# Survey on Smart Contract Code Security in Stack Overflow

In this survey, references to 'Stack Overflow' also encompass Q&A websites like Stack Exchange.

1. 1. Do you have any experience in developing smart contracts?

   *Mark only one oval.*

   - ◯ Yes
   - ◯ No

2. 2. What is your main role in the development of smart contracts?

   *Check all that apply.*

   - ☐ Development
   - ☐ Testing
   - ☐ Project management
   - ☐ Research
   - ☐ Security audit
   - ☐ Compliance check
   - ☐ Training and education
   - ☐ Market analysis
   - ☐ Other: _____

3. 3. How many years of experience do you have in developing smart contracts? (Please be precise to one decimal place.)

   _____

4. 4. What is your current country/region?

   _____

5. 5. There are discussions and posts about smart contracts on Stack Overflow. Are you familiar with Stack Overflow?

   *Mark only one oval.*

   - ◯ Ignorant
   - ◯ Not very familiar
   - ◯ Moderate
   - ◯ Familiar
   - ◯ Very familiar

6. 6. How often do you access/use Stack Overflow during the development process of smart contracts?

   *Mark only one oval.*

   - ◯ Never
   - ◯ Yearly or more often
   - ◯ Monthly or more often
   - ◯ Weekly or more often
   - ◯ Daily or more often
   - ◯ Other: _____

7. 7. What is the average frequency of asking questions on Stack Overflow during the development of smart contracts?

   *Mark only one oval.*

   - ◯ Never
   - ◯ Yearly or more often
   - ◯ Monthly or more often
   - ◯ Weekly or more often
   - ◯ Daily or more often
   - ◯ Other: _____

8. 8. What types of questions about smart contract development interest you most on Stack Overflow?

*Check all that apply.*

- [ ] Programming syntax issues, such as data type conversion, etc
- [ ] API call issues, such as Ethereum Web3 API, Ethers.js, etc
- [ ] Security concerns, such as whether there are security issues, etc
- [ ] Debugging and error management, such as transaction rollback, execution errors, contract deployment issues, etc
- [ ] Smart contract design considerations, such as scalable contract design methods, etc
- [ ] Other: _____

9. 9. Have you ever used or referenced the code on Stack Overflow?

*Mark only one oval.*

- ◯ Yes (Jump to Question 10)
- ◯ No (Jump to Question 11)

10. 10. What kind of security analysis do you perform before referencing the smart contract code on Stack Overflow?

*Mark only one oval.*

- ◯ I do not perform any security analysis.
- ◯ I consider security only if there are third-party warnings about security risks.
- ◯ I understand the code logic but do not specifically focus on security aspects.
- ◯ I conduct basic code reviews without using additional tools or methods for security audits.
- ◯ I perform comprehensive security audits using a variety of methods.
- ◯ Other: _____

11. 11. Why do you choose not to use code from Stack Overflow?

*Check all that apply.*

- [ ] The code quality is low and doesn't meet my development requirements.
- [ ] There are potential security risks and vulnerabilities in the code.
- [ ] Using the code may lead to copyright infringement or similar legal issues.
- [ ] It hinders deep learning and understanding of programming concepts.
- [ ] The code does not meet the unique needs of my project.
- [ ] The code is incompatible with the latest standards or versions.
- [ ] Other: _____

12. 12. How do you typically evaluate the security of smart contract code on Stack Overflow?

*Check all that apply.*

- [ ] Never evaluate
- [ ] Self code review, checking for obvious errors and vulnerabilities
- [ ] Peer code review, entrusting code to other industry professionals for security analysis
- [ ] Refer to feedback from other users in the community
- [ ] Software testing methods, such as unit testing and functional testing
- [ ] Use security audit tools to evaluate the security of code
- [ ] Seeking professional auditors to evaluate the security of code
- [ ] Other: _____

13. 13. How frequently do you respond to others' questions about smart contracts on Stack Overflow during the development process?

*Mark only one oval.*

- ◯ Never
- ◯ Yearly or more often
- ◯ Monthly or more often
- ◯ Weekly or more often
- ◯ Daily or more often
- ◯ Other: _____

14. 14. When answering smart contract questions on Stack Overflow, do you verify the security of the code before providing it?

