

IOT based water level indicator

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Abstract

- This project automates water pump for filling tank, watering garden and farm for our department.
- Through our project, we are eliminating manual control for the whole system. We also eliminate the wastage of water due to negligence from the user side.
- Manual override control over the system.

Existing system

- A person should manually monitor the water level.
- Turn pump and corresponding valves manually.
- Possible wastage of water due to user negligence.
- No usage log with aggregate usage report.
- Remote access to the system.

Proposed system

- An IOT based solution for the problem.
- Automates water pumping to tank based on water level.
- Automates garden sprinkler system based on moisture level.
- Automates farm sprinkler system based on time.
- A method that allows only one system to work at a time.

Product functions

- Automated pump control.
- Android app for user to get information and control the system.
- Fill tank based on water level.
- Farm sprinkler system based on time.
- Garden sprinkler system based on moisture level.

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- Manual control over the system.
- Provides log and summary of the system.
- LCD display on device to view pump status and water percentage.

Hardware requirements

- Tank Module
 - Atmega328p - 1
 - 10k resistor - 4
 - Ultrasonic sensor - 1
 - Wires

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- Valve control module
 - Atmega328p - 1
 - Moisture sensor - 1
 - Solenoid valve - 3
 - Wires

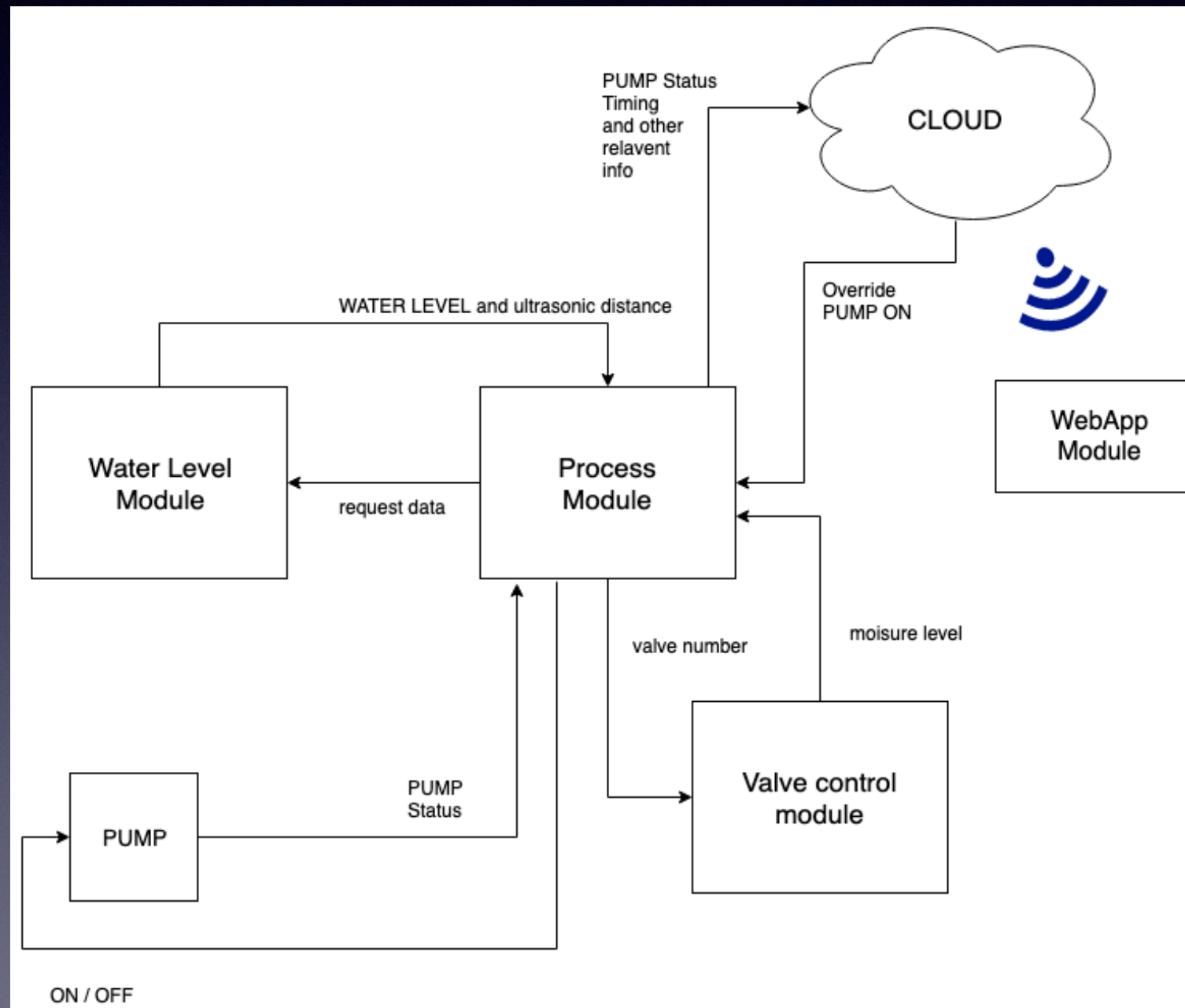
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- Main module
 - Raspberry Pi Zero W - 1
 - Logic level shifter - 1
 - 5V relay - 1
 - LEDs - 2
 - LCD display

