
BEDROOM
AUTOMATION SYSTEM
Group 41

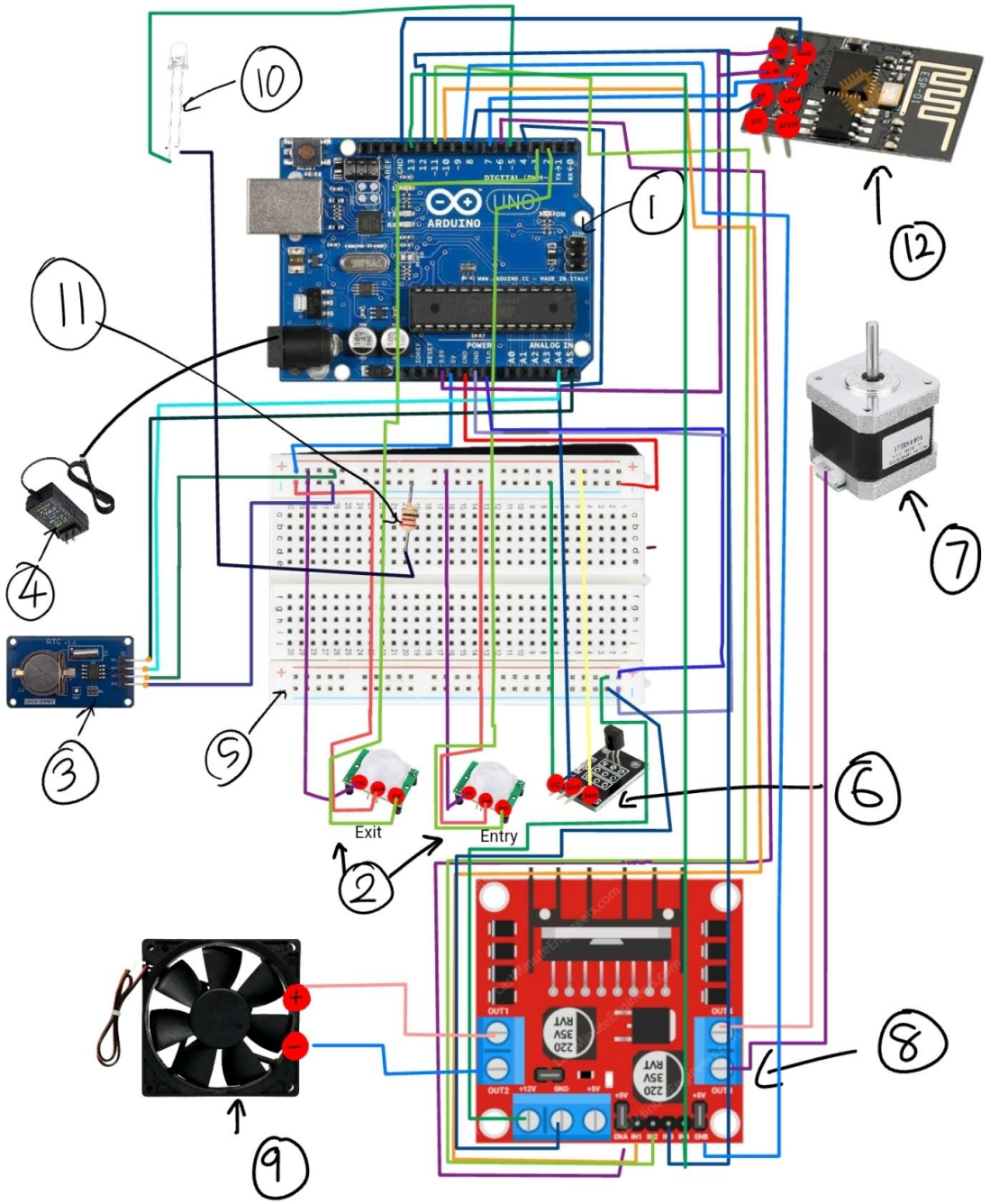
INTRODUCTION

Welcome to a New Era of Comfort and Convenience!

