

Today:

- Plotting in Python

Monday:

- Boundary conditions
- Multi-dimensional

Reading: Chapters 7, 18, 19

Plotting documentation:

<http://www.clawpack.org/users/plotting.html>

Python plotting tools

Directory `_output` contains files `fort.t000N`, `fort.q000N` of data at **frame N** (N'th output time).

`fort.t000N`: Information about this time,

`fort.q000N`: Solution on all grids at this time

There may be many grids at each output time.

Python tools provide a way to specify what plots to produce for each frame:

- One or more **figures**,
- Each figure has one or more **axes**,
- Each axes has one or more **items**,
(Curve, contour, pcolor, etc.)

setplot function for specifying plots

The file `setplot.py` contains a function `setplot`
Takes an object `plotdata` of class `ClawPlotData`,
Sets various attributes, and returns the object.

Documentation: www.clawpack.org/users/setplot.html

Example: 1 figure with 1 axes showing 1 item:

```
def setplot(plotdata):  
    plotfigure = plotdata.new_plotfigure(name, num)  
    plotaxes = plotfigure.new_plotaxes(title)  
    plotitem = plotaxes.new_plotitem(plot_type)  
    # set attributes of these objects  
    return plotdata
```

setplot function for specifying plots

Example: plot first component of q as blue curve, red circles.

```
plotfigure = plotdata.new_plotfigure('Q', 1)
plotaxes = plotfigure.new_plotaxes('axes1')

plotitem = plotaxes.new_plotitem('1d_plot')
plotitem.plotvar = 0 # Python indexing!
plotitem.plotstyle = '-'
plotitem.color = 'b' # or [0,0,1] or '#0000ff'

plotitem = plotaxes.new_plotitem('1d_plot')
# plotitem now points to a new object!
plotitem.plotvar = 0
plotitem.plotstyle = 'ro'
```

Plotting examples and documentation

General plotting information: (e.g., “make .plots” vs. interactive)

www.clawpack.org/users/plotting.html

Use of setplot, possible attributes:

www.clawpack.org/users/setplot.html

Examples:

1d: www.clawpack.org/users/plotexamples.html

2d: www.clawpack.org/users/plotexamples2d.html

FAQ: www.clawpack.org/users/plotting_faq.html

Gallery of applications:

www.clawpack.org/users/apps.html