

Questionnaire on the AI Coding Assistant Tutorial

The tutorial is available online at: <https://iblasquez.github.io/tuto-copilot-genai/en/>

General Information: Getting to Know You (Before Starting the Tutorial)

1. What is your preferred IDE?

- ☐ Visual Studio Code
- ☐ JetBrains (IntelliJ)
- ☐ Eclipse
- ☐ Other(s) (please specify)

2. Have you ever used a general-purpose AI chatbot (e.g., ChatGPT)?

- ☐ Yes
If yes, which one(s)?
- ☐ No

3. Have you ever used an AI coding assistant (e.g., GitHub Copilot) before this tutorial?

- ☐ Yes
If yes, which one(s)?
 - ☐ GitHub Copilot
 - ☐ Codeium
 - ☐ Cursor
 - ☐ Supermaven
 - ☐ Tabnine
 - ☐ Other(s) (please specify)
- ☐ No

Only if you answered YES to the previous question:

4. If you had already used a coding assistant before this tutorial, in what context did you use it?

- ☐ In a course / while learning
- ☐ For a personal project
- ☐ For a professional project
- ☐ Other (please specify): _____

5. How often do you use your coding assistant in your development environment?

- ☐ Every day
- ☐ Several times a week
- ☐ Occasionally
- ☐ Rarely

6. Which features of your coding assistant do you use most often?

(You may select more than one)

- ☐ Writing production code
- ☐ Generating unit tests
- ☐ Fixing compilation errors
- ☐ Generating documentation
- ☐ Understanding a legacy system
- ☐ Reviewing or reinforcing technical concepts
- ☐ Other(s) (please specify): _____

Part1 : Installation and Getting Started

7. Which coding assistant will you use for this tutorial?

- ☐ GitHub Copilot
- ☐ Codeium
- ☐ Cursor
- ☐ Tabnine
- ☐ Other(s) (please specify): _____

8. Did you find the installation of the coding assistant easy?

- ☐ Yes
- ☐ No

9. Do you find that the coding assistant is easy to use within your IDE?

- ☐ Yes
- ☐ No

Part 2 : Assisting with the Implementation of New Business Rules in a Simple Legacy Project

Generating Unit Tests for a Simple Class

10. How many unit tests were generated by your coding assistant for the `LibraryMember` class?
.....

11. Did you need to modify the generated unit tests to make them compile?
(e.g., *adjusting the constructor*)

☐ Yes

If yes, how?

☐ Modified the constructor (as suggested in the instructions)

☐ Other (please specify):

☐ No

12. Did you need to modify the generated tests to make them pass?

(for example, to make a decision about a behavior not yet implemented in the code, like *borrowBookTwice*)

☐ Yes

If yes, which behavior(s)?

☐ `borrowBookTwice` (as mentioned in the instructions)

☐ Other(s) (please specify):

How many tests did you delete?

☐ No

13. What is the code coverage percentage achieved by the tests generated by the coding assistant for the `LibraryMember` class?

.....

Implementing a New Business Rule: ISBN Validation

14. When first asked to implement ISBN validation, what did your coding assistant generate?

☐ Only an implementation for ISBN-10

☐ Only an implementation for ISBN-13

☐ Both ISBN-10 and ISBN-13 implementations at once

15. Was the test code generated by the assistant compilable and ready to run?

☐ Yes

☐ No

16. Did the AI-generated tests pass on the first run with the data provided by the assistant?

☐ Yes

☐ No

Only if you answered No to the previous question:

17. Were the test data generated by the assistant of poor quality?

☐ Yes

☐ No

18. Did you identify another reason why the tests did not pass on the first run?

☐ Yes

If yes, please specify: _____

☐ No

19. Did the tests AI-generated by your coding assistant pass on the first run when using high-quality test data provided in the tutorial, corresponding to real computer science books? (ISBN-13: 9780321146533, ISBN-10: 0321125215, ISBN-10 with X: 0321125215)

☐ Yes

☐ No

If not, which data caused issues?

☐ ISBN-13

☐ ISBN-10 with X

☐ ISBN-10

☐ Malformed ISBN

20. Was the case of an ISBN-10 with an 'X' handled correctly by your coding assistant?

(i.e., did the generated code, when tested with a valid ISBN containing an X, pass on the first run?)

☐ Yes

☐ No

If not, what was the issue?

.....

Adding the searchBookByTitle Feature

21. Did the AI-generated test for searchBookByTitle pass on the first run?

(i.e., was the test data provided by the assistant of good quality?)

