

**Due Date: Friday, March 14<sup>th</sup>, 2022 11:59pm**

## Assignment-3: Monitoring and Alarm System



**Important:** You are allowed to work individually or as a group of two or three. If you decide to work as a group, please email me names in your group by 1pm March 2<sup>nd</sup> (Wednesday). After this date, if I don't hear from you, I'll assume you'll work individually.

**Purpose:** In this assignment, you will use your Arduino dev kit to build a monitoring and alarm system, and have fun with a real project.

**Objectives:** This assignment will help you to:

- be familiar with Arduino environment and its applications
- learn the basics of programming, coding and electronics including current, voltage, and digital logic.
- be able to understand Arduino programming and Arduino IDE.
- experiment on digital input and digital output on Arduino board and using LED and Buzzer.
- experiment on LCD display (print numbers, time etc.)
- experiments on Remote with LCD.

**Reference Material:**

<https://docs.arduino.cc/built-in-examples/>

### Description

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The requirements are:

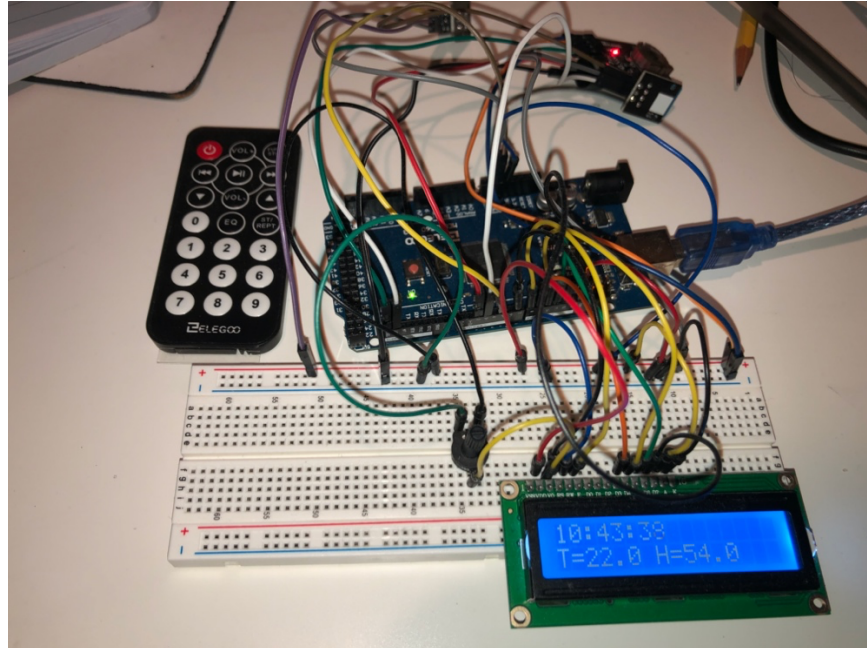
1. This system will constantly monitor the temperature and humidity using an integrated temperature humidity sensor.
2. The temperature and humidity will be displayed and updated on an LCD screen.
3. This system will also include a clock module. If you don't have the clock module, you can also simulate one easily by using the delay function. It won't be as accurate though.
4. The clock and the sensor data will be displayed together on the LCD as the following screenshot shows.
5. Initially, the displayed clock won't have the exact time as your smartphone clock. So, you will need to use a remote controller (or another type of keypad) to adjust the clock.
6. To adjust the clock, you can press '1' on the controller to increase the hours by one, press '2' to increase the minutes by one, press '3' will reset the seconds to zero. Feel

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free to add other controls. Your goal is to adjust your displayed clock to match your true clock exactly.

7. You will also integrate a buzzer; it will be used as an alarm.
8. If the humidity is over 85%, the buzzer will sound, and the clock will freeze. So that you know exactly when the accident happens.
9. It is easy to make the humidity increase by holding it in your palm.



### What to Submit

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1. A full video to show the following steps:
  - a. On launch, the LCD screen will show a running clock with the temperature and humidity data.
  - b. Use your remote controller or any other keypad to adjust the clock to match your smartphone clock (or whatever clock time) exactly.
  - c. Hold the humidity sensor in your palm until the value increase to 85.
  - d. The buzzer will sound continuously once the humidity reaches 85, it will continue even after the humidity drops below 85.
  - e. The clock on LCD will freeze at the moment when humidity reaches 85. So that it tells you when that accident happens.
  - f. You press the reset button on Arduino to restart this system.
2. An Arduino sketch file \*.ino

### How to grade:

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- (50 pts) video shows the complete demo.

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- (50 pts) the Arduino sketch file.