Implementation and Design of PC Control System Using Mobile-Based Database

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Summary
This paper proposes the system to control computer system connecting to PC anytime and anywhere with mobile devices. This system is designed by mobile system based on .NET and database, and mobile remote control system for managing PC via the mobile connection that applies IP address and database. First of all, this paper implements the function to manage not general system action but multimedia (music, image and movie files) and Shutdown actions

Key words:
Mobile.

1. Introduction

The advance of wireless Internet brings the convenient usage of mobile device such as PDA, cell phone and portable PC for Internet. Accordingly, this paper proposes PC control system via wireless Internet for existing wire network users. However, user cannot use existing Internet environment due to the restrictions of mobile device display and difference of context. This paper first proposes multimedia and PC Shutdown action through the connection between mobile device and PC via wireless network, and web service for wire network. Proposed system implements management system using C#.NET, and provides functions that mobile device connects to server and controls client PC using ASP.NET of C# mobile component. Also, proposed system does not provides access permissions for client PC using P2P method as conventional wire and wireless network context, but can simply connect via database server between mobile environment and client PC for making up for the vulnerability of connection configuration and security

2 Wireless Internet

Wireless Internet (mobile Internet) is that user connects to the Internet using portable wireless terminal and data communication network, and uses web service. In other words, wireless Internet does not need cabling as wire Internet, and is not fixed but mobile. Accordingly, user uses the web service of fixed environment in wire Internet but web service of various environments in wireless Internet. Wireless Internet can provide more customized service and distinct information based on user mobility.

3 Design and implementation of PC control system

3.1 System overview

Proposed system consists of C/S program and database. Mobile device or web request the access permission to PC and connect to PC via middle database server. Proposed system uses IP address of PC as access method. After verifying log-in information, user can receive access permissions to client PC. Figure1 shows the system overview.

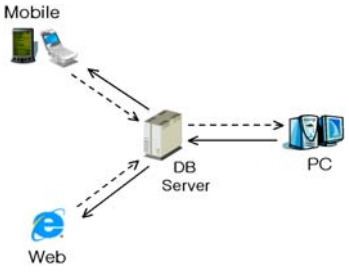

Fig. 1. PC control system overview

Firstly, figure2 shows the processing of proposed control system.

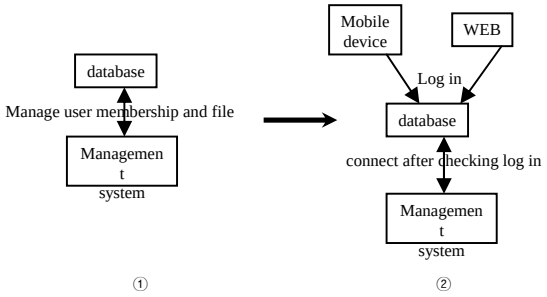

Fig. 2. Processing of user and file

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After system launching, proposed system manages user membership and file, and database system verifies log-in information through member table and activates program when mobile device or web request log-in.
Secondly, figure3 shows program operating.

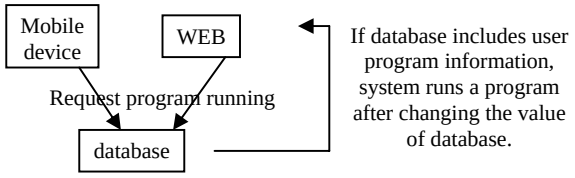
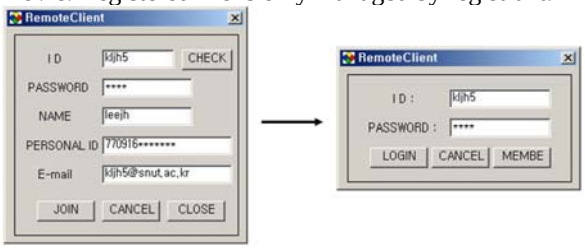
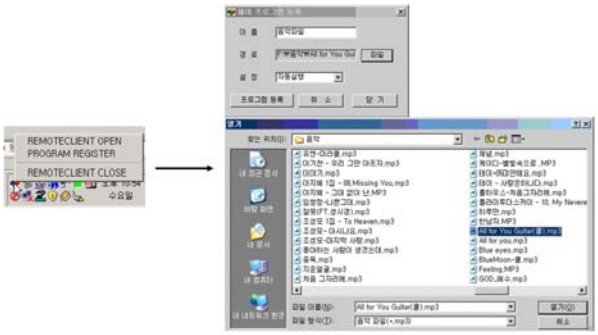


