SMART WATER FOUNTAIN

Introduction:

Nowadays, the internet of things has been improved greatly with the progress of the sensor, big data, mobile Internet and other relative technologies. One water fountain with intelligent monitoring system based on the internet of things is discussed in this paper. The key parameters of the water fountain were derived from the sensors and transmitted the encrypted data by GPRS or WIFI net to central server automatically. The Access database was established according to the real time running data of each water fountain fixed everywhere. The unified database management and maintenance could be achieved with the PC interface application by the users or the server station administrator with different authority. Products applications show that this intelligent monitoring system could provide reliable real-time monitor, control the water fountain through internet and inform abnormal states of the machine to the administrator and the users in short message promptly.

Overview:

Water fountains have been a major tourist attraction these days which freeze the attention of tourists with their variety of lights, designs, and heights. And as we all know music holds a major part in our day-to-day lives. And hence our idea is to combine the beautiful water fountain with music which makes an extraordinary tourist attraction when constructively set with a range of frequencies that enables us to operate through various electronic devices. Musical water fountain consists of Arduino UNO, sound sensor with external MIC, submersible motors, LCD, relay modules, sound generation using mobile, ARGB LED light strip &adapters.

VARIOUS TOOLS USED FOR THIS PROJECT:

Sensors:

IOT smart water fountain system rely on a variety of sensors designed to measure parameters like temperature, humidity, water quality, water level and more. These sensors are strategically deployed to collect real time data.

IOT device:

These are the hardware component that sensors, process data, and facilitate communication. Devices like Raspberry Pi, Arduino, or specialized IoT modules are commonly used to collect data from sensors and transmit it to central systems.

Communication Networks:

Data from sensors is transmitted using various communication protocols, such as Wi-Fi, Bluetooth, Zigbee, or cellular networks. The choice of network depends on the specific application's range and data transfer requirements.

IoT Platform:

Data collected by sensors is sent to an IoT platform or cloud service, such as AWS IoT, Google Cloud IoT, or Microsoft Azure IoT. These platforms provide storage, data processing, real-time monitoring, and visualization tools.

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Components:

* ARDUINO UNO OR ARDUINO NAN

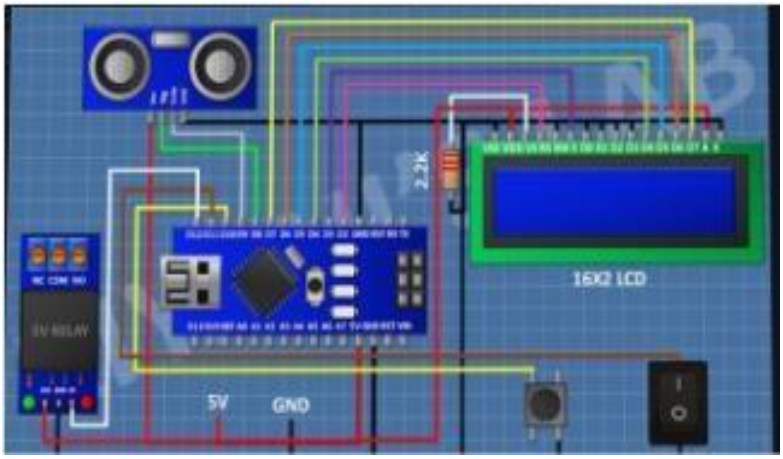
* 1K 0.25WATT RESISTORS – 8 NO (R1 – R8)

* 10K 0.25WATT RESISTORS – 4 NO (R9 – R12)

* BC547 NPN TRANSISTOR (Q1)

* LED 5MM – 7NO

* 2-PIN TERMINAL CONNECTORS (5 NO)



Design features:

- fountains wirelessly communicate with base stations.
- base stations collect and transmit usage, filter, and system health information to the cloud via ethernet.
- wireless communications use a low-power unlicensed band for improved security and power savings.

Working:

- In manual; ○ if tank is empty, we need to turn on manually
- In auto; ○ if tank is empty, motor turn on automatically

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Program:

```
#include <EEPROM.h>
#include <LiquidCrystal.h>
LiquidCrystal lcd(2,3,4,5,6,7);
 long duration, inches;
int set_val,percentage;
 bool state,pump;
 void setup() { lcd.begin(16, 2);
lcd.print("WATER LEVEL:");
lcd.setCursor(0, 1);
 lcd.print("PUMP:OFF MANUAL");
pinMode(8, OUTPUT);
pinMode(9, INPUT);
 pinMode(10, INPUT_PULLUP);
pinMode(11, INPUT_PULLUP);
pinMode(12, OUTPUT);
set_val=EEPROM.read(0);
if(set_val>150)set_val=150;
}
 void loop()
 {
 digitalWrite(3, LOW);
delayMicroseconds(2);
 digitalWrite(8, HIGH);
delayMicroseconds(10);
digitalWrite(8, LOW);
 duration = pulseIn(9, HIGH);
 inches =microsecondsToInches(duration);
percentage=(set_val-inches)*100/set_val;
lcd.setCursor(12, 0);
 if(percentage<0)percentage=0;
lcd.print(percentage);
lcd.print("% ");
if(percentage<30&digitalRead(11))pump=1;
if(percentage>99)pump=0;
digitalWrite(12,!pump);
 lcd.setCursor(5, 1);
if(pump==1)lcd.print("ON ");
else if(pump==0) lcd.print("OFF");
lcd.setCursor(9, 1);
if(!digitalRead(11))lcd.print("MANUAL");
else lcd.print("AUTO ");
if(!digitalRead(10)&!state&digitalRead(11))
{
```

SMART WATER FOUNTAIN

```
 state=1; set_val=inches;
EEPROM.write(0, set_val);
}
if(!digitalRead(10)&!state&!digitalRead(11)){ state=1;
pump=!pump;
}
if(digitalRead(10))state=0;
delay(500);
}
long microsecondsToInches(long microseconds) { return
microseconds / 74 / 2;
}
```

Output link:

HTTPS://WOKWI.COM/PROJECTS/379631344770984961