

A FORUM FOR CASE TOOLS UTILIZATION

By

ZAITUN A. B. and ZHU LIZHONG.

Faculty of Computer Science and Information Technology,
University of Malaya,
50603 Kuala Lumpur,
MALAYSIA

Tel: 603-79676363

Fax: 603-79579249

zab@um.edu.my

ABSTRACT:

CASE tools have increasingly grown to be more and more important in software development as the awareness of their benefits become progressively dependent to software developers. Vendors are capitalizing on the new trend of software development where CASE tools are significantly utilized. In order to keep abreast with current CASE tools offerings will require software developers and users to be constantly searching for new software products or CASE tools on the web or other conventional media. This paper presents to the readers a web-based CASE tool that we have developed that can assist IT professionals, vendors, students and lecturers to share their knowledge and experience on CASE tools utilization, learn about new CASE tools and even purchase CASE tools.

KEYWORDS: CASE tools utilization and IT professionals.

1.0 INTRODUCTION

Computer Aided Software Engineering (CASE) tools encompass a collection of automated tools and method that assist software engineering in the phases of software development lifecycle [1]. The Software Engineering Institute at Carnegie Mellon University [2] refers to CASE tool as a computer-based product aimed at supporting one or more software engineering activities within a software development process. Software houses have experienced that by using CASE tools in their work they encounter an improvement in productivity, obtain better quality software, reduce cost in software development, enable software reuse and ability to support object oriented software development [3]. CASE tools have evolved from the period that it was first introduced in the 70s to support the ever-increasing sophistication of software requirement of the IT industry. In the early 80s, CASE tools were only able

to assist in documentation preparation and diagramming during the design phase of software development. In the mid-1980s CASE tools are able to perform automatic design analysis and check automated system information reposting. Then in the late 1980s, CASE tools are able to perform automatic code generation from design specifications, thus linking design automation and program automation [4]. In the early 1990s, CASE tools offer intelligent methodology drivers, habitable user interface and promote reusability. Programmers claim that when they use CASE tools in their work, they can; do coding faster, find more flexible ways of modifying and maintaining software, communicate better with end users and development team members, produce better quality and trusted software, remain undaunted by the tedious documentation phase as it can be generated automatically, they enjoy the powerful features that CASE tools can offer in consistency checking and CASE tools facilitate them to work in teams [5]. However, there are also some problems that tend to discourage software developers from using CASE tools. To begin with, CASE tools themselves are expensive and require an ongoing usage fees in terms of licensing. Using CASE tools require costly education and training. Some CASE tools are complex and will require a longer learning curve. Some of these CASE tools require the developers to have strong programming skills and knowledge of methodologies and notations. New programmers often find this a barrier to adopting a CASE tool [4]. CASE tools can also be categorized according to their functionalities. Some CASE tools can even support more than one phase of the system development life cycle. Categories of CASE tools include; editing tools, Programming tools, Verification and Validation tools, Configuration Management tools, Metrics and measurement tools, Project Management tools, Reengineering tools, Change Management tools, Documentation tools, Testing tools and even Planning tools[6, 7].

Students, lecturers, IT professionals and Vendors are the stakeholders in the area of CASE tools. Students are

interested to equip themselves with the skills and knowledge that will make them appealing to employers. Lecturers are interested to prepare students with the right CASE tools utilization skills so that universities/colleges are producing the industry with the right workforce. Vendors need to disseminate information on the latest and best CASE tools that they are trying to popularize. IT professionals (especially employers) need to know what CASE tools universities and colleges are teaching students so that can know what kind of graduates will be entering the job market and contribute positive suggestions on how to correct any mismatch between universities/colleges training programs and the industrial requirements. Therefore, we need a platform where this group of CASE tools users can discuss and share information. This realization has led us to develop a web-based system, which we have appropriately named Forum of CASE Tools, abbreviated to FOCT.

In the following sections we described the development of FOCT, starting with its objectives, design, software requirements, testing and display some snap shots of the system screens. Finally, we discuss some weaknesses of the system and future work to enhance the system.

