ESCUELA POLITÉCNICA DE INGENIERÍA DE GIJÓN.

GRADO EN INGENIERÍA ELECTRÓNICA INDUSTRIAL Y AUTOMÁTICA

ÁREA INGENIERÍA DE SISTEMAS Y AUTOMÁTICA

TRABAJO FIN DE GRADO N.º 18010302

EVOLUCIÓN DE SISTEMA DOMÓTICO BASADO EN RASPBERRY PI Y Z-WAVE

ANEXOS

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Índice

1. Descripción de los anexos

Los contenidos de estos anexos se dividen en dos capítulos. El primero de ellos con el programa para la automatización del lado Z-Wave, y el segundo con todo lo referente al diseño y automatización de los servicios que ofrece la página web creada. Básicamente los programas son:

1. El código JavaScript del programa binding.js. Este está ubicado en la carpeta /opt/z-way-server/automation de la Raspberry Pi, y se encarga de enviar los datos de los nodos del sistema al servidor web.

2. Todos los programas referentes al correcto funcionamiento de la interfaz web. Esto incluye, por un lado, el código del diseño web, es decir HTML y CSS ayudado por Bootstrap. Por otro lado, el código para la ejecución de órdenes lógicas dentro de la interfaz, es decir, PHP y los programas Python. Todos ellos ubicados en el directorio de la Raspberry Pi /var/www/html.

2. Automatización mediante JS API

ANEXO 1. BINDING.JS

```
//Bindings for value changes


//AUTO-VALVE//
zway.devices[8].instances[0].commandClasses[37].data.level.bind(function(type){ //Binds event


        if (type & 0x02) return;
        console.log('TEST value: '+this.value);
        console.log('TEST2 type: '+type);


    if(this.value || !this.value){ //Notification if sensor is OPEN or CLOSE


    console.log('COMPRUEBA AUTO VALVE!!!!!!'+this.value);


        try { //here begins the code for sending
            var options = {};
            // send data to server
            options.url = "http://192.168.0.30/portada1.php";
            options.method = "POST";
            options.data = "valve="+this.value;  //this can be accessed in portada1.php by
$_POST['valve']

            var res = http.request(options);


            console.log('COMPRUEBA AUTO VALVE2!!!!!!'+options.data);
        }
                catch(err) { // here is the code to display the error in the console server log
if something is wrong
            debugPrint("Failed to send data: " + err);
        }
    }
```

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```
});


//***************************SENSOR 1 (SALÓN)***************************//


//FLOOD//

zway.devices[2].instances[0].commandClasses[156].data[5].sensorState.bind(function(){     //Binds event


        if(this.value || !this.value){ //Notification if sensor is ON (255) or OFF (0)


        console.log('COMPRUEBA FLOOD!!!!!!'+this.value);


            try { //here begins the code for sending

                var options = {};
                // send data to server
                options.url = "http://192.168.0.30/portada1.php";
                options.method = "POST";
                options.data  =  "sensor_level="+this.value;      //this  can  be  accessed  in
portada1.php by $_POST['sensor_level']
                var res = http.request(options);


                console.log('COMPRUEBA FLOOD!!!!!!'+options.data);
            }
                    catch(err) { // here is the code to display the error in the console server log
if something is wrong
                debugPrint("Failed to send data: " + err);
            }
        }
});


//TEMPERATURE//

zway.devices[2].instances[2].commandClasses[49].data[1].val.bind(function(){ //Binds event


        if(this.value){ //Notification
```

```
console.log('COMPRUEBA SENSOR TEMP BIND!!!!!!'+this.value);


        try { //here begins the code for sending

            var options = {};

            // send data to server

            options.url = "http://192.168.0.30/portada1.php";

            options.method = "POST";

            options.data = "temperature="+this.value;  //this can be accessed in portada1.php
by $_POST['temperature']

            var res = http.request(options);


            console.log('COMPRUEBA SENSOR TEMP BIND!!!!!!'+options.data);

        }

            catch(err) { //display the error in the console server log if something is wrong

            debugPrint("Failed to send data: " + err);

        }

    }

});


//BATTERY//

//zway.devices[2].commandClasses[128].data.lastlevel.bind()(function(){ //Binds event


