

# Home Automation System for Divyang Persons

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## ABSTRACT

The most important source of motivation behind this work is to assist the people with memory disorders and divyangas to meet common living standards on their own. In this work we made an attempt to decrease the adverse effects that occur due to mind aversion and to facilitate independent living style for divyangas while performing some action or in daily life. In this work with the help of programmable logic control we provided assistance for the “memory disordered persons and divyangas”, SCADA is used to demonstrate the program designed in PLC.

*Index Terms:* PLC, SCADA, Sensors

## I. INTRODUCTION

Home automation is that the use and management of home appliances remotely or mechanically. Early home automation began with labour-saving machines like laundry machines. Some home automation appliances area unit stand alone and don't communicate, like a programmable light-weight switch, whereas others area unit a part of the net of things and area unit networked for device and knowledge transfer. Hardware devices will embrace sensors (like cameras and thermometers), controllers, actuators (to do things), and communication systems. device will vary from an easy device to a smartphone with Bluetooth, to a laptop on the opposite facet of the planet connected by web. Home automation systems area unit offered that incorporates a collection of merchandise designed to figure along. These generally connected through Wi-Fi or power cable communication to a hub that is then accessed with a code application Everything in the house is automated through PLC interfacing and these can be monitored through SCADA through which continuous assistance of second person can be overcome. All the lights, fans, air conditioners, addition of security system to avoid burglary, firefighting system to avoid fire accidents, continuous water supply system, automatic gardening and automatic water usage controlsystems are incorporated in the house.

## II. BACKGROUND WORK

Sheila Mahapatra *et al.*, worked to PLC-Based Home Automation System with the help of plc and created a prototype<sup>1</sup>. Vijay S. Deshpande *et al.*, worked on Home Automation using PLC and SCADA, in this paper they explained Home Automation using PLC and SCADA. They tried to implement thr same on a prtotype<sup>2</sup>. Rajesh Singh *et al.*, worked on Design and Implementation of Energy Efficient Home Automation System by the use of wireless sensors and networks<sup>3</sup>. S. Sasikala *et al.*, worked on Implementation of Home Automation Safety Control Using Programmable Logic Controller explained about safety using plc<sup>4</sup>. Okan Bingol *et al.*,

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worked on Web-based Smart Home Automation: PLC-controlled Implementation<sup>5</sup>., SAHIL SAHNI *et al.* worked on PLC BASED HOME AUTOMATION SYSTEM<sup>6</sup>. Joanna Marie *et al.*, Worked on Automation of Packaging and Material Handling Using Programmable Logic Controller to handle material using plc<sup>7</sup>. Prof. Burali Y. N worked on PLC Based Industrial Crane Automation & Monitoring to automate industrial crane<sup>8</sup>.

### III. METHODOLOGY

Whenever a vehicle comes near the gate it asks for password. After entering the password the gate opens and closes automatically after the vehicle crosses the gate, then the parking area light is made on. When the person reaches the main door again he is asked for password, after entering the password the main door opens. Now all the sensors in the house are made active.

If the person enters into a room then the sensors in the room checks for natural light if the light is low then the light are turned on, the fan is turned on depending on the output given by thermocouple. If the temperature is too high then air conditioner is activated. If the temperature is low then heater is turned on. The sensors in the water tank check continuously, if the water level is below the low then the motor is turned on until the level reaches maximum limit.

If the smoke sensors in any room is on then immediately an alarm and fire safety system is turned on. When the fire is put off the the fire safety system is made to reset to normal position.

The moisture sensors in the garden countinously check the moisture level in the garden. If the level is low then it activates the sprinklers and turned on.

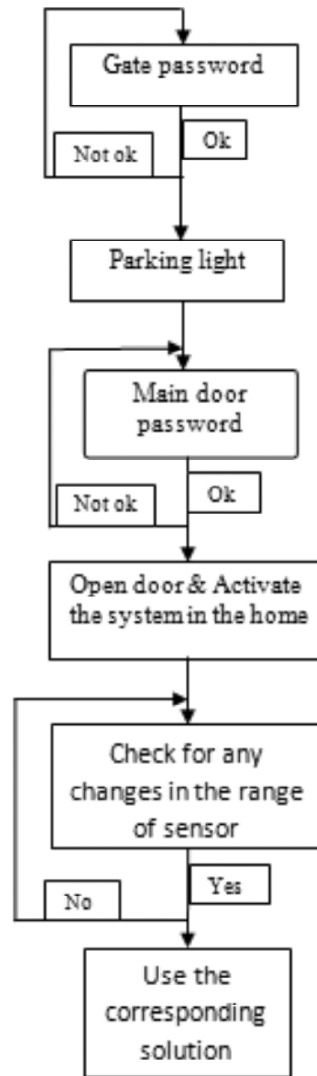
### IV. PROPOSED WORK

In this proposed work we have assigned the main inputs and outputs for the PLC program. The details of the input and output are shown in the tables bellow.

