

Practical Exercise 1 - Additional Notes

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1. Implementation

Possible implementation procedure:

- First, program the detection of tetrahedral cells that have zeroes on the edges.
- Count and output the number of detected cells, should be >16 for the Isabel data
- Then you could start implementing the detection in the interior of the tetrahedra
- In case of problems, you could visualize the corners of the first (or all) appropriate cells together with the intersection points in question, and inspect them visually
- Finally compare your results with the sample output on the course web page

2. Linux

- Include Paraview into the search path by the following command:
`export PATH=$PATH:/afs/ethz.ch/users/p/peikert/paraview/inst/bin`
After that, you can start Paraview by a simple `paraview`
If it does not work, make sure you are using a *bash* shell by simply typing `bash`
For adding it permanently, add it e.g. to your bash resource file `.bashrc` in your home
- `'.'` means the current directory, `'..'` means the parent directory, and `'~'` means home
- Use file name completion, e.g. type `moz` and then press once, or twice the tab key
this expands `moz` to `mozilla` and possibly to several available mozilla installations
when the tab key is pressed twice.
- Use the shell history, available by the up and down cursor keys
- `ls`: show file or directory, example: `ls data`
- `cd`: change directory, example: `cd data`
- `rm`: remove file or directory, example: `rm -rf data`
- `mv`: rename or move a file or directory, example: `mv a b` (if `b` is a directory, then `a`
is moved into `b`, otherwise `a` is renamed to `b`)
- `top`: show processes continuously
- `ps`: show processes, example: `ps ax` (first shown number is the process ID or PID)
- `kill`: kill a process by its PID: `kill -9 3054`
- `jobs`: show processes started from the current shell (first number is the job ID)
- `kill`: kill a process by its job ID, example: `kill %1`
- `xkill`: this command allows to click the window of the program to be killed
- `du`: show disk usage, example: `du -ks .` (shows size of current directory)
- `pwd`: show the current directory

- `df`: show free disk space
- Programs can be aborted (if running in the foreground) by pressing `ctrl-c`
- You can interrupt running processes by pressing `ctrl-z` and then let them continue in background by the `bg` command.
- You can start programs in the background by adding a `'&'` at the end of the command, example: `paraview&`

3. Paraview

Module Import

- Before importing the module into Paraview, load appropriate (Isabel) data
- Do not import your (the same) module multiple times into Paraview
-> You have to restart Paraview in order to make a recompiled module available
This can be simplified using a session file (see below)
- After the module is imported, instantiate it immediately (Filter -> FlowTopo)

Sessions

- You can simplify the development process by using sessions
- Start Paraview and e.g. load data, import a module, instantiate the module and execute it. Then save this session state (File -> Save Session State) to a session file.
- Then you can exit Paraview and start Paraview with the saved session:
`paraview <your session file>`

Debugging

- After you have attached `ddd` to the Paraview process, wait for a message like:

```
[Thread debugging using libthread_db enabled]
[New Thread -1218606304 (LWP 24510)]
0x0350f038 in __newselect_nocancel () from /lib/tls/libc.so.6
(gdb)
```

- Then you can continue File -> Open Source ...