Zona Del Silencio

- A smart system to reduce traffic noise

Mrs. S. S. Ambarkar | **Guide**

TEAM

Sanket Munot
Shravani Dasari
Utkarsha Kandale
Rupam Pusdekar

PROBLEM STATEMENT

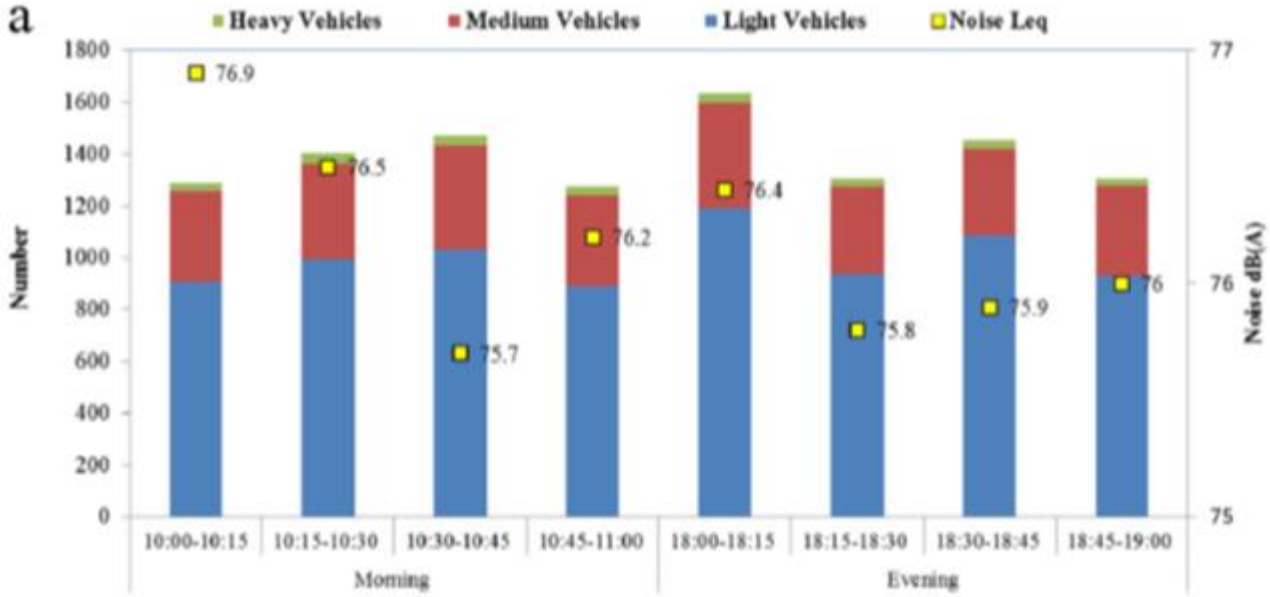
Sound/Noise pollution is one of the most severe problem in metropolitan area with a thriving population and traffic. The problem can be further amplified in “Silent Zones” - such as for students in schools or patients in hospitals.

LITERATURE SURVEY

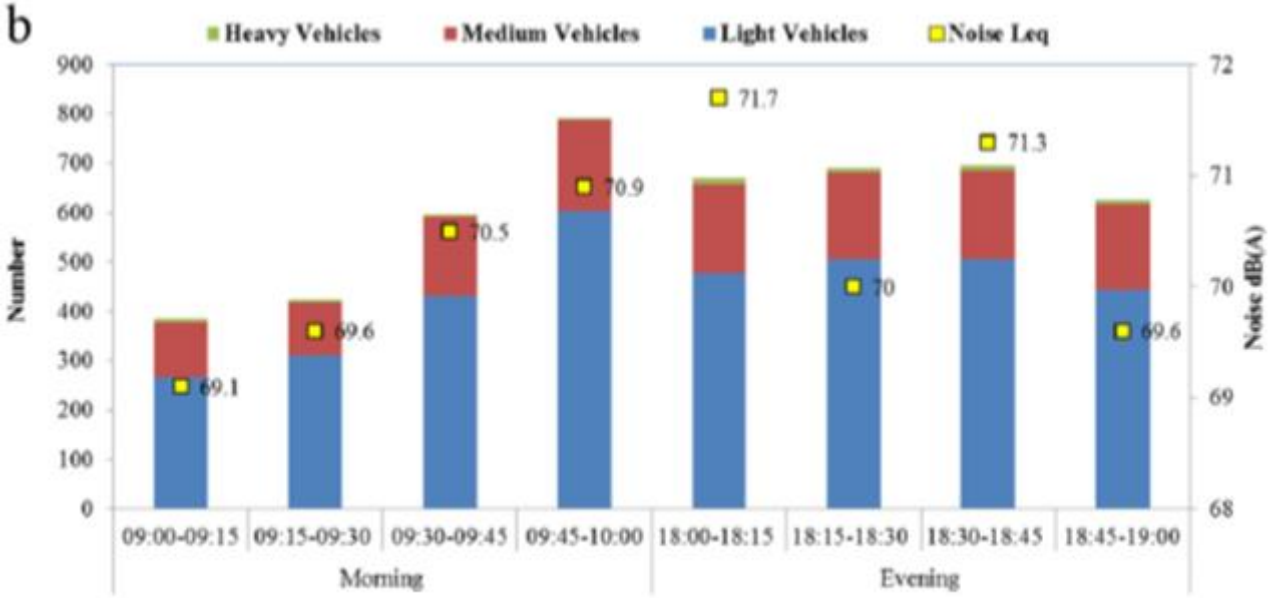
The study area comprises of three main roads namely Wardha road, SouthAmbazari road and NEERI road. These are classified as national highway, major and minor roads respectively. Road details including geometry, category, number of traffic lanes and road conditions are considered in the study. The width of national highway, major and minor roads is 21 m, 15 m and 7 m respectively. Road conditions were almost same for all roads. [1]

