# AUTOMATED SWITCH SYSTEM

# PROBLEM STATEMENT

**Today energy is related to electricity. And the ultimate goal is to save electricity.**
**Even if we switch off the appliances they actually go in standby mode and consume electricity, hence wastage of electricity is observerd**

- Wastage of electricity
- Switches are not turned off after the required use
- Atlast , detoriation of enviornment

# SOLUTION

- Automated switch.
- It will turn off our regular switches when not in use.
- Detectors and sensors will help to increase the automation of this device.
- Automated switch will work on Arduino module for prototyping but afterwards we can use a microcontroller specially built for this purpose so that cost and size will be reduced.

# ARDUINO

- A microcontroller board, contains on-board power supply, USB port to communicate with PC, and an Atmel microcontroller chip.
- It simplify the process of creating any control system by providing the standard board that can be programmed and connected to the system without the need to any sophisticated PCB design and implementation.
- It is an open source hardware, any one can get the details of its design and modify it or make his own one himself.

# SPECIFICATIONS

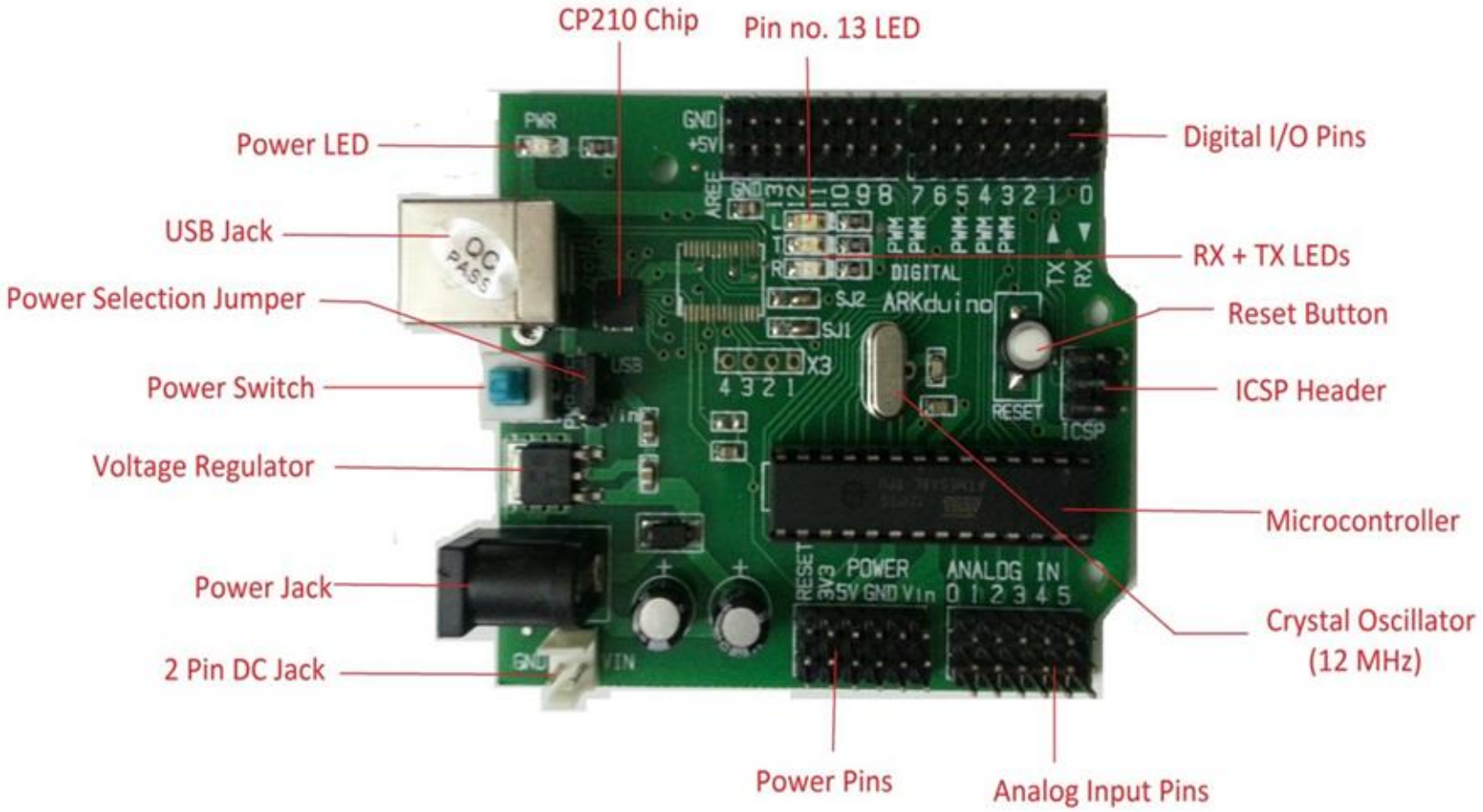
- **Specifications of Arduino :-**
  - The Uno is a microcontroller board based on the ATmega328P.
  - It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button.
  - It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started..

# SPECIFICATIONS (2)

**Technical specs:-**

| | |
|---|---|
| Microcontroller | ATmega328P |
| Operating Voltage | 5V |
| Input Voltage (recommended) | 7-12V |
| Input Voltage (limit) | 6-20V |
| Digital I/O Pins | 14 (of which 6 provide PWM output) |
| PWM Digital I/O Pins | 6 |
| Analog Input Pins | 6 |
| DC Current per I/O Pin | 20 mA |
| DC Current for 3.3V Pin | 50 mA |
| Flash Memory | 32 KB (ATmega328P)of which 0.5 KB used by bootloader |
| SRAM | 2 KB (ATmega328P) |
| EEPROM | 1 KB (ATmega328P) |
| Clock Speed | 16 MHz |
| Length | 68.6 mm |
| Width | 53.4 mm |
| Weight | 25 g |

# TOP VIEW


CP210 Chip
Pin no. 13 LED
Power LED
Digital I/O Pins
USB Jack
RX + TX LEDs
Power Selection Jumper
Reset Button
Power Switch
ICSP Header
Voltage Regulator
Microcontroller
Power Jack
Crystal Oscillator
(12 MHz)
2 Pin DC Jack
Power Pins
Analog Input Pins
PWR
GND
+5V
AREF
DIGITAL
ARKduino
SJ2
SJ1
X3
RESET
ICSP
TX
RX
POWER
ANALOG IN
3V3 5V GND Vin
0 1 2 3 4 5
VIN

# How Arduino is used ??

- Program is feeded/Burned into the Arduino
- It can be controlled by WiFi module (ESP20).
- Sensors are attached to Arduino for automatization.
- Mechanical relay will turn off the switch at desired point by signal feeds provided by ardiuno board.

# Components used

- Arduino Ultrasonic range finder module sensor distance measuring Transducer
- It uses sonar to measure distance to an object
- Working voltage 5V DC

- Pyroelectric infrared Pir motion sensor detector module
- Operating voltage range 3.6V

THANK YOU !!