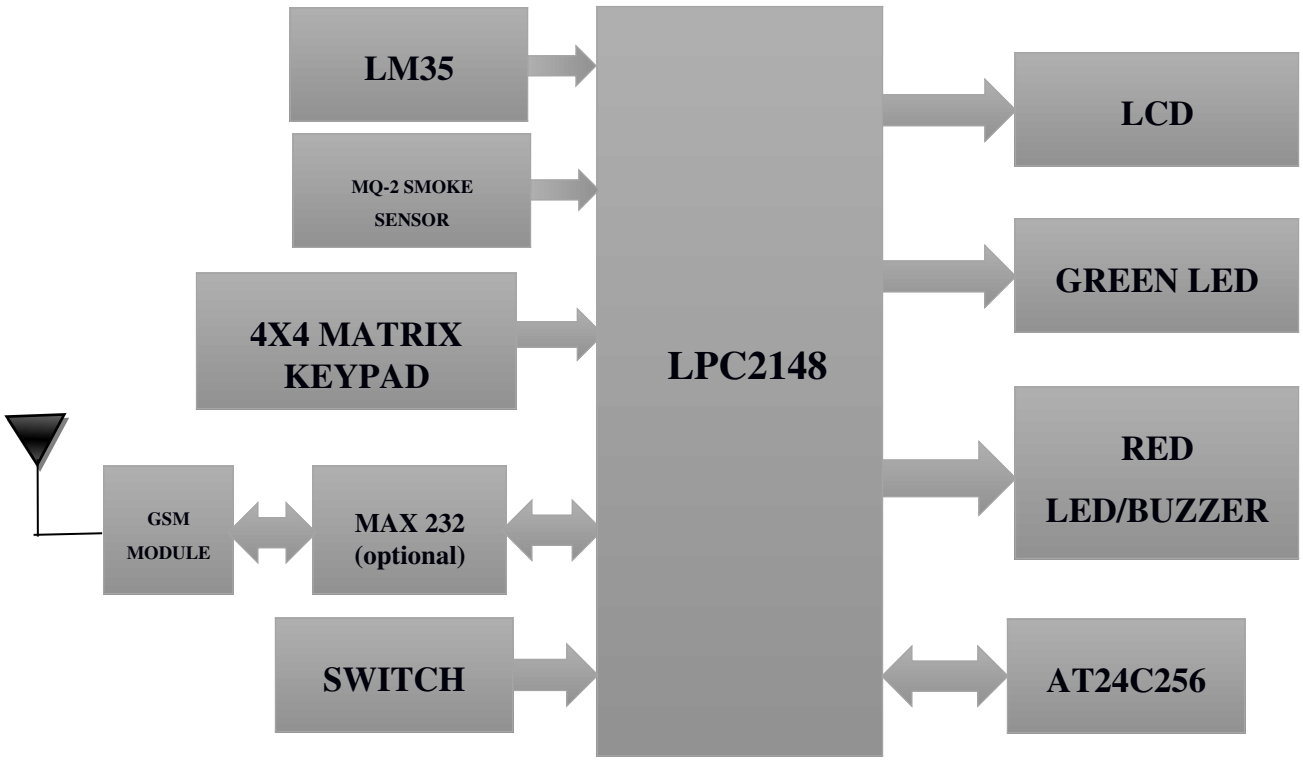
INDUSTRIAL FAULT INDICATION SYSTEM with SMS ALERT

AIM:

The main aim of this project is to get the indication and alert whenever any fault is occurred in industry.

BLOCK DIAGRAM:



REQUIREMENTS:

HARDWRAE REQUIREMENTS:

- LPC2148
- LCD
- AT24C256
- LM35
- 4X4 MATRIX KEYPAD
- SWITCH
- LED'S
- GSM MODULE (M660A)
- DB-9 CABLE/USB-UART CONVERTER

SOFTWARE REQUIREMENTS:

- KEIL C Compiler
- PROGRAMMING IN EMBEDDED C
- Flash Magic

<u>Steps to be followed to complete your project:</u>

- Create New Folder in your laptop/PC and save that folder with your project name.
- Then copy what you done files - lcd.c, lcd.h, delay,c, delay.h, keypad.c, keypad.h, i2c.c, i2c.h, adc.c, adc.h, uart.c & uart.h into project folder.
- Individually can check each and every module.
- First check lcd to display character constant, string constant and integer constant.
- Next check keypad peripheral by displaying key values on LCD.
- Next Check UART peripheral by transmitting string constant on hyper terminal.

- Next write n bytes into EEPROM and read that n number of bytes from EEPROM and display on LCD.

  Note: Use BYTE WRITE and BYTE READ / PAGE WRITE and SEQUENTIAL READ functions.
- Next check analog input (LM35) through inbuilt ADC pin.
- Next check the GSM module with the help of AT commands by connecting to PC. If GSM module is working for all required AT commands, then develop the GSM initialization function and sending sms function by using uart interrupts concept.
- In gsm_init() function minimum commands need to send to the GSM module from LPC2148 and take the reply. If the GSM module gives the positive reply, then only need to send the next command otherwise display the error message on the LCD.
- Next define the send_sms() function, which is used for sending the sms to the specified mobile number with specified message content.
- If above steps are completed create new file with projectmain.c, add all peripheral definition files to source group, and write below steps in projectmain.c file.
- And inside main initialize all required peripherals.
- Initially once write temperature set point as well as accessing password in EEPROM fixed memory locations.
- If user/officer want to change the set point, two different option are available. One is through message we can change the set point. And second one is through keypad we can change the set point.
- In continuous loop, read current temperature value from LM35 which is connected to inbuilt ADC and display it on LCD. Then read the set point

from the EEPROM fixed memory location. Now Compare the current temperature value with set point value. If current temperature is greater than the set point value, give one fault indication by switching ON the red led/buzzer as well as send message to concerned person mobile number through GSM Module. And read the smoke level status, if smoke detected then send the smoke alert message to concerned person mobile number through GSM Module. During this process if any message received, based on the message content need to change the set point and update the new set point in the EEPROM. After set point modified to new one, need to send the alert message to user/officer about set point modification.

Note: For security reasons, fix one specific message format to change the set point.

- In External Interrupt0 ISR or whenever external interrupt is occurred, user has the provision to change the set point and current password. Below mentioned menu will display on LCD after interrupt was generated.

  1. Set point change
  2. Password change

  User has to select the specific option based on the requirement. If option 1 is selected then enter the security password to change the temperature set point. Once user enters the correct password, the concerned person has permission to change the temperature set point. If entered password is correct, then green LED is turned ON for some time. After user has to enter new set point value from the keypad. Entered set point has to be updated in to EEPROM fixed locations. If the entered password is wrong then red LED or buzzer has to ON for failure indication. If user is continuously giving wrong password for three times, then system has to block for some time.

If option 2 selected, then user has to enter the current password. If the entered password is correct then enter the new password then confirm new password. If both are same then new modified password saved in to EEPROM fixed memory locations.

- If you're getting this output then your project is completed.

********** ALL THE BEST **********