21°7'15"N
21°7'30"N
NEERI Road (Minor Road)
RPTS Road (Minor Road)
NEERI, Nagpur
South Amabazari Road (Major Road)
Wardha Road (National Highway NH-7)
79°4'15"E
79°4'30"E
0
70
140
280
m
N

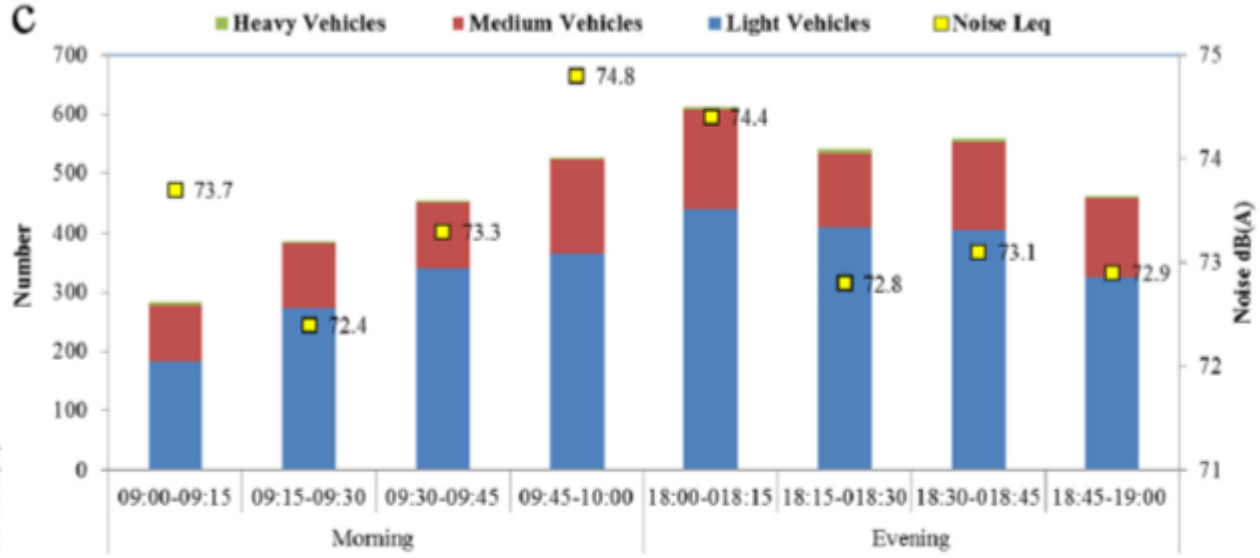
a


Heavy Vehicles
Medium Vehicles
Light Vehicles
Noise Leq
Number
Noise dB(A)
76.9
76.5
75.7
76.2
76.4
75.8
75.9
76
10:00-10:15
10:15-10:30
10:30-10:45
10:45-11:00
18:00-18:15
18:15-18:30
18:30-18:45
18:45-19:00
Morning
Evening

b


Heavy Vehicles
Medium Vehicles
Light Vehicles
Noise Leq
Number
Noise dB(A)
69.1
69.6
70.5
70.9
71.7
70
71.3
69.6
09:00-09:15
09:15-09:30
09:30-09:45
09:45-10:00
18:00-18:15
18:15-18:30
18:30-18:45
18:45-19:00
Morning
Evening

c


Heavy Vehicles
Medium Vehicles
Light Vehicles
Noise Leq
Number
Noise dB(A)
73.7
72.4
73.3
74.8
74.4
72.8
73.1
72.9
09:00-09:15
09:15-09:30
09:30-09:45
09:45-10:00
18:00-018:15
18:15-018:30
18:30-018:45
18:45-19:00
Morning
Evening

BACKGROUND OF PROJECT

The Library Noise Detector with Short Information Provider is a portable device that is used in detecting noise in the library.

