The IRAF Packages
IRAF Version 2.10

- **clpackage.dataio:**

bintxt	-	Convert a binary file to an IRAF text file
mtexamine	-	Examine the structure of a magnetic tape
rcardimage	-	Convert a cardimage file into a text file
reblock	-	Copy a binary file, optionally reblocking
rfits	-	Convert a FITS image into an IRAF image
rtextimage	-	Convert text files to IRAF images
t2d	-	Fast tape to disk copy
txtbin	-	Convert an IRAF text file to a binary file
wcardimage	-	Convert text files to cardimage files
wfits	-	Convert an IRAF image into a FITS image
wtextimage	-	Convert an IRAF image to a text file

- **clpackage.images:**

blkavg	-	Block average or sum a list of N-D images
blkrep	-	Block replicate a list of images
boxcar	-	Boxcar smooth a list of 1 or 2-D images
chpixtype	-	Change the pixel type of a list of images
convolve	-	Convolve a list of 1 or 2-D images with a rectangular filter
fit1d	-	Fit a function to image lines or columns
fmedian	-	Quantize and median filter a 2-D image or a list of images
fmode	-	Quantize and modal filter a 2-D image or list of images
gauss	-	Convolve a list of 1 or 2-D images with an elliptical Gaussian
geomap	-	Calculate a coordinate transformation
geotran	-	Geometrically transform a set of 2-D images
gradient	-	Convolve a list of 1 or 2-D images with a gradient operator
hedit	-	Header editor
hselect	-	Select a subset of images satisfying a boolean expression
imarith	-	Simple image arithmetic
imcombine	-	Combine images pixel-by-pixel using various algorithms
imcopy	-	Copy an image
imdebug	-	Image debugging package (currently undocumented)
imdelete	-	Delete a list of images
imdivide	-	Image division with zero checking and rescaling
imgets	-	Return the value of an image parameter as a string
imheader	-	Print an image header
imhistogram	-	Compute image histogram
imlintran	-	Linearly transform a list of 2-D images
imrename	-	Rename one or more images
imshift	-	Shift a list of 2-D images
imslice	-	Slice images into images of lower dimension
imstack	-	Stack images into a single image of higher dimension
imstatistics	-	Compute and print statistics for a list of images
imsum	-	Compute the sum, average, or median of a set of images
imsurfit	-	Fit a surface to a 2-D image
imtranspose	-	Transpose a 2-D image
laplace	-	Laplacian filter a list of 1 or 2-D images
lineclean	-	Replace deviant pixels in image lines
listpixels	-	Convert an image section into a list of pixels

magnify	-	Magnify a list of 1-D or 2-D images
median	-	Median filter a 2-D image or list of images
minmax	-	Compute the minimum and maximum pixel values in an image
mode	-	Modal filter a 2-D image or list of images
register	-	Register a set of images
rotate	-	Rotate and shift a list of 2-D images
sections	-	Expand an image template on the standard output
shiftlines	-	Shift image lines
tv	-	Image display load and control package

- **clpackage.images.tv:**

display	-	Load an image or image section into the display
iis	-	IIS image display control package
imedit	-	Examine and edit pixels in images
imexamine	-	Examine images using image display, graphics, and text
tvmark	-	Mark objects on the image display
wcslab	-	Overlay a displayed image with a world coordinate grid

- **clpackage.images.tv.iis:**

blink	-	Blink two frames
cv	-	Control image device, display "snapshot"
cvl	-	Load image display (newer version of ’display’)
erase	-	Erase an image frame
frame	-	Select the frame to be displayed
lumatch	-	Match the lookup tables of two frames
monochrome	-	Select monochrome enhancement
pseudocolor	-	Select pseudocolor enhancement
rgb	-	Select true color mode (red, green, and blue frames)
window	-	Adjust the contrast and dc offset of the current frame
zoom	-	Zoom in on the image (change magnification)

