

ASSUMPTION UNIVERSITY
FACULTY OF ENGINEERING
COMPUTER ENGINEERING



**CE4301 FUNDAMENTAL OF INTERNET OF THINGS
SECTION 641
SEMESTER 2/2022**

**HOMEWORK2
AUTO-CAR-PARKING**

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Question 1:

IoT-based Automatic Car Parking System using Arduino and NodeMCUesp32determines the maximum parking space of10 cars.

Step1:Make the connection of the switches and led in a circuit in figure 1.

Step2:Create Blynk project in Local Blynk Server byusing the name “AutoCarPark” for the project name.

Step3:Design anAutomatic Car Parking System program ona Mobile app with Blynk and IoT device withesp32,as shown in figure 1tofigure 2.

Working functions

- By pressing switch CAR-IN and CAR-OUT on esp32, the counter value will count up by one and count down by one, respectively. The counter value will be displayed on the LCD screen on line 1 and display “PARKING EMPTY” on line 2.
- By pressing switch CAR-IN on esp32and the counter value exceeds ten cars, a message appears “PARKING FULL” on the LCD screen on line 2, and led status CARPARK FULL will be on.
- By pressing the button COUNT RESET on mobile, the counter value is clear to zero, and the led status CARPARK FULL will be off.
- By pressing switch CAR-IN and CAR-OUT on esp32, the led status CAR IN and CAR OUT on mobile will be on;otherwise are off.
- Car counter reset by pressing COUNT RESET on a mobile phone.

- Code

```
7 #define BLYNK_PRINT Serial
8 #include <WiFi.h>
9 #include <WiFiClient.h>
10 #include <BlynkSimpleEsp32.h>
11
12 #define LED 17
13 const int SW_carin = 4;
14 const int SW_carout = 16;
15
16 WidgetLCD lcd(V0);
17 WidgetLED led_in(V1);
18 WidgetLED led_out(V3);
19
20 char auth[] = "yBEiN0MnBrFH5oAlGwyu8_a1qonBWCVE";
21 char ssid[] = "Senee";
22 char pass[] = "12345543210";
23
24 int sw_in = 0;
25 int sw_out = 0;
26 int count = 0;
27 int reset;
28
29 void setup() {
30   Serial.begin(115200);
31   Blynk.begin(auth, ssid, pass, IPAddress(134, 122, 29, 169), 8080);
32   pinMode(sw_in, INPUT);
33   pinMode(sw_out, INPUT);
34   pinMode(LED, OUTPUT);
35   lcd.print(0, 0, "COUNTER = ");
36 }
37
```

```
38 void loop() {
39   Blynk.run();
40   sw_in = digitalRead(SW_carin);
41   sw_out = digitalRead(SW_carout);
42   if (reset == 1){
43     count = 0;
44     lcd.clear();
45     lcd.print(0, 0, "COUNTER = ");
46     lcd.print(10, 0, count);
47     lcd.print(1, 1, "PARKING EMPTY");
48   }
49   if (sw_in == 1){
50     count = count + 1;
51     led_in.on();
52     lcd.clear();
53     lcd.print(0, 0, "COUNTER = ");
54     digitalWrite(LED, LOW);
55     if(count >= 10){
56       count = 10;
57       lcd.print(1, 1, "PARKING FULL");
58       digitalWrite(LED, HIGH);
59     }
60     lcd.print(10, 0, count);
61   }
62   else{
63     led_in.off();
64   }
65
66   if (sw_out == 1){
67     count = count - 1 ;
68     led_out.on();
69     digitalWrite(LED, LOW);
70     lcd.clear();
71     lcd.print(0, 0, "COUNTER = ");
72     if (count <= 0){
```

```

73     count = 0;
74     lcd.print(1, 1, "PARKING EMPTY");
75 }
76 lcd.print(10, 0, count);
77 }
78 else{
79     led_out.off();
80 }
81 }
82
83 BLYNK_WRITE(V2) {
84     reset = param.toInt();
85 }

```

- Result