2.0 FORUM OF CASE TOOLS - FOCT

Sharing knowledge is necessary for both IT staff and people in colleges and universities to shorten the gap between theory and practice. This system is to establish a platform for CASE tool users from IT organizations and universities in Malaysia. Through using this system, they can interact with each other and improve their skills in using CASE tools and also upgrade their knowledge on the current development of CASE tools.

2.1 SYSTEM OBJECTIVES

The main objective of the system is to provide a platform for its users to share knowledge and experience on CASE tools utilization and to complement each other's role in the utilization of CASE tools. This can be achieved by providing specific functions to each category of users.

- Students can participate in the on-line survey on the effectiveness of learning how to use CASE tools in their courses, provide information on their skills of CASE tools utilization so that potential employers (IT professionals) can find them easily, get feedback from IT professionals on their skills and knowledge of CASE tools utilization and learn more about new CASE tools.
- IT professionals can post comments and suggestions on the online survey results, CASE tools highlighted in the system, students

skills and knowledge on CASE tools utilization.

- Lecturers can view survey results, access links to CASE tools to update themselves with current development on CASE tools, read comments from IT professionals and news posted by other users.
- Vendors can add links to the CASE tools that they specialize in, view survey results, access links to CASE tools to update themselves with current development on CASE tools, read comments from IT professionals and news posted by other users.
- System administrators maintains the CASE tools and can view survey results, access links to CASE tools to update themselves with current development on CASE tools, read comments from IT professionals and news posted by other users.

2.2 SYSTEM DESIGN

The system is designed to cater for its five main groups of users and each group has its own password and enjoys different system functionalities based on the level of authority. A bird's eye view of the system is depicted in the context diagram, Figure 1.

2.3 SOFTWARE REQUIREMENTS

Software used in the development work is summarized in Table 1.

Table 1: Software used in the development of FOCT

Software	Description and purpose
Tomcat3.2	It is a web server for running JSP. The Jakarta Tomcat server is an open source, Java-based Web application container that was created to run servlet and JavaServerPage Web application [8]. It is more stable and equipped many features that a commercial web application container has.
Mysql	It is open-source and a very robust relational database. According to [9] "It provides speed and flexibility that no other database in its class can match". The researcher uses it to store the data from the five groups of people.
JDeveloper	It is used to write and compile java code in class files. It can support servlet and integrate with MySQL. In this project it has been used to write JavaBean.
Dreamweaver	It can be used to write JSP and HTML code. Besides that, it can also be used to design interfaces
JDK1.4	JDK is used to compile java code into class files and support Tomcat

Each of the user's facilities is described diagrammatically in a structure. As an example, we have included Figure 2, which shows the structure of the students' functional areas.

