

PROJECT PROPOSAL

PRESENTED BY

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PROBLEM STATEMENT



- Although most developed countries have easy access to water, dehydration remains a significant problem, especially for certain groups such as the elderly and athletes. Most of the people are not aware of how much water needs to be taken every day which causes dehydration. There are various other factors also such as temperature and the physical activities performed by an individual.
- It leads to various consequences such as fatigue, headaches, and decreased cognitive function, increased risk of heat stroke and other heat-related illnesses, and exacerbation of existing health conditions such as kidney stones and urinary tract infections.
- One should always stay hydrated and should monitor the level of hydration. However, the current methods to monitor the hydration level not very convenient and accurate and more accurate laboratory methods are tedious to perform and time taking. Therefore, some expedient mechanism is needed to monitor the level of hydration in a person especially when he/she is performing some physical activity.

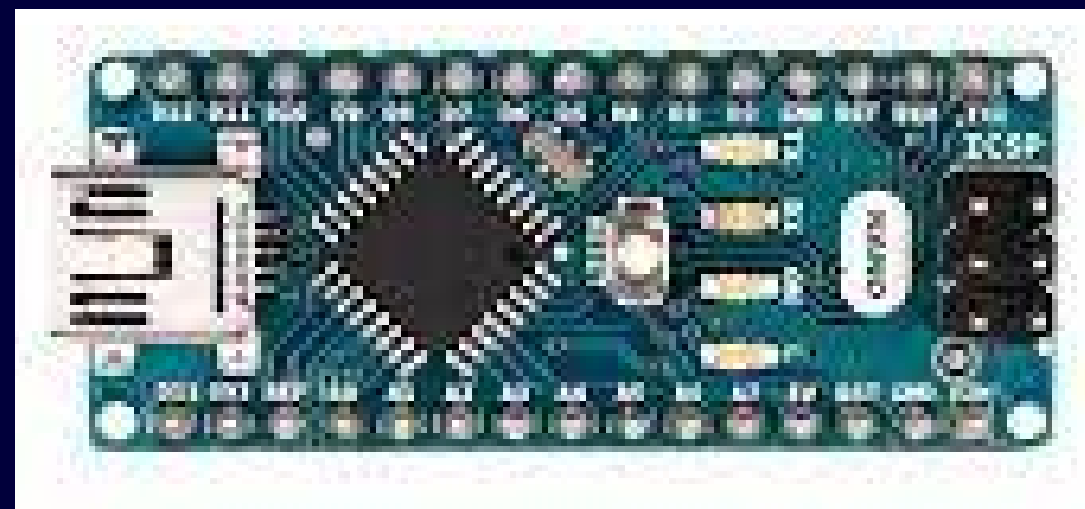
PROPOSED SOLUTION

- The aim is to design a smart water bottle system that incorporates sensors and Arduino technology to measure the dehydration level of the user in real-time.
- In order to measure dehydration level accurately, it is important to take into consideration both water intake by the user as well as the water lost from the body of the user in the form of sweat.
- Based on the difference between water intake and water lost through sweat, hydration level is calculated on a scale of 0-10.
- This will enhance the user's ability to monitor their hydration status at any point of time and reduce the risk of dehydration.



How will it work?

- Arduino Nano will be connected to Ultrasound sensor and GSR(Galvanic Skin Response) sensor.
- Ultrasound sensor will help in measuring the amount of water in the bottle which will further help in monitoring the water intake of the user.
- GSR sensor will be attached to the bottle and will measure the skin conductance which will be converted to sweat rate. Sweat rate of the user will be used to calculate the total water lost through sweat.
- Necessary computation and calculation will be done on the Arduino and the result will be shown on the LCD attached to the bottle.



How it is unique?