The device is used to control excessive noise inside the library. [2]

NIROB - A Device that detects overall sound level using sound sensors and displays it on the Digital Board creating an awareness among the public. [3]

SOLUTION

The solution to this increasing problem, “Zona del Silencio” is a device which will be connected to the vehicle, upon entering the no-honking-zones the device will suppress honking of vehicles by drivers.

The major target for our device are two wheeler light vehicle.

METHODOLOGY

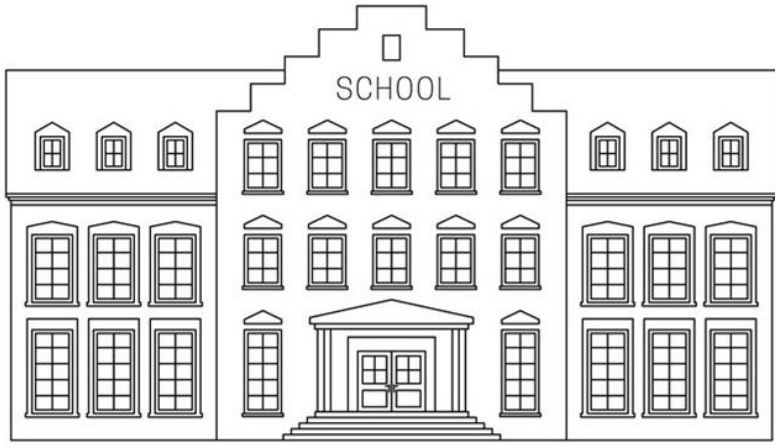
Once the vehicle enters in silent zone, device gets connected with nearby WiFi Router. Thus, disabling the horn.

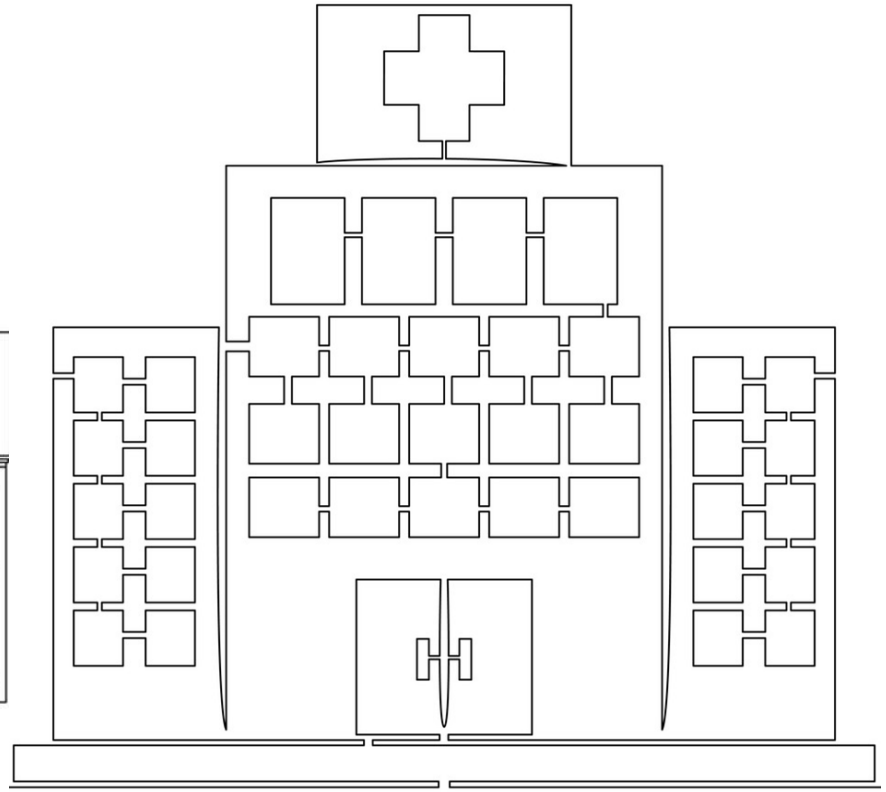
In case of an emergency, driver is provided with switch to use horn.

The count of this action is recorded at Database.