        //if(this.value){ //Notification


        //console.log('COMPRUEBA BATTERY BIND!!!!!!'+this.value);


        //try { //here begins the code for sending

            //var options = {};

            // send data to server

            //options.url = "http://192.168.0.30/portada1.php";

            //options.method = "POST";

            //options.data  =  "battery="+this.value;     //this  can  be  accessed  by
$_POST['battery']

            //var res = http.request(options);

            //console.log('COMPRUEBA BATTERY BIND!!!!!!'+options.data);
```

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```
            //}
                        //catch(err) { // here is the code to display the error in the console server log
if something is wrong
                    //debugPrint("Failed to send data: " + err);
                //}
        //}
//});


//***************************SENSOR 2 (BAÑO)***************************//


//FLOOD//

zway.devices[4].instances[0].commandClasses[156].data[5].sensorState.bind(function(){     //Binds
event


        if(this.value || !this.value){ //Notification if sensor is ON (255) or OFF (0)


        console.log('COMPRUEBA FLOOD!!!!!!'+this.value);


            try { //here begins the code for sending
                var options = {};
                // send data to server
                options.url = "http://192.168.0.30/portada1.php";
                options.method = "POST";
                options.data = "sensor_level2="+this.value;     //this can be accessed in
portada1.php by $_POST['sensor_level']
                var res = http.request(options);


                console.log('COMPRUEBA FLOOD!!!!!!'+options.data);
            }
                    catch(err) { // here is the code to display the error in the console server log
if something is wrong
                debugPrint("Failed to send data: " + err);
            }
        }
});
```

```
//TEMPERATURE//
zway.devices[4].instances[2].commandClasses[49].data[1].val.bind(function(){ //Binds event

        if(this.value){ //Notification

        console.log('COMPRUEBA SENSOR TEMP BIND!!!!!!'+this.value);

            try { //here begins the code for sending
                var options = {};
                // send data to server
                options.url = "http://192.168.0.30/portada1.php";
                options.method = "POST";
                options.data = "temperature2="+this.value;    //this can be accessed in
portada1.php by $_POST['temperature']
                var res = http.request(options);

                console.log('COMPRUEBA SENSOR TEMP BIND!!!!!!'+options.data);
            }
                catch(err) { //display the error in the console server log if something is wrong
                debugPrint("Failed to send data: " + err);
            }
        }
});
//BATTERY//
//zway.devices[4].commandClasses[128].data.lastlevel.bind()(function(){ //Binds event

        //if(this.value){ //Notification

        //console.log('COMPRUEBA BATTERY BIND!!!!!!'+this.value);

            //try { //here begins the code for sending
                //var options = {};
                // send data to server
```

```
//options.url = "http://192.168.0.30/portada1.php";

//options.method = "POST";

//options.data  =  "battery2="+this.value;    //this  can  be  accessed  by
$_POST['battery2']

//var res = http.request(options);

//console.log('COMPRUEBA BATTERY BIND!!!!!!'+options.data);

//}

//catch(err) { // here is the code to display the error in the console server log
if something is wrong

//debugPrint("Failed to send data: " + err);

//}

//}

//});
```

3. Interfaz de usuario

ANEXO 2. INDEX.PHP

```
<!DOCTYPE html>
<html>
<head>
<title>Login</title>
</head>
<body style="background-color: gray">
<br><br><br>
<div class="container">
        <div class="row">
                <div class="col-sm-4"></div>
                <div class="col-sm-4">
                        <div class="panel panel-primary">
                                <div style="text-align: center;" class="panel panel-heading">User
Interface TFG</div>
                                <div class="panel panel-body">
                                        <div style="text-align: center;">
                                                <img        src="Cabecera.jpg"        width="300"
height="110">
                                        </div>
                                        <br>
                                        <p></p>
                                        <form id="frmlogin">
                                        <label>Usuario:</label>
                                        <input type="text" id="usuario" class="form-control input-
sm" name="">
                                        <br>
                                        <label>Contraseña:</label>
                                        <input    type="password"    id="password"    class="form-
control input-sm" name="">
                                        </form>
```

```html
                                    <br>
                                    <p></p>
                                    <span                class="btn              btn-primary"
id="entrarSistema">Entrar</span>
                              </div>
                        </div>
                  </div>
                  <div class="col-sm-4"></div>
            </div>
      </div>
</body>
</html>
```

```html
<script type="text/javascript">
      $(document).ready(function(){
            $('#entrarSistema').click(function(){
                  if($('#usuario').val()==""){
                        alertify.alert("Debes agregar el usuario");
                        return false;
                  }else if($('#password').val()==""){
                        alertify.alert("Debes agregar la contraseña");
                        return false;
                  }

                  cadena="usuario=" + $('#usuario').val() +
                        "&password=" + $('#password').val();

                  $.ajax({
                        type:"POST",
                        url:"login.php",
                        data:cadena,
                        success:function(r){
                              if(r==1){
                                    $('#frmlogin')[0].reset();
```

```
                                    window.location="portada0.php";
                            }else{
                                    alertify.alert("El        usuario      o
contraseña son incorrectos");
                            }
                    }
            });
    });
});
</script>
```

