

WIRELESS TICKETING APPLICATION USING J2ME AND SERVLET-JSP

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Abstract

Java 2 Micro Edition (J2ME) is a programming language which is aimed for wireless application. J2ME has several advantages than WAP technology. Those advantages are better graphical ability, platform-free, and ability to work on offline environment. In this paper we design and simulate a clien-server connection using Java programming language. This program is simulate wireless ticketing reservation (that can be accessed by a wireless phone or PDA in the real application). The programming language that used on the client side is J2ME, while on the server side is using Java Servlet Technology and Java Server Pages (JSP). Servlet is contained in the Tomcat web server, which is connecting to MySQL database server. Application is tested using three different simulator, those are Nokia 6310i simulator, Motorola i85s simulator and SonyEricsson P800 simulator.

1. INTRODUCTION

Communication technology has grown rapidly. Especially in wireless communication, it enable people to communicate each other, anytime and anywhere. Wireless communication technology has a broad application. It varies from a TV remote control, to a cellular phone. In fact, cellular phone technology is the most rapidly grown technology. Its costumer has grown beyond the fixed telephone customer.

Wireless telecommunication technology has driven application development that build on wireless device such as cellular phone or PDA. The application vary from business application, office application, or even games. Java2 Micro Edition (J2ME) is a programming language to be used on wireless platform. J2ME has several advantages than Wireless Application Protocol (WAP) that has emerge before. Those are a better graphics capability, platform-free, and the capability to run in off-line condition. Bellow is another Java language advantages :

- Java platform is secure; application code always executed on a virtual machine not in the hardware. Therefore if there is a malicious programs, the virtual machine will detect it.
- Java programming language can be used to develop a robust application; programmer doesn't have to worry about memory lack because there is a mechanism called exception to control it.
- Java platform has a high compatibility; one Java program code can be run on any platform (Windows, Linux, or Solaris)

In this paper, we design and simulate a client-server connection using Java programming language. It simulates wireless train ticketing application by a wireless client, such as cellular phone or PDA. At client-side we use J2ME programming language, while on the server-side we use Apache Tomcat as a web server that connected to MySQL database server by Java Servlet Technology and Java Server Pages (JSP) programming language.

2. CLIENT SIDE APPLICATION DESIGN

Our application is a wireless version of manual ticketing procedure. This application consists of six main page, those are :

- Cover page
- Login page; it contains user verification. User has to input a login name and a password.
- Train selection page
- Train information page; it contains such data as departure station, arrival station, departure time, arrival time, and ticket price.
- Available seat search page
- Available seat purchase page

Figure 1 show the application flowchart.

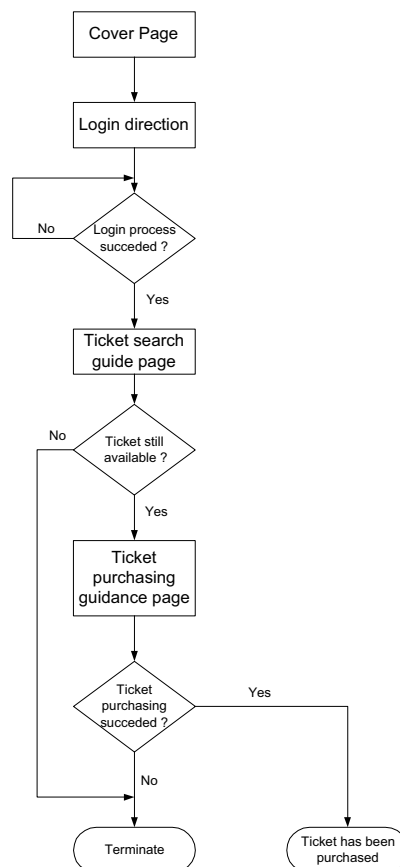


Figure 1 Client side application flowchart

3. SERVER SIDE APPLICATION DESIGN

Server side application consists of servlet and MySQL database. Servlet's function is to process the data requested by client. While the presentation function in client side is done by JSP (Java Server Pages). JSP file can show a page in the form of plain text or HTML.

To process different kind of request, we need a different servlet program. We make four different servlet programs. These program are use to verify login process, to process train ID request, to process available ticket, and to process ticket purchasing.

In database design, we make login database, train database and train ID database. Login database consist of user ID and password. Train database consist of train name, departure date, departure time, seat number. Train ID database consist of train number (unique number for each train departure).

Figure 2 shows application architecture in real implementation

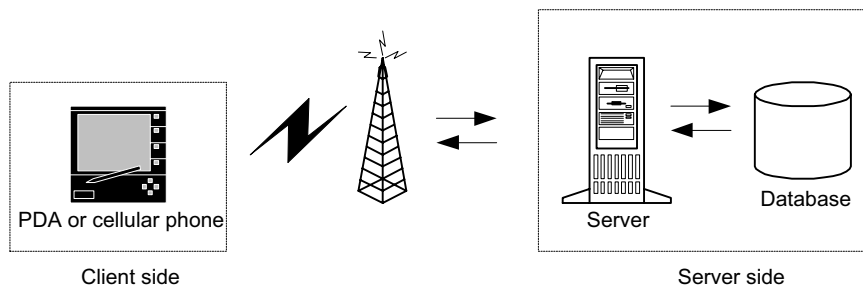


Figure 2 Application implementation in real environment

3.1 Servlet design

We make servlet with following components :

- Connection to database server
- Database driver declaration; we used driver type IV that downloadable freely on www.mysql.com.
- Capturing client sent parameter; this parameter used by servlet to search the database.
- Query process; we used SQL to process data query from database
- Query result process
- Send the result to client

3.2 Database design

In this paper, we make two different databases. The first is login database that contains users table which is a four column table (userid, password, firstname, lastname).

The second database is tiketdb with four tables those are keretaid, parahyangan, argogede, and lodaya.

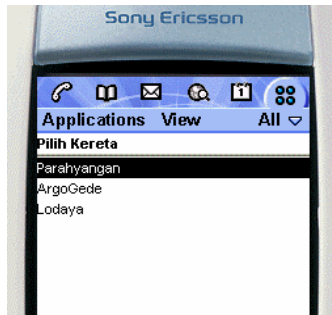
4. APPLICATION TESTING

We have tested the application developed in this research by different emulators. We used these particular emulators: Motorola i85s, Nokia 6310i, and SonyEricsson P800. Motorola i85s emulator

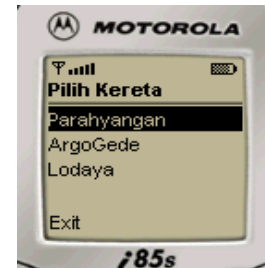
resides in SDK J2ME Wireless Toolkit 1.04 from SUN Microsystem. Nokia 6310i resides in Nokia Developer Suite for J2ME v.1.1 that can be downloaded freely at <http://forum.nokia.com>. SonyEricsson P800 emulator downloadable from www.sonyericsson.com and integrate it to J2ME Wireless Toolkit 1.04.



(a) Nokia 6310i



(b) Sony Ericsson P800



(c) Motorola i85s

Figure 3 Emulator test result

5. CONCLUSION AND FUTURE WORKS

5.1 Conclusion

- In this paper, we have developed wireless train ticketing application with end-to-end Java Programming language.
- Client side application developed by J2ME programming language
- Server side application developed by Servlet and JSP that process client query on database server MySQL
- The application have been emulated on various emulator successfully

5.2 Future works

Security issues are the main concern of wireless application development (especially concerning rapidly growth of *mobile-commerce*). So the source code for security aspect has to be developed to complete our application.

5. REFERENCES

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