IOT BASED HOME AUTOMATION SYSTEM

-By Swarnapudi Ishwar

SRM AP, Amravati

INTRODUCTION

The concept of “Home Automation” has been in existence for several years. “Smart Home”, “Intelligent Home” are terms that followed and has been used to introduce the concept of networking appliance within the house. Home Automation Systems (HASs) includes centralized control and distance status monitoring of lighting, security system, and other appliances and systems within a house. HASs enables energy efficiency, improves the security systems, and certainly the comfort and ease of users. In the present emerging market, HASs is gaining popularity and has attracted the interests of many users

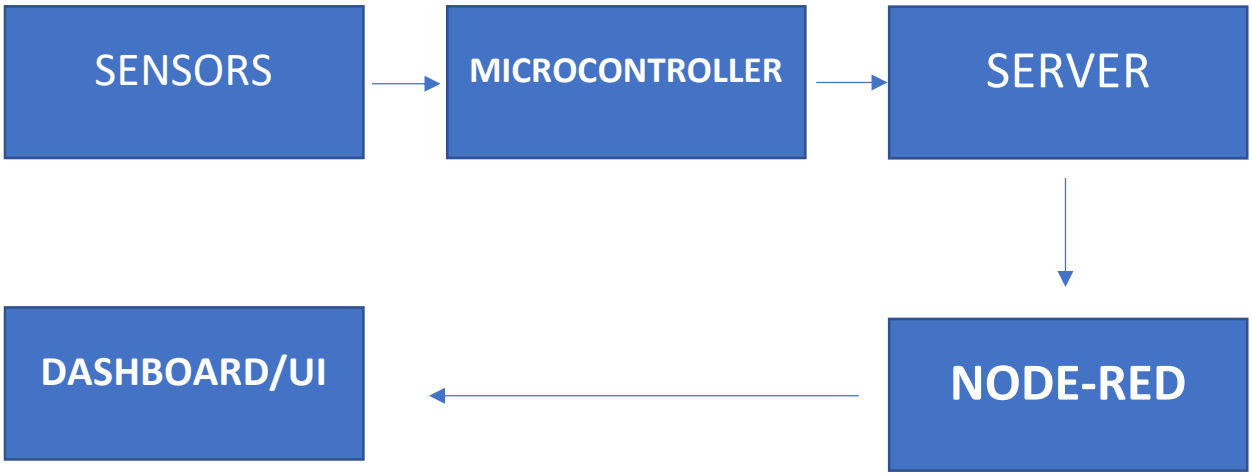
LITERATRURE SURVEY

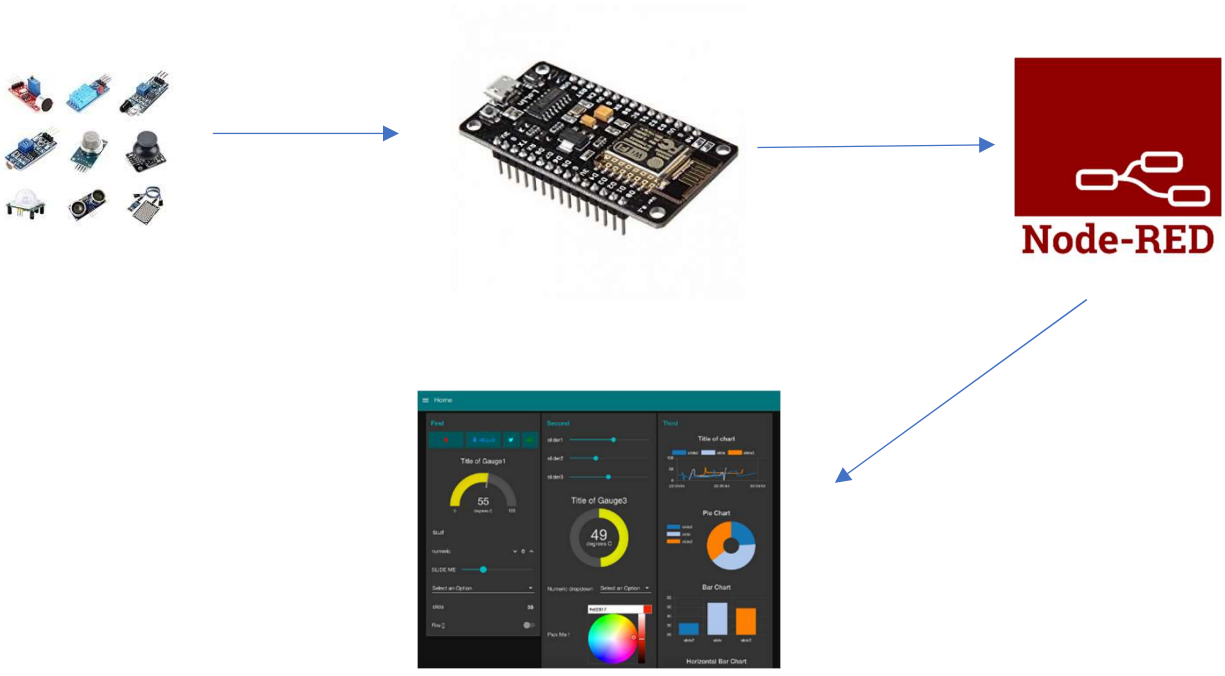
Existing Problem - The system comes with its own challenges. Mainly being, in the present day, end users especially elderly and disabled, even though hugely benefited, aren't seen to accept the system due to the complexity and cost factor and there are systems which are not open source and with various difficulties in it.

