PHASE 3: DEVELOPMENT PART-1

Smart water fountain

**DESCRIPTION:**

This document is describing the process of developing the project with the mentioned components in phase 2 innovation segment. For our project we are going to use ultrasonic Sensor and ESP32 module for smart water fountain.

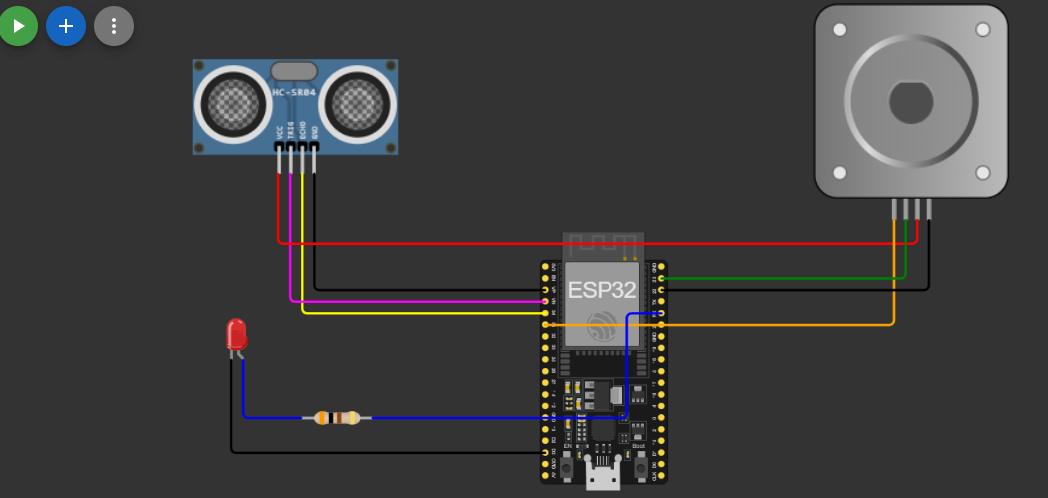
**COMPONENTS REQUIRED:**

* ESP32 module.
* Stepper motor.
* Water pump.
* Relay module.
* Ultrasonic sensor.
* Wokwi virtual components.

**WORKING DESCRIPTION:**

Smart water fountains are innovative devices designed to enhance the traditional concept of public water dispensers. They incorporate advanced technology to provide a more efficient and user-friendly experience. These fountains are equipped with sensors and filtration systems that ensure the water is clean and safe to drink. They often feature touchless operation, allowing users to fill their bottles or cups without physical contact, promoting hygiene. Additionally, smart water fountains can monitor water usage, track water quality, and even offer real-time data through mobile apps, contributing to water conservation efforts and promoting sustainability. These fountains represent a fusion of convenience, sustainability, and technology, making them a valuable addition to modern urban environments.

**CIRCUIT DIAGRAM:**

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Here is the .json program for the above diagram as follows:

{

"version": 1,

"author": "Anonymous maker",

"editor": "wokwi",

"parts": [

{ "type": "board-esp32-devkit-c-v4", "id": "esp", "top": 9.6, "left": 187.24, "attrs": {} },

{

"type": "wokwi-stepper-motor",

"id": "stepper1",

"top": -178.79,

"left": 413.23,

"attrs": { "size": "17" }

},

{ "type": "wokwi-hc-sr04", "id": "ultrasonic1", "top": -132.9, "left": -100.1, "attrs": {} },

{

"type": "wokwi-resistor",

"id": "r1",

"top": 157.55,

"left": -9.6,

"attrs": { "value": "300" }

},

{ "type": "wokwi-led", "id": "led1", "top": 73.2, "left": -82.6, "attrs": { "color": "red" } }

],

"connections": [

[ "esp:TX", "$serialMonitor:RX", "", [] ],

[ "esp:RX", "$serialMonitor:TX", "", [] ],

[ "ultrasonic1:GND", "esp:VP", "black", [ "v0" ] ],

[ "ultrasonic1:ECHO", "esp:34", "yellow", [ "v0" ] ],

[ "ultrasonic1:TRIG", "esp:VN", "magenta", [ "v0" ] ],

[ "ultrasonic1:VCC", "stepper1:B+", "red", [ "v57.6", "h528" ] ],

[ "esp:35", "stepper1:A-", "orange", [ "h0" ] ],

[ "esp:23", "stepper1:A+", "green", [ "h0" ] ],

[ "stepper1:B-", "esp:22", "black", [ "v0" ] ],

[ "r1:2", "esp:RX", "blue", [ "v0", "h210", "v-86.4" ] ],

[ "led1:A", "r1:1", "blue", [ "v0" ] ],

[ "led1:C", "esp:D3", "black", [ "v0" ] ]

],

"dependencies": {}

}

**PROGRAM FOR SIMULATION:**

As our project is based on IOT, we need to code the Instructions to the controller for performing our desired function. Here is the code for simulating our project. Before that, we have to ensure the required libraries are installed in wowki platform .

#include <WiFi.h>

#include <Stepper.h>

#include <NewPing.h>

const char\* ssid = "your\_wifi\_ssid";

const char\* password = "your\_wifi\_password";

const int stepsPerRevolution = 2048; // Adjust this value based on your stepper motor

Stepper myStepper(stepsPerRevolution, 16, 17, 18, 19);

const int motorSpeed = 5; // Adjust this value based on your motor's speed requirements

const int waterPumpPin = 23;

const int ultrasonicTriggerPin = 24;

const int ultrasonicEchoPin = 25;

const int ledPin = 26;

NewPing sonar(ultrasonicTriggerPin, ultrasonicEchoPin, 200); // Adjust the max distance (200cm) as needed

void setup() {

Serial.begin(115200);

// Initialize components

pinMode(waterPumpPin, OUTPUT);

pinMode(ledPin, OUTPUT);

// Connect to Wi-Fi

WiFi.beg…

