GNANAMANI COLLEGE OF

TECHNOLOGY(Pachal,Namakkal)

DEPARTMENT OF BIOMEDICAL

ENGINEERING

(Third Year)

TITLE : SMART WATER MANAGEMENT

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SMART WATER MANAGEMENT

PROBLEM:

Inefficient Water Usage In A Garden

DESCRIPTION:

Imagine you have a garden with automated irrigation,but it waters your plants on a fixed schedule,regardless of weather conditions.This leads to water wastage during rainy days or over watering during periods of high humidity.

SOLUTION:

Create a Smart Watering System using IoT and Arduino.

COMPONENTS NEEDED:

1. Arduino Board(e.g.,Arduino Uno)

2. Soil Moisture Sensor

3. Water Pump

4. Relay Module

5. Rainfall Sensor(optional)

6. Wifi Module(e.g.,ESP8266)

7. Smart Phone or Computer for monitoring

STEPS TO IMPLEMENT:

SOIL MOISTURE MONITORING:

Connect the soil moisture sensor to the Arduino.Program the Arduino to read soil moisture levels periodically.Set a moisture threshold to determine when the plants need water.

WATER PUMP CONTROL:

Connect the water pump to a relay module.Program the Arduino to control the relay based on soil moisture readings.When the moisture level falls below the threshold,activate the pump to water the garden.

WEATHER DATA INTEGRATION(OPTIONAL):

Connect a range sensor to the Arduino to detect rainfall.integrate weather data from the internet using the wifi module.If it’s raining or for caste predicts rain,suspend watering to avoid over watering .

REMOTE MONITORING AND CONTROL:

Set up wifi connectively and the Arduino to send data to the cloud .Create a web or mobile app to monitor soil moisture and control the system remotely.Receive alerts or notifications when the system waters the garden or when a issues arise.

BENEFITS:

WATER EFFICIENCY:

The system waters the garden only when neccesary,reducing water wastage.

REMOTE CONTROL:

Monitor and control the system from anywhere,ensuring optimal plant care.

WEATHER INTEGRATION:

Prevent over watering during rainy periods,saving water and money.

THIS SIMPLE PROJECT DEMONSTRATES HOW IOT AND ARDUINO CAN BE USED TO SOLVE A COMMON WATER MANAGEMENT PROBLEM BY MAKING IRRIGATION SMARTER AND EFFICIENT.