ANEXO 3. LOGIN.PHP

```php
<?php
    session_start();

    //DATABASE

    $servername = "localhost";
    $username = "newuser";
    $password = "newpass";
    $dbname = "sensor";

    // Create connection
    $conn = new mysqli($servername, $username, $password, $dbname);

    // Check connection
    if ($conn->connect_error) {
            die("Connection failed: " . $conn->connect_error);
    }
            $usuario=$_POST['usuario'];
            $pass=$_POST['password'];

            $sql="SELECT * from usuarios where usuario='$usuario' and password='$pass'";
```

```php
$result = $conn->query($sql);


if(mysqli_num_rows($result) > 0){
        $_SESSION['user']=$usuario;
        echo 1;
}else{
        echo 0;
}
?>
```

ANEXO 4. SALIR.PHP

```php
<?php

    session_start();

    unset($_SESSION['user']);

    header("location:../index.php");

?>
```

ANEXO 5. LOGO.PHP

```php
<?php
    session_start();

    if(isset($_SESSION['user'])){
    }
    else {
    header("location:index.php");
    }
?>
```

```html
<!DOCTYPE html>
<html lang="es">
<head>
 <title>Domotic Interface Logo</title>
 <meta charset="utf-8">
 <div align="center"><a href="index.html"><img src="Cabecera.jpg" ></a></div>
 <br>
 <meta name="viewport" content="width=device-width, initial-scale=1">
 <link                                                          rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
 <style>
  /* Remove the navbar's default margin-bottom and rounded borders */
  .navbar {
   margin-bottom: 0;
   border-radius: 0;
  }

  /* Set height of the grid so .sidenav can be 100% (adjust as needed) */
  .row.content {height: 700px}

  /* Set gray background color and 100% height */
  .sidenav {
   padding-top: 20px;
   background-color: #f1f1f1;
   height: 100%;
  }

  /* Set black background color, white text and some padding */
  footer {
   background-color: #555;
   color: white;
```

```
        padding: 15px;
    }


    /* On small screens, set height to 'auto' for sidenav and grid */
    @media screen and (max-width: 767px) {
      .sidenav {
        height: auto;
        padding: 15px;
      }
      .row.content {height:auto;}
    }
  </style>
</head>
<body>
<nav class="navbar navbar-inverse">
  <div class="container-fluid">
    <div class="navbar-header">
      <button        type="button"        class="navbar-toggle"        data-toggle="collapse"        data-target="#myNavbar">
        <span class="icon-bar"></span>
        <span class="icon-bar"></span>
        <span class="icon-bar"></span>
      </button>
      <a class="navbar-brand" href="logo.php">Logo</a>
    </div>
    <div class="collapse navbar-collapse" id="myNavbar">
      <ul class="nav navbar-nav">
        <li><a href="portada0.php">Home</a></li>
        <li><a href="portada2.php">Cámara</a></li>
        <li><a href="portada1.php">Historial</a></li>
      </ul>
      <ul class="nav navbar-nav navbar-right">
        <li><a href="salir.php"><span class="glyphicon glyphicon-log-in"></span> Logout</a></li>
      </ul>
```

```
  </div>
 </div>
</nav>


<div class="container-fluid text-center">
 <div class="row content">
  <div class="col-sm-2 sidenav">
  </div>
  <div class="col-sm-8 text-left">
   <h1>DOMOTIC INTERFACE</h1>
       <br>
       <br>
       <div align="center"><a href="index.html"><img src="Cabecera.jpg" ></a></div>
       <br>
       <br>
       <p>Esta página web ha sido creada por el alumno Jorge Nieto Palacio como Trabajo Fin de
Grado para la Escuela Politécnica de Ingeniería de Gijón, departamento de Ingeniería Eléctrica,

       Electrónica, de Computadores y Sistemas. Año 2018.</p>
       <p>Así mismo el logo de la página ha sido llevado a cabo por el autor.</p>
  </div>
  <div class="col-sm-2 sidenav">
  </div>
  </div>
 </div>
</div>


<footer class="container-fluid text-center">
 <p>Página creada por Jorge Nieto Palacio</p>
</footer>
</body>
```

