DIY Team Project Week-2

Project Name :-
Controlling Home Appliances remotely using Arduino

TEAM 19 :-
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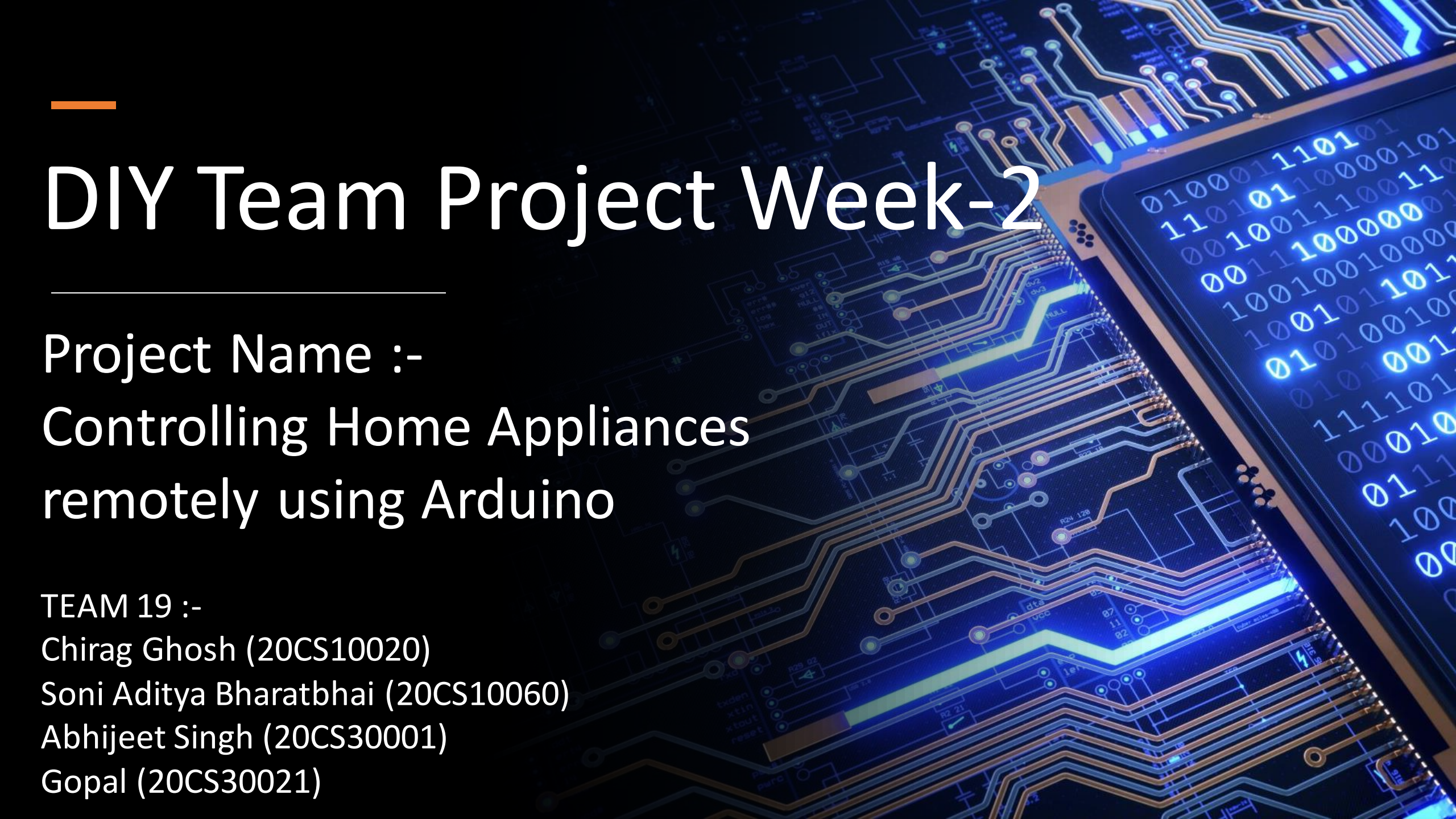
