AVISHKAR 2K19

EVENT NAME :- EMBEDDED SYSTEM DESIGN

Team info :-

Team name:- **BOMBERMEN**
Team leader's name:- Vikas Jangid
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Number of members in the team : 3

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A detailed report describing the logic used in order to solve the problem statement :-

The final design will consist of a Atmega 16 controller unit, properly stationed fan and light arrangement and a LCD display to show the status of the fan and light. The device would have the following basic features :-

1. The whole device would be capable of running on battery when the power supply is disconnected. We have used the rechargeable Li-ion battery for this purpose.

2. There would be a sufficiently powerful fan and bright light source present on the device. Fan would be connected to the controller through dc motor with a L293d motor driver. We would use a LED strip running on 12v for the purpose of light source which would again powered through a L293d driver.

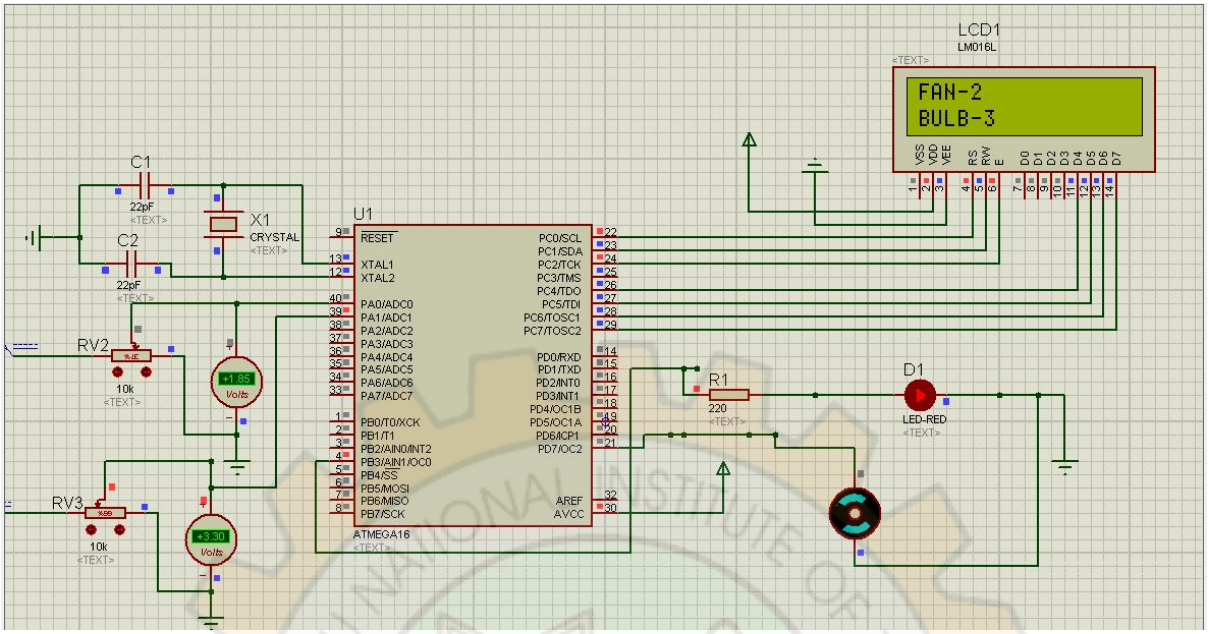
3. The speed of the fan and light intensity should be controllable and it should be displayed on the LCD. The speed and intensity would be controlled through the PWM functionality of the microcontroller and the input for the controlling of the same would be done through the potentiometer using the ADC (Analog to digital converter) interfacing on analog pins of the microcontroller.

4. The status of fan, light and few other things (like speed, intensity and battery life) would be displayed on an LCD display. This would be done through the simple interfacing of the LCD in 4-bit mode. We would also use custom character for the symbol of battery and few other things.

5. The battery should start charging when the power supply is re-established (also notified on LCD). We are currently working on this functionality and is yet to be implemented.

The overall solution and the hardware would be properly arranged in a proper format. We are trying to drive the fan the LED strip using bjt or mosfet instead of a l293d motor driver. We are also working on the implementation of various add-ons. For example:- Different modes of working(manual and automatic), automatic activation of device (using LDR and Ultrasonic sensor), etc.

I have also included a screenshot of the functionality implemented in the Proteus simulation software so far.


LCD1
LM016L
FAN-2
BULB-3
VSS VDD VEE RS RW E D0 D1 D2 D3 D4 D5 D6 D7
C1
22pF
C2
22pF
X1
CRYSTAL
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA16
RV2
10k
RV3
10k
+1.85
Volts
+3.30
Volts
R1
220
D1
LED-RED