

Home Automation with IoT

Unlock the power of the Internet of Things (IoT) to transform your home into a connected, intelligent, and energy-efficient living space. Explore how Arduino UNO, servo motors, and sensors can work together to automate your doors, temperature control, and security systems for a more convenient and eco-friendly lifestyle.

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Introduction to Arduino UNO

1 Powerful Microcontroller

The Arduino UNO is a compact, versatile, and easy-to-use microcontroller board that forms the heart of our home automation system.

2 Extensive Connectivity

It offers a wide range of digital and analog input/output pins to interface with various sensors, motors, and other components.

3 Simple Programming

The Arduino IDE provides a user-friendly platform for writing, compiling, and uploading code to the board, making it accessible for beginners and experts alike.

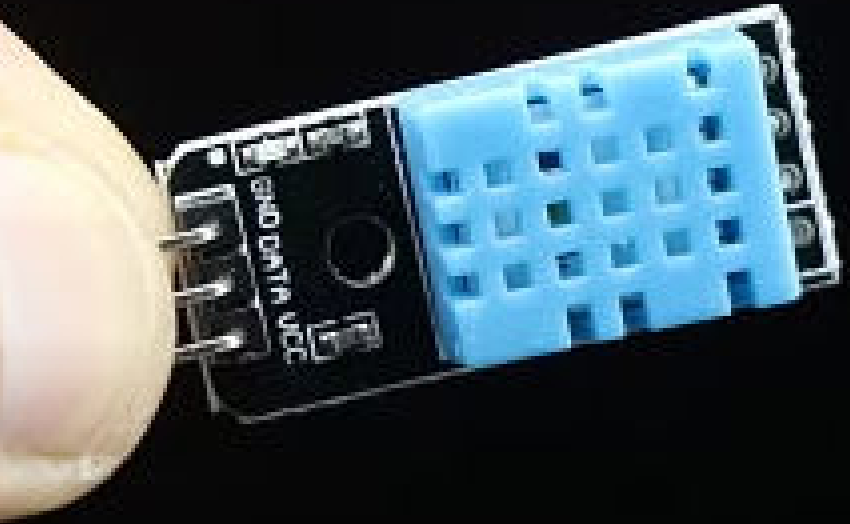


Buzzer (6V)

A 6V power supply buzzer is used to intimate users when the temperature exceeds the threshold.

Arduino does not provide 6V supply so it is connected to a data pin .

Auditory information.



DHT 11 Sensor

DHT11 sensor is used as it accurately detects the temperature and humidity of the area.