Proposed solution- This project presents the overall design of Home Automation System especially with low cost and wireless system with a user friendly and easy interface and provides other features such as humidity, temperature, and earthquake monitor for security purposes.

THEORITICAL ANALYSIS

Block Diagram-





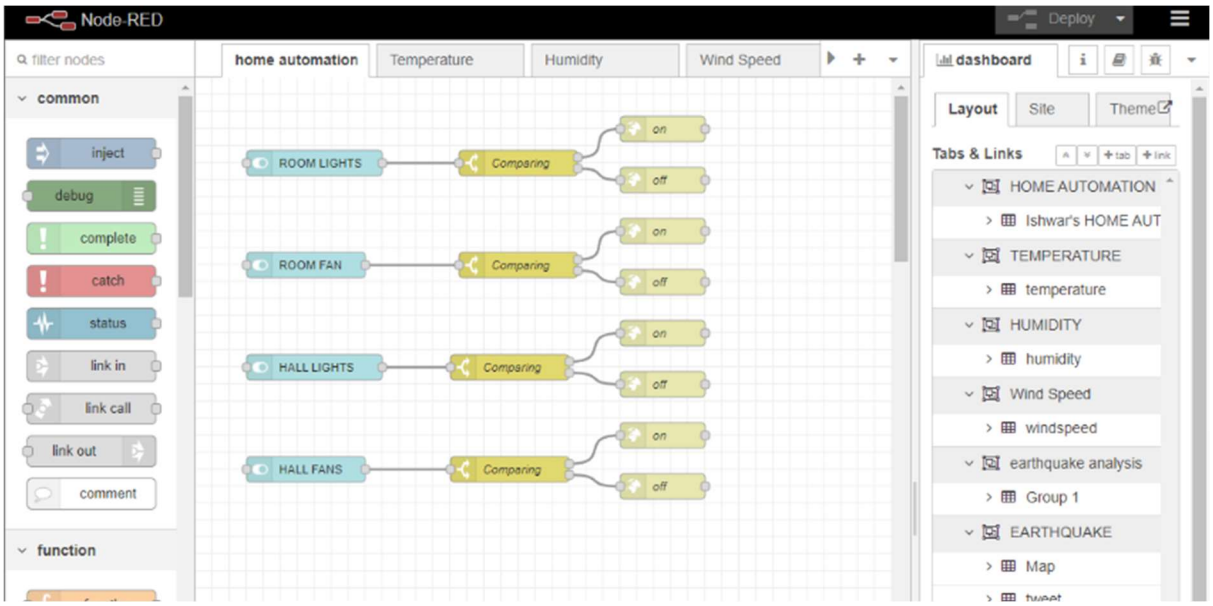
SOFTWARE ANALYSIS

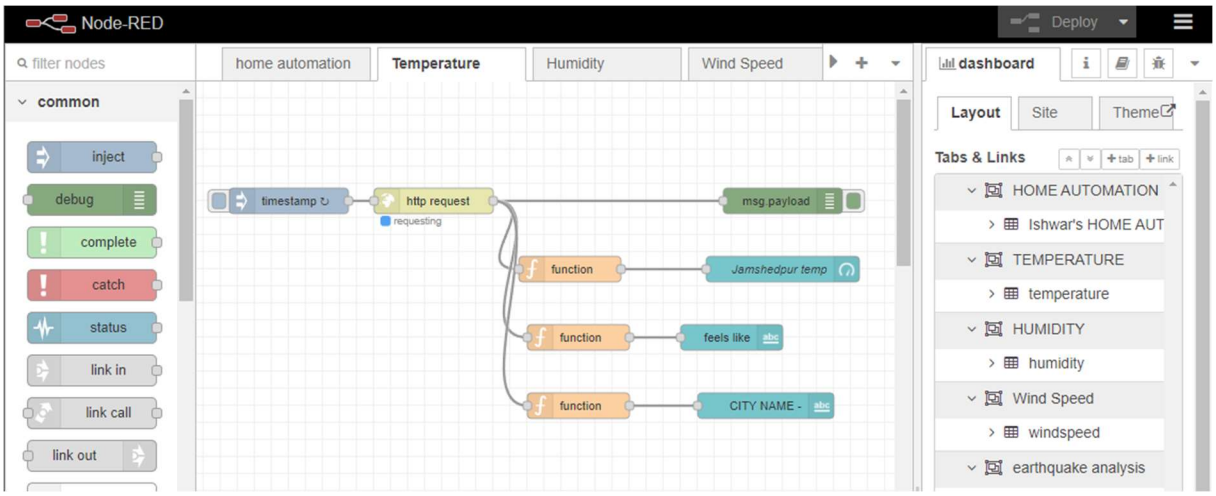
NODE RED - Node-RED is a programming tool for wiring together hardware devices, APIs, and online services in new and interesting ways. It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click.

