INDUSTRIAL LOADS CONTROL AND SECURITY SYSTEM

AIM:

Design and development of Industrial loads control and security system with GSM using Arduino.

PURPOSE:

In industries, there will be various loads to be operated and these loads are to be operated at some specific intervals according to our requirements and also based on the device constraints. For these purposes, a person should be employed to monitor the status of the loads. But there may be chances that the person may forget to operate these loads. And also it is not an easy task for a person to operate these loads manually as these loads run with high currents and high power consumption. This project gives the best solution for electrical power wastage. Also the manual operation is completely eliminated. Some loads produce heat when then runs more time. Providing fire security system to loads is very helpful. This project is implemented on wireless technology. One of wireless communication system is GSM as it is very cheap and very easy to implement. Here we have implemented industrial loads control and security system with GSM.

DESCRIPTION:

This project includes GSM (Sim800c) module, which is connected to Arduino through UART interface. Three loads connected to Arduino digital IO pins which are light, fan and motor respectively through relays. Fire sensor connected to Arduino digital IO pin.

WORKING:

User can control loads through SMS. Arduino reads SMS commands and based on command Arduino controls loads accordingly. When fire sensor activates SMS will be send to registered mobile number.

Buzzer sound will come when fire sensor gets activated. Loads status and fire sensor sensor status displayed on LCD.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
GSM	:	SIM800C
Light	:	AC 230V
Fan	:	DC 12V
Motor	:	DC 5V/12V
Fire sensor	:	IR type
Buzzer	:	5V DC
Relay	:	12v DC Coil type
Power Source	:	12v 2 amp Adaptor

SOFTWARE:
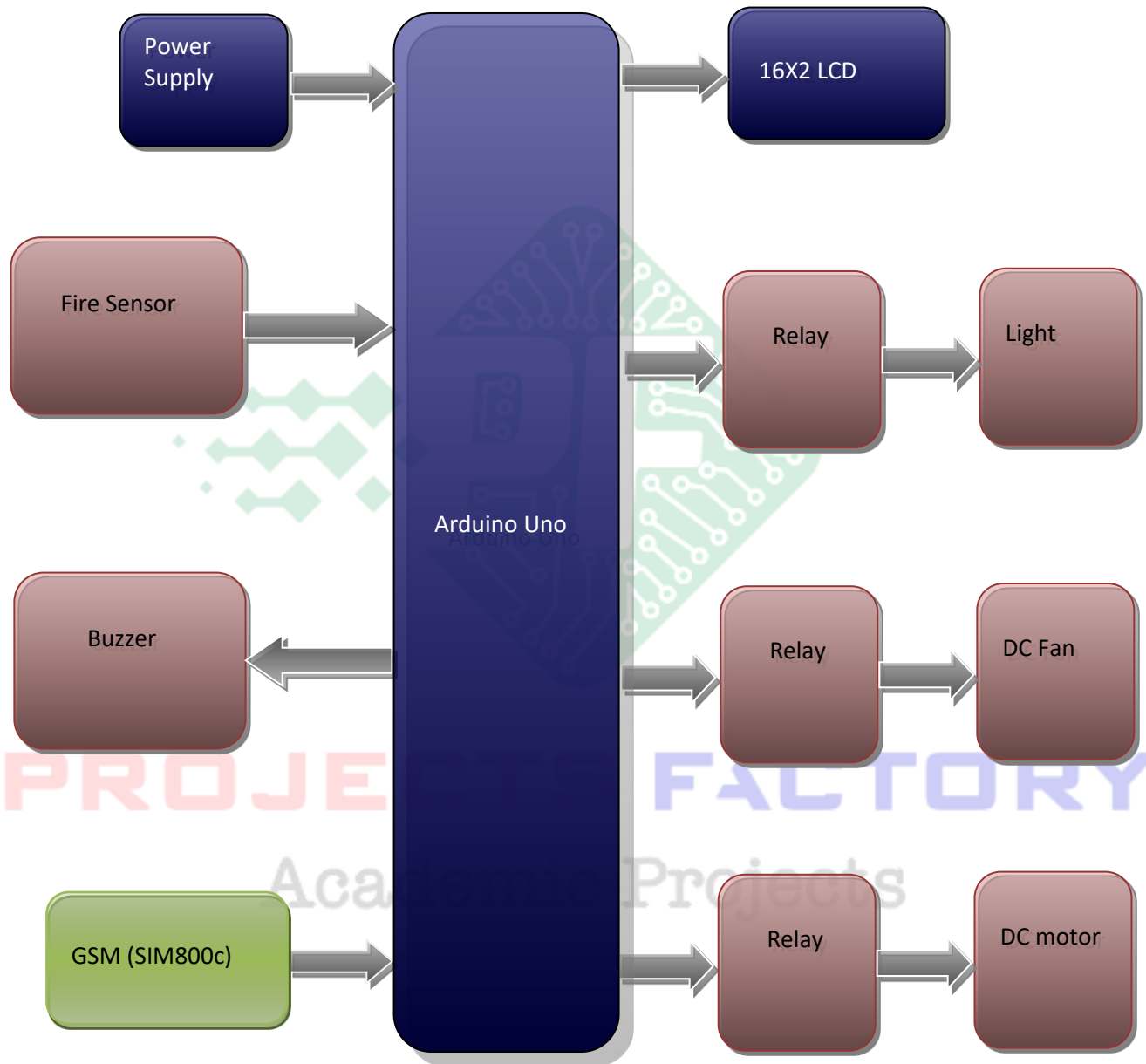
Arduino IDE

Proteus based circuit diagram

APPLICATIONS:

- ➢ Industrial Applications
- ➢ Home Appliances

BLOCK DIAGRAM:

```
Power                                        16X2 LCD
Supply ──────►┌──────────────┐──────►
              │              │
Fire Sensor ──►│              │──────► Relay ──────► Light
              │              │
              │  Arduino Uno │
Buzzer ◄───────│              │──────► Relay ──────► DC Fan
              │              │
GSM (SIM800c)─►│              │──────► Relay ──────► DC motor
              └──────────────┘
```

POWER SUPPLY BLOCKDIAGRAM:

| Step down Transformer | → | Bridge Rectifier | → | Filter | → | Regulator | → | Output |
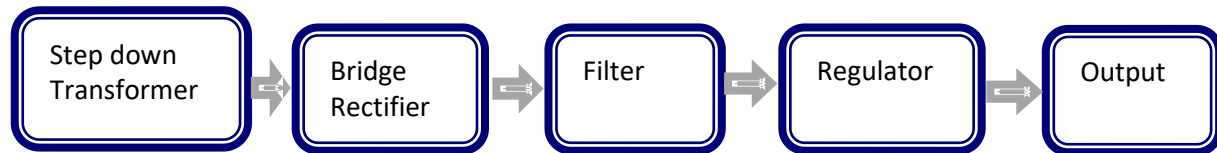
INTERFACES COVERD:

- We have covered GSM (SIM800C) module interfacing
- 12V DC Relays with loads like Light, Fan and Motor
- Fire Sensor Interface