Fig. 3. Program operating

After the processing of figure2, program is activated and mobile device and web program can request program running. When requesting program, user can manage private program. Database receives the requested program list and run a program after converting 'st' column value of StartProgram table into 1.
Figure4 shows the process that system program is activated from user and file management. Figure4 (a) shows the process to register a user and log in after starting a system. Figure4 (b) shows that user can register his program when system is activated through user log in. User registers his program with the menu of system activation window. In program registration, user can register various types of files such as music, image and movie. Registered file is only managed by registrant.



(a) User register and log in



(b) Program activation and registration

Fig. 4. System processing

3.2 Management system

Management system is designed by C/S program. Proposed system designates management system to RemoteClient and checks database by log in information and an hour. Next, proposed system runs the program conformed to the data of database or exits system. Figure5 shows the components of RemoteClient file.

Fig. 5. RemoteClient component

3.3 WEB

WEB program is designated to RemoteClientWeb and is linked to database with dbcon.asp. Next, logincheck.asp checks ID and password at log in, and generates a session for log in step on web. Logout.asp removes a session. RemoteClientLogin.asp inputs ID and password for log in, and this information is passed to RemoteControl.asp. RemoteControl.asp shows the list of program and system managed by a user. User selects the menu of start and download, and sees the progressing of transmission. RemoteControl_ok.asp receives the program lists from RemoteControl.asp and converts the value of 'st' column of StartProgram table. RemoteSystemDown_ok.asp sets the value of systemdown column of systemDown table according to the value of RemoteControl.asp. Figure6 shows the components of RemoteClientWeb file.

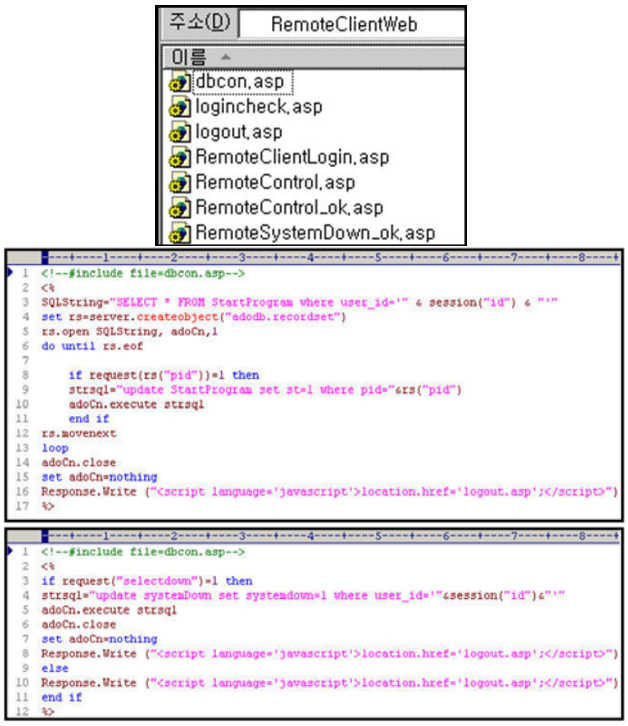


Fig. 6. RemoteClientWeb component

3.4 Mobile

Mobile program is designated to RemoteClientMobile. MoblieWebForm1.aspx.cs checks log in page, ID and password, and Form1.aspx.cs indicates the program and computer information to manage, and transmits the value. SystemStart_ok.aspx.cs starts a program with the value from From1.aspx. This page is for system off. Figure7 shows the components of RemoteClientMobile file.

