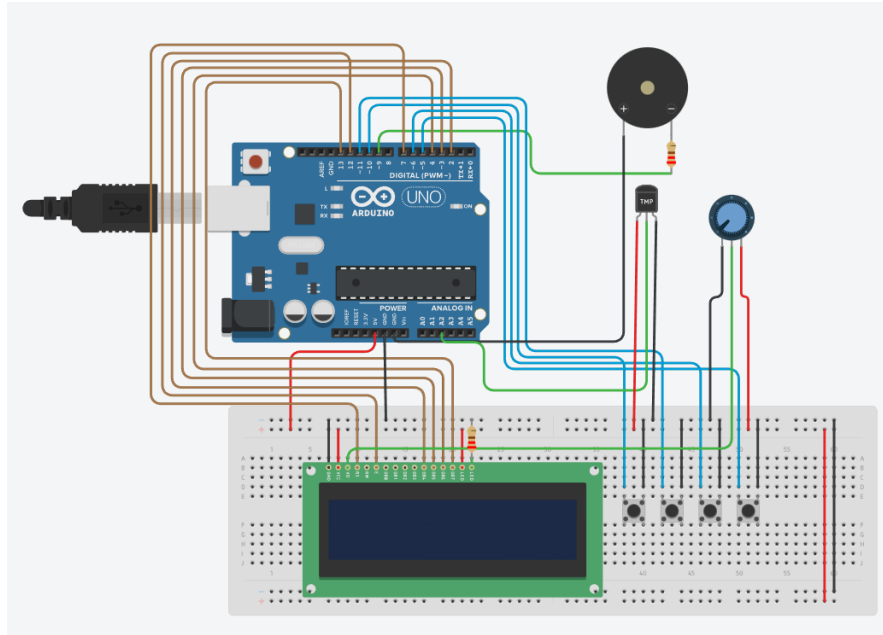# CMP3006 PROJECT

Baran BATI

1902028


Auxiliary Systems:

Temperature detector: We use the voltage coming to read the current temperature and then do math to convert it to either Fahrenheit or Celsius according to the mode set.

Buzzer: It is used to beep for when the set alarm time is reached. The beeping can be postponed by 5 minutes with the Snooze button.

Potensiometer: The value read is used to set the brightness of the LCD screen.
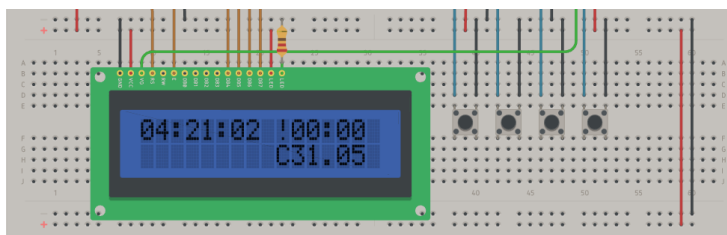
LCD Screen:

Top Left: Displays the current time in either 12-hour or 24-hour format according to the Button1's setting.

Top Right: Displays the alarm either in 12-hour or 24-hour format according to the user's setting.

Bottom Right: Displays the temperature either in Fahrenheit or Celsius format according to the Button3's setting.

```cpp
#include <LiquidCrystal.h>

int hour = 0;
int min = 0;        Clock is set here
int sec = 0;

int fnc_setHour = 1;   Function for setting the Clock
int fnc_setAlarm = 1;  Function for setting the Alarm

int flag_clock = 0;      Flag for Clock
int flag_alarm = 0;      Flag for Alarm
int status_button1 = 0;  Flag for Button1

int status_alarm = 0;  Checks if the alarm is set or not to use with snooze, if alarm is
int alarm = 0;         not set, snooze button will not be active.
int onoff_alarm = 0;   If it is 1, alarm will be ringing.

int hour_alarm = 0;    Alarm is declared here
int minute_alarm = 0;

int state = 0, Loadstate = 0;    Button 3 settings
int cstate = 0, cLoadstate = 0;  Button 4 settings
int fstate = 0, fLoadstate = 0;  Button 2 settings
int gstate = 0, gLoadstate = 0;  Button 1 settings

float pressLenght_ms = 0;  For calculating how long the button is pressed

LiquidCrystal lcd(7, 12, 2, 3, 4, 13);
```
LCD Screen connections
Pin 13 is attached to the arduino, it tells if there is power on the board

```cpp
void setup()
{
    cli();  Disables Global Interrupts

    TCNT1 = 0;
    TCCR1A = 0;     Clears registers
    TCCR1B = 0;

                      TCCR1B |= (1 << WGM12);
    CTC mode          TCCR1B |= (1 << CS12) | (1 << CS10);
    1024 Prescaler    OCR1A = 15624;
    System clock      TIMSK1 |= (1 << OCIE1A);
    Custom OCR1A interrupt

    lcd.begin(16, 2);
    lcd.print("CLOCK STARTUP");
    lcd.setCursor(0, 1);
    lcd.print("Hello!");   LCD startup
    delay(3000);
    lcd.clear();

    pinMode(5, INPUT);    Pin settings
    digitalWrite(5, HIGH);
    pinMode(6, INPUT);
    digitalWrite(6, HIGH);
    pinMode(10, INPUT);
    digitalWrite(10, HIGH);
    pinMode(11, INPUT);
    digitalWrite(11, HIGH);

    pinMode(9, OUTPUT);  Buzzer

    sei();               Enables interrupts
    Serial.begin(9600);
}
```