Design and Implementation of Mobile Learning System for Soldiers' Vocational Skill Identification Based on Android

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Abstract: To carry out the identification of the professional skills of the soldiers is to further promote the regularization of the needs of the fire brigade, in accordance with the "public security active forces soldiers professional skills identification implementation approach" to meet the needs of candidates for mobile learning to solve the paper learning materials bring a lot of inconvenience; This article uses the Android technology to develop a set of soldiers professional skills Identification Theory learning app, the learning software based on mobile learning, learning function is perfect, you can learn to practice, to achieve the goal of learning at any time, to enhance the soldier's post ability has a good practical value.

1. Introduction
The soldiers to carry out occupation skill appraisal is to further promote the standardization of building fire protection needs, is a new measure to strengthen the construction of public security forces personnel, to further improve the soldiers evaluation system, enhance the ability to post office soldiers, have important meaning to improve the combat effectiveness of the armed forces [1]; According to the measures for the evaluation of professional skills of soldiers in active service, the identification of soldiers' professional skills is divided into different grades, such as primary, middle and advanced skills, technicians and senior technicians. Among them, the basic theory of fire fighters is the basis of each level, the basic theory of learning content rich, more knowledge, if the use of paper-based review materials to learn, not only waste a lot of paper, but also unable to grasp the knowledge of their correct assessment, lack of timeliness and effectiveness.

With the rapid development of mobile Internet technology, represented by smart phones and tablets enrich the mobile terminal equipment, mobile learning has gradually become a new way of learning [2]. Mobile learning is the combination of mobile computing and digital learning, it includes anytime, anywhere learning resources, powerful search capabilities, rich interactivity, strong support for effective learning and performance-based evaluation [3]. The mobile learning style is free of time and space limitation, flexible, highly targeted, and the absorption rate is higher. Android, as an open source, free mobile terminal operating system, is widely used in the education area. Here, the use of the Android development techniques developed to adapt to the mobile learning soldiers learn software professional skill appraisal theory, using the software learners can use of fragmented time learning anytime and anywhere, and can understand their own learning situation in time, improve the test efficiency.

2. System Analysis
The assessment of professional skill appraisal of firemen is divided into three parts: theoretical knowledge examination, skill performance appraisal and fitness assessment; Among them, the theoretical knowledge test took the written examination method, the percentage system was adopted, the
above 60 is qualified, the skill operation appraisal adopts the percentage system, the above 80 is qualified, the physical examination adopts the standard system; The above three measures are certified as qualified\cite{4}. The theoretical knowledge is divided into fire fighting occupational ethics and legal regulations, basic knowledge, fire fighting, emergency rescue and combat duty in five articles, altogether 26 chapters. The software is mainly suitable for firefighters occupation skill appraisal theory knowledge, learners can use this software to choose the relevant sections of online learning materials presented in the form of multimedia, and can record their own learning process; at the same time support online simulation test.

| Classification     | Illustration                                                                 |
|--------------------|------------------------------------------------------------------------------|
| Knowledge point    | According to the requirements of the outline is divided into 5 chapters, a total of 26 chapters |
| Question types     | Single topic, Multiple choice, Judgment                                        |
| Examination difficulty | Simple, Intermediate, Difficulty                                                |
| Importance         | Understand, General, Important                                                |

3. Development Platform

Android application development requires a specific development environment support, so the mobile learning system before the development of the function, you need to build the system development environment. The system uses integrated development tools Eclipse, the operating environment for Windows\textregistered, the program development language for the Java language.

3.1 Eclipse

Eclipse is Java based, open source, extensible development platform, Eclipse comes with a standard plug-in set, including the Java development tool (Java Development Tools, JDT). Eclipse software can be integrated software development tools of different vendors products, any development tool vendors can put their tools or components added to the Eclipse platform, users can use different tools through the same interface. Therefore, Eclipse platform has not only been supported by many developers and emerging small and medium-sized software companies, but also supported by large software companies such as IBM, Sun, Oracle and so on. Currently, Eclipse supports the Windows operating system and the Linux operating system, so you can easily switch between two operating systems.

