# HOME AUTOMATION SYSTEM

- KEERTHANA M G (99007891)

# TABLE OF CONTENTS

# 1. ABOUT

## 1.1 Abstract

Home automation is the ability to do tasks automatically and monitor remotely. Tasks include like tuning off lamp when nobody is present in the room, locking door, door opening automatically, monitoring temperature and etc. So, like this many tasks are done by home automation system. The main thing is that it gives a proper security. It saves time. It helps in avoiding wastage of electricity.
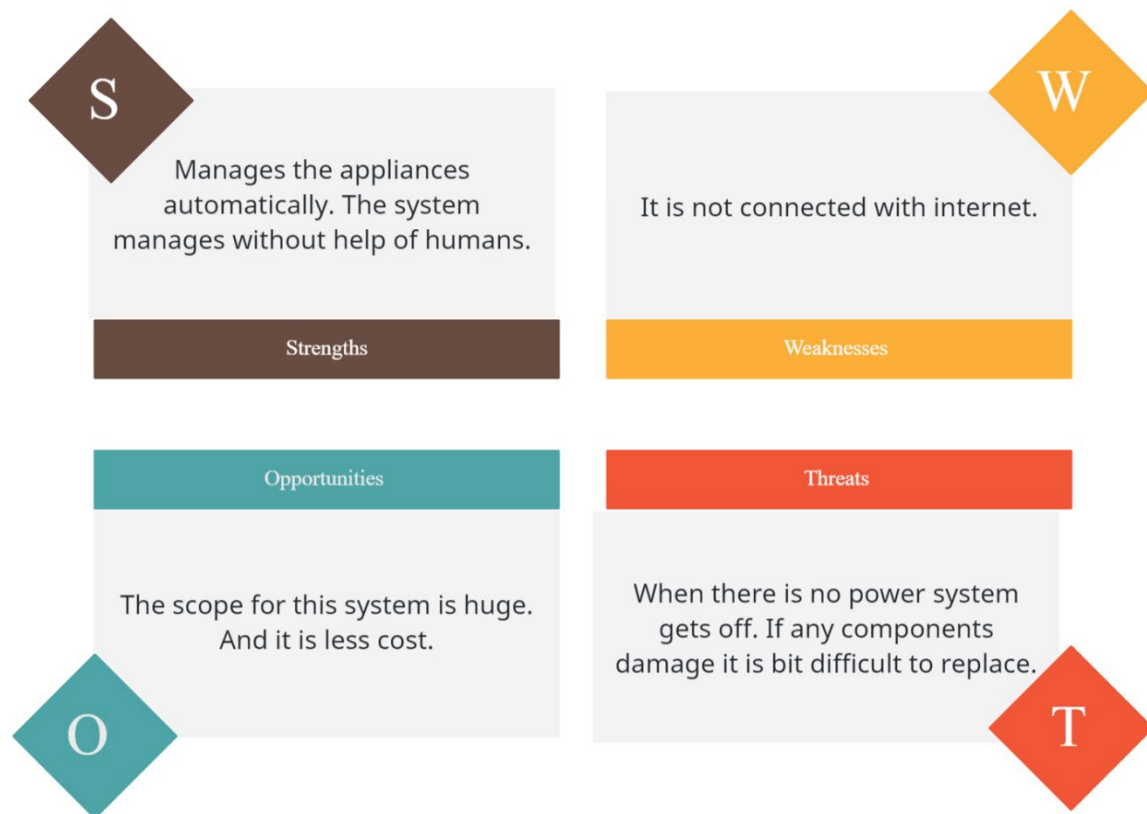
## 1.2 Features

1.    It shall switch ON the light when someone is present in that particular place and switch OFF the lamp when no one is there in that place by using sensors.

2.    It shall switch ON the fan when someone is present in that particular place and switch OFF the fan when no one is there in that place by using sensors.

