CAR PARKING SYSTEM USING IOT

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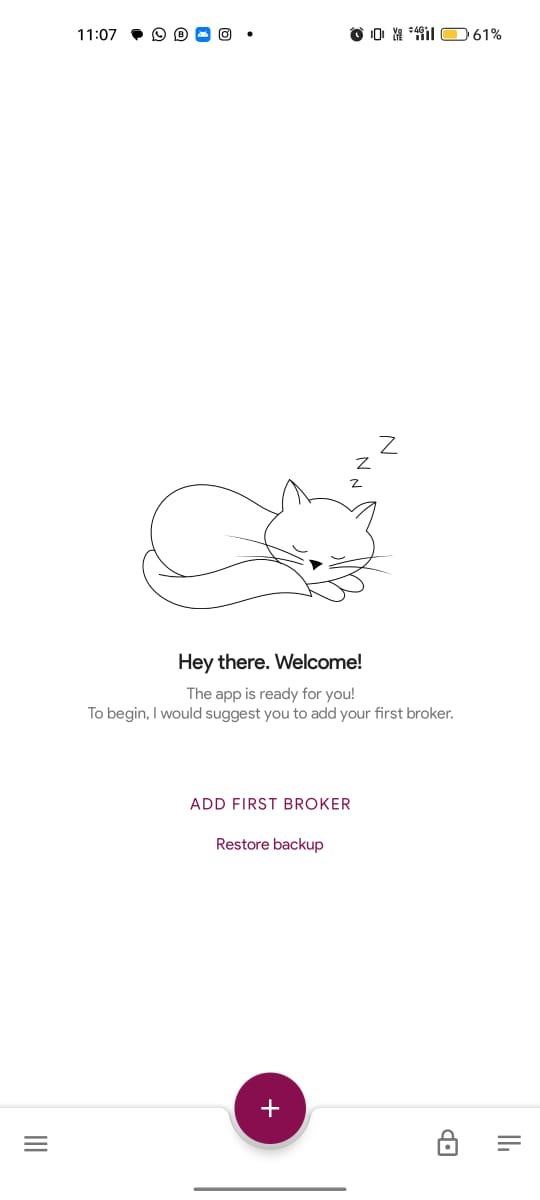
NM:AU721221106075

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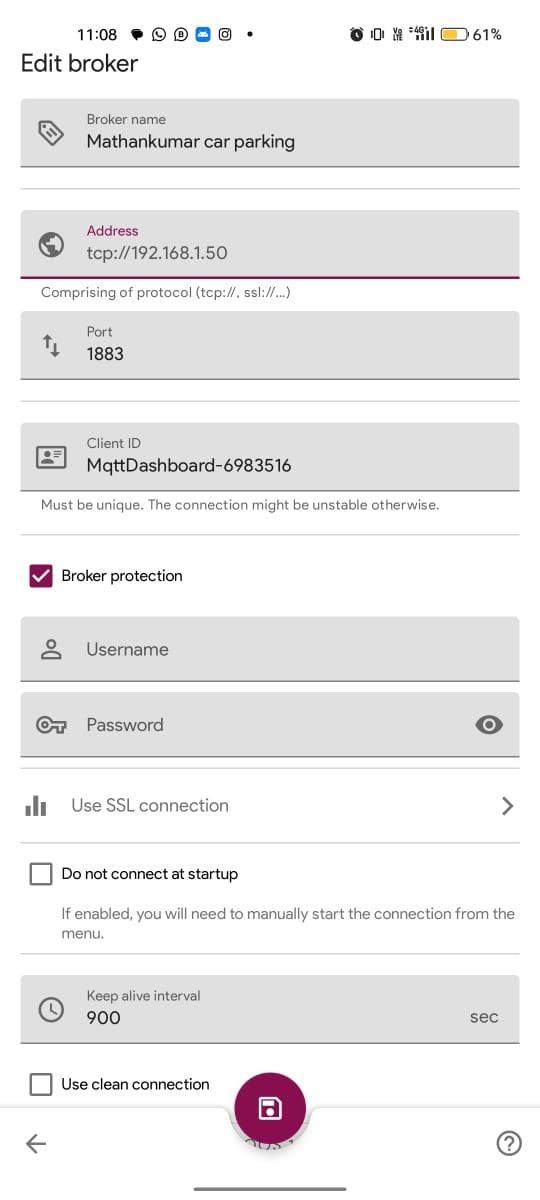
Phase:4

DEVELOPMENT PART 2

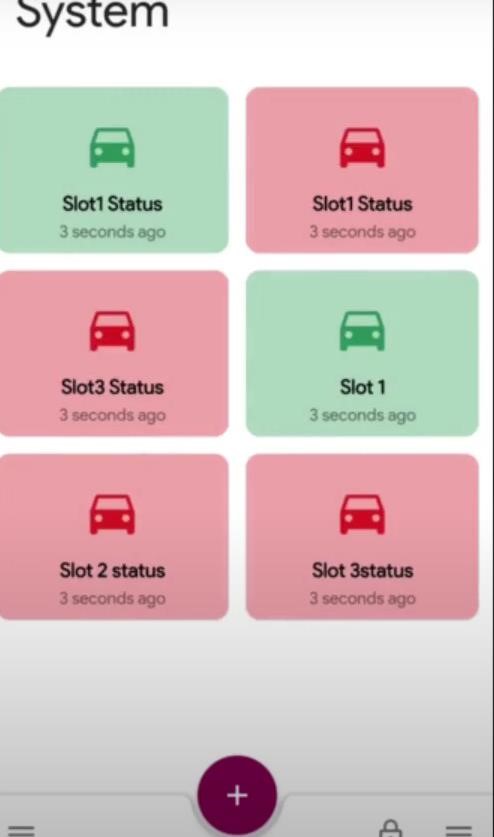
APP: FIRST STEP CREATE BROKER



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)