- At present there are devices which help in ensuring hydration by reminding the users at regular intervals of time. Also, there are devices which keep a track of the water intake of the user.
- However, these devices don't take into account factors like dependence of hydration level on water loss from the body in the form of sweat.
- Our system addresses this concern and tries to measure the hydration level of the user in true sense by monitoring water intake as well as water loss from the body.
- This project tries to reduce the gap between the prevention of dehydration and actually measuring the dehydration levels by integrating separate technologies of monitoring water consumption of an individual and total body water (TBW) loss measurement.

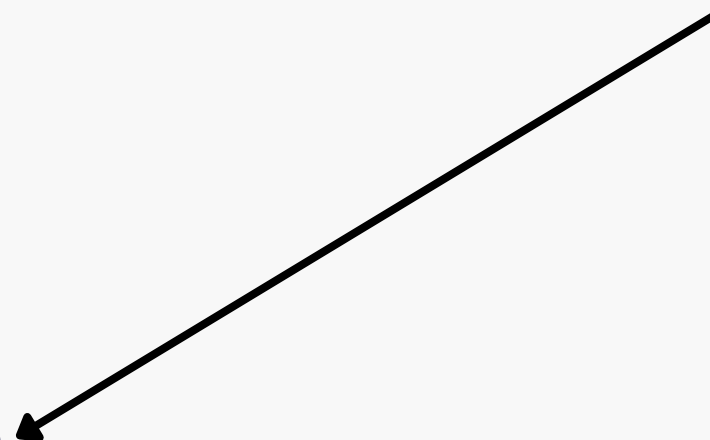
ANOMALY DETECTION

1. Data Collection and
Preprocessing

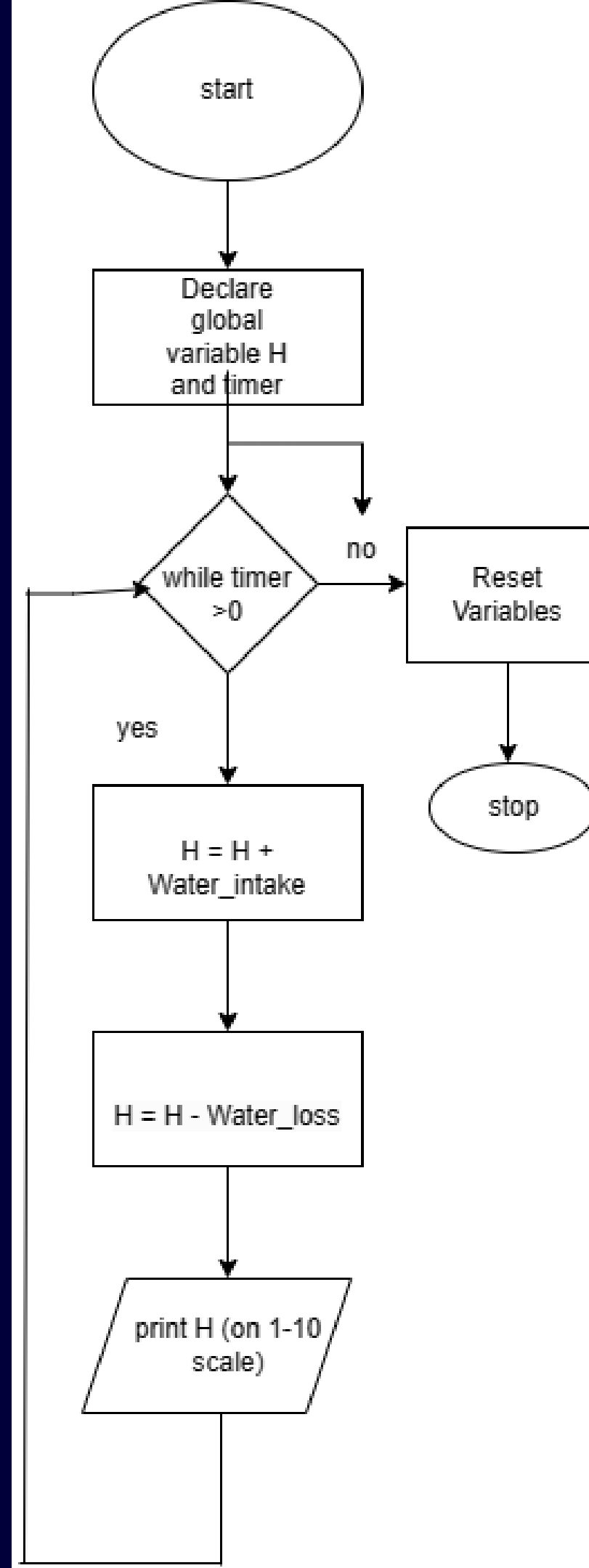
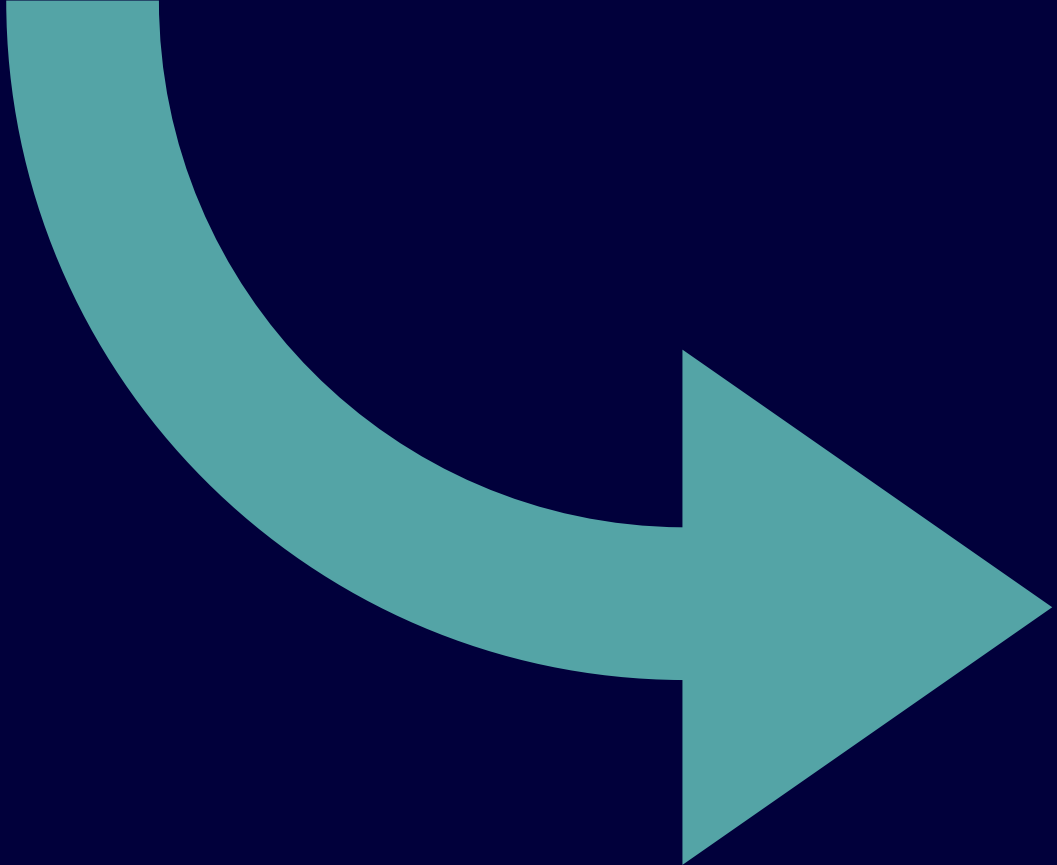
2. Train the model

