10 Day 8051 Micro controller Workshop final challenges

NB:

1. the questions follow no particular order.
2. Choose any one question to accomplish its design and programming.

1. 0 Design a digital calculator

1.1 Modules

1. matrix keyboard

2. LCD display

1.2 Requirements

-use the 1602 LCD as your display

-use the 4x4 matrix keyboard as your input keys

-basic operations, +,-,*,/

1.3 Extension (optional)

-make your digital calculator save and recall answers.

-any other extension according to your creativity.

2. Design a Password Based Door Lock System

1.1 Modules

1. matrix keyboard

2. LCD display

3. Infrared sensor

4. DC motor

2.2 Requirements

-use the DC motor to simulate opening and closing of the door.

-use Infrared sensor to sense presence of the person infront of the door and prompt them to enter access password.

-when the right password is entered and person has entered, automatically lock the door and wait the next time a person comes to the door.

3. 0 Design an intelligent traffic light system

3.1 Modules

-LED bar

-Infrared senser（optional）

-7 segment display

3.2 Requirements

-make your intelligent traffic light system depending on your creativity.

note: 4-1 and 4-2 is should be treated as a 2 in 1 project.

4-1 Design a temperature-controlled fan

4.1 Modules

-DC motor to simulate fun

-Temperature resistor

4.2 Requirements

-make the speed of the fan adjustable

-turn on and off the fan depending on the temperature

4-2 Design an ambient light controlled light system

4.1 Modules

-LED bar

-light resistor

4.2 Requirements

-turn on the lights when it gets dark and turn them off otherwise.

//Feel free to be creative questions

5. Design a simple game.

6. Design a stop watch.

7. Design an alarm clock.

Project submission:

-C program files in a zipped folder, with comments.

-hex file of your program.

-A 2 to 3-minute video of how your project works.

-A description of how your project works, a submission template has been attached.