



Transform Yourself

DESIGN AND DEVELOPMENT OF AN APP TO MONITOR AND CONTROL THE WATER FLOW USING GSM

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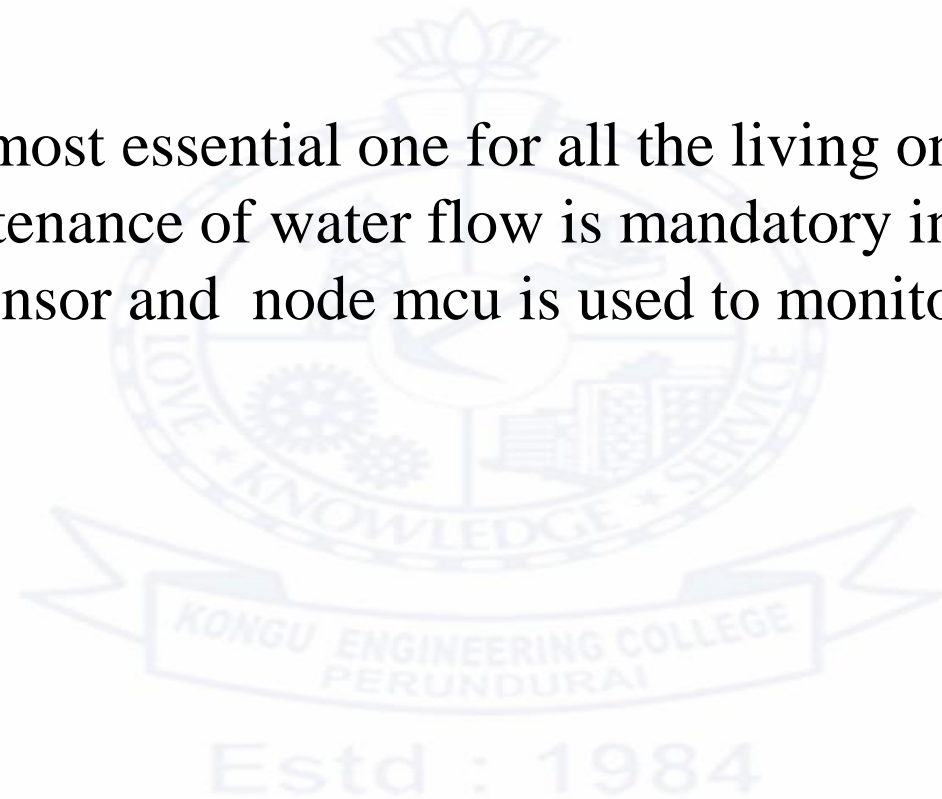
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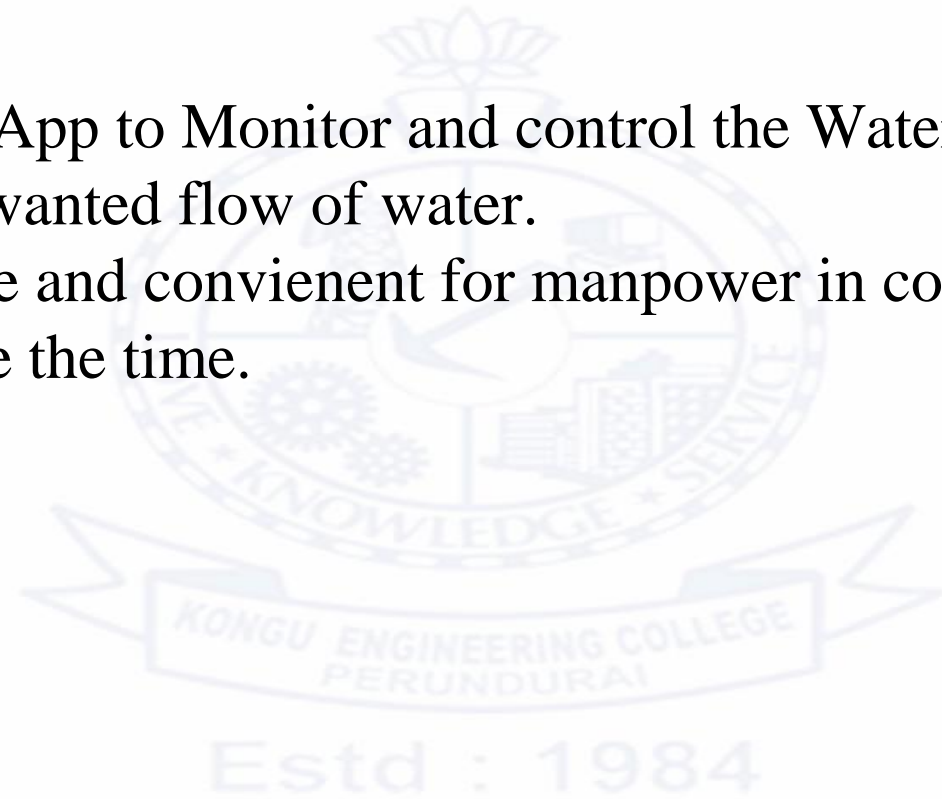
INTRODUCTION:

- ✓ Water is an most essential one for all the living one.
- ✓ Proper maintenance of water flow is mandatory in all the case.
- ✓ Here flow sensor and node mcu is used to monitor and control the water flow.