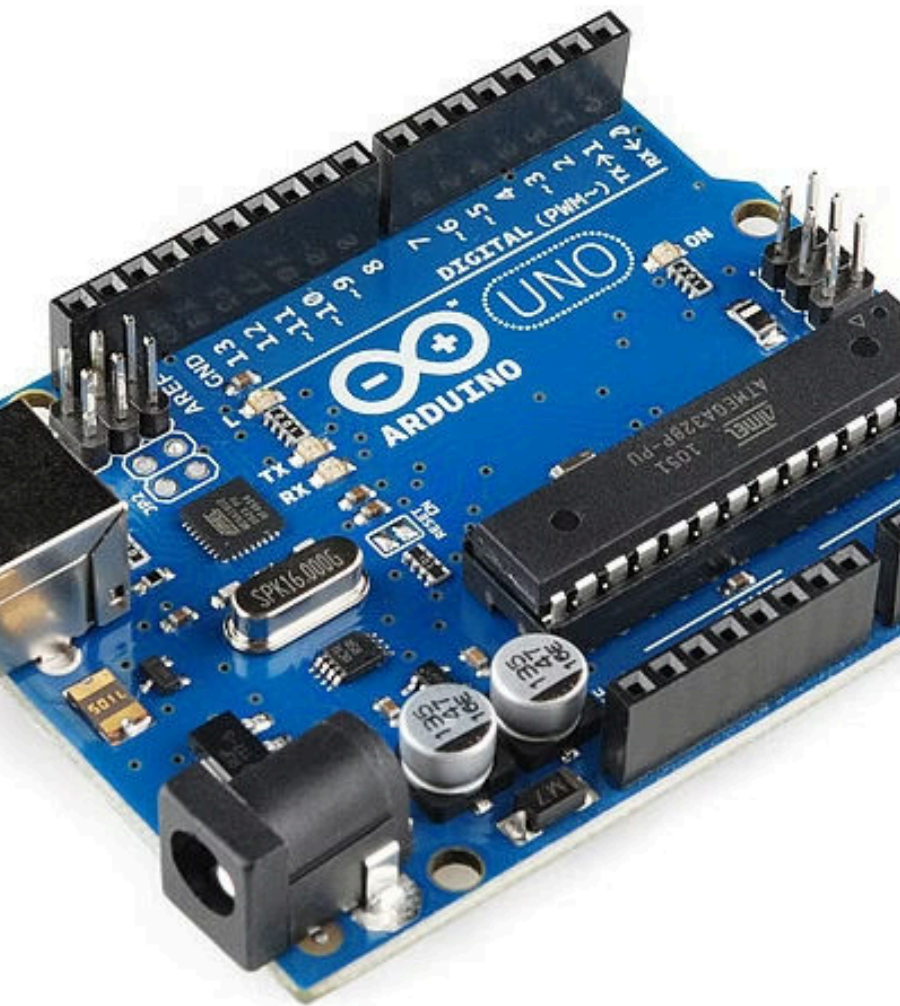
It also can keep updating the temperature and humidity data at regular intervals of time.



Servo Motor

It requires a 5v power supply given in Arduino

The servo motor, connected to the Arduino, provides precise and controlled movement to automate the opening and closing of doors.



Arduino UNO

Arduino UNO is chosen over ESP8266 because it has 5V power supply.

Arduino has a simpler, more beginner-friendly development environment and extensive documentation

Arduino is designed with education in mind, making it a popular choice in educational institutions.

Servo Motor for Door Closing

Precise Control

The servo motor, connected to the Arduino, provides precise and controlled movement to automate the opening and closing of doors.

Smooth Operation

Servo motors are designed to rotate smoothly and accurately, ensuring the door closes gently and reliably.

Easy Integration

The Arduino's intuitive programming interface makes it straightforward to integrate the servo motor into our home automation system.

Temperature Sensor and Threshold

1

Sensor Placement

Strategically place the temperature sensor in a key location to accurately monitor the home's ambient temperature.

2

Threshold Setting

Establish a temperature threshold, 30 degrees Celsius, to trigger the automated door closing and buzzer activation.

3

Continuous Monitoring

The Arduino will constantly read the sensor data and compare it to the threshold, ensuring prompt response to temperature changes.



Buzzer Integration

Audio Alerts

The buzzer, connected to the Arduino, will sound an alert when the temperature exceeds the set threshold.

Attention-Grabbing

The buzzer's audible cue will instantly notify homeowners of the temperature change, prompting them to take action.

Easy Configuration

The Arduino's programming flexibility allows for customizing the buzzer's volume, tone, and duration to suit your preferences.

Closing the Door Automatically

1

Temperature Exceeds Threshold

When the ambient temperature rises above the set limit, the Arduino triggers the servo motor to close the door.

2

Servo Motor Activation

The servo motor, under the Arduino's control, rotates to pull the door shut, securing the home's interior.

3

Door Fully Closed

The door is now securely closed, helping to maintain the desired temperature and protect the home's energy efficiency.

Stopping the Buzzer when Temperature Drops



Temperature Monitoring

The Arduino continuously monitors the temperature sensor for changes, both above and below the set threshold.



