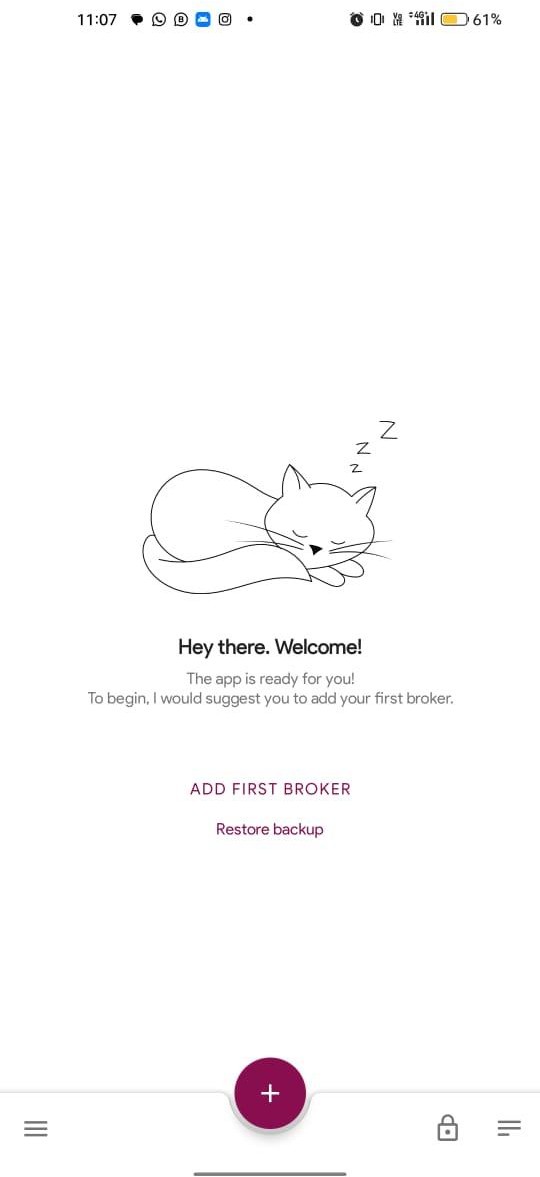
CAR PARKING SYSTEM USING IOT

NAME: Srinivasan M

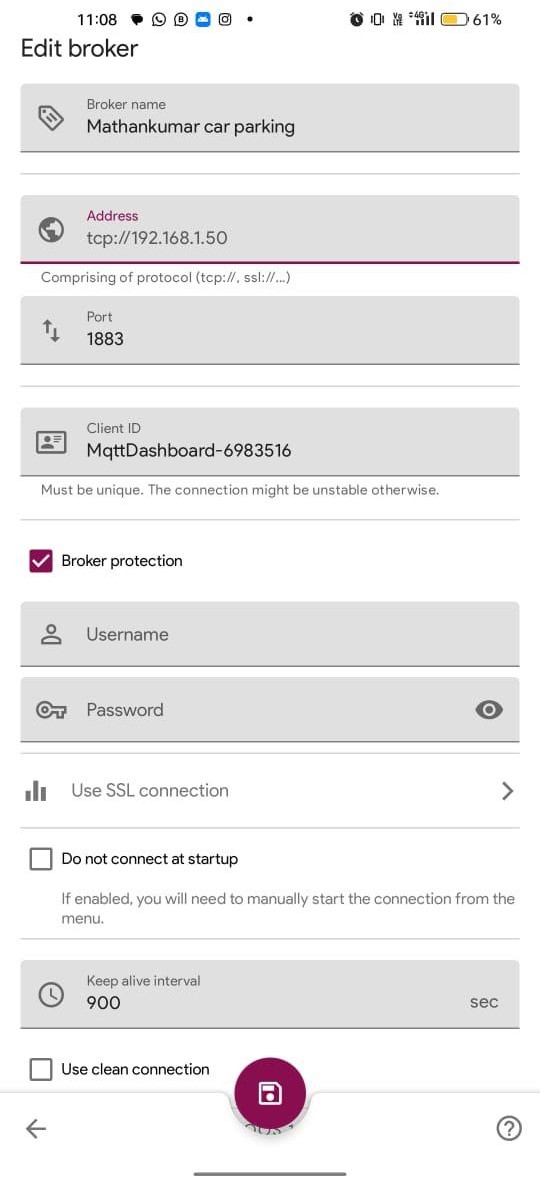
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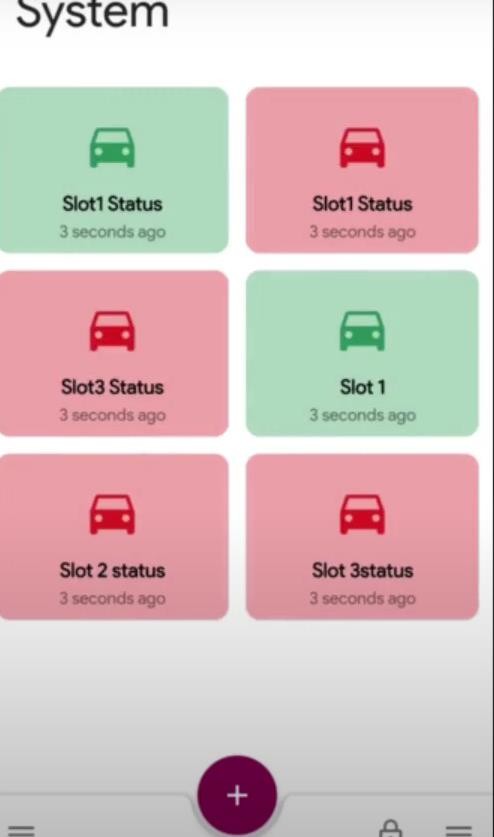
DEVELOPMENT PART 2

APP: FIRST STEP CREATE BROKER

STEP 2:EDIT BROKER



**STEP 3:**



**PROGRAM:**

#!/usr/bin/python import time

import RPi.GPIO as GPIO import time

import os,sys

from urllib.parse import urlparse import paho.mqtt.client as paho

GPIO.setmode(GPIO.BOARD)

GPIO.setwarnings(False)

'''

define pin for lcd '''

# Timing constants E\_PULSE = 0.0005

E\_DELAY = 0.0005

delay = 1

# Define GPIO to LCD mapping LCD\_RS = 7

LCD\_E = 11

LCD\_D4 = 12

LCD\_D5 = 13

LCD\_D6 = 15

LCD\_D7 = 16

slot1\_Sensor = 29

slot2\_Sensor = 31 GPIO.setup(LCD\_E, GPIO.OUT) # E GPIO.setup(LCD\_RS, GPIO.OUT) # RS

