

IOT Based Automatic Plant Watering and Tank Filling System

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Abstract— The Internet of Things (IOT) defines that objects are interconnected through wired and wireless networks without user intervention. The current IOT perform, sensing, actuating, data gathering, storing, and processing by connecting physical or virtual devices to the Internet. In this paper a model of automated plant watering system has proposed. It is a model of controlling watering system to the plants. Automatic plant watering system is a technological solution that enables automating the bulk of electronic, electrical and technology based task within a home or in the garden. It uses a combination of hardware and software technology that enables control and management of water supply to the plants automatically.

Keywords—IOT, Plant watering, Home automation

I. INTRODUCTION

In this modern world, everything is becoming much easier than ever by digitalizing with the help of IOT platform like Arduino, raspberry pi, etc. This research deals with IOT using Arduino. Basically People have no time today to look after their plants so this research work has proposed with the idea of automated watering of plants. In our research, Arduino Uno- R3, GSM Module and relay have been used as main sources. The coding has been done in the arduino Uno-R3 which get the data from the TX and RX of GSM Module. According to the input the Arduino Uno-R3 gets the relay high/low states. The command is either on or off state. If the relay is switched on the pump automatically gets started and water gets pumped out. In this way the plants get sufficient amount of water automatically. Our research work can also be used in switching on and off any electrical circuit used in various aspects like home automation, agricultural & industrial aspects where there is no longer need of any manual interaction to perform that task. This research work is very economical in terms of cost and power. It can be operated from any place with or without internet. It can reduce manual power and is cost efficient also.

II. LITERATURE SURVEY

The IOT based pump system is already initiated by other enthusiast and developed up to certain limits. A Survey on an efficient IOT Based Smart Home proposes an efficient implementation for IOT for monitoring and automation system and it uses the portable devices as a user interface. Portable devices can communicate with home automation network through an Internet gate, by means of low power

communication protocols like zigbee, Wi-Fi etc. This research work aims at controlling home appliances via smart phone using Wi-Fi as communication protocol and Arduino Uno. The user will move directly with the system through a web-based interface over the web whereas home appliances like lights, fan etc. are remotely controlled through easy website. This paper also describes how to provide fully smart environment condition monitoring by various sensors (Temperature, Humidity, Light and Level) for providing necessary data to automatically detection and resolution of any problem in the devices. Controlling the home appliances via World Wide Web based on the idea of Internet of Things. A Remote Password Operated Home Appliances control Algorithm was designed to read the data from Bluetooth module initialize the LCD and UART protocol and display the status of the electrical loads on LCD. The system is installed beside the conventional electrical switches on the wall. The risk of dangerous electric shocks can be avoided by using low voltage switches. The system uses two GUIs- one on the personal computer and the other on Smart- phone. The status of the appliances i.e. weather it is on/off state can be known by using this GUI. Any changes in the status of the appliances, immediate intimation is shown on the GUI. The window GUI will act as a server to forward or transmit any data to/from the Smart-phone and the main control board, after the Smart-phone's Bluetooth is connected to the Bluetooth of the computer. In case, the Bluetooth connection between the PC or laptop and the control board fails, then connection can be reestablished by using USB cable. The user can monitor and control the devices from any remote location at any time using IOT.

III. METHODOLOGY

In this research work, an Arduino based IOT platform is used to switch on/off a general pump circuit by commanding through GSM / GPRS inputs.

Hardware/Software Requirement:

- Arduino Uno-R3
- GSM module
- Relay
- Pump

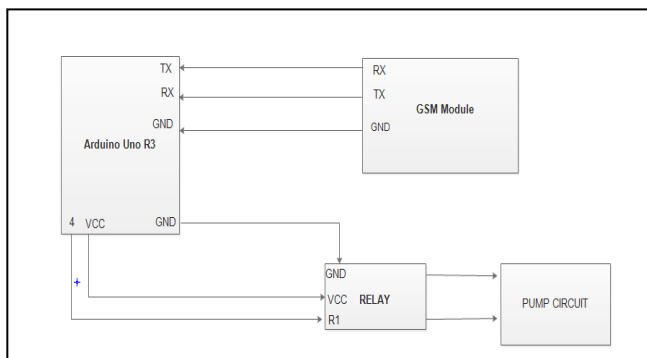


Figure 1. Block diagram

Working Principle:

In this research work, first of all the data is sent to Arduino using a GSM module (TX, RX) & after getting the data the Arduino does corresponding action. Simply if the pump is wished to turn on the Arduino make the relay signal high & low for switching it off. In this process the user can send the data through GPRS accessed control website or can send it through command message for remote areas where they cannot get GPRS access. The Arduino Send the relay a signal & relay turns on the pump circuit. Thus the entire process is working.

Circuit Diagram

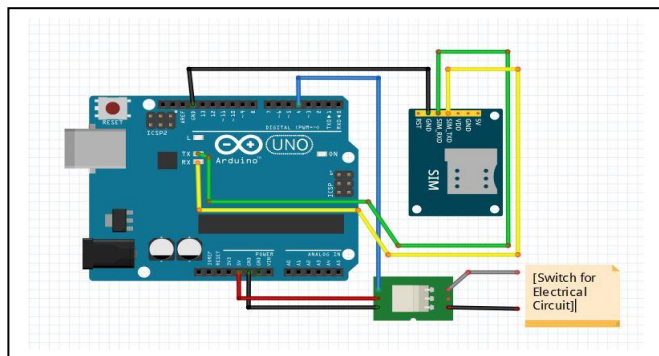


Figure 2. Circuit diagram

Circuit Explanation:

In this circuit, first the data given by the user through GPRS web page or SMS will come to the SIM module. From the

SIM module using RX, TX, the data retrieves by the Arduino. After getting the data into it from the user, Arduino runs the code and sets the relay in high or low states depending on the user input. In high state relay, switches on the circuit & in low state relay, shuts the circuit.

IV. RESULTS

This research work is used to watering of plants by pumping water automatically through switching on the relay. It can be operated through mobile or through webpage.



Figure 3. Working Circuit diagram

V. CONCLUSION AND FUTURE SCOPE

In present day especially farmer are facing major problems in watering agricultural fields. This research work not only help farmer but also reduces the manual power. In future, it can be used for large field irrigation and home automation purpose widely through remotely accessible from any location. There are huge opportunities in local markets due to low cost. This research work can also be implemented through a new IOT platform called BOLT IOT which contains a built in ML engine and AI features.

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