ABSTRACT
Multimedia tutorials can be generated from a set of pre-designed courseware, based on individual performances of students in a distance learning program. In this demonstration, we present such a system, which is based on an educational theory and sophisticated mobile programming. We demonstrate the authoring tool, the exam tool, and the tutorial generation tool as an integrated system. Interested readers can visit our Web site for an on-line demo: http://elresearch.mine.tku.edu.tw/.

Key words: distance learning, student assessment, courseware authoring, automatic assessment, SP table

1. INTRODUCTION
Distance learning courseware may contain multimedia tutorials generated by the system [1]. We developed a mechanism and a system that can generate tutorials on the fly based on a set of pre-designed courseware, the test outcomes of students, and the content of the exam. We use the system to design a data structure course. The demonstration will present the software tool, as well as the analysis from a field test of the data structure course taken by undergraduate students.

2. SYSTEM DEMONSTRATION
2.1 Tools for the Instructors
In addition to courseware design, the instructor can use our problem design tool (shown in figure 4) to design a set of popup quizzes and assignments. Popup quizzes are used in an on-line section while students are navigating
through a courseware. Assignments are used as homework or as basic units for the development of a test set. The exam setup tools (figure 5) allow the instructor to setup the scope of exam, the schedule of exam, and the test set.

The test outcomes of students as well as the behavior of each student while they are joining an on-line exam or navigating through a courseware are maintained by a centralized databases, which has a set of mobile agent programs running on student stations to collect individual behavior. The analysis tool shown in figure 6 allows an instructor to monitor student behavior, as well as the overall statistic data of exams.

2.2 Tools for the Students

Figure 7 shows an on-line section, with popup quiz for the students. The navigation behavior and the performance of a student in the popup quizzes are used as a base for the generation of individual tutorials.

On-line tests can be implemented either on PDAs, or using a centralized exam server. After an exam, each student will automatically receive a tutorial on the Web site. Interested readers can visit our Web site for the demonstration on a video clip. Free software is also available upon request.

3. CONCLUSIONS

The demonstration lasts about 15 minutes each round. A data structure courseware will be used as an example. At least two computers will be used as the instructor station and the student station. Interested readers can get a free copy of the software for research purposes. Yet, we are open for a possibility for collaboration with software venders.

REFERENCES