ANDROID DEVELOPMENT OF MOBILE APPLICATION FOR DISTANCE CONTROLLING OF THE CAR SECURITY SYSTEM

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Abstract: - applications on the Android platform, which help car owners to control their cars remotely is described. It can operateboth via Bluetooth and GSM/GPRS networks. For instance, is brought up details of an applicationwhich allows opening and closing car locks and trunk, turning on / off alarm management using Android OSsmartphone .
Key-Words:- car remote monitoring system,Arduino UNO, GSM/GPRS.

1 Introduction

Inventions which seemed unrealistic in the past are coming true in daily life. Emergence of Smart phones stimulated a number of new directions of software development that relate to automobile branch. The set of functions of carsmonitoring could be operated remotely by special application [1].
There are lots of new or enhanced gadgets in market which provide a set of various security and controlling functions. Among them of course, GPS navigators, MP3 players, SmartPhones, notebooks, tablets, etc…

Very interesting and convenient fact: Using GSM / GPRS [2]-[6] which works with Arduino and having installed a special application, users will have an opportunity to get the information about the location and general conditions of the car in details. The car engine could be started up or even a luggage carrier could be opened without being dependent on the geographical location of the car owner. In critical cases, again, via phone it is possible to block the car. After the block, the system will startemergency signal, including a siren and blinking as well. The car blocks any operations, as a result.

With the development of mobile devices over the past decade, the integration of mobile devices and applications in various industries and technology has increased.

Using mobile devices and applications have the following advantages: (1) they are relatively easyto use and not expensive, (2) they save time and other important recourses (effectiveness), (3) manuals and demonstration of the application are not complicated.

We'll present here an application which allows control an alarm system of a car and based on the development of information technology, programming technology and mechanical engineering technology.

2 Problem formulation

In this section management of car, using a cell phone is considered. It seems that typicalproperties of modern smartphones(permanent communication, internet access and many software applications) are ideal for using them as automotive receivers. The idea of the standard is to ensure that all cars can be connected to smartphone, display information from them and manage smartphones with touch screen. To this end, special developed applications allow devices to connect in any way using standard protocols - both cable and wireless. In the near future, creation of a universal opportunity to combine into a single device via wireless network Wi-Fi which will work constantly in the car is planned. Even today, special configuration which allows remote control of the machine with any gadget (including mobile phone) is thought by enormous

companies. Furthermore, integration of this technology into existing models is planned. The main features are: control door locks, heating, lighting,air conditioning. In addition, car owners will be able to monitorthe available amount of the gasoline. As for an electric car, information about the battery could be received as well.

3 Problem solution

Security- is one of the most important and relevant aspects of both the information and the social environment. The modern protection system of cars requires the presence of alarm, Internet notification, identification, encryption, etc.

By using mobile device as identification, generating and modulating device of digital signals users will have an opportunity to improve the system that ensure safety of the car.

For instance, consider a remote control alarm of Mazda 626 car model. For the experiments and verification of program code was constructed an identical model shown in Figure 1

