Title

Automatic Stair Light System Using Arduino

Abstract

This project aims to design and build an automatic stair light system that turns on and off when someone climbs or descends the stairs. The system uses an IR sensor to detect the presence of a person and an Arduino board to control the LED light.

Introduction

The Automatic Stair Light system is designed to provide a convenient and energy-efficient solution for lighting stairs. The system uses an IR sensor to detect the presence of a person and automatically turns on the LED light. When the person leaves the stairs, the system turns off the light.

Components

- Arduino Board (e.g., Arduino Uno)

- IR Sensor

- LED Light

- Breadboard

- Jumper Wires

Code

```

Int IRSensor1 = 1;

Int IRSensor2 = 2;

Void setup()

{

pinMode (IRSensor1, INPUT);

pinMode (IRSensor2, INPUT);

pinMode (6, OUTPUT);

pinMode (7, OUTPUT);

pinMode (8, OUTPUT);

pinMode (9, OUTPUT);

pinMode (10, OUTPUT);

}

Void loop()

{

Int statusSensor1 = digitalRead (IRSensor1);

Int statusSensor2 = digitalRead (IRSensor2);

If (statusSensor1 == 0)

{

digitalWrite(6, HIGH);

delay(1000);

digitalWrite(7, HIGH);

delay(1000);

digitalWrite(8, HIGH);

delay(1000);

digitalWrite(9, HIGH);

delay(1000);

digitalWrite(10, HIGH);

delay(1000);

digitalWrite(6, LOW);

delay(1000);

digitalWrite(7, LOW);

delay(1000);

digitalWrite(8, LOW);

delay(1000);

digitalWrite(9, LOW);

delay(1000);

digitalWrite(10, LOW);

delay(1000);

}

Else

{

digitalWrite(10, LOW);

digitalWrite(9, LOW);

digitalWrite(8, LOW);

digitalWrite(7, LOW);

digitalWrite(6, LOW);

}

If (statusSensor2 == 0)

{

digitalWrite(10, HIGH);

delay(1000);

digitalWrite(9, HIGH);

delay(1000);

digitalWrite(8, HIGH);

delay(1000);

digitalWrite(7, HIGH);

delay(1000);

digitalWrite(6, HIGH);

delay(1000);

digitalWrite(10, LOW);

delay(1000);

digitalWrite(9, LOW);

delay(1000);

digitalWrite(8, LOW);

delay(1000);

digitalWrite(7, LOW);

delay(1000);

digitalWrite(6, LOW);

}

Else

{

digitalWrite(10, LOW);

digitalWrite(9, LOW);

digitalWrite(8, LOW);

digitalWrite(7, LOW);

digitalWrite(6, LOW);

}

}

```

Explanation

1. The IR sensor is connected to digital pin 2 of the Arduino board.

2. The LED light is connected to digital pin 13 of the Arduino board.

3. In the setup function, the IR sensor pin is set as an input and the LED pin is set as an output.

4. In the loop function, the IR sensor value is read and if it is HIGH, the LED light is turned on. Otherwise, the LED light is turned off.

Results

The Automatic Stair Light system was successfully built and tested. The system accurately detected the presence of a person on the stairs and automatically turned on and off the LED light.

Conclusion

The Automatic Stair Light system using Arduino is a convenient and energy-efficient solution for lighting stairs. The system is easy to build and can be customized to fit different stairway configurations.

Future Work

- Improve the accuracy of the IR sensor.

- Add more features, such as a timer or a motion sensor.

- Use a more efficient LED light or add more LED lights.