- **clpackage.language:**

intro	-	A brief introduction to IRAF

Language components:

break	*	Break out of a loop
case	*	One setting of a switch
commands	-	A discussion of the syntax of IRAF commands
cursors	-	Graphics and image display cursors
declarations	-	Parameter/variable declarations
default	*	The default clause of a switch
else	*	Else clause of IF statement
for	*	C-style for loop construct
if	*	If statement
goto	*	Goto statement
logging	-	Discussion of CL logging
next	*	Start next iteration of a loop
parameters	-	Discussion of parameter attributes
procedure	*	Start a procedure script
return	*	Return from script with an optional value

switch	*	Multiway branch construct
while	*	While loop

Builtin Commands and Functions:

access	-	Test if a file exists
back	-	Return to the previous directory (after a chdir)
beep	-	Send a beep to the terminal
bye	-	Exit a task or package
cache	-	Cache parameter files, or print the current cache list
cd	-	Change directory
chdir	-	Change directory
cl	-	Execute commands from the standard input
clbye	-	A cl followed by a bye (used to save file descriptors)
clear	-	Clear the terminal screen
defpac	-	Test if a package is defined
defpar	-	Test if a parameter is defined
deftask	-	Test if a task is defined
dparam	-	Dump a pset as a series of task.param=value assignments
edit	-	Edit a text file
ehistory	-	Edit history file to re-execute commands
envget	-	Get the string value of an environment variable
eparam	-	Edit parameters of a task
error	-	Print error code and message and abort
flprcache	-	Flush the process cache
fprint	*	Print a line into a parameter
fscan	*	Scan a list
gflush	-	Flush any buffered graphics output
hidetask	-	Make a task invisible to the user
history	-	Display commands previously executed
jobs	-	Display status of background jobs
keep	-	Make recent set, task, etc. declarations permanent
kill	-	Kill a background job
logout	-	Log out of the CL
lparam	-	List the parameters of a task
mathfcns	-	Mathematical routines
mktemp	-	Make a temporary (unique) file name
osfn	-	Return the host system equivalent of an IRAF filename
package	-	Define a new package, or print the current package names
prcache	-	Show process cache, or lock a process into the cache
print	-	Format and print a line on the standard output
putlog	-	Put a message to the logfile
radix	-	Encode a number in the specified radix
redefine	-	Redefine a task
reset	-	Reset the value of an environment variable
scan	*	Scan the standard input
service	-	Service a query from a background job
set	-	Set an environment variable
show	-	Show an environment variable
sleep	-	Hibernate for a specified time
strings	-	String manipulation routines
stty	-	Set/show terminal characteristics
task	-	Define a new task
time	-	Print the current time

unlearn	-	Restore the default parameters for a task or package
update	-	Update a task's parameters (flush to disk)
wait	-	Wait for all background jobs to complete

- **clpackage.lists:**

average	-	Compute the mean and standard deviation of a list
columns	-	Convert multicolumn file to separate files
lintran	-	Perform linear transformation of a list
rgcursor	-	Read the graphics cursor (makes a list)
rimcursor	-	Read the image display cursor (makes a list)
table	-	Format a list of words into a table
tokens	-	Break a file up into a stream of tokens
unique	-	Delete redundant elements from a list
words	-	Break a file up into a stream of words

- **clpackage.obsolete:**

imtitle	-	Change the title of an image (noao.proto V2.9)
mkhistogram	-	List or plot the histogram of a data stream (noao.proto V2.9)
oimcombine	-	Combine images (images.imcombine V2.9)
radplot	-	PLot the radial profile of an object (noao.proto V2.9)

The previous package and release is listed in parenthesis

- **clpackage.plot:**

calcomp	-	Plot metacode on a Calcomp pen plotter
contour	-	Make a contour plot of an image
crtpict	-	Generate greyscale plots of IRAF images
gdevices	-	List available imaging or other graphics devices
gkidecode	-	Decode metacode on the standard output
gkidir	-	Directory listing of metacode file
gkiextract	-	Extract individual frames from metacode file
gkimosaic	-	Condense metacode frames to fit on one page
graph	-	Graph one or more image sections or lists
hafton	-	Generate half-tone plots of an image
imdkern	-	Image display device (IMD) graphics kernel
implot	-	Plot lines and columns of images using cursors
nsppkern	-	Plot metacode on a NSPP (NCAR) plotter device
pcol	-	Plot a column of an image
pcols	-	Plot the average of a range of image columns
phistogram	-	Plot or print the histogram of an image or list
pradprof	-	Plot or list the radial profile of a stellar object
prow	-	Plot a line (row) of an image
prows	-	Plot the average of a range of image lines
pvector	-	Plot an arbitrary vector in a 2D image
sgidecode	-	Decode an SGI format metacode file
sgikern	-	Simple graphics interface (SGI) graphics kernel
showcap	-	Show and decode graphcap entries
stdgraph	-	Plot metacode on the standard graphics device
stdplot	-	Plot metacode on the standard plotter device
surface	-	Make a surface plot of an image
velvect	-	Plot representation of a velocity field

