HEATWATCH(Temperature monitoring system)-[Digital and System Designs]

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README

HEATWATCH (Temperature monitoring system)

Team

▼ Details

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Abstract

▼ Details

The Temperature Monitoring System is a digital project designed to measure and monitor temperature levels in real-time. This system uses digital sensors, microcontrollers, and display units to collect, process, and display temperature data. It can be used in labs after some advancedments. It oĊers a practical application for various industries, including environmental monitoring, healthcare, and industrial control. The project involves the integration of a temperature sensor, counter IC, flip-flops, logic gates, a 7-segment LED display,

and power supply components on a breadboard or PCB. It performs various tasks like it records and monitors temperature, it gives a security alarm when Temperature reaches extremes. It displays the Temperature in both Celcius and Fahrenheit. It also displays the average Temperature over 24hrs.

```
        Our motivation is to provide safety measures and safe working conditions for
employes. After some advancements we can provide this setup for maintaining optimal
Temperature in Industries to make   Industrial processes more effecient.
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```
   Our unique contribution is Hypothetically we can implement Alarms, maintain
optimal temperatureand share data using bluetooth/WiFi
```

Working

▼ Details

The sensor (Dh t11) measures the atmospheric temperature and sends the value as input directly to a display which is used to display current temperature and it also gives an input to the main circuit after every 30 seconds which is set by using a clock. We use a counter IC to count the number of times we get the temperature inputs.This is an upward counter and it increments every time we get an input from the sensor. The value from the sensor is used as an input to the 11-bit adder in which another 11-bit number is initialized to zero. The result will then be the input for the divider.This result here will be the dividend in this dividor module and the divisor will be the value of the counter. The output from this dividor module is directly displayed using another LCD which is used to display average temperature and the same output is given as an input to 7 flip flops which store each of the 7 bits of the output of divider. Now we are using a 7 by 4 bit multiplier which multiplies the 7-bit ouput from the flip flops and 4 bit output from the counter which is subtracted by 1 using the 4-bit subtractor. The output from this multiplier will be another input for the 11-bit adder which adds the next incoming input to this . The loop goes on and the average temperature is displayed every 30 seconds.

Components-used #Temperature Sensor (e.g., LM35, LM75, or thermistor)

#Counter IC (e.g., 74LS90 or 74LS192).

#Flip-Flops (e.g., 74LS74).

#Logic Gates (e.g., 74LS00, 74LS32).

#Display (e.g., 7-segment LED display).

