Final project report :

Done by :
lily Ahmed , Safie Eldeen , Mahmoud Shehab , Yousef Sherif

Brief description of the project :

This is a gas station project containing three sensors which are : IR sensor , Flame sensor and gas sensor. First of all, when a car is detected via the IR sensor to enter the gas station , we ask for a password which is preset as 1234 to be inputted by the keypad, after checking that it is correct, the car can enter and ask for amount of fuel liters it wants also entered via the keypad , first and after knowing the amount of fuel needed -we send it to the firebase- the servo motor opens and pass the fuel until the car is full with the amount of liters it asked for ,finally servo motor closes and the car leaves . As we mentioned using the flame and gas sensor were to detect any fire via the flame sensor or gas leakage via gas sensor , if any of these happens , the led and the buzzer immediately will give an action by lightening the led and the buzzer will give an alarm. Also we added LCD screen for displaying “Gas detected “ if there is gas leakage or “flame detected” if there is fire or smoke detected . as well as we used this LCD for displaying whether the password entered at the beginning was correct or incorrect and then it displays the amount of liters the car asked for .

Components :

1. LCD
2. Servo motor
3. Keypad
4. Buzzer
5. Led
6. IR sensor
7. Flame Sensor
8. Gas sensor

Connection :

Lets start with the flame sensor : we used analog pin it is connected with pin 4.

For the gas sensor : it is analog sensor so it can sense any smoke or gas and send the readings to the firebase and it is connected to pin 34.

Finally for the IR sensor : it is used to detect any movement ,it is also analog sensor and connected to pin 35.

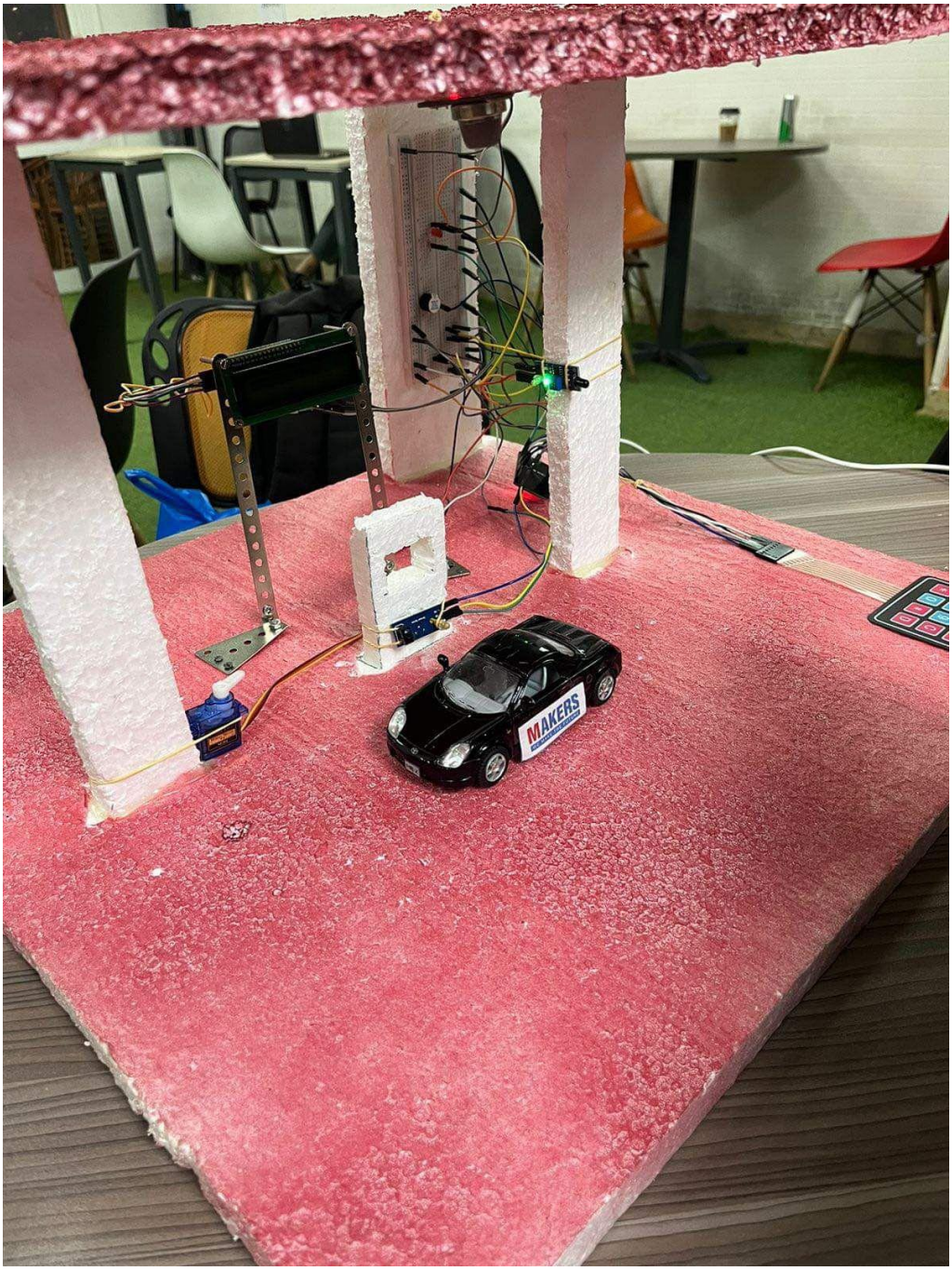
For the keypad : the user is asked to enter the password which is preset by the gas station and the amount of liters he wants. We used three rows with connections 32,33,25 and three columns with connections 27,14,12.