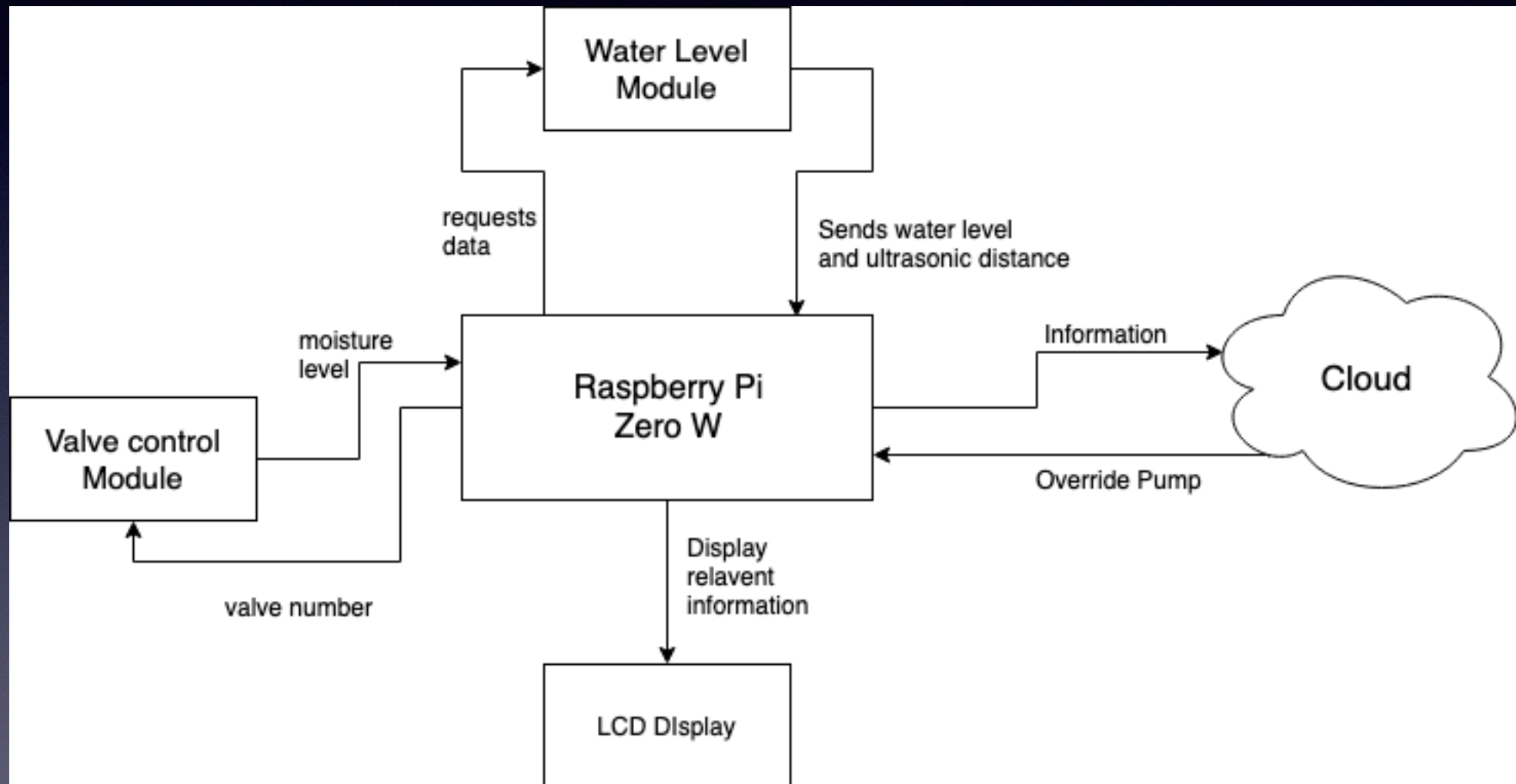
Software requirements

- Arduino IDE - For flashing atmega328p
- Embedded C - For write code for atmega328p
- Visual Studio code - For developing python code for raspberry Pi.
- Android Studio - For developing android code for the system.
- Firebase - For database connectivity.