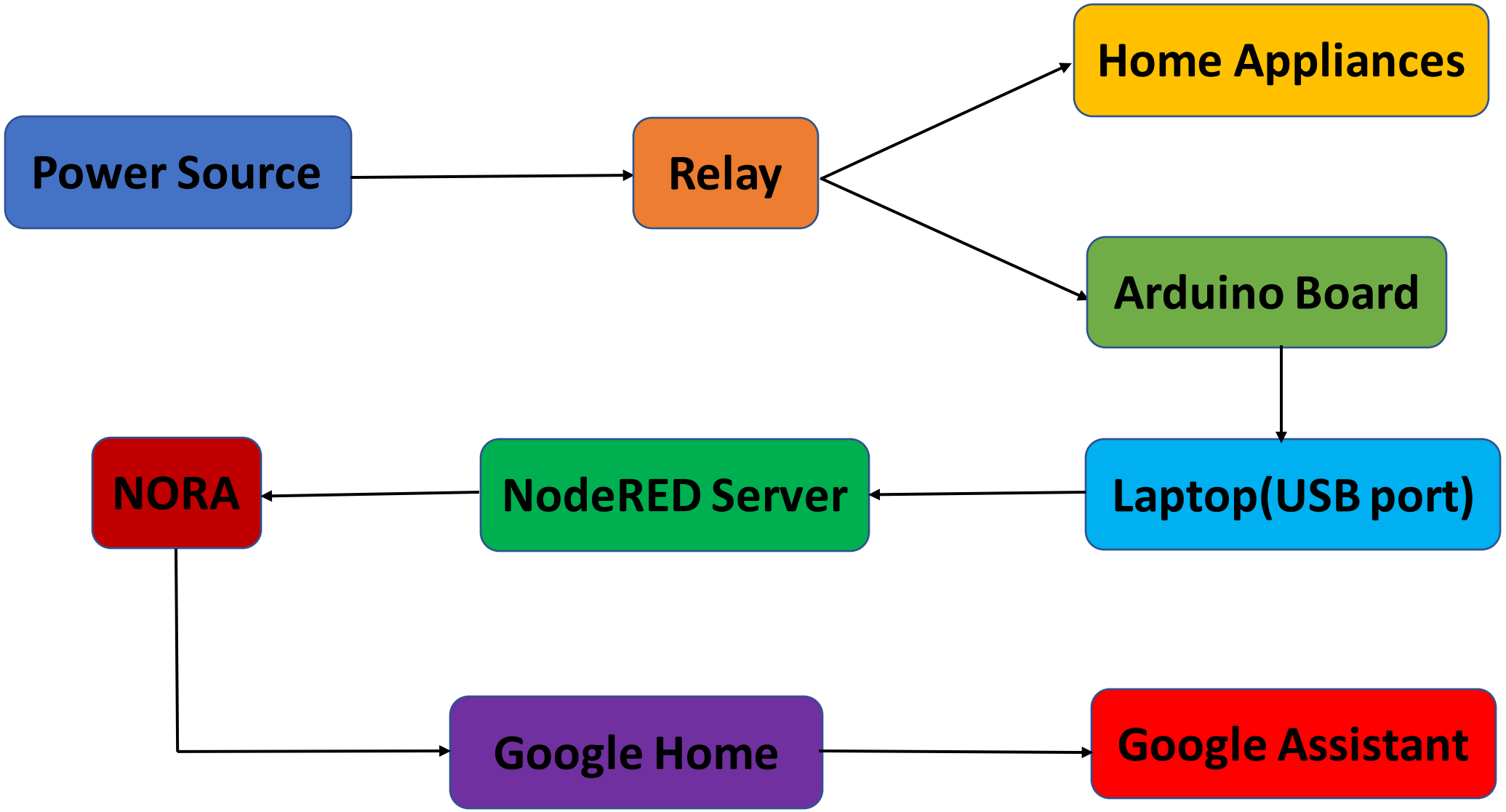
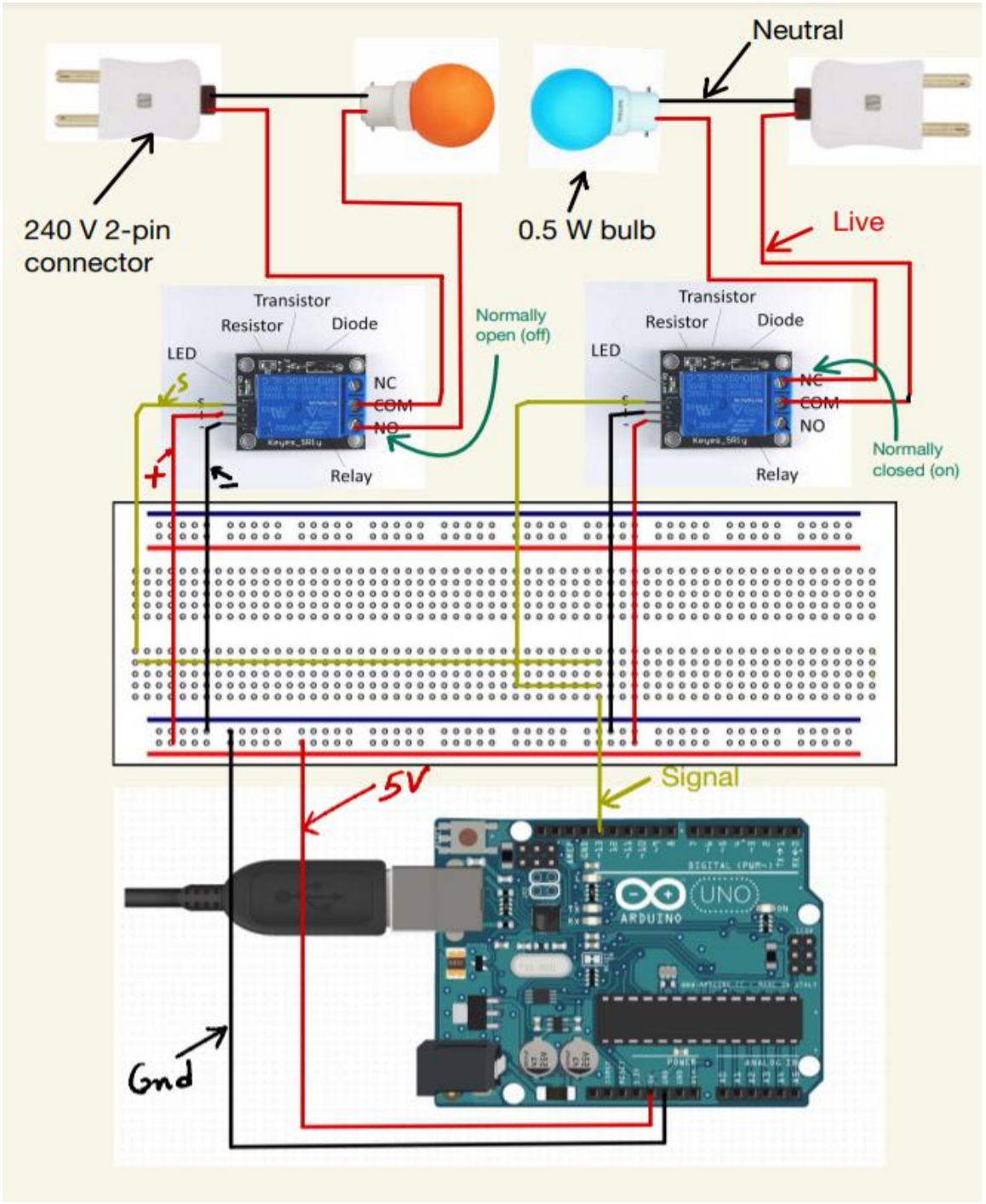


