Web integration

Introduction:

- Freshwater is a world resource that is a gift of nature and important to farming, manufacturing, and the life of human beings on earth.
- Due to the limited drinking water resources, intensive money requirements, growing population, urban change in rural areas, and the excessive use of sea resources for salt extraction has significantly worsened the water quality available to people.
- Even due to containment water various water born are increasing day by day, due to which many human beings are losing their lives.

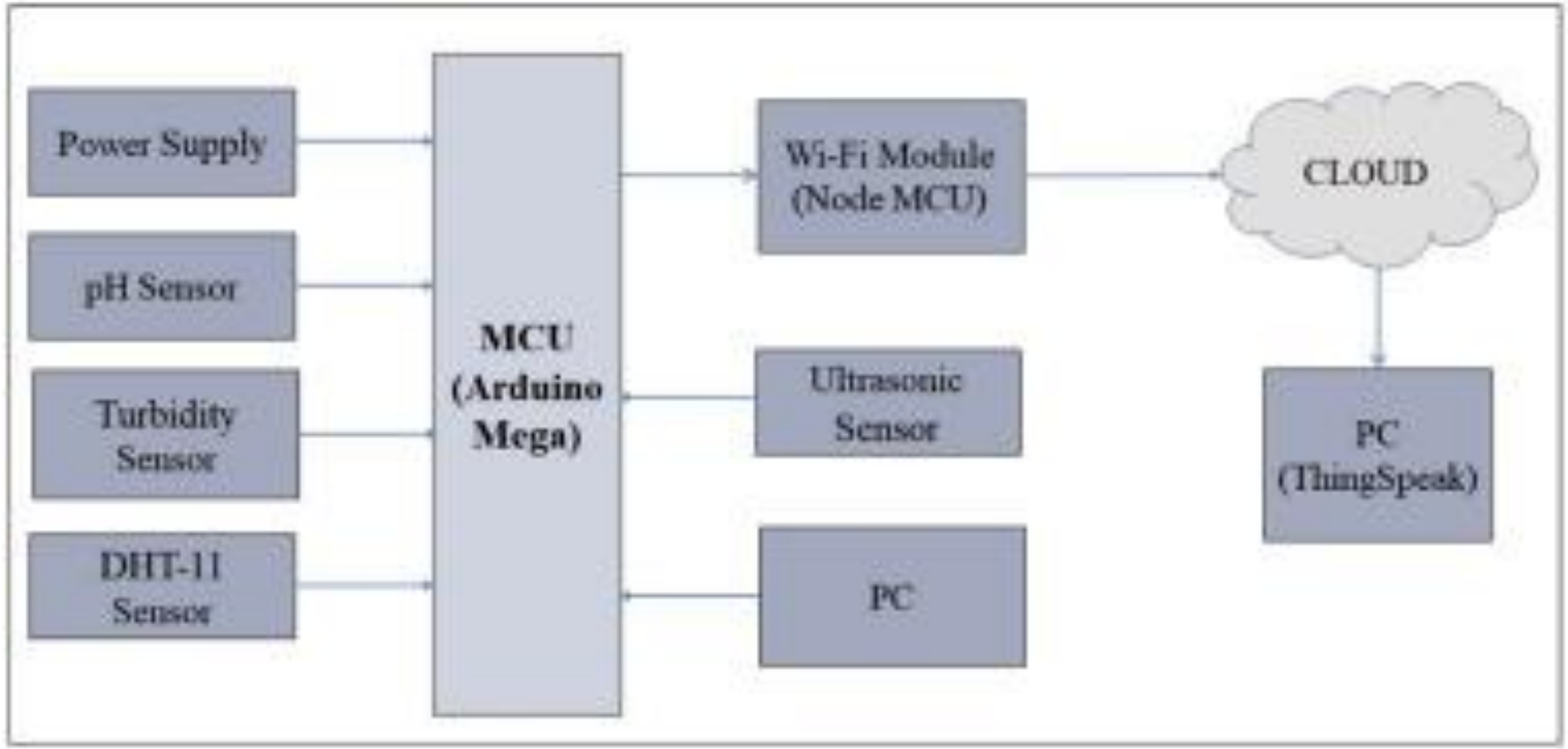
Measurement parameters of WQM system:

- Water’s pH value.
- Turbidity of the water.
- Water level present in the tank.
- Temperature and humidity of the surrounding atmosphere.

