Personal Details

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Short Bio:

I am a rising junior at the University of Wisconsin Madison pursuing a Bachelors in Computer Science. I have been programming for quite some time and began doing computational biology research in 2016 at Los Alamos National Laboratory. I currently work at Morgridge Institute for Research doing bioinformatics. It has been my goal for some time, to contribute to an open source project which I actively use.

Project Idea

Goal(s)

- To rewrite key parts of MacPorts (fetch, dependency calculation, install) in Python using Elmer.
- The eventual goal is to rewrite all of MacPorts in Python to increase modularity and make integration of other APIs with MacPorts easier.

Abstract (Don't just copy and paste, use your own words!)

The goal of this project is to rewrite key components of MacPorts such as fetch, dependency calculation, and install in Python. Many new projects are written in Python or have Python bindings and this would make integration with MacPorts much easier and simpler. It is also possible to do this in a modular fashion and slowly phase MacPorts to be completely written in Python by using system calls which allow Tcl code to call a Python script and receive the return value.

Technical Details

- Methodology (Broken into steps/phases/short-goals)
  - Become more familiar with Tcl
  - Start understanding the source code for the main functions (fetch, install, etc)
  - Discuss and find the best structure for the Python rewrite

- Start rewriting in Python with Tcl calls to the scripts
- Schedule from the 18th of May till the 24th of August (approximately weekly outline)
  - May 18th to 25th / to learn Tcl and get a better understanding of the MacPorts source
  - May 25th to June 1st / to decide the best structure for the Python code, most likely just using system call with "execute python xxx.py" and getting the return value
  - June 1st to August 10th / will be spent rewriting some functions in Python (hopefully install, fetch, dependency calculation)
    - Each function will take a different amount of time but my hope is that each function rewrite will take around a week to two weeks.
    - This includes tests.
  - August 10th to 24th / Release a beta to the community and incorporate feedback. Also write documentation on the code completed thus far.

Stretch Goals/Plans after GSoC

- The eventual goal is to rewrite all of MacPorts in Python to increase modularity and make integration of other APIs with MacPorts easier.

Additional Questions

1. What are your experiences with macOS so far? (How long do you use it, did you switch from Windows/Linux, etc.)

I've been a user of macOS since 2012 as well as a Linux and Windows user. I was triple booting the three operating systems for a bit but eventually switched to dual booting macOS and Ubuntu and then went to just macOS.

2. How long have you been using MacPorts?

I've been using MacPorts for as long as I can remember, for packages I needed for programming projects.

3. Do you have experience with other package management systems?

In addition to MacPorts, I have also been using Homebrew for some time and the apt package manager obviously on Ubuntu.

4. How much experience do you have with Tcl and C?

I have little to no experience with Tcl but I have taken some coursework in C and would consider myself proficient. I have extensive experience with Python; I have used it for four years in a work environment and on large scale projects.

5. Will you be available after the project ends? (optional)

Yes, I would still make commits and pull requests after GSoC just with less frequency as I am still a student in university.

Availability

- Do you plan to go on vacations, have exams, internship or be otherwise absent during the GSOC? If so, when?

No.