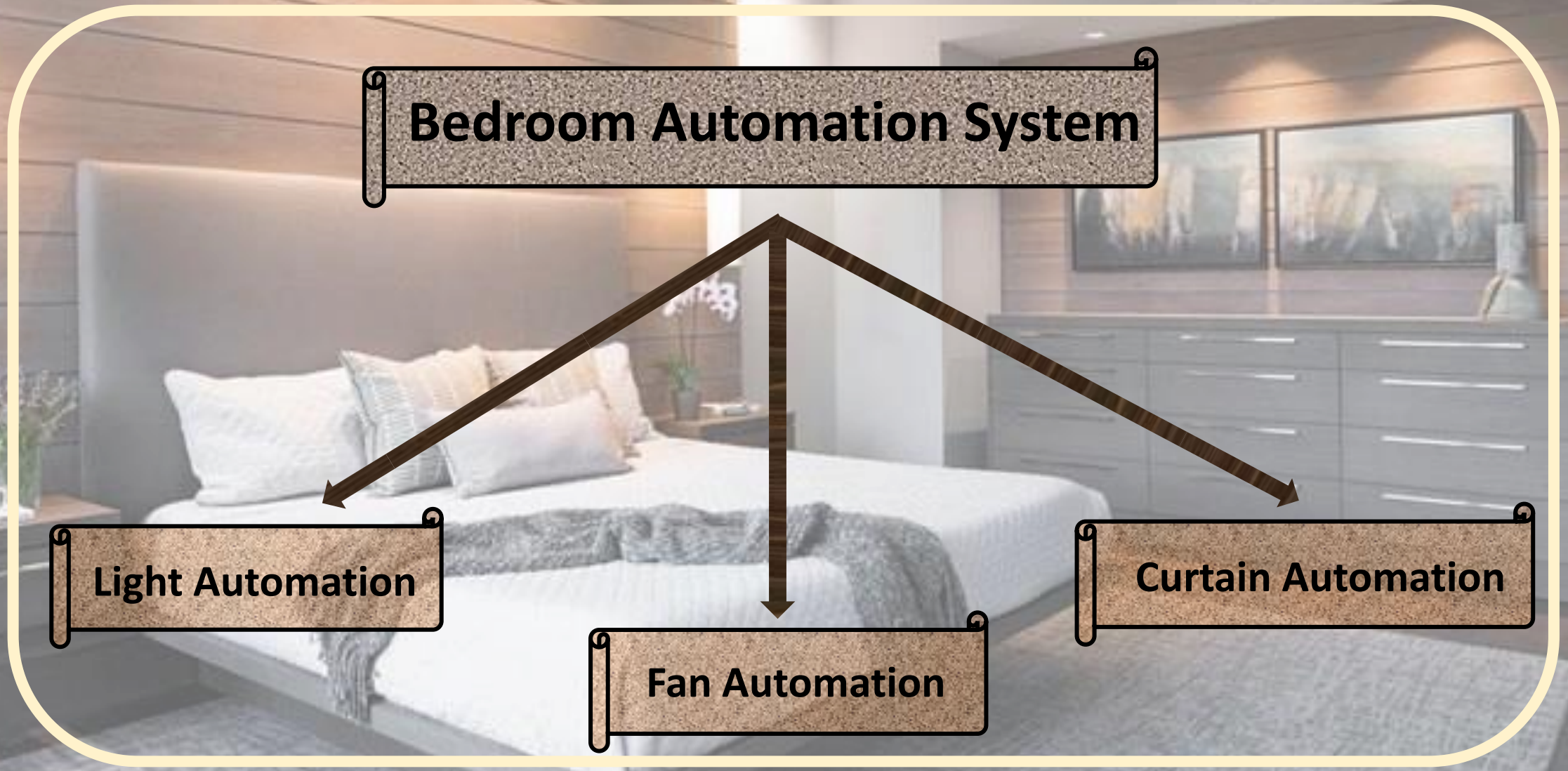
- **Arduino-based automation** featuring **smart lighting**, **automated fan control**, and **motorized curtain systems** that respond to your needs effortlessly.
- By integrating sensors and smart controls, we bring together **technology and everyday comfort**, making your bedroom more responsive, energy-efficient, and future-ready.

