Smart Home Project

1- Components:

1- Atmega32 microcontroller QTY>2

2- LCD 16X2 QTY>1

3- KeyPad 4x4 QTY>1

4- LM35 temp. sensor QTY>1

5- HC-05|06 Bluetooth module QTY>1

6- LDR sensor QTY>1

7- External EEPROM QTY>1

8- Limited Servo Motor QTY>1

9- DC Motor QTY>1

10-Stepper Motor QTY>1

11-LED QTY>8

12-Seven-Segment Display QTY>2

Project Description:

1- MCU1 will be the Master microcontroller and it will be responsible for any input data in the system.

2- Master MCU will ask the user to choose one of 3 modes:

1- Open Smart System

2- Change Password

3- Add User

1- Open Smart System:

1 - Master MCU will ask you about your User ID and password?

case 1: Wrong ID >> master mcu will ask you about a valid ID

case 2: Your password is true>> Now you can control any electronic device in your home via your smart phone

case 3: Your password is wrong>> Master mcu will ask you to enter your password again for more 3 times if ur password still wrong, Master mcu return you to the main menu.

2 - MCU2 work as Slave and it controls the following behaviors:

1 - if temperature is bigger than 35C fan will work

2 - Based on Ambiant light (data came from LDR sensor) your home light will turns on

3 - if user pressed on button '1' send via Bluetooth >> the door will open (Servo motor will move to angle 180)

4 - if user pressed on button '2' send via Bluetooth >> the door will close (Servo motor will move back to angle 0)

5 - if user pressed on button '3' send via Bluetooth >> fan will work (Dc Motor will run)

6 - if user pressed on button '4' send via Bluetooth >> fan will stop (Dc Motor will stop)

7 - if user pressed on button '5' send via Bluetooth >> garage door will open (Stepper motor will move to reach 270 degree)

8 - if user pressed on button '6' send via Bluetooth >> garage door will close (Stepper motor will move back to its previous position)

9 - if user say "open light" send via Bluetooth >> the light turns On (8 LEDS should be On)

10- if user say "close light" send via Bluetooth >> the light turns Off (8 LEDS should be Off)

Note:

1 - Master MCU will send all data to Slave MCU via SPI protocol.

2 - Your password should be reserved in a non-volatile memory (External EEPROM)

3 - Temperature degree should displayed on 2 SevenSegment

4 - you should not use the \_delay\_ms function, you should use Timer to make delay

2- Change Password:

Master mcu will ask you to enter the User ID then User previous password

case 1: Wrong ID >> master mcu will ask you about a valid ID

case 2: if previous password is True >> Master mcu will ask you to enter your New Password

case 3: if previous password is wrong >> Master mcu will ask you to enter your password again for more one time if ur password still wrong, Master mcu return you to the main menu.

3- Add User:

1 - Master mcu will ask you to enter User ID

2 - Master mcu will ask you to enter User Password

3 - Master mcu will ask you to confirm your password

case 1: if your confirmation password is True >> Master mcu will return back to main menu

case 2: if your confirmation password is wrong >> Master mcu will print Wrong password and return back to main menu