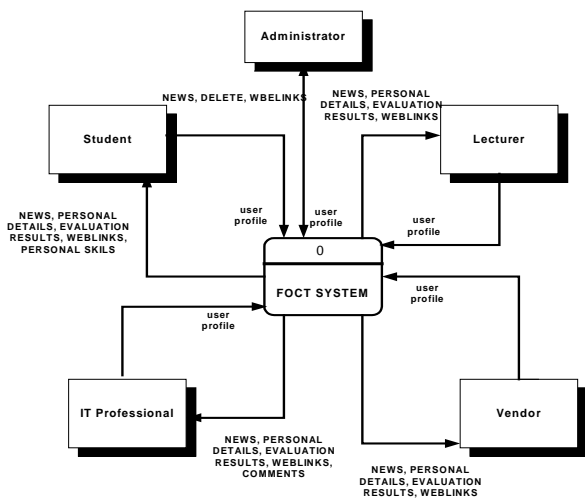


Figure 1: Context Diagram for the FOCT System

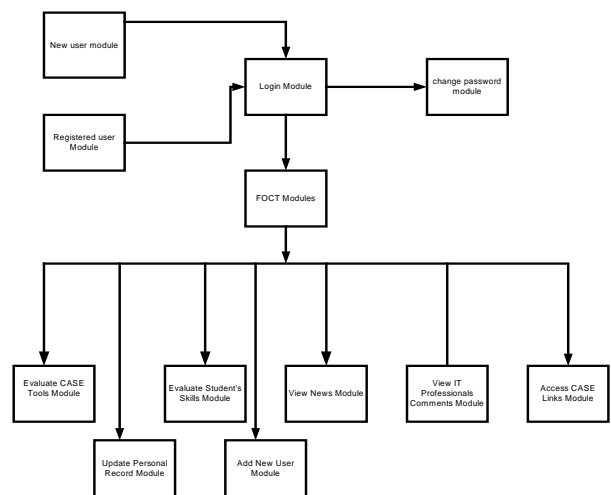


Figure 2: Students' Structure Chart

2.4 SYSTEM TESTING

Upon completion of the coding phase, we had rigorous testing of the system according to the recommendation [10]. We conducted unit testing, integration testing, system testing and end user testing. Feedbacks were used to improve the system further. Figure 3 to Figure 7 are some screen shots of FOCT.