GPIO.setup(LCD\_D4, GPIO.OUT) # DB4 GPIO.setup(LCD\_D5, GPIO.OUT) # DB5 GPIO.setup(LCD\_D6, GPIO.OUT) # DB6

GPIO.setup(LCD\_D7, GPIO.OUT) # DB7

GPIO.setup(slot1\_Sensor, GPIO.IN) GPIO.setup(slot2\_Sensor, GPIO.IN) # Define some device constants

LCD\_WIDTH = 16 # Maximum characters per line LCD\_CHR = True

LCD\_CMD = False

LCD\_LINE\_1 = 0x80 # LCD RAM address for the 1st line LCD\_LINE\_2 = 0xC0 # LCD RAM address for the 2nd line LCD\_LINE\_3 = 0x90# LCD RAM address for the 3nd line

def on\_connect(self, mosq, obj, rc): self.subscribe("Fan", 0)

def on\_publish(mosq, obj, mid):

print("mid: " + str(mid))

mqttc = paho.Client() # object declaration # Assign event callbacks

mqttc.on\_connect = on\_connect mqttc.on\_publish = on\_publish

url\_str = os.environ.get('CLOUDMQTT\_URL', 'tcp://broker.emqx.io:1883') url = urlparse(url\_str)

mqttc.connect(url.hostname, url.port)