OBJECTIVE :

- To Build an App to Monitor and control the Water flow
- To avoid unwanted flow of water.
- To make ease and convenient for manpower in controlling the gate valve and save the time.



LITERATURE SURVEY:

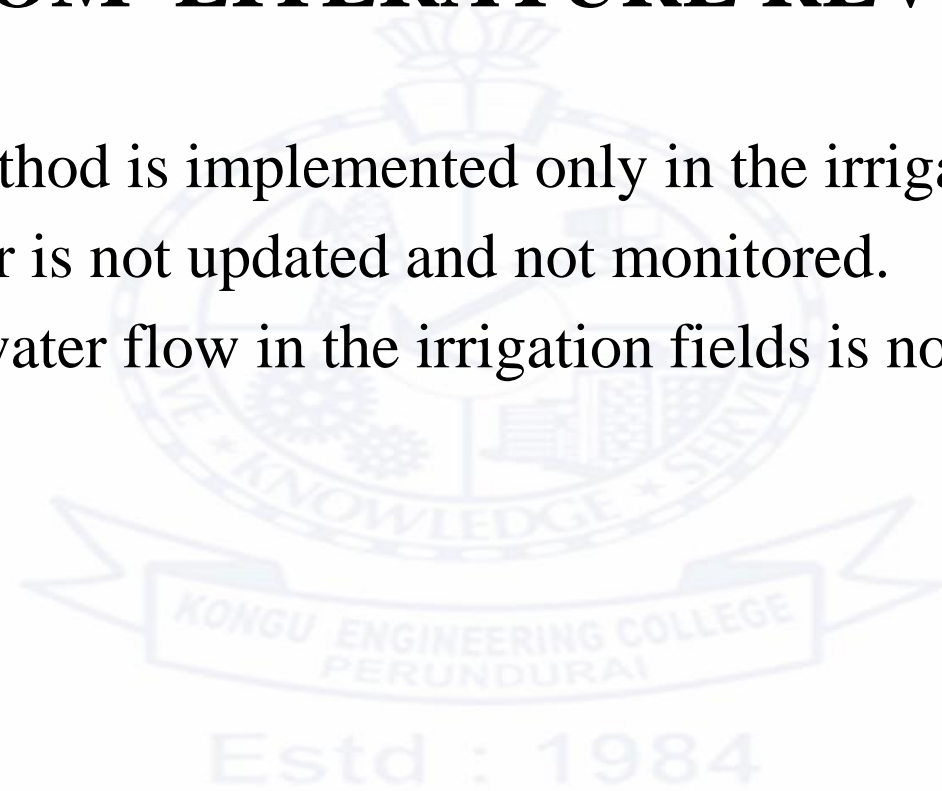
Topic and Year	Methodology	Advantage	Results
Wireless Irrigation system via cell phone call & SMS (Dec 2018)	Wireless technology is used. GSM monitor the level of water source and control the switching of the motor. Also GSM receives the calls from former and accordingly do the operation.	Automation of irrigation field to motor ON/OFF and gate valves open and close.It can make irrigation, eventhough the farmers are not in their farm.	Integration of monitoring of level of water source as well as controlling the motor and gate valves (solenoid valves) using GSM.
Sweating the assets - The role of instrumentation, control and automation in urban water systems (19 February 2019)	Integrated software is used and monitored repeatedly. Stationary sensors used to control and montior the flower of water	Performance improved, reduction in cost, enhanced capacity of increased service demand caused by population growth	Most cases to date the application of ICA has been achieved

Topic and Year	Methodology	Advantage	Result
Lock gates and closures in hydraulic projects. (Survey Book 2019)	Hydraulic gates designed with several loads. Structural modeling and analysis are done by various methods and tools	Maintenance done in design state itself. Size is reduced compared to previous cases	It can control big water body also. Because the performance of the structure. Natural conditions and human action can't able to affect. Effective water control was detected
Dynamic control of water distribution system (Aug 2016)	A Python software is used It provides the different solution comparing with graph	Effective partitioning compare to previous cases with limited gate valves. Low cost to redesign network topology.	Dynamic layout allows the solution for pipe break, insufficient pumping etc., Fire condition results are effective and relatable.

Topic and Year	Methodology	Advantage	Results
A sensor based solution to monitor grazing cattle drinking Behavior and water intakes (Dec 2019)	Stationary sensors (wireless) used to monitor animal visit and water quantity. Accelerometer data processing and algorithm development	Wireless data transmission and regular monitoring no need for manual water check	RFID reader recorded 66% only and failed to record consecutive observations. Water quantity monitoring has 95% accuracy. it missed 5-20% data
Gating valve on spinning micro fluidic platforms (Aug 2016)	A flow switch / control concept. Liquid gating, flow detection, numerical analysis in CFD package	Compare to previous technique it enables the flow direction without employing external power source	Numerical data; are very close to the practical calculation and accuracy is 96%

