

Sprint 4

Date	18.11.2022
Team ID	PNT2022TMID28239
Project Name	Real-Time Water QualityMonitoring And Control System

```
#include <ESP8266HTTPClient.h>
#include <FirebaseArduino.h>
#include <DNSServer.h>
#include <ESP8266WiFi.h>
#include <ESP8266WebServer.h>
#include <WiFiManager.h>      //https://github.com/tzapu/WiFiManager
#include <OneWire.h>
#include <TimeLib.h> //library to get time and date
#include <WiFiUdp.h>
#include <OneWire.h>
#include <Servo.h>
```

/*CLOUD FUNCTIONS*/

```
{
  "name": "functions",
  "description": "Cloud Functions for Firebase",
  "scripts": {
    "lint": "eslint .",
    "serve": "firebase serve --only functions",
    "shell": "firebase experimental:functions:shell",
    "start": "npm run shell",
    "deploy": "firebase deploy --only functions",
    "logs": "firebase functions:log"
  },
  "dependencies": {
    "firebase-admin": "~5.10.0",
    "firebase-functions": "^0.9.0"
  },
  "devDependencies": {
    "eslint": "^4.12.0",
    "eslint-plugin-promise": "^3.6.0"
  },
  "private": true
}
```

/*WEBSITE PAGE CREATION*/

```
<!DOCTYPE HTML>
<html>
<head>
<title>Easy Admin Panel an Admin Panel Category Flat Bootstrap Responsive
Website Template | Blank Page :: Real</title>
<meta name="viewport" content="width=device-width, initial-scale=1">
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<meta name="keywords" content="Easy Admin Panel Responsive web template,
Bootstrap Web Templates, Flat Web Templates, Android Compatible web
template,
Smartphone Compatible web template, free webdesigns for Nokia, Samsung, LG,
SonyEricsson, Motorola web design" />
<script type="application/x-javascript"> addEventListener("load", function() {
setTimeout(hideURLbar, 0); }, false); function hideURLbar(){
window.scrollTo(0,1); } </script>
<!-- Bootstrap Core CSS -->
<link href="css/bootstrap.min.css" rel='stylesheet' type='text/css' />
<!-- Custom CSS -->
<link href="css/style.css" rel='stylesheet' type='text/css' />
<!-- Graph CSS -->
<link href="css/font-awesome.css" rel="stylesheet">
<!-- jQuery -->
<!-- lined-icons -->
<link rel="stylesheet" href="css/icon-font.min.css" type='text/css' />
<!-- //lined-icons -->
<!-- chart -->
<script src="js/Chart.js"></script>
<!-- //chart -->
<!--animate-->
<link href="css/animate.css" rel="stylesheet" type="text/css" media="all">
<script src="js/wow.min.js"></script>
    <script>
        new WOW().init();
    </script>
<!--//end-animate-->
<!--webfonts-->
<link
href='//fonts.googleapis.com/css?family=Cabin:400,400italic,500,500italic,600,60
0italic,700,700italic' rel='stylesheet' type='text/css'>
```

```

<!--//webfonts-->
<!-- Meters graphs -->
<script src="js/jquery-1.10.2.min.js"></script>
<!-- Placed js at the end of the document so the pages load faster -->

</head>

<body class="sticky-header left-side-collapsed" onload="initMap()">
  <section>
    <!-- left side start-->
      <div class="left-side sticky-left-side">
        <!--logo and iconic logo start-->
          <div class="logo">
            <h1><a href="index.html">Easy
<span>Admin</span></a></h1>
          </div>
          <div class="logo-icon text-center">
            <a href="index.html"><i class="lnr lnr-home"></i> </a>
          </div>
          <!--logo and iconic logo end-->
          <div class="left-side-inner">
            <!--sidebar nav start-->
            <ul class="nav nav-pills nav-stacked custom-nav">
              <li><a href="index.html"><i class="lnr lnr-
powerswitch"></i><span>Dashboard</span></a></li>
              <li class="menu-list">
                <a href="#"><i class="lnr lnr-cog"></i>
                <span>Components</span></a>
                <ul class="sub-menu-list">
                  <li><a href="grids.html">Grids</a> </li>
                  <li><a href="widgets.html">Widgets</a></li></ul>
                </li>
              <li><a href="forms.html"><i class="lnr lnr-spell-check"></i>
<span>Forms</span></a></li>
              <li><a href="tables.html"><i class="lnr lnr-menu"></i>
<span>Tables</span></a></li>
              <li class="menu-list"><a href="#"><i class="lnr lnr-
envelope"></i> <span>MailBox</span></a>
                <ul class="sub-menu-list">
                  <li><a href="inbox.html">Inbox</a> </li>