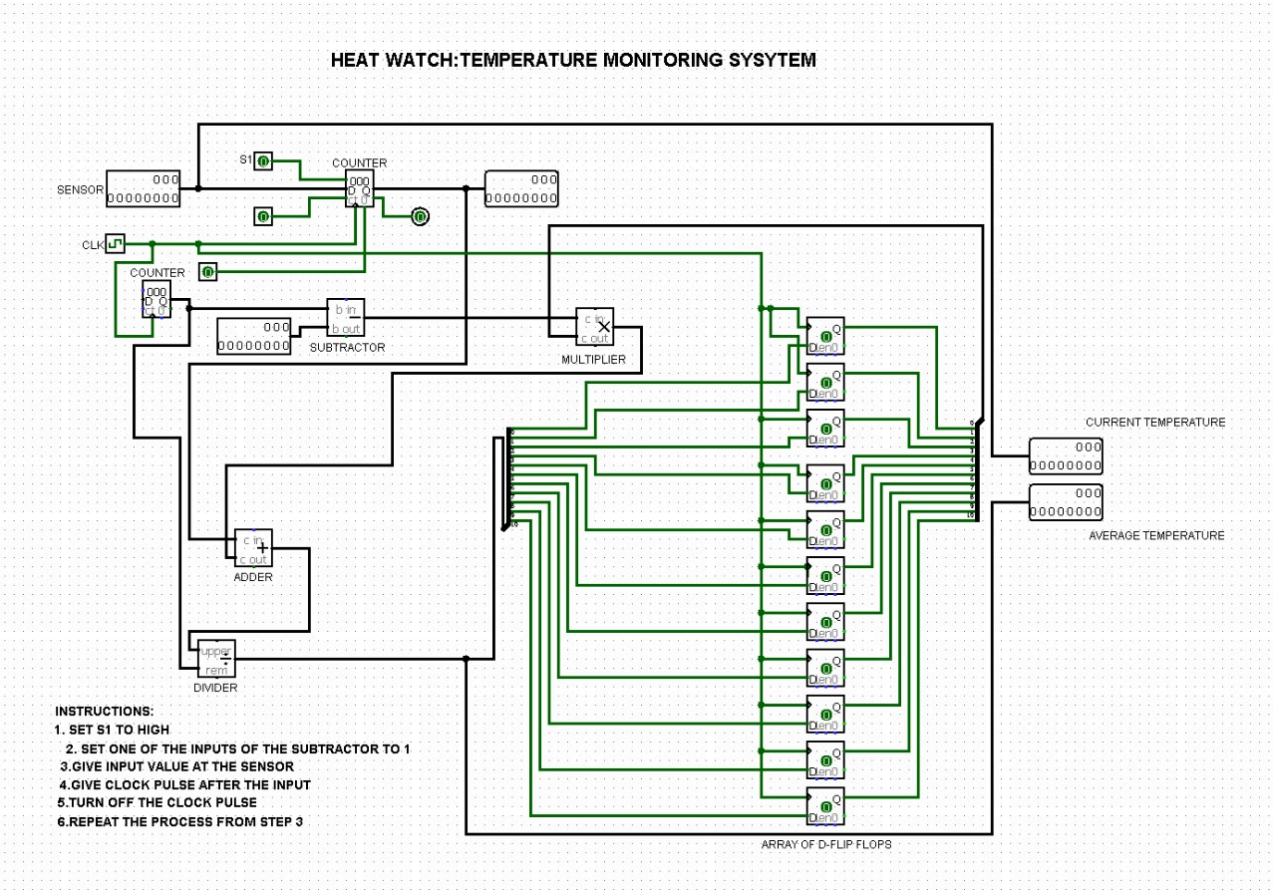
#Power supply components (voltage regulator, capacitors, etc.).

#Breadboard or PCB for circuit construction.

