Seznam příloh

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This work is in developing applications for mobile phones that use the values displayed on the touch screen simply displays the current status of the remote device. Increased comfort is achieved by visualization applications by using components created. Processing and easy-to-use application that is currently designed for GSM communicator GD-06 Allegro is facilitated by a remote control device. The second part is exactly the opposite functional application that is portable PDA. The application simulates a GSM communicator, and acts as a remote device. Both applications are designed and constructed for the platform .NET Compact Framework.

1. Introduction

With the ever expanding market for PDAs and numerous uses, there are many ways to communicate between devices. PDA may communicate only among themselves but also with remote devices and GSM communicators. Communication skills are using SMS, MMS, GPRS, etc.

By developing applications using .NET Compact Framework, you can use many features of the PDA. We also have a great opportunity to use graphical environment that allows us the platform. The visualization and graphical components are in the final stage of the application easily and quickly understand and easy to use. Using the generated application can communicate with GSM communicators. Accordingly, for what purpose and with what protocol the application works, you can specify any process.

The subject of my thesis is the first part of a single universal application for communication and remote control devices. According to the assignment to work with commercial GSM communicator, GD-06 Allegro. With graphics applications processed quickly and easily communicate via SMS.

The second part will deal with creating a reverse application that simulates a GSM communicator and PDA, which should be started creating an application, is connected controlled device (heating).

PDA acronym comes from the English connection Personal Digital Assistant, which translates to a personal digital assistant. Control is implemented largely through the touch screen depending on design, either with a stylus with the stylus or your fingertips on the hand. Currently in use as a PDA operating systems: Windows Mobile, Palm OS, Symbian, OS and Linux, Android.

In the early development of electronic helpers formed a data bank, which served to organize contacts and short notes. The development of other technologies and communications PDA. The first models can be classified among the multifunctional calculators or electronic diaries, which consisted of a small keypad, monochrome display and a very small memory. Over time, the incremented internal memory and later placed at the external memory card. The displays have been enlarged and moved to the monochrome and color touch. In addition, developers have increased the performance of the processor and adding a variety of communication options. As one of the first option was infrared, then the Bluetooth, Wi-Fi, and of course the GSM communication.
1. Problem Definition

In this chapter, the definitions of each application. Each section deals with analysis of how applications should operate and what is the proposal for their construction.

1.1. Applications for mobile devices that perform remote device monitoring

Application is developed in an environment developed by Microsoft Visual Studio .NET Compact Framework. It communicates via text message. The application was created by award used components from Mr. Čajka.

Communication solutions in the application via SMS, it seemed to be the simplest way for this award and sufficient. The aim of a remote control device using SMS directly from the proposed application process facilitates communication and eliminates the problem of communicating directly by typing text messages. The application was initially dealt only with the basic toolbox menu in Visual Studio C#. Over development application has been modified to operate with components. The use of components in the application increases the overall aesthetic impression easier and faster with the application. One of offering solutions to control its use directly from your computer. The problem occurs when the management needs of GSM communicator and not a PC. Control directly from a PC is impractical from the grounds, it must be connected device that supports sending data to the GSM network or sent over the internet.

1.2. Applications for mobile devices replacing the GSM communicator

The application is created in the same environment as the application driver. Building was very similar. It is also true for the visual appearance. Embedded graphics are used from the previous applications and their functionality is the same.

In cases where we do not have any GSM communicator, offers the possibility of using a mobile phone or PDA running WM. Application to replace the GSM communicator has the advantage that we are limited in number and outputs can be programmed immense amount of features. We are only limited possibilities for mobile devices. In terms of the cost of the acquisition of mobile phone applications cheaper than buying a GSM communicator.

The disadvantage of using this method of control and management is that the GSM communicator stable than WM freezes and its reliability is high. For mobile devices, problems arise with freezing. Occasionally, it may collapse running application or communication between the connected elements.
2. **New Solution**

The new solution shows how applications are created and their description of their functionality is outlined. The elements of the display, has its own function serving as one of the important processes.