```

```

<li><a href="compose-mail.html">Compose Mail</a></li>
</ul></li>
<li class="menu-list"><a href="#"><i class="lnr lnr-indent-increase"></i>
<span>Menu Levels</span></a>
<ul class="sub-menu-list">
<li><a href="charts.html">Basic Charts</a> </li>
</ul>

</li><li><a href="codes.html"><i class="lnr lnr-pencil"></i>
<span>Typography</span></a></li>
<li><a href="media.html"><i class="lnr lnr-select"></i> <span>Media
Css</span></a></li>
<li class="menu-list act"><a href="#"><i class="lnr lnr-book"></i>
<span>Pages</span></a>
<ul class="sub-menu-list">
<li><a href="sign-in.html">Sign In</a> </li>
<li><a href="sign-up.html">Sign Up</a></li>
<li><a href="blank_page.html">Blank Page</a></li></ul></li></ul>
<!--sidebar nav end--></div></div>
<!-- left side end--><!-- main content start-->
<div class="main-content main-content2 main-content2copy">
<!-- header-starts -->
<div class="header-section">
<!--toggle button start-->
<a class="toggle-btn menu-collapsed"><i class="fa fa-bars"></i></a>
<!--toggle button end-->
<!--notification menu start -->
<div class="menu-right">
<div class="user-panel-top">
<div class="profile_details_left">
<ul class="nofitications-dropdown">
<li class="dropdown">
<a href="#" class="dropdown-toggle" data-toggle="dropdown" aria-
expanded="false"><i class="fa fa-envelope"></i><span
class="badge">3</span></a>
<ul class="dropdown-menu"><li>
<div class="notification_header">
<h3>You have 3 new messages</h3>
</div>
</li>
<li><a href="#">

```

```

<div class="user_img"></div>
<div class="notification_desc">
<p>Lorem ipsum dolor sit amet</p>
<p><span>1 hour ago</span></p>
</div>
<div class="clearfix"></div>
</a></li>
<li class="odd"><a href="#">
<div class="user_img"></div>
<div class="notification_desc">
    <p>Lorem ipsum dolor sit amet </p>
    <p><span>1 hour ago</span></p>
</div>
<div class="clearfix"></div> </a></li>
<li><a href="#">
    <div class="user_img"></div>
    <div class="notification_desc">
        <p>Lorem ipsum dolor sit amet </p>
        <p><span>1 hour ago</span></p></div>
    <div class="clearfix"></div>
</a></li><li><div class="notification_bottom">
    <a href="#">See all messages</a>
</div> </li></ul></li>
<li class="login_box" id="loginContainer">
<div class="search-box">
<div id="sb-search" class="sb-search"><form>
<input class="sb-search-input" placeholder="Enter your search term..."
type="search" id="search">
<input class="sb-search-submit" type="submit" value="">
<span class="sb-icon-search"> </span></form></div>
</div><!-- search-scripts -->
<script src="js/classie.js"></script>
<script src="js/uisearch.js"></script>
<script>new UISearch( document.getElementById( 'sb-search' ) );
</script>
<!-- //search-scripts -->
</li><li class="dropdown">
<a href="#" class="dropdown-toggle" data-toggle="dropdown" aria-
expanded="false"><i class="fa fa-bell"></i><span class="badge
blue">3</span></a><ul class="dropdown-menu"><li>

```

```

<div class="notification_header">
<h3>You have 3 new notification</h3></div></li>
<li><a href="#">
<div class="user_img"></div> <div
class="notification_desc">
<p>Lorem ipsum dolor sit amet</p>
<p><span>1 hour ago</span></div>
<div class="clearfix"></div> </a></li>
<li class="odd"><a href="#">
<div class="user_img"></div>
<div class="notification_desc">
<p>Lorem ipsum dolor sit amet </p>
<p><span>1 hour ago</span></p></div>
<div class="clearfix"></div> </a></li>
<li><a href="#">
<div class="user_img"></div>
<div class="notification_desc">
<p>Lorem ipsum dolor sit amet </p>
<p><span>1 hour ago</span></p></div>
<div class="clearfix"></div> </a></li>
<li><div class="notification_bottom">
<a href="#">See all notification</a></div>
</li></ul></li>
<li class="dropdown">
<a href="#" class="dropdown-toggle" data-toggle="dropdown" aria-
expanded="false"><i class="fa fa-tasks"></i><span class="badge
blue1">22</span></a>
<ul class="dropdown-menu"><li>
<div class="notification_header"></div>
</li><li><a href="#">
<div class="task-info">
<span class="task-desc">Database update</span><span
class="percentage">40%</span>
<div class="clearfix"></div>
</div>
<div class="progress progress-striped active">
<div class="bar yellow" style="width:40%;"></div></div></a></li>
<li><a href="#"><div class="task-info">
<span class="task-desc">Dashboard done</span>
<span class="percentage">90%</span><div class="clearfix"></div> </div>

