# Gromacs - Feature #1410

## Future of shell completions

12/27/2013 06:19 AM - Teemu Murtola

<table>
<thead>
<tr>
<th>Status</th>
<th>Closed</th>
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<tbody>
<tr>
<td>Priority</td>
<td>Normal</td>
</tr>
<tr>
<td>Assignee</td>
<td>Mark Abraham</td>
</tr>
<tr>
<td>Category</td>
<td>core library</td>
</tr>
<tr>
<td>Target version</td>
<td>5.0</td>
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**Description**

With the implementation of [#685](https://gerrit.gromacs.org/#/c/2590/), shell completions no longer work except when invoked through the legacy symlinks. Also, they can only be generated by the mkcompl script, which requires the symlinks (and likely requires some updates to work correctly in the presence of the gmx binary). If we want to remove those symlinks altogether in the future, then the completions will become useless.

[https://gerrit.gromacs.org/#/c/2590/](https://gerrit.gromacs.org/#/c/2590/) contains RFC changes for implementing basic completion functionality for the wrapper binary, but has not received a single comment in the four months it has been out there. Currently, it only implements the completions for bash. IIIRC, the last time the completion machinery was modified was some time in the early 2000's.

We should decide what we want to do with this and how much effort we want to spend here. In addition to the wrapper binary, another thing that requires a complete overhaul of the machinery that generates the completions is the use of the Options machinery for command-line parsing. We are not far from being able to extend [https://gerrit.gromacs.org/#/c/2932/](https://gerrit.gromacs.org/#/c/2932/) to cover also the command-line parsing.

**Possible alternatives:**

- Drop the completions completely.
- Keep basic completion facilities, but only generate them for a single shell (e.g., bash, since that currently works). zsh should be able to use bash completions more or less directly. The only way to implement such complex completions for tcsh is a custom script, so that script could also redirect the actual work to a bash script.
- Keep generating separate completions for the different shells. This requires someone who actually knows these shells to pitch in with the implementation, since I only have experience with bash. zsh seems ultra-flexible, and I could try to do something there. But tcsh is quite limited, so it can be difficult to get the same level of functionality there as for the other shells, and I don't have particular interests there. One option is to also just drop the tcsh completions if no one is interested in maintaining those.

**Related issues:**

- [Related to Gromacs - Feature #685: Wrapper binary](https://gerrit.gromacs.org/#/c/2590/) Closed 01/26/2011
- [Related to Gromacs - Bug #1159: Shell completions are partly broken](https://gerrit.gromacs.org/#/c/2932/) Closed 02/26/2013
- [Related to Gromacs - Feature #969: Generating man pages, html help etc. from ...](https://gerrit.gromacs.org/#/c/2932/) Closed 07/12/2012

**Associated revisions**

**Revision 04cc4266 - 01/28/2014 02:05 PM - Teemu Murtola**

Shell completion export from the wrapper binary

Bash completions now complete the arguments to the wrapper binary itself, as well as the subcommand names. After a subcommand has been specified, use the existing completion logic. Completions now work also for arbitrarily suffixed binaries (which the old system didn't work at all). No completion is generated for symlinks, but should be straightforward to do if really required; approach would be the same as for GMX_BUILD_MDRUN_ONLY.

Other completions are not working for the wrapper binary, and as far as I can tell, require a completely different approach. Removed the non-functional code.

Related to [#685](https://gerrit.gromacs.org/#/c/2590/) and [#1410](https://gerrit.gromacs.org/#/c/2590/).

Change-Id: i55b13a65c176dab6e2f4f41bf6e829112c99e6b3
Fixes to filename shell completions

- When completing a file name, don't add a space after a directory name has been completed.
- Don't exclude directory names starting with . from the completions. This also excludes ../foobar/.
- Use a more reasonable pattern to match the file names: expect exactly one of the acceptable extensions, and at most one .gz/.Z extension.
- Complete directory names for mdrun -multidir.