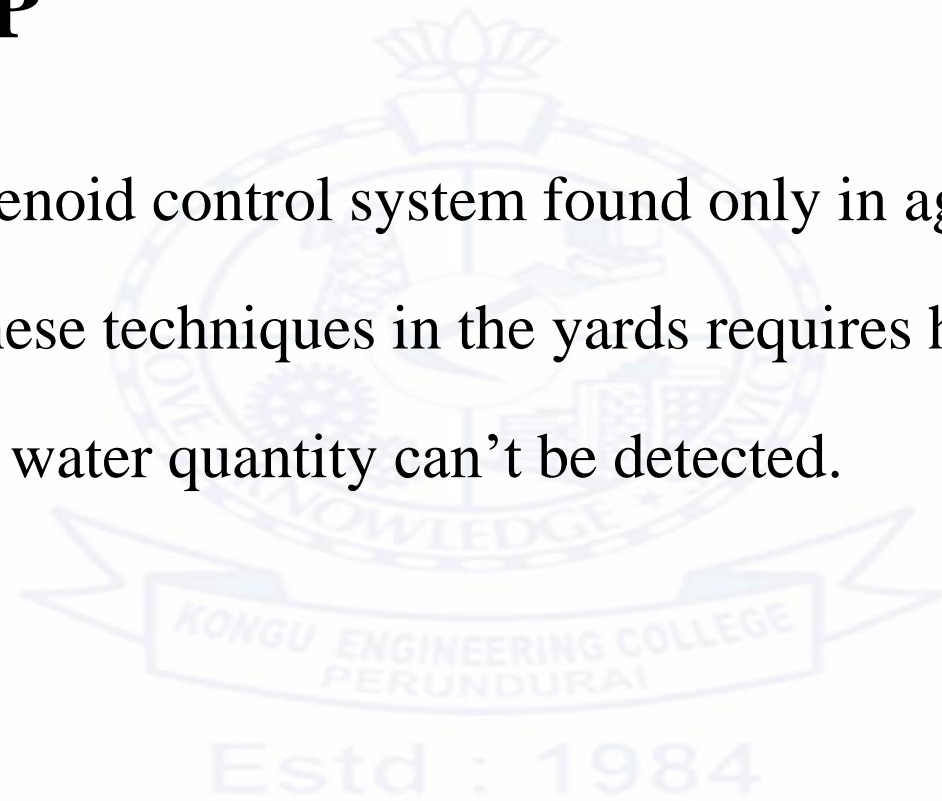
SUMMARY FROM LITERATURE REVIEW

- Most of these method is implemented only in the irrigation field.
- The flow of water is not updated and not monitored.
- The quantity of water flow in the irrigation fields is not monitored.



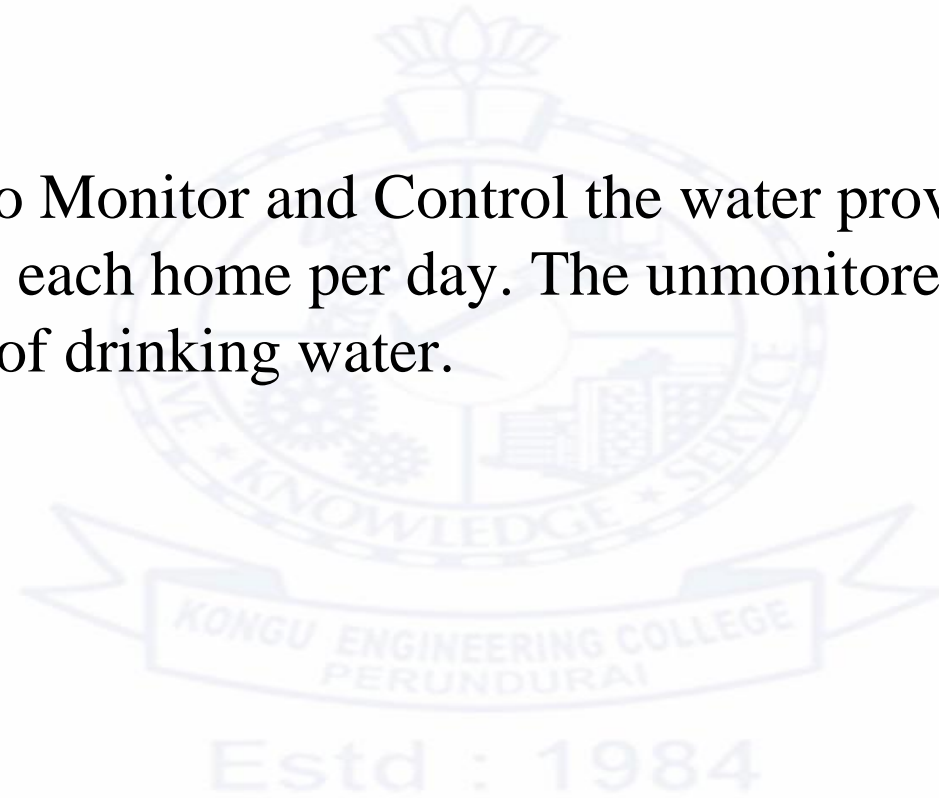
RESEARCH GAP

- Automated solenoid control system found only in agriculture field.
- The setup of these techniques in the yards requires high cost.
- The consumed water quantity can't be detected.