ANEXO 6. PORTADA0.PHP

```
<?php
```

```php
        session_start();
        if(isset($_SESSION['user'])){
        }
        else {
        header("location:index.php");
        }
 ?>
<?php

//Definimos fecha y hora
date_default_timezone_set('Europe/Madrid');
$date = date('H:i:s (d/m/Y)');

//DATABASE
$servername = "localhost";
$username = "newuser";
$password = "newpass";
$dbname = "sensor";

// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);

// Check connection
if ($conn->connect_error) {
   die("Connection failed: " . $conn->connect_error);
}

//cURL
require_once ('/var/www/html/curl.php');
?>


<!DOCTYPE html>
<html lang="es">
```

```html
<head>
 <title>Domotic Interface Home</title>
 <meta charset="utf-8">
 <div align="center"><a href="index.html"><img src="Cabecera.jpg" ></a></div>
 <br>
 <meta name="viewport" content="width=device-width, initial-scale=1">
 <link                                                         rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
 <style>
  /* Remove the navbar's default margin-bottom and rounded borders */
  .navbar {
   margin-bottom: 0;
   border-radius: 0;
  }


  /* Set height of the grid so .sidenav can be 100% (adjust as needed) */
  .row.content {height: 500px}


  /* Set gray background color and 100% height */
  .sidenav {
   padding-top: 20px;
   background-color: #f1f1f1;
   height: 100%;
  }


  /* Set black background color, white text and some padding */
  footer {
   background-color: #555;
   color: white;
   padding: 15px;
  }
```

```
/* On small screens, set height to 'auto' for sidenav and grid */
@media screen and (max-width: 767px) {
  .sidenav {
    height: auto;
    padding: 15px;
  }
  .row.content {height:auto;}
}
</style>
</head>
<body>
<nav class="navbar navbar-inverse">
 <div class="container-fluid">
  <div class="navbar-header">
    <button type="button" class="navbar-toggle" data-toggle="collapse" data-target="#myNavbar">
     <span class="icon-bar"></span>
     <span class="icon-bar"></span>
     <span class="icon-bar"></span>
    </button>
    <a class="navbar-brand" href="logo.php">Logo</a>
  </div>
  <div class="collapse navbar-collapse" id="myNavbar">
   <ul class="nav navbar-nav">
    <li class="active"><a href="portada0.php">Home</a></li>
    <li><a href="portada2.php">Cámara</a></li>
    <li><a href="portada1.php">Historial</a></li>
   </ul>
   <ul class="nav navbar-nav navbar-right">
    <li><a href="salir.php"><span class="glyphicon glyphicon-log-in"></span> Logout</a></li>
   </ul>
  </div>
 </div>
</nav>
```

```html
<div class="container-fluid text-center">
 <div class="row content">
  <div class="col-sm-2 sidenav">
  </div>
  <div class="col-sm-8 text-left">
   <h1>FIBARO FLOOD SENSORS</h1>
        <table class="table">
   <thead>
    <tr>
     <th>SALÓN: TEMPERATURA </th>
                <th>BAÑO: TEMPERATURA </th>
    </tr>
   </thead>
   <tbody>
    <tr>
```

```php
        <?php
        $sql = "SELECT valor FROM valores WHERE objeto = 'Sensor de temperatura 1' ORDER BY id DESC LIMIT 1";
        $result = $conn->query($sql);
        foreach($result as $row){
                echo"<td>" . $row['valor'] . "</td>";
