

# Requirement Analysis on Network Teaching Management System

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**Abstract.** Network teaching is to use computer equipment and Internet technology in the virtual space, through a certain method to implement the teaching method on the network, the perfection of the network teaching system can directly replace the traditional teaching method in the whole process of teaching. In order to solve the problem of system development, this paper carries out the demand analysis. First, the use of data flow graph technology, depicting information flow and data from the input to the output of the process of transformation; and then, the use of data dictionary technology, defining the relevant elements of the data flow diagram; finally, the use of tree structure diagram is represented by the administrator subsystem, teacher subsystem and student subsystem structure of the system. The requirement analysis system design the bridge of analysis and software, has laid a foundation for the system development.

## Introduction

Educational informationization is the process of promoting the reform and development of education in the field of modern information technology. Technical feature are digital, networking, intelligent and multimedia, the basic feature are open, sharing, interaction, collaboration. To promote the modernization of education and information technology to change the traditional model. The development of education informationization has brought about great changes in the form of education and learning style. It has a huge impact to the traditional education ideas, ideas, patterns, contents and methods. Education informatization is an important part of the national informatization, it has profound significance for changing educational ideas and concepts, deepening education reform and improving education quality and benefit, it is the inevitable choice to realize the leaping development of education. The purpose of education is to cultivate innovative talents, which is to realize the modernization of education. Educational informationization should be based on the new educational ideas, educational ideas and guiding information technology in various departments and fields of education, should be based on the requirements of innovative personnel training, the use of information technology to explore new educational mode, and promote education modernization.

Teaching management is the core content of educational informationization. Teaching management is an important management in school management, teaching management is the management of the teaching activities to achieve the objectives of the school's established personnel training process, teaching management is the guarantee of normal teaching order. Network teaching management system is the main means to realize the teaching management informationization. Computer network provides students with learning materials, tools and the creation of learning situations, improve the student's learning interest, mobilize the enthusiasm and initiative of learning, the student's creative ability; the computer network has rich teaching information resources, it can represent the knowledge and experience of the media in the premise of the knowledge of the subject system. And it can be extended to the systematic knowledge of subject, and it is a reflection of the same object in different subjects. To provide students with the knowledge of the system to provide a book can not match the information environment. In addition, there is no restriction on the learning time and learning place. And the openness of the Internet determines the network information resources can be shared at any time, so get rid of the traditional teaching of learning time of the

strict requirements, students can according to the need to study the time [1,2]. Network teaching also provides students with the opportunity to enjoy more education resources, so that the school education broke through the boundaries of the region, improve the utilization of education resources.

Only through the need analysis, can the software function and performance of the overall concept, described as the specific software requirements specifications, and thus lay the foundation for the development of software. In software engineering, requirement analysis refers to the establishment of a new or an existing computer system, the description of the purpose, scope, definition and function of the new system to do all the work. Requirement analysis is a key process in software engineering. In this process, system analysts and software engineers determine the needs of users. Only by determining these needs can we be able to analyze and find solutions to the new system. Through the requirement analysis, the system must accomplish the work, which is to put forward a complete, accurate, clear and specific requirements of the target system.

### Data Flow Diagram and Data Dictionary

Structure analysis method is a software development method, which emphasizes the structure of the development method, and the structure of the software. Structure is the framework of the interaction between the various components of the system. Structure analysis method is given a set of principles and techniques to help the system to analyze the function of the system. In this paper, we use data flow diagram and data dictionary technology to carry out the requirement analysis.

Data flow graph is a graphical technique, which describes the transformation of information flow and data from input to output. Because the data flow diagram is a graphical representation of the logic system, it is an excellent communication tool even if it is not a professional computer technology personnel. Data flow graph is drawn from the top-down method, from the beginning of the research system overview, and then the layer down, until the required detailed procedures [3,4]. The system uses a top-down, layer by layer method, the top-level data flow diagram as shown in Fig. 1.

