IRAF Basics for Gemini

Frank Valdes

NOAO/SDM/IRAF Group

Introduction

- Focus of presentation
  - awareness rather than how-to
  - some things apply only to 'cl'
- What is IRAF?
  - large body of software for astronomical image processing and data calibrations and extraction
- What is Gemini IRAF?
  - instrument scripts layered on generic tools
  - you can look at the scripts (cd <package>)
- Command languages
  - cl, _ecl_, ncl, xcl, _pyraf_

Help

- beginner's guide
  - http://iraf.net/irafdocs/beguide.pdf
- help pages
  - help, phelp: help alone, help <package>, help <task>
  - references
  - help dev=gui, guiapps.xhelp
  - http://iraf.noao.edu/scripts/irafhelp?splot
- documents
  - http://iraf.net/irafdocs/
- support
  - iraf.net

Getting Started

- terminal windows
  - xterm, xgterm
- create a directory to be your IRAF home
- mkiraf
- login.cl, loginuser.cl, uparm
- image display servers
  - ximtool, ds9
- cl, logout

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Commands

- packages: e.g. gemini -> gmos (packages, ?, help)
- tasks
- abbreviations
- syntax: command vs compute, pipes
- history: editing, list
- foreign: escapes and declarations
  - !echo, !!echo, task $echo=$foreign, task $echo=$...

- flpr

Parameters

- most tasks have parameters
- required vs hidden
  - task auto1 auto2 param=hidden

    auto3 (default):
  - advanced: task.param.p_mode=[auto|hidden]
- lpar, _epar_, dpar, task.par=value
- parameters can be supplied as variables in the scripting environment

Scripting

- script guide
  - http://iraf.net/irafdocs/script.pdf
- simple scripts
  - redirection: cl < mycommands.cl
  - declared: task $mycomands = mycommands.cl
- procedure scripts

Files

- @files
- simple images
- multi-extension FITS (MEF)
- masks
- tables

File and Image Syntax

- files: [node!]name
- [node!]name[.type][index][kernel][section]
- templates
  - wildcards, lists, @files, prepend/append, replacements
  - important: look for "list" or plural in prompts
- image sections
  - [c1:c2,l1:l2], [*,l1:l2], [*:2,*:2], [-*,*]
- FITS kernel parameters
  - http://iraf.net/irafdocs/fits_userguide.pdf
- MEF extensions

Graphics

- plot package: graph, sgraph, implot, gkimosaic
- igi: ftp://ftp.stsci.edu/pub/software/stsdas/docs/**IgiManual**.pdf
- cursor
  – advance: =gcur, rgcur
- cursor commands
  – important: ?, :, = (:.snap)
  – advanced: annotation, saving (gif, metacode)
- cursor and graphics redirection
  – gcur=<file>, >G

- glbcolor

Image Display

- display servers: ximtool, ds9
- display, mscdisplay, …
- image cursor
  - =imcur
  - rimcur

Accelerators

- history editing
  - up arrow, e, ^^
- epar editing
  - ^U^L, :go
- file templates
- image templates
  - need to escape [: imhead *V![12].fits
- replacement syntax
  - imcopy *V1.fits *V%1%2%.fits

Loops

```
list = "file"
while (fscan(list,s1) != EOF) {
    for (i=1; i<=10; i+=1) {
        printf ("%s[%d]\n", s1, i) | scan (s2)
        sometask (s2)
    }
}
list = ""
```

Common Tasks

- copy, rename, delete
- imcopy, imrename, imdelete
- imhead, nhedit, hedit, hselect
- imarith, <u>imexpr</u>, imcombine
- display, imexam
- fields, join, files, sections

- <u>gemini</u>