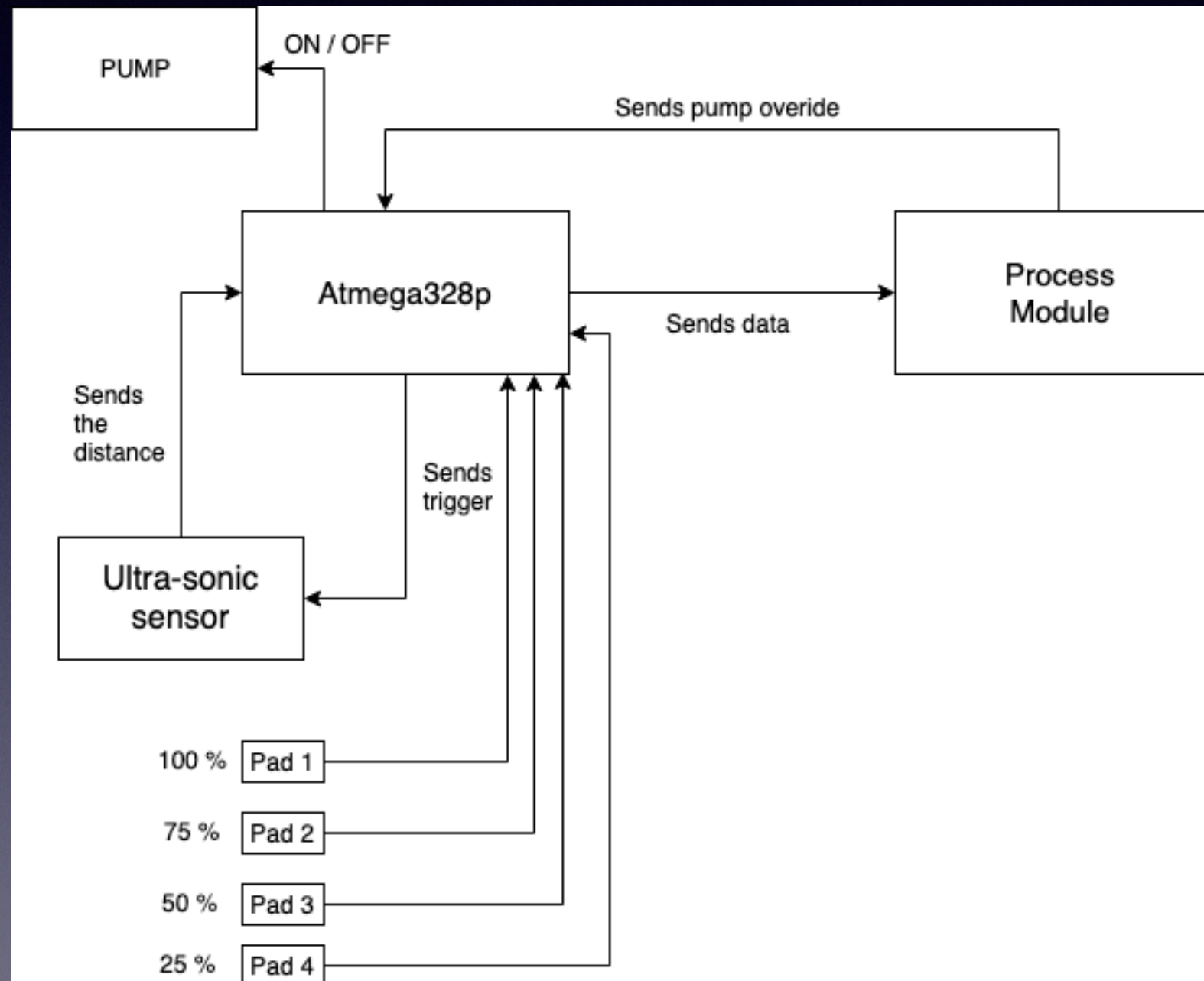
Hardware design - Main design



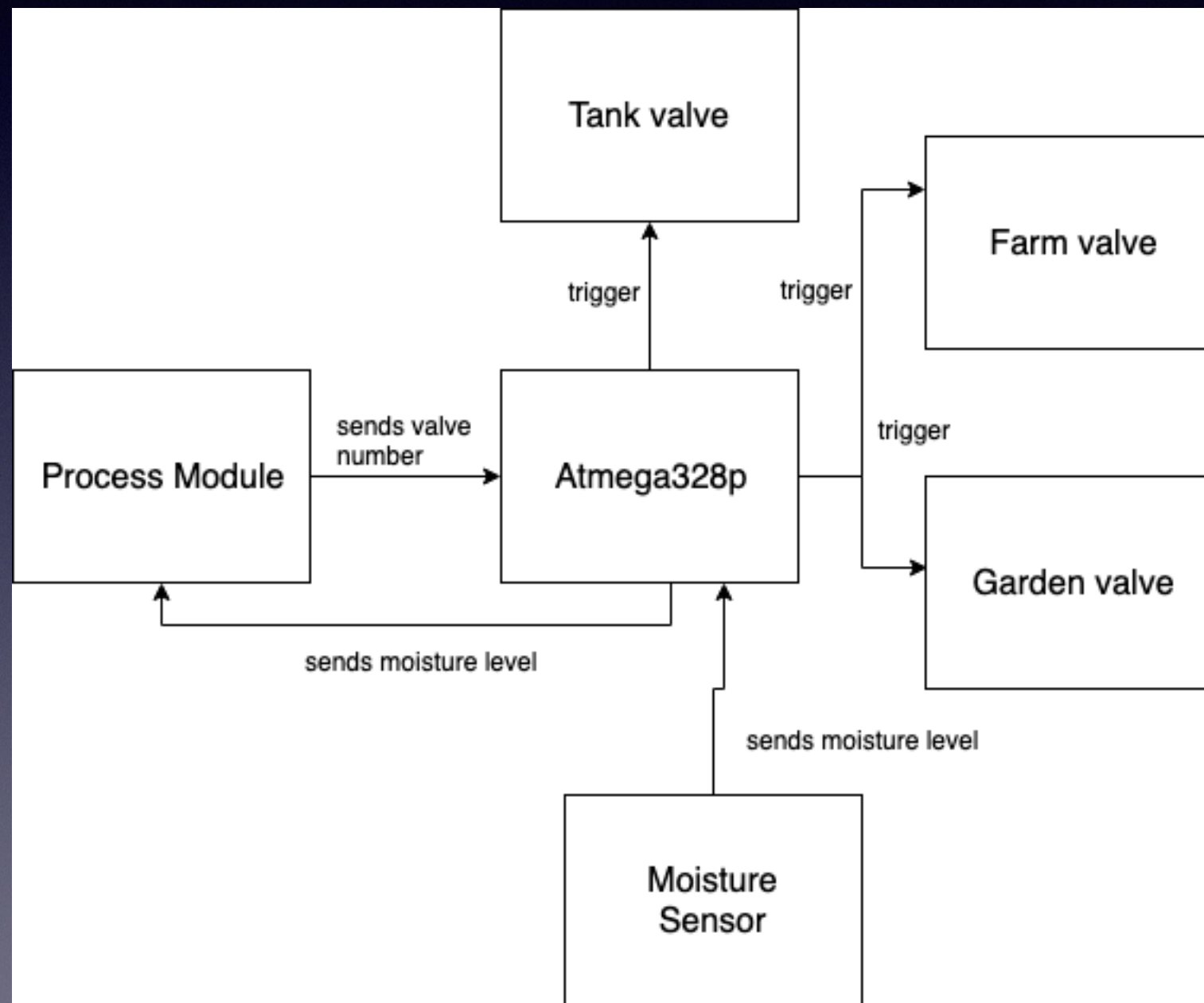
Hardware design - process module



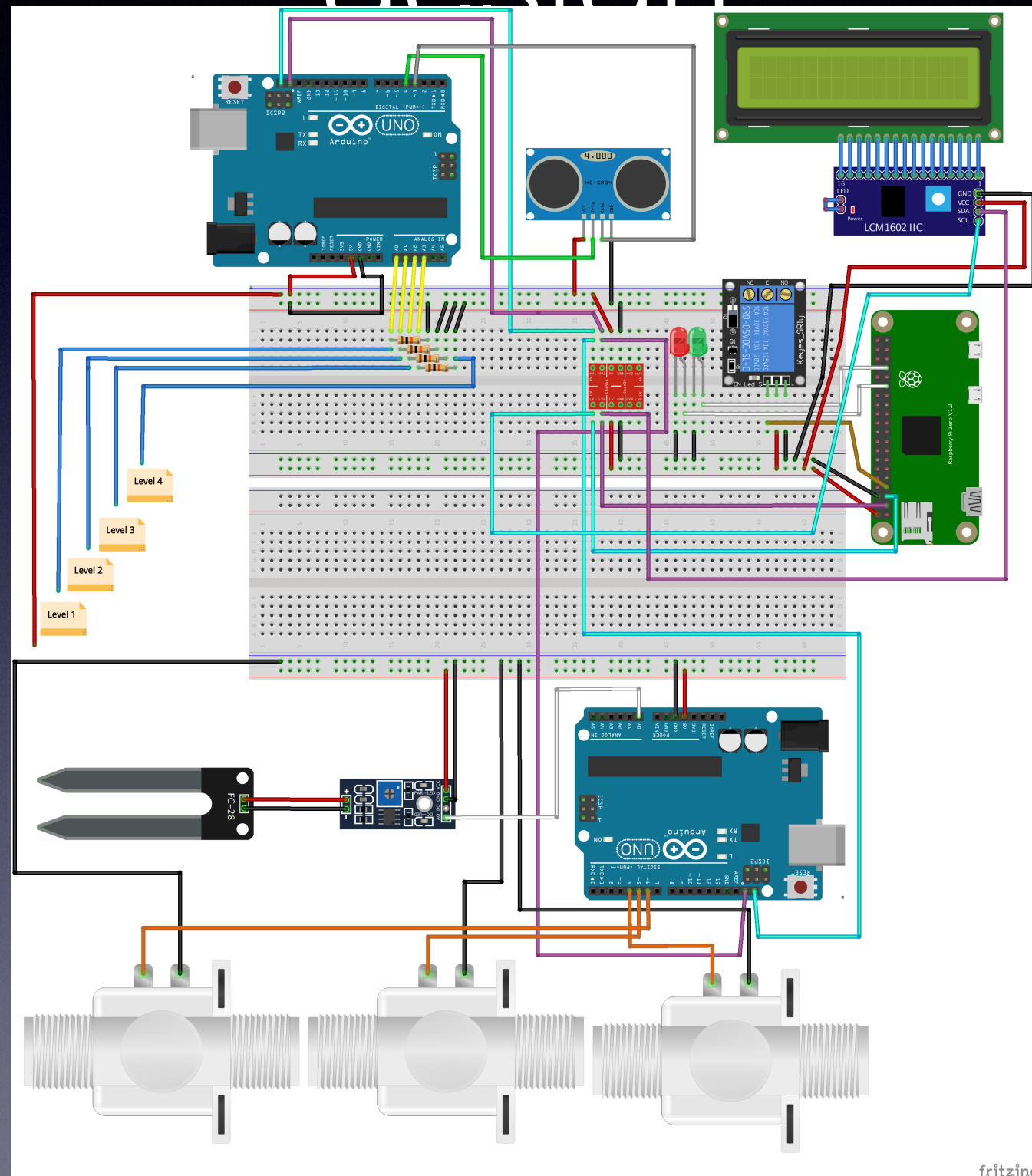
