

The Icon Program Library; Version 8.10

Ralph E. Griswold

Department of Computer Science, The University of Arizona

1. Introduction

The Icon program library consists of Icon programs, procedures, documentation, and data. Version 8 of Icon is required to run most of the library [1]. A few programs require Version 8.10 [2].

Section 7 lists the contents of the library. More complete documentation is contained in comments in the program and procedure files, as well as in separate documentation files in some cases. You may wish to print these files to have documentation handy.

2. Unloading the Library

The library is designed to be unloaded in a hierarchy that contains separate directories for different kinds of material. Material that requires X-Icon [vix] is segregated so that persons who are using Icon on platforms that do not support the X facilities do not need to unload these files.

The normal directory structure for this version of the library is

```
| --data
|
| --docs
|
| --procs
|
| --progs
|--ipl--|
| --xdata
|
| --xdocs
|
| --xprocs
|
| --xprogs
```

Directories whose names start with `x` contain material appropriate for X-Icon. There also are packages that can be unloaded into their own directories. See the distribution disks for specific unloading instructions.

3. Link Search Paths

Many of the programs link procedures. For example, `options()` is used by many programs for processing command-line options and is linked from “ucode” files obtained from translating `options.icn`.

Icon searches for ucode files first in the current directory and then in directories specified by the `IPATH` environment variable. `IPATH` consists of a sequence of blank-separated path names. The search is in the order of the names. For example, on a UNIX system running `csh`,

```
setenv IPATH "./procs /usr/icon/ilib"
```

results in a search for file names in link declarations first in the current directory, then in `./procs`, and finally in `/usr/icon/ilib`.

The method of setting `IPATH` varies from system to system. Since the current directory always is searched first, `IPATH` need not be set if ucode files are placed in the same directory as the program files. See the next section.

4. Installing the Library

Installing the Icon program library consists of two steps: (1) translating the procedure files to produce ucode files and (2) compiling the programs.

Ucode files are produced by translating the procedure files with the `-c` option to `icont`, as in

```
icont -c options
```

which translates `options.icn`. The result is two ucode files named `options.u1` and `options.u2`. The `.u1` file contains the procedure's code and the `.u2` file contains global information about the procedure. It is these files that a link declaration such as

```
link options
```

needs.

Scripts for translating the procedure files are provided with the distribution. Once the procedure files have been translated, the ucode files can be moved to any place that is accessible from `IPATH`.

The programs are compiled using `icont` without the `-c` option, as in

```
icont deal
```

which compiles `deal.icn`, a program that produces randomly selected bridge hands. The result of compiling a program is an "icode" file. On some systems, the name of the icode file is the same as the name of the program file with the `.icn` suffix removed (for example, `deal`). On other systems, the icode file name has the suffix `.icx` in place of `.icn` (for example, `deal.icx`). Scripts for compiling the programs are provided with the distribution. Instructions for building the programs contained in separate packages are included with those packages.

On systems that support the direct execution of icode files (UNIX, for example), an icode file can be run just by entering its name on the command line, as in

```
deal
```

On other systems (MS-DOS, for example), icode files must be run using the Icon executor, `iconx`, as in

```
iconx deal
```

(This also works on systems that support direct execution.) Note that the suffix (if any) need not be mentioned.

Many Icon programs take arguments and options from the command line. Options are identified by dashes. For example, in

```
deal -h 10
```

the `-h 10` instructs `deal` to produce 10 hands.

Icode files can be moved to any location. Ucode files are needed only during compilation. They need not be accessible when icode files are run.

5. Usage Notes

It is important to read the documentation at the beginning of programs and procedures in the library. It includes information about special requirements, limitations, known bugs, and so forth.

Some of the programs in the Icon program library are quite large and may require more memory than is available on some platforms.

6. Disclaimer

The material in the Icon program library is contributed by users. It is in the public domain and can be freely copied, although author information should be left intact and any modifications should be properly attributed.

Neither the Icon Project nor the authors of material in the Icon program library assume any responsibility as to its correctness or its suitability for any purpose. The responsibility for use of the Icon program library lies entirely with the user.