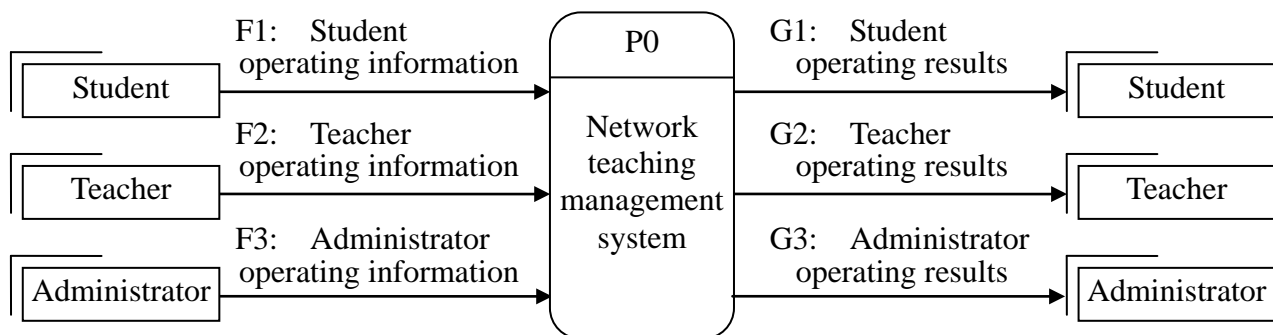
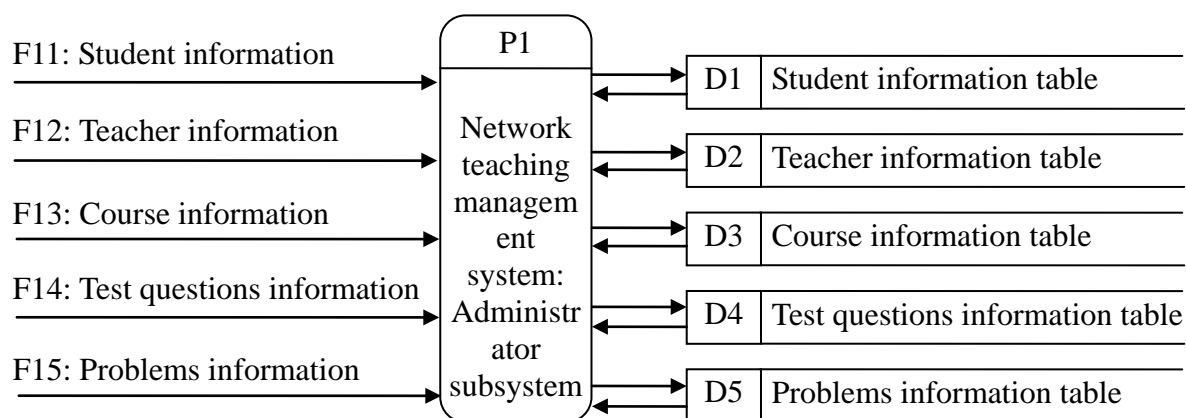


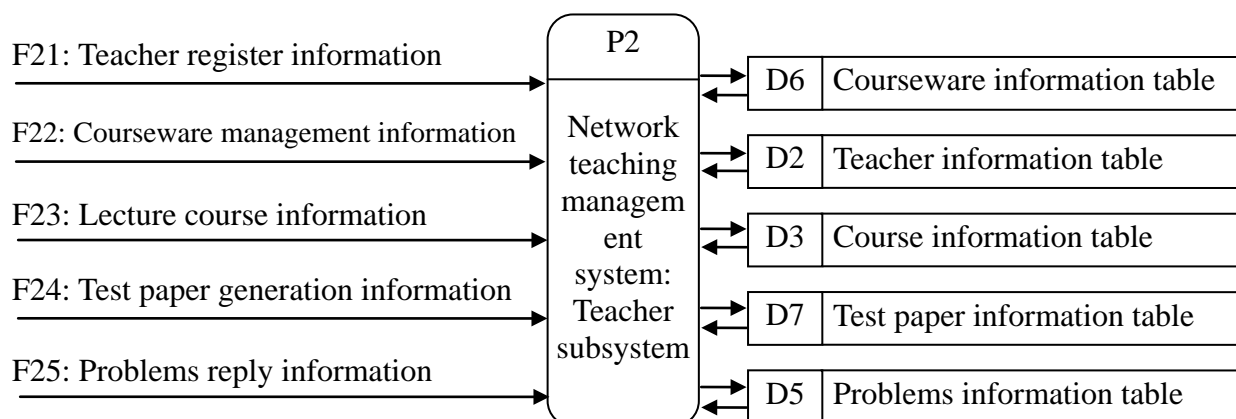
Fig. 1. Top level data flow diagram

Top data flow diagram is too abstract, the network teaching management system express the information is very limit. So the top data flow diagram is refined, depicting the main functions of the system. The system mainly includes three kinds of users, including administrators, teachers and students, and the system will be a subsystem of all kinds of users. Therefore, a layer of data flow graph is composed of three subsystems, such as Fig. 2. Among them, Fig.2(a) is a data flow diagram of the administrator subsystem, Fig.2(b) is a data flow diagram of the teachers, Fig.2(c) is a data flow chart of the students,