3. It shall indicate a signal when the temperature is not in normal level.

# 1.3 5W's & 1H

| What | It is a home automation system. |
|------|--------------------------------|
| Who | People who are in need of home monitoring system. |
| Why | It saves energy and automated one. |
| When | When we are at house and when we are not at the house. The system will automatically monitor the home appliances. |
| Where | Inside house |
| How | Through use of sensors, we achieve this. |

# 1.4 Swot Analysis

| | |
|---|---|
| **S** Manages the appliances automatically. The system manages without help of humans. | **W** It is not connected with internet. |
| **Strengths** | **Weaknesses** |
| **Opportunities** | **Threats** |
| The scope for this system is huge. And it is less cost. **O** | When there is no power system gets off. If any components damage it is bit difficult to replace. **T** |

# 2. REQUIREMENTS

## 2.1 High Level Requirement

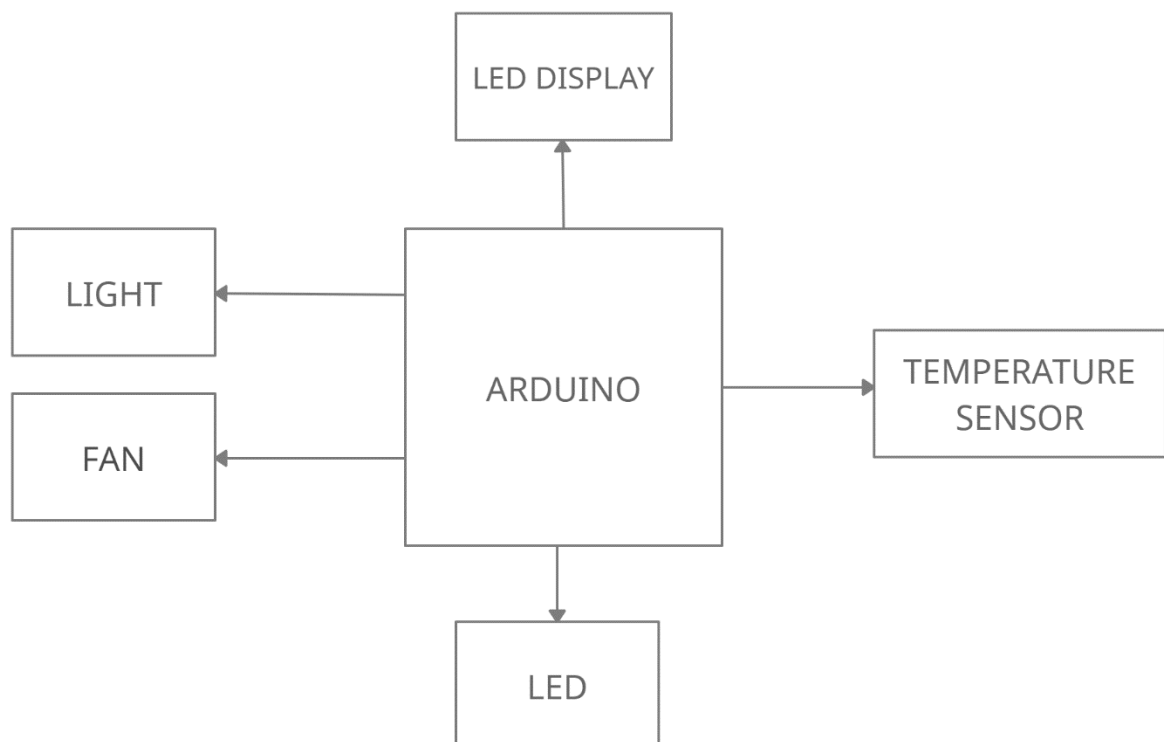| ID | Description |
|---|---|
| HLR1 | User will be experiencing automatic turn on and off of lamp |
| HLR2 | User will be experiencing automatic turn on and off of fan |
| HLR3 | User will be able to experience the indication of increase or decrease in temperature |
| HLR4 | User will be able to experience indication signal |
| HLR5 | User will be able to monitor everything using a display |