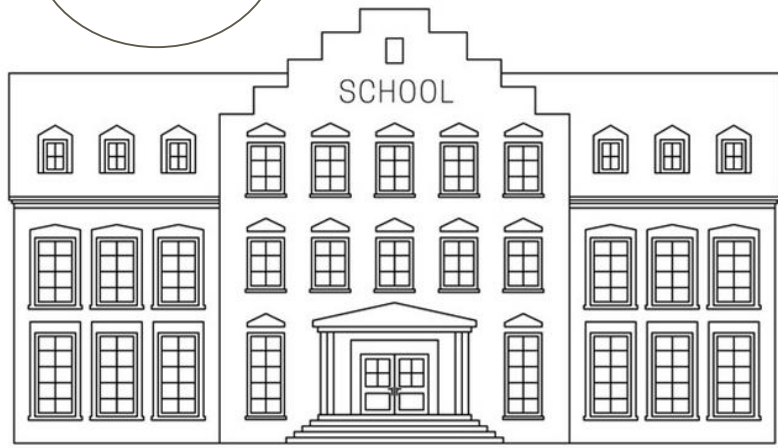
If notorious use of emergency switch is found, the user can be penalised.

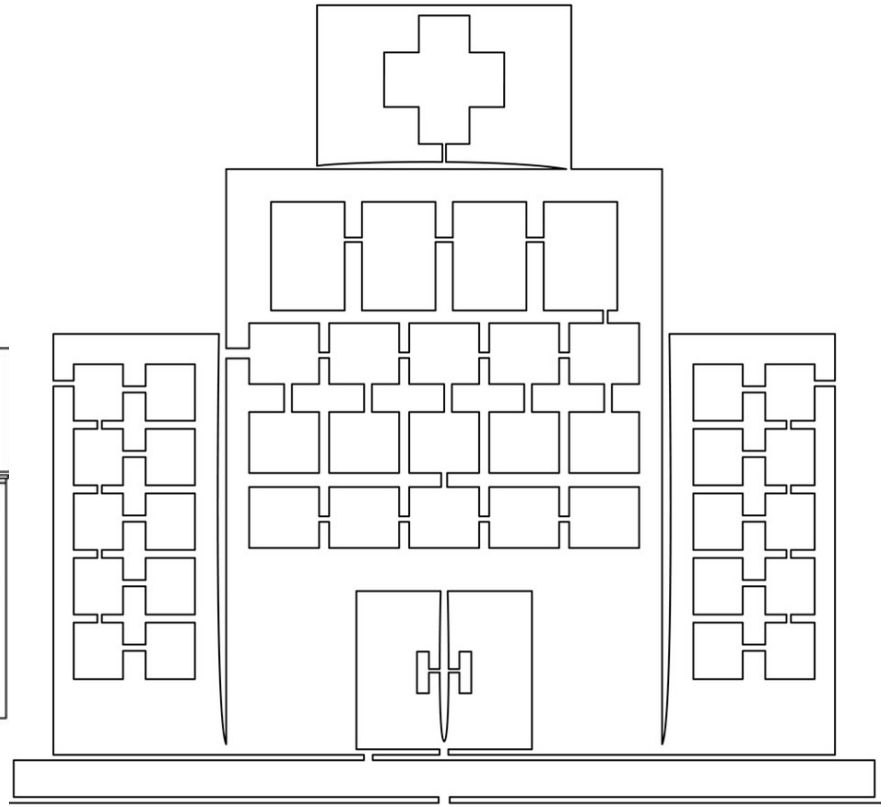
Silent Zone

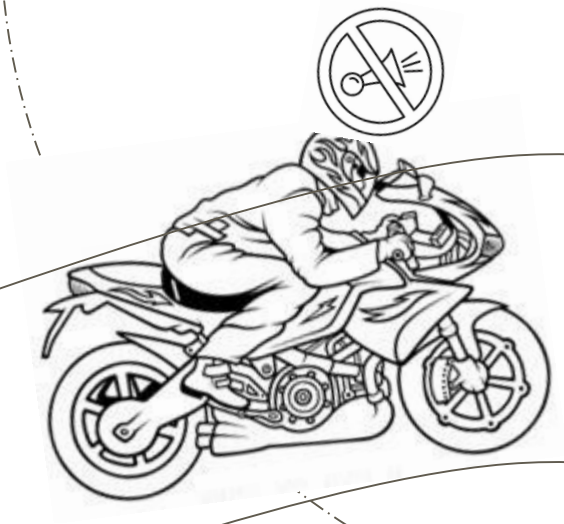