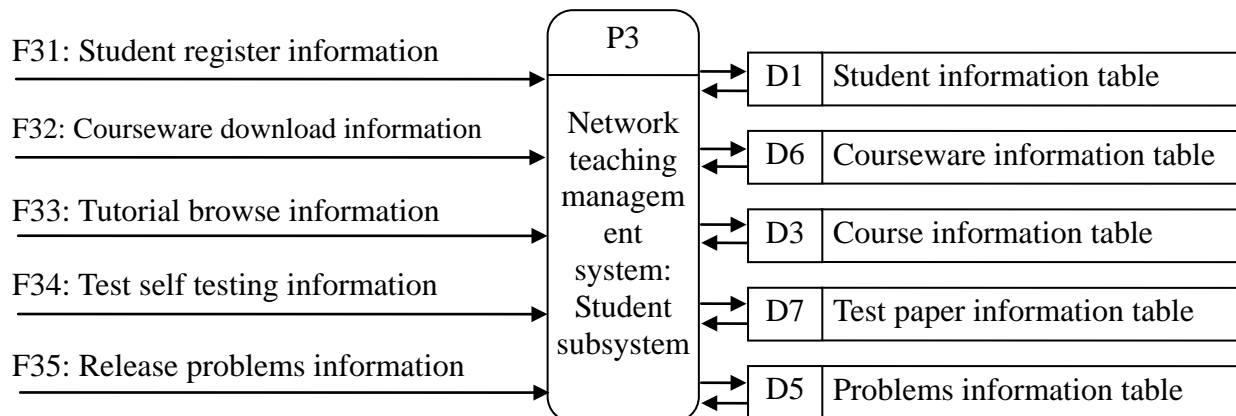
Data dictionary is a collection of data information, which is defined as the collection of all the elements contained in the data flow diagram. Data flow graph and data dictionary are the logical model of the system, and the data flow chart of no data dictionary is not strict, but it is difficult to play a role in the data dictionary of no data flow graph. Only the data flow graph and the accurate definition of the data flow chart are put together to form a system specification. For the above data flow diagram, the entries are too many. Only two data dictionary entries are listed.



(a) Administrator subsystem data flow diagram



(b) Teacher subsystem data flow diagram



(c) Student subsystem data flow diagram

Fig. 2. One level data flow diagram

### 1. Source point: Teacher

Name: Teacher

Description: Complete the information management, network teaching and other related work

Definition: Teacher = Teacher Number + Teacher Name + Graduation School + Graduation Date + College Name + Professional Name + Technical Title + Final Degree + Final Education + Mobile Phone + Electronic Mailbox + Job Resume

Input data flow: Teacher Number + Login Password

Output data flow: Courseware information + Teacher information + Course information + Test paper information + Problems information

Location: Teacher information table

## 2. Data Flow: Test questions

Data flow name: Test questions information

Description: Describing detailed information of the papers

The source of data flow: Test paper generation

Data flow direction: Examination scripts

Data flow composition: Test Questions Number + Course Number + Knowledge Point + Chapter Section + Test Questions Type + Title Name + Test Questions Content + Test Questions Answer

Location: Test questions information table

## System Function Design

Function design is the most important content of software design. Function design is based on the goal of the software, the formation of the function model of the software to describe the results, and quantitative or qualitative description of the function requirements of the software. Function design is usually used in modular system architecture. Modules are units that can be combined, decomposed and replaced. Modular is a way of dealing with complex systems to be better managed. By setting different functions in different components, a problem is decomposed into many small independent and interacting components. Network teaching management system function design module structure as shown in Fig. 3.

