Research on Teaching Reform of Android Network Programming Course Based on Real Project

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Keywords: Real project; Application-oriented personnel training; The teaching reform.

Abstract. At present, there is a gap between the teaching of android network programming course and the current social development and enterprises' talent demand for android. Based on industry demand as the guidance, based on real project teaching, from teaching content, reform teaching methods, curriculum design, the inspection way, this course and enterprises to better implement the android demand docking. Fully promote students' ability in engineering application, provide important basis for applied talents training.

Introduction

With the development of wireless network technology, mobile terminal has become the most convenient and direct device for people to obtain information. The rapid development of mobile terminals promotes the rapid development of mobile network technology, and at the same time drives the explosive development of smart phones. At present, the mobile Phone operating system Google's Android, Microsoft's Windows Phone and Apple's IOS account for the main share of the market. Since the birth of the operating system, Android has surpassed its main competitor Apple Inc. in terms of the lure of open source code and low price, and thus has become the no. 1 market share in the world. At the same time, there is a great demand for the development of mobile APP based on mobile terminals in various fields of social life, and the corresponding job demand for APP development also increases sharply. Android network programming is a popular course with very good prospects and strong applicability. Therefore, this course plays a crucial role for students majoring in computer science and technology to engage in Android software development after graduation.

Dilemma of Android Network Programming Course

At present, in order to meet the social demand for such talents, colleges and universities have successively opened courses related to android development, but there are still many problems. There are problems with the traditional teaching model, such as the disconnection between teaching content and actual industry needs; Students' programming ability is low, especially the lack of systematic practice of real project development process, project development ability is insufficient; The single course assessment method cannot comprehensively examine students' application ability, resulting in students' low learning enthusiasm, knowledge and ability disjointed, students are difficult to meet the needs of the industry.

Curriculum Design Based on Real Projects

Project Selection

This course is taught by real projects, which consist of two parts: one is the project in which the teacher grasps the required knowledge and skills through enterprise research, and the other is the project in which the teacher participates. Through these two parts, we plan to set up real projects. The determination of real projects requires teachers to combine the knowledge category and skills
of the course content. The demand for Android talents in the industry shall be determined by the
teachers of the Android course group through discussion.

Design of Teaching Content

Traditional teaching is taught in the order of textbook chapters, chapters and sections. The
teaching content arranged in this way is taught in accordance with chapters, which is systematic and
coherent. However, students tend to lose interest in learning in this way and have low enthusiasm
for learning. Based on the concepts of career orientation, real project as carrier, task as driver and
working process as core, this course studies and sorts out the knowledge objectives and skill
objectives of this course, and reorganizes the teaching contents of this course through
deconstruction and reconstruction. Project development is based on the work process, combining
the typical work tasks and work flow of the actual job to set the juice. On teaching content design
based on Android network programming process and working process of software development
skills needed to complete the task, the four steps of each project according to the working process of
the project analysis, system overall design, system detailed design, system implementation and
maintenance, and gradually integrated into the knowledge and skill points, selection of projects,
from easy to difficult, with the increase of the difficulty of the project, gradually increase the
knowledge and skill points, the teaching content from simple to complex, knowledge through
unceasingly, improve students' ability. The design of teaching content pays attention to the
application of knowledge and skills, which can meet the employment needs of students. The
teaching content design is shown in Table 1 below.

| The project name | Working process | The specific design |
|------------------|-----------------|--------------------|
| Project analysis | Describe the purpose and functions of the project |
| Overall system design | The design of common classes |
| Database design | The system class diagram |
| Detailed system design | Use case diagram |
| System implementation | Web server-side implementation |
| Android client implementation | |
| Basic function 1 implementation | |
| Basic function 2 implementation | |
| Basic function 3 implementation | |
| ...... | |
| Basic function n implementation | |
| The system test | Bug queries on Log Cat |

Teaching Methods

This course adopts a project-driven teaching method, and each project is carried out in
accordance with the working process. The corresponding teaching process is that the teacher issues
the assignment, students make plans according to the assignment, software development, results
exchange and mutual evaluation.

Issue the Assignment. Taking the game of one-dozen whacks as an example, the teacher used
the blue ink cloud class to distribute the assignment as shown in Table 2 below.
Table 2. Assignment.

| The project name | whack-a-mole | Task allocation | The group leader: | Team members: |
|------------------|--------------|-----------------|------------------|--------------|

Teaching objectives:
1. Master the concept of threading
2. Master the creation, interruption and termination of threads
3. Master the messaging class Handler
4. Hold the Message

Project requirements:
1. Designed the whack-a-mole game interface: provided background pictures and designed 9 gopher caves
2. System design: system class diagram and use case diagram are given
3. System function realization: to realize the system function, gophers can randomly appear in one of the 9 caves

Assessment criteria:
1. Beautiful interface
2. System function realization
3. Work as a team

Content (pasting):

Evaluation:
Teacher's signature                  Signature of enterprise mentor

Make Plans. After students receive the task book, each group shall make a plan for the whole project to ensure the smooth implementation of the project. The program mainly includes: task assignment of team members, project design.

Software Development. According to team project design, team members develop software according to tasks.

Exchange of Results. After the completion of each project, at the end of the software development phase, one student from each team will be sent to the stage for the presentation, and explain the specific assignment of each team member and the problems encountered in the software production process and the solutions. Teachers ask questions and communicate with other members of the group. Through this link, teachers can get to know students' actual mastery, and students can also gain something in the process of communication.

Evaluation. After the completion of the project results exchange, the project evaluation stage will be entered. Evaluation means to adopt the diversified evaluation method of "teacher evaluation + enterprise engineer evaluation + group evaluation" to form multi-dimensional quantitative evaluation standard when each group conducts the report and demonstration. Teachers are no longer the only subject of evaluation. Enterprise engineers and students, as the main part, also participate in the evaluation, and focus on the evaluation of the whole learning activity.

Conclusion
This paper studies the teaching reform of android network programming course based on real projects. By understanding the needs of enterprises and reconstructing the teaching content, the implementation of the project is carried out according to the working process. Students master the work process, familiar with the process of software development, better achieve the training of application-oriented talents, but also improve the competitiveness of students.
Acknowledgement

This research was financially supported by the Special project of innovation of school-level classroom teaching mode of Xi'an Peihua University in 2019, number PHJM1915.

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