## Help

**List tasks related to a keyword**

```
cl> references keyword    or
cl> apropos keyword
```

**Show only the example section (STSDAS only)**

```
st> example task
```

**Show only the task description (STSDAS only)**

```
st> describe task
```

**Page help viewer (help front-end)**

```
cl> phelp task
```

**Display help for task**

```
cl> help task
```

**Display help for a package**

```
cl> help package opt=sys
```

**Display only PARAMETERS section**

```
cl> help task section=parameters
```

SECTION HELP ARGUMENTS

| | |
|---|---|
| `name` | 1-line task description |
| `usage` | Syntax |
| `description` | Details of algorithms, etc. |
| `parameters` | Details of parameters |
| `examples` | Examples |
| `bugs` | Potential errors or problems |
| `see also` | Related tasks or documents |

## Parameters

**List parameters and settings for a task**

```
cl> lparam task
```

**Edit parameters for task (see eparam commands below)**

```
cl> eparam task
```

**Restore default parameter values**

```
cl> unlearn task
```

**Set a particular parameter**

```
cl> task.parameter=value
```

## Eparam Commands

| | |
|---|---|
| **:q** | **Exit eparam (or pset), saving changes** |
| Control-C | **Abort eparam, discarding changes** |
| `:e` | **Edit a pset** |
| `:g` | **Execute the task** |

## Environment Variables

| | |
|---|---|
| `set variable=value` | **Assign value to environment variable** |
| `show variable` | **Show current value of variable** |
| `set` | **Show all environment variables** |

COMMON ENVIRONMENT VARIABLES & VALUES

| | |
|---|---|
| `stdplot=lp` | Default plotting device |
| `stdimage=imt512` | Image display device |
| `printer=lp` | Printer device |
| `multiversions=no` | Keep multiple versions (VMS only) |
| `imdir=HDR$` | Directory for storing .pix files |
| `editor=vi` | Editor invoked by typing "edit" |
| `clobber=no` | Overwrite existing files? |

| | |
|---|---|
| `stty terminal` | **Set a terminal type** |
| `stty variable=value` | **Set a terminal attribute** |

TERMINAL ATTRIBUTES & DEFAULTS

| | |
|---|---|
| `nlines=48` | Number of text lines on screen |
| `ncols=80` | Number of text columns on screen |
| `vt100` | Set terminal type to VT100 |
| `xterm` | Set terminal type to xterm |

## Data I/O (Tapes)

**Find out if device (tape drive) is available**

```
cl> devstatus device
```

**Reserve device for your use**

```
cl> allocate device
```

**Release device when finished**

```
cl> deallocate device
```

**List first 999 FITS files on tape mounted on drive mta, saving long output in a log file**

```
fi> catfits mta 1-999 log="fits.log" long+
```

**Read first 3 files from FITS tape mounted on drive mta, producing output files "images001" through "images003"**

```
fi> strfits mta 1-3 images.hhh
```

**Write all images to FITS files on tape mounted on drive mta, converting multigroup to FITS with extra dimensions and using IEEE format**

```
fi> stwfits *.??h mta gftoxdim+ ieee+
```

