**Task Allocation**

The development of this report was a collaborative result. Initially, our group held a brainstorming meeting to discuss the core themes of the “No Silver Bullet” concept and its relationship to design patterns in software engineering. Then, each group member was assigned specific works based on their interests and strengths.

**Bangxu Tian** was responsible for writing the introduction, which included explaining the relevance of “No Silver Bullet” to software engineering and laying the conceptual foundation of the report. He also managed the Git repository, ensuring version control and team synchronization during the process.

**Donglin Gong and Gaopin Zhou** analyzed the case studies together. They selected appropriate examples and explored how the Strategy and Decorator design patterns were applied to solve software challenges such as complexity, flexibility, and maintainability.

**Shiyang Liu** focused on reviewing and summarizing the findings of the report, which can ensure that the final report had a coherent narrative flow. In addition, he was in charge of designing the overall report framework and ensuring the consistency of formatting and tone.

**Lesson Learned and Conclusion**

After the exploration, our group has gained deeper insights into the complexity and inherent difficulties of software development. This report helped us understand that there is no general solution or single technology that can completely solve fundamental issues in software engineering.

The Strategy Pattern showed the importance of modularity and dynamic behavior switching, which directly contributes to whether it is adaptable and testable. Similarly, the Decorator Pattern provided a flexible way to extend system functionalities without modifying existing code. It is quite crucial for system evolution and long-term maintenance.

By connecting theoretical design patterns with practical case studies, we realized that well-applied design patterns not only improve software architecture but also provide feasible methods to solve some essential difficulties in system design. This aligns with Brooks’ idea that although no silver bullet exists, incremental improvements and intelligent design decisions can help manage software complexity.

In conclusion, the application of suitable design patterns does not remove the problems described in “No Silver Bullet”, but they do offer a structured and effective way to address them. This project deepened our understanding of pattern-oriented design. It also improved our collaboration and critical thinking skills for future software engineering tasks.