Fig. 7. RemoteClientMobile component

3.5 Database

The name of DB is RemoteControl, usertbl of tables includes user information and StartProgram does program information. Database system runs a program according to the value of 'st' in table. systemDown is a table to support system off and can exit the system with ID and the value of column as systemdown. Database can manage private program with *user_id. Figure8 shows database table.

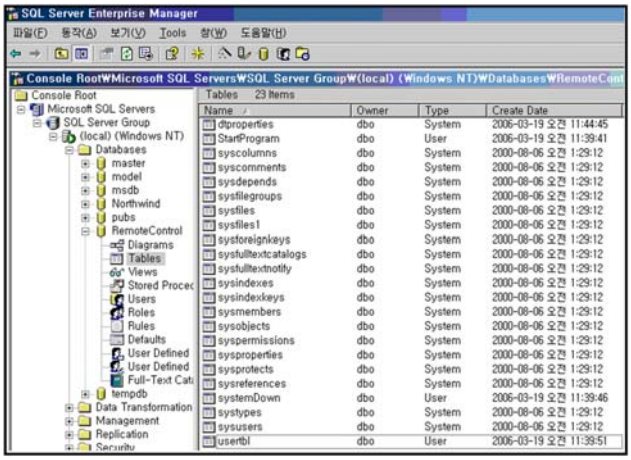
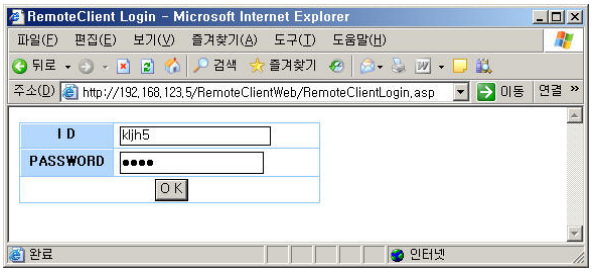


Fig. 8. Database table

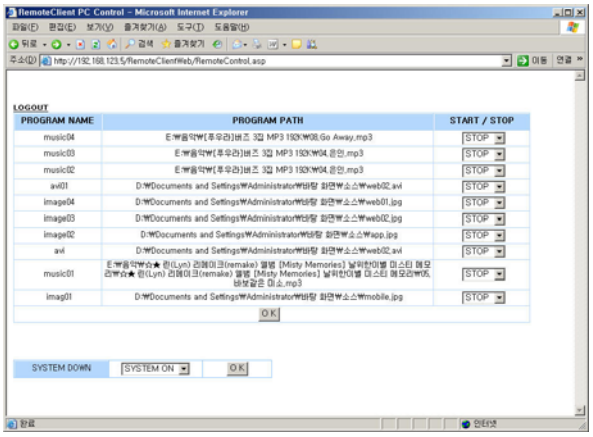
3.6 Result of running

PC control system need to install the management system to user computer after running RemoteClient.exe as execution files in administrator PC. After this, user can connect via mobile device and web and manage the client PC. Figure9 shows connection method and running

window on a web. To connect to database server, user must input the address including IP of client on address window as figure9 (a). We input the address including IP address and run it in running window for a test. Figure9 (b) shows a window after log in. This window can run a program and control Shutdown.