Issues that remain:
- Completions for paths that contain spaces doesn't really work. The only difference to earlier behavior is that now, completing something that starts with a " gets an appended space before the closing ".
- When completing to subdirectories, the list of possible completions shows the subdirectory for each alternative. This doesn't happen with standard bash completion. Not sure whether this is feasible to fix.

Part of #1410 and #1159.

Change-Id: I1aff3ab89419e0ed4b53bc998c9a50b9a1879e9c

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Fix shell completions of fffMULT options

Now file names for options with fffMULT set are completed also after one file name has already been provided.

Fixes #1159, related to #1410.

Change-Id: I1f4f0b6a5817ce3193a0195d1cb4a2491c397593

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Shell completions through Options

- Implement shell completion generation for command line options specified through an Options object.
- Use this support to generate the list of options for the wrapper binary instead of hardcoding them.
- Use this support and the conversion from t_pargs/t_filenm to Options to generate the existing completions. The only differences in the
generated completions are in the order of the options and in changing "$n == 1" to "$n <= 1" and ".(xtc|trr|...)" to ".(xtc|.trr|...)".
- Extend some of the options to expose information necessary for this.

Related to #969 and #1410.

Change-Id: Ib77543367c38803ef186f6024a1af14feb806d80

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**History**

#1 - 12/27/2013 06:19 AM - Teemu Murtola

- Related to Feature #685: Wrapper binary added

#2 - 12/27/2013 06:20 AM - Teemu Murtola

- Related to Bug #1159: Shell completions are partly broken added

#3 - 12/27/2013 09:58 AM - David van der Spoel

I would vote for dropping the completions completely and turn the symlinks off by default.

#4 - 12/30/2013 11:24 AM - Szilárd Páll

I think completion is rather useful for non-expert users and even I, with my moderate amount of experience, find it great that pressing \( \text{TAB} \) when looking for an input file will show me e.g. only the three tpr-s that are relevant as input instead of all 300 files in the respective directory.

Regarding the issue of providing full and tested functionality with multiple shells, this is IMO an ideal task to get help with from the GROMACS community. At least for bash and csh there should be people interested and willing to help - they may need some poking, though.

#5 - 12/31/2013 07:09 AM - Teemu Murtola

- Related to Feature #969: Generating man pages, html help etc. from Options added

#6 - 01/20/2014 03:03 PM - Mark Abraham

I invited some feedback on gmx-users.

I can see value in the bash completions, but none in doing separate work for the others unless someone wants to do it.

#7 - 01/23/2014 06:03 AM - Teemu Murtola

[https://gerrit.gromacs.org/#/c/2590/](https://gerrit.gromacs.org/#/c/2590/) now contains a relatively finished implementation of automatically generated bash completions. Other completions are simply dropped, since as far as I can tell, they require a completely different approach than what was used previously. I can provide support (e.g., refactor shellcompletions.cpp to more easily support export in multiple different formats) if someone gets to actually implement this for other shells.

I'm not planning to do more for now; let's just wait for those contributions come flowing in…

If people really feel that this is such a great feature, it would be nice to get some review comments as well.

#8 - 01/28/2014 09:38 PM - Gerrit Code Review Bot

Gerrit received a related patchset '1' for Issue #1410.
Uploader: Teemu Murtola (teemu.murtola@gmail.com)
Change-Id: l1aff3ab89419e0ed4b53bc998c9a50b9a1879e9c
Gerrit URL: [https://gerrit.gromacs.org/3037](https://gerrit.gromacs.org/3037)
Gerrit received a related patchset '1' for Issue #1410.
Uploader: Teemu Murtola (teemu.murtola@gmail.com)
Change-Id: I1f4f0b6a5817ce3193a0195d1cb4a2491c597593
Gerrit URL: https://gerrit.gromacs.org/3049

Gerrit received a related patchset '1' for Issue #1410.
Uploader: Teemu Murtola (teemu.murtola@gmail.com)
Change-Id: Ib77543367c38803ef186f6024a1a1f14feb806d80
Gerrit URL: https://gerrit.gromacs.org/3119

- Status changed from New to Resolved

With bash working and little interest in other shells, I think we are done here.

- Target version changed from future to 5.0

- Status changed from Resolved to Closed