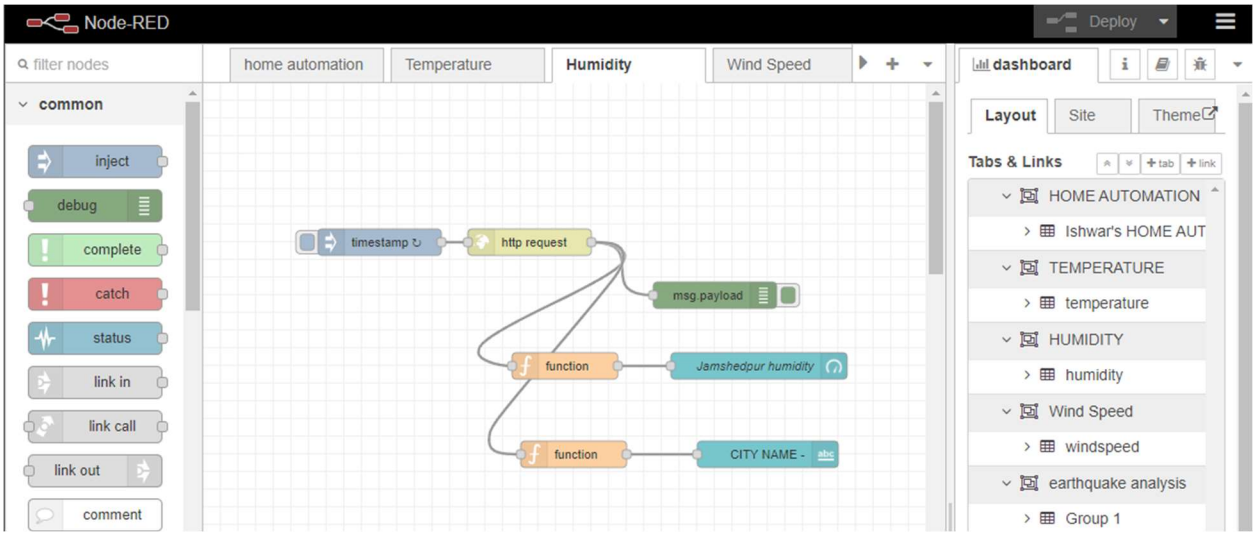
JAVA SCRIPT- It is a scripting or programming language that allows you to implement complex features on web pages — every time a web page does more than just sit there and display static information for you to look at — displaying timely content updates, interactive maps, animated 2D/3D graphics, scrolling video jukeboxes, etc. — you can bet that JavaScript is probably involved. It is the third layer of the layer cake of standard web technologies, two of which (HTML and CSS) we

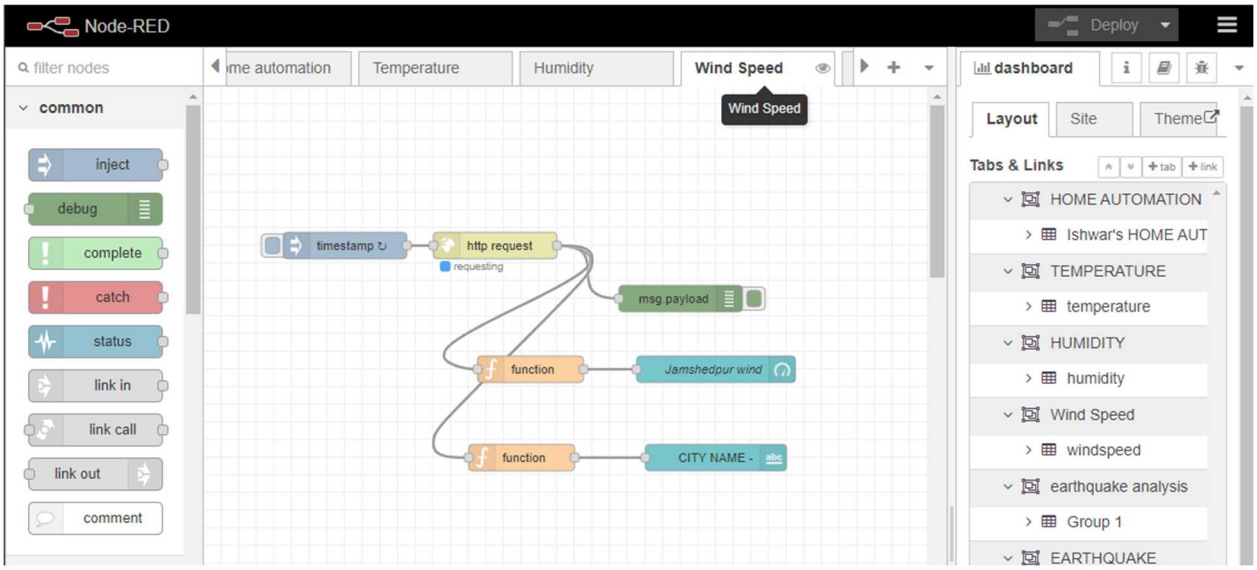
have covered in much more detail in other parts of the Learning Area.