(a) Window for entering an address and log in on the web



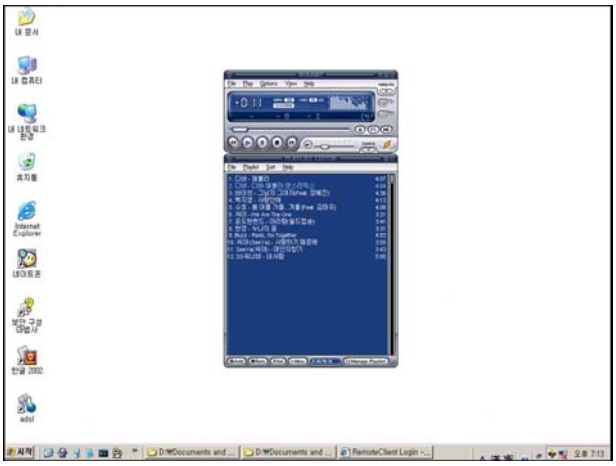
(b) Program managing window after user log in

Fig. 9. Web connection and control

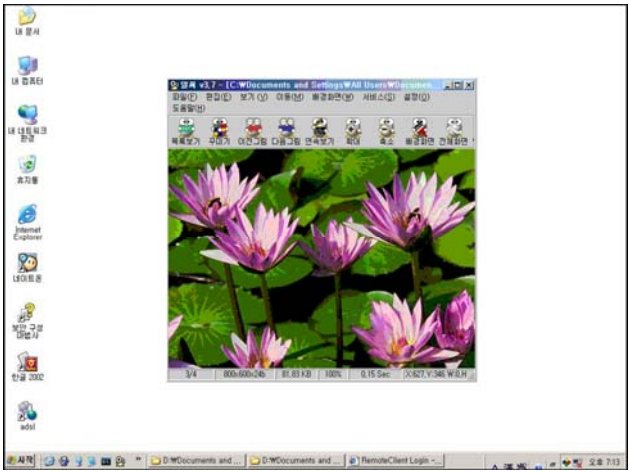
The connection method of mobile device is similar to the method of web. User must enter an address including IP of client on address window via mobile device as the connection method of web. Figure10 shows the running screen of mobile device. To connect to database server from mobile device, proposed system needs to perform registered program and system Shutdown function after log in.

Fig. 10. Connection and control in mobile device

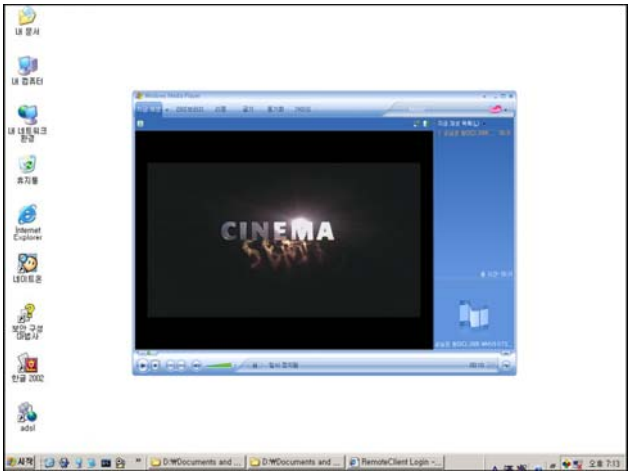
After user operation control, the desired work runs. Figure11 shows the running window of multimedia. Firstly, if user runs music file, system replays music file using music player (Winamp) as figure11 (a). Secondly, proposed system reproduces the image file using image viewer (ALSee) as figure11 (b). Thirdly, proposed system can replay the registered movie file using movie player (Windows Media Player) as figure11 (c)



(a) Running window for music file



(b) Running window for image file



(c) Running window for movie file

Fig. 11. Running window for multimedia

4 Conclusion

This paper proposes new method to connect to client PC using mobile device via database server. Also, this paper provides the method based on web technology, so proposed system is very easy to manage remote PC (multimedia)

However, proposed system implements only two control methods of multimedia and shutdown. Accordingly, we need to support more various PC control methods in the future. Also, we need to introduce the method to couple with PC through the process supporting communication program of each mobile device for connecting to various mobile devices.

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