```

```

<div class="progress progress-striped active">
  <div class="bar green" style="width:90%;"></div></div></a></li>
</li><a href="#">
  <div class="task-info">
    <span class="task-desc">Mobile App</span>
    <span class="percentage">33%</span>
    <div class="clearfix"></div> </div>
    <div class="progress progress-striped active">
      <div class="bar red" style="width: 33%;"></div></div>
    </a></li><li><a href="#">
      <div class="task-info">
        <span class="task-desc">Issues fixed</span><span
        class="percentage">80%</span>
        <div class="clearfix"></div> </div>
        <div class="progress progress-striped active"><div class="bar blue" style="width:
        80%;"></div></div></a></li><li>
        <a href="#" class="dropdown-toggle" data-toggle="dropdown" aria-
        expanded="false">
          <div class="profile_img"><span style="background:url(images/1.jpg) no-repeat
          center"> </span> <div class="user-name"></div>
          <i class="lnr lnr-chevron-down"></i>
          <i class="lnr lnr-chevron-up"></i>
          <div class="clearfix"></div> </div> </a>
          <ul class="dropdown-menu drp-mnu"><li>
            </div>
            <div class="social_icons">
              <div class="col-md-4 social_icons-left"><a
              href="#" class="yui"><i class="fa fa-facebook i1"></i><span>300<sup>+</sup>
              Likes</span></a></div>
              <div class="col-md-4 social_icons-left pinterest">
                </div>
                <div class="col-md-4 social_icons-left twi">
                  <a href="#"><i class="fa fa-twitter i1"></i><span>500<sup>+</sup>
                  Tweets</span></a></div>
                  <div class="clearfix"> </div></div>
                  <div class="clearfix"></div></div>
                </div><!--notification menu end --></div>
                <!-- //header-ends -->
                <div id="page-wrapper">
                <div class="graphs"><div class="error-main">

```

```

<h3><i class="fa fa-exclamation-triangle"></i> <span>404</span></h3>
<div class="col-xs-7 error-main-left">
<span>Oops!</span>
<p>The page you're looking for could not be found.</p>
<div class="error-btn">
<a href="index.html">Go back?</a></div></div>
<div class="col-xs-5 error-main-right">
</div>
<div class="clearfix"> </div></div></div></div>
<script src="js/jquery.nicescroll.js"></script>
<script src="js/scripts.js"></script>
<!-- Bootstrap Core JavaScript -->
<script src="js/bootstrap.min.js"></script>
</body>
</html>

```

/*Motor Controller*/

```

import receiveData
import sendData
import Ultrasonic1
import Valve_WaterFlow
from firebase import firebase
import time
import getArduinodata
count= len(result)
sendData.initializeConnection()
for i in range(count):
    user_id = result[i]
    Turbidity = getArduinodata.get_control_Arduino('1')
    index = sendData.sendData(fb,user_id,"Turbidity",Turbidity,-1)
    Updated_data1={'qualityTurbidity':1}
    Updated_data2={'qualityTurbidity':0}
    if Turbidity > 70:
        sendData.updateData(user_id,Updated_data1)
    else:
        sendData.updateData(user_id,Updated_data2)
    print Turbidity
    water_level = Ultrasonic1.ultrasonic1(user_id,result)
    sendData.sendData(fb,user_id,"Waterlevel",water_level,index)

```



```

#Updated_data = {'water_level':water_level,'Turbidity':Turbidity}
#sendData.sendData(user_id,Updated_data)
#max_cap = result['User'+str(i+1)][ 'maxCap']
MaxCap = fb.get(user_id+'/', 'MaxCap')

if water_level < MaxCap:
    fetch = receiveData.fetchData(user_id)
    reply = fb.get(user_id+'/Notify/', 'usercontrolwater')
    #max_cap = fetch['maxCap']
    if reply == 0:
        print 'Ready'
        time.sleep(2)
        water_meter =
Valve_WaterFlow.Valve_WaterFlow(user_id,water_level,MaxCap,result)
        sendData.sendData(fb,user_id,'waterFlow',water_meter,index)
        print water_meter

        Updated_data = {'usercontrolwater':1}
        sendData.updateData(user_id,Updated_data)
    elif reply==1:
        print "Water Not Required"
if i==1:
    i=0
    continue

/*Ultrasonic Sensor */

import RPi.GPIO as GPIO
import time
TRIG1,ECHO1 = 7,12
TRIG2,ECHO2 = 16,15
#GPIO.setmode(GPIO.BOARD)
def ultrasonic1(user_id,result):
    GPIO.setmode(GPIO.BOARD)
    if user_id == result[0] :
        TRIG,ECHO = TRIG1,ECHO1
    elif user_id == result[1] :
        TRIG,ECHO = TRIG2,ECHO2
GPIO.setup(TRIG,GPIO.OUT)
GPIO.output(TRIG,0)

