Class Modeling in UML with ChatGPT Student Questionnaire

This questionnaire contains 24 questions:

Questions 1-15 are used to assess: (i) whether students are able to identify the strengths and weaknesses of generative AI in software modeling tasks (RQ1), and (ii) the level of improvement on academic performance (if any) the student experiences on different aspects of the modeling tasks (RQ2). These questions are based on a Likert scale that includes the following values: {never, almost never, sometimes, most times, always}

1. Do the diagrams include all the necessary classes?
2. Do the diagrams include all the necessary relations?
3. Do the diagrams include all the necessary multiplicities?
4. Are the attributes of the classes represented correctly?
5. Are the operations of the classes represented correctly?
6. Are the simple associations between the classes represented correctly?
7. Are the aggregation relations between the classes represented correctly?
8. Are the composition relations between the classes represented correctly?
9. Are the generalization relations between the classes represented correctly?
10. Are the multiplicities of the relations between the classes represented correctly?
11. Are the roles in the relations between the classes represented correctly?
12. Do the class names make sense?
13. If applicable, do the relation names make sense?
14. If applicable, do the role names in the relations make sense?
15. If applicable, are the multiplicities in the relations correct?

Questions 16-17 are targeted towards fostering critical thinking in the student and acquiring information about the perceived trade-offs about the use of generative AI technology for modeling tasks (RQ3). Concretely, questions 16-17 are related to whether ChatGPT is deterministic in its output. Questions 19-21 are related to the suitability of the tool and the required effort to produce results of an acceptable quality.

16. Does ChatGPT always generate the same result for the same prompt?
17. If the answer to the previous question is "No": What elements vary?
18. How many attempts did you need to reach the correct solution?
19. Do you think it is a suitable tool for generating useful models?
20. Do you find it interesting to use it for learning how to create class diagrams?
21. Do you think generating a class diagram with ChatGPT (including necessary corrections) requires more effort than doing it manually?

Finally, questions 22-24 are included to let the student provide some input about potential improvements required by this technology and further context that may be deemed as relevant and was not explicitly mentioned in the previous questions.

22. Do you think the tool should improve to provide more useful diagrams more quickly?
23. If you answered "Agree" or "Strongly agree" to the previous response: What aspects should be improved?
24. Other comments.