PROJECT ON TEMPERATURE BASED VENTILATION SYSTEM

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1. ABSTRACT

In this report we're going to see about the simple air ventilation and it's overall view and simple implementation. A Ventilation system can be defined as the treatment of indoor air in order to control certain conditions required for human comfort. The desirable conditions may be temperature, humidity, dust particle level, odor level, and air motion.

It is known that the physical properties of air can be controlled by cooling, heating, humidification, and dehumidification. These processes may be employed to maintain specific conditions desirable for comfort. Thus, simultaneous control of temperature, humidity, air motion, and cleanliness is known as air conditioning.

2. BASIC LOGIC NEED TO BE KNOWN

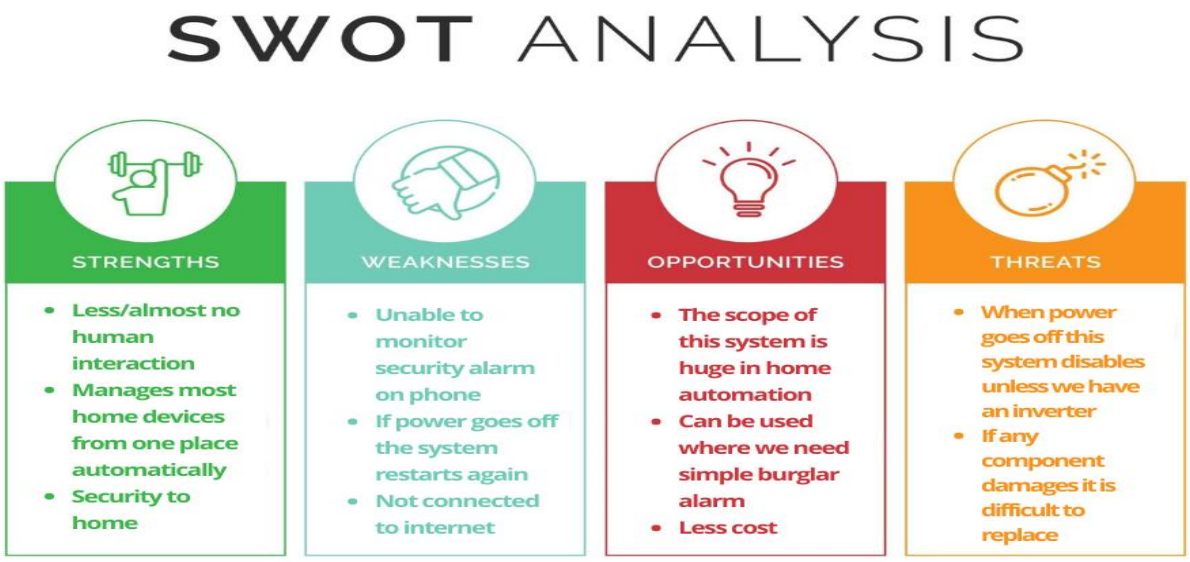
Human body releases about 100 W to 450 W/person depending on the activity of the person due to metabolism. The body temperature is maintained to be 97°F. But the body surface temperature changes according to the surrounding temperature and relative humidity. The body heat must be dissipated from body surface to the surrounding.

If the surrounding temperature is less than the body temperature, the flow of heat from body becomes quite easy and normal flow. If the surrounding temperature is low as in winter, the rate of flow of heat from the body is rapid and the person will feel cold. If the surrounding temperature is too hot, there would be no flow of heat.

In such situation, sweat glands become activated. The moisture of body gets evaporated which brings the temperature normal. If the outside temperature is hot and humid, little evaporation of moisture will occur from the body skin and so the person will feel hot and uncomfortable. The movement of air by fan helps to keep body comfortable.

When the room temperature becomes high due to heat gain, it causes human discomfort. When the room moisture becomes high, the increased humidity causes difficulties in disposing the body heat. For human comfort, the indoor temperature of 20°C and relative humidity 60% is quite good. Any air conditioning unit will be able to achieve the above requirement and maintain the conditions for comfort.