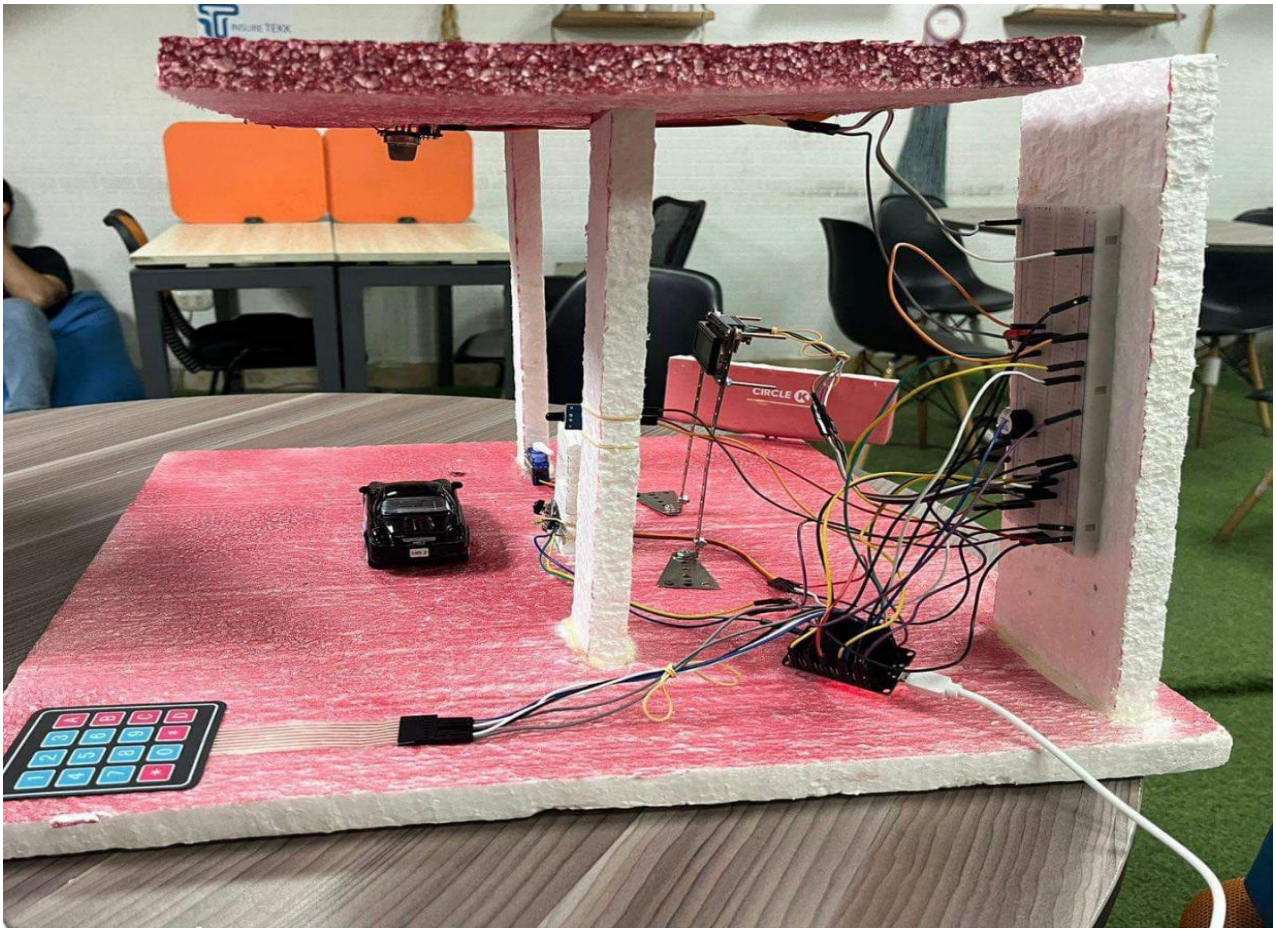
For the servo motor : here the servo motor rotates based on the amount of fuel the car needs, and after the car leaves the servo meter returns back to its normal condition , connected to pin 5 .