            }
        $sql = "SELECT valor FROM valores WHERE objeto = 'Sensor de temperatura 2' ORDER BY id DESC LIMIT 1";
        $result = $conn->query($sql);
        foreach($result as $row){
                echo"<td>" . $row['valor'] . "</td>";;
            }
        ?>
```

```html
   </tr>
        <thead>
   <tr>
    <th>SALÓN: BATERÍA SENSOR </th>
                <th>BAÑO: BATERÍA SENSOR</th>
```

```
        </tr>
            <tr>
            <?php
            $sql = "SELECT valor FROM valores WHERE objeto = 'Batería 1' ORDER BY id DESC
LIMIT 1";
            $result = $conn->query($sql);
            foreach($result as $row){
                        echo"<td>" . $row['valor'] . "</td>";
                }
            $sql = "SELECT valor FROM valores WHERE objeto = 'Batería 2' ORDER BY id DESC
LIMIT 1";
            $result = $conn->query($sql);
            foreach($result as $row){
                        echo"<td>" . $row['valor'] . "</td>";
                }
                ?>
        </tr>
            <tr>
     <th>SALÓN: ALARMA DE AGUA</th>
                <th>BAÑO: ALARMA DE AGUA </th>
        </tr>
                 <tr>
            <?php
            $sql = "SELECT valor FROM valores WHERE objeto = 'Sensor de inundación 1' ORDER
BY id DESC LIMIT 1";
            $result = $conn->query($sql);
            foreach($result as $row){
                        echo"<td>" . $row['valor'] . "</td>";;
                }
            $sql = "SELECT valor FROM valores WHERE objeto = 'Sensor de inundación 2' ORDER
BY id DESC LIMIT 1";
            $result = $conn->query($sql);
            foreach($result as $row){
                        echo"<td>" . $row['valor'] . "</td>";
                }
```

```php
                ?>
    </tr>
    </tbody>
        </table>
        <h1>AUTO VALVE GR-105</h1>
        <table class="table">
    <thead>
      <tr>
        <th>ESTADO</th>
      </tr>
    </thead>
    <tbody>
      <tr>
            <?php
            $sql = "SELECT valor FROM valores WHERE objeto = 'Auto Válvula' ORDER BY id
DESC LIMIT 1";
            $result = $conn->query($sql);
            foreach($result as $row){
                        echo"<td>" . $row['valor'] . "</td>";
                }
            ?>
      </tr>
        <div align="center">
                <form action="" method="post">
                        <input type="submit" class="btn btn-danger btn-lg" name="close"
value="CERRAR">
                        <input type="submit" class="btn btn-success btn-lg " name="open"
value="ABRIR">
                </form>
        </div>
    </tbody>
        </table>
    </div>
    <div class="col-sm-2 sidenav">
    </div>
```

```
  </div>
 </div>
</div>
<footer class="container-fluid text-center">
 <p>Página creada por Jorge Nieto Palacio</p>
</footer>
</body>
<?php
//EJECUTAR CURL
if($_POST[close]){
control_valvula("http://192.168.0.30:8083/ZWaveAPI/Run/devices[8].SwitchBinary.Set(false)");
sleep(1);
header("Location:http://192.168.0.30/portada0.php");
}
if($_POST[open]){
control_valvula("http://192.168.0.30:8083/ZWaveAPI/Run/devices[8].SwitchBinary.Set(true)");
sleep(1);
header("Location:http://192.168.0.30/portada0.php");
}
?>
```