3. SWOT ANALYSIS



3.1. S-STRENGTH

Strengths are defined as what each business does best in its gamut of operations which can give it an upper hand over its competitors.

- Good quality air filteration.
- Non CFC gase usage.
- Reliable

3.2. W-WEAKNESS

- High Price
- Continuous Power Supply is required in Devices

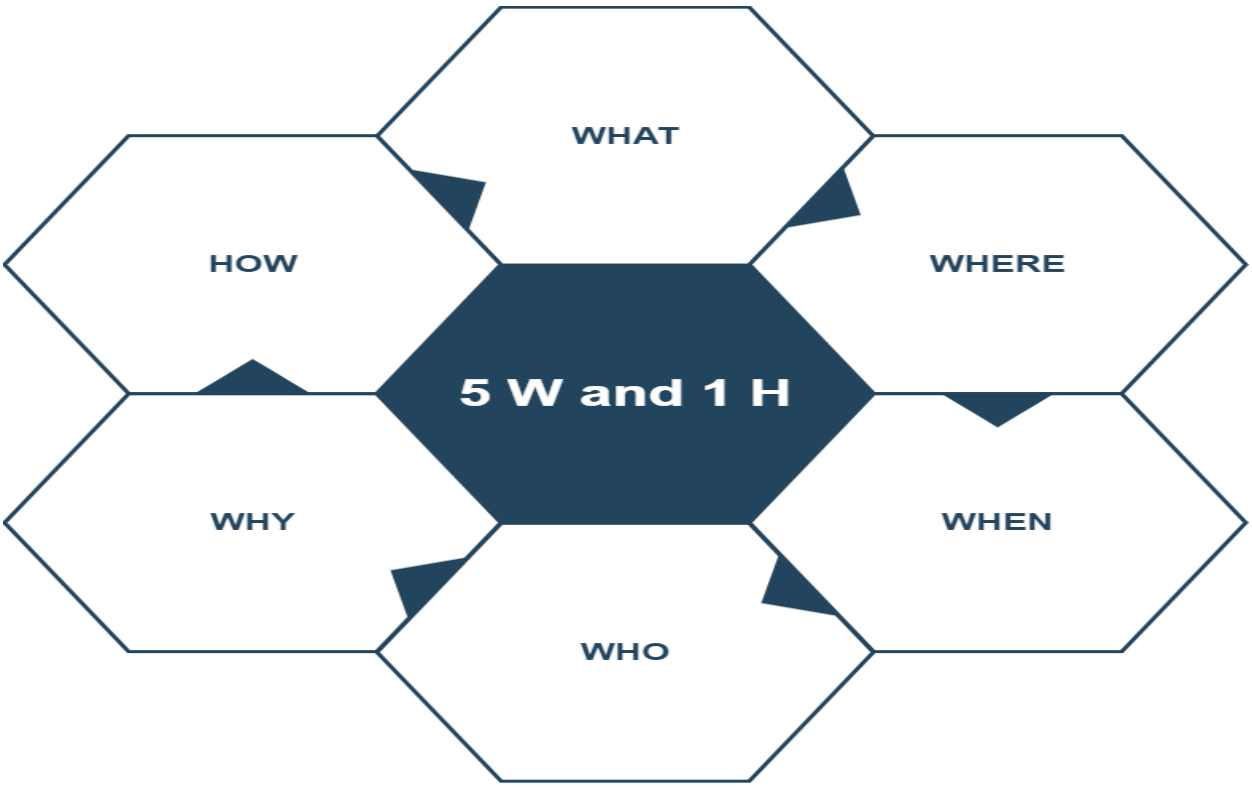
3.3. O-OPPORTUNITIES

- Operations can be implemented in our day to day life and in our gadgets like Phones (like IR blasters in redmi mobiles).
- IOT: In the consumer durables market, the next big thing is going to be Intenet of Things. In IOT there will be a surge in demand for self-controlled gadgets that are smart.

3.4. T-THREATS

- The main threat is the emerging technology which plays according to the trends which may outcast this system in terms of money and improvements.

4. 5W's and 1'H



4.1. Who:

The project can be used almost by all the people who owns bigger homes. At the end, user satisfaction is the goal of the project.

