

Stack Overflow: Q&A Website Done Right

Ethan Hua

Institute for the Study of University Pedagogy: University of Toronto Mississauga

ISP100: Writing for University and Beyond

Dr. Mark Blaauw-Hara

March 22, 2024

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Programming is a tough job that requires a variety of skills. Clear visualisation of complex concepts, adept problem-solving skills, and great attention to detail are just a few of the many skills required in programming. When working, programmers dedicate long hours to create and maintain software. As the code becomes more complex, there will be times when a programmer encounters a task they do not know how to complete. In these cases, they often consult with the programming discourse community, a group of programmers that exchange knowledge to overcome challenges within code. Often, the information sharing occurs on Stack Overflow, a website meant to help people with programming-related problems. Specifically, it is an online forum for individuals to ask and answer programming-related questions.

Since Stack Overflow serves as a method of communication to accomplish the programming community's goals, it qualifies as a genre (Swales, 2016). Dirk (2010) reinforces this by suggesting that genres are "tools to help people get things done" (p. 252). In essence, genres are useful tools to share information within a community. Stack Overflow receives over 100 million visits every month, with more than 45 billion questions asked and answered as of 2024 (Stack Exchange Inc., 2024). From the data, it is clear that Stack Overflow is a vital part of the programming discourse community, and for good reason. This essay will explore the effectiveness of Stack Overflow as a genre in a variety of ways. First, two examples from the website will be used to analyse how Stack Overflow operates. Then, it will examine the underlying systems of the site to unravel how information is kept reliable. Lastly, those same systems will be used to explain how users are encouraged to make contributions to the discussion.

Like all genres, Stack Overflow posts adhere to certain formats of writing. Dirk (2010) remarks that every piece of writing in a genre is inspired by past writing within said genre. In other words, the writing establishes a basis for communication, which increases the efficiency of future writing. On Stack Overflow, all questions asked follow a pattern, depending on the type of question. They can be classified into two categories: common questions or specific questions.

Common questions are issues applicable to many programmers. Their topics can range from programming concepts to well-known algorithms. These are problems that programmers would find solutions for through quick web searches.

Figure 1

Question about NullPointerException in Java

What is a NullPointerException, and how do I fix it?

Asked 15 years, 5 months ago Modified 1 year, 6 months ago Viewed 4.1m times



209

This question's answers are a [community effort](#). Edit existing answers to improve this post. It is not currently accepting new answers or interactions.



What are Null Pointer Exceptions (`java.lang.NullPointerException`) and what causes them?



What methods/tools can be used to determine the cause so that you stop the exception from causing the program to terminate prematurely?



java

nullpointerexception

Figure 1 features a prevalent question with over 4.1 million views, indicating a common programmer struggle. This is because NullPointerException is an error that can occur in virtually any program. In the post itself, there is very little content. In fact, the title alone perfectly conveys what the user is asking. The user understands the broadness of the question, so they omit

unnecessary context for other knowledgeable users. This is the standard method to ask a common question.

The other category of questions—specific questions—are ones that only a single programmer would have. For instance, it could be about an obscure bug that they discovered in their code, making an internet search unlikely to yield promising results. In such cases, the user will post a question to Stack Overflow.

Figure 2

Question about fixing a bug in code

How to access the correct `this` inside a callback

Asked 10 years, 3 months ago Modified 11 months ago Viewed 628k times

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1907

I have a constructor function which registers an event handler:

```
function MyConstructor(data, transport) {
  this.data = data;
  transport.on('data', function () {
    alert(this.data);
  });
}

// Mock transport object
var transport = {
  on: function(event, callback) {
    setTimeout(callback, 1000);
  }
};

// called as
var obj = new MyConstructor('foo', transport);
```

Run code snippet Expand snippet

However, I'm not able to access the `data` property of the created object inside the callback. It looks like `this` does not refer to the object that was created, but to another one.

I also tried to use an object method instead of an anonymous function:

```
function MyConstructor(data, transport) {
  this.data = data;
  transport.on('data', this.alert);
}

MyConstructor.prototype.alert = function() {
  alert(this.name);
};
```

but it exhibits the same problems.

How can I access the correct object?

javascript callback this

Figure 2 demonstrates the typical way to ask a specific question. The user titles the post with the question, and provides code snippets and a concise explanation of what they are trying to do, as well as how they attempted to fix the problem. Formatting the post in the described fashion is optimal as other users can tailor their response to be more helpful according to the former user's needs, making the communication process much more efficient. Demonstrated by the two examples above, Stack Overflow posts are shown to follow a defined convention, depending on the type of question.

