

# Arduino Based Public Garden Automation

Smita Jadhav, Pournima Mandak , Manisha Yadav  
Students, Dept. of ETC

Adarsh Institute of Technology and research Centre, vita

Mr. Pradnyawant. N. Kalamkar  
Assistant Professor, Dept. of ETC

Adarsh Institute of Technology and research Centre, vita

**Abstract:- In the present era the resources such as water and electricity are of limited resources which need to be saved from being waste. While saving the resources such as water we should not forgot the trees which are of much more importance. In this technique we are using an application for atomization of garden, which will help to save the flora of the garden. For atomization we are going to control the light, water dustbin waste etc. This can be useful for avoiding the misuse of water and electricity. In this technique we are using number of application for atomization of the garden such as water level indication, dustbin indicator, electricity monitoring etc. After controlling the various parameters we are using GSM module to send the data of particular parameter to the person who is controlling the garden automation. We are using time for each and every parameter so that only at that instant it can resume again. For controlling this technique we are using an Arduino which will be going to control all the parameters. For light we are using LDR sensor, for water level sensor and for particular control we are using various pumps and the motors.**

*Keywords:- Electricity, LDR, Level sensor, Pumps, motors, GSM, Solar panel etc.*

## I. INTRODUCTION

This paper in general will give the technique for solving the garden automation. Which contain different applications such as controlling the light, controlling the gate of the garden, controlling the water supply, etc. All this can be achieved by the use of solar panel to control the electricity of the garden. The public garden automation can be used to improve the condition of gardens. Which Means by using level sensor the motor will automatically start if the water level is indicated as low and if the water tank is full then motor will automatically get off. This will make the planned use of water so that it will help to solve the wastage of water.

As the working is for garden atomization, every application in this technique works with time, at 6:00 pm the gate will be open for all the visitors and the light become ON at that time. After that at 8:00 pm the gate will be closed and the lights get OFF. As the light will get OFF the water will start flowing and after 2 hrs. at 10:00 pm the motor will stop. This system also contains a solar panel which will be used when their will be electricity shortage is present. For collecting all the real time data an Arduino is used to collect the information and using that information. Depending upon the data collected the output will be given to the light controlling unit and the motor drivers to control the flow of water. This technique uses number of applications to be used for gardening automation which contains the dustbin control block which will control the garbage present in the dustbin, if the dustbin gets full, a level sensor will sends the signal to

arduino. It also contains the water control block which will control the flow of the water to the plants. All the applications are working with solar panel which will control all the motors and the sensors.

Using this technique we can easily automate the gardening system and we can control the waste of electricity and the water will flow.

## II. LITERATURE SURVEY

There is an enormous amount of work is going in this field to make the garden atomization. People works for different application such as a gate control for garden, light control using microcontroller. Some the important research working in these fields is:

- Public Garden Automation using Microcontroller which contains the microcontroller which will be going to control the various applications of garden automation. This technique involves the controlling of the gate of the garden at the particular time, the flow of the water and the controlling of the lights at the night. For connecting with the microcontroller the different sensors are used such as LDR, humidity etc.

The designed program loaded into atmega 32 microcontrollers and executed. Initially when the signal coming to the microcontroller in (port d) the microcontroller understands this signal and translates it to move the motors to open the doors.

- The public garden automation system contains the same applications but based on the PIC18F. It will not only control the light but also monitors the moisture present in the soil. It will continuously monitor the moisture content of the soil and the requirement of light at night.

This system doesn't have any extra power supply it works only on the primary power supply. If the electricity will be cutoff their will not be any extra supply present there.

- This project will ripen and contrivance an automatic garden monitoring system that can be utilized to improve the condition of household gardens and can also be expanded to greenhouses. This will make the planned use of water so that we can fight with the problem of water. Real time data will be collected by employing several analog and digital sensors, such as light, temperature, soil moisture sensors. This system is accessed by GSM.

This system will perform the following tasks:

- Supply water to plants according to their need.
- Automatically turns ON/OFF the shelter to avoid the burning of plants by excessive atmosphere temperature.
- Transmit the data and various SMS to the user.

- Display the data on LCD.

### III. PROPOSED SOLUTION

According to the literature there is so much of work can still be done in this field. So many advanced techniques can be used to make garden automation works easily. Our technique works with the principal that contains an Arduino board which can be interfaced with the various sensors and drivers to control the overall garden automation.