EXPERIMENTAL INVESTIGATION






Node-RED
Deploy
filter nodes
home automation
Temperature
Humidity
Wind Speed
dashboard
common
inject
debug
complete
catch
status
link in
link call
link out
comment
timestamp
http request
msg.payload
function
Jamshedpur humidity
function
CITY NAME -
Layout
Site
Theme
Tabs & Links
HOME AUTOMATION
Ishwar's HOME AUT
TEMPERATURE
temperature
HUMIDITY
humidity
Wind Speed
windspeed
earthquake analysis
Group 1


Node-RED
Deploy
filter nodes
Temperature
Humidity
Wind Speed
Wind Speed
dashboard
common
inject
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complete
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comment
timestamp
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msg.payload
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Jamshedpur wind
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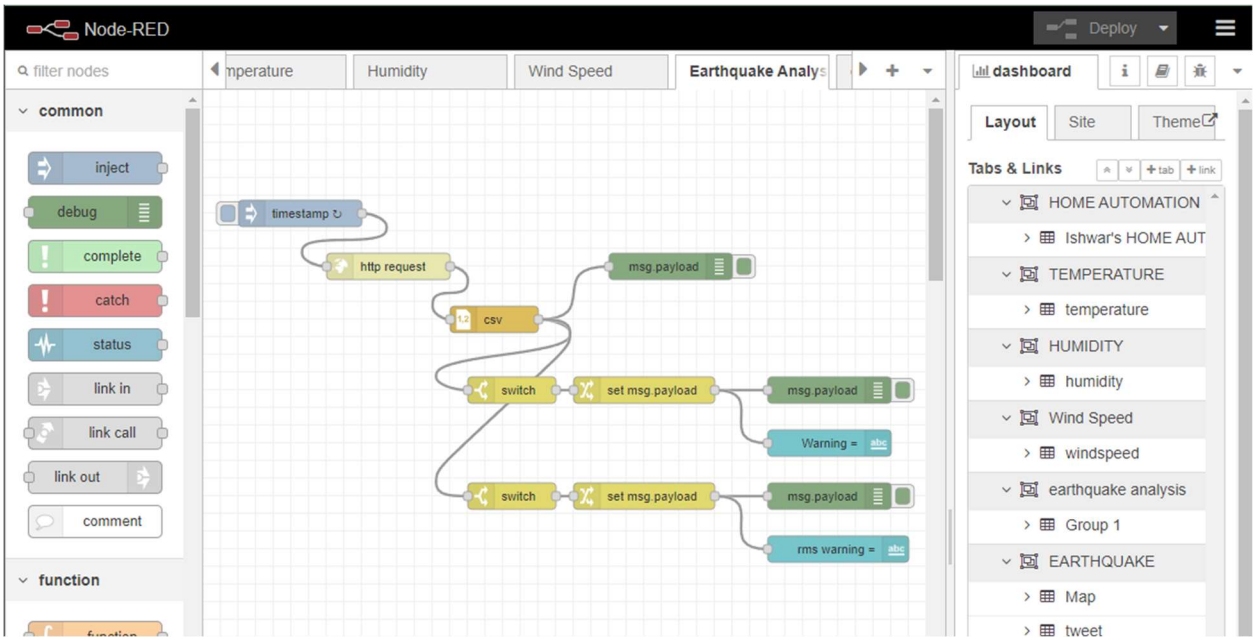
CITY NAME -
Layout
Site
Theme
Tabs & Links
HOME AUTOMATION
Ishwar's HOME AUT
TEMPERATURE
temperature
HUMIDITY
humidity
Wind Speed
windspeed
earthquake analysis
Group 1
EARTHQUAKE