The assignment to the sensors and its ports in PLC are explained in detail in below table 1

**Table 1**  
**Sensors and its ports**

<i>Sensor name</i>	<i>Port number</i>
Low Level switch at Tank	I:0/0
High level switch at Tank	I:0/1
Motion Sensor1 at Gate	I:0/2
Motion Sensor at Gate	I:0/3
Door sensor	I:0/4
PIR Sensor Hall	I:0/5
PIR Sensor bed room	I:0/6
IR light sensor at Sinks	I:0/7
Thermocouple temperature sensor	I:0/8
Smoke sensor in Hall	I:0/10
Smoke sensor in bed room	I:0/11
Fire Sensor in hall	I:0/12
Fire sensor in bed room	I:0/13
Moisture sensor1	I:0/14
Moisture sensor2	I:0/15



Flow chart 1: Process representation

The below table shows the main four outputs their names and port numbers in the PLC Program

**Table 2**  
Output Port name and its ports

<i>Output name</i>	<i>Port number</i>
Tank PUMP	o:0/0
Gate Motor	o:0/1
Car parking Light	o:0/2
Door Motor	o:0/3
Room Light	o:0/4
Sink Pump	o:0/5
Bed Room Light	o:0/6
Fan	o:0/7
Air conditioner	o:0/8
Sprinkler Motor at Fire or Smoke Sensing Case	o:0/9
Hardware Alarm for Fire or Smoke Sensing Case	o:0/10
Garden sprinkler Motor	o:0/11
Gate Password lamp	o:0/12
Door password Lamp	o:0/13

When a person enters the gate after entering password thr gate opens, after vehicle crosses gate the gate automatically closes. When the person goes to house main door again he has to enter password then the door opens

The following diagrams show how the system works

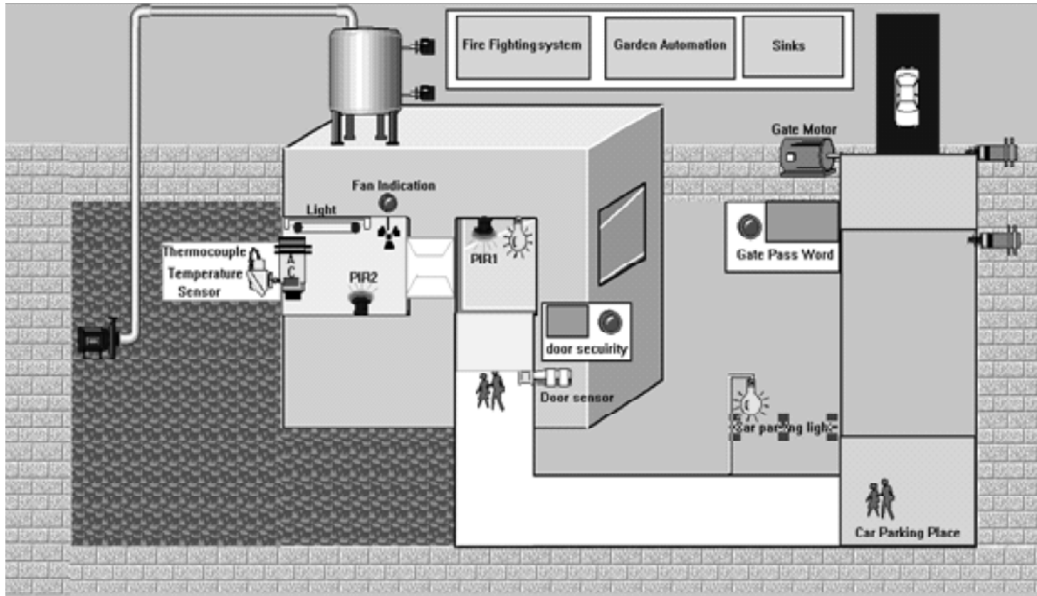


Figure 1: Gate and door security

As the motion sensors1 at the gate - I:0/2 and motion sensor at the gate-I:0/3 are ON and the PLC gets the data from these two sensors makes the car parking light o:0/2 ON.

