a preview: the Workbench with all its functions! (-:

4.2 Installing IconMaker

Simply copy 'IM.000' (or 'IM.030' if you have a MC-68030 Amiga) somewhere into your path (e.g. to 'C:') and rename it to 'IM'. For example:

```
Copy im.030 TO c:im
```

4.3 Invoking IconMaker

IconMaker uses `ReadArgs()` to parse the command line arguments with the following template:

```
FROM=NORMAL/K/A,SELECTED/K,
IW=ICONWIDTH/K/N,IH=ICONHEIGHT/K/N,MINSIZE/S,
TYPE/K,HIGHLIGHT/K,
IX=ICONX/K/N,IY=ICONY/K/N,
TOOLTYPES/K/M,STACKSIZE/K/N,DEFAULTTOOL/K,
WX=WINDOWX/K/N,WY=WINDOWY/K/N,WW=WINDOWWIDTH/K/N,WH=WINDOWHEIGHT/K/N,
TO/K/A
```

FROM=NORMAL/K/A (required, keyword required)

The specified IFF/ILBM brush will be used for the normal image of the icon. This argument **must** be present in the command line.

SELECTED/K (keyword required)

The specified IFF/ILBM brush will be used for the selected image of the icon. If present in the command line, an implicit HIGHLIGHT=IMAGE is used.

TO/K/A (required, keyword required)

The name of the icon **without** the trailing '.info' which is appended automatically by `PutDiskObject()`.

IW=ICONWIDTH/K/N (numeric, keyword required)

IH=ICONHEIGHT/K/N (numeric, keyword required)

The dimensions of the icon image. Smaller values than those of the brush(es) will use the top/left corner of the image, larger values will fill up the icon image's bottom/right border with 0's

MINSIZE/S (switch)

If the two IFF/ILBM brushes differ in size then the resulting icon image normally has the dimensions of the larger brush. However, if the **MINSIZE** switch is present in the command line, the dimensions of the smaller brush are used.

TYPE/K (keyword required)

By default, **IM** will use **TYPE=PROJECT** and create a project icon with the default tool 'MultiView'. The **TYPE** parameter is parsed with the following template:

DISK/S, DRAWER/S, TOOL/S, PROJECT/S, GARBAGE/S

HIGHLIGHT/K (keyword required)

This argument specifies the highlighting method of the icon, i.e. what happens when the icon is selected. If a **SELECTED** image is specified, then **IM** implicitly assumes **HIGHLIGHT=IMAGE**. The **HIGHLIGHT** parameter is parsed with the following template:

COMPLEMENT/S, BACKFILL/S, IMAGE/S

IX=ICONX/K/N (numeric, keyword required)

IY=ICONY/K/N (numeric, keyword required)

By default the created icon has no fix position. These two options allow an exact positioning of the created icon.

TOOLTYPES/K/M (keyword required, multiple)

Any number of ToolTypes can be specified. By default, **IM** uses

TOOLTYPES "FILETYPE=ILBM"

STACKSIZE/K/N (numeric, keyword required)

The default stack size for **TYPE=TOOL** icons.

DEFAULTTOOL/K (keyword required)

The default tool for **TYPE=PROJECT** and **TYPE=DISK** icons.

WX=WINDOWX/K/N (numeric, keyword required)

WY=WINDOWY/K/N (numeric, keyword required)

WW=WINDOWWIDTH/K/N (numeric, keyword required)

WH=WINDOWHEIGHT/K/N (numeric, keyword required)

The window parameters for **TYPE=DRAWER**, **TYPE=DISK** or **TYPE=GARBAGE** icons.

Example: Let's assume you have **D0pus5** and you want to see all brushes in the 'Images/' and 'Images2/' drawer. You simply have to do the following:

```
List >RAM:doit ALL FILES DIR D0pus5:Images/ D0pus5:Images2/ +
PAT ~(#?.info) LFORMAT "IM FROM *"%p%n*" TO *"%p%n*"
```

```
Execute RAM:doit
```

By default, **IM** creates a project icon with the default tool 'MultiView' and ToolType **FILETYPE=ILBM**. This is what I need in most cases when using **IM** for the above purpose.

4.4 Bugs

IM does not remap the colors in your brushes to Workbench colors. This may or may not be implemented in the future. Please mail me if you really need such a feature.

Master Index

(Index is nonexistent)

Table of Contents

GNU GENERAL PUBLIC LICENSE	1
Preamble	1
TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION	2
How to Apply These Terms to Your New Programs	6
1 Introduction	9
2 OptIcon	11
2.1 Abstract	11
2.2 Installing OptIcon	11
2.3 Invoking OptIcon	12
2.4 Notes	13
2.5 OptIcon and MagicWB	14
3 Icon2c	15
3.1 Abstract	15
3.2 Installing Icon2c	15
3.3 Invoking Icon2c	15
3.4 The Code Generated by Icon2c	16
3.4.1 The Image Data	16
3.4.2 The ToolTypes Array	17
3.4.3 The <code>DrawerData</code> structure	17
3.4.4 The <code>DiskObject</code> structure	18
3.4.5 The <code>TEST</code> code	19
4 IconMaker	21
4.1 Abstract	21
4.2 Installing IconMaker	21
4.3 Invoking IconMaker	21
4.4 Bugs	22
Master Index	23

