

How to be a good member of a scientific software community

[Article v0.1]

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Abstract

Software is ubiquitous in modern science — almost any project, in almost any discipline, requires some code to work. However, many (or even most) scientists are not programmers, and must rely on programs written and maintained by others. As a result, a crucial but often neglected part of a scientist's training is learning how to use new tools, and how to exist as part of a community of users. This article will discuss key behaviors that can make the experience quicker, more efficient, and more pleasant for the user and developer alike.

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1 Introduction

Most practicing scientists (even the ones who write code as part of their research) spend more time as consumers as opposed to producers of software. Moreover, we are constantly learning new skills and solving new problems, which often means learning to use new programs or new aspects of large packages. This, combined with the complex nature of scientific software (and the often low quality of the associated documentation) means we have to ask for help. Sometimes it's because we don't know how to accomplish a specific task. Others, it's because there's a feature we need that isn't implemented. Inevitably, there are bugs.

In all of these cases, it is necessary to interact with the folks who develop and support the code. How you go about it has an enormous impact on your likelihood of success and how you are viewed, but this is not something that is explicitly taught in most places. The goal of this work is to reveal the hidden curriculum – what's expected of a software consumer, how to ask for help, how to contribute productively to a software community (regardless of whether you can write

code).

There lots of articles on best practices in software development, including open source.

emphasize the idea of a social contract: what do developers owe the users, what do users owe developers, what do users owe other users

2 Prerequisites

Training articles should clearly state the target audience and knowledge prerequisites. Key prerequisites should be noted in the article abstract to permit readers to rapidly ascertain an articles suitability.

2.1 Background knowledge

Although the authors may imagine a particular career-level (e.g., undergraduate or graduate), given the diversity of disciplinary curricula, it is more important to specify precisely any knowledge prerequisites (e.g., vector calculus, basic thermodynamics).

2.2 Software/system requirements

If a particular software or programming environment plays a central role in the article, that should be specified.

3 Content and links

A training article may on additional files and materials; clearly indicate where and how these are available, with links, and how they are being archived for the long-term and maintained so they stay current. You will likely want to reference your GitHub repository as a central point to access all of this information, and then the GitHub repository may link out to other content as needed.

4 Checklists

GOOD COMMUNITY MEMBER

- ☐ Tries to solve problem themselves first
- ☐ Asks for help in the right place
- ☐ Writes informative bug reports
- ☐ Cites and acknowledges software appropriately
- ☐ Contributes to the community
- ☐ Treats fellow members and developers with courtesy and respect

POOR COMMUNITY MEMBER

- ☐ Doesn't read the manual or search the internet before asking for help
- ☐ Doesn't use the correct venue to ask for help
- ☐ Writes vague or unhelpful bug reports, or doesn't respond to questions
- ☐ Is rude or demanding when requesting support
- ☐ Treats fellow community members disrespectfully

A GOOD COMMUNITY

- ☐ Helps users solve their problems
- ☐ Is friendly and supportive when responding to questions
- ☐ Is receptive to suggestions and critiques, regardless of the source
- ☐ Encourages participation from users of all experience levels
- ☐ Encourages respectful treatment of all community members, and calls out disrespectful behavior

5 Author Contributions

The initial version of this paper was written by Alan Grossfield.

For a more detailed description of author contributions, see the GitHub issue tracking and changelog at https://github.com/GrossfieldLab/article_templates.

6 Other Contributions

For a more detailed description of contributions from the community and others, see the GitHub issue tracking and changelog at https://github.com/GrossfieldLab/article_templates.

7 Potentially Conflicting Interests

Alan Grossfield serves as a consultant to two companies, Moderna Therapeutics and Atelerix Life Sciences.

8 Funding Information

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