2.1. **Applications for mobile devices that perform remote device monitoring**

When you start, the main area where the most controls. At the same time you can also see the last known state of the remote device. To determine the status of the state of the mouse click and press the green button Allegro in the upper left. Within a short time directly on the PDA screen changes the values and views of individual parts. In the upper right of the display shows the current value of temperature at the remote device is installed. Under the button Allegro is a switch to change between manual and automatic control of heating type. In the bottom left of the screen you will find a blue block, which serves as a demonstration of the remote terminal device. Each terminal is identified as P1 – 6. The formation was calculated with the fact that more terminals in a controlled facility will be. In the case of controlling another device that has multiple terminals, such applications would be insufficient.

![Picture 1 - Original and contemporary look of the application](image)
2.2. Applications for mobile devices replacing the GSM communicator

This application is designed for applications like remote control device. Its functionality is replaced by the GSM communicator GD-06 Allegro, because the functional commands, which respond to, are written for this device. Construction elements (components) are the same as used in the control application. Allegro component, which used to read incoming SMS and send commands is remodeled and named as SMS, see further description. When the command comes from a telephone number that is set, commands will evaluate applications and make all operations. Set the visualization to the desired value and sends back an SMS with the values in the phone. The added component thermometer shows the temperature value in the location of the PDA. In this solution, the application generates the temperature only through the algorithm and displayed on your phone using the added component thermometer and LED displays, showing the exact value of temperature.

Picture 2 - Application of replacing the GSM communicator
2.3. Custom made components for remote control

Allegro component is purely to communicate with a remote device, which was delivered for testing. By creating this component to achieve greater compatibility, while simplifying and shortening the main code. Using global variables to communicate with the application component Allegro. Creating new components can communicate with other devices and other peripherals with than just using SMS.

This version replaces the original terminal solution using the checkboxes. Its functionality is very simple. To turn on or off the terminal, just press the gray circle. When you turn green, it means that the terminal is turned on. If we act the same again, will turn gray button and thus turns off the terminal. Using global variables to communicate with other components or the main application. It depends on which point we call these variables. The programming terminal components were created "event", an event with which we work. These events serve as a single click on the dots. Defining the "click" to work on individual terminals, made using the handle and classes. The background of this component is called by the code, but the individual wheels are embedded picture boxes, which when clicked changes the picture.

The thermometer component is used to demonstrate the actual measured temperature values in the neighborhood. After receiving the command to turn on or off the heating system or an automatic temperature control component perform the appropriate command. If the component signal as 3 °C and received SMS shows Order "switch a relay (turn on the heater), the timer starts, which is used to slowly add the value of temperature on the thermometer. Change the appearance and function of change in level is formed by overlapping images. The thermometer has a range from 0 to 30 °C.
3. GSM Communicator GD-06 Allegro

Allegro device functions as multi-channel universal GSM equipment. Control is carried out via SMS, via the Internet, through GPRS or by dialing the specified telephone number. Information about the current state can be sent to up to eight phone numbers at once. If you connect the hands free kit and then call the number and dialer can make calls. This product is intended for indoor use. The best location is where the greatest signal strength.

4. Conclusions

At the beginning I was creating this work environment, discussing the theory offered by Microsoft. Description of individual chapters shows us what the options are different types of programming environments. The theoretical analysis of communication via SMS, MMS and GPRS readers were shown a fundamental aspect of the issues relating to communications. As already mentioned in the previous chapter, it is possible to get a full picture of how to program these types of communications. At first glance you can easily conclude that programming of communication via SMS is simple. This kind of sending and receiving data, it seems appropriate in this application, but we need to consider how and what data will be sent and determines the type of communication.

In C# I wrote an application that is used to control existing remote device allegro GD-06, via SMS. Application was made up of several components, both created in the previous years; I've got available, as well as components that I had myself created. Its form is done so that compatible and expandable at any time by adding any new components that will operate as another type of communication.

Design of applications that perform remote device is shown how the possible replacement of GSM communicator. Create an application does not function as a communicator, because it is not connected to any device using a mobile phone. This solution is a simulator of the GSM communicator GD-06 Allegro. If necessary, the real recovery is possible by crediting a relatively simple code to define the connection with the device.

This theme opens up many more issues and sub issues, which would be a good deal further, and new research would certainly bring us a variety of useful knowledge.