PROBLEM STATEMENT :

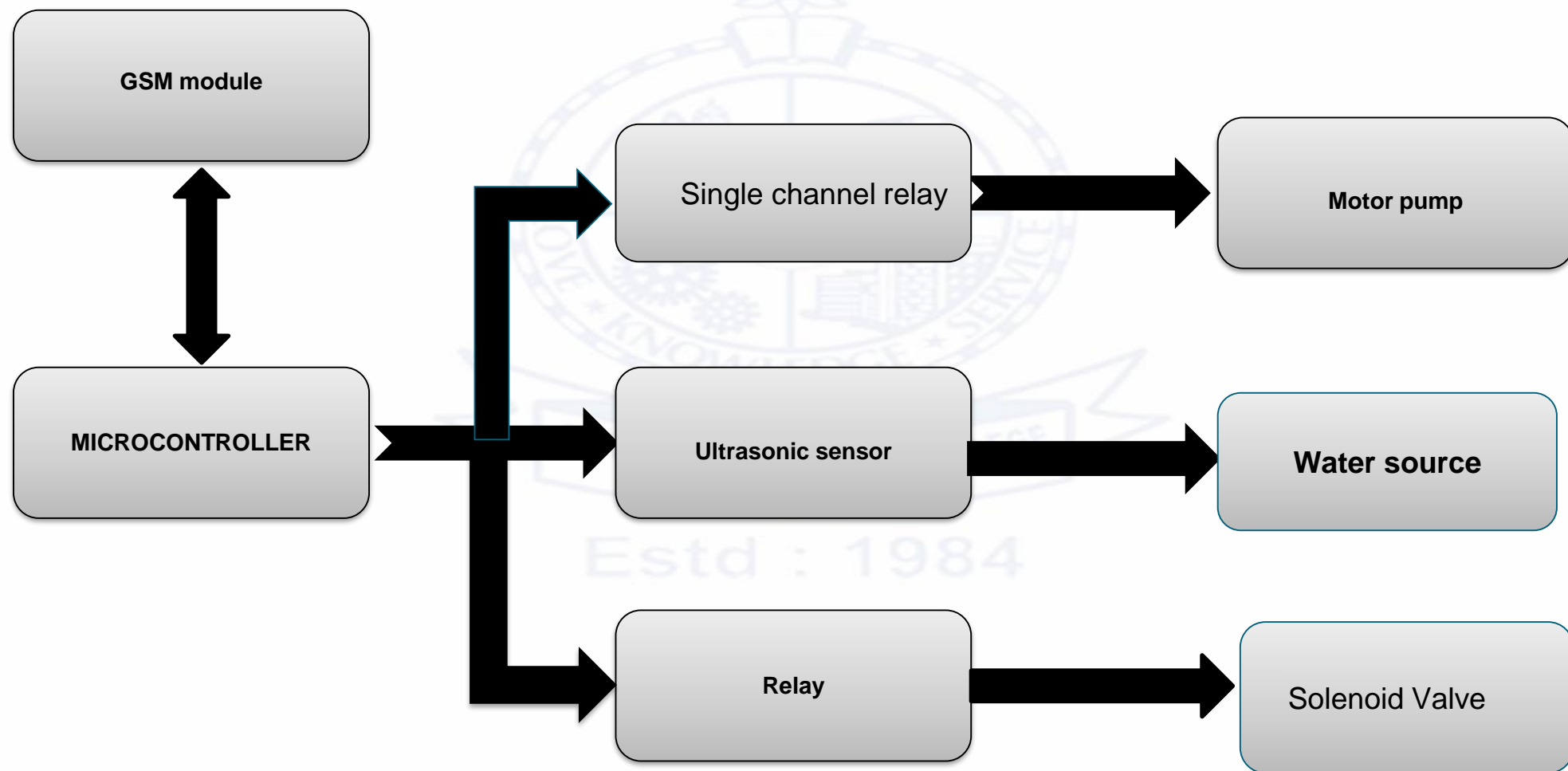
- Build an App to Monitor and Control the water provided by municipality to each home per day. The unmonitored condition leads to the wastage of drinking water.



EXISTING METHOD:

- ❑ Microcontroller is interfaced with GSM module , Ultrasonic sensor , solenoid valves and relay.
- ❑ Ultrasonic sensor is used to detect the water level.
- ❑ Once it is detected then the signal is passed to the controller.
- ❑ Controller monitor the water level and control the switches of motor and solenoid valve.
- ❑ The switches can also be controlled by farmers by calling to the GSM module
- ❑ According to the selected number the operation will be processed .