SYSTEM DIAGRAM

1. Arduino Uno
2. PIR Motion Sensor
3. RTC module (DS3231)
4. 12V power supply
5. Breadboard
6. Temperature Sensor (DHT 11)
7. Stepper motor
8. L298N Motor Driver
9. DC Fan
10. LED bulb
11. 220-ohm resistor
12. ESP 8266 (Wi-Fi Module)



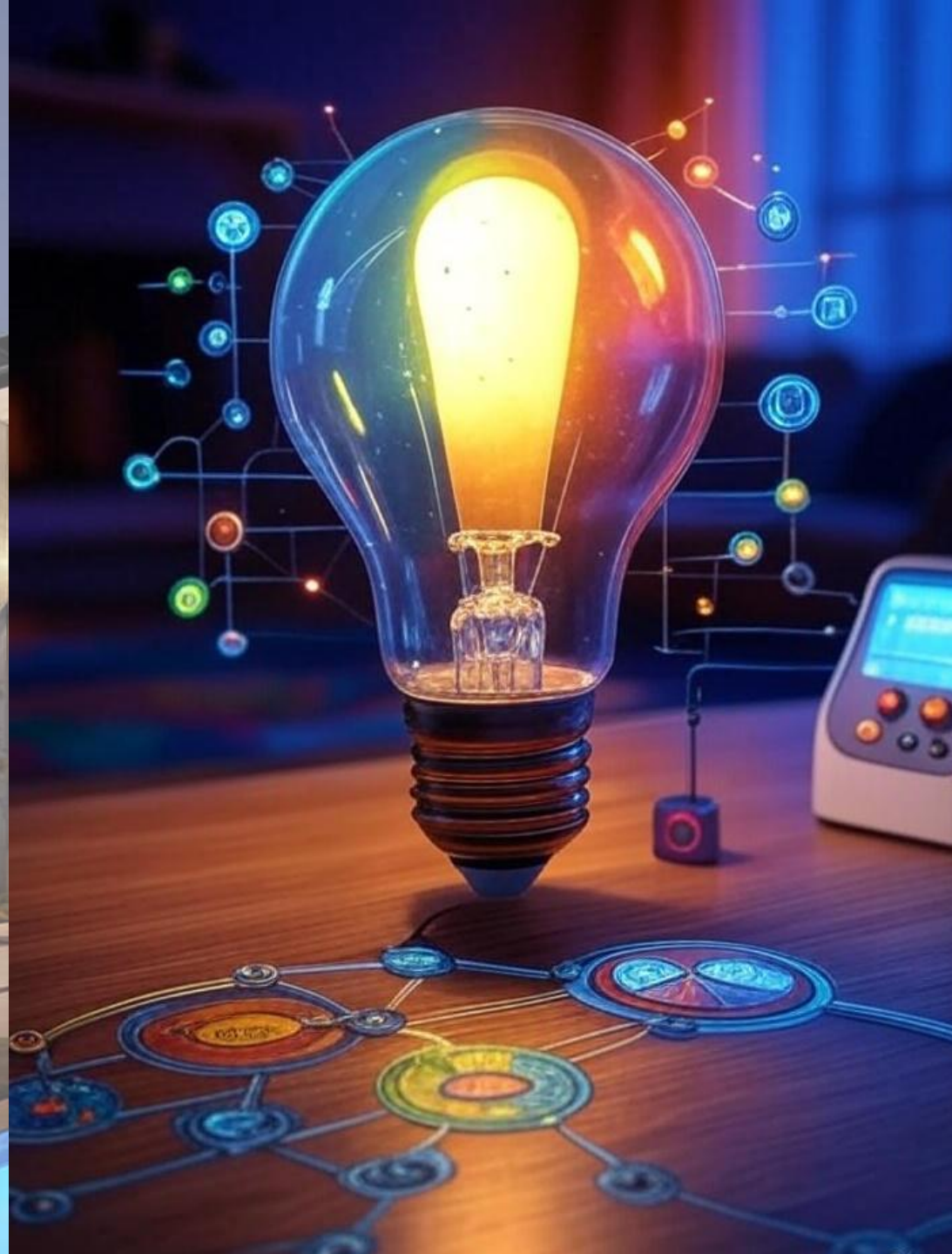
- To simplify and clearly showcase our innovation, we've divided our Smart Bedroom Automation Project into three key categories.