3. Use the model to detect
anomalies in the daily
water consumption

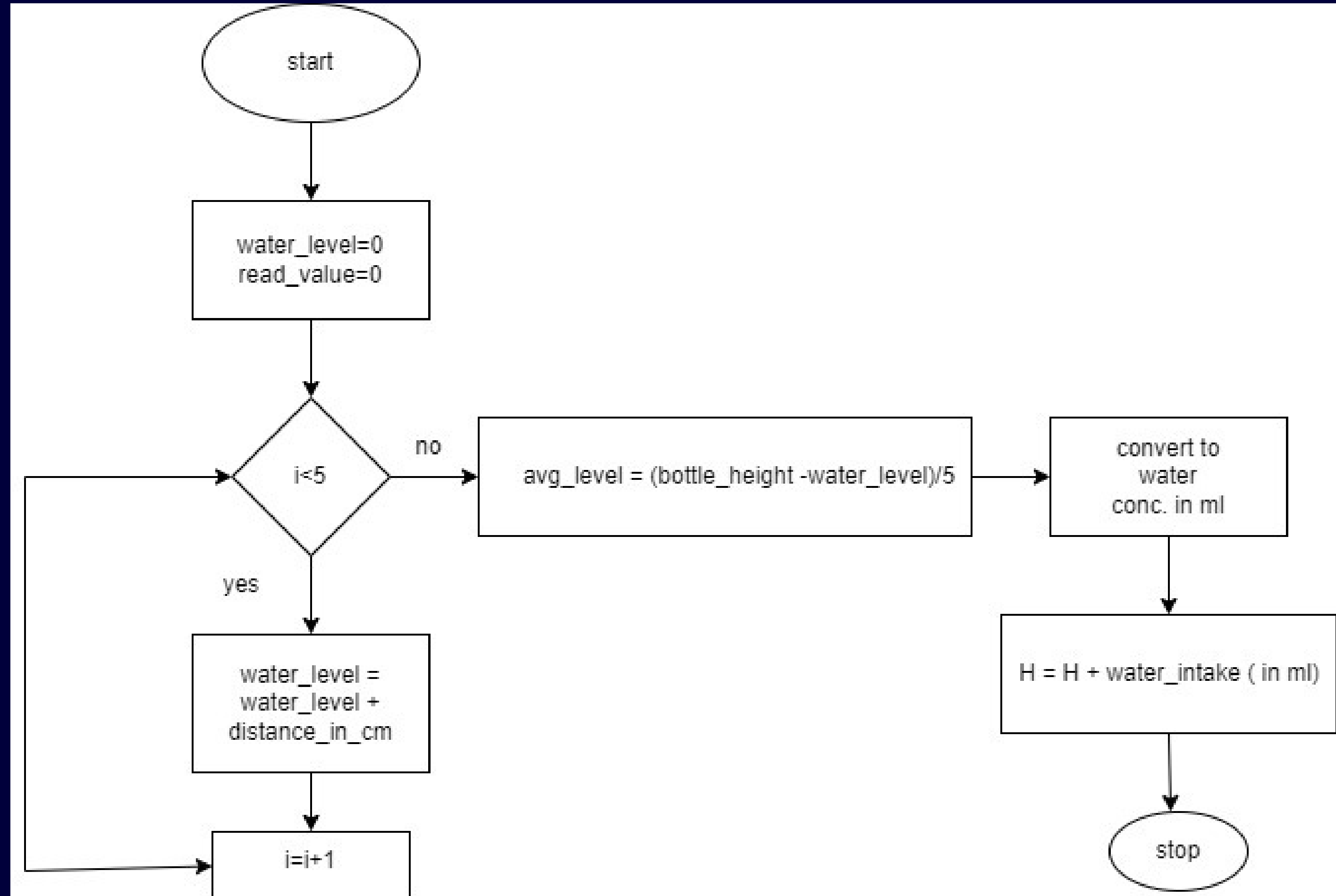
4. Inform the user