Buzzer Deactivation

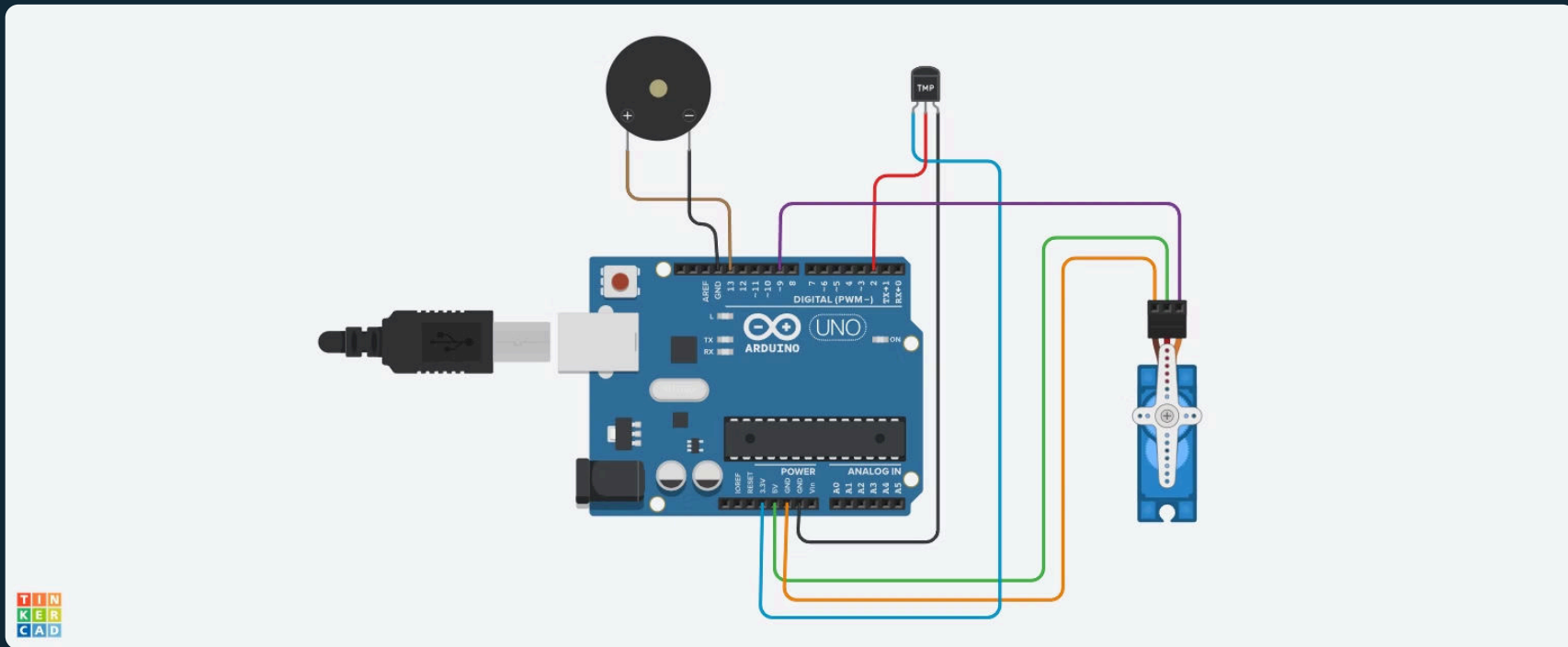
When the temperature drops back below the threshold, the Arduino automatically deactivates the buzzer, providing a seamless experience.