Main Components

Automated Light	Automated Fan	Automated Curtain
Arduino Uno	Arduino Uno	Arduino Uno
ESP 8266	ESP 8266	ESP 8266
PIR Motion sensor	DC Fan	RTC module (DS3231)
Light Bulb	Temperature Sensor(DHT 11)	Stepper motor
	L298N Motor Driver	Motor driver

AUTOMATED LIGHT



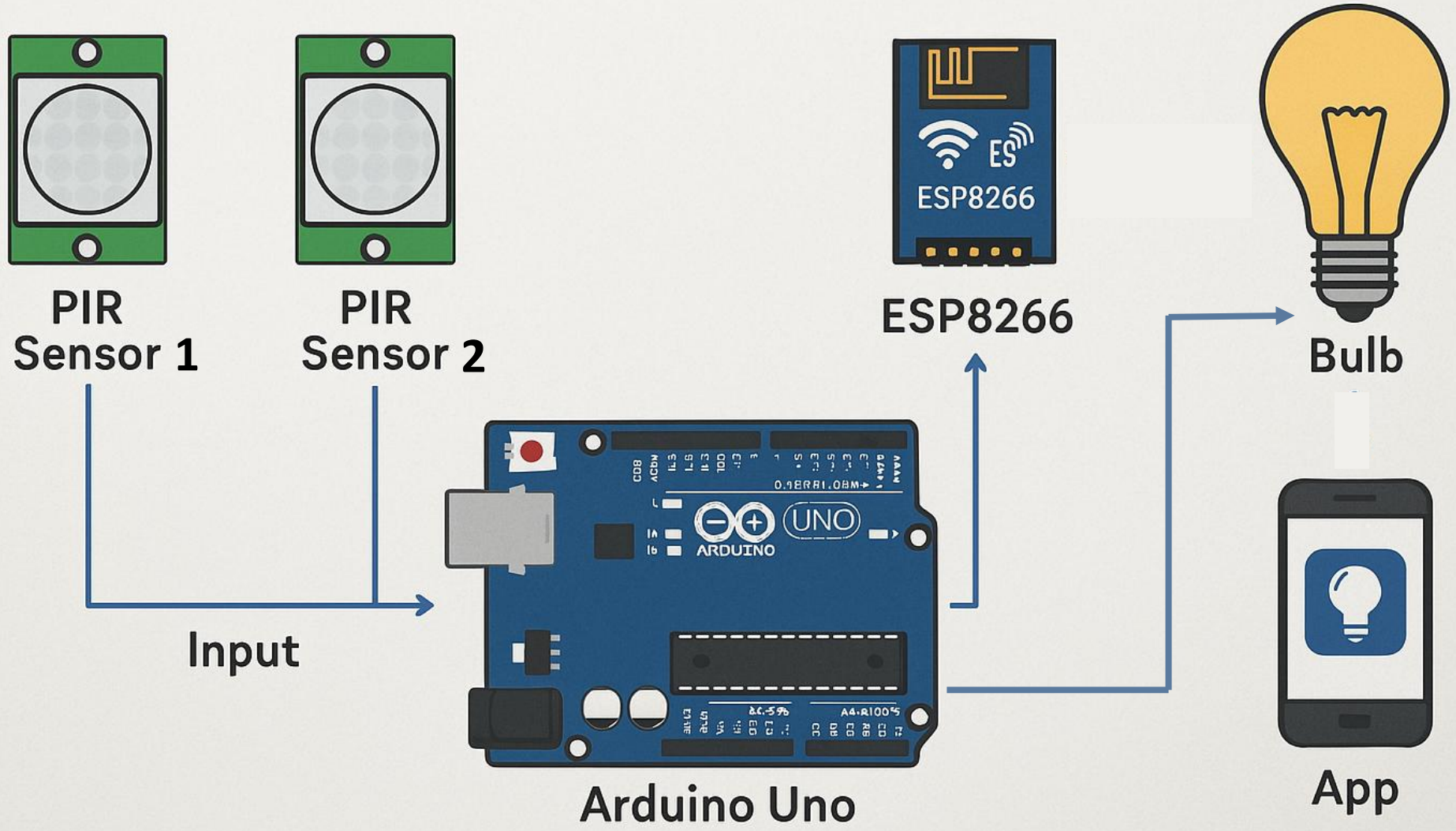
Problems

- ✓ Electricity bills are rising because of energy waste.
- ✓ Manually operating lights can be inconvenient, especially for the elderly and disabled people.

Aims

- ✓ Reduce energy waste
- ✓ Help to elderly people and disabled ones
- ✓ Make our lives more comfortable

System Diagram



KEY POINTS

- ❖ Arduino UNO :- Controls the system's logic.
- ❖ PIR Motion Sensor :- Detects human movement.
- ❖ Bulb :- Represents the light being controlled.
- ❖ Power Supply :- Provides power to all components.
- ❖ Control the bulb remotely using the mobile app.