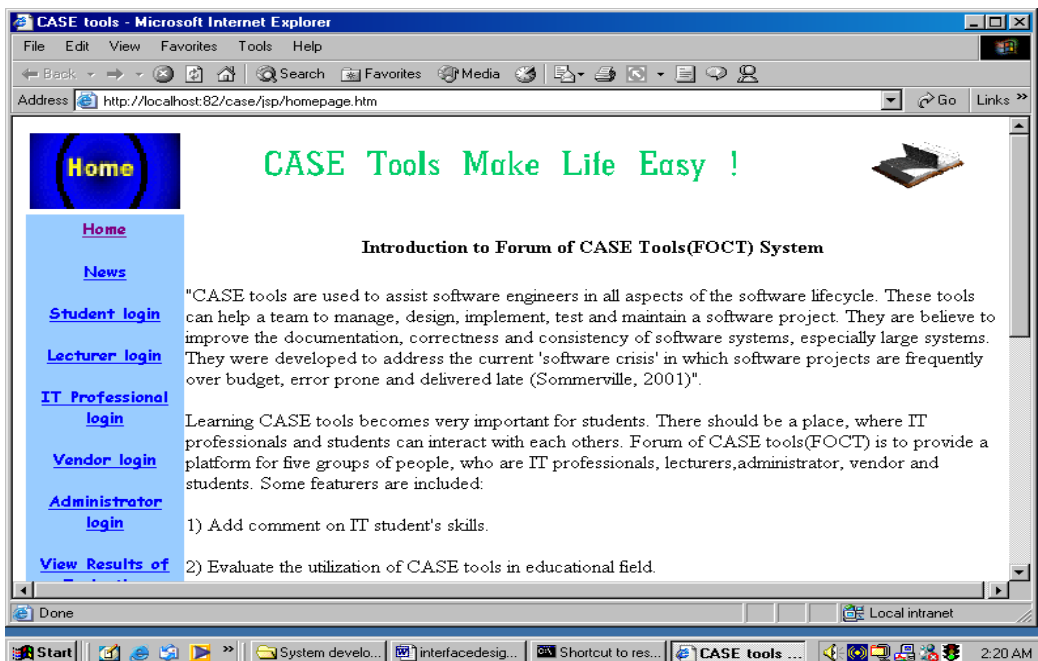


Figure 3: Homepage of FOCT

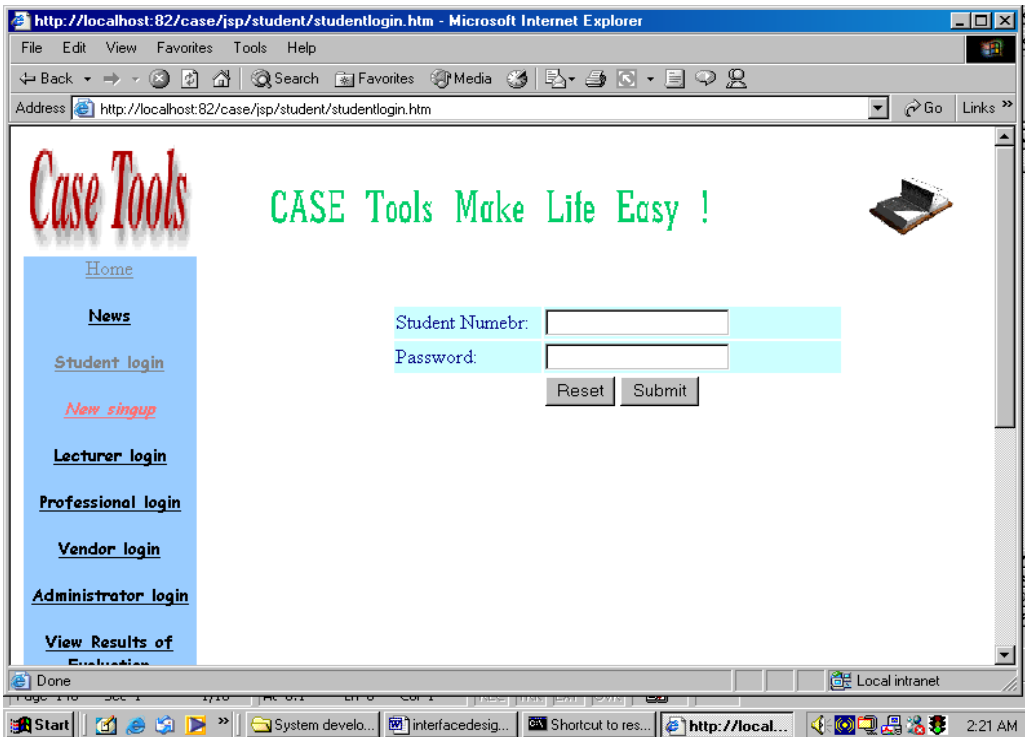


Figure 4: Student Login

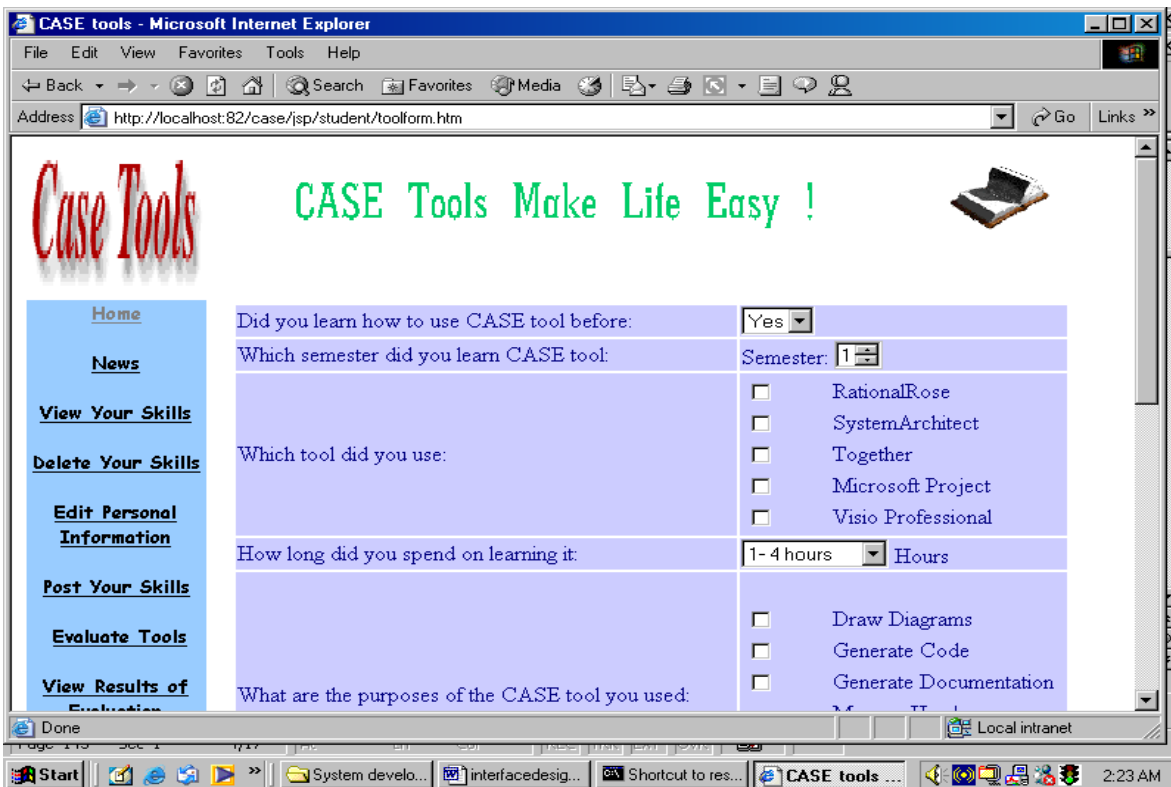


Figure 5: Online Students Survey

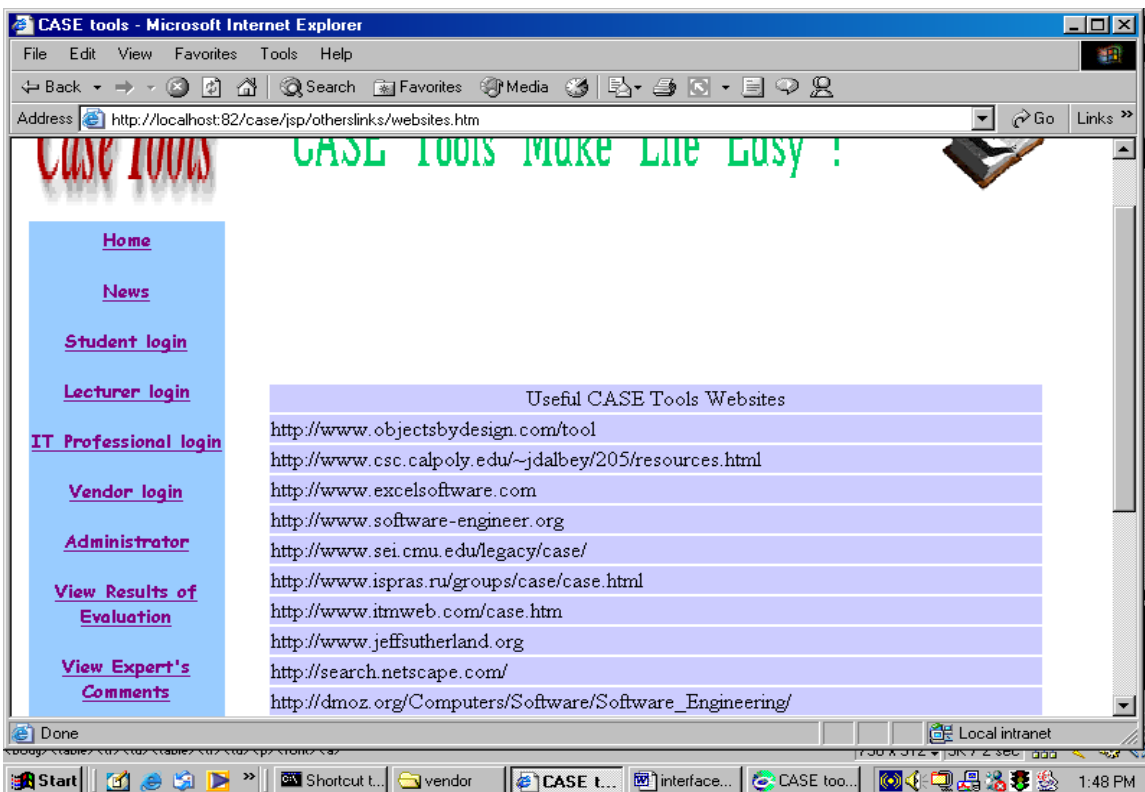


Figure 6: Links to CASE Tools Websites

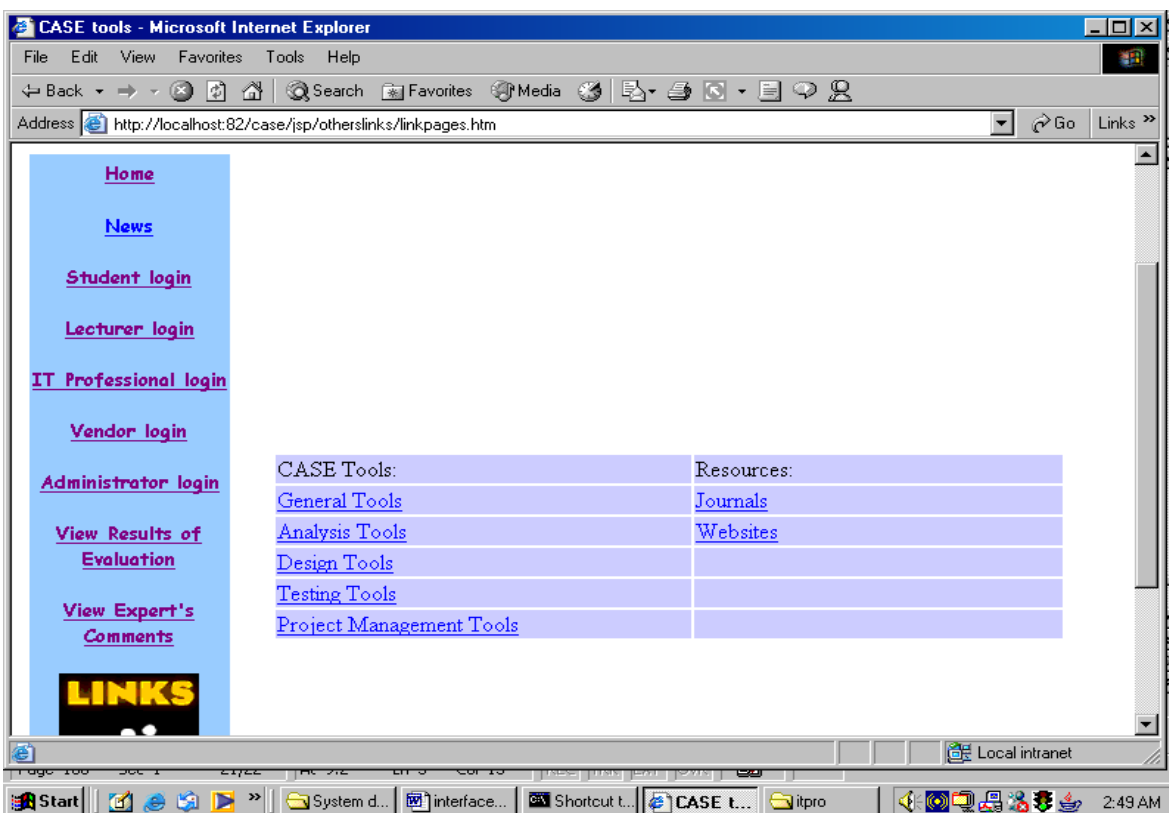


Figure 7: Category of CASE Tools

3.0 DISCUSSION AND CONCLUSION

When the system was ready three lecturers and five students were invited to test the systems and they gave favorable feedback on the systems. All of them agreed that the system is easy to use and beneficial in helping end users to learn more about CASE tools. However there are still some weaknesses that can be addressed to make FOCT better. Firstly, the information made available is still limited and to a certain extent can cater only for undergraduate students who are new to CASE tools. Postgraduate students and researcher need more information than what is currently available in the system. To overcome this drawback, links should be provided to a collection of conference proceedings and journal articles that are related to CASE tool. Secondly, the content of the website is too elementary for researchers in CASE tool industry. This limitation can be overcome by providing links to websites of software research institutes specializing in CASE tools developments. In this way, researchers can get more information on the current and future trends of CASE tools development. Thirdly, FOCT should provide a facility that can help users to purchase or try out CASE tools. This will help users to be linked with vendors directly. By providing these additional facilities, FOCT can be upgraded to be a one stop website which caters for every user needs on CASE tools.

Finally, we conclude that this first version of FOCT has achieved its main objective and that is to provide a platform where all parties can interact with each other to improve and share their experience on CASE tools utilization. The system is simple and straightforward to use and easily accepted by the end users.

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