

Sending data from sensors to clouds

By:

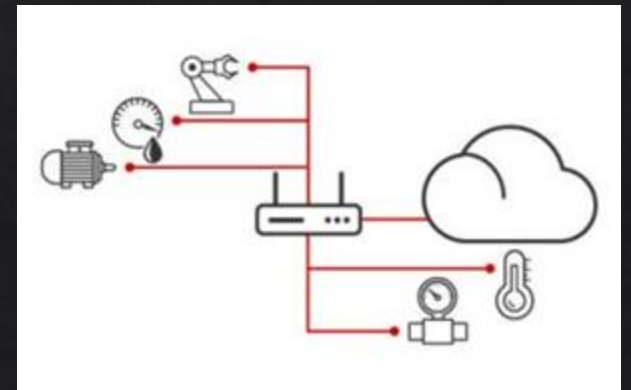
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An overview

- ◆ The main aim of the project was to send data from sensors to cloud.
- ◆ This enables one to keep track of data as and when it changes. Real-time data helps in monitoring values and ensuring timely prevention in case something goes wrong.
- ◆ Multiple sensors are connected to Arduino or Node MCU. As and when the sensors sense a new value they are sent to the real-time database and this data is retrieved from the cloud (in our case Firebase) with the help of a HTML page. This data can be viewed on a mobile friendly app.



Cloud

- ◆ Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user.
- ◆ Users can scale services to fit their needs, customize applications and access cloud services from anywhere with an internet connection.



Few sensors which can be used

1. Temperature sensor LM35 :



2. Accelerometer MPU6050 :



3.IR Sensor :

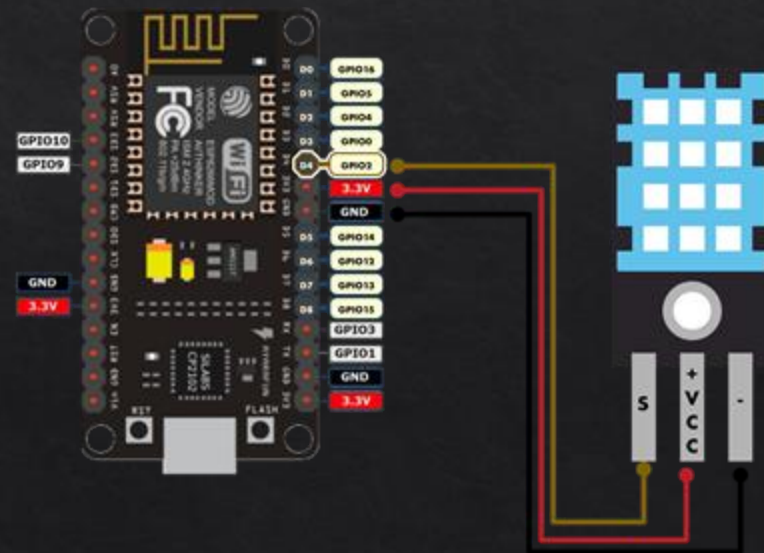


4.Ultrasonic Sensor:



Temperature sensor

- ◈ Working principle: Increase in resistance increases the temperature
- ◈ They are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius temperature.



Connections

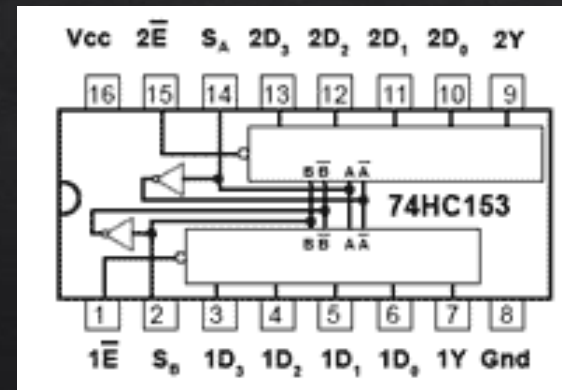
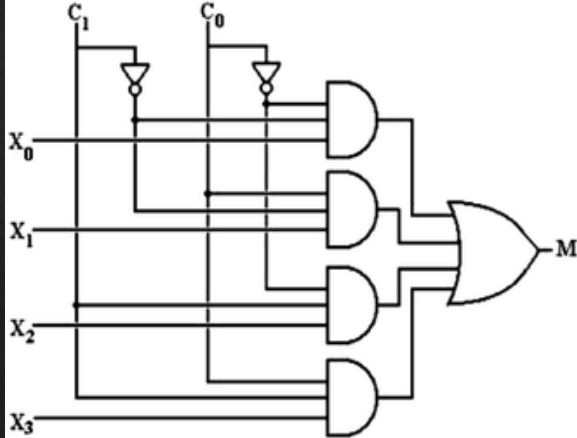
- ◆ V_{out} of four temperature sensors are connected to A_0 pin of the Node MCU using 4:1 4051 multiplexer.
- ◆ Inhibit, ground and V_{EE} are connected to ground of Node MCU
- ◆ V_{CC} of mux is connected to 3.3 V.
- ◆ The selection lines can be connected to any of the digital pins.

How it works?

- ◆ The temperature sensor transmits data to firebase as and when it detects changes. Firebase records this data in the real-time database.
- ◆ This change is retrieved by the HTML page in the form of snapshots.
- ◆ This HTML is then styled and is converted to a mobile- friendly app.
- ◆ Another feature is that the maximum temperature is also noted.

MULTIPLEXER

- ◆ Since this model had to be used with multiple sensors which all required to be connected to an analog point which wasn't available, a 4:1 multiplexer was used.
- ◆ This enables multiple sensors to be connected to the node MCU at the same time.



The App

TEMPERATURE 1	35.13	MAX :	37.71
TEMPERATURE 2	58.43	MAX :	60.76
TEMPERATURE 3	34.81	MAX :	35.3
TEMPERATURE 4	33.67	MAX :	36.18
ACCELEROMETER 1	80		
ACCELEROMETER 2	90		
ACCELEROMETER 3	74		
ACCELEROMETER 4	69		

Thank you!!