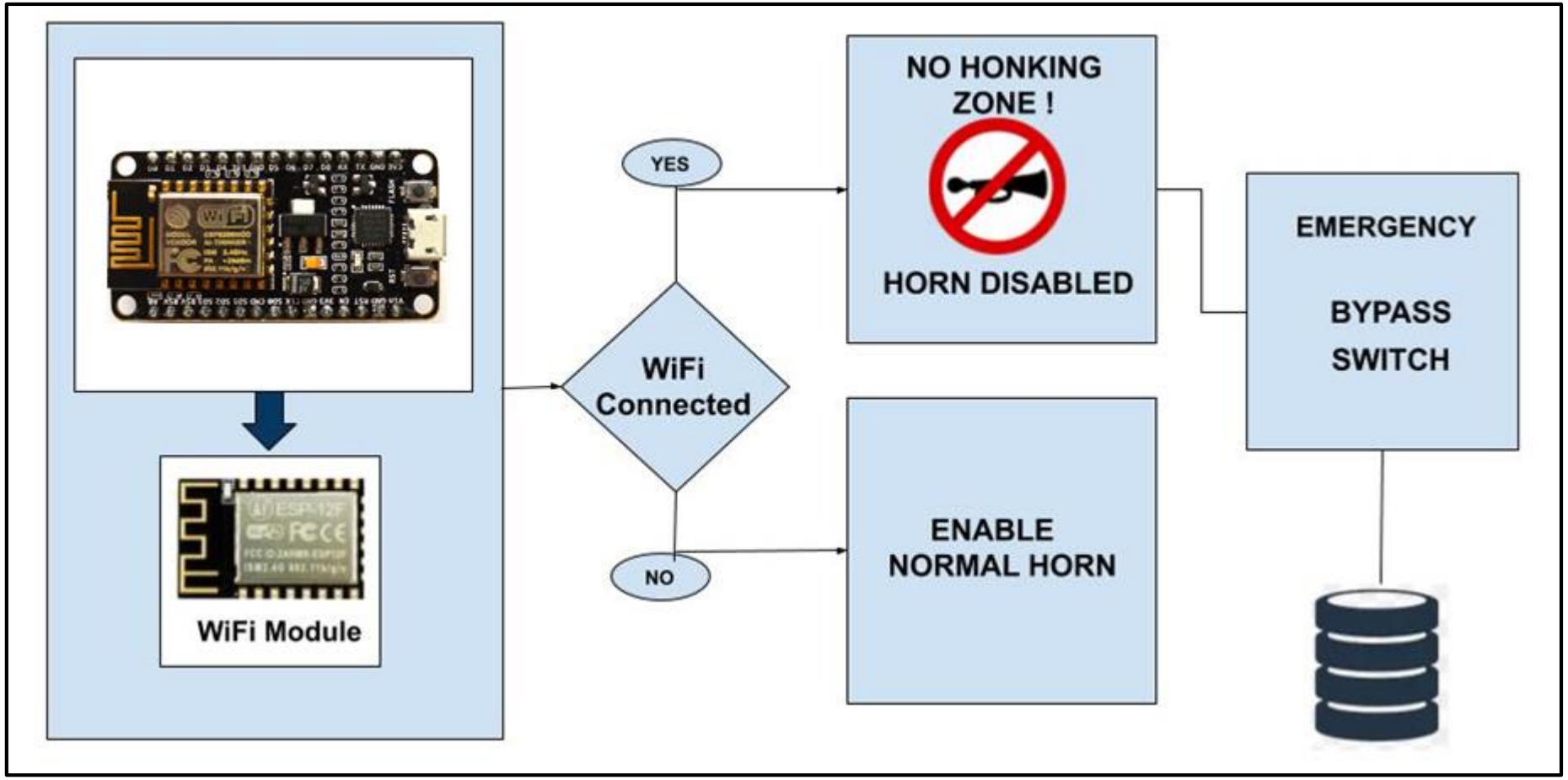
Silent Zone







PROPOSED ARCHITECTURE



IMPLEMENTATION

Node MCU is provided with a program which tries to connect to Wifi infinitely.