```

```

GPIO.setup(ECHO, GPIO.IN)
time.sleep(0.1)
print "Start"
GPIO.output(TRIG,1)
    time.sleep(0.00001)
    GPIO.output(TRIG,0)
while GPIO.input(ECHO) == 0:
    pass
start = time.time()
while GPIO.input(ECHO) == 1:
    pass
stop = time.time()
#print (stop - start) * 17000
GPIO.cleanup()
depth = (stop - start) * 17000
#print depth
length = 13
water_level = (length - depth)/length * 100
if depth > 13:
    return 0
print water_level
return water_level
#print water_level
#ultrasonic1(2)

```

/*Valve Controller*/

```

import RPi.GPIO as GPIO
import time,sys
import Ultrasonic1
import getArduinodata

#GPIO.setmode(GPIO.BOARD)
inpt1,inpt2=13,18

def Valve_WaterFlow(user_id,water_level,maxCap,result):
    GPIO.setmode(GPIO.BOARD)
    if user_id == result[0]:
        inpt = inpt1
        code = '2'
    elif user_id == result[1]:
        inpt = inpt2
        code = '4'

```

```

GPIO.setup(inpt,GPIO.IN)
rate_cnt=0
tot_cnt=0
minutes=0
count=0
constant=0.05
time_new=0.0
#openValve()
getArduinodata.get_control_Arduino(code)

water_meter = 0

#print('Water Flow-Approx')
while True:
    time_new=time.time() + 5
    rate_cnt=0
    while time.time()<=time_new:
        if GPIO.input(inpt)!=0:
            rate_cnt+=1
            tot_cnt+=1
        count+=1
    try:
        print(GPIO.input(inpt))
        #None
    except KeyboardInterrupt:
        print('\CTRL C - Exiting nicely')
        GPIO.cleanup()
        sys.exit()
    #print(count)
    #minutes+=1
    water_meter+=round(rate_cnt*constant,4)

    if Ultrasonic1.ultrasonic1 >= maxCap:
        #closeValve
        getArduinodata.get_control_Arduino(str(int(code)+1))
        break

    #print('\nLitres/min',round(rate_cnt*constant,4))

    #print('Total Liters',round(tot_cnt*constant,4))

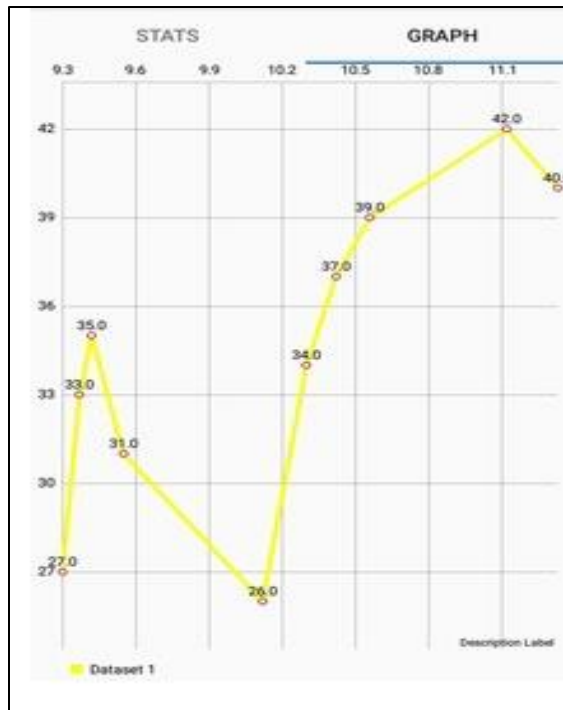
```

```

    #print('Done')
    #break
    GPIO.cleanup()
    print water_meter
    return water_meter
#Valve_WaterFlow(2,50,100)

```

APPLICATION OUTPUT



STATS	GRAPH
40.000000 at time – 11.330000	
42.000000 at time – 11.120000	
39.000000 at time – 10.560000	
37.000000 at time – 10.420000	
34.000000 at time – 10.300000	
26.000000 at time – 10.120000	
31.000000 at time – 9.550000	
35.000000 at time – 9.420000	
33.000000 at time – 9.370000	
27.000000 at time – 9.300000	