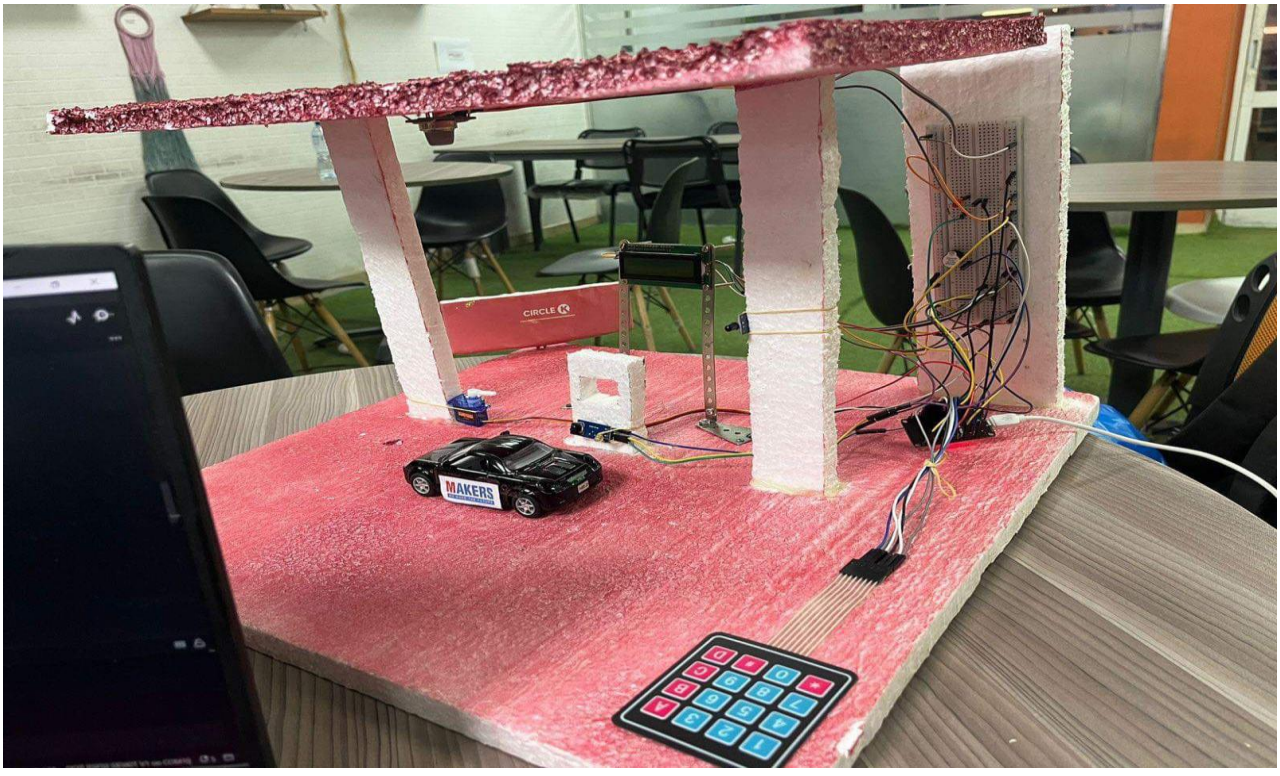
Lcd :this is used for displaying some texts such as “gas detected” / “flame detected “ / whether password is correct or no / amount of liters needed . it is connected power with power , we used 5 volts, ground with GND , The I2C protocol involves using two lines to send and receive data: a serial clock pin (SCL) that the Arduino Controller board pulses at a regular interval, and a serial data pin (SDA) over which data is sent between the two devices which are connected with pins 27 and 26.