3.2 MySQL

MySQL is a relational database management system, MySQL software because of its small size, fast, low total cost of ownership, in the development process of the system, the choice of MySQL Front database development software, it is a small application management MySQL. Key features include multi-document interface, syntax highlighting, dragging databases and tables, editable / addable / deleted fields, editable / insertable / erasable records, displayable members, executable SQL scripts, Interface with external programs, save data to CSV files, and so on.

3.3 APK

APK full name is Androgenic, is the Android installation package. When installing, use the simulator to execute the file for installation. APK format is zip, after decompression to see the dec file, is the implementation of Andrews procedures, rather than bytecode. Before the operation of the program is the need for Unzip bedding, and then directly connected to the relevant procedures.
4. System Design

4.1 Software Architecture
The software architecture shown in Figure 1. The mobile client learning system sends the HTTP network connection request to the back-end server, and the back-end server program accesses the MySQL database to obtain the required data to return to the client. The client communicates with each other through the WEB server and the database.

![System Architecture Diagram](image1)

Fig 1 System architecture

4.2 System Function
The software is divided into client module and server management module, as shown in figure 2.

![System Function Diagram](image2)

Fig 2 System function

The client user can easily retrieve the content of the resource that he needs through the system query module, while the user can collect and review the resource content and comment and evaluate the contents. The server management module is used to add, modify, delete, query, etc. At the same time, the administrator can manage the user's login user account and resource classification. Including the system user management module, the student information management module, learning information management module, the practice test module and curriculum resources management module, etc., each module can be the content of the management to add, modify, delete, and query operations. Student users through a web side or Android mobile terminal after login system, can undertake courses available information, resources, and comment on the operation, such as the administrator to the user's evaluation, curriculum resources and student information management.

4.3 Database Design
Mobile learning system needs to store a large amount of offline data and network data, and it needs to select database and data storage mode according to the corresponding requirements. The design of database plays a very important role in the development of the system, and it is also an important
component of the system design. According to the function design and the type and characteristics of the data in the system, SQLite and MySQL are used as the two types of database. In order to facilitate students' learning off-line and can obtain the corresponding learning resources without a network, the learning curriculum resource system data and database data storage and exercise test in the SQLite database and server network; and the need to exchange data, including user registration and login data and interactive communication module the data is stored in the MySQL database.

4.4 Random Sampling Algorithm
In this system, an improved random sampling algorithm is designed. The random problem algorithm based on the attribute of the knowledge question bank is used to supplement the constraints of difficulty, knowledge and importance in each type. The corresponding question number in the database is extracted and stored in an array. A random numbering algorithm is called in the set of arrays of each question type to generate a random number corresponding to the number of questions requested. Road, more than 10 questions, 30 questions to determine the principle of the deposit into the corresponding array. After the random number is generated, the type of problem is generated. The process of the algorithm is similar to that of the manual process. The operation is simple and convenient. Through the control of the constraint condition, the problem of the same knowledge point can be avoided and the problem of the knowledge point Can be pumped.

4.5 Interface Design
Human computer interface is the medium for transmitting and exchanging information between human and computer. The quality of human computer interface influences the user's sense of software. It has become one of the standards to measure the usability of software, and the good man-machine interface has become an important aspect of software design. In the design of mobile learning system interface, we should take full account of the characteristics of mobile devices and screen size and other factors, in order to better presentation of learning content, and to minimize the memory space occupied by the system. At the same time, it is necessary to consider the style and beauty of the interface, so as to better attract learners' interest in learning, and thus enhance the learners' visual experience of the learning system. The interface of the learning system is divided into client and server, and the client is the course study page.

The server completes the information interaction between the client and the database, and plays an intermediary role. Management login into the background system, you can view user management, data management, chapter management, title management and other functional modules of operation.

5. Conclusion
Design and develop mobile learning system based on Android platform is humanized, responsive, powerful, rich in learning, and provides a platform for soldiers to use. The software can make better use of scattered time and learn anytime and anywhere Professional skills knowledge, improve learning efficiency.

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