BLOCK DIAGRAM:

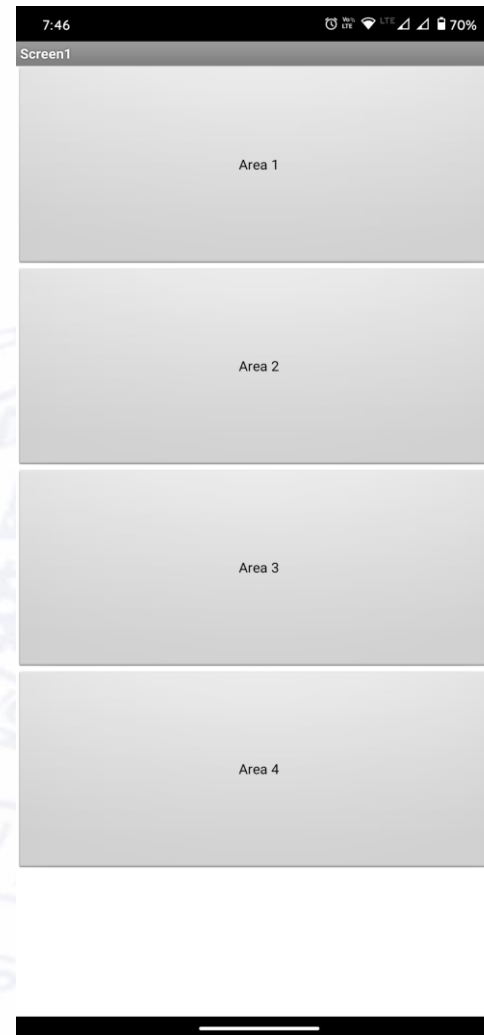


PROPOSED METHOD:

- ❑ Node MCU is interfaced with GSM module flow sensor ,relay and solenoid valve .
- ❑ Flow sensor is fixed at the receiving pipe at each house and consumption is monitored.
- ❑ When the consumption reaches the specific level (eg;1000 lit) the solenoid valves are closed..
- ❑ While solenoid valves closed the owner receive a message that you have used the daily consumption .
- ❑ GSM will send message to registered mobile.
- ❑ This methods will run for every house simultaneously and controlled by using app.



App screen of user



Select the area

App screen of Control room



Select the House

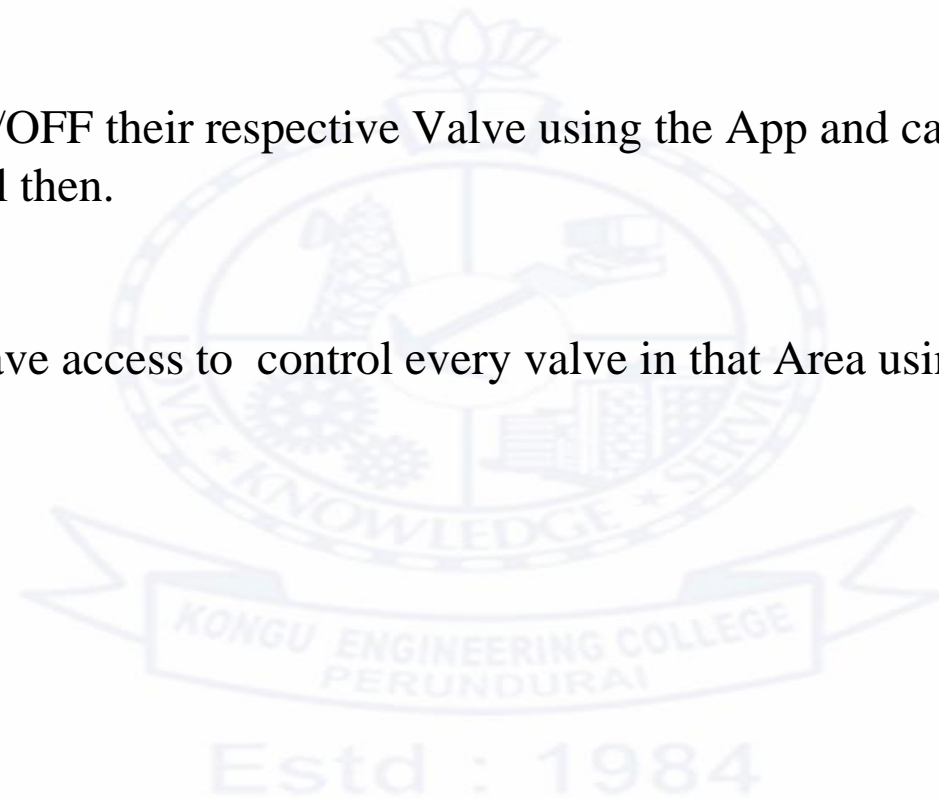
WORKING OF APP

USER APP

The user can turn ON/OFF their respective Valve using the App and can also check the amount of water they have consumed until then.

