Rain Detector and Alarming System

Short description

The main aim of our project is to build a system which detects rain and gives alerts depending on rainwater level. This helps in giving localised flood alerts. The rain sensor used in the project detects rain. We use a buzzer and a led to give a rain alert. Then we collect rainwater in a container to measure the rainwater level using a Ultrasonic sensor. Using this setup we can find the rainfall per square area. We use this data to give alerts (using buzzer and led) if the rainwater level becomes excess.

Component list

1.Ultrasonic sensor
2.Rain sensor
3.Solenoid valve(normally closed)
4.Arduino uno
5.Relay module(5v single channel)
6.Jumper wires
7.Diode- IN 4007

8.Led
9.9v battery
10.Buzzer
11.Breadboard

Long Description

The main component of our project is two sensors - Rain sensor and Ultrasonic sensor. Rain. Using the rain sensor we can detect rain and use a buzzer to alert the rain. Using Ultrasonic sensor we can measure distances. We use it to find the height of rainwater collected in a container. Doing some calculations in this height we can measure the rain per square area. Further we use these measurements to give alert in excess rain conditions.

We need to protect the ultrasonic sensor from water ,for that we have to maintain a safety distance of 5cm from the water level. If water level increases beyond this we have to drain out water. For that we use a solenoid valve and a

single channel relay module to control it. Solenoid valve is connected to a 12V source through a relay. Using the relay we can open and close the valve whenever required. For the solenoid valve to work properly a small pressure needs to be applied. For that a residual amount of water level is maintained in the container.

The microcontroller used in our project is Arduino uno. The code for the project is written in the Arduino IDE and uploaded to the Arduino board. Once the code is uploaded, sensors work continuously to check conditions, and our system acts according to the code.