Hardware design - Tank Module



Hardware design - Valve control Module



Hardware design - Fritzing



Software design

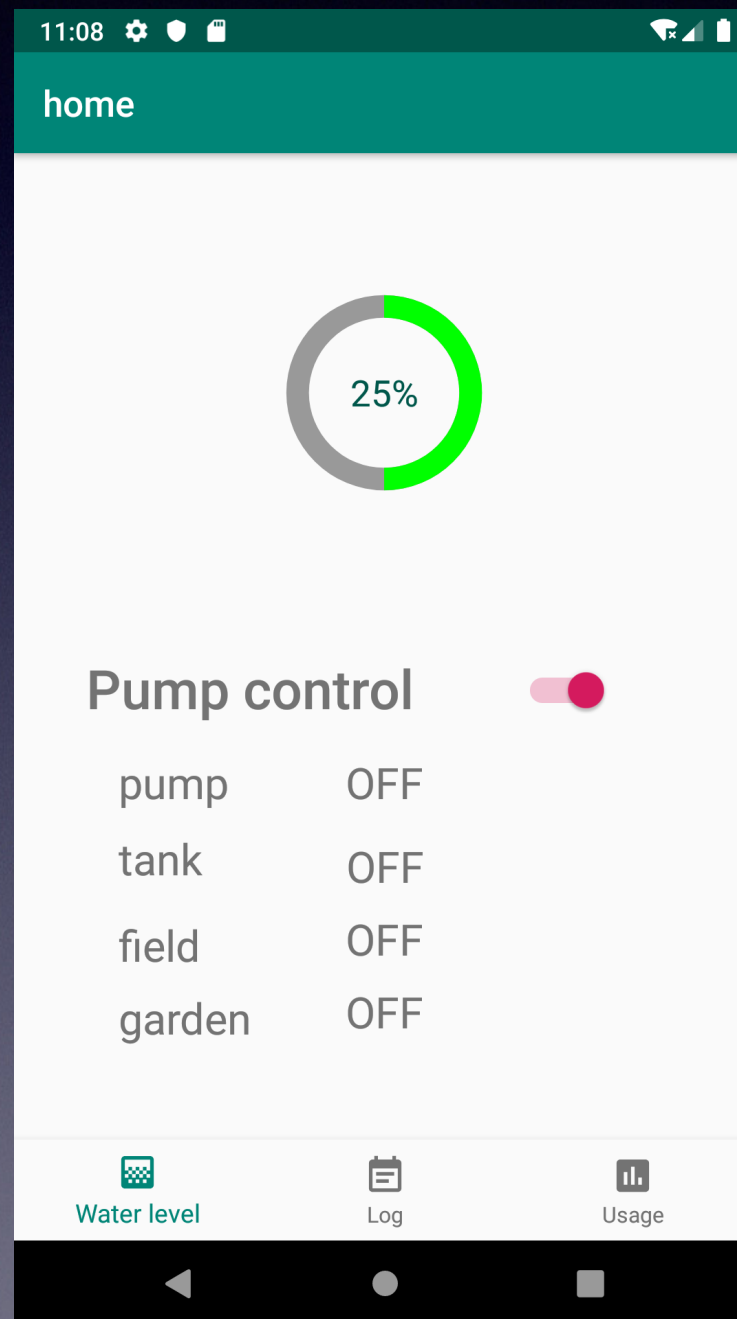
11:14

My Application