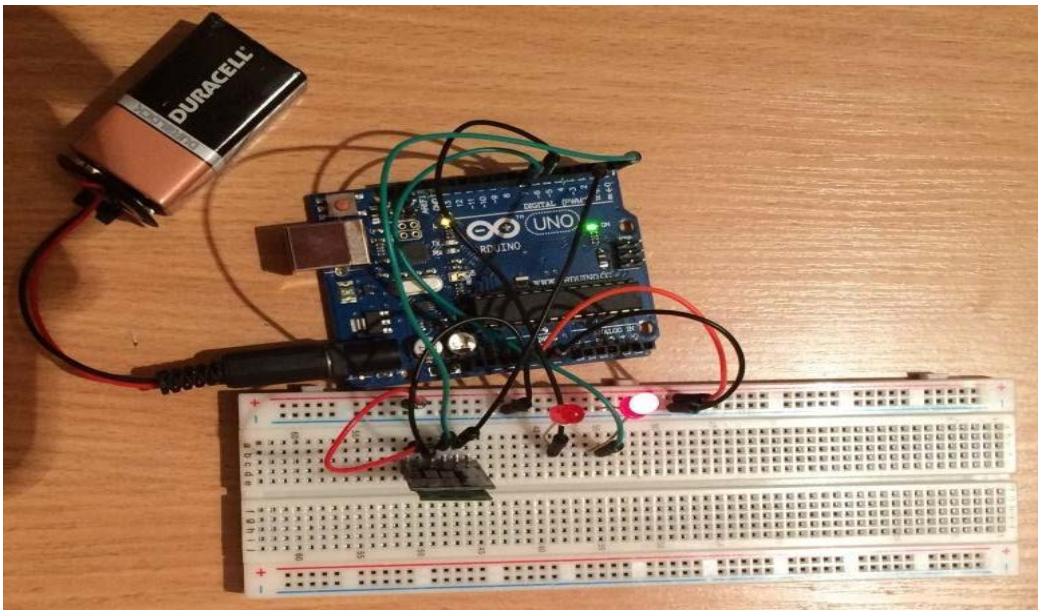
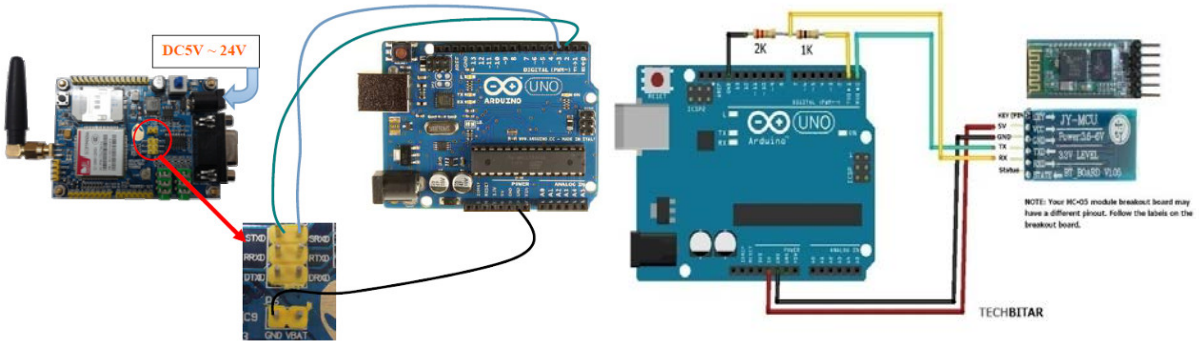


Figure 1

As seen in Figure 1, the main part is the Arduino UNO board

The microcontroller [9] is used in many control systems for several advantages such as the flexibility, ease of use, relatively small cost and size. The microcontroller can be programmed at any time which makes it more flexible. Also, the microcontrollers are small in size and cost efficient compared to other controller technology. In this paper, Arduino UNO microcontroller is used as it is shown in figure 2.



a) b)

Figure 2 (a, b)- connection scheme Arduino UNO with Bluetooth HC 06 and connection scheme Arduino UNO with GSM module which is shown in Figure 2

The code for the Arduino UNO board and Android application, is presented in Table1.

Table 1

File Edit Sketch Tools Help

arduino63_2

```
char incomingByte;  // входящие данные
int  LED = 12;      // LED подключен к 12 пинуі
int ledpin=13;

void setup() {
  Serial.begin(9600); // инициализация порта
  pinMode(LED, OUTPUT);

}

void loop() {
  if (Serial.available() > 0) {  //если пришли данные
    incomingByte = Serial.read(); // считываем байт
    if(incomingByte == '0') {
       digitalWrite(LED, LOW);  // если 1, то выключаем LED
        }
    if(incomingByte == '1') {
       digitalWrite(LED, HIGH); // если 0, то включаем LED
        }

        if(incomingByte == '2') {
       digitalWrite(ledpin,HIGH);  // если 1, то выключаем LED
        }
    if(incomingByte == '3') {
       digitalWrite(ledpin,LOW); // если 0, то включаем LED
        }

  }
```

GSM/GPRS with Arduino

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3.1 The principle of operation

Our application will help you to open / close the lock and the trunk, turn on / off and control the alarm system, open / close window, by GPS navigation to track a car and it works using the Arduino board via Bluetooth and GSM module.

