

Smart plug controller system

FEATURE

- Manual mode: Turn Relay on/off manually
- Automatic mode: Turn Relay on/off according to light value
- Display brightness value on LCD
- Turn on/off LCD
- Increase/decrease threshold value (threshold value use to control how light sensor work)
- Communication with a computer: USB-to-UART

Input:

Light sensor

Keyboard

Output:

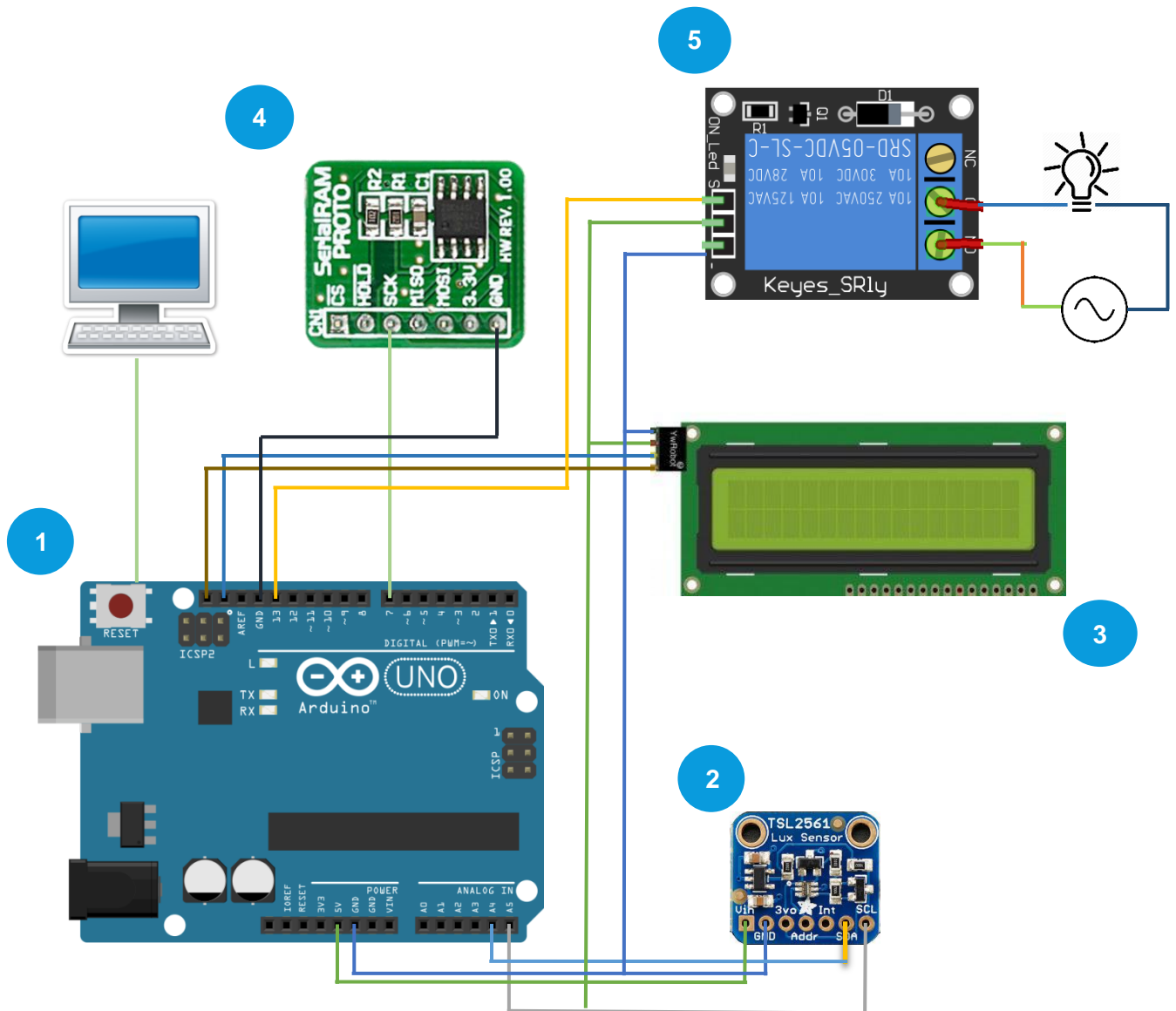
A relay

A LCD

SELF-DEFINE INSTRUCTION

- RON : Turn on relay
- ROF : Turn off relay
- AON : Turn on automatic mode
(will decline all relay control function after this instruction until instruction AOF terminate)
- AOF : Turn off automatic mode
(will accept all relay control function after this instruction until instruction AON terminate)
- LON : Turn on LCD
- LOF : Turn off LCD
- TINC : Increase threshold value by 5
- TDEC : Decrease threshold value by 5

BLOCK DIAGRAM



(1) ARDUINO UNO R3

In order to work with Arduino, we have to download the software from provided by Official Arduino on this link: <https://www.arduino.cc/en/Main/Software>. Then connect Arduino board to power supply and/or computer to starting writing the code and debugging it

(2) LIGHT SENSOR

Light sensor has 6 pin for output and input, but we use only 4 pin to communicate with Arduino which is V_{in} (5V), GND, SDA, and SCL.

(3) LCD I2C

LCD with I2C has only 4 ports (V_{in} (5V), GND, SDA, and SCL) which communicate to Arduino.

(4) 23K640

The Microchip Technology Inc. 23X640 are 64 Kbit Serial SRAM devices. The memory is accessed via a simple Serial Peripheral Interface (SPI) compatible serial bus. The bus signals required are a clock input (SCK) plus separate data in (SI) and data out (SO) lines. Access to the device is controlled through a Chip Select (CS) input

(5) RELAY

To use relay to control plug, we need to cut the electrical wire then connect it to relay's Normal Open (NO) and Communication (COM). After that V_{cc} , Gnd and input of relay are connected to specific port of Arduino board.

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