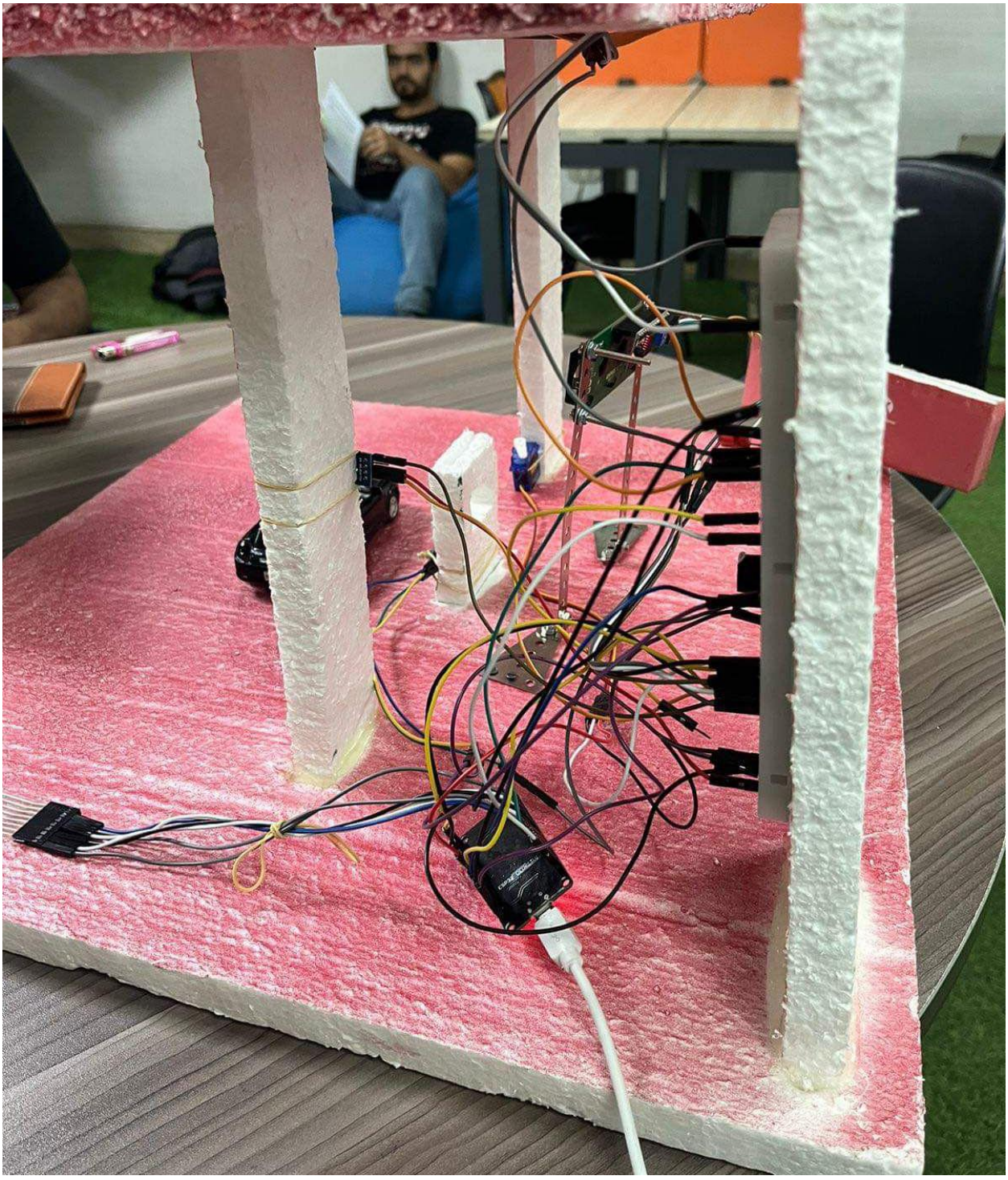
Lastly we added the buzzer and the led as actuators for the gas station , the buzzer is connected to pin 2 and the led is connected to pin 13