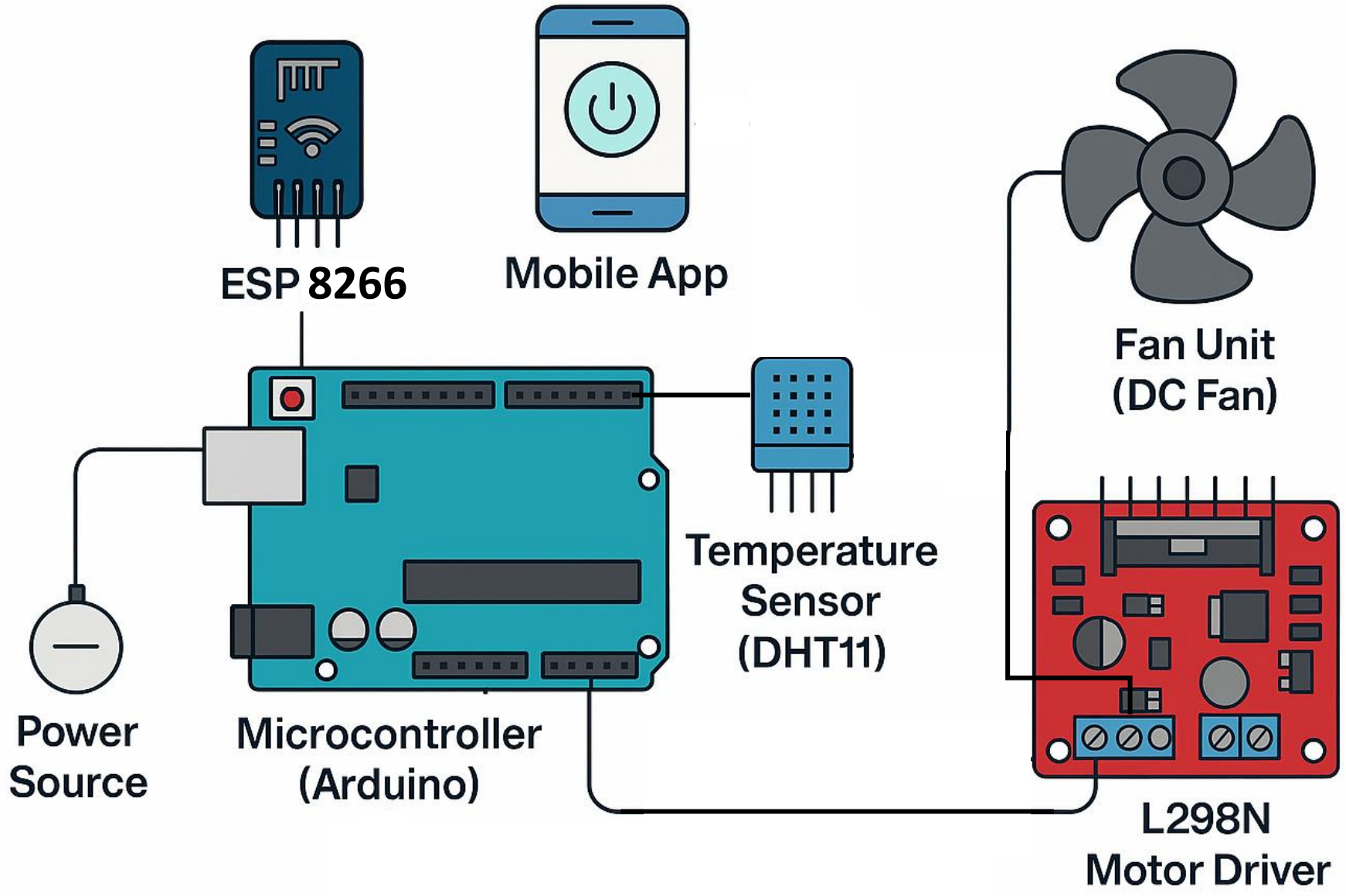
AUTOMATED FAN

Problem

- ✓ In traditional home environments, fans must be manually operated, which can be inconvenient, especially during sleep or while performing other tasks. Additionally, fans may run unnecessarily when the room temperature is already comfortable, leading to energy waste and reduced efficiency.

Aims

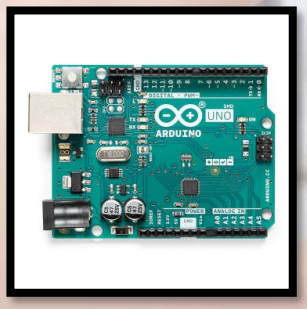
- ✓ To enhance **comfort**
- ✓ **Energy efficiency**
- ✓ **User convenience** in a smart bedroom environment