Node-RED
Deploy
filter nodes
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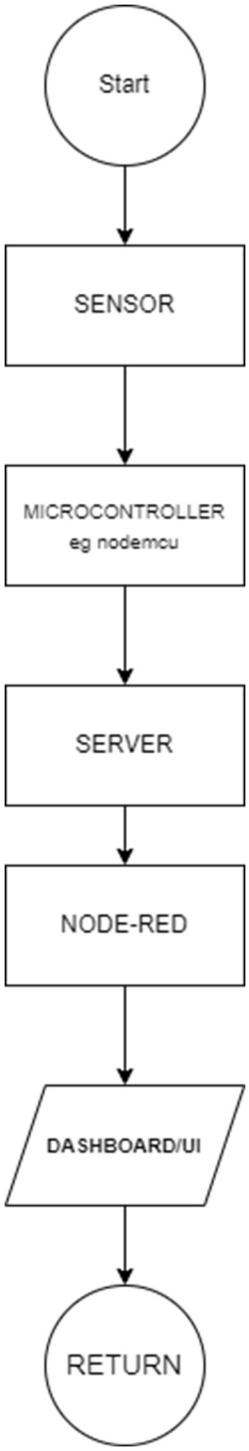
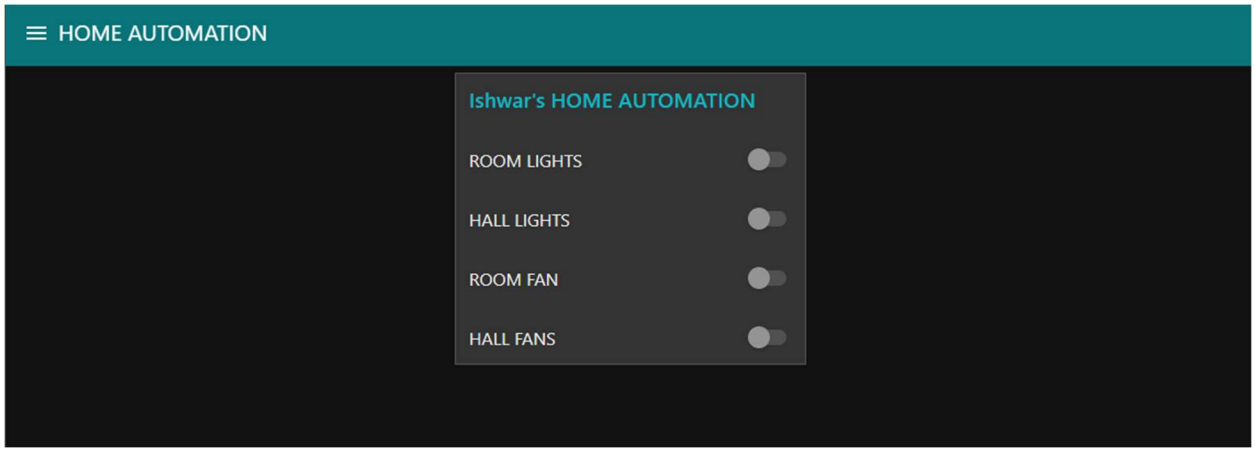
Wind Speed
Earthquake Analys
dashboard
Layout
Site
Theme
Tabs & Links
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
timestamp
http request
csv
msg.payload
switch
set msg.payload
msg.payload
Warning =
switch
set msg.payload
msg.payload
rms warning =
HOME AUTOMATION
Ishwar's HOME AUT
TEMPERATURE
temperature
HUMIDITY
humidity
Wind Speed
windspeed
earthquake analysis
Group 1
EARTHQUAKE
Map
tweet

