HARDWARE

List of Hardware Components

COMPONENTS	QUANTITY	COST PER ITEM(RS)
LPC2148	1	2000
Motor Driver	1	341
DC Motor	1	130
LED (Green)	1	50
LED (Red)	1	59
Buzzer	1	59
Keypad (4x4)	1	50
LCD (16x2)	1	88

ARM-7 LPC 2148 Microcontroller

This is a brief description of LPC2148.

The microcontroller is responsible for the detection and polling of the status of the peripheral. The ARM processor core is the key component of many successful 32-bit embedded systems widely used in mobile phones.

Technical Specifications of ARM7 LPC2148:

1. It is 16 or 32 bit ARM 7 family-based microcontrollers and is available in the market in small packages such as LQFP64.
2. Its programming time is 1 millisecond for 256 bytes and 400 milliseconds for erasing the full chip data.
3. It is used on-chip bootloader software during the ISP (in-system programming) and IAP (in application programming)
4. It has 8 kB to 40 KB on-chip static RAM and 32 kB to 512 kB on-chip flash memory.

5. It offers a high-speed operation at frequency 60 MHz with a wide range of interfaces of almost 128 bits.
6. LP2148 has clock input with 32 K Hz frequency and low power RTC (real-time clock).
7. It has an embedded ICE RT and embedded trace interface which offers the tracing of instruction execution with high speed with real-time debugging.
8. It offers a changeable output with a 10 bit DAC(digital to analog converter).
9. This LQFP64 small package also has 5 volts input-output pins for any general purposes.
10. For counting the external events it has two 32 bit timers, a watchdog timer, and a PWM unit.
11. LPC2148 offers the changeable input with 10 bit ADC (analog to digital converter) with very conversion time such as 2.44μs / channel.
12. The modes, which are used for power conversion are called idle and power down.
13. It has several serial interfaces such as two 12C buses, two 16C550 UARTs with 400 Kbit speed.
14. It has a 1 MHz to 25 MHz on-chip incorporated oscillator which works as an exterior crystal.
15. It also has individual enable or disable peripheral function and peripheral SLK scaling for extra power optimization.

LCD

The LCD is an acronym for Liquid Crystal Display that is used here is 16x2 alphanumeric Liquid Crystal Display (LCD) which means it can display alphabets along with numbers on 2 lines each containing 16 characters. It is used to show the password entered and the status of the password. It can also display the various options and all the readings that have been stored in the EEPROM.

KEYPAD

A Panel is used in the door locking system, designed to enter the password. We use a 12-button numeric keypad, similar to what we might find on a telephone. This keypad has three columns and a four-row. Pressing a button will short one of the row outputs to one of the column outputs.

DC MOTOR

An electric motor operated by DC (direct current) is known as a DC motor. A DC motor converts DC electrical energy into mechanical energy. When a current-carrying conductor is placed in a magnetic field, it experiences a torque and has a tendency to move.

MOTOR DRIVER

L293D IC is a typical Motor Driver IC that allows the DC motor to drive in any direction. This IC consists of 16-pins which are used to control a set of two DC motors instantaneously in any direction. It means, by using an L293D IC we can control two DC motors. As well, this IC can drive small and quiet big motors.