Aim: - To write C++ code of the given following tasks.

Software Used: -

Cloud Keil Studio IDE and Tera Term

Theory: -

The mbed NXP LPC11U24 Microcontroller in particular is designed for prototyping low-cost USB devices, battery powered applications and 32-bit ARM® Cortex™-M0 based designs. It is packaged as a small DIP form-factor for prototyping with through-hole PCBs, stripboard and breadboard, and includes a built-in USB FLASH programmer.

Specifications of LPC11U24:

* NXP LPC11U24 MCU
* Low power ARM® Cortex™-M0 Core
* 48MHz, 8KB RAM, 32KB FLASH
* USB Device, 2xSPI, I2C, UART, 6xADC, GPIO
* Prototyping form-factor
* 40-pin 0.1" pitch DIP package, 54x26mm
* 5V USB, 4.5-9V supply or 2.4-3.3V battery
* Built-in USB drag 'n' drop FLASH programmer
* mbed.org Developer Website
* Lightweight Online Compiler
* High level C/C++ SDK
* Cookbook of published libraries and projects

API Used:

* Syntax used for digital output:
* DigitalOut (PinName pin)
* For LED blinking we’ve used:
* DigitalOut variable(LEDn); where n= 1,2,3,4
* For delay:
* wait(t); where ‘t’ is in seconds

Task 1: - Smart Engine control of a car using gas sensor or alcohol sensor.

Code: -

#include "mbed.h"

AnalogIn ang(A0);

DigitalOut led(PC\_0);

int main() {

    float ang\_val;

    while(1) {

        ang\_val = ang.read();

        if (ang\_val>0)

        {

            led = 1;

        }

        else

        {

            led=0;

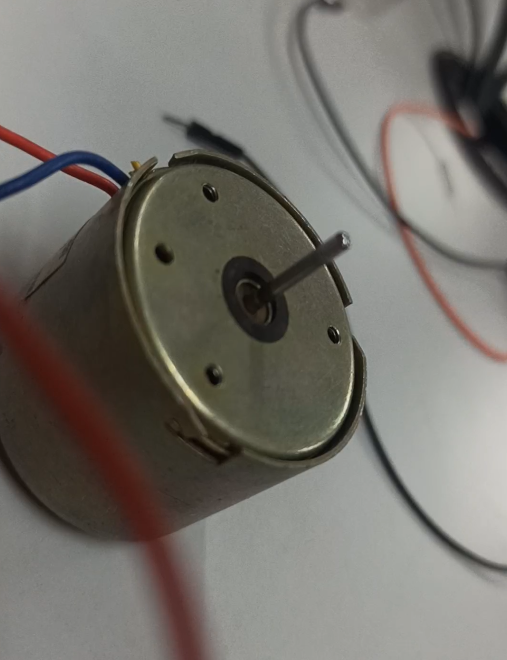
        }

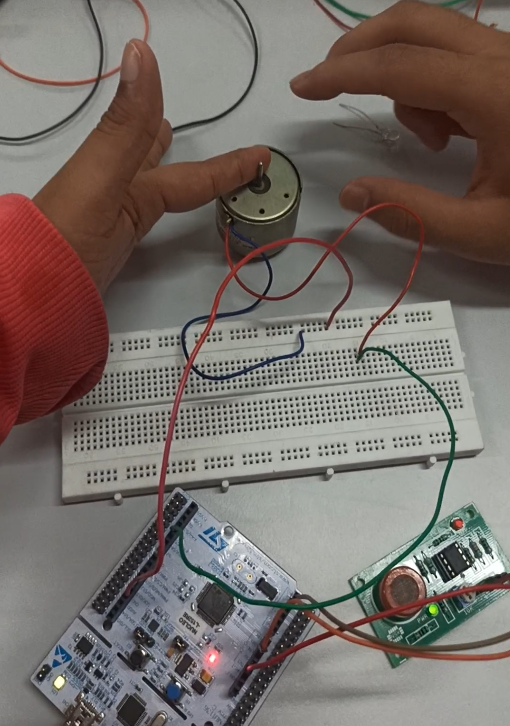
        wait(0.2);

    }

}

Output: -





Task 2: - Control the LED using eyeblink sensor.