username

password

LOGIN



10:09

Water Level Indicator

Year

2019

Month

11

Day

17

Log

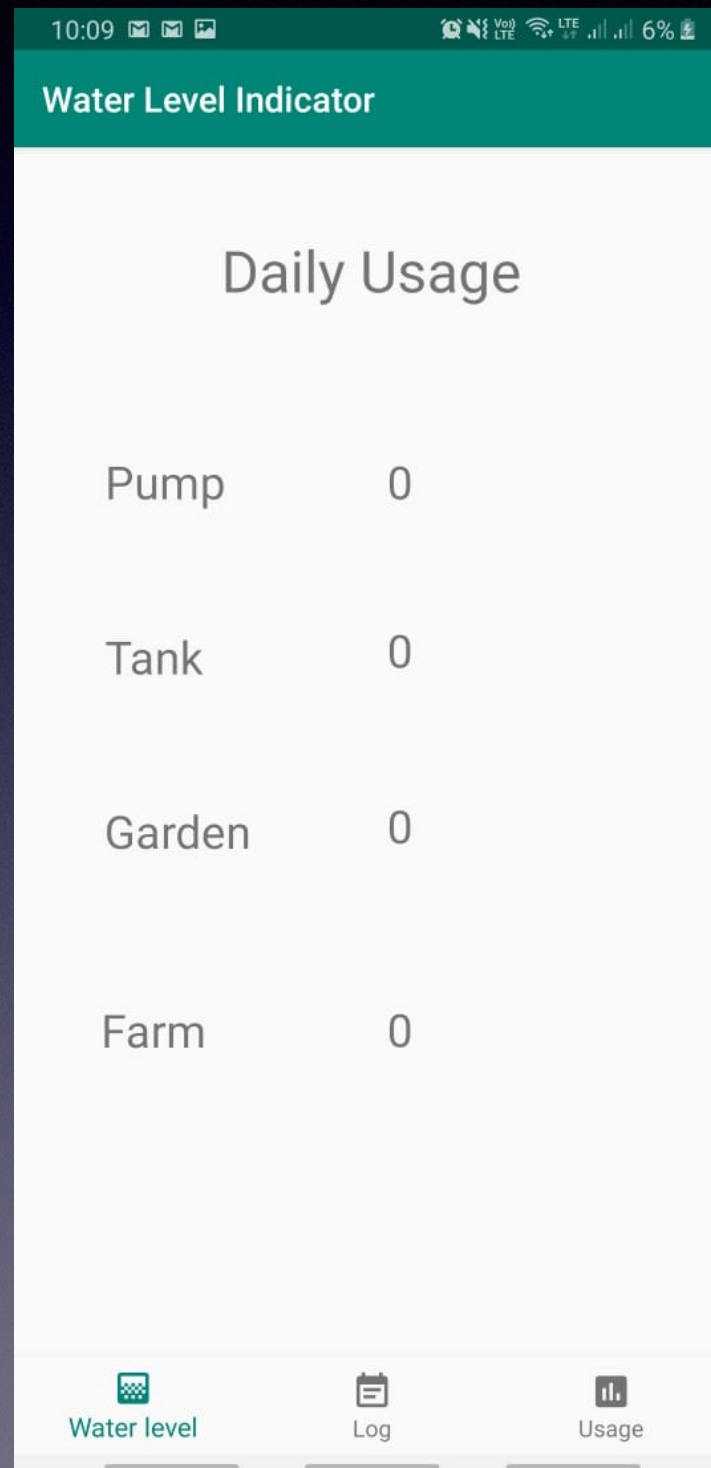
TimeStamp	Status
18:09:31	Garden Sprinkler Activated
18:09:43	Garden Srinkler Deactivated
18:10:14	Tank Pump Activated
18:11:10	Tank Pump Deactivated
18:37:29	Farm Sprinkler Activated
18:38:03	Farm Sprinkler Deactivated
19:28:32	Garden Sprinkler Activated
19:28:51	Garden Srinkler Deactivated
20:20:35	Manual Tank Pump Activated
20:20:44	Tank Pump Deactivated
20:30:38	Manual Tank Pump Activated
20:36:37	Tank Pump Deactivated