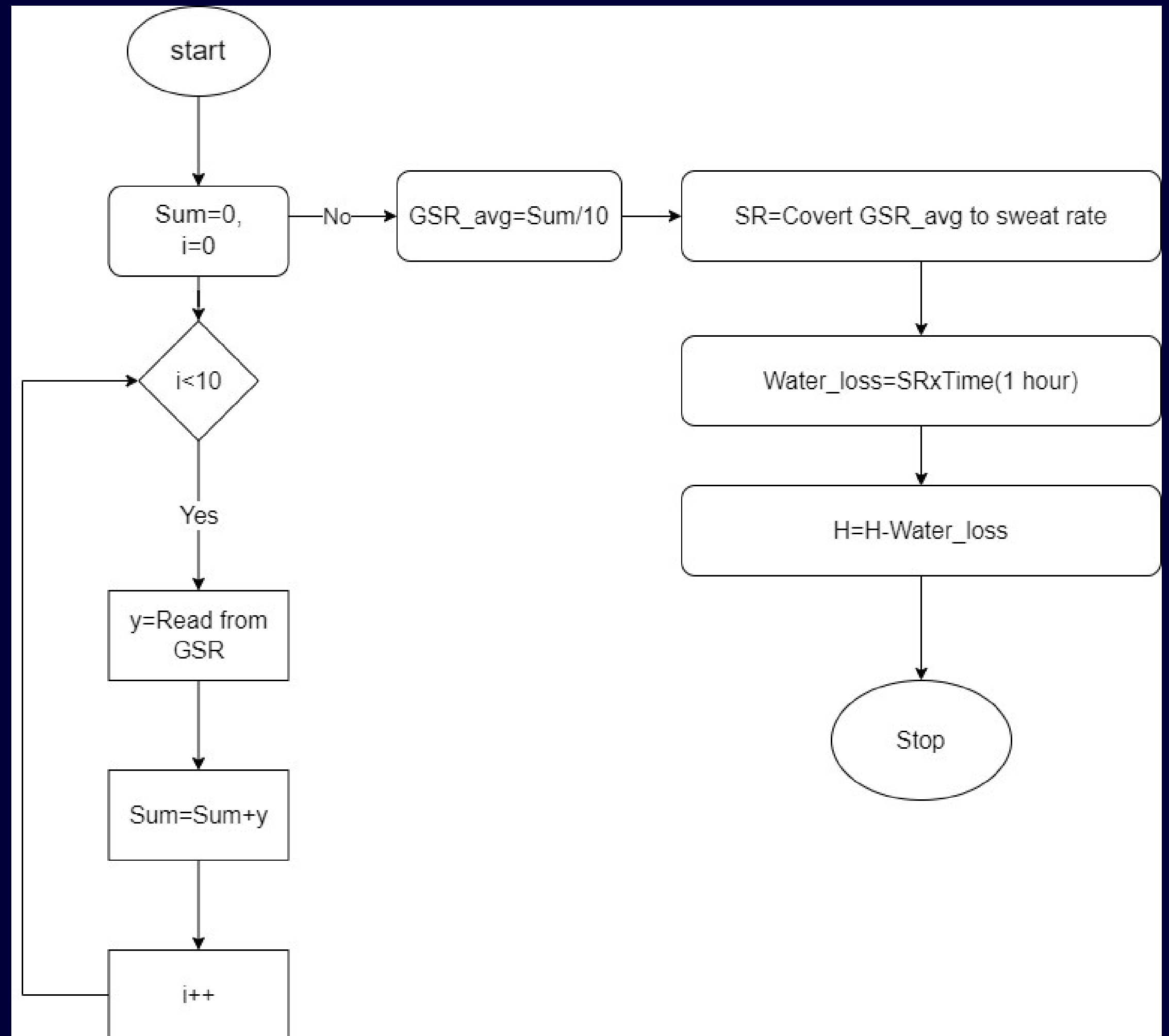
FLOW DIAGRAM OF SYSTEM



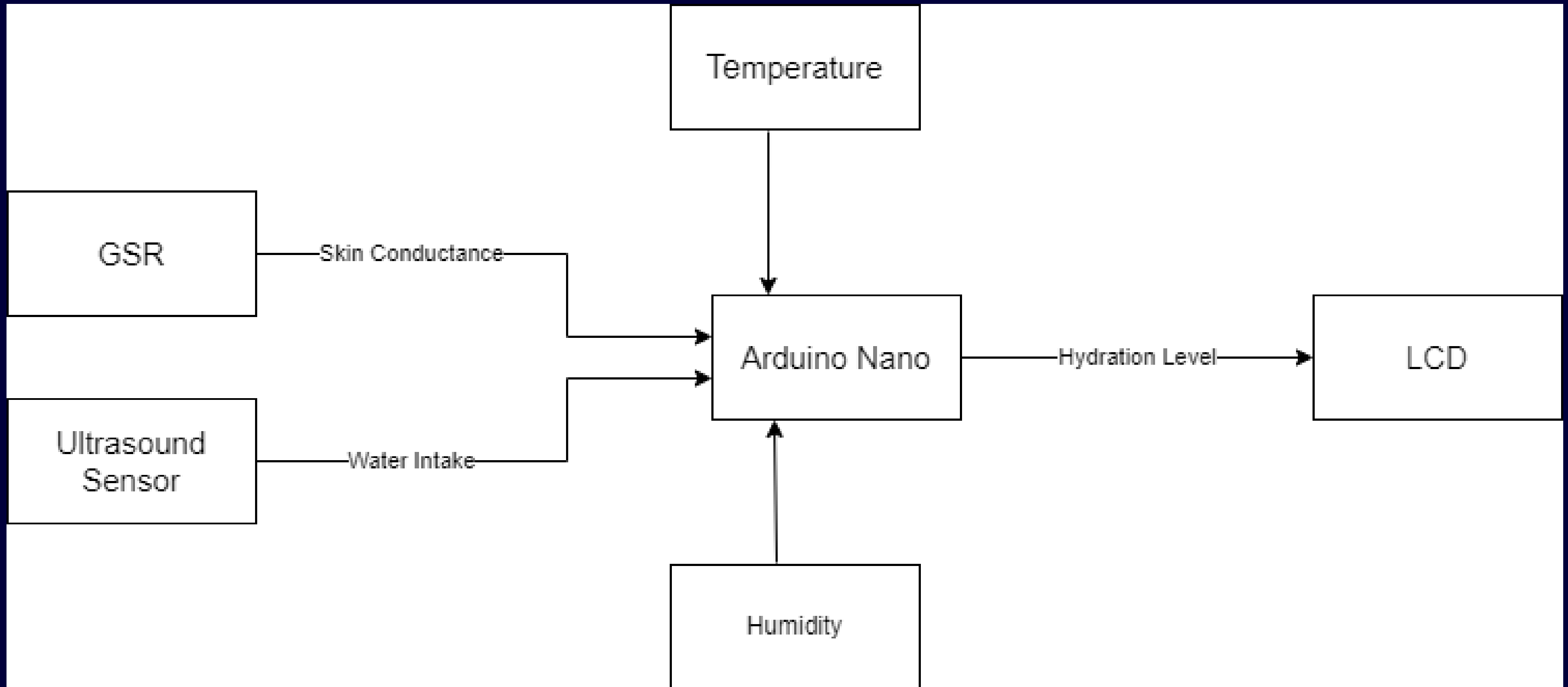