4.2. What:

Temperature and Humidity of the environment can be stabilised.

4.3. When:

This project can be implemented in all real time application and also automatically sets the environment temperature accordance to the outside temperature.

4.4. Where:

All the Airports, Labs, Shops and high towers and basically in server rooms , Hospitals and Malls

4.5. Why:

Patients in Hospitals and older people require adequate oxygen supply , this can be implemented to avoid medical accidents

4.6. How:

It maintains the body temperature to be normal and not heating up it . Normally sweat comes out of our body when the body temperature rises up, this can be done while working in a non physical tasks.

5. DETAIL REQUIREMENTS

5.1. HIGH LEVEL REQUIREMENTS:

ID	Description	Status
HLR1	Temperature sensor (LM35)	Implemented
HLR2	Embedded C language	Implemented
HLR3	LCD display	Implemented
HLR4	Humidity sensor (SYHS-220) as a button or potentiometer . (in case of un available in SimulIde)	Implemented

ID	Description	Status
HLR5	Memory (EEPROM)	Implemented

5.2. LOW LEVEL REQUIREMENTS:

ID	Description	Status
LLR1	Thermostat	Implemented
LLR2	Speed control (L293D Driver)	Implemented
LLR3	Microcontroller (Atmega328)	Implemented

6. SIMPLE ALGORITHM:

1.start

2.input temp //temperature

3.input hum //humidity

4.input dof //density of people

5.if (dof>0)

6.if (temp>27 && hum>50)

7.switch on the motor1

8.elsif (temp50)