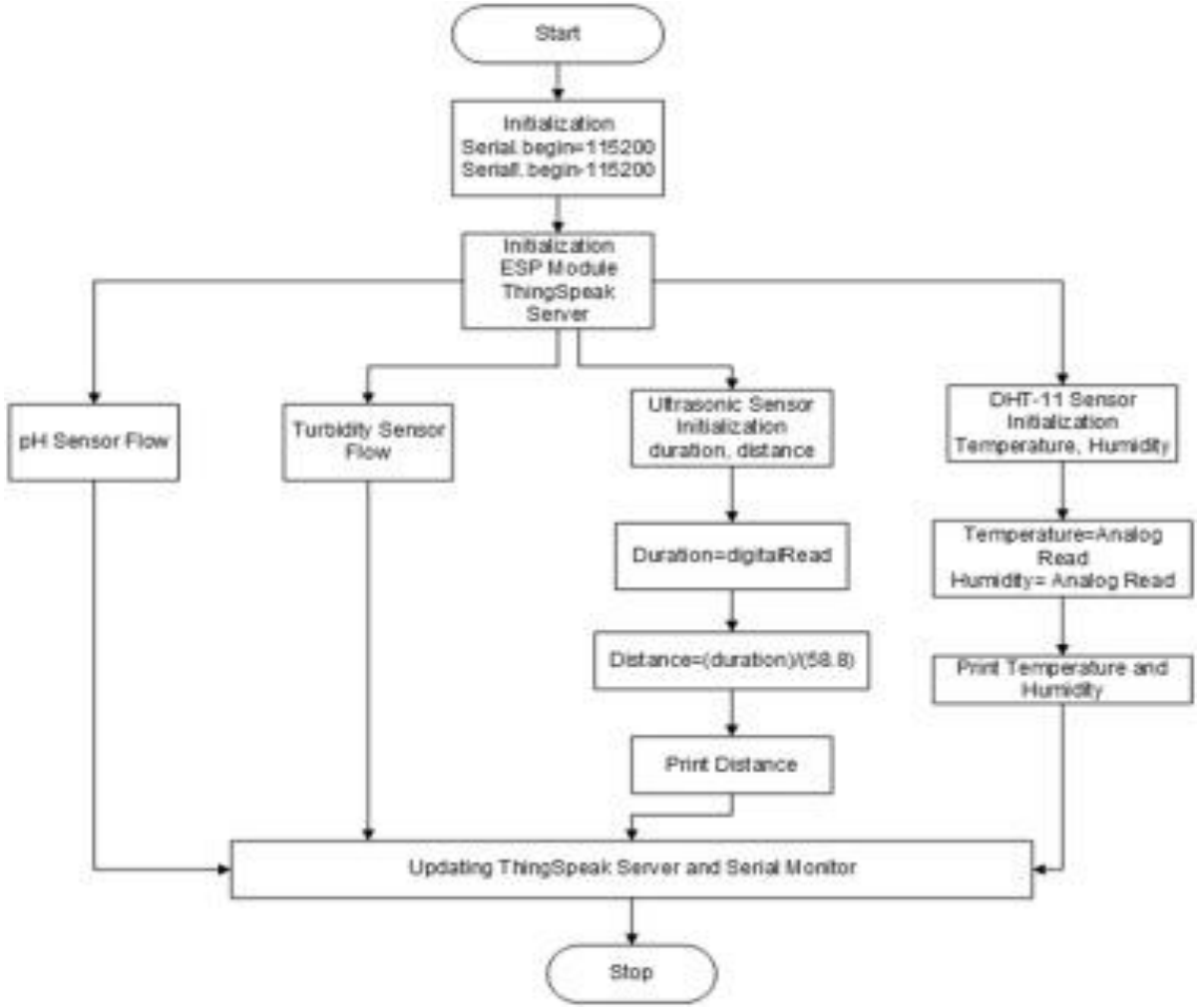
Methodology of the proposed system:

- The proposed system uses four sensors which are pH, turbidity, ultrasonic, DHT-11, microcontroller unit as the main processing module and one data transmission module ESP8266 Wi-Fi module (NodeMCU).
- The microcontroller unit is a significant part of the system developed for water quality measurement because The Arduino Mega consumes low power, and it is a small size, where the size is a good use for a crucial point-of-sale technology criterion.
- Among four sensors, two of the sensors collect the data in the form of analog signals; the MCU has an on-chip ADC that translates the sensor analog signals into the digital format for further study.

The block diagram of the system proposed for water quality measurement is:



Algorithm of the proposed system:



Conclusion:

- The system proposed in this paper is an efficient, inexpensive IoT solution for real-time water quality monitoring.
- The developed system having Arduino Mega and NodeMCU target boards are interfaced with several sensors successfully.
- An efficient algorithm is developed in real-time, to track water quality. The measured pH value ranges from 6.5 to 7.5 for Hyderabad Metropolitan city supply water and 7 to 8.5 for groundwater.
- The measured value of turbidity ranges from 600 to 2000 NTU for both Hyderabad Metropolitan city supply water and groundwater.

- A web-based application i.e., ThingSpeak is used to monitor the parameters such as pH value, the turbidity of the water, level of water in the tank, temperature and humidity of the surrounding atmosphere through the webserver.
- Further, these measured parameters also monitored in ThingSpeak mobile application. Also, this work needs to be carried out to analyse several other parameters like electrical conductivity, free residual chlorine, nitrates, and dissolved oxygen in the water.