Improvisations in our DIY Project :-

- The use of NGROK VPN Server has been discontinued. (It's URL changed every time the server restarted. This caused inconvenience as we had to share new URL every time).
- Instead we have come up with another better solution. We are introducing voice control for appliance operation by integrating our Node-RED dashboard with Google Assistant (using NORA extension in node-red)
- This additional feature enables the consumer to operate home appliances verbally without any distance constraints. (As we will demonstrate at the end of this presentation).

Flow Chart :-


Home Appliances
Power Source
Relay
Arduino Board
NORA
NodeRED Server
Laptop(USB port)
Google Home
Google Assistant


Neutral
240 V 2-pin connector
0.5 W bulb
Live
Transistor
Resistor
Diode
LED
NC
COM
NO
Relay
Normally open (off)
Normally closed (on)
5V
Signal
Gnd
UNO
ARDUINO

Power and Energy Requirement :-

- **Power Source :** 230V AC Mains (50Hz) - through switch board.
- **Home appliances used :** Light bulb , Table Fan. (Other appliances can also be considered once hardware has been assembled)
- **Energy requirements :** The energy requirements of the appliances to be run will be according to their rating. Additionally our project uses a laptop and Arduino board. They have minimal power usage.

Work Done in Week 2 :-

- After watching all the IOT videos , we have come up with an arduino-code for our project. (which is the standard firmata code).
- We have created a node-red dashboard for controlling the home appliances via arduino (virtually).
- We have connected our node-red server with google home using a node-red extension (NORA).
- We have ordered the hardware and we will set it up after it arrives in the upcoming week.
- As of now , we are pretty sure that all the software aspects have been taken care of and hopefully, they will integrate well with our hardware for overall success of our project.

Overall Status :-

We have completed all the software aspects of the project. With the arrival of hardware component , we will set it up and complete the project.

We have already ordered the hardware parts they include.

- Arduino UNO 328p
- Breadboard
- Jumper wires
- Relay modules for arduino
- Home appliances are present in Chirag’s home. (tentatively we will operate light bulb , fan and mobile charger).