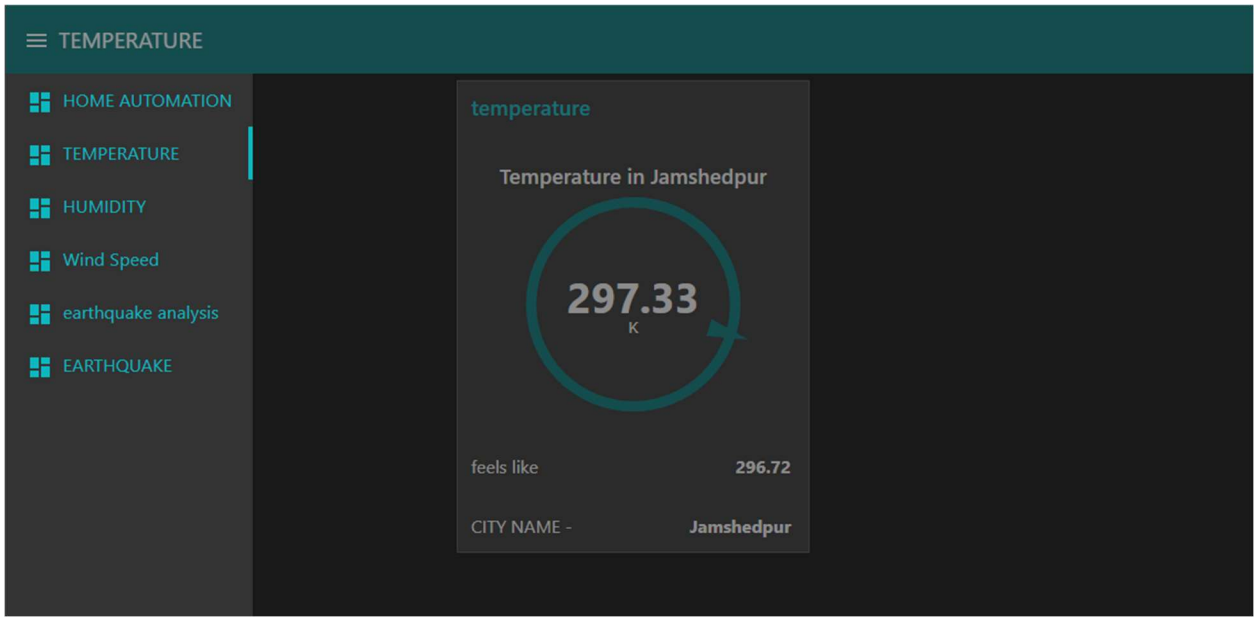
FLOWCHART

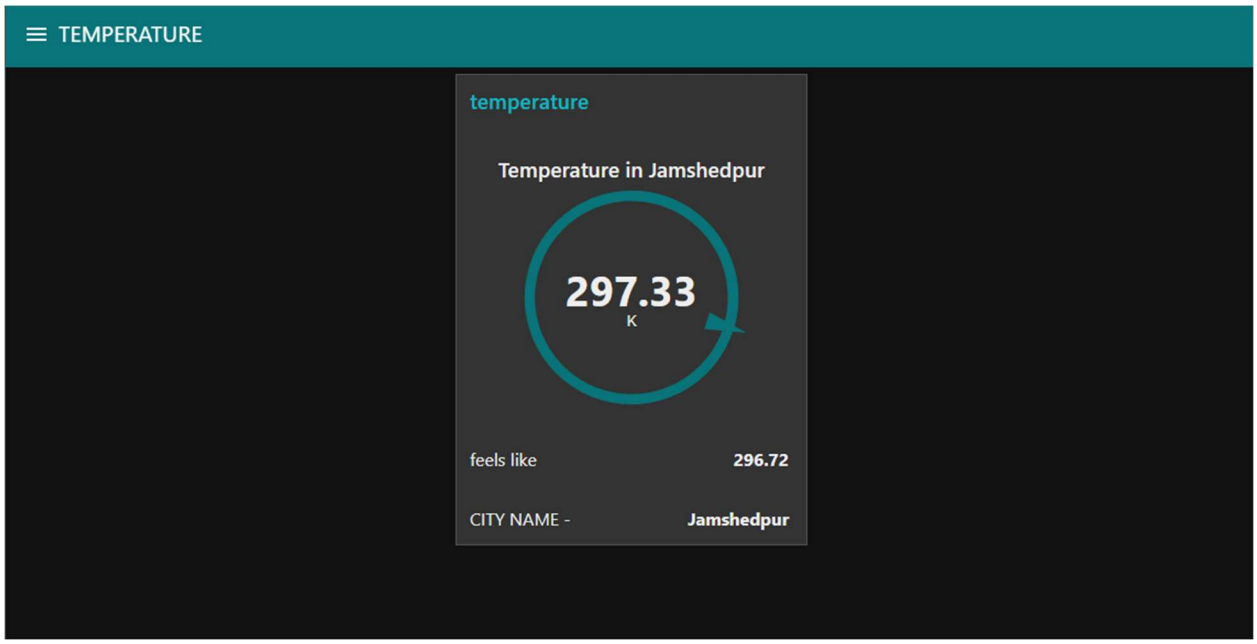

Start
SENSOR
MICROCONTROLLER
eg nodemcu
SERVER
NODE-RED