FLOW DIAGRAM OF ULTRASONIC COMPONENT



FLOW DIAGRAM OF GSR COMPONENT



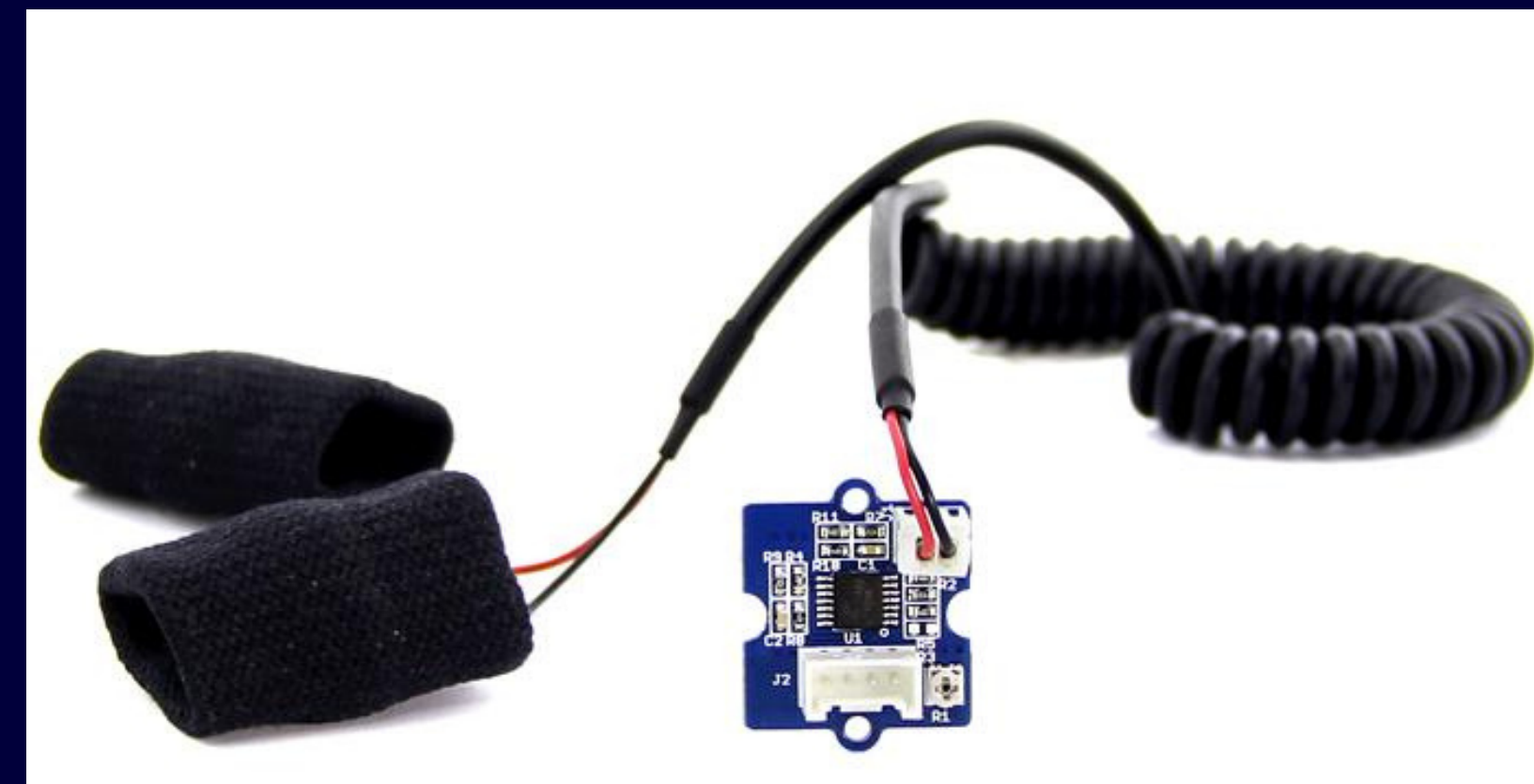