StandardFirmata | Arduino 1.8.5

File Edit Sketch Tools Help

StandardFirmata

```
/*
  Firmata is a generic protocol for communicating with microcontrollers
  from software on a host computer. It is intended to work with
  any host computer software package.

  To download a host software package, please click on the following link
  to open the list of Firmata client libraries in your default browser.

  https://github.com/firmata/arduino#firmata-client-libraries

  Copyright (C) 2006-2008 Hans-Christoph Steiner.  All rights reserved.
  Copyright (C) 2010-2011 Paul Stoffregen.  All rights reserved.
  Copyright (C) 2009 Shigeru Kobayashi.  All rights reserved.
  Copyright (C) 2009-2016 Jeff Hoefs.  All rights reserved.

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  License as published by the Free Software Foundation; either
  version 2.1 of the License, or (at your option) any later version.

  See file LICENSE.txt for further informations on licensing terms.

  Last updated August 17th, 2017
*/

#include <Servo.h>
#include <Wire.h>
#include <Firmata.h>
```
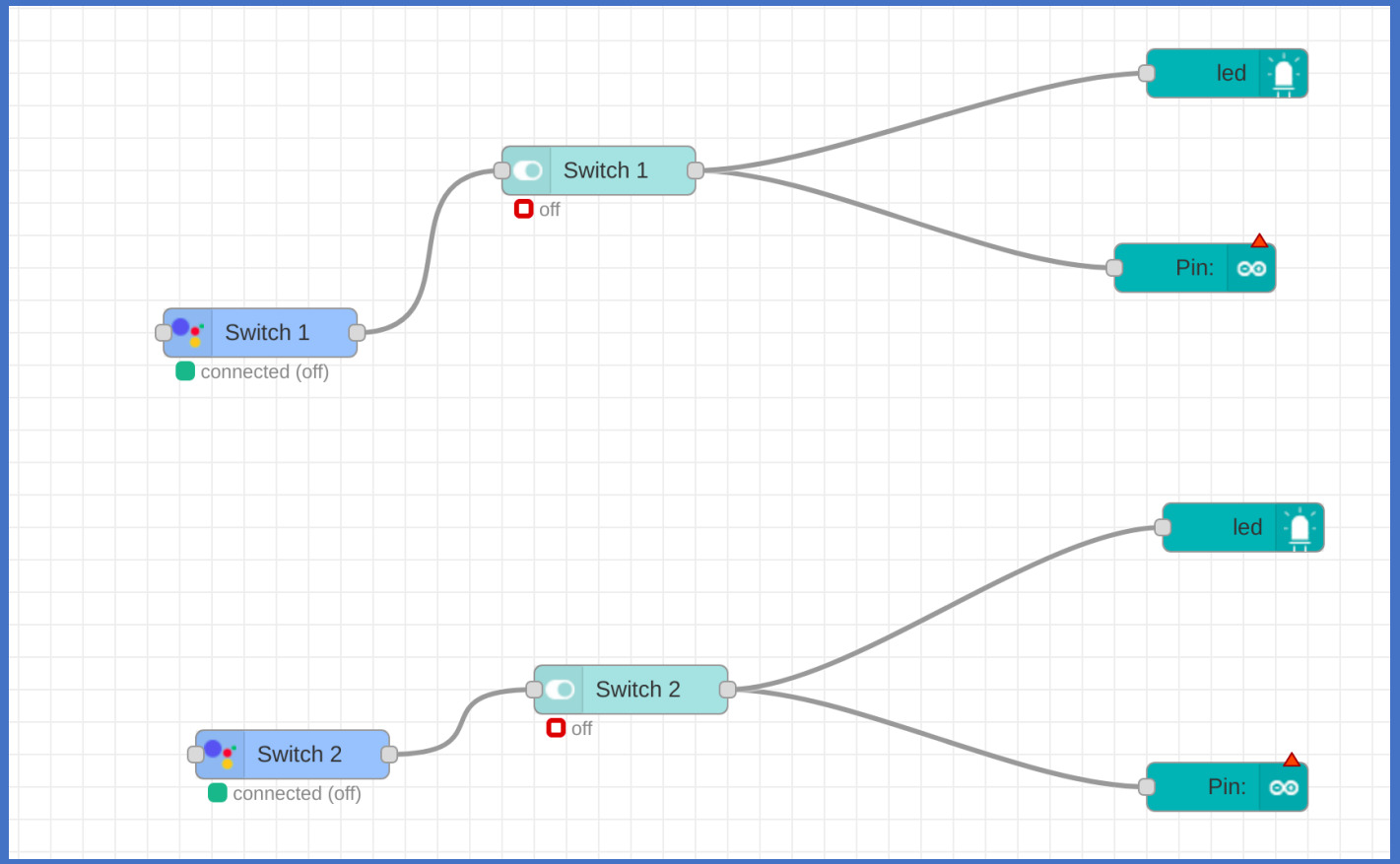
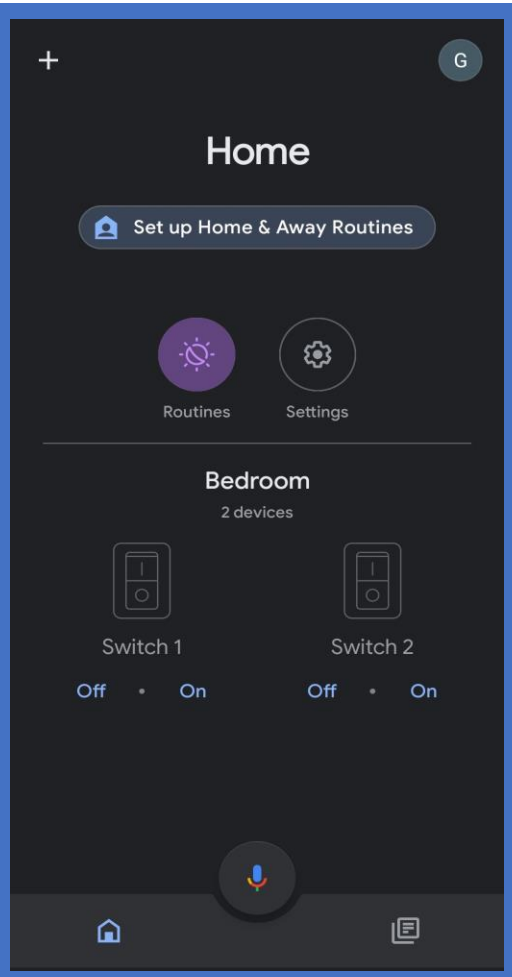

