

ABSTRACT

- With the rapid advancements in the field of technology, home automation systems are growing in popularity. A smart home system gives access to all controllable household appliances and can help render the electricity supply in a household, reducing consumption by controlling usage. To avoid the risk of contracting COVID-19, it has become important to not touch surfaces of buttons and keys that have been frequently used by other people. This calls for a need to innovate the switching technology for replacing a hand-operated switch, with an automatic contactless switch. So today, we will design a no-touch switch that works entirely on hand gestures. Our smart contactless switch includes a sensor that is capable of detecting hand movements and translates them into commands for controlling lights, fans and various home appliances.

Objectives

- ☒ In heavily frequency there is a growing demand for technologies that are as contactless as possible and that reduces the necessary contact with surfaces and thus the risk of infection to a minimum.

- ☒ Smart switch primarily decreases the effort of human and improve the connection to house with enhanced service , facility and security.

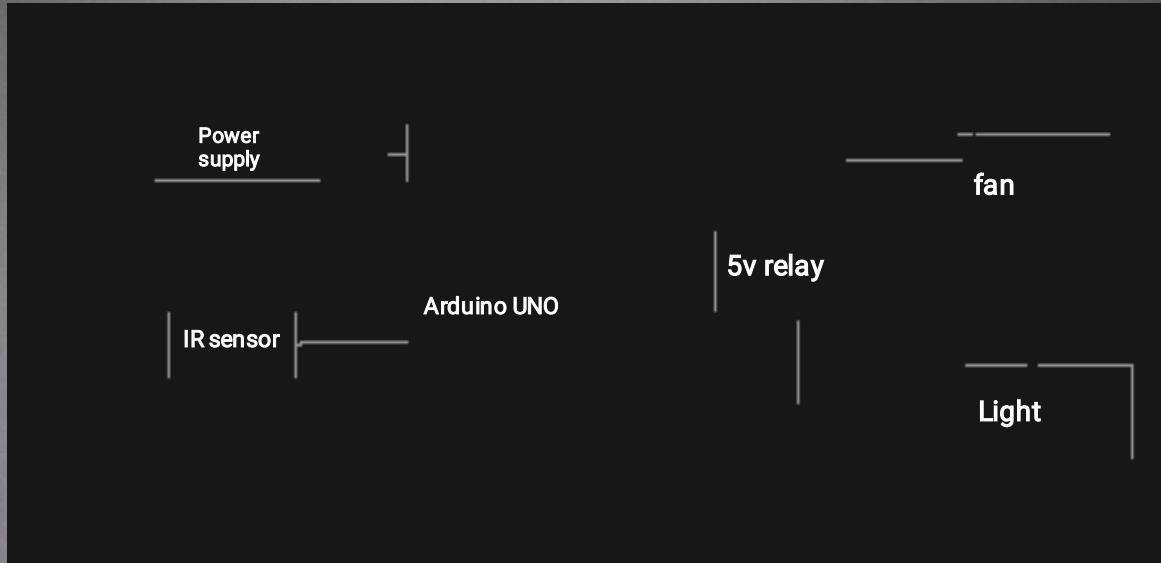
- ☒ By the smart switch we can prevent the electric shocks.

Methodology

- ☒ It is an open source methodology based on real-world experience that covering all aspects of IoT developing .
- ☒ It involves two main parts.
- ☒ The first part called "strategy execution", which defined IoT Strategy and prepared organization for IoT adoption, then created and managed a portfolio of IoT Project to support IoT strategy.
- ☒ The second is "solution delivery", which applied plan, build and run IoT solution

- ☒ In this Contactless Smart Switch we are using the C and C++ based of IoT.
- ☒ The sensor reads the inputs by using the hand gestures to control Arduino output pins.
- ☒ Specifying the command based on the hand gesture.
- ☒ With that command the sensor will take the input and deploy the operations