ANEXO 7. PORTADA1.PHP

```
<?php
	session_start();

	if(isset($_SESSION['user'])){
	}
	else {
	header("location:index.php");
	}
 ?>

<?php
```

```php
//Definimos fecha y hora
date_default_timezone_set('Europe/Madrid');
$date = date('H:i:s (d/m/Y)');


//cURL
require_once ('/var/www/html/curl.php');


//DATABASE

$servername = "localhost";
$username = "newuser";
$password = "newpass";
$dbname = "sensor";


// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);


// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}


// prepare and bind
$stmt = $conn->prepare("INSERT INTO valores (objeto, valor, fecha) VALUES (?, ?, ?)");
$stmt->bind_param("sss", $objeto, $valor, $fecha);


if($_SERVER['REQUEST_METHOD'] == 'POST'){
        //AUTO-VALVE
        if(isset($_POST['valve'])){
                $objeto = "Auto Válvula";
                $fecha;
                $variable = $_POST['valve'];
                        if ($variable=="true"){
                                $valor = "ABIERTA";
```

```php
                }
                else if ($variable == "false"){
                        $valor = "CERRADA";
                }
        }
        //SENSOR FLOOD
        if(isset($_POST['sensor_level'])){
                $objeto = "Sensor de inundación 1";
                $fecha;
                $variable = $_POST['sensor_level'];
                        if ($variable=="255"){
                                $valor = "ON";
                                //Ejecución en segundo plano del envío de e-mail y activación de
cierre de válvula (en e-mailycURL.php)
                                exec("php e-mailycURL.php > /dev/null 2>&1 &");
                        }
                        else if ($variable == "0"){
                                $valor = "OFF";
                        }
        }
        if(isset($_POST['sensor_level2'])){
                $objeto = "Sensor de inundación 2";
                $fecha;
                $variable = $_POST['sensor_level2'];
                        if ($variable=="255"){
                                $valor = "ON";
                                //Ejecución en segundo plano del envío de e-mail y activación de
cierre de válvula (en e-mailycURL.php)
                                exec("php e-mailycURL.php > /dev/null 2>&1 &");
                        }
                        else if ($variable == "0"){
                                $valor = "OFF";
                        }
        }
        //SENSOR TEMP VALOR
```

```php
        if(isset($_POST['temperature'])){
                $objeto = "Sensor de temperatura 1";
                $fecha;
                $variable = round((float)$_POST['temperature'],1); //redondeo el valor a una cifra
decimal
                $valor = $variable . "&deg;C";
        }
        if(isset($_POST['temperature2'])){
                $objeto = "Sensor de temperatura 2";
                $fecha;
                $variable = round((float)$_POST['temperature2'],1); //redondeo el valor a una cifra
decimal
                $valor = $variable . "&deg;C";
        }
        //BATERIA
        if(isset($_POST['battery'])){
                $objeto = "Batería 1";
                $fecha;
                $valor = ($_POST['battery']) . "&;%";
        }
        if(isset($_POST['battery2'])){
                $objeto = "Batería 2";
                $fecha;
                $valor = ($_POST['battery2']) . "&;%";
        }
$stmt->execute();
}
?>


<!DOCTYPE html>
<html lang="es">
<head>
 <title>Domotic Interface Historial</title>
 <meta charset="utf-8">
 <div align="center"><a href="index.html"><img src="Cabecera.jpg" ></a></div>
```

```html
<br>
<meta name="viewport" content="width=device-width, initial-scale=1">
<link                                                              rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>
<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
<style>
  /* Remove the navbar's default margin-bottom and rounded borders */
  .navbar {
    margin-bottom: 0;
    border-radius: 0;
  }

  /* Set height of the grid so .sidenav can be 100% (adjust as needed) */
  .row.content {height: 700px}

  /* Set gray background color and 100% height */
  .sidenav {
    padding-top: 20px;
    background-color: #f1f1f1;
    height: 100%;
  }

  /* Set black background color, white text and some padding */
  footer {
    background-color: #555;
    color: white;
    padding: 15px;
  }

  /* On small screens, set height to 'auto' for sidenav and grid */
  @media screen and (max-width: 767px) {
    .sidenav {
      height: auto;
```

```
    padding: 15px;
  }
  .row.content {height:auto;}
  }
</style>
</head>
<body>
<nav class="navbar navbar-inverse">
 <div class="container-fluid">
  <div class="navbar-header">
    <button      type="button"      class="navbar-toggle"      data-toggle="collapse"      data-target="#myNavbar">
     <span class="icon-bar"></span>
     <span class="icon-bar"></span>
     <span class="icon-bar"></span>
    </button>
    <a class="navbar-brand" href="logo.php">Logo</a>
  </div>
  <div class="collapse navbar-collapse" id="myNavbar">
   <ul class="nav navbar-nav">
    <li><a href="portada0.php">Home</a></li>
    <li><a href="portada2.php">Cámara</a></li>
    <li class="active"><a href="portada1.php">Historial</a></li>
   </ul>
   <ul class="nav navbar-nav navbar-right">
    <li><a href="salir.php"><span class="glyphicon glyphicon-log-in"></span> Logout</a></li>
   </ul>
  </div>
 </div>
</nav>

<div class="container-fluid text-center">
 <div class="row content">
  <div class="col-sm-2 sidenav">
```

```html
</div>
<div class="col-sm-8 text-left">
 <h1>HISTORIAL DE SUCESOS</h1>
      <br>
     <table class="table">
<thead>
 <tr>
   <th>OBJETO</th>
   <th>ESTADO</th>
   <th>ÚLTIMO CAMBIO</th>
 </tr>
</thead>
<tbody>
 <tr>
      <?php
      $sql = "SELECT * FROM valores ORDER BY fecha DESC LIMIT 15";
      $result = $conn->query($sql);
      foreach($result as $row){
              echo"<tr>";
              echo"<td>" . $row['objeto'] . "</td>";
              echo"<td>" . $row['valor'] . "</td>";
              echo"<td>" . $row['fecha'] . "</td>";
              echo"<tr>";
          }
          $conn->close();
          ?>
  </tr>
</tbody>
     </table>
</div>
<div class="col-sm-2 sidenav">
</div>
</div>
</div>
```

```
</div>


<footer class="container-fluid text-center">
  <p>Página creada por Jorge Nieto Palacio</p>
</footer>
</body>
```