DASHBOARD/UI
RETURN

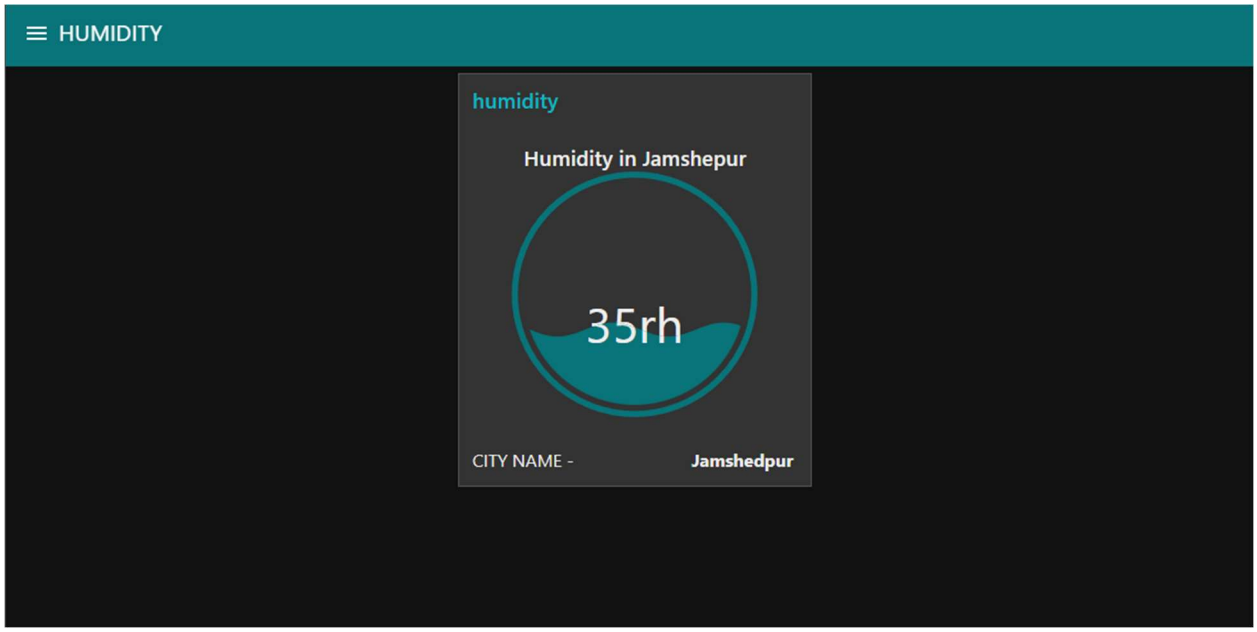
RESULT

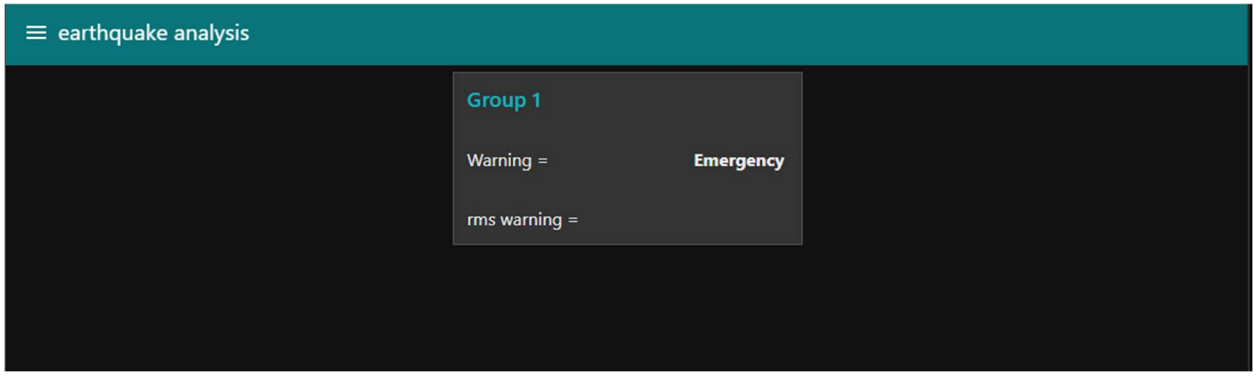
- THE RESULT OF THE PROJECT IS AS FOLLOWS: -