## 2.2 Low Level Requirement

| HLR | LLR | Description |
|---|---|---|
| HLR1 | LLR1 | Usage of IR Sensor |
| HLR2 | LLR2 | By monitoring the temperature, the fan will be switched on automatically |
| HLR3 | LLR3 | By monitoring the temperature, the fan will be switched on automatically |
| HLR4 | LLR4 | LED will glow when there is decrease in temperature and when the lamp is on |
| HLR5 | LLR5 | LED display will display the lamp status and temperature status |

# 3. BLOCK DIAGRAM AND COMPONENTS DESCRIPTION

## 3.1 Block Diagram

## 3.2 Components Description

## Sensors:

1. IR Sensor: It is responsible for switching on and off of lamp.
2. Temperature Sensor: It is responsible to monitor the temperature and warn when it is not normal.
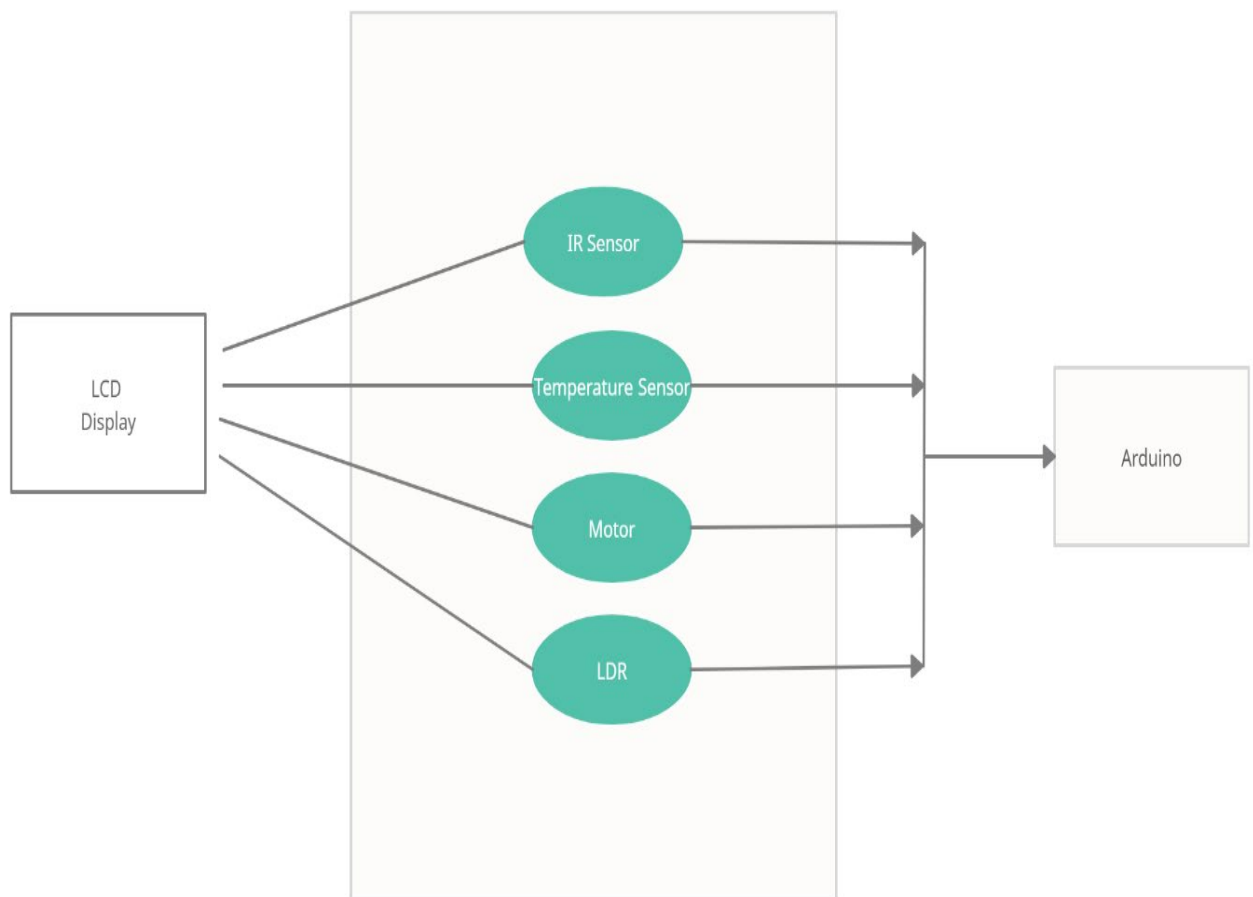3. Potentiometer: Basically, used to take input of temperature.