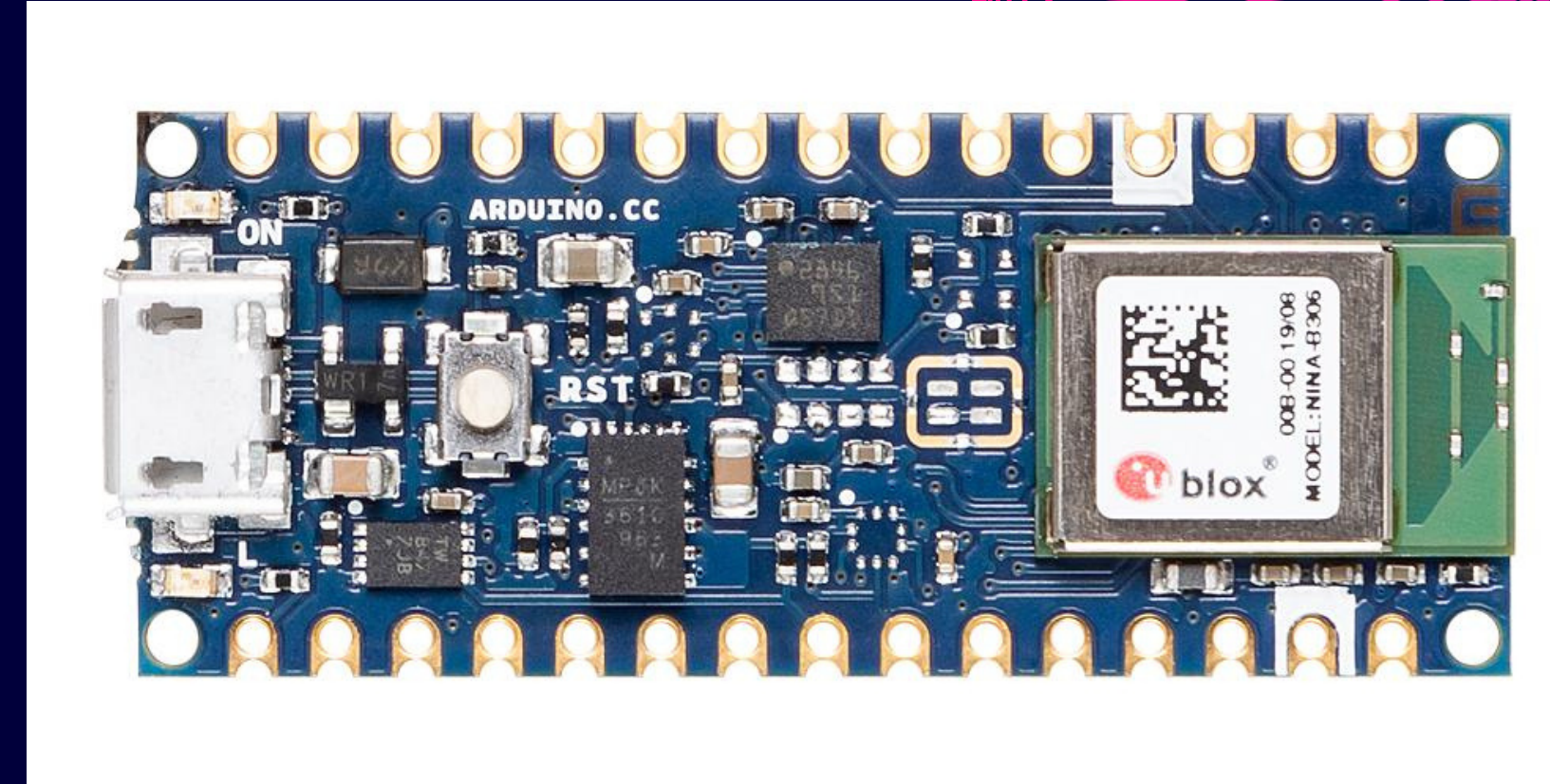
BLOCK DIAGRAM



MAIN COMPONENTS

Hardware and Software components used that will be used

1. **Arduino Nano 33 BLE**
2. **GSR(Galvanic Skin Response) Sensor**
3. **Ultrasound Sensor**
4. **LCD**
5. **Arduino IDE**



THANK
YOU