Block diagram



Arduino UNO



IR Obstacle
sensor



5v relay



Jumper wires



Electric
wire

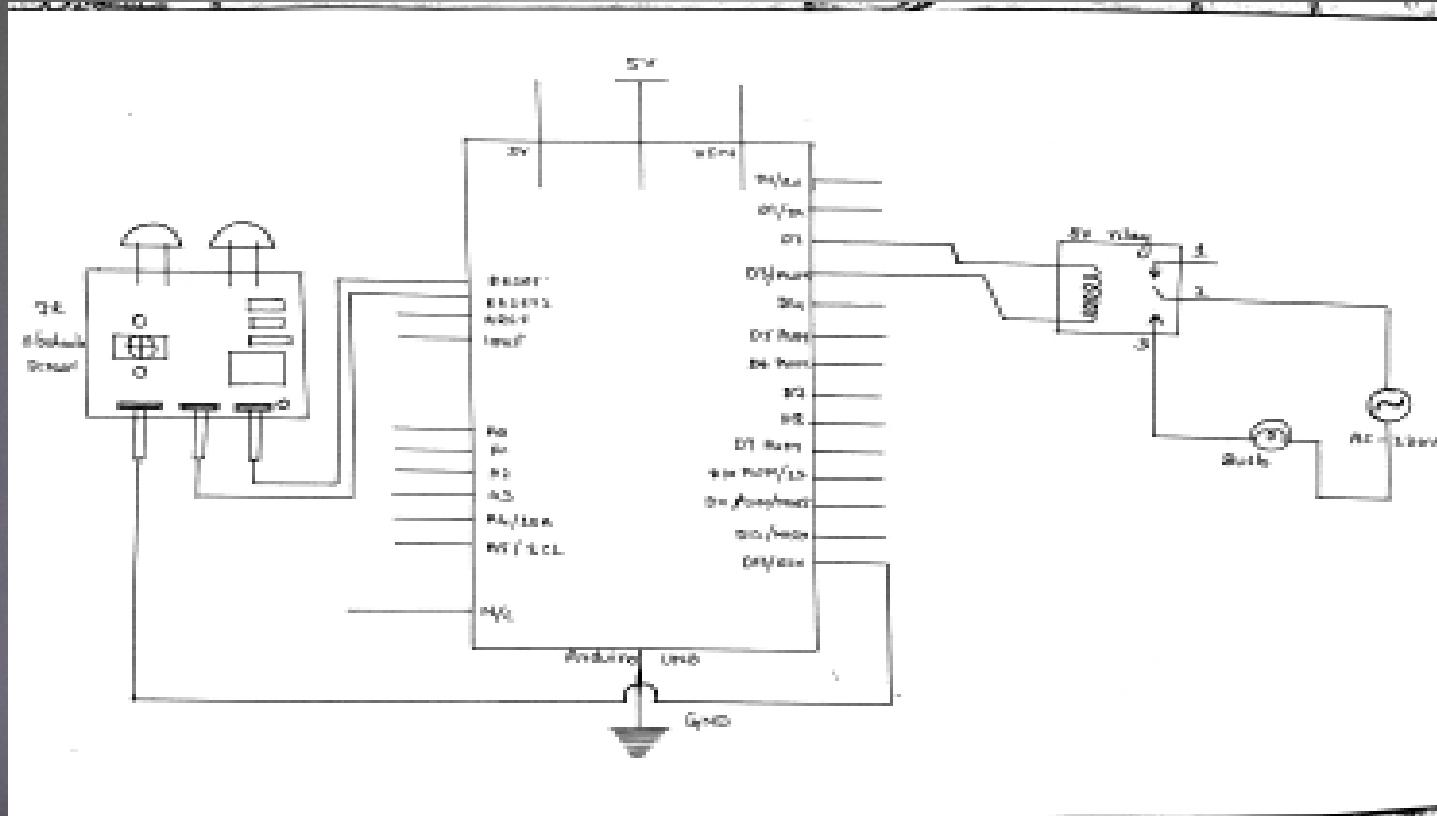


Light



fan

Circuit diagram



Implementation

- ☒ This proposed project is implemented by using the IoT devices (called IR obstacle sensor, Arduino, 5V Relay) and other devices(Light and fan) and a block of source code
- ☒ **Injecting code** : we need to inject a block of code to the Arduino for deployment of our project.
- ☒ **Connections 1:**
 - ☒ **IR Sensor to Arduino :**
 - ☒ We have 3 connecting pins in IR sensor named(VCC,GND and OUT). We need to connect them to power pins and digital pins in Arduino as follows below.
 - VCC - 5V
 - GND - GND
 - OUT - 7

- ☒ **Connection 2:**

- ☒ **Arduino to 5V Relay:**

- ☒ After connection 1, now we need to connect the pin 13 and GND in Arduino to signal and GRD pins of Relay module.

