PROJECT REPORT

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RAIN DETECTOR OR RAIN SENSOR

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* INTRODUCTION OF PROJECT:

RAIN DETECTOR PROJECT is a simple but very useful project that detects the rain (Rain Water) and automatically trigger an alarm or Buzzer.

Water is a basic need in every one’s life. Saving water and proper usage of water is very important. here is an easy project which will give the alarm when there is rain, so that we can make some actions for rain water harvesting and also save the rain water for using it later. With the help of saving this rain water through rain water harvesting, we can increase the levels of underground water by using underwater recharge technique. Rain water detector will detect the rain and make an alert; rain water detector is used in the irrigation field, home automation, communication, automobiles etc. Here is the simple and reliable circuit of rain water detector which can be constructed at low cost. In this project, we have designed a simple Rain Alarm Circuit, which, upon detecting rain, will activate a buzzer. Based on the buzzer, we can take necessary actions.

* LITRETURE REVIEW:

Rain alarm is a device which will really work as you wish what you want to do. It is a device which will generate the signal when the rain comes. The frequency will be more when the rain is heavy and the frequency is very less when the rain will be low. It all means that the frequency will depend upon the rain. The circuit will generate melodious tone whenever the rain starts.

2.1 RAIN WATER SENSOR: A rain sensor is a rain switch device activated by a rain fall. there is two main applications for rain sensor. the first is water conservation device connected to an automatic irrigation system that cause the system to shut down in the event of rain fall. The second is a device used to protect the interior of an automobile from rain and to support the automatic mode of wind screen wipers. An additional application in professional satellite communications antennas is to trigger a rain blower on the aperture of the antenna feed, to remove water droplets. Rain water sensor is the main component in the circuit. For this rain sensor, no need to go and buy in the market. We can do it ourselves just by taking the piece of Bakelite or mica board and aluminum wire

2.2 IRRAGATION SENSOR: Rain sensor in irrigation systems are available in both wireless and hard-wired versions, most employing hygroscopic disks that swell in the presence of rain and shrink back down again as they dry out. Wireless and wired versions both use similar mechanisms to temporarily suspend watering by the irrigation controller specifically they are connected to the irrigation controller's sensor terminals, or are installed in series with the solenoid valve common circuit such that they prevent the opening of any valves when rain has been sensed

* CONSTRUCTION OF THE CIRCUIT:

One of the blade is connected to emitter and also connected to the positive wire of battery. One positive wire of buzzer is connected to the collector, Other blade is connected to the Base and other wire of negative buzzer is connected to the LED positive, Then the wire of LED negative and wire of battery negative is connected to the ON/OFF switch.

* WORKING OF THE PROJECT:

When we will drop the droplets of water between two blades ,the circuit will close and it will trigger the alarm as we know that battery converts chemical energy to electrical energy and the use of NPN transistor in this project is because of they are low operating voltages for greater safety and lowest cost and the transistor which is used in this project is BC547.

* OBJECTIVES:

5.1To Conserve Water: there is a lot of water that you can save by using a rain sensor. By automatically turning off your lawn irrigation system every time it rains, the conserved water can be used in other essential purposes such as fighting fire.

5.2. To Prevent Disease Damage and Nutrient Loss: Over-watering prevent the roots of your plants from reaching deep into the ground making your plants vulnerable to disease. Over-watering is also one of the major cause of nutrient loss in plants as excessive watering washes away the nutrients of the soil leaving your plants weak and unhealthy.

5.3 To Save Money on Fertilizer: A rain sensor prevents you from overwatering your plants and lawn. When a plant is overwatered, the nutrients from the turf wash away into the drainage system. You have to compensate by adding more fertilizers to your lawn and plants. This means spending more money on fertilizers. With a rain sensor that effectively prevents your lawn irrigation system from overwatering your lawn and plants, your garden turf will remain to be an ideal environment for your plants in accordance with the fertilizer that you are using.

5.4. To Increase the Life-span of your Irrigation System: Using a rain sensor prevents unnecessary wear and tear of your lawn irrigation system since it minimizes the amount of time that your lawn irrigation is in operation. This is especially useful during the rainy season where rain unpredictably come and go.

5.5To Prevent Groundwater and Waterways Pollution: A lawn irrigation system equipped with a rain sensor minimizes wasteful runoff such as pesticides, motor oil, fertilizer, pet waste and sediments from reaching your waterways. It also minimizes garden pollutants such as herbicides and fertilizers from getting into your groundwater system.

* DIFFICULTY: Due to the rain detector we faced issue like, problem in circuit, Many droplets of water can lead to problem in circuit so that’s why I had to make new one, So to avoid problem in project i.e circuit we should drop small amount of droplets so that there will be no problem.
* CONCLUSION:

Generally there was no question that water is very essential to our life. We can summarize that, after the end of the project, it will give enormous advantages for home, commercial and industrial appliances

* APPLICATION:

1. In the irrigation, it will detect the rain and immediately alert the farmer.
2. In automobiles, when the rain detector detects the rain it will immediately active the wipers and inform the driver.
3. In communications, it will boost the power of the antenna and increase the signal strength to send or receive the signals.
4. In normal house hold, with the help of rain water detector we can automatically save the rain water. (This can be done only when home automation is done and there is proper equipment to save the rain water. In this, rain water detector will detect the rain and helps to switch ON the equipment which will automatically save rain water for different purposes).
5. This can also be used if there is a chemical rain also. This is very common in industrial areas.

* IMPROVISATION OF RAIN DETECTOR:

 The future scope of this project is to increase the application of such circuits which use IC 555 for easy lifestyle.

 These rain sensing circuits can be used for many future purposes like in rainwater harvesting etc.

 We can similarly make this project using Arduino .It will help us in addition of the more features to the alarm circuit and everything will get automated.

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