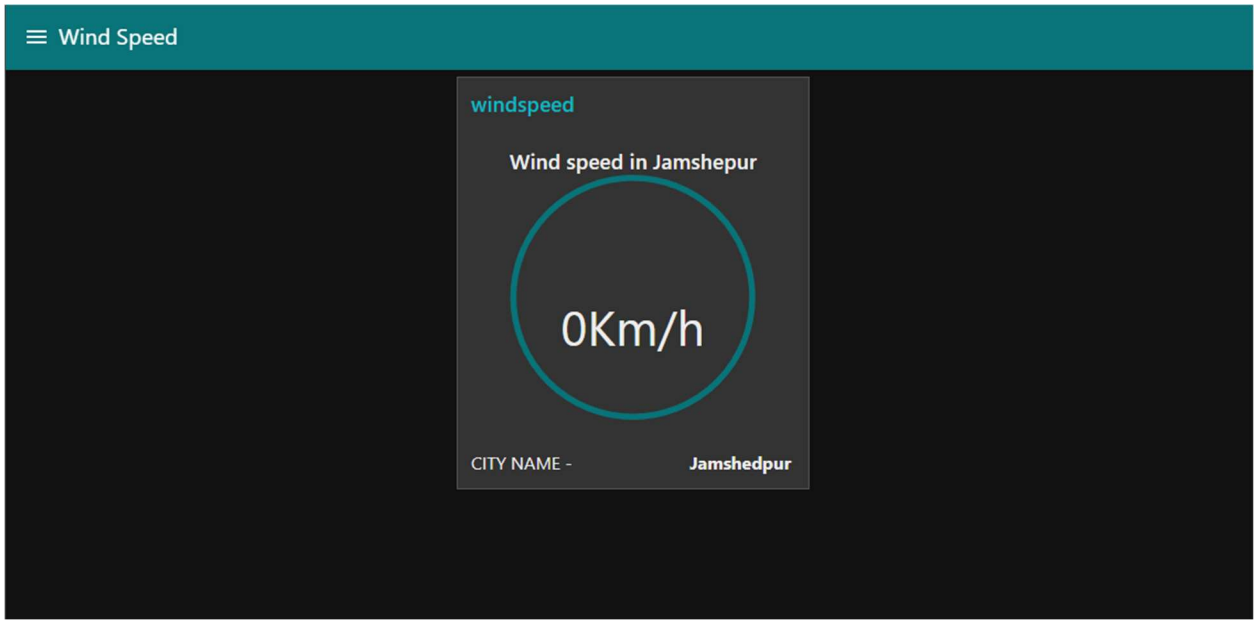





TEMPERATURE
temperature
Temperature in Jamshedpur
297.33
K
feels like
296.72
CITY NAME -
Jamshedpur


HUMIDITY
humidity
Humidity in Jamshepur
35rh
CITY NAME -
Jamshedpur


earthquake analysis
Group 1
Warning =
Emergency
rms warning =


Wind Speed
windspeed
Wind speed in Jamshepur
0Km/h
CITY NAME -
Jamshedpur

ADVANTAGES OF HOME AUTOMATION

1. IT IS USER FRIENDLY AND WIRELESS
2. EASILY ACCESIBLE AND MONITORABLE FROM ANY LOCATION.
3. LOW COST BUILT AND EFFICIENT
4. SECURITY FROM EARTHQUAKE
5. WETAHER MONITORING TO MAKE PLANS ACCORDINGLY.

DISADVANTAGES OF HOME AUTOMATION

1. CURRENTLY HAS VERY LOW MARKET
2. LESS RELIABLITY AND ACCURACY
3. SAFETY OR SECURITY BREACH BY HACKERS
4. MORE COMPLEXITY

APPLICATIONS

The most common *applications of home automation* are: -

- Lighting control
- HVAC
- Outdoor lawn irrigation
- Kitchen appliances
- Security systems.

CONCLUSION

This project is developed make a smart home automation system with sensors and actuators for home purposes and in future used in industrial as well as other purposes. It is evident from this project work that an individual control home automation system can be cheaply made from low-cost locally available components and can be used to control multifarious home appliances ranging from the security lamps, the television to the air conditioning system and even the entire house lighting system. And better still, the components required are so small and few that they can be packaged into a small inconspicuous container. The designed home automation system was tested a number of times to control different home appliances used in the lighting system, earthquake monitoring etc . Hence, this system is scalable and flexible.

FUTURE SCOPE

THIS PROJECT CAN BE MADE MORE ADVANCED AND USEFUL WITH ADDITION AND IMPLEMENATION OF ADVANCED TECHNOLOGY LIKE FOR EXAMPLE ADDING RASPBERRY Pi AND SYSTEMS OR MACHINES IN IT AND CAN BE USED IN MULTINATIONAL ORGANIZATIONS AND BIGGER MARKET.

REFERENCE

- NODE RED WEBSITE
- NODE JS WEBSITE
- https://www.irjet.net/archives/V2/i3/Irjet-v2i3317.pdf
- RESEARCHGATE.NET
- YOUTUBE

SOURCE CODE


```
[
    {
        "id": "f97028089c414224",
        "type": "tab",
        "label": " Earthquake Analysis",
        "disabled": false,
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    ]
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ur.geojson",
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        "proxy": "",
        "authType": "",
        "senderr": false,
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            ]
        ]
```

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```

```
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        ]
    ]
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    "type": "switch",
    "z": "f97028089c414224",
    "name": "",
    "property": "payload",
    "propertyType": "msg",
    "rules": [
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            "v": "6",
            "vt": "str"
        }
    ],
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    "repair": false,
    "outputs": 1,
    "x": 390,
```

```
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    ]
},
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    "z": "f97028089c414224",
    "name": "",
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            "p": "payload",
            "pt": "msg",
            "to": "Emergency",
            "tot": "str"
        }
    ],
    "action": "",
```

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    "to": "",
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    "y": 340,
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        "bd265d941641372d"
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    ]
  },
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    "z": "f97028089c414224",
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    "tosidebar": true,
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    "tostatus": false,
```

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    "statusVal": "",
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    "console": false,
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```

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    "order": 4,
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    "y": 400,
    "wires": []
},
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```

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"z": "f97028089c414224",
"name": "",
"property": "payload",
"propertyType": "msg",
"rules": [
    {
        "t": "lte",
        "v": "1",
        "vt": "str"
    }
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"checkall": "true",
"repair": false,
"outputs": 1,
"x": 390,
"y": 460,
"wires": [
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    ]
]
```

```
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    "name": "",
    "rules": [
        {
            "t": "set",
            "p": "payload",
            "pt": "msg",
            "to": "Emergency",
            "tot": "str"
        }
    ],
    "action": "",
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    "name": "",
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    "console": false,
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    "complete": "payload",
    "targetType": "msg",
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    "y": 460,
```

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    "hidden": false
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