- ☒ **Connection 3:**

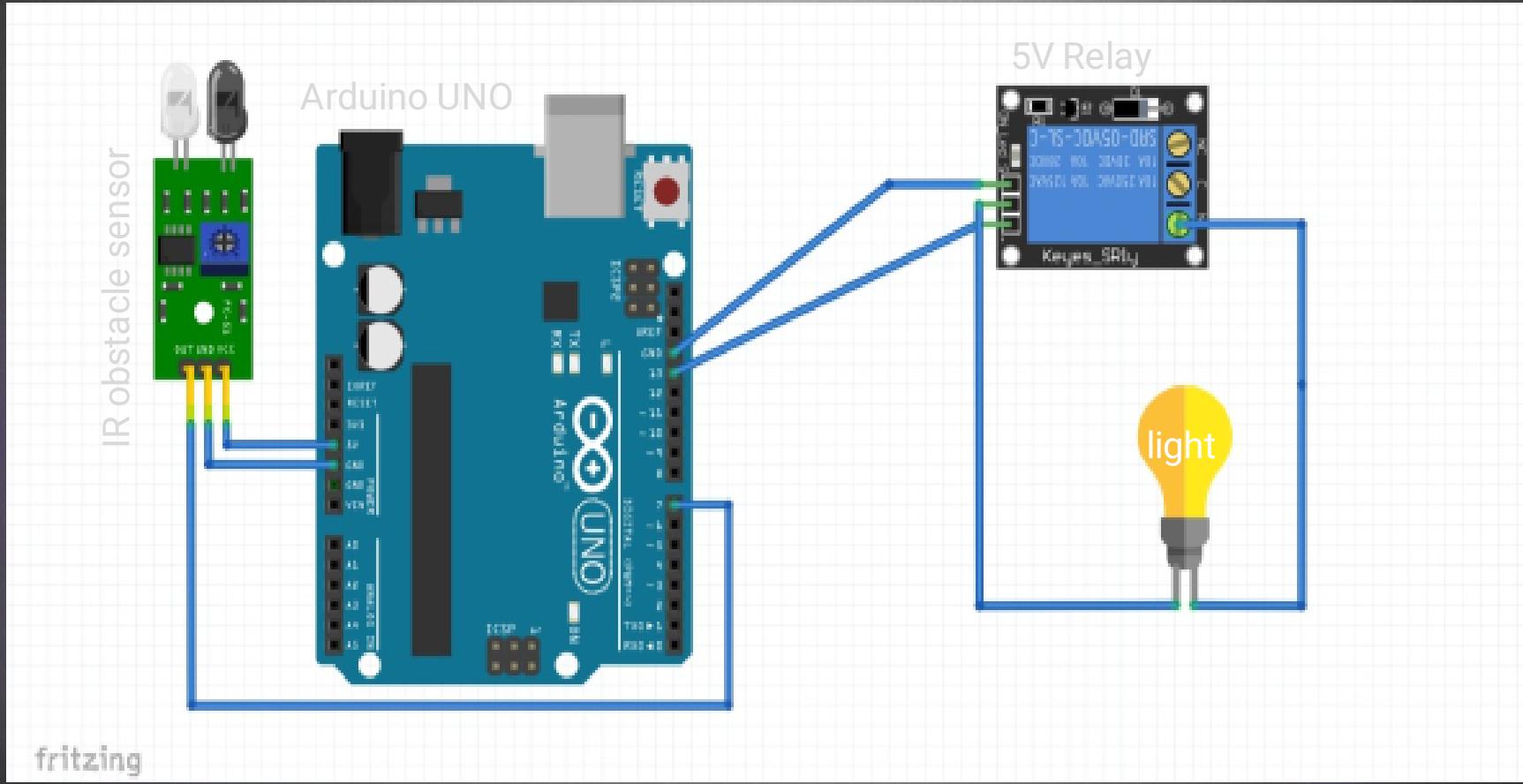
- ☒ **5V Relay to fan & light:**

- ☒ After connection 2, we have to connect the 5v VCC in Relay module to +ve of light &fan
 - ☒ And we need to connect ON pin in Relay to –ve of fan and light.