☐ Yes

☐ No

Only if you answered No to the previous question:

22. What was the issue?

☐ The same as in the instructions (hallucination due to primitive obsession)

☐ Other (please specify): _____

23. When you asked your assistant to:

Implement a method to sort books by year, then by author name

Did the assistant directly propose an implementation using streams?

☐ Yes

☐ No

Part 3 : Assisting with Working on Complex Legacy Projects

Helping to Gain an Overview of the Project

24. By the end of this first part, do you feel that you have a clear and overall understanding of the complex project?

☐ Yes

☐ No

25. How would you rate the assistance provided by the tool in helping you gain an overall understanding of the project?

☐ Very helpful

☐ Helpful

☐ Somewhat helpful

☐ Slightly helpful

☐ Not helpful at all

26. What kind of support from the coding assistant did you find most helpful for understanding the legacy project?

.....

27. Which question(s) did you find most effective in helping you understand the legacy project?

.....

Assistance in Setting Up a Functional Development Environment

28. Did you encounter any issues when trying to run the main method in the CLI module?

☐ Yes

Only if you answered Yes:

29. Did you find that the coding assistant provided the necessary and sufficient help to solve these issues?

☐ Yes

☐ No

☐ No

Understanding Design Choices

30. With the help of the coding assistant, do you think you understood the concept of an AST (Abstract Syntax Tree)?

(In other words, did you find the assistant's explanations clear and relevant?)

☐ Yes

☐ No

31. With the help of the coding assistant, do you think you understood the AST implementation (using the visitor pattern) in the code?

☐ Yes

☐ No

Generating Unit Tests

32. Did the tests initially generated by your coding assistant fail?

☐ Yes

Only if you answered Yes: What was the issue?

☐ The same as described in the instructions
(hardcoded file paths pointing to nonexistent files)

☐ Other(s) (please specify): _____

☐ No

33. Did your coding assistant directly generate tests using @TempDir?

☐ Yes

☐ No

34. Did the coding assistant generate a test for a behavior that was not yet implemented in the existing code?

(As mentioned in the instructions, this would require using @Disabled)

☐ Yes

☐ No

35. What was the initial code coverage percentage for the JavaFileParser class based on the tests first generated by your coding assistant?

Assisting with Code Review

36. Did you feel that the assistant contributed to improving the readability or maintainability of the code?

☐ Yes

☐ No

37. How relevant did you find the refactoring suggestions provided by the assistant to improve code quality?

☐ Always relevant

☐ Often relevant

☐ Moderately relevant

☐ Rarely relevant

☐ Not relevant at all

Overall Reflection on part 3 : Assisting with Working on Complex Legacy Projects

38. Overall, how would you rate the effectiveness of a coding assistant in exploring and getting familiar with a complex legacy project?

☐ Very effective

☐ Effective

☐ Moderately effective

☐ Slightly effective

☐ Not effective at all

Please justify your answer in one or more sentences:

39. What advice would you give for asking more effective questions to coding assistants when trying to understand a legacy project?

General Impressions of the Coding Assistant After Completing the Tutorial

40. Which features of your coding assistant do you think you will reuse?

(Multiple answers possible)

- ☐ Writing production code
- ☐ Generating unit tests
- ☐ Fixing compilation errors
- ☐ Generating documentation
- ☐ Understanding a legacy project
- ☐ Reviewing or reinforcing technical concepts
- ☐ Other(s) (please specify): _____

41. How would you rate the quality of the code generated by the assistant?

- ☐ Very good
- ☐ Good
- ☐ Average
- ☐ Poor

42. Do you think coding assistants could help improve your understanding of programming concepts?

- ☐ Not at all
- ☐ A little
- ☐ Moderately
- ☐ Quite a lot
- ☐ Very significantly

43. Do you think using a coding assistant could limit your learning of programming?

- ☐ Yes
- ☐ No

44. Do you think regular use of a coding assistant could negatively affect your autonomy as a developer?

- ☐ Yes, significantly
- ☐ Yes, slightly
- ☐ No, not really
- ☐ No, not at all

45. Do you think regular use of a coding assistant could improve your productivity as a developer?

- ☐ Yes, significantly
- ☐ Yes, slightly
- ☐ No, no noticeable difference
- ☐ No, it could actually reduce my productivity

Limitations and Suggestions

46. In your opinion, what are the main advantages of coding assistants in the context of software development?

(Open-ended response)

47. In your opinion, what are the drawbacks or limitations of coding assistants?

(Open-ended response)

48. What surprises you the most when using a coding assistant?

(Open-ended response)