

Application of UML in applied undergraduate graduation thesis (Design)

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Abstract

This paper first gives the definitions of graduation thesis (Design), software project system and UML and the relationship between them, and then takes the library management system as an example to illustrate the application of use case diagram and sequence diagram in the demand analysis stage, so as to fully grasp the customer's needs from the perspective of business, effectively ensure the quality of demand work, and develop the software system smoothly. It can be seen that UML technology has high application value in the development of software project system.

Keywords

Applied undergraduate colleges; Applied talents; Graduation thesis (Design); UML modeling.

1. Introduction

Major application-oriented undergraduate colleges and universities attach importance to students' comprehensive quality, and scientific research literacy is an important embodiment of students' comprehensive quality. Scientific research literacy is to cultivate students' self-learning ability, problem discovery - problem analysis - problem solving ability, induction and summary ability and divergent association ability [1-2]. The way to improve undergraduate scientific research literacy is generally undergraduate graduation thesis (Design), which aims to enable students to flexibly use various knowledge, theories and skills learned in class and experiment for comprehensive practical training, so as to cultivate students' comprehensive practical ability and scientific spirit of diligent research. Major universities generally set graduation thesis (Design) as a comprehensive teaching link, which is a standard for students to achieve graduation, including mutual selection between teachers and students, students' topic selection, literature review, thesis (Design) opening, investigation and research, software project development, mid-term inspection of thesis (Design), thesis writing, thesis (Design) defense and so on. This series of links will improve students' basic abilities such as comprehensive use of learned knowledge, independent analysis and solution of practical problems, as well as literature review and written expression. Therefore, as a graduation thesis (Design) instructor, we should strengthen the process management of graduation thesis (Design) and ensure the teaching quality of graduation thesis (Design).

With the rapid development of society, in order to facilitate our daily life, there are more and more demands for intelligent life in all aspects. Students majoring in software engineering generally choose the software project system with high practical significance when creating their graduation thesis (Design). By participating in the actual software project, they can not only experience the application of various knowledge fields, but also use the developed software project system to improve work efficiency and management level.

In software project system development, it is generally necessary to analyze the requirements of the system. The unified object-oriented modeling language (UML) is often used to model the

system functions in the requirements analysis stage [3-8]. UML is a visual modeling language, which mainly uses a group of visual graphical symbols. Using these symbols, we can vividly describe the function of the system by establishing various relationships between graphics. Therefore, using UML technology can help us design a more reasonable software project system.

2. Application of UML technology in software project system

As a visual modeling tool, UML can be applied to the whole process of software system development. The use case diagram and sequence diagram are mainly used in the requirement analysis stage of the system. Taking the library management system as an example, this paper focuses on the application of these kinds of diagrams in system development. This paper uses Microsoft Visio 2010 tools to model the system in UML.

