

Writing macros in Spec at 8-ID-E

Using def to define macros

Spec makes it easy to collect any sequence of commands and invoke them by entering a string. This is the **macro facility** of spec. You can enter in a macro from the command line using the command def. It works like this:

```
10. FOURCGIS> def hello '  
11.quot>           eprint "Hello, world!"  
12.quot>         '
```

```
13.FOURCGIS> hello  
Hello, world!
```

```
14.FOURGIS>
```

In this example, the def command defines the string hello to mean the command(s) contained between the single quotes. So now there is a new macro named hello.

Directory conventions at 8-ID-E: where to save files for macros

Most of the time, we use a file to define macros. We follow some conventions to (try to) keep our macro files organized. By convention, spec is running in the directory
/home/beams10/8IDGUSER/spec_data/YEAR/MonYEAR/groupYEARMOs

```
15.FOURCGIS>pwd  
/home/beams10/8IDGUSER/spec_data/2017/Nov2017/roentgen201711s
```

```
16.FOURCGIS>
```

The home directory for 8idguser is /home/beams10/8IDGUSER. In Linux (and Spec), the home directory is abbreviated as ~. Each group has a directory for macros:

/home/beams10/8IDGUSER/local_macros/group which be written more compactly as
~/local_macros/group

This is where you should save macros that are specific to your group.

Some macros are not specific to your group. For example, we generally group macros for reflectivity scans into the directory:

```
~/local_macros/ref/
```

For completeness, note that the 2-D data from the Pilatus 1M detector gets saved to the network drive:

```
/home/8-id-g/YEAR-C/groupYEARMOp
```

For example, the Roentgen group will save their data from November, 2017 (the 2017-3 cycle at APS) in the director /home/8-id-g/2017-3/roentgen201711p

Using do and qdo to execute files

Spec has built-in macros do and qdo that execute the contents of a text file. For example, the Roentgen group could have a script saved in their directory to measure gisaxs at a couple of different incident angles.

```
17.FOURCGIS> do ~/local_macros/roentgen/gisaxs.scr
```

```
18.FOURCGIS>
```

The commands in the file ~/local_macros/roentgen/gisaxs.scr are executed line by line and the inputs are echoed to the screen. The command qdo does the same thing, except it does not echo the input to the screen (The “q” in qdo stands for “quiet”). Often, we use qdo together with a script containing def commands to define macros. By convention, if we define a macro named, for example, giwaxsmacro, then we save the definition in a file named giwaxsmacro.mac.

Prdef and lsdef

The command prdef will print the definition of any macro. Before it shows the definition, it shows the path of the file that defined the macro.

The command lsdef will list the names of macros that match the input string. For example,

```
FOURCGIS> lsdef pil*
```

Will show the names of all the macros with names beginning with “pil”. If no string is given, the names of all the macros are shown (it’s a long list!).

Reference:

The Spec manual documents def and related commands here:

https://certif.com/spec_manual/ref_2_4_4_1.html#kwdidx_745

The Spec help page for “flow” describes if statements and loops in Spec:

https://certif.com/spec_help/flow.html