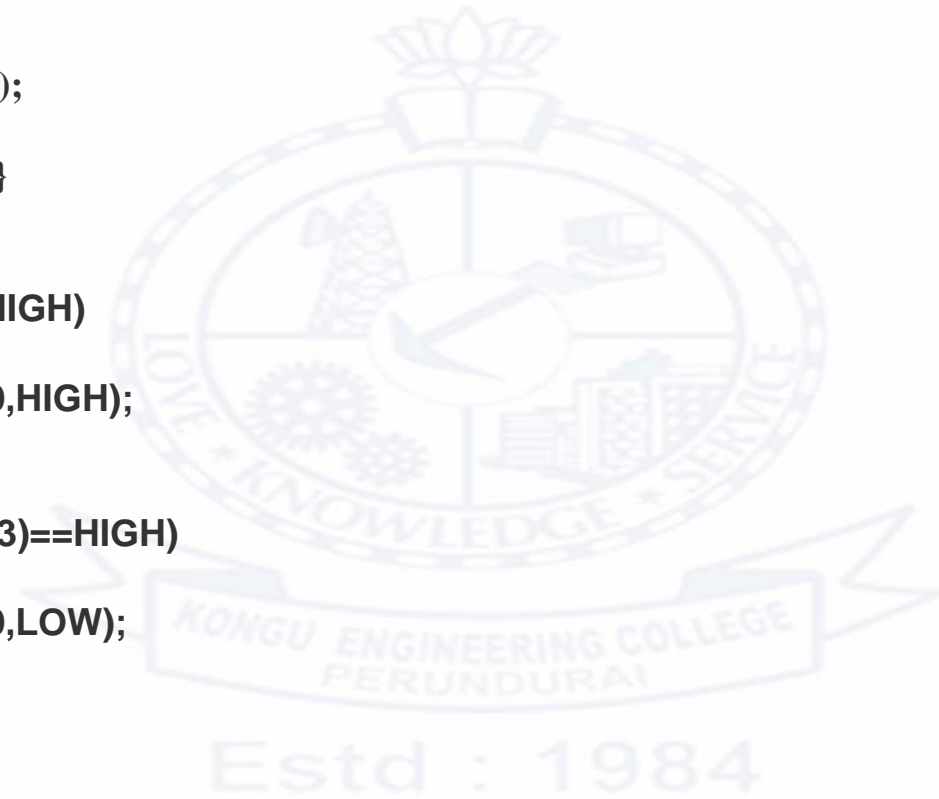
CONTROLLER APP

The Controller will have access to control every valve in that Area using the Controller app