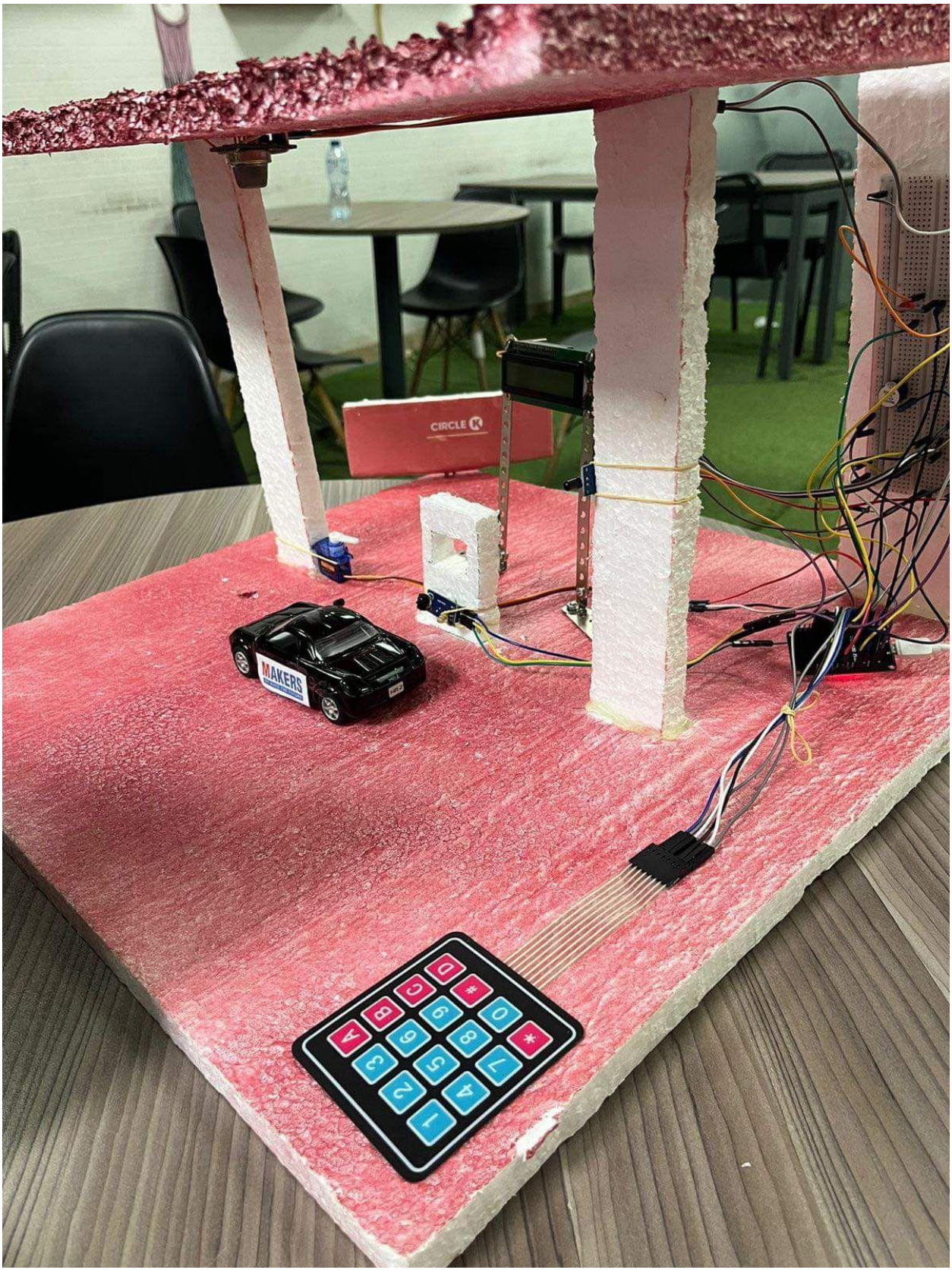
Pictures :