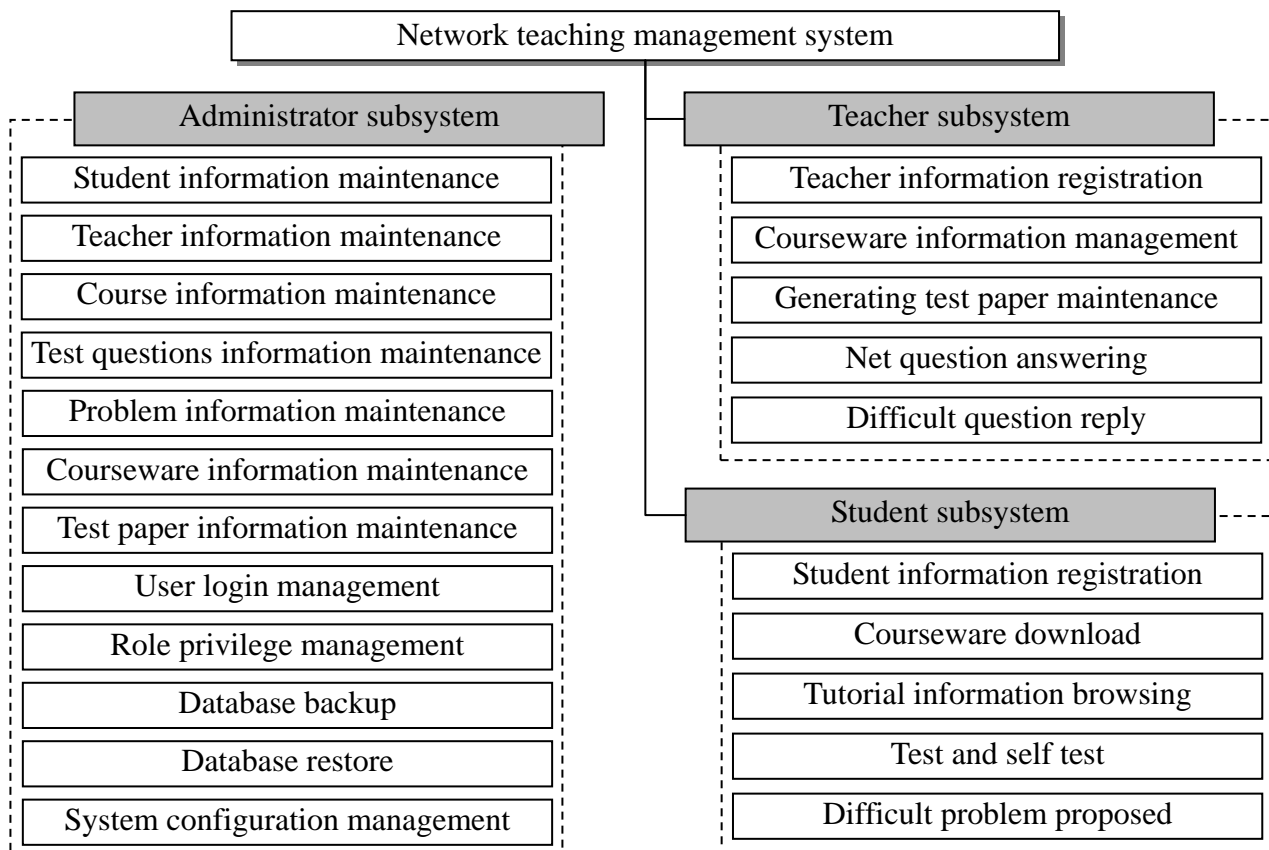


Fig. 3. Modular structure on network teaching management system

As can be seen from Fig. 3, the network teaching management system is composed of the administrator subsystem, the teacher subsystem and the student subsystem. Each subsystem is briefly described as follows [5-7]:

(1) The administrator subsystem. It provides the function of the system administrator, mainly for information maintenance and system management, etc.. Information maintenance includes student information, teacher information, course information, test questions, information, information,

courseware information, paper information, system management, including user login management, role authority management, database backup and recovery, system configuration information, and system integrity management, etc..

(2) The teacher subsystem. It provides the function of the teacher, can complete information management and network teaching and other related work. Specific include: user login, information registration, test paper information settings, test paper, for individual students of the network answer questions, the common issue of the students issued to reply, publish teaching information, etc..

(3) The student subsystem. It provides students with the function, you can complete the network learning and test and other related work. Including user login, information registration, teaching resources download, tutorial information browsing, examination and self testing, troubleshooting, and teacher network interaction and related information browsing, etc..

## Conclusion

The network teaching management system based on computer technology can not only improve the management efficiency, but also reduce the influence of human factors on the teaching management system. Through the computer technology, information management system, in the same time to maintain the basic functions of the original management system, improve the teachers' information retrieval speed, improve the safety level of teaching information, reduce labor costs, and promote the modernization of teaching management in colleges and universities [8]. The process of requirement analysis is the process of determining the user's needs, and the bridge of the system analysis and software design. Based on the research content of this paper, the network teaching management system with complete functions and safety and reliability can be developed.

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