## Actuators:

1. Fan: Its switching is depended on temperature rise.
2. Light: The lightening of the room is monitored by the lamp.
3. Display: It displays the temperature and lamp status.

# 4. ARCHITECTURE

## 4.1 Behaviour Diagram

## 4.2  Structural Diagram



```
LCD
Display

IR Sensor

Temperature Sensor

Motor

LDR

Arduino
```
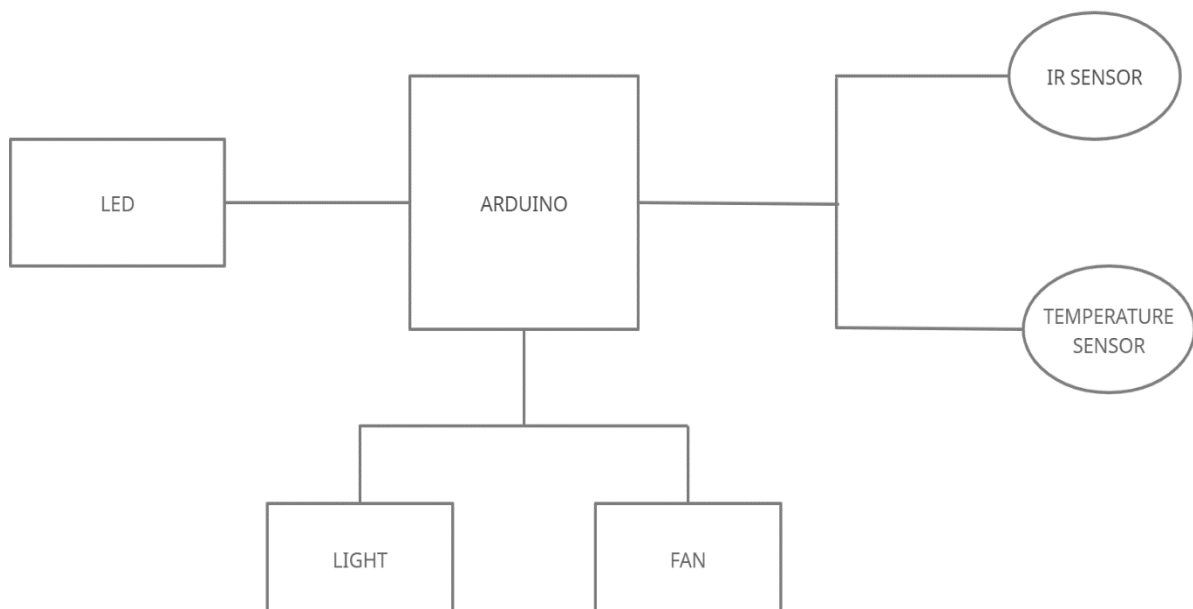
# 5. TEST PLAN AND OUTPUT

## 5.1 Hight Level Test Plan

| Test ID | Description | Expected Output | Actual Output | Pass/Fail |
|---------|-------------|-----------------|---------------|-----------|
| HLTP1 | Lamp | 100% LED | 100% LED | PASS |
| HLTP2 | Fan | Should be on when temperature is high | Should be on when temperature is high | PASS |
| HLTP3 | LED | Should indicate when temperature is low | Should indicate when temperature is low | PASS |
| HLTP4 | Temperature | When it is high fan will run and when it is low warning LED will glow | When it is high fan will run and when it is low warning LED will glow | PASS |