7. Content Listing

7.1 Programs — progs

adlcheck.icn	check for bad address list data
adlcount.icn	count address list entries
adlfiltr.icn	filter address list entries
adlfirst.icn	write first line of addresses
adllist.icn	list address list fields
adlsort.icn	sort address list entries
animal.icn	play “animal” guessing game
bj.icn	play blackjack game
calc.icn	simulate desk calculator
colm.icn	arrange data into columns
concord.icn	produce concordance
conman.icn	convert units
countlst.icn	count items in a list
cross.icn	display intersection of words
crypt.icn	encrypt file
csgen.icn	generate context-sensitive sentences
cstrings.icn	print strings in C files
deal.icn	deal bridge hands
delam.icn	delaminate file
delamc.icn	delaminate file using tab characters
detex.icn	strip LaTeX commands
diffn.icn	show differences among files
diffu.icn	show differences in files
diffword.icn	list different words
duplproc.icn	find duplicate declarations
edscrip.icn	produce script for ed(1)
empg.icn	produce expression-benchmark program
farb.icn	generate Farberisms
farb2.icn	generate Farberisms
filecvt.icn	convert line terminators
fileprnt.icn	display characters in file

filter.icn	skeleton for generic filter
findstr.icn	find imbedded character strings
fixpath.icn	replace path in a binary file
fnctmpl.icn	produce function templates
format.icn	word wrap a range of text
fset.icn	do set operations on file specifications
gcomp.icn	produce complement of file specification
genqueen.icn	solve arbitrary-size n-queens problem
graphdem.icn	demonstrate simple bar graphics
grpsort.icn	sort groups of lines
hcal4unx.icn	combination Jewish/Civil calendar
hebcalen.icn	combination Jewish/Civil calendar
hufftab.icn	compute Huffman state transitions
ibrow.icn	browse Icon files for declarations
icalc.icn	simulate infix desk calculator
icontent.icn	list Icon procedures
icvt.icn	ASCII/EBCDIC program conversion
idxtext.icn	creating indexed text-base
igrep.icn	search in the style of egrep
ihelp.icn	give on-line help for Icon
iiencode.icn	decode text in style of uuencode
iiencode.icn	encode text in the style of uuencode
ilnkxref.icn	produce Icon link cross reference
ilump.icn	lump linked Icon source files
interpe.icn	interpret Icon expressions
interp.icn	interpret Icon programs
ipldoc.icn	collect library documentation
ipp.icn	preprocess Icon programs
iprint.icn	print Icon program
iprofile.icn	profile Icon procedure usage
ipsort.icn	sort Icon procedures
ipsplit.icn	split Icon program into files
ipxref.icn	cross reference Icon program
isrcline.icn	count code lines in Icon program
istrip.icn	strip comments from Icon program
itab.icn	entab an Icon program
itags.icn	create tags file for Icon programs
iundecl.icn	find undeclared Icon identifiers
iversion.icn	show icode version
iwriter.icn	write Icon code to write input

krieg.icn	play kriegspiel
kross.icn	show intersections of strings
kwic.icn	produce keywords in context
labels.icn	format mailing labels
lam.icn	laminate files
latexidx.icn	process LaTeX idx file
linden.icn	generate sentences in 0L-systems
lisp.icn	interpret LISP programs
loadmap.icn	show load map of UNIX object file
longest.icn	write length of longest line in a file
makepuzz.icn	make find-the-word puzzle
memsum.icn	summarize Icon memory management
miu.icn	generate strings from the MIU system
monkeys.icn	generate random text
morse.icn	convert string to Morse code
mr.icn	read mail
mtf3.icn	map tar file
nim.icn	play the game of nim
nocr.icn	convert MS-DOS text files to UNIX
pack.icn	package multiple files
paginate.icn	insert formfeeds
parens.icn	produce random balanced strings
pargen.icn	generate context-free parser
parse.icn	parse simple statements
parsex.icn	parse arithmetic expressions
patchu.icn	implement UNIX-like patch
post.icn	post news
press.icn	archive files
profile.icn	profile Icon programs
proto.icn	show Icon syntactic forms
psrsplit.icn	separate PostScript recorder output
pt.icn	produce parse table generator
puzz.icn	create word search puzzle
qt.icn	announce time in English
queens.icn	generate solutions to the n-queens problem
recgen.icn	generate context-free recognizer
reply.icn	reply to news-articles or mail
repro.icn	reproduce itself
roffcmds.icn	list roff commands and macros
rsg.icn	generate randomly selected sentences

