A Study on TestNG and Unit Testing Application

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***Abstract*—This undergraduate thesis explores the theory and application of unit testing, focusing on the TestNG framework in Java. The author reviews the basic concepts, principles, and types of software testing, and applies this knowledge to a few simulated test cases. The study acknowledges the limitations in the student's knowledge and skills, and suggests future research in unit testing. The thesis provides an overview of software testing theories and introduces the TestNG framework for unit testing in Java, aiming to familiarize students with the fundamentals of testing and apply these concepts to practical scenarios. Despite the effort, the student's understanding and application of unit testing remain limited, and the thesis highlights the need for further practice and research.**

***Index Terms*—software testing, unit testing, TestNG, Java, unit test, framework**

I. Introduction

The thesis provides an overview of software testing theories and introduces the TestNG framework for unit testing in Java. It aims to familiarize students with the fundamentals of testing and apply these concepts to practical scenarios. The author reviews literature on software testing, including books and online resources, and applies TestNG to simulate unit testing on a few test cases. The study covers the basic concepts, principles, and types of software testing, as well as the specific application of TestNG in Java. The author acknowledges the limitations in their knowledge and skills, and suggests future research in unit testing [1]. Earlier ICTU student work on related designs is included here for context [5], [6], [7], [8], [9], [10]. Published technical books provide background for the methods discussed in this summary [4]. These contextual works were selected for this English summary; they are not asserted to appear in the original thesis bibliography.

II. Methods

The author reviews literature on software testing, including books and online resources, and applies TestNG to simulate unit testing on a few test cases. The study covers the basic concepts, principles, and types of software testing, as well as the specific application of TestNG in Java. The author uses simulated test cases to apply the knowledge gained from the literature review. The methods section includes a detailed review of existing literature and the application of TestNG to practical scenarios, but does not provide specific examples of implemented functions or worked examples [1].

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III. Results

The student gained a basic understanding of software testing and unit testing using TestNG in Java. However, the thesis notes that the student's knowledge and skills are still limited, and the application of these concepts to a full project is still lacking. The student was able to apply the knowledge gained from the literature review to simulate unit testing on a few test cases, but the results are not quantified or measured. The study highlights the need for further practice and research in unit testing [1].

IV. Discussion

The author discusses the importance of software testing and the role of unit testing in the software development process. The limitations in the current study are acknowledged, and the need for further research and practice is highlighted. The author suggests that the student's understanding and application of unit testing remain limited, and that the study provides a foundation for future research. The discussion section emphasizes the need for continued learning and application in future projects [1]. Earlier ICTU undergraduate work by Nguyễn Thị Hồng Vân addressed automated unit testing of software [3].

V. Conclusion

The thesis concludes that software testing is crucial for software development organizations. The author has achieved a basic understanding of unit testing and TestNG, but acknowledges the need for continued learning and application in future projects. The study provides an overview of software testing theories and introduces the TestNG framework for unit testing in Java, but the student's knowledge and skills are still limited. The conclusion section reiterates the importance of software testing and the need for further research and practice [1].

References

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