

# 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.

- < 6 months
- 6 months - 1 year
- 1 - 3 years
- > 3 years

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

Never

15. How often do you ask that others peer review your code?

- 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 If code is not peer reviewed, what is the reason?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 a 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.

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Would you consent to be contacted later via e-mail if we need some additional information about your response?

- Yes
- No
- No answer