MAKERS



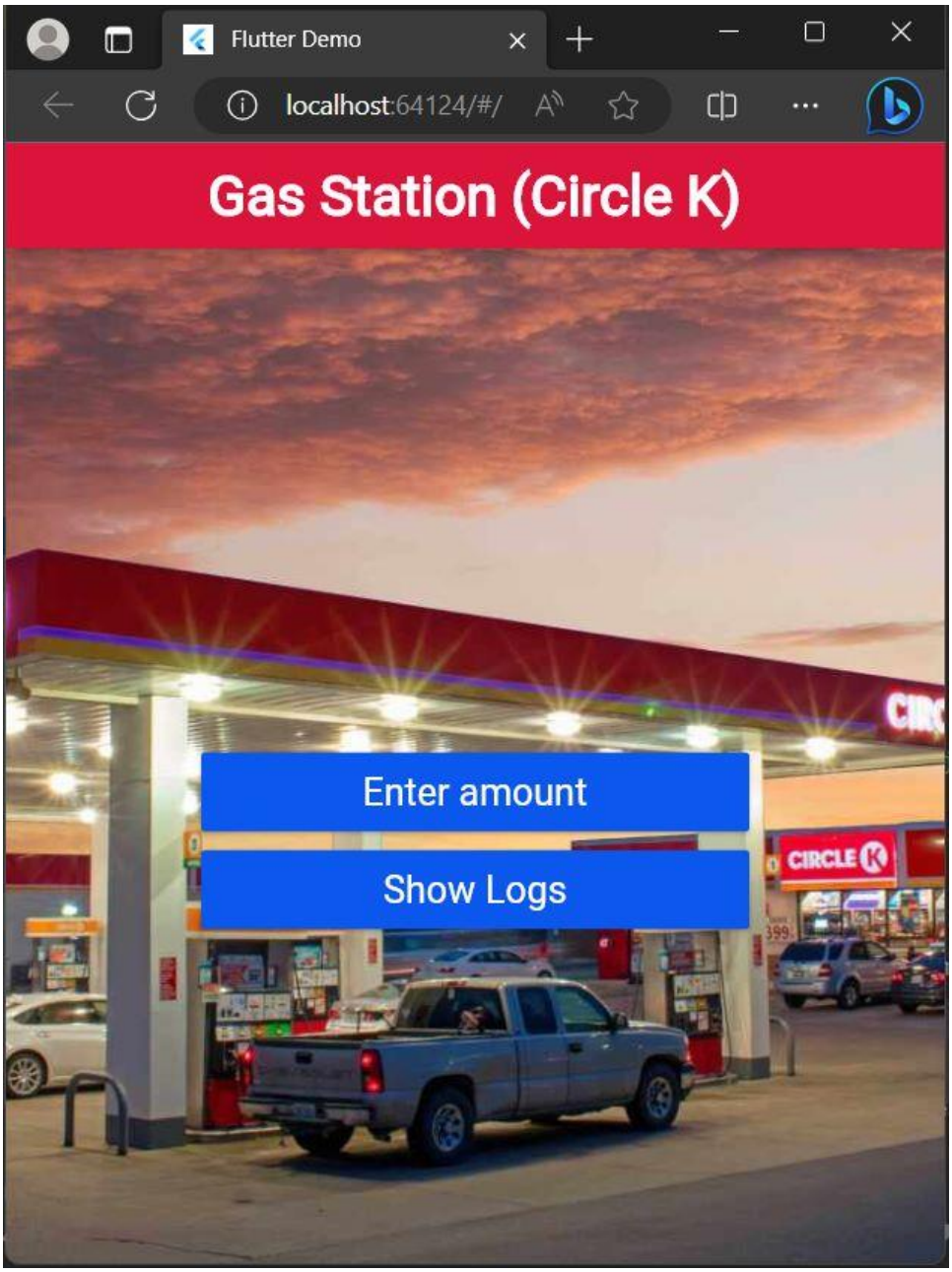

CIRCLE K
MAKERS
1 2 3 A
4 5 6 B
7 8 9 C
* 0 # D

