Multimedia Appendix 1. Survey Form*

Demographics and Background

1. How many years of programming experience do you have?
   - [ ] <1 year
   - [ ] 1-5 years
   - [ ] 5+ years

2. How many years have you been involved in developing bioinformatics/biomedical software?
   - [ ] <1 year
   - [ ] 1-5 years
   - [ ] 5+ years

3. Highest academic degree and area: (e.g., M.S in Computer Science)
   __________________________________________

Product Characteristics

4. Please specify the name of this open source product:
   ________________________________

5. What level of participation do you have in developing this product?
   - [ ] Dedicated full-time
   - [ ] Part-time, supported by employer
   - [ ] Part-time, personal time

6. What is the estimated current number of users of this product?
   - [ ] 1-5
   - [ ] 5-10
   - [ ] 10-50
   - [ ] 50+

7. How often are the product releases (on an average)?
   - [ ] Every week
   - [ ] Every month
   - [ ] Every quarter
   - [ ] Every six months
   - [ ] Every year
   - [ ] Only one release at this time

8. How long has this product been available to users (i.e., since the first stable release)?

* Some survey questions were not analyzed in this paper, and hence the relevant questionnaire sections have been excluded.
9. What is the approximate size of this product?
   - < 5,000 LOC
   - 5,000 – 20,000 LOC
   - 20,000 - 50,000 LOC
   - >50,000 LOC

Peer Reviews

10. Is peer-review an integral part of your software development process?
   - Yes
   - No

11. When are peer review performed?
   - Never
   - Before any source code is committed to the code base (continuously)
   - Before product release
   - Randomly
   - Other: ______________

12. In general, how often is code peer reviewed before it is committed to the code base?
   - Almost always
   - Frequently
   - Half the time
   - Occasionally
   - Never

13. In general, how often is code peer reviewed before product release?
   - Almost always
   - Frequently
   - Half the time
   - Occasionally
   - Never

14. How frequently do you peer review other people’s code in this project?
   - Almost always
   - Frequently
   - Half the time
   - Occasionally
15. How often do you ask that others peer review your code?
   - □ Never
   - □ Almost always
   - □ Frequently
   - □ Half the time
   - □ Occasionally
   - □ Never

16. If code is not peer reviewed, what is the reason?
   - □ It is considered unnecessary as the code is usually of high quality
   - □ Work is too busy to review code
   - □ Reviewing code brings no benefit
   - □ Unsure how to review to best effect
   - □ Other: __________________

17. How much experience do you have of peer-reviewing other people’s code?
   - □ <1 year
   - □ 1-5 years
   - □ 5+ years
   - □ None

18. Do you use a checklist for peer review?
   - □ Yes
   - □ No

19. On average, how many people typically peer review your code snippets?
   - □ 1
   - □ 2 - 3
   - □ 5-10
   - □ 10+
   - □ None

Testing

20. Have you received any formal education/training in software testing?
   - □ Yes (Please specify)
   - □ No

21. Is testing an integral part of your open source development process?
   - □ Yes
   - □ No

22. Testing is performed:
   - □ Continuously (e.g. before any source code is committed to the code base)
   - □ Before product release (alpha testing)
☐ After product is released to specific users
☐ Randomly
☐ Other: ______________

23. Do you perform?
☐ Unit testing (testing whether individual modules function as expected)
☐ Integration testing (testing whether group of modules function as expected)
☐ System testing (testing high-level usage scenarios)
☐ System load and performance testing
☐ Other: ______________

24. How often do you unit test the software that you write?
☐ Almost always
☐ Frequently
☐ Half the time
☐ Occasionally
☐ Never

25. What strategy do you adopt in choosing your test cases?
☐ Provide inputs trying to imitate valid user behavior
☐ Choose those inputs most likely to cause failure
☐ Choose inputs according to your experience
☐ Use script to provide random values as inputs
☐ Provide extreme values as inputs
☐ Provide boundary conditions as inputs
☐ Try extreme loads on the system (e.g., many users and large volumes of data)
☐ Other

26. What percentage of your time is spent on testing
☐ <20%
☐ 20% - 40%
☐ 40% - 60%
☐ 60% - 80%
☐ >80%

27. Do you contribute your test cases to a regression test suite?
☐ Yes
☐ No

28. Do you have a “baseline” test suite that you re-run in your software before every release?
☐ Yes
☐ No
29. What percentage of the source code is covered by the testing activity?
   - <20%
   - 20% - 40%
   - 40% - 60%
   - 60% - 80%
   - >80%
   - Don’t know

30. The coverage information in the previous question was based on:
   - Personal estimation
   - Reports by coverage tool (please specify name: _________________)

31. What percentage of the defects that you fix are discovered during your testing?
   - <20%
   - 20% - 40%
   - 40% - 60%
   - 60% - 80%
   - >80%

32. What percentage of the defects that you fix are discovered by users?
   - <20%
   - 20% - 40%
   - 40% - 60%
   - 60% - 80%
   - >80%

33. Do you use testing tools during your development?
   - Yes (Please give name: _________________)
   - No

Suggestions, Comments, and Feedback

Please do let us know about your suggestions and comments about this survey.

__________________________________________________________________________
__________________________________________________________________________

Would you consent to be contacted later via e-mail if we need some additional information about your response?
   - Yes
   - No
   - No answer