3.2 Screenshot

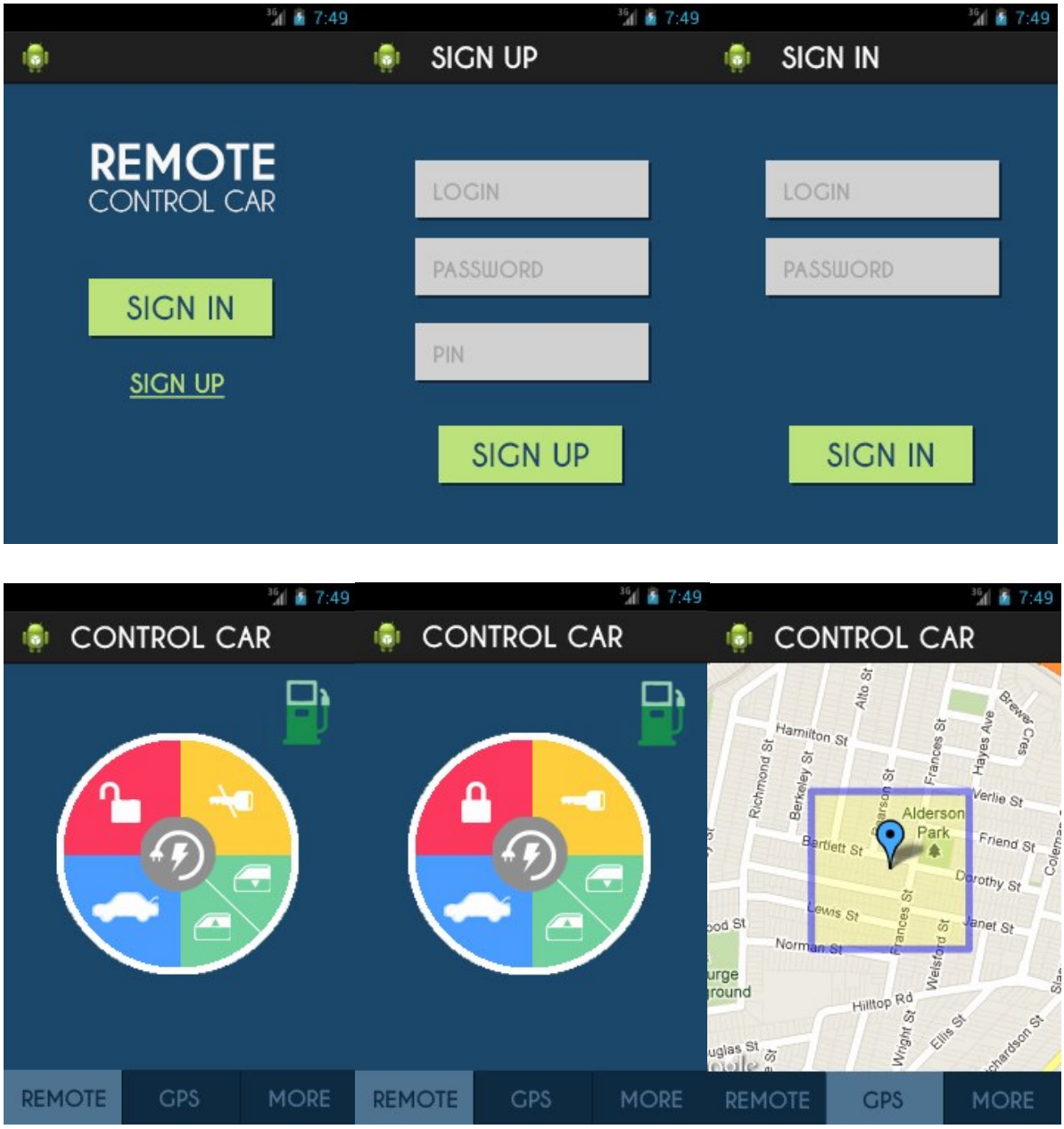

Figure 3, Screenshot of mobile application

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4 Discussion

Arduino - is an electronic designer and convenient system for rapid development of high-grade multi-functional electronic devices. The hardware computing platform consists of a simple microcontroller board and a development environment for user-friendly language Processing / Wiring. To date, Arduino is a breakthrough in the field of development of amateur devices. Created and accessible set of shield-s connected to the motherboard to extend the functionality. The remote control system using smart devices gives a lot of opportunities [10]. In the future there is a plan to construct smart house, which will work by GSM / GPRS [7]. And it will be work With Mobile application.

5 Conclusion

The proposed application represents a low cost automotive localizing system using Bluetooth hc 06 and Arduino UNO to contact services for car localization. Additionally, other parameters can be transmitted to inform the owner about car theft etc. This system can be connected to Android operating system for settings or for using as a navigation system. In the near future, by using the GPRS transmission, the presented system can realize car tracking function, together with automobile parameters and engine monitoring and alarm event signaling.

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