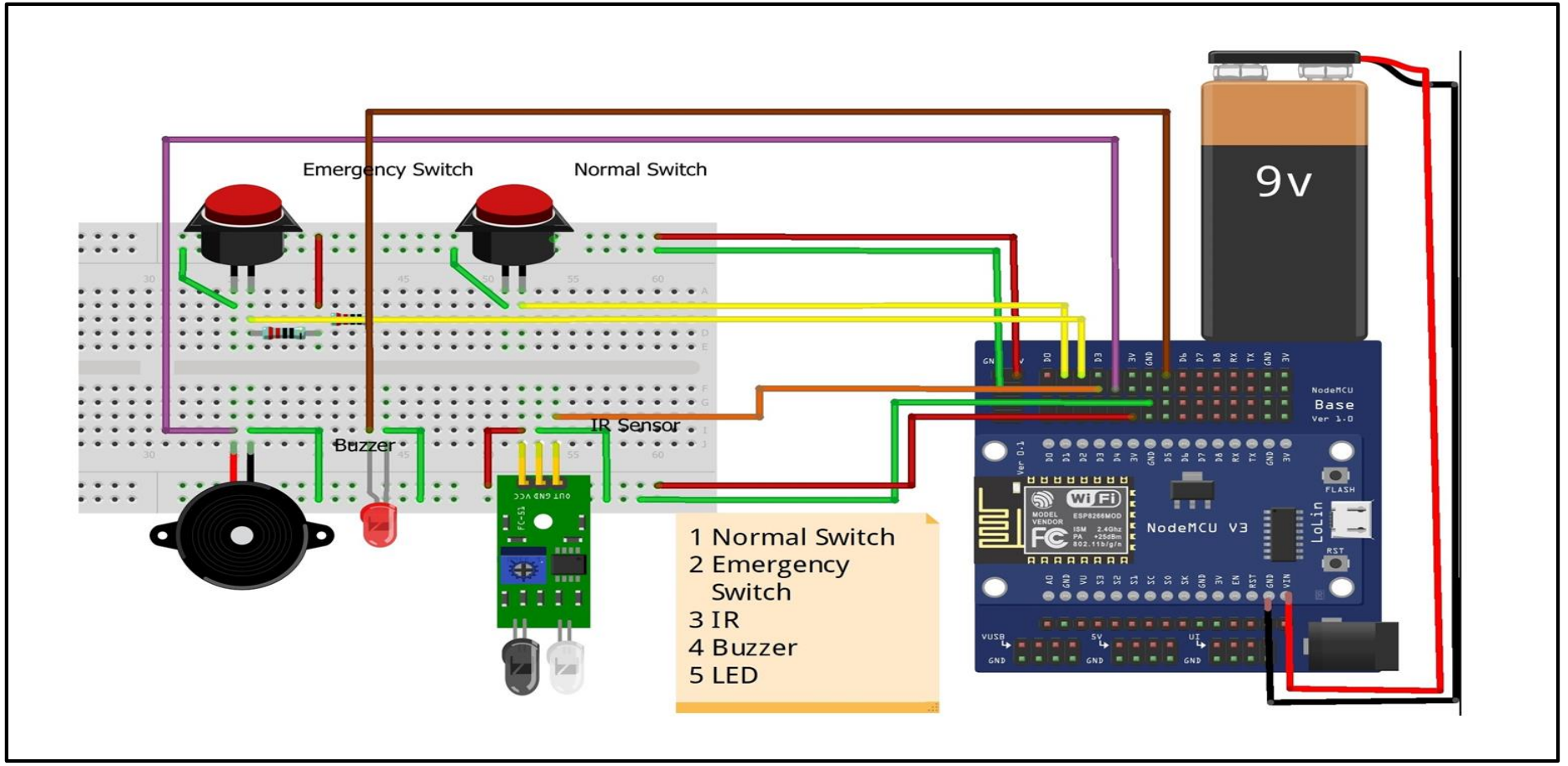
On a successful connection input from normal switch is disabled.

The input from normal switch is enabled upon exiting the Wi-Fi zone.

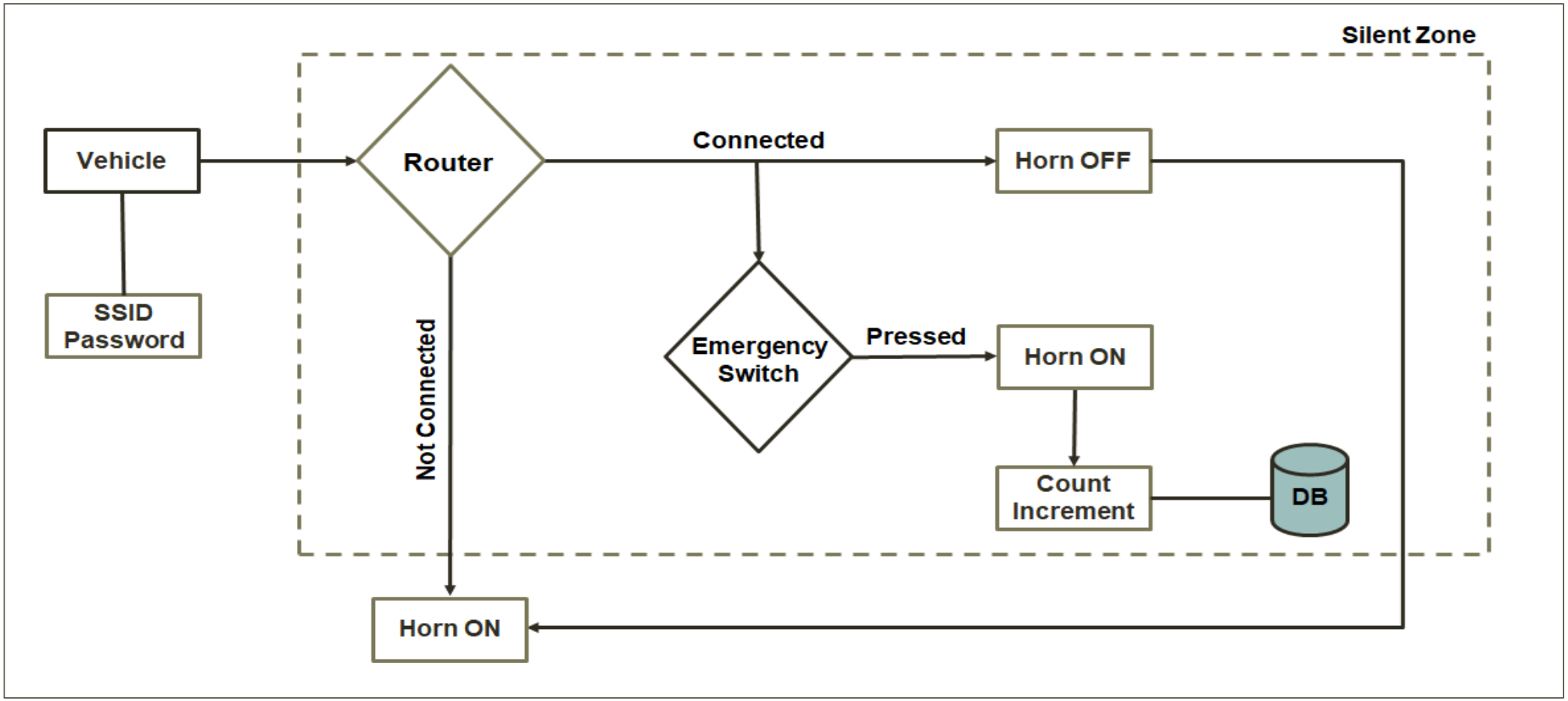
A secondary switch is used as emergency button in silent zone.