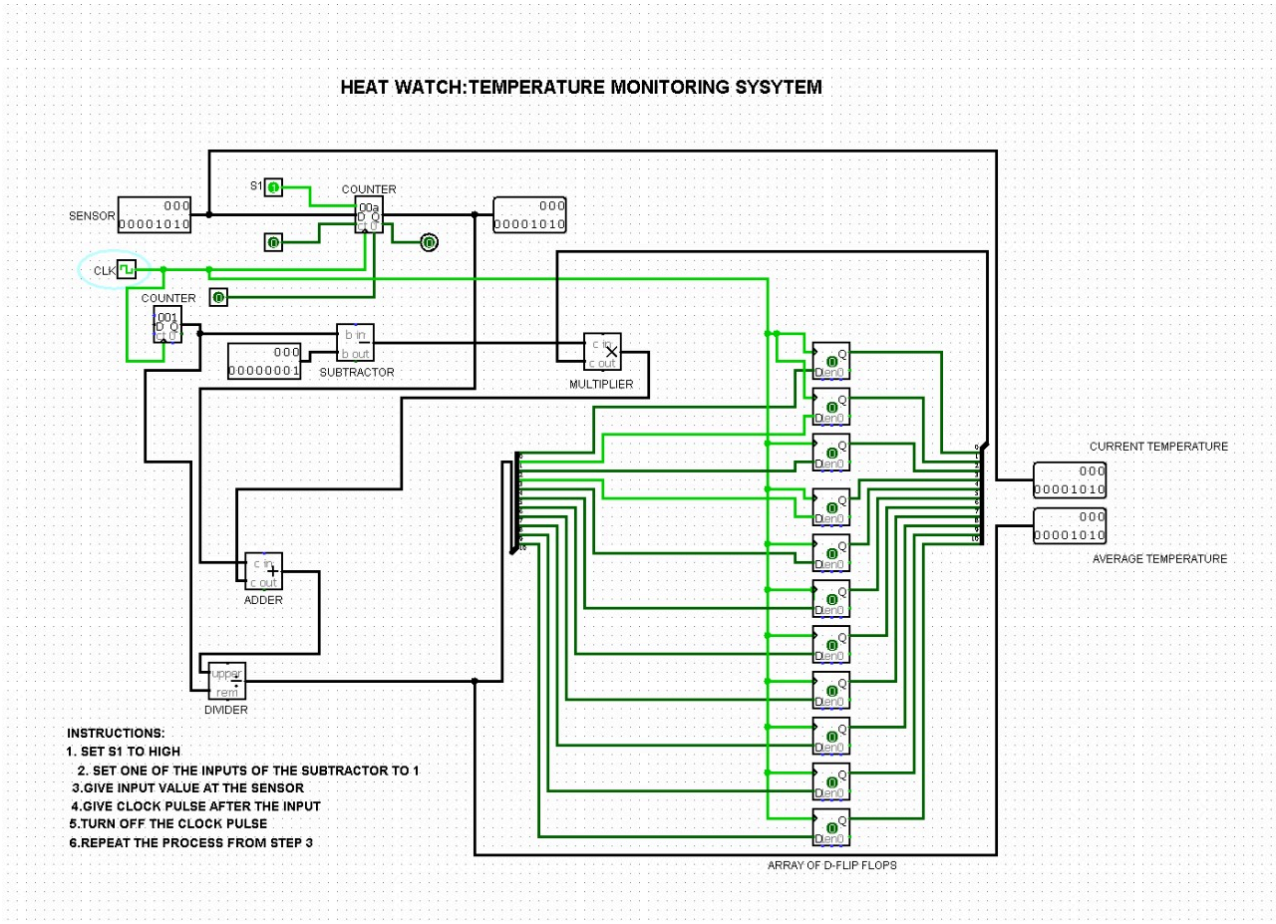
Logism working

▼ Details

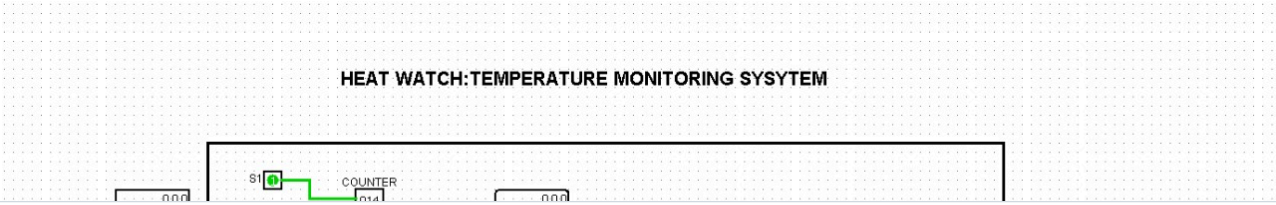
```
                                    This is our Logism Simulation design.
```



Iteration 1-We can see that the input of the numbers throught the Temperature sensors is 10 which is 00000001010 in binnary,
so the current temperature shows the output as 00000001010 and the average output also shows 00000001010 because there is only
one single iteration.



Iteration 2-We can see that the input of the numbers have changed to 20 in the second iteration which is 00000010100 in binnary,
so the output shows to be 00000010100 in the current temperature but 00000001111 as average temperature which is 15.



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Contributors 3

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Languages

- **Verilog** 100.0%