9.switch on motor1 and motor2

10.else switch the motor1 and motor2 off

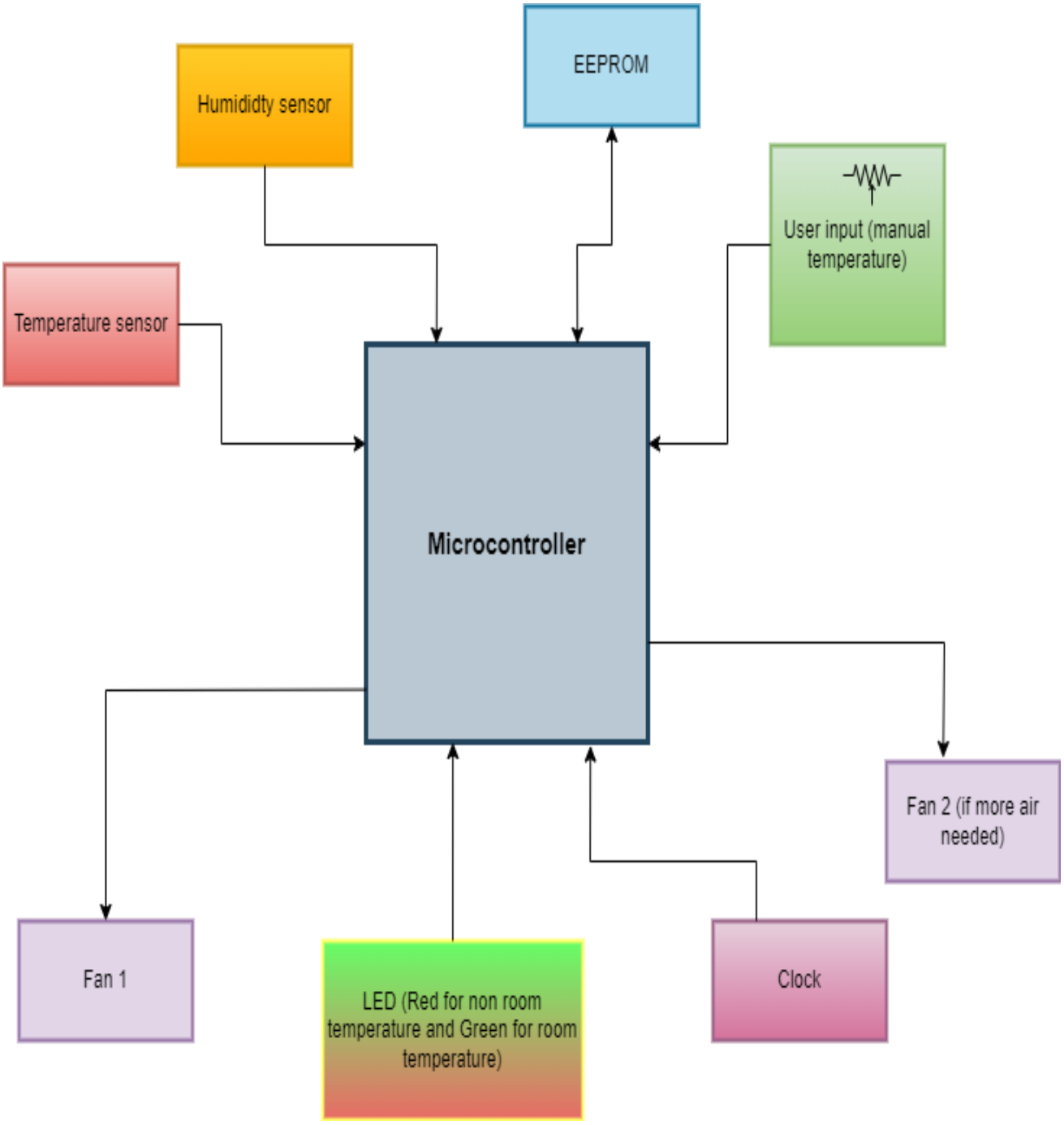
11.print temp

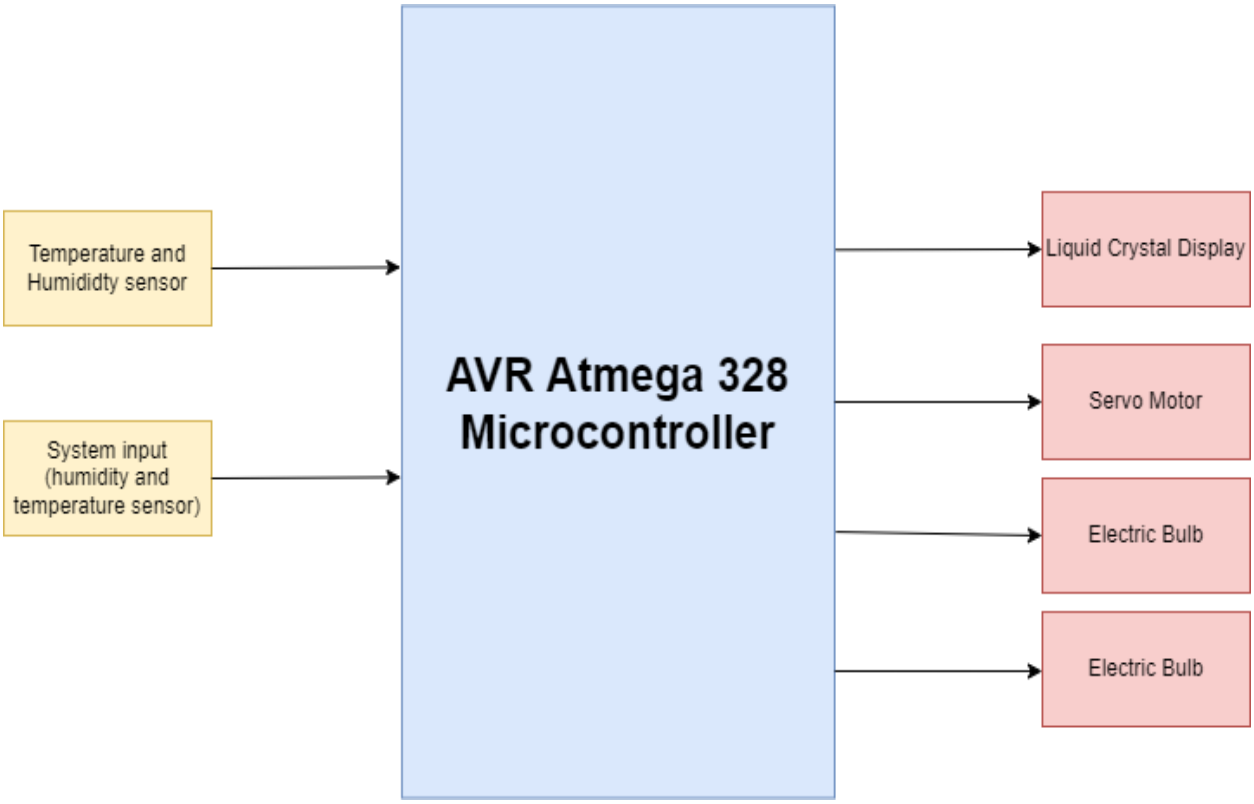
12.print hum

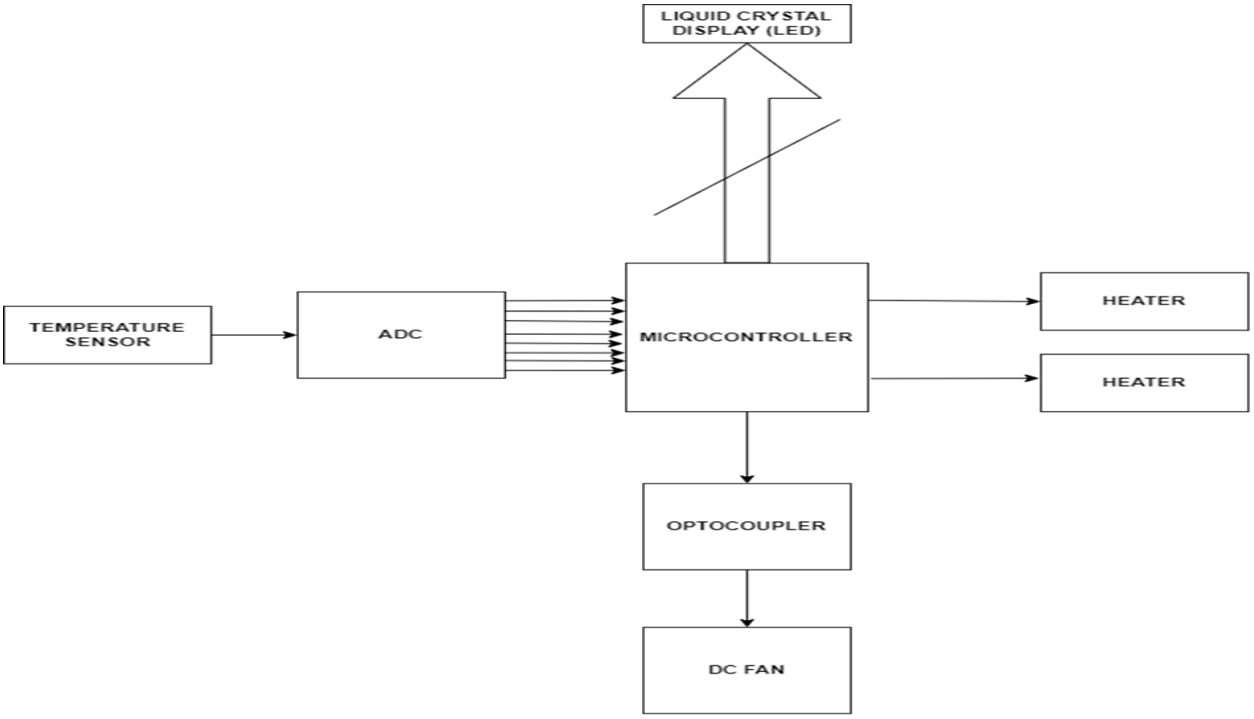
13.print dof

14.stop

7. ARCHITECTURE:




Temperature and Humididty sensor
System input (humidity and temperature sensor)
AVR Atmega 328 Microcontroller
Liquid Crystal Display
Servo Motor
Electric Bulb
Electric Bulb


LIQUID CRYSTAL DISPLAY (LED)
TEMPERATURE SENSOR
ADC
MICROCONTROLLER
HEATER
HEATER
OPTOCOUPLER
DC FAN

8. FLOW DIAGRAM: