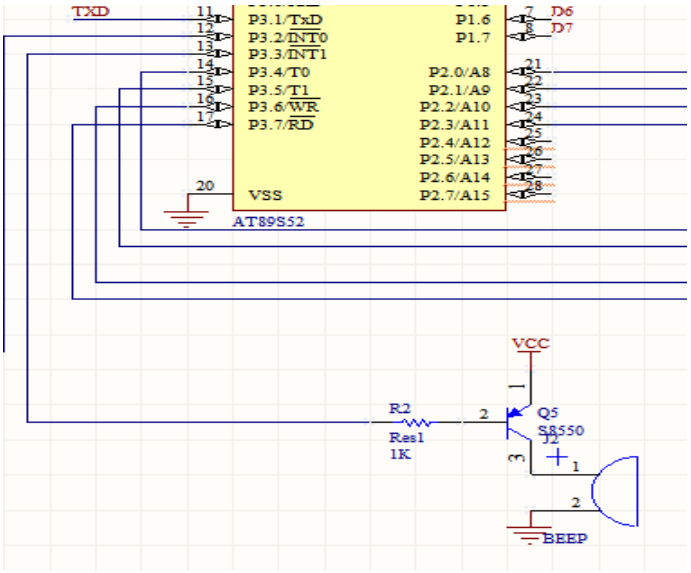

Figure 7: Connection diagram of alarm circuit and main control IO

3. SYSTEM SOFTWARE DESIGN

When the power is on, some components of the system need to be initialized before they can start running properly [9]. The temperature module starts temperature measurement, only when the data reaches a dangerous value (threshold value, the system set up the dangerous temperature is 32 degrees Celsius), the buzzer will alarm; similarly, the oxygen concentration reached the dangerous value (23%), the system will alarm. Because the button control is used, when the left shows 0, the temperature is measured. When the left side shows 1, the oxygen concentration is measured [10]. The measured temperature and oxygen concentration will be displayed on the display screen, no matter whether the system alarms. As shown in Figure 8, the main program flow chart.

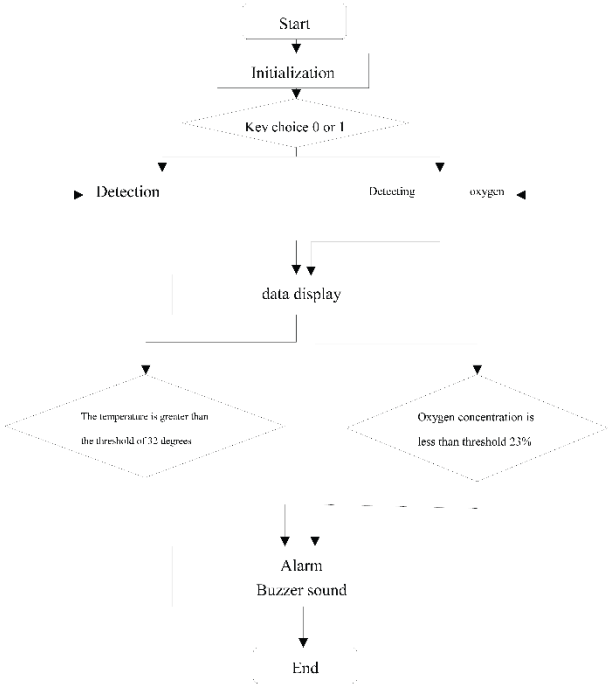

Figure 8: Flow chart of main program

4. SIMULATION DEBUGGING

The design will use Proteus for simulation of the design. It is a EDA tool software, powerful, can be simulated on the market a variety of commonly used mainstream microcontroller. It can also be programmed directly on a schematic based virtual prototype, followed by display and output, to see the effect of input and output after operation. And then with the system configuration of the virtual logic analyzer, oscilloscope and so on, Proteus established a complete electronic design and development environment. After running on the Proteus, you can carry out the simulation test of the vehicle risk warning device system, as shown in figure 9. After power on, press start / stop button S5 to start work. From left to right, the first button, S6, select "1" to measure the oxygen concentration, if less than 23%, the system alarm, concentration is simulated by a potentiometer, the 0-5V outputs are simulated 0%-100% respectively; The second buttons S4 select "0", that means temperature measurement. If more than 32 degrees, centigrade system alarms.

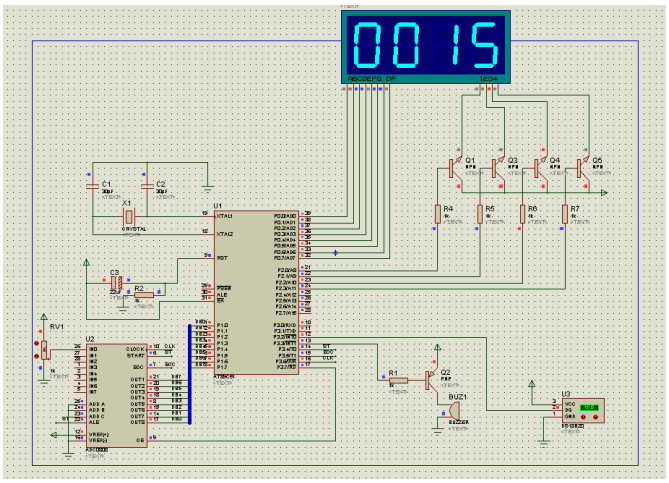

Figure 9: Simulation of vehicle danger warning device

5. CONCLUSION

This design mainly by the temperature monitoring module and oxygen concentration monitoring module two parts and the alarm and display of two parts, etc., after simulation, basically can complete the alarm task, in real life has very important value.

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