However, not all answers are accurate. Trusting a response that provides an inadequate solution can lead to hours wasted time and frustration for the asker. To circumvent this issue, Stack Overflow utilises a voting and reputation system that leverages the strength of ethos. As stated by Higgins & Walker (2012), key factors in building ethos is to possess expertise and consistency in the relevant field. Expertise indicates that an individual possesses knowledge and experience about the topic. The voting mechanism mentioned above makes use of expertise to help the asker select the suitable solution. Users can upvote a post they agree with, or downvote one they dislike. The system allows knowledgeable users to curate the best answer for the asker. As a result, answers garnering a great number of upvotes with little downvotes possess a high level of ethos, as it is judged to be reliable by users with expertise. Therefore, Stack Overflow's voting system provides a way for users to identify trustworthy solutions amidst potentially inaccurate answers.

Another way Stack Overflow helps the asker in choosing dependable answers is by taking advantage of consistency through their reputation system. Consistency refers to an individual's ability to repeatedly impart reliable information. Stack Overflow uses this as a metric with their reputation system. Each user is given a reputation score that increases or

decreases depending on their activity. Upvotes act as merit points, with each upvoted question and answer increasing the poster's reputation (Stack Exchange Inc., 2024). A user with a high reputation has a proven track record of contributing valuable information to the community, bolstering their ethos in the eyes of others. This means that answers from such a user are guaranteed to be credible. With the reputation system in place, users seeking answers can look for responses written by people with high reputation, ensuring that they receive a reliable answer.

Finally, not only are Stack Overflow's voting and reputation systems a way to improve its reliability, but also act as motivators of user contribution. According to Mustafa et al. (2023), "An online Q&A community's users are... essential to the community's growth and development" (p. 10468). Participation in Stack Overflow is completely voluntary. Without the contributions of its users, there would be no questions asked or answered; the community would disappear. Thus, it is necessary to incentivise users to post questions and answers. This task is also done by the website's voting and reputation systems. Studies by Chen et al. (2019) have shown that most users are motivated by receiving upvotes, while Lu et al. (2022) found that reputation is also a strong driver of user activity. These systems automatically prompt users to continue posting, ensuring that no question is left unanswered.

Throughout this essay, it was shown that Stack Overflow is an effective genre of the programming discourse community. Many programmers visit the website to find answers to their problems. When asking questions, users follow a specific convention to optimise answers. For the sake of maintaining the reliability of the information, Stack Overflow uses a voting mechanism and reputation system to highlight dependable answers. Not only that, they also encourage users to answer questions by providing extrinsic motivation. Ultimately, the format of posts were determined by members of the community. The voting system is entirely reliant on

the community. The reputation system has value only because it was assigned value by the community. These factors hidden underneath Stack Overflow result in the website being completely community-driven: the essence of what a community should be.

References

- Chen, L., Baird, A., & Straub, D. (2019). Why do participants continue to contribute? Evaluation of usefulness voting and commenting motivational affordances within an online knowledge community. *DECISION SUPPORT SYSTEMS*, 118, 21–32.
<https://doi.org/10.1016/j.dss.2018.12.008>
- Dirk, K. (2010). Navigating genres. In Lowe, C. & Zemliansky, P. (Eds.), *Writing Spaces: Readings on Writing* (1, pp. 249-261). Parlor Press.
<https://writingspaces.org/past-volumes/navigating-genres/>
- Higgins, C., & Walker, R. (2012). Ethos, logos, pathos: Strategies of persuasion in social/environmental reports. *Accounting Forum*, 36(3), 194–208.
<https://doi.org/10.1016/j.accfor.2012.02.003>
- Kling, F. (2021, July 25). *How to access the correct `this` inside a callback*. Stack Overflow.
<https://stackoverflow.com/questions/20279484/how-to-access-the-correct-this-inside-a-callback>
- Lu, Y., Mao, X., Zhou, M., Zhang, Y., Li, Z., Wang, T., Yin, G., & Wang, H. (2022). Motivation Under Gamification: An Empirical Study of Developers' Motivations and Contributions in Stack Overflow. *IEEE Transactions on Software Engineering*, 48(12), 4947–4963.
<https://doi.org/10.1109/TSE.2021.3130088>
- Mustafa, S., Zhang, W., & Naveed, M. M. (2023). What motivates online community contributors to contribute consistently? A case study on Stackoverflow netizens. *Current Psychology (New Brunswick, N.J.)*, 42(13), 10468–10481.
<https://doi.org/10.1007/s12144-022-03307-4>

Stack Exchange Inc. (2024). *Stack Overflow*. Retrieved March 18, 2024, from
<http://stackoverflow.com>

Swales, J. (2016). Reflections on the concept of discourse community. *Concepts and Frameworks in English for Specific Purposes*, 69, 7-19, <https://doi.org/10.4000/asp.4774>

Ziggy. (2016, May 26). *What is a NullPointerException, and how do I fix it?*. Stack Overflow.
<https://stackoverflow.com/questions/218384/what-is-a-nullpointerexception-and-how-do-i-fix-it>