Code: -

#include "mbed.h"

// #include "mbed2/299/drivers/BusInOut.h"

// #include "mbed2/299/drivers/DigitalOut.h"

//Serial pc(USBTX,USBRX);

AnalogIn ang(A0);

BusOut led(PC\_0);

int main() {

    float ang\_val;

    while(1) {

        ang\_val = ang.read();

        if (ang\_val==1)

        {

            led=1;

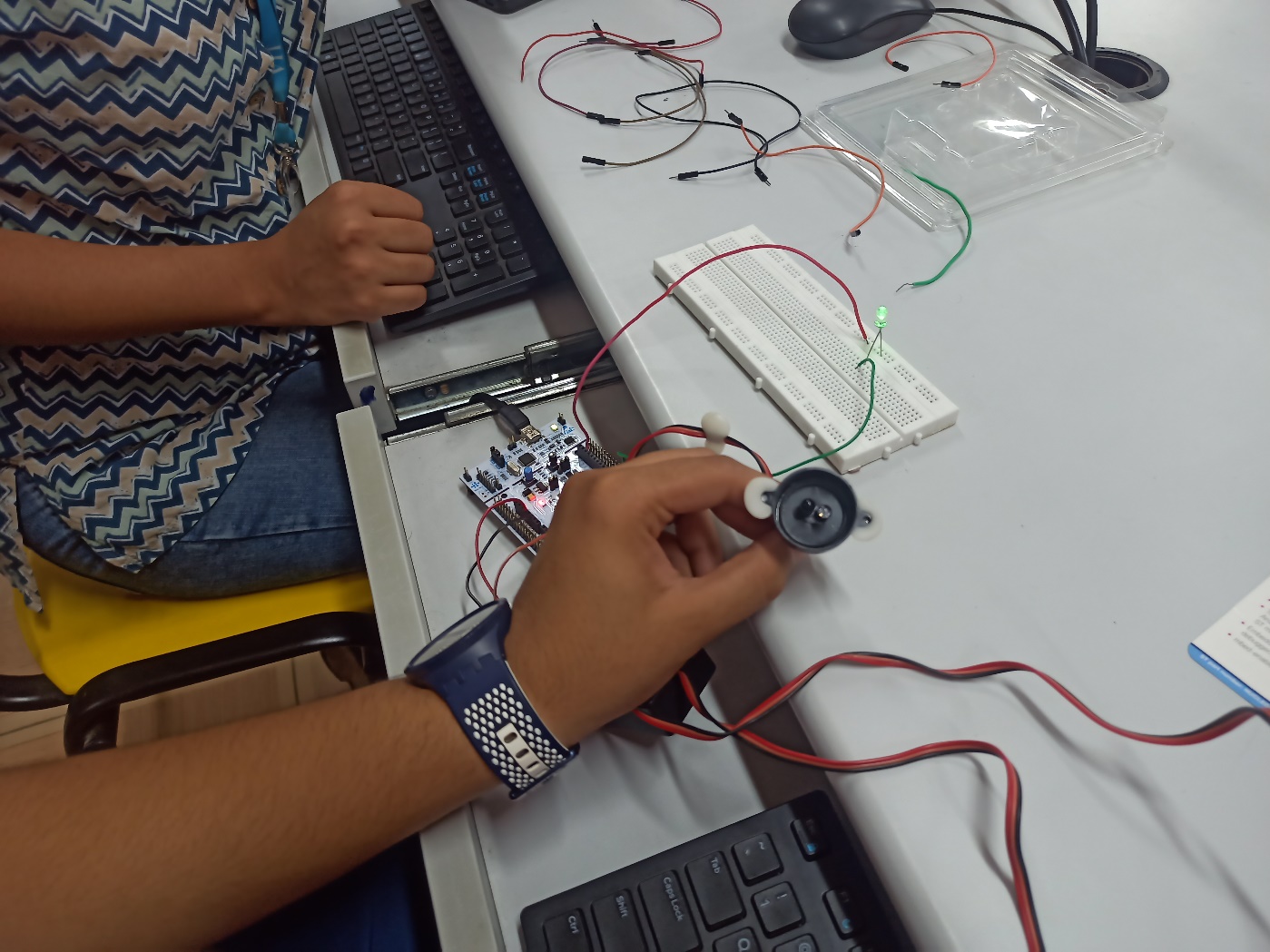
        }

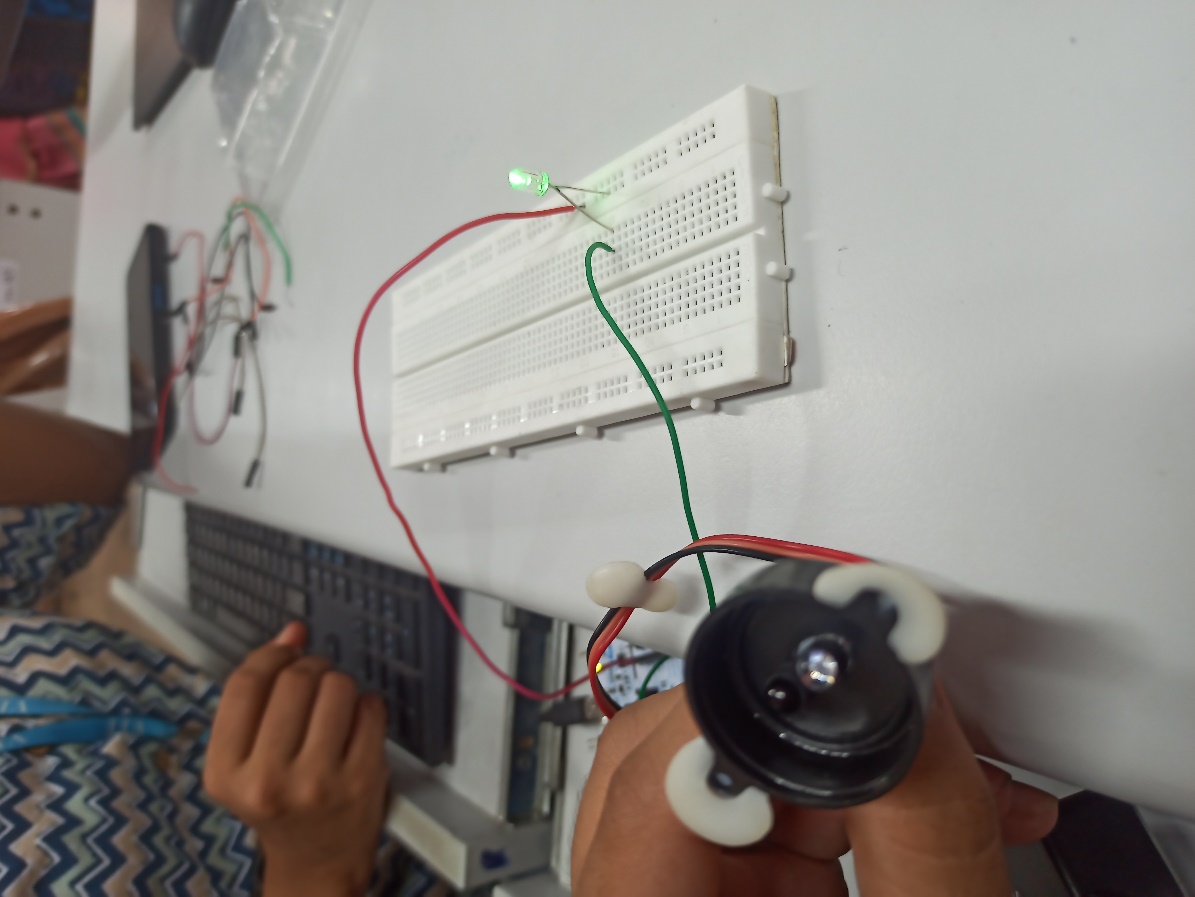
        wait(0.2);

    }

}

Output: -





Task 3: - Smart Reverse Parking Alert System using Ultrasonic Sensor.