## 5.2 Low Level Test Plan

| HLTP | LLTP | Description | Input | Expected Output | Actual Output | Pass/Fail |
|------|------|-------------|-------|-----------------|---------------|-----------|
| HLTP1 | LLTP1 | Lamp | 200Lux(User) 0Lux(LDR) | LED should glow | LED should glow | |
| HLTP2 | LLTP2 | Fan | When temperature is between 35°C - 50°C | Fan should be on | Fan should be on | |
| HLTP3 | LLTP3 | LED | When temperature is between 1°C - 10°C | LED should glow for indication | LED should glow for indication | |
| HLTP4 | LLTP4 | Temperature | 1°C - 10°C | LED should glow for indication | LED should glow for indication | |
| HLTP4 | LLTP4 | Temperature | 35°C - 50°C | Fan should be on | Fan should be on | |

# 6. OUTPUT

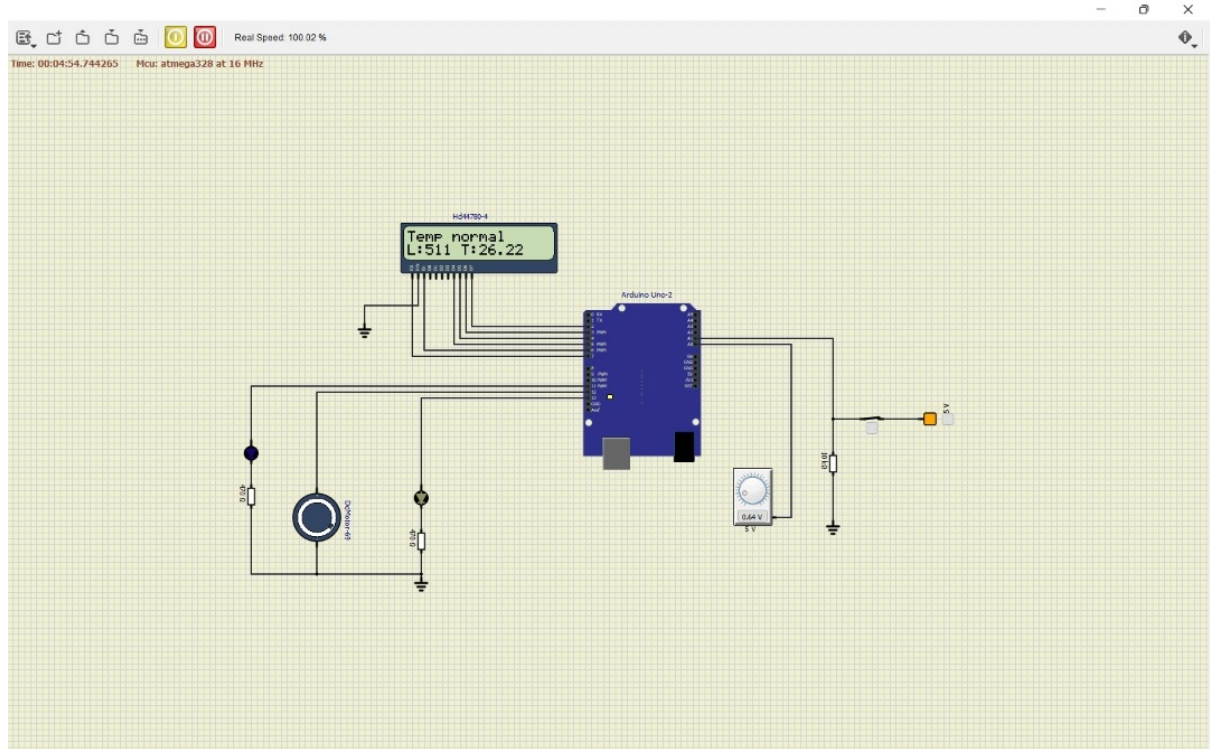## 1. When system initially starts:
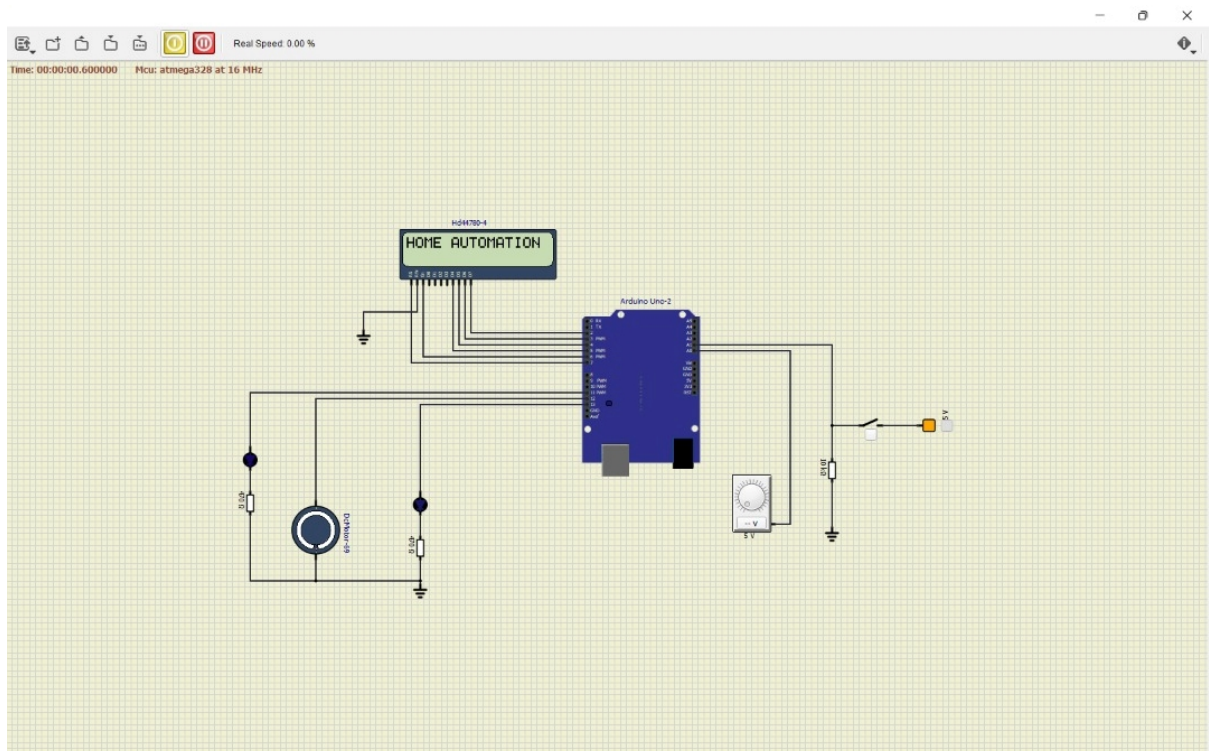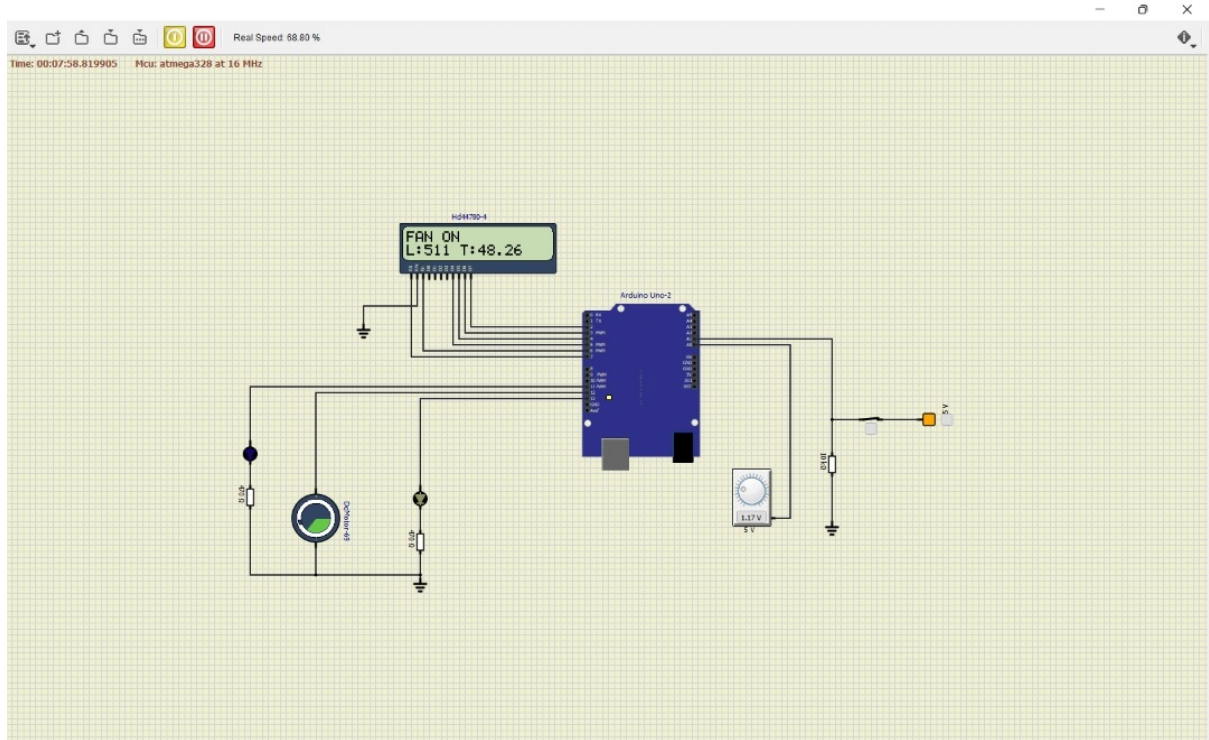
## 2. When lamp is ON:
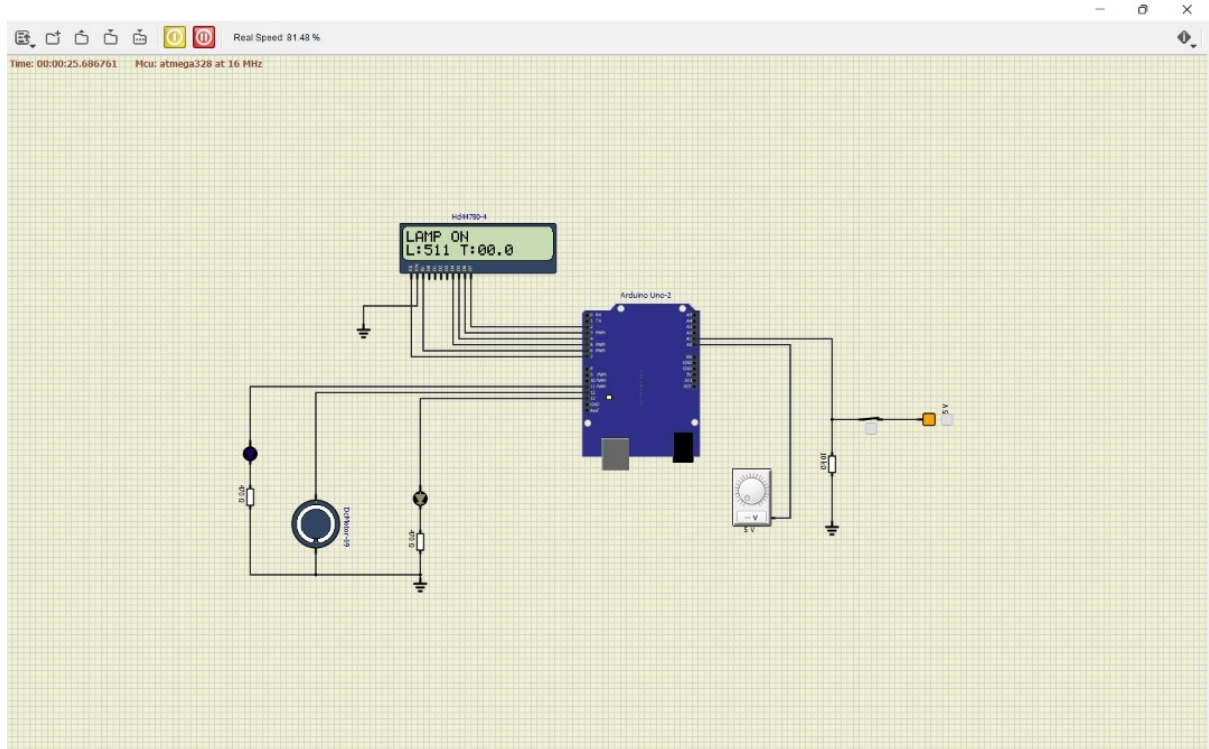