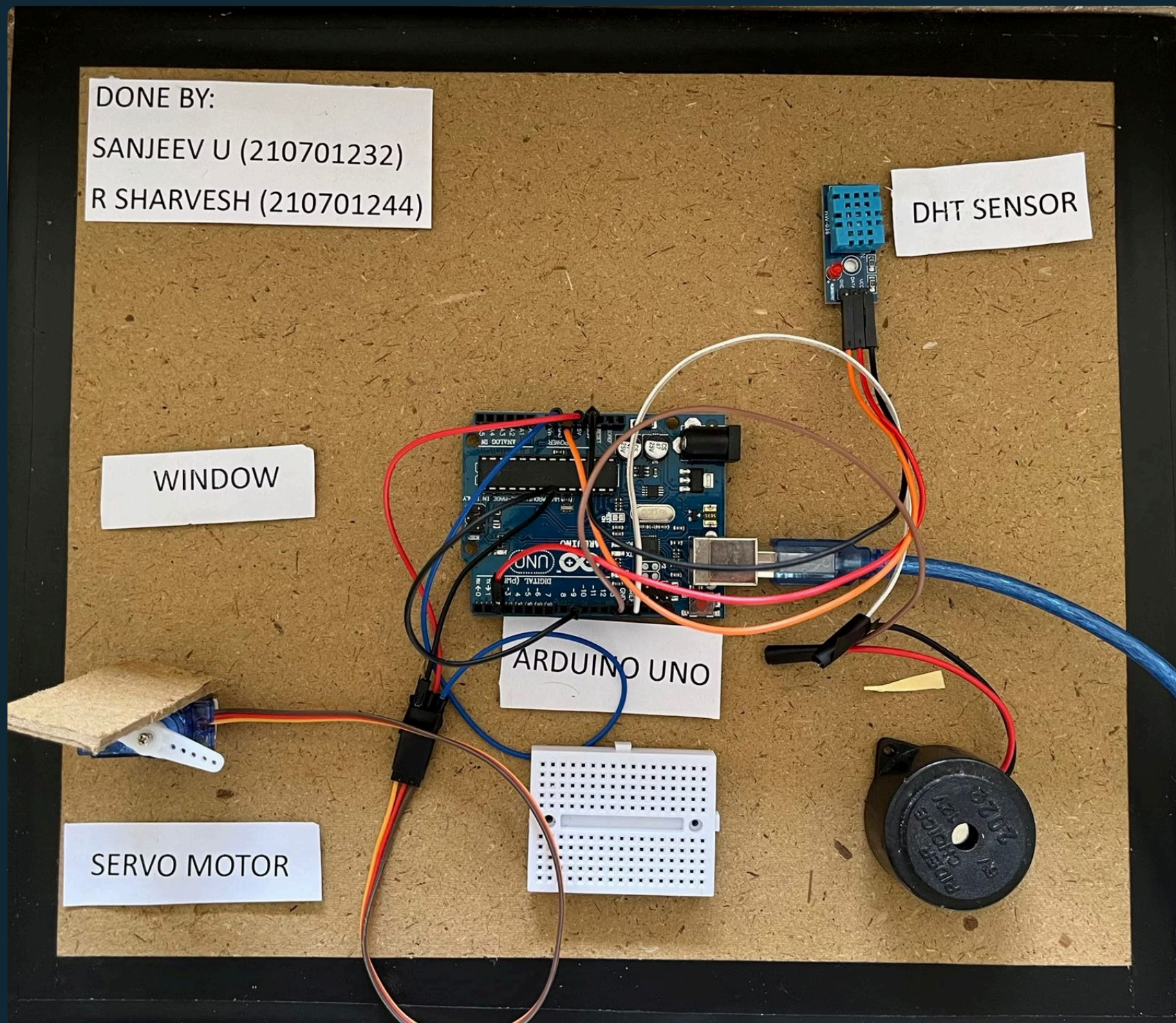
Energy Efficiency

By automatically closing the door and stopping the buzzer, the system helps maintain optimal temperature and conserve energy.

Circuit Diagram



PROJECT DIAGRAM



Conclusion and Key Takeaways

1 Intelligent Home Control

This Arduino-based home automation system leverages IoT technology to provide automated temperature monitoring and door control, enhancing comfort and efficiency.

2 Customizable and Scalable

The modular nature of the system allows for easy customization and expansion to include additional sensors, motors, and features as needed.

3 Energy-Saving Benefits

By automatically closing the door and adjusting temperature, the system contributes to overall energy savings and a more sustainable home environment.

THANK YOU