An infrared sensor is used to detect vehicles ahead, if no vehicle is detected a count is increased in database to penalise.

Circuit Diagram



Data Flow Diagram



SYSTEM REQUIREMENTS

- **Node MCU Microcontroller**
- **Wi-Fi Router**
- **IR Sensor**
- **PHP**
- **MySQL**
- **Misc. Hardware**

COSTING
535 ₹

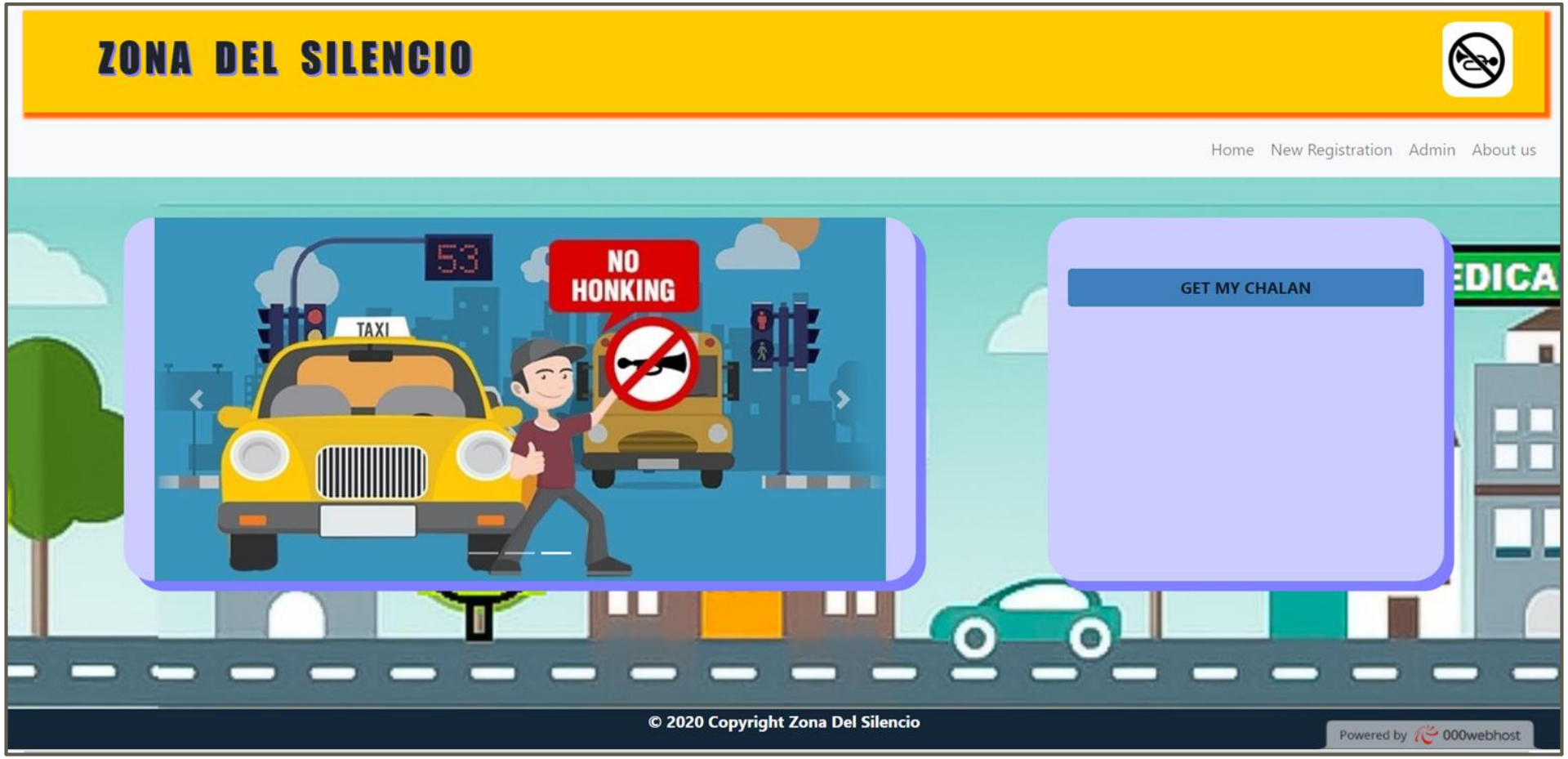
FUTURE SCOPE

Add IR sensor in all directions to detect surrounding activity.

Populate a clean dataset for future pattern recognition for betterment in penalty system.

Integration of Zona Del Silencio with RTO.

SNAPSHOTS – WEB INTERFACE



SNAPSHOT – MISUSE RECORD

MH-1 J-1111

Instance
2020-01-13 09:07:14
2020-01-14 10:47:43
2020-02-04 11:48:13

Payment Receipt

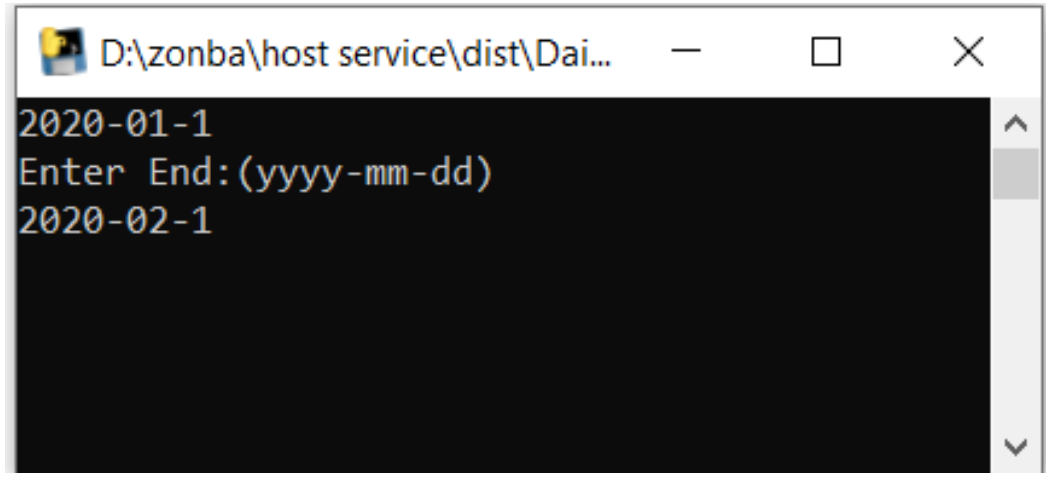
Invoice #	MH-13 20F-0729
Date	2020/03/12

Vehicle No	Unit Cost	Count	Amount
MH-13 20F-0729	100.00	16	₹1600
		Total	₹1600

Print

ZONA DEL SILENCIO

SNAPSHOT – REPORT GENERATOR



2020-01-13.csv

	A	B
1	vehicle Nu	count
2		
3	MH-1 J-11	1
4		
5	MH-13 20	5
6		
7	MH-2 J-22	1
8		
9	MH-3 J-33	1
10		
11		

OUTCOME

The true silent zones would be found !

REFERENCES

[1] Vijay, Ritesh & Sharma, Asheesh & Chakrabarti, Tapan & Gupta, Rajesh. (2015). Assessment of honking impact on traffic noise in urban traffic environment of Nagpur, India. Journal of Environmental Health Science and Engineering. 13. 10.1186/s40201-015-0164-4.

[2] David, Nathan & V, Anyika & IfeyinwaN, Ejindu & AyodejiO, Abioye. (2013). LIBRARY SOUND LEVEL METER. Quest Journal of Electronics and Communication Engineering Research(JECER). 1. 20-29.

[3] Sojol, Jafrul & Shihab, Hashmi & Ahamed, Tanvir & Abu, Sayed & Siam, & Siddique, Shahnewaz. (2019). Nirob: A Next Generation Green Earth Technology Based Innovative System for Metropolitan Sound Pollution Management. 10.23919/ICACT.2019.8701955.

THANKYOU