ANEXO 8. PORTADA2.PHP

```php
<?php
        session_start();

        if(isset($_SESSION['user'])){
        }
        else {
        header("location:index.php");
        }
 ?>
<!DOCTYPE html>
<html lang="es">
<head>
 <title>Domotic Interface Camara</title>
 <meta charset="utf-8">
 <div align="center"><a href="index.html"><img src="Cabecera.jpg" ></a></div>
 <br>
 <meta name="viewport" content="width=device-width, initial-scale=1">
 <link                                                          rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css">
 <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.2.1/jquery.min.js"></script>
 <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"></script>
 <style>
   /* Remove the navbar's default margin-bottom and rounded borders */
   .navbar {
    margin-bottom: 0;
```

```
    border-radius: 0;
  }


  /* Set height of the grid so .sidenav can be 100% (adjust as needed) */
  .row.content {height: 500px}


  /* Set gray background color and 100% height */
  .sidenav {
    padding-top: 20px;
    background-color: #f1f1f1;
    height: 100%;
  }


  /* Set black background color, white text and some padding */
  footer {
    background-color: #555;
    color: white;
    padding: 15px;
  }


  /* On small screens, set height to 'auto' for sidenav and grid */
  @media screen and (max-width: 767px) {
    .sidenav {
      height: auto;
      padding: 15px;
    }
    .row.content {height:auto;}
  }
 </style>
</head>
<body>


<nav class="navbar navbar-inverse">
 <div class="container-fluid">
```

```
<div class="navbar-header">
    <button    type="button"    class="navbar-toggle"    data-toggle="collapse"    data-target="#myNavbar">
      <span class="icon-bar"></span>
      <span class="icon-bar"></span>
      <span class="icon-bar"></span>
    </button>
    <a class="navbar-brand" href="logo.php">Logo</a>
  </div>
  <div class="collapse navbar-collapse" id="myNavbar">
    <ul class="nav navbar-nav">
      <li><a href="portada0.php">Home</a></li>
      <li class="active"><a href="portada2.php">Cámara</a></li>
      <li><a href="portada1.php">Historial</a></li>
    </ul>
    <ul class="nav navbar-nav navbar-right">
      <li><a href="salir.php"><span class="glyphicon glyphicon-log-in"></span> Logout</a></li>
    </ul>
  </div>
 </div>
</nav>


<div class="container-fluid text-center">
 <div class="row content">
  <div class="col-sm-2 sidenav">

  </div>
  <div class="col-sm-8 text-left">
   <h1>ESTADO HABITACIÓN</h1>
       <br>
      <div align="center">
            <form action="" method="post">
                 <input type="submit" class="btn btn-primary btn-lg" name="panoramica" value="Actualizar imagen">
            </form>
```

```
        </div>
        <br>
        <br>
        <div align="center">
                <img    src="image1.jpg"    width="400px"    class="img-rounded"    class="img-
responsive">
        </div>
    </div>
    <div class="col-sm-2 sidenav">
    </div>
  </div>
</div>
<footer class="container-fluid text-center">
  <p>Página creada por Jorge Nieto Palacio</p>
</footer>
</body>


<?php
//Funcion PHP fotos
if($_POST[panoramica]){
$a- exec("sudo python /var/www/html/panoramica.py");
sleep(1);
header("Location:http://192.168.0.30/portada2.php");
echo $a;
}
?>
```