- **clpackage.proto:**

binfil	-	Create a binary file from an IRAF image
bscale	-	Linearly transform the intensities of a list of images
epix	-	Edit pixels in an image
fields	-	Extract specified fields from a list
fixpix	-	Fix bad pixels by linear interpolation from nearby pixels
hfix	-	Fix image headers with a user specified command
imalign	-	Register and shift a list of images
imcentroid	-	Compute relative shifts for a list of images
imcntr	-	Locate the center of a stellar image
imfunction	-	Apply a function to the image pixel values
imreplace	-	Replace pixels in a range by a constant
imscale	-	Scale an image to a specified (windowed) mean
interp	-	Interpolate for a value in a table of X,Y pairs
irafil	-	Create an IRAF image from a binary data file
joinlines	-	Join text files line by line
suntoiraf	-	Convert Sun rasters into IRAF images
wcsedit	-	Edit the image coordinate system
wcsreset	-	Reset the image coordinate system

- **clpackage.softools:**

generic	-	Preprocess a generic source file
hdbexamine	-	Examine a help database
lroff	-	Lroff (line-roff) text formatter
mkhelpdb	-	Make (compile) a help database
mkmanpage	-	Make a manual page
mkpkg	-	Make or update an object library or package
mktags	-	Tag all procedure declarations in a set of files
mkttydata	-	Build cache for termcap/graphcap device entries
rmbin	-	Find/delete binary files in subdirectories
rmfiles	-	Find/delete files in subdirectories
rtar	-	Read a TAR format archive file
wtar	-	Write a TAR format archive file
xc	-	Compile and/or link a program
xyacc	-	Build an SPP language parser

- **clpackage.system:**

allocate	-	Allocate a device, i.e., magtape drive mta, mtb, ...
concatenate	-	Concatenate a list of files
copy	-	Copy a file or files (use IMCOPY for imagefiles)
count	-	Count the number of lines, words, characters in a text file
deallocate	-	Deallocate a previously allocated device
delete	-	Delete a file or files (use IMDELETE to delete imagefiles)
devices	-	Print information on the locally available devices
devstatus	-	Print the status of a device (mta, mtb, ...)
directory	-	List the files in a directory
diskspace	-	Show how much diskspace is available
files	-	Expand a file template into a list of files
gripes	-	Send suggestions, complaints, etc. to the system
head	-	Print the first few lines of a text file
help	-	Print online documentation

lprint	-	Print a file on the line printer device
match	-	Print all lines in a file that match a pattern
mkdir	-	Create a new directory
mkscript	-	Make a command script
movefiles	-	Move files to a directory
netstatus	-	Print the status of the local network
news	-	Page through the system news file
page	-	Page through a file
pathnames	-	Expand a file template into a list of OS pathnames
phelp	-	Paged HELP: collects and pages the output of HELP
protect	-	Protect a file from deletion
references	-	Find all help database references for a given topic
rename	-	Rename a file
rewind	-	Rewind a device (magtape)
sort	-	Sort a text file
spy	-	Show processor status
tail	-	Print the last few lines of a file
tee	-	Tee the standard output into a file
type	-	Type a text file on the standard output
unprotect	-	Remove delete protection from a file

- **clpackage.utilities:**

curfit	-	Fit data with Chebyshev, Legendre or spline curve
detab	-	Replace tabs with tabs and blanks
entab	-	Replace blanks with tabs and blanks
lcase	-	Convert a file to lower case
polyfit	-	Fit polynomial to list of X,Y data
split	-	Split a large file into smaller segments
translit	-	Replace or delete specified characters in a file
ucase	-	Convert a file to upper case
urand	-	Uniform random number generator

Note: Language package keywords are starred. To get help on a keyword enclose it in quotes.