As the door sensor I:0/4 in on the all the sensors are made active and sends information only i I:0/4 a person is in the range specified to them

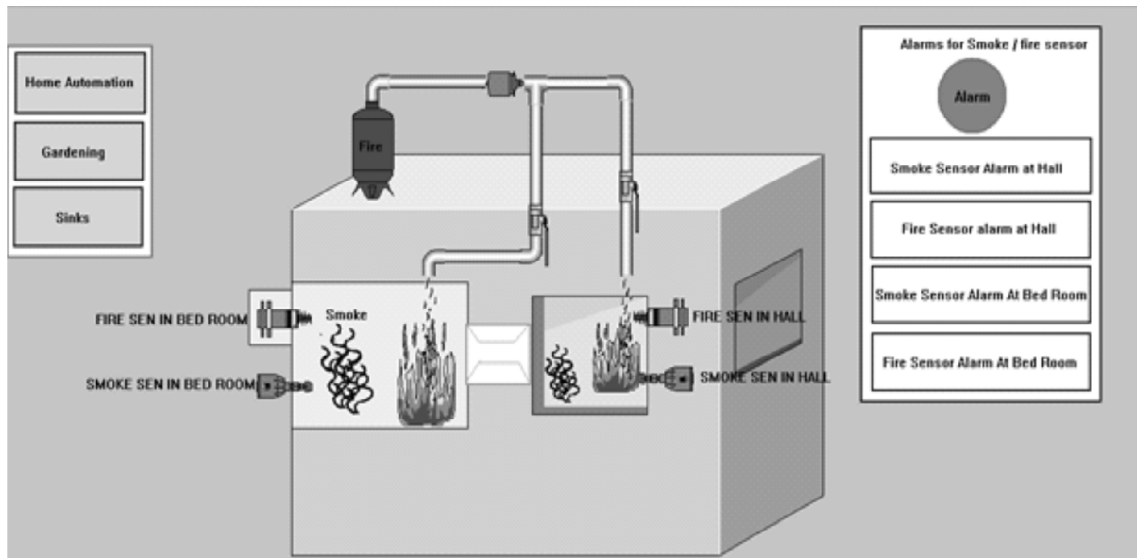


Figure 2: Fire safeties

If the smoke sensors in hall I:0/10 or smoke sensor in the bed room I:0/11 are active then . Hardware Alarm for Fire or Smoke Sensing Caseo:0/10, Sprinkler Motor at Fire or Smoke Sensing Case o:0/9 are made active till the fire turn off.

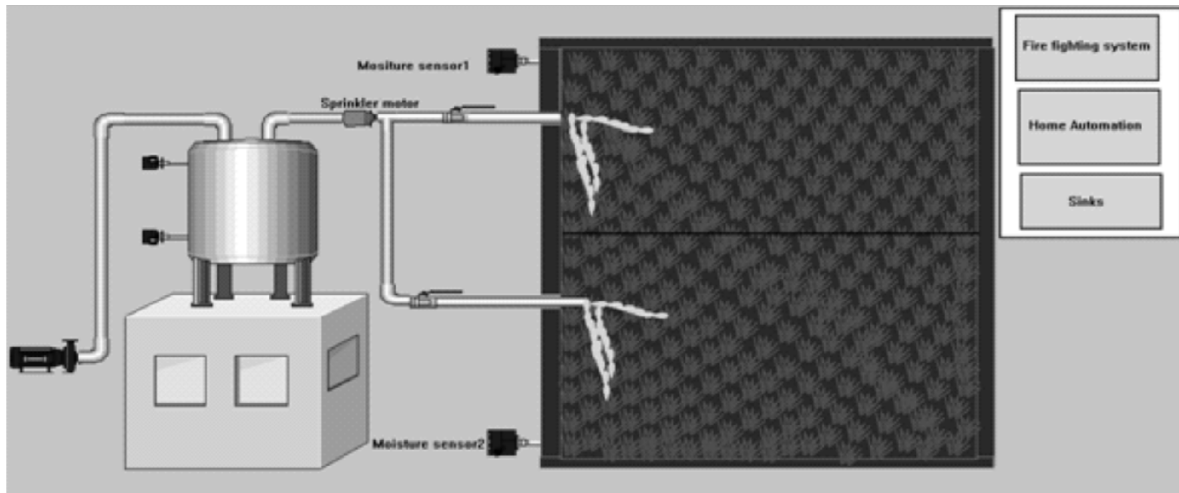


Figure 3: Gardening

The two moisture sensors in the garden Moisture sensor1 I:0/14 and Moisture sensor2 I:0/15 continuously checks the moisture content in the garden. If the level is low then the Garden sprinkler Motor o:0/11 is turned on. The motee automatically turns off when the moisture lever is as per the sufficient.

In this way we can develop a Home Automation system for Divyang Persons.

### V. RESULTS AND DISCUSSIONS

At whatever point the input sensor conditions are fluctuated, there will be suitable variety in relating yield variables in a flawless manner. The Logic is clear and it indicates particular changes relying upon input conditions

The Total Program is simulated in Rslogics PLC and the results are shown below.

