ENERGY SAVING LIGHTS

TEAM MEMBERS:
Vishal Celestine (2018115130)
Pravinbabu B (2018115075)

THEME:

The energy saving lights system focuses on controlling the intensity of light automatically based on the ambient lighting conditions around. The lights will automatically switch on at a specific time and switch off at a specified time thereby reducing power and saving energy.

WORKING:

The system initially runs in RTC (real time clock) mode where there are two times set in the code: On Time and Off Time.

Arduino compares the ON TIME with the time from RTC and when they match, the LED is turned ON. And when the OFF time is reached, the LED switches off.

And when the button, which is connected as an external pin is pushed,the Arduino enters LDR (light dependent resistor) mode.the Arduino reads the value of the LDR and based on the value, it adjusts the intensity of the LED.

ARDUINO CODE EXPLANATION:

The arduino code of the project has been attached in the drive folder.

The project works in two modes: RTC mode and LDR mode. So the code has been written such that when the program starts running, the project will initially run in RTC mode i.e. the led light will be on during on time and off during off time. And when button is pressed , project switches to LDR mode and based on the value of intensity, it adjusts the intensity of the LED.

In setup() function ,we set baud rate, lcd, inputs ,outputs and also initialize the humidity sensor in the header.

In loop() function, if the path variable is 1, the project runs in RTC mode checks the On time and keeps led ON and when Off time is reached, led switches off. loadhandler() function takes care of RTC mode.

If the button is pressed, the interrupt service routine button_ISR() is called and the project switches to LDR mode where it checks intensity of surrounding lighting conditions and varies the intensity of LED depending on that.

COMPONENTS REQUIRED

- **Arduino UNO**
- **DS3231 RTC Module**
- **LDR**
- **16×2 LCD Display**
- **LED**
- **10KΩ Potentiometer**
- **10KΩ Resistor**
- **Push Button**
- **Connecting Wires**
- **Breadboard**