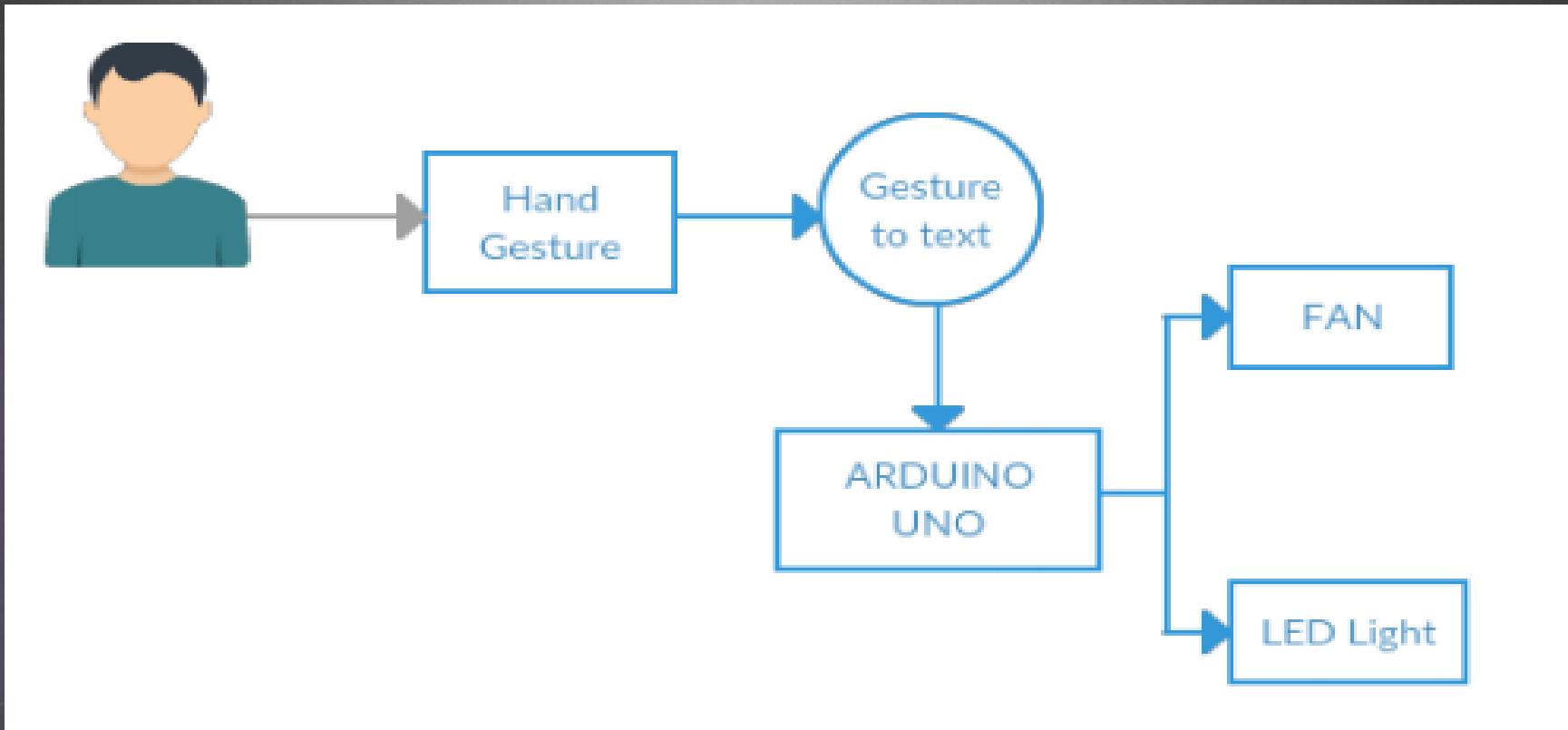
- ☒ All these connections are made by using female to male jumper wires.

- ☒ After all the connections , we need to supply power to Arduino for deployment.
- ☒ **final step is to test the project:**
 - ☒ Now check the project by using hand gesture Infront of sensor, if the light and fan turn on properly, then the connections are correct, if not recheck the connections and try it again.

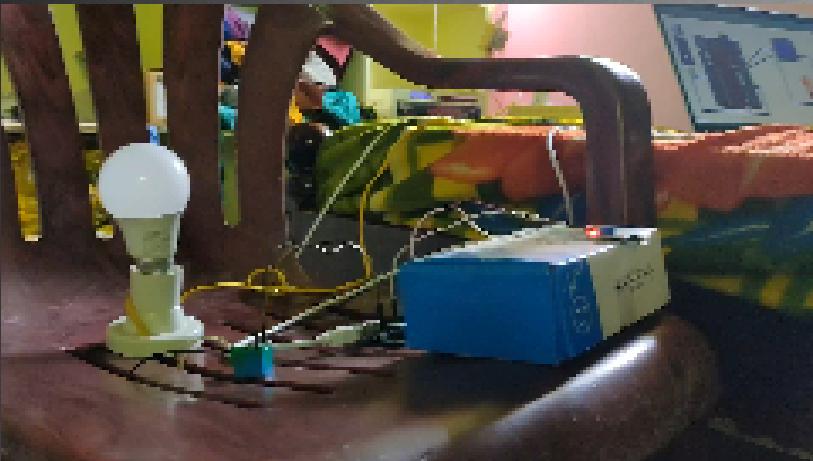
Physical connections



Execution flow chart:



Execution:



By using the open hand gesture facing towards sensor we can turn on the light.



By using the same gesture we can turn off the light.



THANK YOU