Names: Jakob White, Nathan Paul, Ahmad Alothaimin, James Ross
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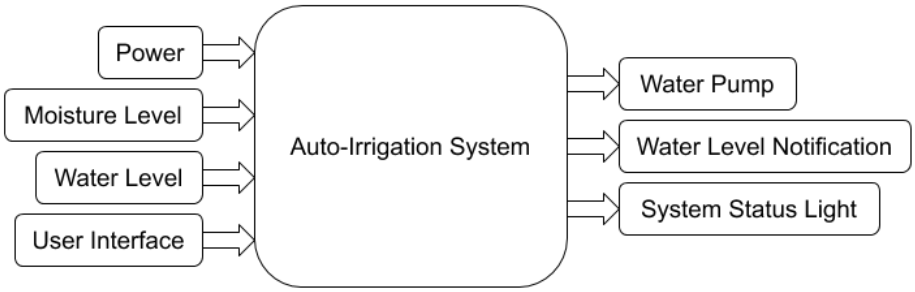
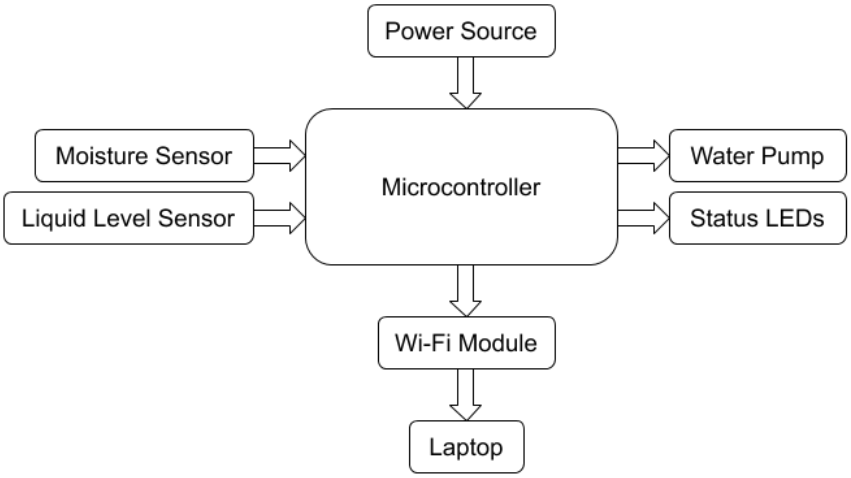
Detailed Design

Level-0 Design

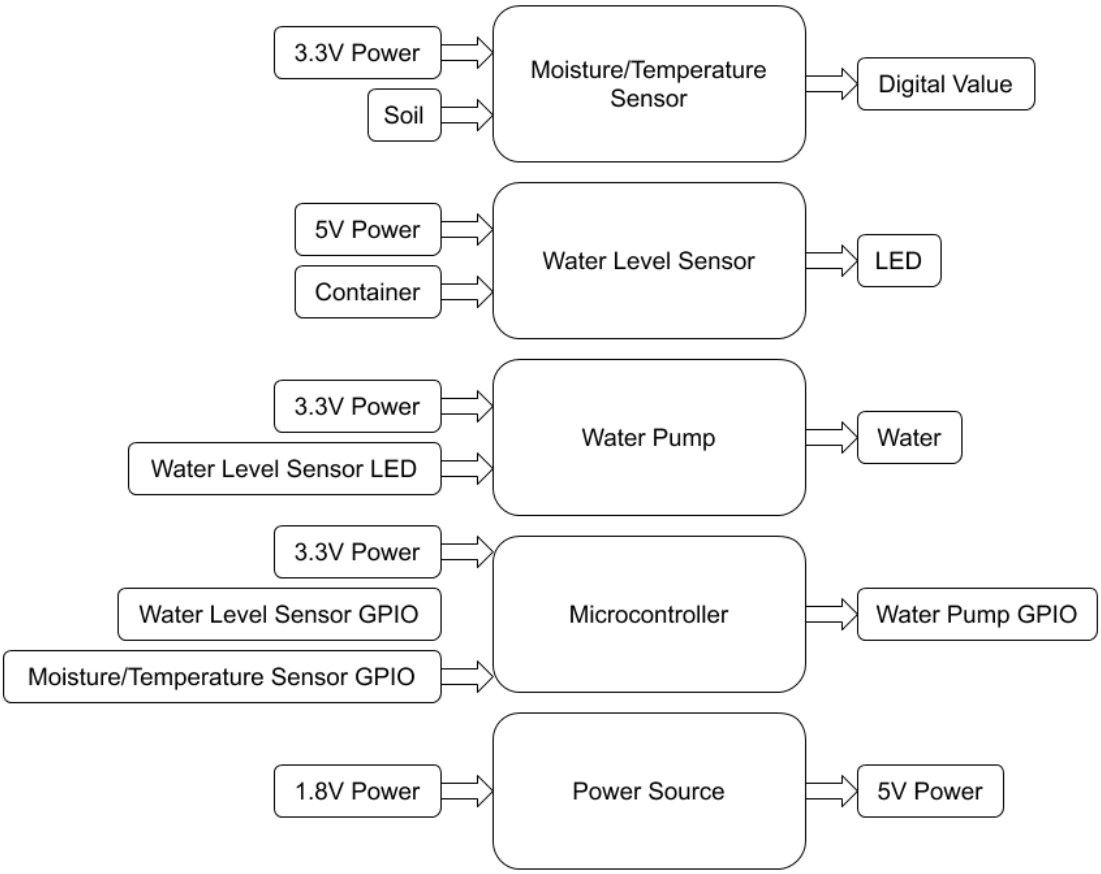


Module	Auto-Irrigation System
Inputs	Power: 3.6V Moisture Level: Variable Water Level: Variable User Interface: Variable (Watering Schedule Control)
Outputs	Water Pump: Water to Plant Water Level Notification: WiFi Notification to Refill Reservoir System Status Light: Light Indicating System Status
Functionality	This system automatically waters indoor plants. If the moisture level is below a certain level and the water reservoir is not empty, the plant is watered. Else, the plant is not watered. The user should be notified when the water reservoir is empty.

Level-1 Design



Level-1 Modules



Module	Moisture/Temperature Sensor
Inputs	Power: 3.3V Soil: Moist or dry
Outputs	Digital values: Capacitive for soil moisture, temperature in celsius
Functionality	This gives a capacitance reading ranging from about 200 (very dry) to 2000 (very wet). The component also gives a temperature from the internal temperature sensor on the microcontroller. However, the margin of error is + or - 2 degrees celsius.

Module	Water Level Sensor
Inputs	Power: 5V Container: with or without water
Outputs	LED: Indicates whether the water is below a certain level.
Functionality	This component is able to detect the water level from contacting the container alone. The presence of water or absence thereof results in the LED being on or off. There are no special requirements for the liquid or container to be used.

Module	Power Source
Inputs	Charge
Outputs	Voltage and Current
Functionality	The power source provides voltage (3.7V) and current (2200 mA).

Module	Water Pump
Inputs	Actuation Signal from Microprocessor
Outputs	Water to the Soil.
Functionality	The purpose of the water pump is to water the plant whenever the soil is below a certain threshold of moisture.

Module	Wifi Module
Inputs	Water Reservoir Data from Microprocessor
Outputs	Wifi Notification to User’s Device

Functionality	The purpose of this module is to send data to the user's chosen device to notify when the water reservoir is empty.

Module	Status LED
Inputs	Actuation Signal from Microprocessor
Outputs	Light from LED
Functionality	The purpose of this LED is to notify the user that the system is ON and functioning.