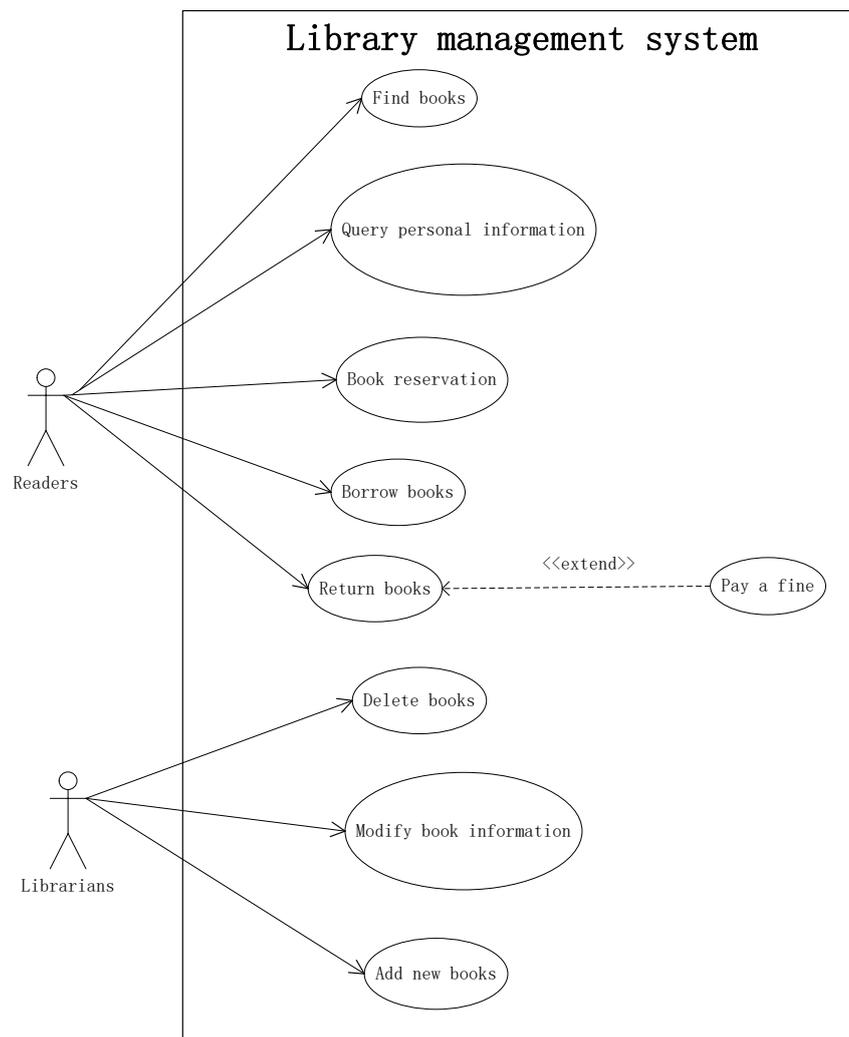


Figure 1 Use case diagram of library management system

2.1. Use case diagram

Use case diagram is a static view composed of participants, use cases and the relationship between them to describe the system functions. It mainly describes the system functions from the perspective of users, and points out the executors of each function, which is helpful for requirements analysts to understand the behavior of the system.

The participants in the library management system are readers and librarians. The executive functions of each participant are as follows:

(1) Readers can find books, query personal information, book reservation, borrow books and return books. The returned books are extended to pay a fine.
(2) Librarians can delete books, modify book information and add new books.
The corresponding use case diagram is shown in Figure 1.

2.2. Sequence diagram

Sequence diagram is used to describe the time sequence of sending messages between objects, reflecting the sequence of system functions. Each message corresponds to a trigger event that causes a transition in a class operation or state machine.

Finding and booking books by borrowers: borrowers log in to the book management system, find books according to book number or book name, and book reservations. The corresponding sequence diagram is shown in Figure 2.

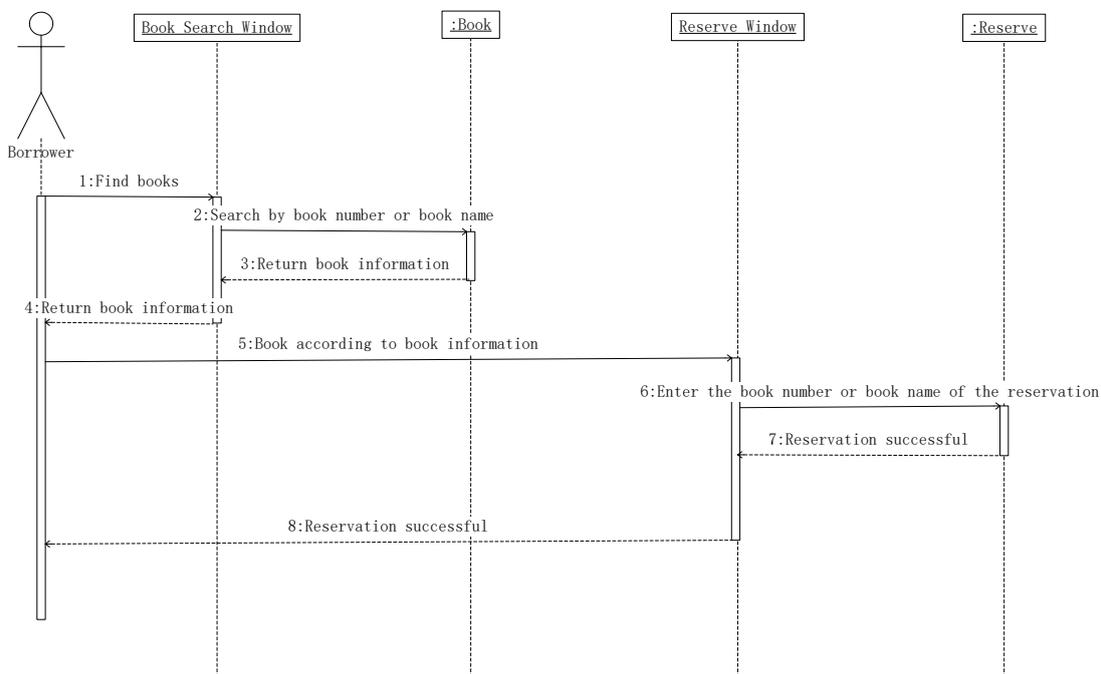


Figure 2 Sequence diagram of book search and reservation

It can be seen from Figure 1 and Figure 2 that UML uses object-oriented graphics to describe the software system, and establishes the use case model and interaction model of the object. The software function and structure are clear, which can facilitate the software system designer to realize the corresponding software according to the model.

3. Conclusion

As an application-oriented undergraduate college, students generally choose to develop software projects with practical significance as the object of graduation thesis (Design). In the process of software project development, first use UML to analyze the functions of the software project system in detail, and use software modeling tools (such as Visio) to establish UML model of the software system, so as to effectively improve the development efficiency of the software system.

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