Standard Firmata Code

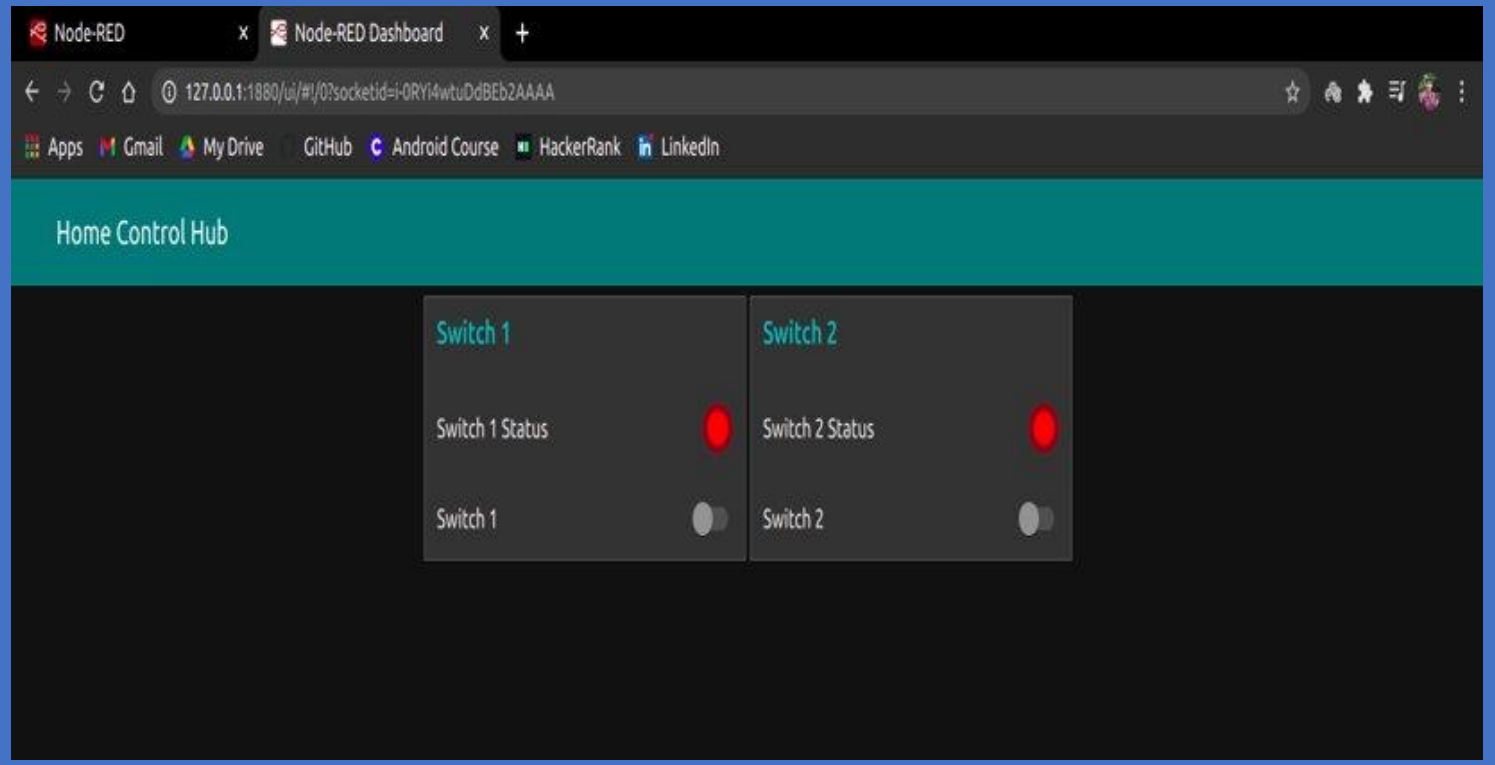
Node RED Flow Chart





Google Assistant in Mobile

Node RED Dashboard



Information on who has done what :-

- **Aditya** and **Abhijeet** watched IOT videos to understand how Arduino works. After research and analysis they have come to a conclusion to use Standard Firmata Code for this project.
- **Gopal** and **Abhijeet** prepared the Node- RED dashboard . They have created two switches so that two appliances can be operated at the same time.
- **Chirag** and **Aditya** came up with the use of Nora software integrated with Google Home mobile application. This will enable voice operation of the home appliances.
- **Gopal** has made the presentation and **Aditya** will be presenting in the class.
- **Chirag** has ordered all the hardware. He along with **Gopal** is doing research about the connections to be made so as to ensure smooth functioning of our project.

Video Demonstration :- https://youtu.be/QsenTzaM0Bo

Thank You

Team 19