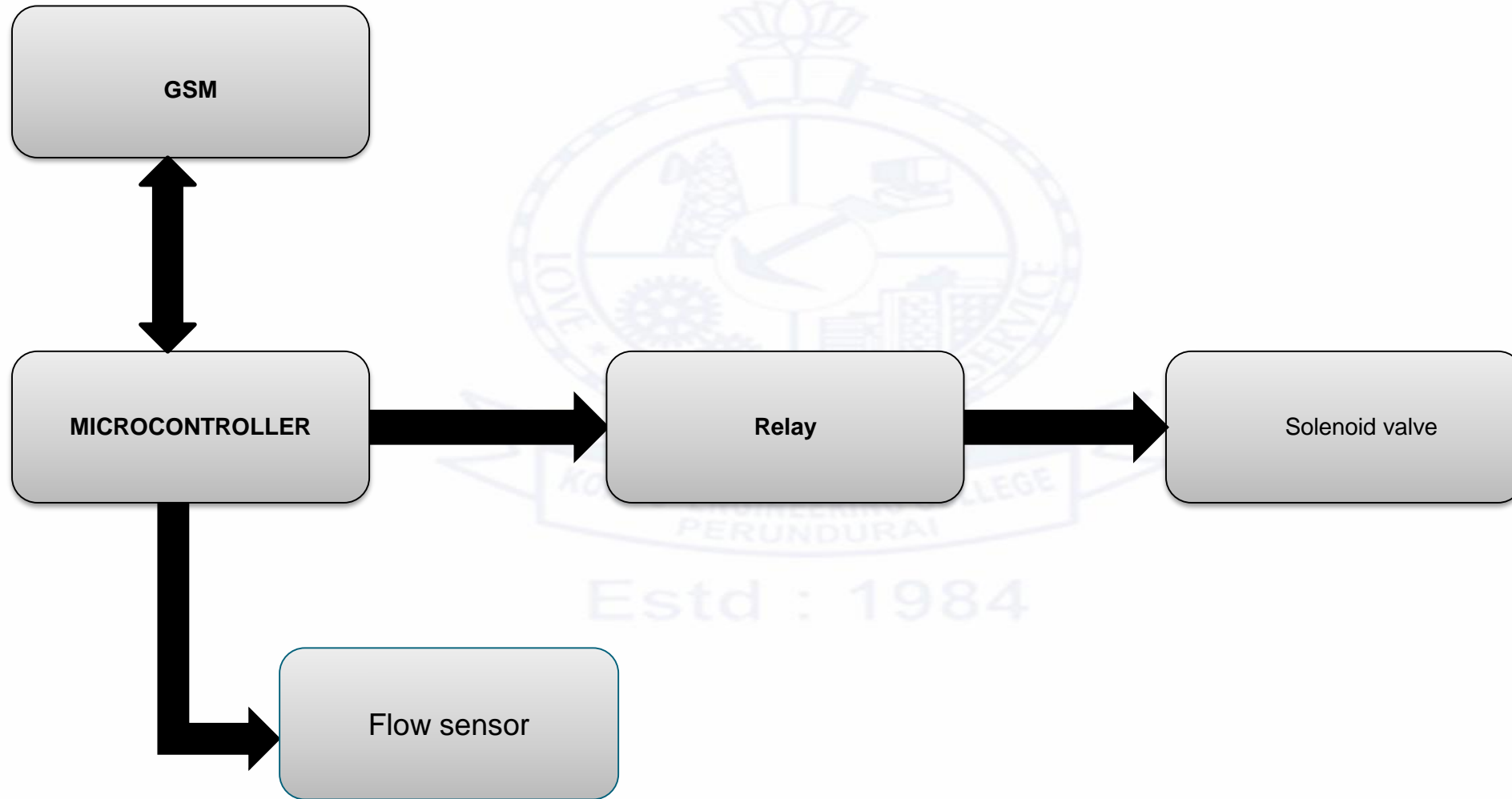


CODING TO CONTROL SOLENOID VALVE

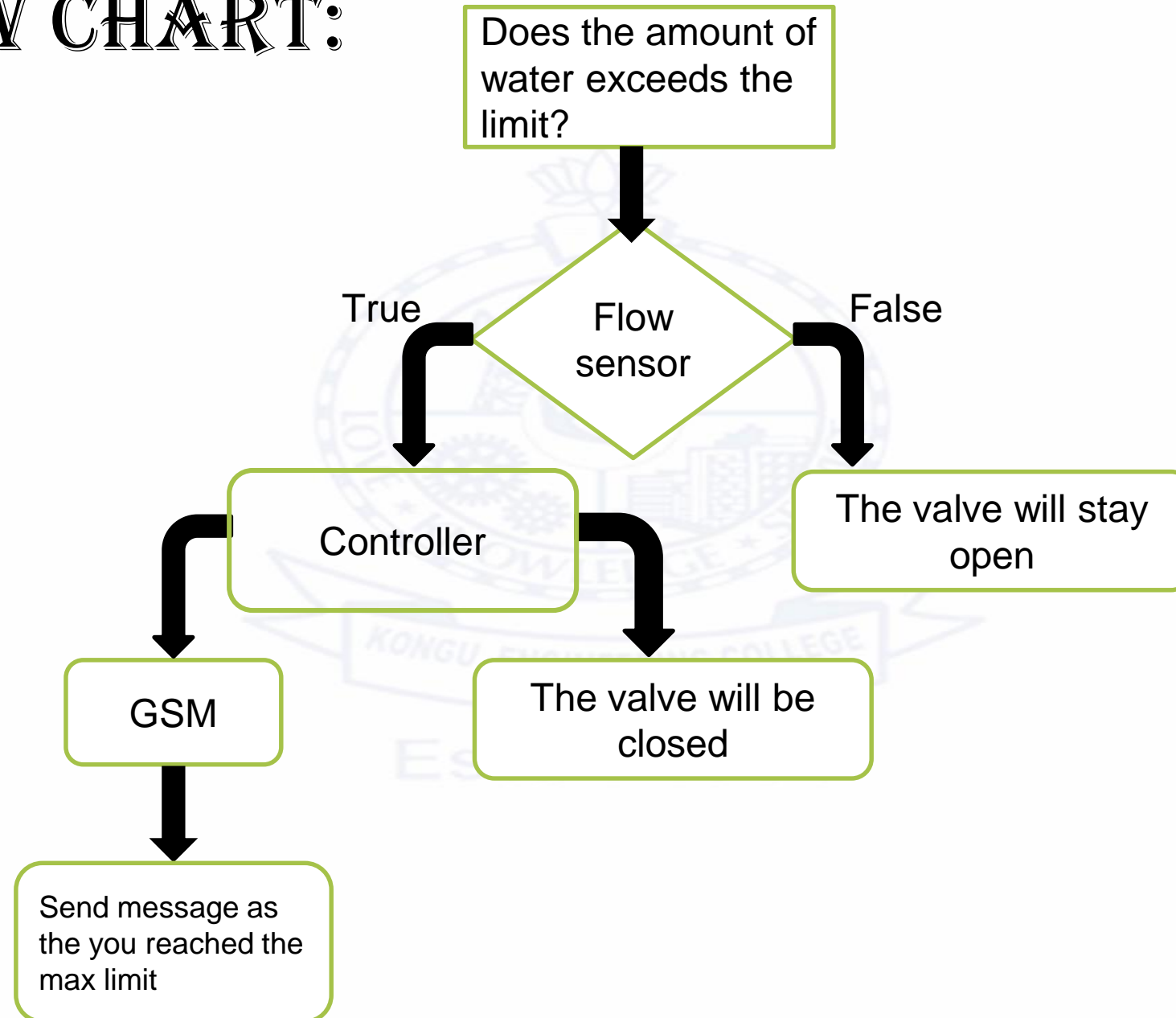
```
void setup() {  
    pinMode(9, OUTPUT);  
    pinMode(2, INPUT);  
    pinMode(3, INPUT); }  
void loop()  
{  
    if(digitalRead(2)==HIGH)  
    {  
        digitalWrite(9,HIGH);  
        delay(1000);  
    }  
    else if(digitalRead(3)==HIGH)  
    {  
        digitalWrite(9,LOW);  
        delay(1000);  
    }  
}
```



BLOCK DIAGRAM:

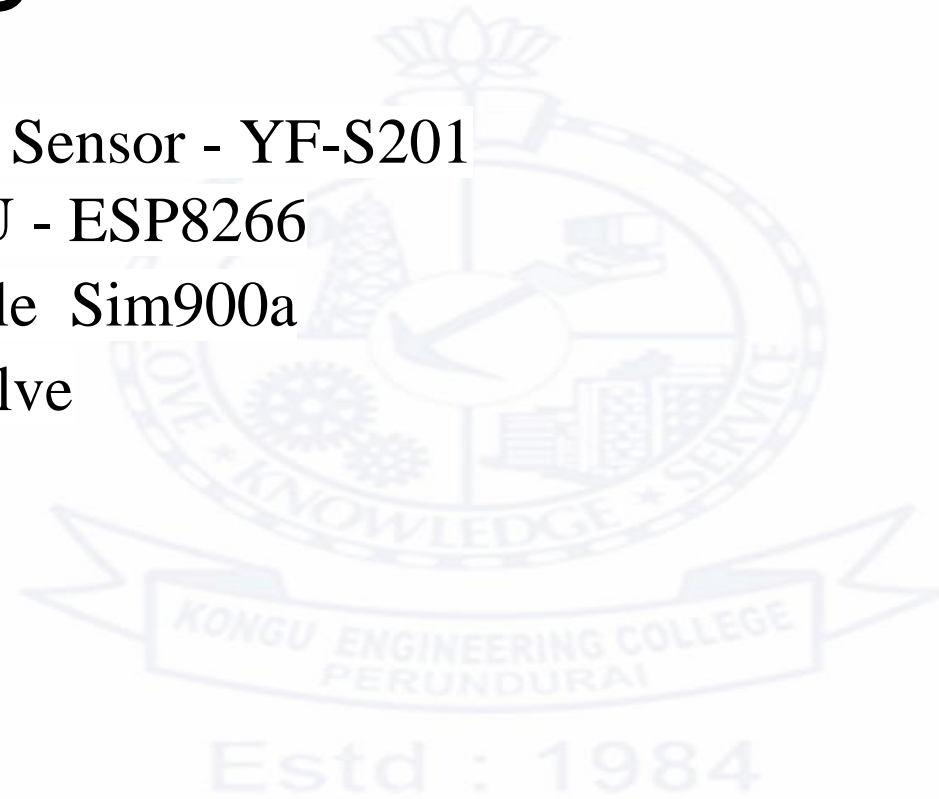


FLOW CHART:



TOOLS USED

- Water Flow Sensor - YF-S201
- NODEMCU - ESP8266
- GSM module Sim900a
- Solenoid valve

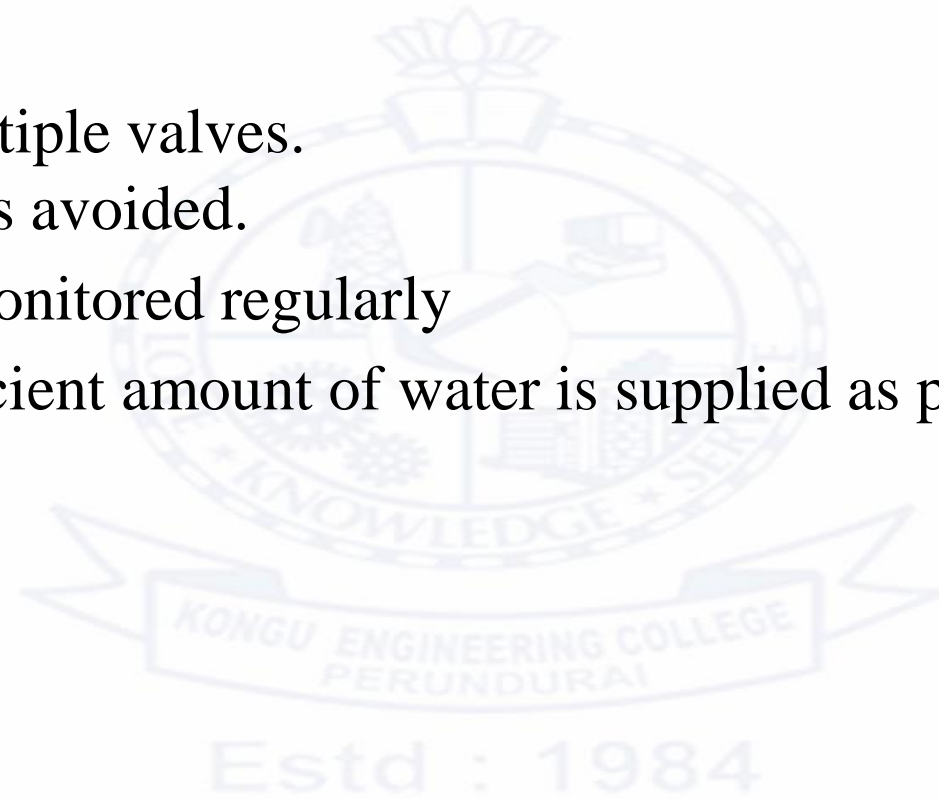


WORK PROGRESS TABLE

MONTH	WORK
JANUARY	LITERATURE SURVEY AND PAPER SELECTION
FEBRUARY	App Design
MARCH	Arduino program completion
MARCH & APRIL	Hardware setup interface with Arduino and App

RESULT:

- App to control multiple valves.
- Wastage of water is avoided.
- Flow of water is monitored regularly
- Essential and sufficient amount of water is supplied as per the needs



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THANK YOU