Water level

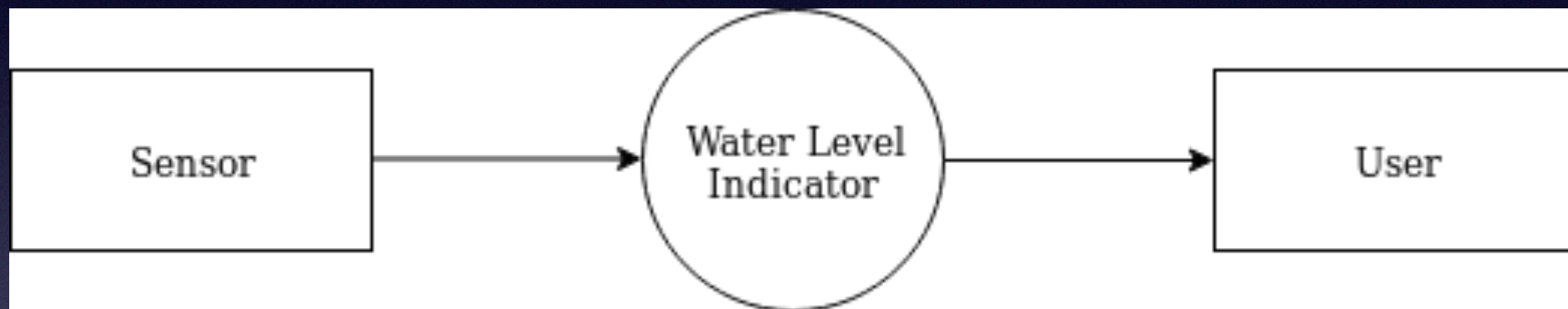
Log

Usage

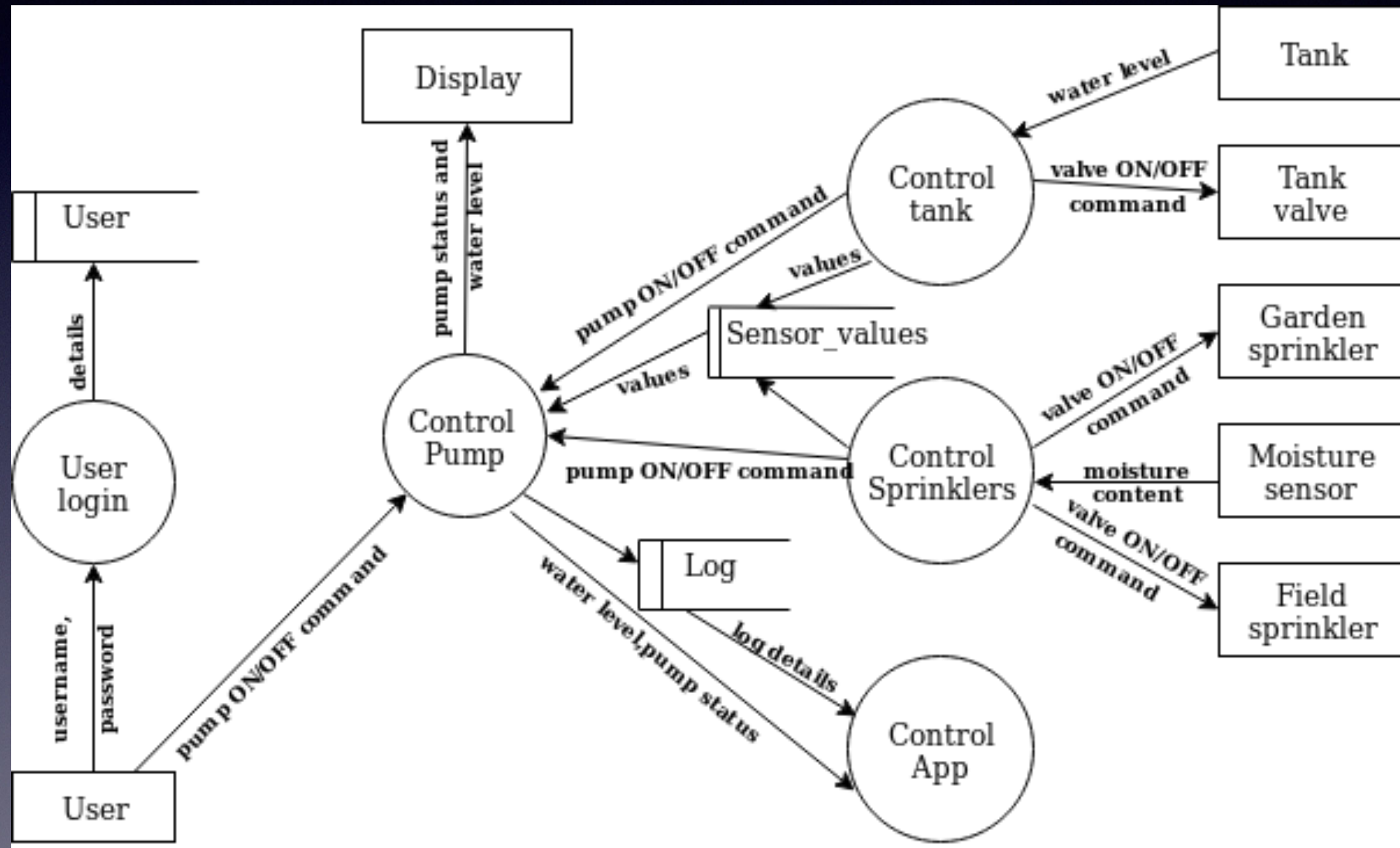
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Level 0



Level 1



Conclusion

- Cost effective method.
- Eliminate manual supervision.
- User friendly and informative dashboard.
- Accessible through android app and web app.

Thank you