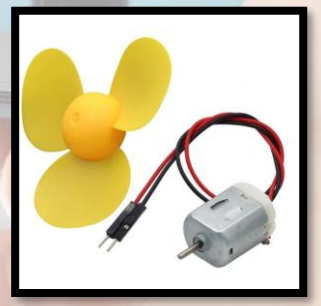


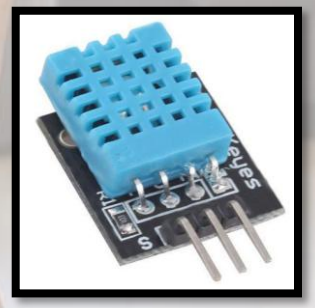
System Diagram

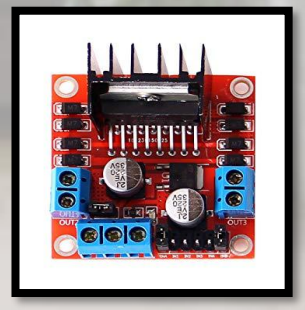
KEY POINTS

- ❖ Microcontroller (Arduino):- Processes input and controls output.
- ❖ Fan Unit (DC fan):- Physically cools the space.
- ❖ Temperature Sensor (DHT11):- Reads ambient temperature.
- ❖ L298N Motor Driver :- Precise control of fan speed.
- ❖ Power Source:- Supplies voltage to both the microcontroller and fan.
- ❖ Turn the fan on/off or adjust speed from our smartphone using a mobile app.