Code: -

#include "mbed.h"

// #include "mbed2/299/drivers/BusInOut.h"

// #include "mbed2/299/drivers/DigitalOut.h"

//Serial pc(USBTX,USBRX);

AnalogIn ang(A0);

BusOut led(PC\_0);

int main() {

    float ang\_val;

    while(1) {

        ang\_val = ang.read();

        if (ang\_val==1)

        {

            led=1;

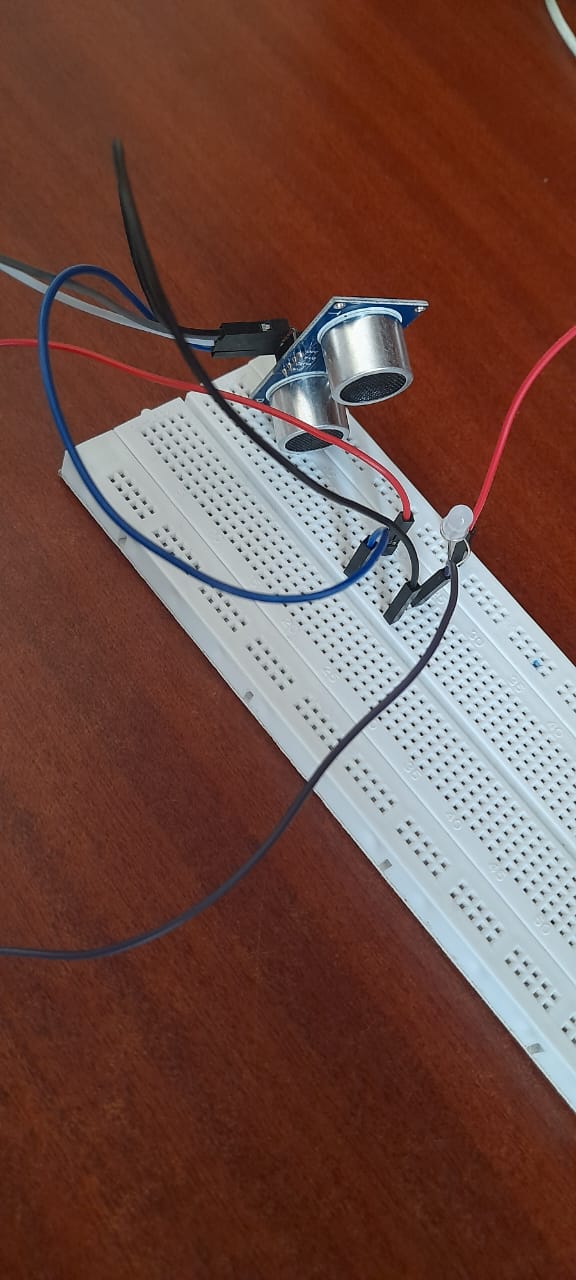
        }

        wait(0.2);

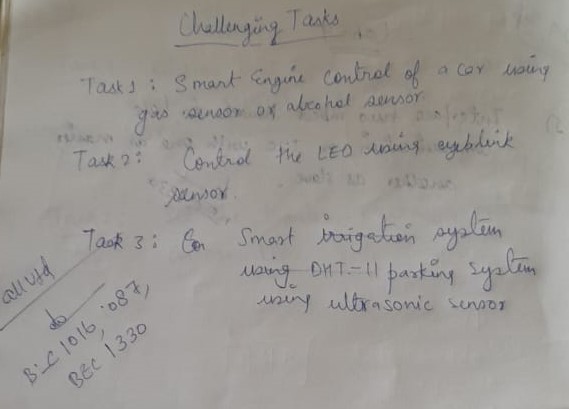
    }

}

Output: -



Verification Status: -



Result: -

Successfully understood and performed all the given tasks.