ruler.icn	write a character ruler
scramble.icn	scramble a document
shar.icn	crate shell archive UNIX
shuffile.icn	shuffle lines in a file
sing.icn	sing ‘‘The Twelve Days of Christmas’’
snake.icn	play the snake game
solit.icn	play solitaire
sortname.icn	order by last name
stars.icn	display ‘‘star’’ field
strpsgml.icn	strip/translate SGML tags
tablc.icn	tabulate characters in a file
tablw.icn	tabulate words in a file
textcnt.icn	tabulate properties of text file
trim.icn	trim lines in a file
ttt.icn	play tic-tac-toe
turing.icn	simulate a Turing machine
unique.icn	delete identical adjacent lines
unpack.icn	unpackage files
verse.icn	generate bizarre verses
vnq.icn	display solutions to n-queens problem
xtable.icn	show character code translations
yahtz.icn	play yahtzee
yescr.icn	convert UNIX files to DOS format
zipsort.icn	sort mailing labels by ZIP code

7.2 Programs — xprogs

bitplane.icn	demonstrate bitplanes
bme.icn	edit bitmap
calib.icn	calibrate color monitor
coloralc.icn	test color allocation
colrbook.icn	show named color
colrgrid.icn	show variation of color hue
colrname.icn	browse color names
colrpick.icn	pick RGB or HSV colors
concen.icn	play solitaire game Concentration
drip.icn	demonstrate color map animation
etch.icn	distributed Etch-A-Sketch
fev.icn	display text in fisheye view
flake.icn	draw a fractal snowflake
fract.icn	demonstrate fractal lines

hextile.icn	show a tiling of a bitmap
hvc.icn	pick colors for Tek HVC space
keypunch.icn	simulate a keypunch
koch.icn	demonstrate Koch curves
lsys.icn	experiment with lindenmeyer systems
pme.icn	edit pixmap
sensdemo.icn	demonstrate sensor routines
sier.icn	generalized Sierpinski's triangle
snapper.icn	display images
spiral.icn	draw polygonal spirals
spiro.icn	display spirograph lines
splat.icn	drop some paint splatters in a window
textures.icn	show various 4x4 stipple patterns
tgdemo.icn	demonstrate turtle graphics
travels.icn	animate the traveling salesman problem
trycolor.icn	investigate color specifications
tryfont.icn	demonstrate X font rankings
wheel.icn	show wheel of colors
xed.icn	edit text in a window
xevents.icn	report X-Icon events
xprompt.icn	prompt in a window
xscroll.icn	scroll image

7.3 Procedures — procs

adjuncts.icn	gettext and idxtext support
adlutils.icn	process address lists
allof.icn	conjunction control operation
ansi.icn	ANSI-based terminal control
argparse.icn	parse pseudo-command-line
array.icn	n-dimensional arrays
asciiname.icn	ASCII name of unprintable character
bincvt.icn	convert binary data
binocoef.icn	binomial coefficient
bold.icn	enbolder and underscore text
buffer.icn	buffered input and output
calendat.icn	get date from Julian Day Number
codeobj.icn	encode and decode Icon data
collate.icn	collate and decollate strings
colmize.icn	arrange data into columns
commaize.icn	add commas to real or integers

complete.icn	complete partial input string
complex.icn	perform complex arithmetic
currency.icn	format currency
date.icn	produce date
datetime.icn	date manipulation
dif.icn	check for differences
distance.icn	compute distance in n-space
dosfiles.icn	get MS-DOS file names
ebcdic.icn	convert between ASCII and EBCDIC
escape.icn	interpret Icon literal escapes
everycat.icn	generating all concatenations
factorl.icn	computing factorials
fcopy.icn	copy a file
feval.icn	evaluate string as function call
filedim.icn	compute file dimensions
filename.icn	parse file names
filetext.icn	read text file into a list
findre.icn	find regular expression
full13th.icn	give days when a full moon occurs on
fullimag.icn	produce complete image of structured data