The below block diagram shows the interfacing of various sensors and the drivers that controls various applications such as dustbin control block, water tank control, light sensor (LDR), the GSM module, gate opening and closing and the power supply with the help of solar panel.

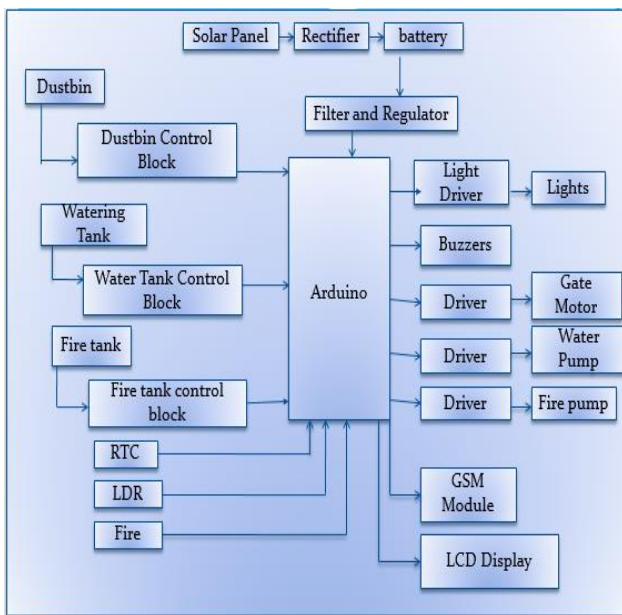


Fig 1 :- Block Diagram

### IV. ALGORITHM

- Initialize the RTC and LCD.
- Take input from RTC.
- If time=6:00AM gate opens.
- Check Intensity of light, if low starts the light.
- Check the level of dustbin, if full makes a buzzer.
- Check temperature from thermistor, if high sprinkler is ON, if low it will get off.
- At time=11:45AM, buzzer is ON to alert visitor.
- Gate will be close at 12:00PM.
- Start the sprinkler up to 1 hour.

As the block diagram and the algorithm suggests that the public garden automation is based on the time and at each interval of time the Arduino takes the input and drives the different output.

As in the morning the visitors will visit for morning walk at 6:00AM, the gate opens. If at the evening time or when solar eclipse occurs, the light intensity is checked with the help of LDR and if it is low the light will get ON. Similarly the level of the dustbin with the help of level sensor will be monitored, if it is high a buzzer rings to make it empty by the worker. Again the temperature of the trees and plants is also checked, if it is high then water sprinkles on the plants. When all this process is carried out for the plants, at 11:45AM the alarm rings for the visitors to vacant the garden. After all the visitors will vacant the garden within 15 minutes at 12:00PM the gate will be closed for the visitors. After closing of the gate the water supply to the plants will get started for up to 1 hr.

This process will again start at 4:00PM and continue it up to 11:00PM in the night. It completes with the shutting down of the water supply.

### V. RESULT AND OBSERVATION

Using the RTC for the Arduino the time for the opening and the closing of the gate will be decided. By the use of different inputs to the Arduino different outputs can be managed for the day to day completion of the work for garden automation. As the Arduino will be going to change each parameters input to the output by using different input output ports of the parameters, the different parameters can be controlled.

Depending on these parameters controlled by the Arduino the working parameters such as gate, water, light and dustbin of the garden automation can be controlled.

We can improve the results by increasing the number of parameters used in the public garden automation to make it more versatile at different conditions.

### VI. CONCLUSION

In this paper the public garden automation with the help of Arduino is shown. The public garden automation with the help of Arduino will make the paper easy to implement than the microcontroller based. The various sensors used in the paper will take the input of various parameters and with the help of Arduino it will transmits the output to drive the different outputs.

For each interval of time we have the RC clock which checks the status of each sensor form time to time. Depending on the time the public garden automation works. The opening of gate, the lightning system inside the garden, the dustbin status and the water supply to the plants, all works with the help of Arduino. Since Arduino is a controller which performs all these tasks. It is also called as the main part of the system.

### IV. FUTURE SCOPE

Since the public garden automation has number of parameters to control the application of the garden. There is enormous amount of work we can do in the future for the up gradation of the system. Some up gradation may include

which contain the time of the gate closing. Suppose what will happen if the gate will be closed at 12:00PM but by mistake any kid will be still the garden, at such a condition we will not be able to know whether anybody will be present in the garden or not. In such cases we can put a camera to check inside the garden. To check after weather someone left in the garden or not. Similar kind of up gradation we can make in the system to make a perfect system to work for the public garden automation.

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