ANEXO 9. E-MAILYCURL.PHP

```
<?php
//cURL
require_once ('/var/www/html/curl.php');

sleep(1);
```

```
//EJECUTAR CURL
control_valvula("http://192.168.0.30:8083/ZWaveAPI/Run/devices[8].SwitchBinary.Set(false)");


//MANDAR PUSHBULLET Y MANDAR EMAIL
$a- exec("sudo python /var/www/html/envioemail.py");
echo $a;


?>
```

ANEXO 10.   CURL.PHP

```php
<?php


//Función necesaria para controlar la válvula por medio de peticiones
//HTTP a la interfaz de Z-Wave.


function control_valvula($url){


$ch=curl_init($url);
$opciones=array(
CURLOPT_CONNECTTIMEOUT => 100,
CURLOPT_TIMEOUT => 100,
CURLOPT_USERPWD => "admin:jo95ni2011",
CURLOPT_POST => true,
CURLOPT_POSTFIELDS => "login=admin&password=jo95ni2011",
);
curl_setopt_array($ch,$opciones);
$resultado=curl_exec($ch);
curl_close($ch);
}
?>
```

Jorge Nieto Palacio

ANEXO 11.   ENVIOEMAIL.PY

```
import smtplib

from email.mime.text import MIMEText

from email.mime.multipart import MIMEMultipart

from email.mime.base import MIMEBase

from email import encoders

#CODIGO DE PUSHBULLET PARA ENVIAR NOTIFICACION#

import os


os.system('/home/pi/Program/pushbullet.sh "Se ha detectado agua en su hogar gracias a su sensor Z-Wave"')

#CODIGO DE PUSHBULLET PARA ENVIAR NOTIFICACION#

#CODIGO DE PANORAMICA PARA ACTUALIZAR LA IMAGEN#

import picamera

from picamera import PiCamera, Color

import time


camera=picamera.PiCamera()


#camera.resolution = (2592,1944)


camera.start_preview()


camera.brightness = 50

camera.annotate_text_size = 50

camera.annotate_background = Color('red')

camera.annotate_foreground = Color('white')

camera.annotate_text = "Asi esta tu habitacion"

time.sleep(3)

camera.capture('image1.jpg')


camera.stop_preview()

camera.close()
```

#CODIGO DE PANORAMICA PARA ACTUALIZAR LA IMAGEN#

```python
fromaddr = "jorgenpalacio.tfg@gmail.com"
toaddr = "jorgenpalacio@hotmail.com"


msg = MIMEMultipart()


msg['From'] = fromaddr
msg['To'] = toaddr
msg['Subject'] = "Alerta Z-Wave!"


body = "Se ha detectado agua en su hogar gracias a su sensor Z-Wave. Se adjunta una imagen del estado actual de la habitacion."
msg.attach(MIMEText(body, 'plain'))


filename = "image1.jpg"
attachment = open(filename, "rb")


part = MIMEBase('application', 'octet-stream')
part.set_payload((attachment).read())
encoders.encode_base64(part)
part.add_header('Content-Disposition', "attachment; filename= %s" % filename)


msg.attach(part)


server = smtplib.SMTP('smtp.gmail.com', 587)
server.starttls()
server.login(fromaddr, "jo95ni2011")
text = msg.as_string()
server.sendmail(fromaddr, toaddr, text)
server.quit()
```

ANEXO 12.   PANORAMICA.PY

```
import picamera

from picamera import PiCamera, Color

import time


camera=picamera.PiCamera()


#camera.resolution = (2592,1944)


camera.start_preview()


camera.brightness = 50

camera.annotate_text_size = 50

camera.annotate_background = Color('red')

camera.annotate_foreground = Color('white')

camera.annotate_text = "Asi esta tu habitacion"

time.sleep(3)

camera.capture('image1.jpg')


camera.stop_preview()

camera.close()
```