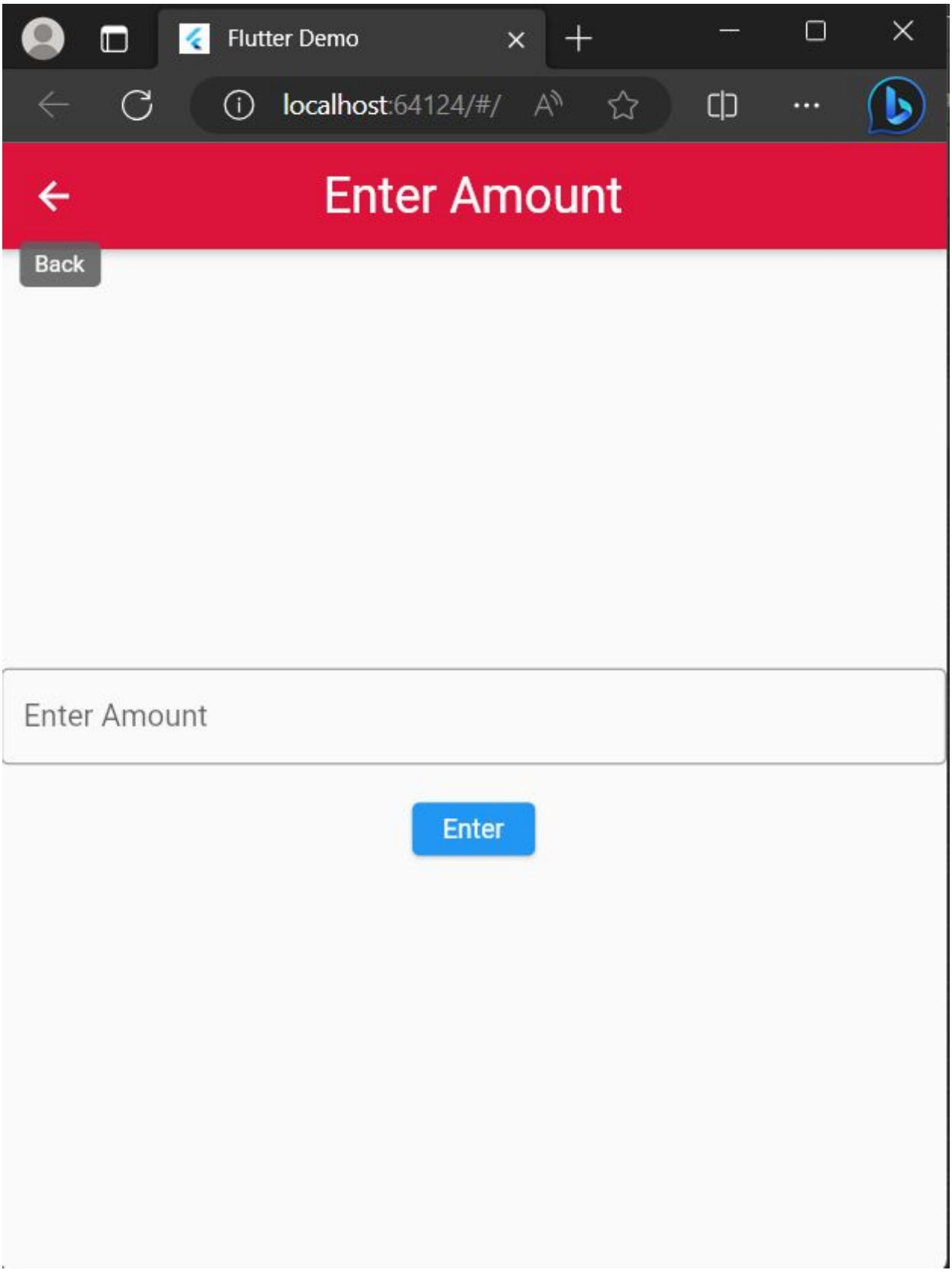
Now , here is the flutter web application, we have two buttons :

