Task 2: Rough Draft

Part 1:

- What is your argument about the piece you are reviewing?

  My argument regarding the article is that collaboration in software development is needed to facilitate smooth development, using tools such as GitHub to manage large code bases.

- Who is/are the writer/s? How are they qualified to write on the topic?

  The writers are Kattiana Constantino, Shurui Zhou, Mauricio Souza, Eduardo Figueiredo and Christian Kästner and are affiliated with Federal University of Minas Gerais in Brazil and/or Carnegie Mellon University in the United States with a background in Computer Science.

- What is the main argument/thesis of the piece you are reviewing? Provide a summary of the article for your readers (assuming they are unfamiliar with the particular article you have chosen, what are the highlights of the article?)

  The article agrees that collaboration in software development is important and seeks to understand how collaboration happens specifically in fork-based development, where users interested in contributing create a copy of the original source code, modify it, and request for the project maintainer to review and integrate the modifications to the main code base. The article first describes some basic terminology, such as open-source software (OSS), where programmers develop software and post the source code in public for free, and GitHub, the most popular website where most open-source code is hosted. Then, the author describes their research method where they will find 12 OSS contributors from GitHub with over 500 commits and are Portuguese speakers and proposes 3 main research questions to answer throughout each interview. They concluded in short that the interviewees preferred to work collaboratively for knowledge sharing, increased productivity, and less software bugs. They found that the main type of contributions was feature developing, code review, issue solving/reporting, and writing/translating documentation and the main mediums of communication were GitHub Issues and Pull Requests (forum for GitHub repositories) and Email. Additionally, they found some challenges of collaborative software development to be challenges of effectively managing collaborators, helping newcomers, inconsistent documentation, lack/loss of contributors, and no compliance with the project guidelines.

- How does the writer support their argument?

The writer finds 12 interviewees to describe their experience and reasoning for embracing collaboration in software development. The writer creates charts to better help the reader visualize why and how developers collaborate in code.

- How does the writer structure their argument?

  The writer gives an introduction, background, and defines terminology. Then, explains their goals, research method, and proposes research questions to answer by the end of the study. They find 12 interviewees and write and discuss their findings regarding the proposed research questions at the end, creating charts to help the reader visualize their findings.

- Who is likely the intended audience for the piece? Is the piece persuasive? Is it effective in its goals? Why or why not?

  The intended audience is likely college students and/or software engineers with less experience in the industry. The article is effective in explaining why software engineers prefer collaboration as it provides interviewee testimony in a concise manner.

- What shortcomings do you notice about the piece?

  As the article described, the interviewees could have been selected better. The writers targeted only the top collaborators on GitHub who spoke Portuguese. The sample size was also very small, only 12 of the 80 contributors responded to the writers' email, so the sample was not very general to the entire population of software engineers.

Works Cited

Constantino, Kattiana, et al. *Understanding Collaborative Software Development: An*

Interview Study. Carnegie Mellon University, 2020,

https://www.cs.cmu.edu/~ckaestne/pdf/icgse20.pdf.

Part 2:

- The Statement of Purpose (150-250 words): In this section, you'll be even more specific about what you would like to learn and why than you were in Task 1. Why do you want to complete this research? What is your personal connection to it? What research question(s) are you trying to answer? Be specific about your research question(s). You are trying to draft specific, measurable research questions for the research proposal. Think of this section as the introduction to your research proposal. You may cite sources in this section if you think they would be helpful.

  With the rise of remote work, especially in the field of software development, it is a common misconception that programming requires little collaboration, and much is done in isolation. Software has become increasingly complex and larger throughout the years, and it would be infeasible to code with little communication; Google's codebase consists of approximately two billion lines as of 2016 (Potvin and Levenberg). As a Computer Science major interested in software engineering, I would like to explore the importance and effects of communication in software development further by proposing two research questions. What are the methods of communication in software engineering? For this question, I would like to see what tools, development practices, and open-source code programmers use in their jobs and personal hobby projects. What are the effects of communication in software engineering? With this question, I would like to identify the most common benefits reported by programmers when using best communication practices.

- Research Plan (200-400 words): You will describe the research methods you would utilize to collect and analyze data to find an answer to your research question(s). Will you complete interviews? Observations? Rhetorical analyses? Why have you chosen the research methods you have chosen? Who would participate in your study, and why?

  My plan is to conduct interviews and surveys. I believe this will be the easiest method to gather the most data regarding my research questions. I would most likely choose college students with job experience or regularly creating personal projects. This will be the easiest and most available demographic to survey, and I can post a QR link in Computer Science clubs and collegiate hackathons, or events where the goal is to create functional real-word software with a team or individually.

- Draft of Research Materials (the length of this section will depend upon the research you intend to do): Whatever research methods you describe in your research plan, you will need to include a draft of the necessary materials in this

section. For instance, if you write that you want to conduct interviews, you will need to draft your interview questions. If you note that you plan to conduct a rhetorical analysis, you will need to describe exactly what it is you will be examining during these analyses. For a survey or interview, draft the questions you would ask your participants; for observations, draft a list of the things you would look for in your observation; etc.

Questions:

1. Do you have job experience in the field of software engineering or have developed a software project? Please describe.
2.   What tools and/or practices do you use in the process of development and testing? How do they relate to communication between programmers?
3. Open-source software (OSS) is the best example of communication as it allows programmers to view, modify, update, and distribute collaboratively to create a product and OSS often are dependent on one another to function. What open-source projects have you used in the past six months?
4. How do you think these tools, practices, and open-source software have affected your teams' productivity?
5. Do you prefer creating large software projects individually or collectively? Why?

Works Cited

Potvin, Rachel, and Josh Levenberg. "Why Google Stores Billions of Lines of Code in a

Single Repository." *ACM*, 1 July 2016,

https://cacm.acm.org/magazines/2016/7/204032-why-google-stores-billions-of-

lines-of-code-in-a-single-repository/fulltext.

Bibliography

Constantino, Kattiana, et al. *Understanding Collaborative Software Development: An

Interview Study*. Carnegie Mellon University, 2020,

https://www.cs.cmu.edu/~ckaestne/pdf/icgse20.pdf.