Air Purifier

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Background

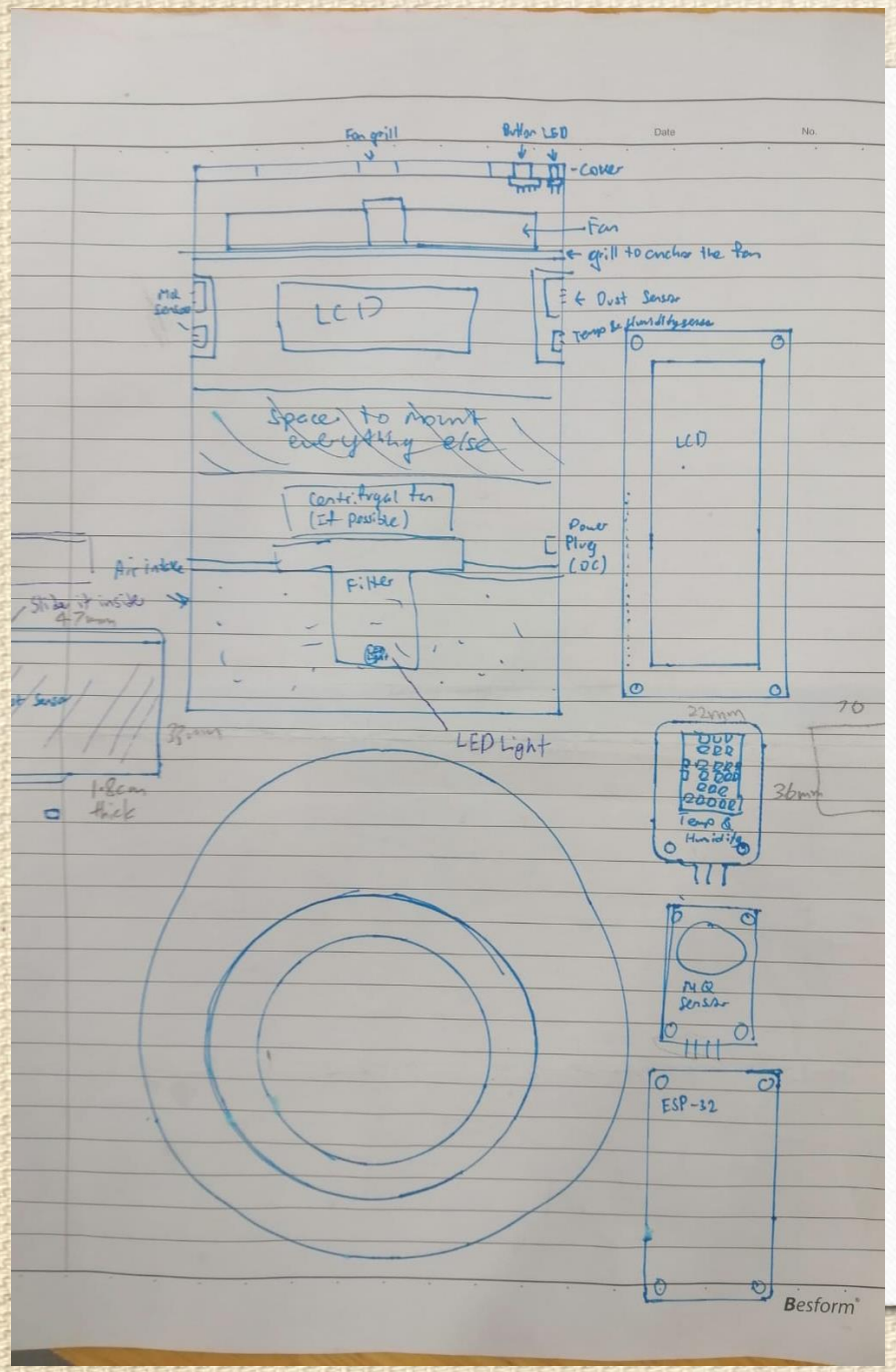
Purpose

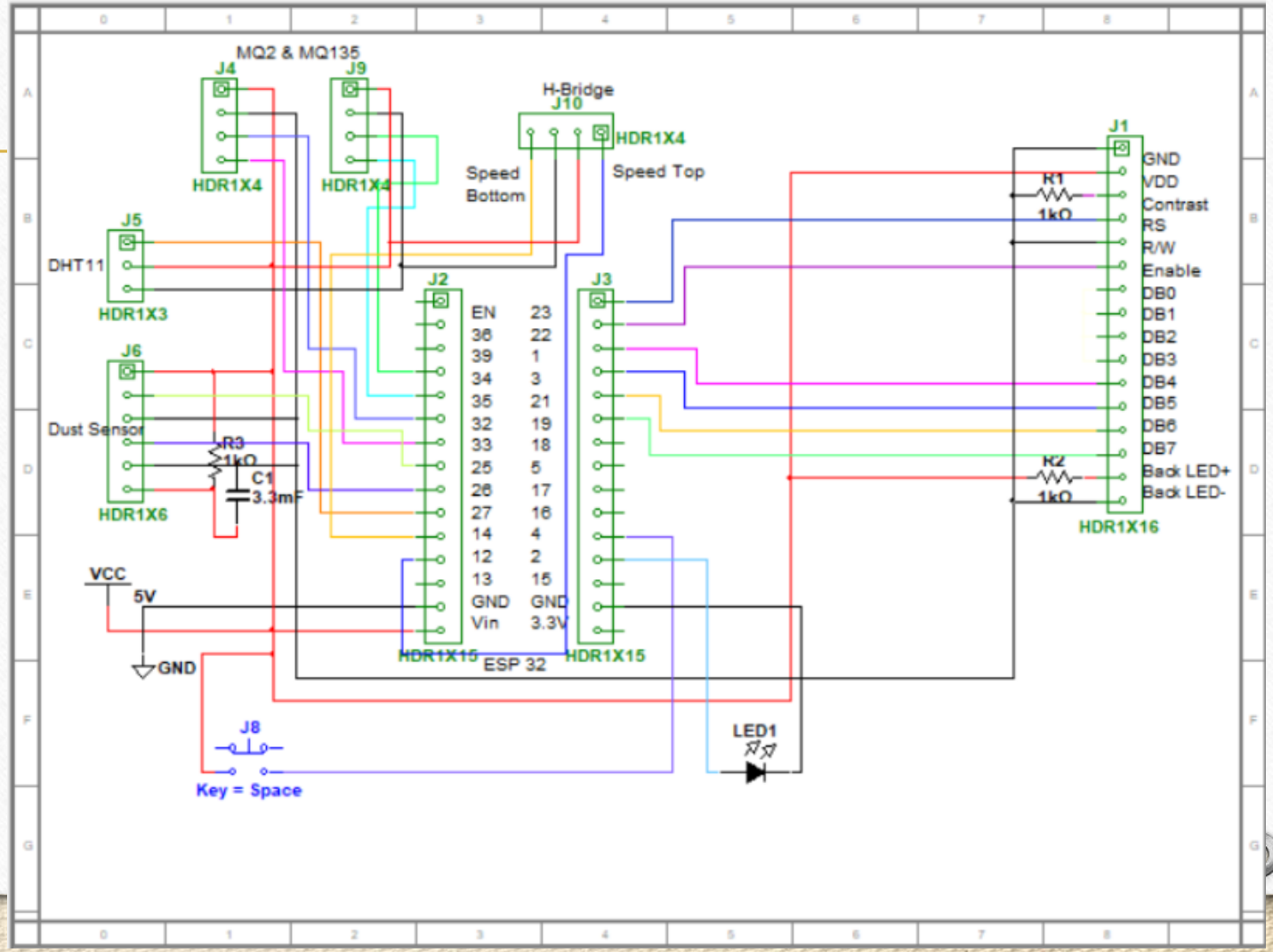
Our main goal for this project is to design a low cost & effective air purifier so that users from all walks of life are able to enjoy clean air in the event of an air pollution.

Components

- ESP32 Module
- GP2Y1014AU0F Dust Density Sensor
- MQ2 & MQ135 Gas Sensor
- DHT 11 Temperature & Humidity Sensor
- 16x2 Matrix LCD Display
- HEPA Dust Filter
- Fans
- LED & Button

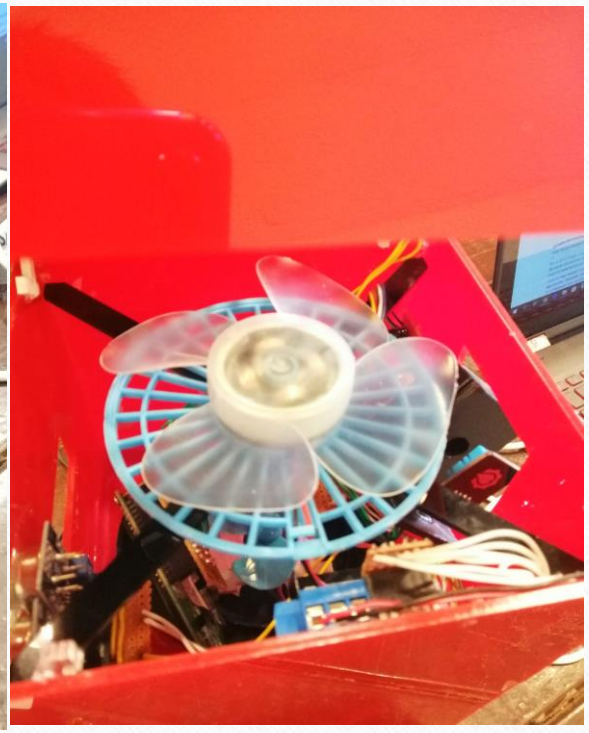
Sketches


Fan grill
Button LED
Date
No.
- Cover
Fan
grill to anchor the fan
Mic Sensor
LCD
Dust Sensor
Temp & Humidity sensor
Space to mount everything else
LED
Centrifugal fan (if possible)
Power Plug (DC)
Air intake
Filter
LED Light
22mm
36mm
Temp & Humidity
MQ Sensor
ESP-32
Besform


MQ2 & MQ135
J4
J9
HDR1X4
HDR1X4
H-Bridge
J10
HDR1X4
Speed Bottom
Speed Top
J5
DHT11
HDR1X3
J6
Dust Sensor
HDR1X6
R3
1kΩ
C1
3.3mF
J2
J3
EN 23
36 22
39 1
34 3
35 21
32 19
33 18
25 5
26 17
27 16
14 4
12 2
13 15
GND GND
Vin 3.3V
HDR1X15
ESP 32
HDR1X15
J1
R1
1kΩ
R2
1kΩ
GND
VDD
Contrast
RS
R/W
Enable
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
Back LED+
Back LED-
HDR1X16
VCC
5V
GND
J8
Key = Space
LED1

Prototype Model

Bottom-Filter



Upper-Fan components

Finished Design

DEMO

Features

- This air purifier can adjust the airflow based on the air quality and displays environmental readings such as Humidity, Temperature and Dust Density on the LCD Display.
- It also contains sensors that can detect harmful gases and alert the user.

Further Improvements

1. Adding more features such as smartphone support
2. Putting more space inside to allow better air flow
3. Having a more efficient fan to draw air through the filter.