'''

Function Name :lcd\_init()

Function Description : this function is used to initialized lcd by sending the different commands

'''

def lcd\_init():

# Initialise display

lcd\_byte(0x33,LCD\_CMD) # 110011 Initialise lcd\_byte(0x32,LCD\_CMD) # 110010 Initialise lcd\_byte(0x06,LCD\_CMD) # 000110 Cursor move direction lcd\_byte(0x0C,LCD\_CMD) # 001100 Display On,Cursor Off, Blink Off

lcd\_byte(0x28,LCD\_CMD) # 101000 Data length, number of lines, font size lcd\_byte(0x01,LCD\_CMD) # 000001 Clear display

time.sleep(E\_DELAY) '''

Function Name :lcd\_byte(bits ,mode)

Fuction Name :the main purpose of this function to convert the byte data into bit and send to lcd port

'''

def lcd\_byte(bits, mode): # Send byte to data pins # bits = data

# mode = True for character # False for command

GPIO.output(LCD\_RS, mode) # RS

# High bits

GPIO.output(LCD\_D4, False) GPIO.output(LCD\_D5, False) GPIO.output(LCD\_D6, False) GPIO.output(LCD\_D7, False) if bits&0x10==0x10: GPIO.output(LCD\_D4, True) if bits&0x20==0x20: GPIO.output(LCD\_D5, True) if bits&0x40==0x40: GPIO.output(LCD\_D6, True) if bits&0x80==0x80: GPIO.output(LCD\_D7, True)

# Toggle 'Enable' pin lcd\_toggle\_enable()

# Low bits GPIO.output(LCD\_D4, False) GPIO.output(LCD\_D5, False) GPIO.output(LCD\_D6, False) GPIO.output(LCD\_D7, False) if bits&0x01==0x01: GPIO.output(LCD\_D4, True) if bits&0x02==0x02: GPIO.output(LCD\_D5, True) if bits&0x04==0x04: GPIO.output(LCD\_D6, True)

if bits&0x08==0x08: GPIO.output(LCD\_D7, True)

# Toggle 'Enable' pin lcd\_toggle\_enable() '''

Function Name : lcd\_toggle\_enable()

Function Description:basically this is used to toggle Enable pin '''

def lcd\_toggle\_enable():

# Toggle enable time.sleep(E\_DELAY) GPIO.output(LCD\_E, True) time.sleep(E\_PULSE) GPIO.output(LCD\_E, False) time.sleep(E\_DELAY)

'''

Function Name :lcd\_string(message,line) Function Description :print the data on lcd '''

def lcd\_string(message,line):

# Send string to display

message = message.ljust(LCD\_WIDTH," ")

lcd\_byte(line, LCD\_CMD)

for i in range(LCD\_WIDTH): lcd\_byte(ord(message[i]),LCD\_CHR)

lcd\_init()

lcd\_string("welcome ",LCD\_LINE\_1) time.sleep(0.5)

lcd\_string("Car Parking ",LCD\_LINE\_1) lcd\_string("System ",LCD\_LINE\_2) time.sleep(0.5)

lcd\_byte(0x01,LCD\_CMD) # 000001 Clear display # Define delay between readings

delay = 5

while 1:

# Print out results rc = mqttc.loop()

slot1\_status = GPIO.input(slot1\_Sensor) time.sleep(0.2)

slot2\_status = GPIO.input(slot2\_Sensor) time.sleep(0.2)

if (slot1\_status == False): lcd\_string("Slot1 Parked ",LCD\_LINE\_1) mqttc.publish("slot1","1") time.sleep(0.2)

else:

lcd\_string("Slot1 Free ",LCD\_LINE\_1) mqttc.publish("slot1","0")

time.sleep(0.2)

if (slot2\_status == False): lcd\_string("Slot2 Parked ",LCD\_LINE\_2) mqttc.publish("slot2","1") time.sleep(0.2)

else:

lcd\_string("Slot2 Free ",LCD\_LINE\_2) mqttc.publish("slot2","0") time.sleep(0.2)