*Mark only one oval.*

- ◯ I do not check the security at all.
- ◯ I only check the security for complex or sensitive code, such as transactions involving transfers.
- ◯ In most cases, I check the security of the code.
- ◯ I always check the security of the code before providing any response, regardless of the situation.
- ◯ Other: _____

15. 15. How do you evaluate the security of the code when answering smart contract related questions on Stack Overflow?

*Check all that apply.*

- ☐ Never evaluate
- ☐ Self code review, checking for obvious errors and vulnerabilities
- ☐ Peer code review, entrusting code to other industry professionals for security analysis
- ☐ Software testing methods such as unit testing and functional testing
- ☐ Use security audit tools to evaluate the security of code
- ☐ Seeking professional auditors to evaluate the security of code
- ☐ Other: _____

16. 16. Based on the common smart contract vulnerabilities listed in DASP10 (https://dasp.co/), how would you rate your understanding of these vulnerabilities?

1: I have never heard of such a vulnerability before
2: Only heard of it, but not clear about the specific definition of vulnerabilities
3: Knowing the definition of vulnerabilities, but not familiar with the specific scenario in which they occur
4: Understand the definition of vulnerabilities and be familiar with the scenarios in which vulnerabilities occur
5: possessing highly specialized knowledge, able to identify potential vulnerabilities, and familiar with defense measures

*Mark only one oval per row.*

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Reentrancy** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Access Control** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Arithmetic Issue** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Unchecked Return Values for Low-level Calls** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Denial of Service** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Bad Randomness** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Transaction Order Dependency** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Time Manipulation** | ◯ | ◯ | ◯ | ◯ | ◯ |
| **Short Address Attack** | ◯ | ◯ | ◯ | ◯ | ◯ |

17. 17. Which of the following vulnerabilities do you think are necessary to detect for the smart contract code on Stack Overflow?

0: I am not aware of this vulnerability
1: It's completely unnecessary
2: Not very necessary
3: Moderate
4: More necessary
5: Very necessary

*Mark only one oval per row.*

| | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Reentrancy** | | | | | | |
| **Access Control** | | | | | | |
| **Arithmetic Issue** | | | | | | |
| **Unchecked Return Values for Low-level Calls** | | | | | | |
| **Denial of Service** | | | | | | |
| **Bad Randomness** | | | | | | |
| **Transaction Order Dependency** | | | | | | |
| **Time Manipulation** | | | | | | |
| **Short Address Attack** | | | | | | |

18. 18. Do you think it is necessary to detect other vulnerabilities besides the aforementioned ones? If so, please write it below.

19. 19. Have you ever employd vulnerability detection tools (such as Mythril, Slither, Oyente, etc.) in the development process of smart contracts?

*Mark only one oval.*

- Never used
- Seldom used
- Moderate
- Sometimes used
- Frequently used

20. 20. Have you ever used smart contract vulnerability detection tools (such as Mythril, Slither, Oyente, etc.) to analyze code on Stack Overflow?

*Mark only one oval.*

- Yes
- No

21. 21. What do you think are the main limitations of using existing tools when conducting security analysis on code on Stack Overflow?

*Check all that apply.*

- [ ] The tool's performance is poor.
- [ ] The tool is complex and user-unfriendly, with a significant time investment required for use.
- [ ] Existing tools do not support code analysis directly from Stack Overflow.
- [ ] Using the tools incurs fees and substantial economic costs.
- [ ] There are security issues that current tools fail to detect.
- [ ] Other: _____

22. 22. What improvements or support do you believe are most needed when reviewing or using community shared smart contract code?

*Check all that apply.*

- [ ] No need for improvement
- [ ] Code Quality and Clarity
- [ ] Security and Vulnerability Detection
- [ ] Contract Performance Optimization
- [ ] Compatibility and Cross-Platform Support
- [ ] Community Support and Feedback Mechanisms
- [ ] Other: _____

23. 23. Thank you for completing our questionnaire. Do you have any other opinions or suggestions regarding this questionnaire? If so, please write it below.

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24. To thank you for your valuable time and feedback, we will randomly select two participants to receive $50 USDT. If you wish to participate, please enter your Ethereum mainnet address.