# 3. When lamp is OFF:
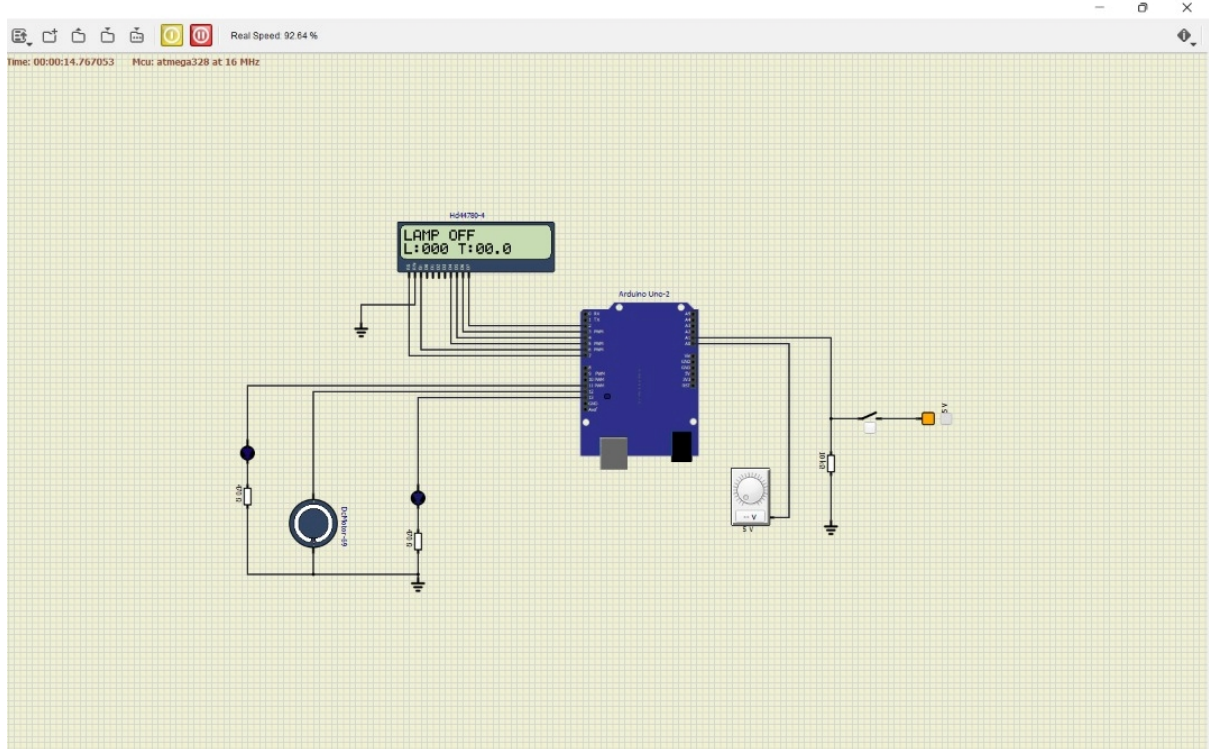
# 4. Normal temperature:

## 5. When fan is ON (due to rise in temperature):

# 7. APPLICATIONS

It can be used in educational institutions.

It can be used in offices.

It can be used in working places.

It can be used in all places.