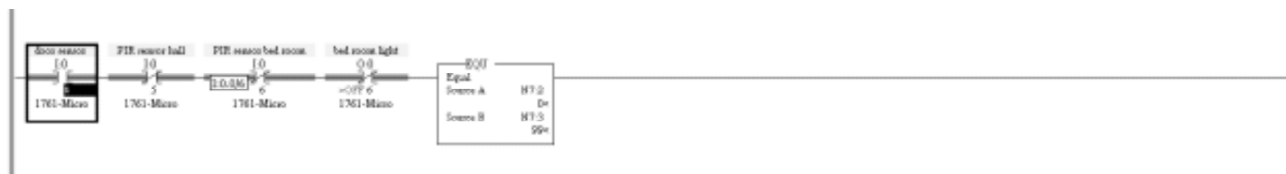


Figure 4: The figure shows main door switch. When the swith is activaedallthe system yn the ome gets activated

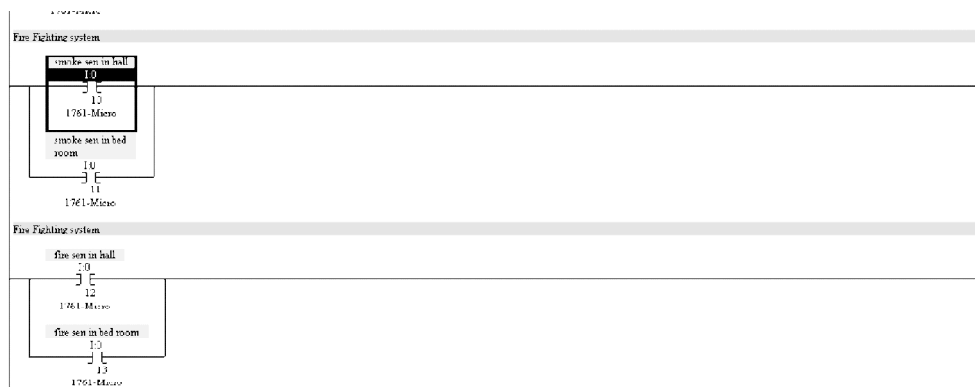


Figure 5: The figure shows fire safety system when ever a sensor dentifie smoke the relay smoke lrm and sprinklers are actvted, in the image the blackselecton shows the sensor actvated nd resultng morors are activated

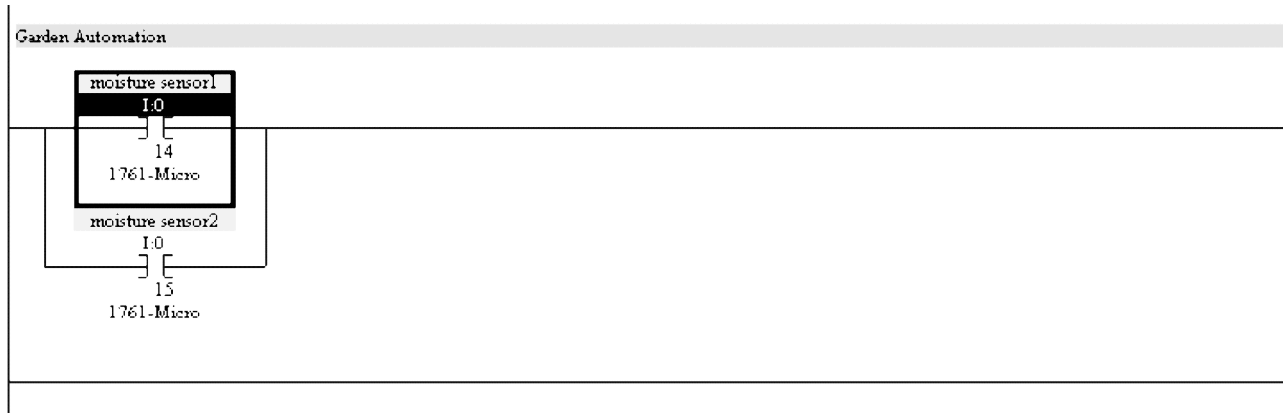


Figure 6: The figure shows garden moisture system when ever the moisture in the garden is low the sprinkler motor is activate

## VI. FEATURE SCOPE

In feature we want to implement the same fully automatically operated number plate identification and face recognition and by this it does not asks for pass word every time. If any un known person came in front of the gate, then it asks for pass word or token. Or any person enters in to room, the doors automatically don't open the door and asks for password or token. In feature our arrangement automatically recognizes the objects or facial.

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