**Convert an image from VAX binary format to Sun format**

```
co> vax2sun image.hhh out.hhh
```

## Tables

**Create a new STSDAS table using a column definition file and a data file**

```
tt> tcreate table coldef
```

**Display statistics (e.g., size) about a table**

```
tt> tinfo table
```

**Edit a table**

```
tt> tedit table
```

**Print the first 10 rows of a table, with a line after 5 rows**

```
tt> tprint intable outtable
```

**Copy one table to another**

```
tt> tcopy intable outtable
```

**Delete a table**

```
tt> tdelete table
```

## I/O Redirection

**Direct output to a file**

```
cl> help plot > tempfile
```

**Append output to existing file**

```
cl> help implot >> tempfile
```

**Redirect both output and errors to a file**

```
cl> imstat >& im.out
```

**Submit a VMS batch job**

```
re> lucy >& luc.out &batch
```

**Submit background job with priority 4**

```
re> lucy >& luc.out &4
```

**Pipe output of tasks to input of other tasks**

```
cl> ?? | words | sort | table
```

## HotSeat

**If you need user support services, send e-mail to:**

hotseat@stsci.edu

## Images

*Packages to Load:*

```
cl> plot
cl> images
im> tv
```

**Display header parameters for images beginning with “y0”**

```
st> imheader y0*.??h
```

**Interactively edit header parameters**

```
st> eheader hdr$y0*.*h
```

**Copy group-format images**

```
st> grpcopy input.*h output.*h
```

**Display general header and instrument-specific information**

```
st> iminfo images.*h
```

**Compute image statistics, in this case, only minimum and maximum pixel values**

```
st> imstat image.*h fields=”min,max”
```

**Rename an image file**

```
st> imrename oldname newname
```

**Delete an image**

```
st> imdelete image
```

**List the pixel values in a portion of an image file**

```
st> listpixels dev$pix[51:55,151:155]
```

**Load the file “image” into frame 2**

```
st> display image 2
```

**Graph the average of columns 50-100**

```
st> sgraph image[50:100,*] axis=2
```

**Start the Interactive Graphics Interpreter**

```
st> igi
```

**Compute a 3-D surface plot as a background job, sending output to the printer**

```
st> surface image device=stplot &
```

**Condense 16 image frames to fit on 1 page**

```
st> gkimosaic inmcode.* nx=4 ny=4
```

**Perform math on images, in this case, average 3 images, creating a new image**

```
st> imcalc image1, image2, image3 /
>>> out_image “(im1+im2+im3)/3.”
```

## Metacharacters

### *Pattern Matching*

**List all files beginning with “x”**

```
cl> dir x*
```

**List all files beginning with “im” and any other single character and having an extension of “hhh”**

```
cl> dir im?.hhh
```

**List only files “im1.hhh”, “im2.hhh”, and “im4.hhh”**

```
cl> dir im[124].hhh
```

**List any file beginning with “im1”, “im2”, or “im3”**

```
cl> dir im[123]*
```

**Match the second argument of the previous command**

```
cl> dir ^2
```

**Match the last argument of the previous command**

```
cl> dir ^$
```

**Use all of the arguments from the previous command**

```
cl> dir ^*
```

| METACHARACTERS | |
|---|---|
| `*` | Any number of characters |
| `?` | One single character |
| `[ab12]` | Characters in the list |
| `[1-5]` | Range of characters |

### *Image Section Syntax*

**Use only the subset of pixels from 100 to 200 in the X direction and all pixels in the Y direction**

```
st> imarith im1.hhh[100:200,*] ...
```

**Use only group 3 of a multigroup GEIS file**

```
cl> imarith im1.hhh[3] ...
```

**Use only a subset of pixels from group 3**

```
cl> imarith i1.hhh[3][100:200,*] ...
```

**Copy group 7 to group 5 of a new image and allocate room for 20 groups**

```
cl> imcopy im1.hhh[7] im2.hhh[5/20]
```

**Same as previous example, but instead of copying to a new image, copy to an existing image**

```
cl> imcopy im1.hhh[7] im2.hhh[5]
```

# IRAF and STSDAS User’s Quick Reference Card

## Basics

**Start IRAF**

```
$ cl
```

**Quit IRAF**

```
cl> logout
```

**List tasks in the current package**

```
cl> ?
```

**List tasks in all loaded packages**

```
cl> ??
```

**Leave current package**

```
cl> bye
```

**List names of all loaded packages**

```
cl> package
```

## Files and Directories

**Change current directory**

```
cl> cd subdirectory
```

**Return to home directory**

```
cl> cd
```

**List files in current directory**

```
cl> dir
```

**Display file, one screen at a time**

```
cl> page filename
```

**Show current directory**

```
cl> path
```

**Prevent file from being deleted**

```
cl> protect filename
```

**Print file on default printer**

```
cl> lprint filename
```

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STSDAS Version 1.3