AUTOMATED CURTAIN

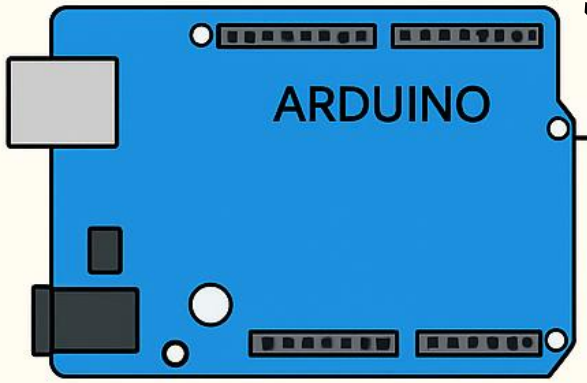
Problem

- ✓ In tropical climates like Sri Lanka, excessive sunlight heats up rooms during the day, increasing air conditioner usage and energy bills. Manually adjusting curtains throughout the day is inconvenient and often neglected.

Aims

- ✓ Automated daylight control
- ✓ Improved energy efficiency

System Diagram



ARDUINO UNO

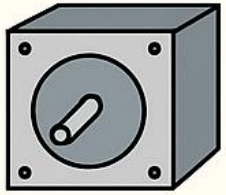
WI-FI MODULE
ESP 8266

RTC MODULE
(DS3231)

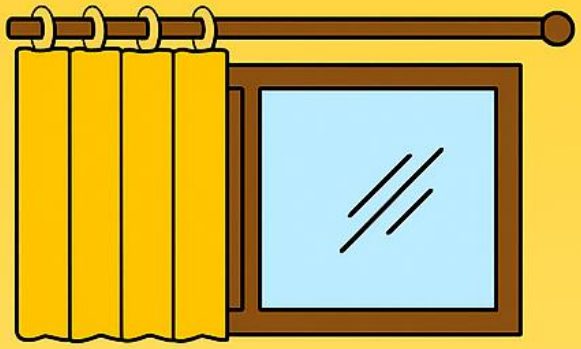
MOTOR DRIVER

STEPPER
MOTOR

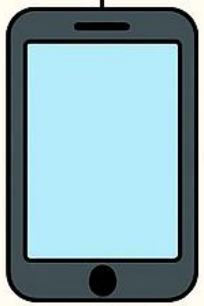
MOTOR DRIVER
Regulates motion



STEPPER
MOTOR



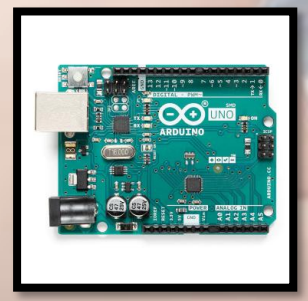
CURTAIN PULLEY SYSTEM
Designed to make opening
and clesing curtains
smoother, easier, and efficient

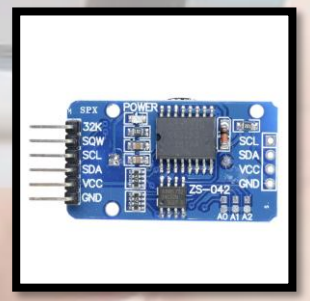


Users can overrride
or schedule curtain
movement via
a mobile app using
Wifi

KEY POINTS

- Arduino UNO :- The Arduino reads real-time clock (RTC) input or smartphone app commands.
- RTC module (DS3231) :- It used to keep track of time.
- Motor driver & Stepper :- A motor drive regulates motion, while a stepper motor moves in precise steps.
- Curtain pulley system :- Designed to make opening and closing curtains smoother, easier, and more efficient.
- Wi-Fi module (ESP8266) :- Users can override or schedule curtain movement via a mobile app using Wi-Fi.



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Storyblocks

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THANK
YOU!