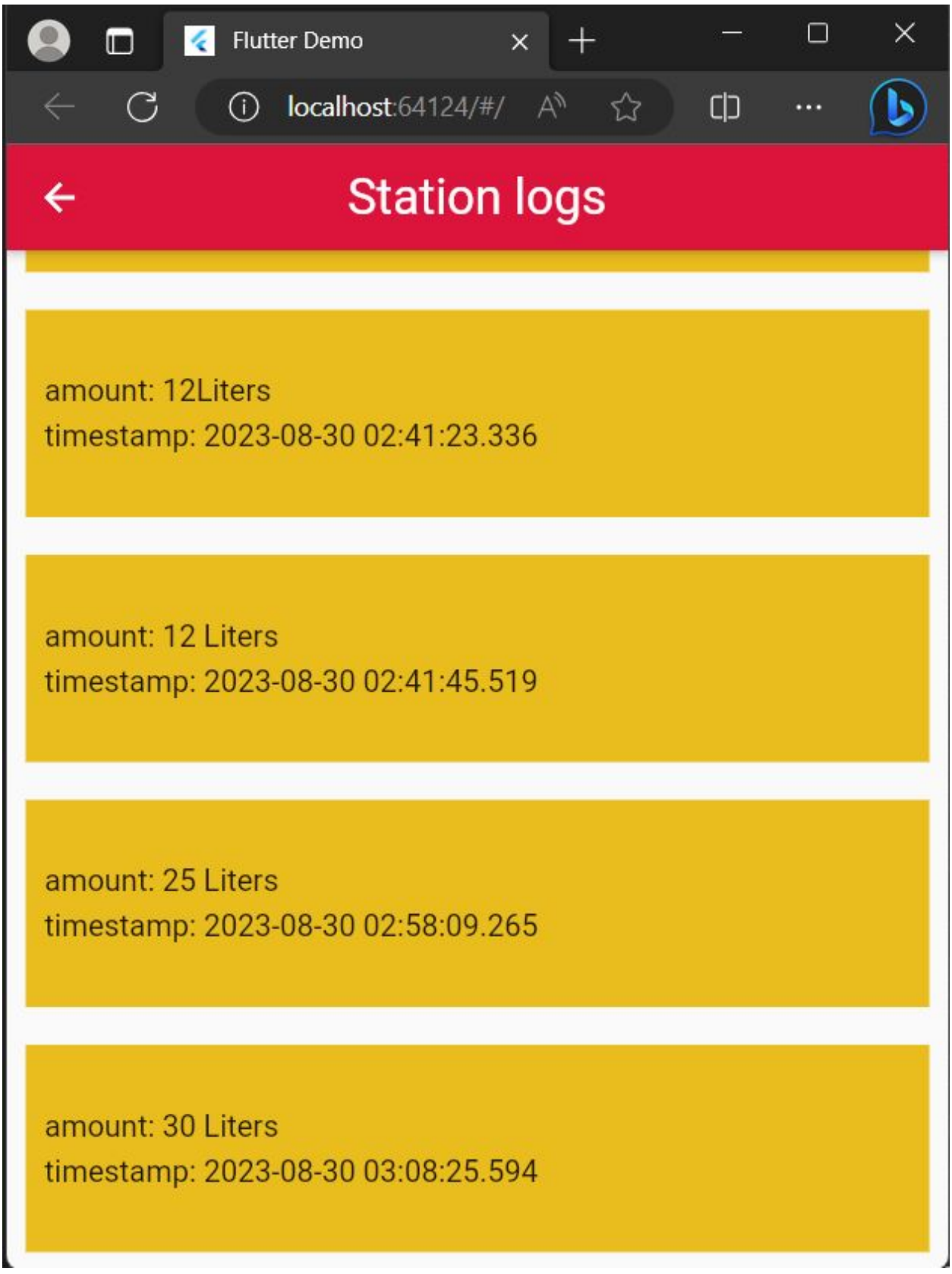
1,enter amount

2.show logs

When choosing enter amount another text box will appear asking you to enter the amount of liters , then it is saved and will appear when clicking on the other button “show logs”, so show logs will show all the station logs . as shown below:




Flutter Demo
localhost:64124/#/
Enter Amount
Back
Enter Amount
Enter


Flutter Demo
localhost:64124/#/
Station logs
amount: 12Liters
timestamp: 2023-08-30 02:41:23.336
amount: 12 Liters
timestamp: 2023-08-30 02:41:45.519
amount: 25 Liters
timestamp: 2023-08-30 02:58:09.265
amount: 30 Liters
timestamp: 2023-08-30 03:08:25.594