Rain Alarm Project

Water is basic need in every one's life. Saving 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 and save the rain water. As a result, we can increase the water 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.

Rain Alarm Project Block Diagram:

Rain water sensor is the main component in the circuit. For this rain sensor, no need to go and buy in the market or online. We can do it ourselves just by taking the piece of Bakelite or mica board and aluminum wire. Bakelite or mica board should be made completely flat and aluminum wire should be pasted on the flat board as shown in the figure below of rain water sensor. Care should be taken that there should be no spaces between the wire and board. When the rain water sensor is completed, it should get connected to the circuit and voltage should be passed through the wires.

Rain water sensor diagram is shown below:

If there is no rain, the resistance between the wires will be very high and there will be no conduction between the wires in the sensor. If there is rain, the water drops will fall on the rain sensor which will also decrease the resistance between the wires and wires on the sensor board will conduct and trigger the NE555 timer through the transistors circuitry. Once NE555 is triggered, it will make the output pin high and which will make the buzzer to make alarm.

Rain Alarm Project Circuit Diagram:

Rain water detector alarm circuit is shown below.
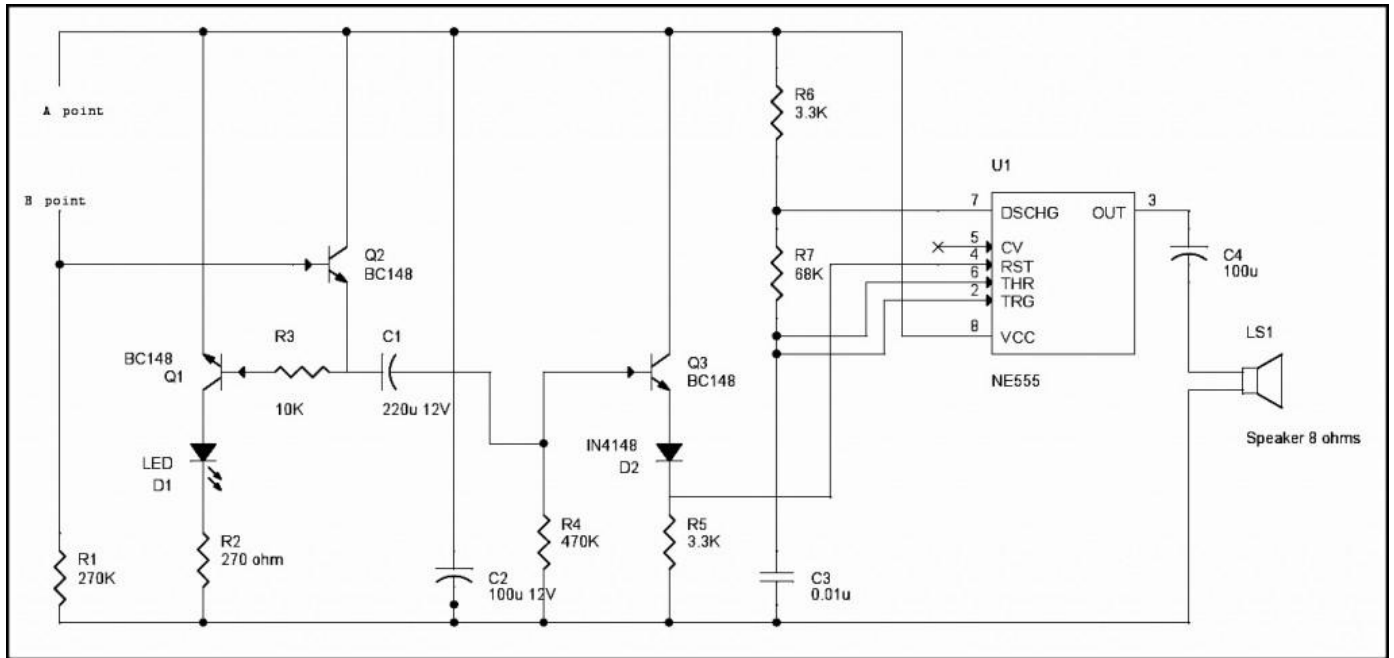
Circuit Explanation:

- The points A and B of the circuit are connected to the points A and B of the rain sensor respectively. When rain is falling, the rain water will fall on the rain sensor which has aluminum wires on mica or Bakelite sheet. Due to the water on sensor, the aluminum wire 'w' develops resistance and gets conducted because of battery connector, the sensor and also to the circuit.

- When the aluminum wires are connected, the transistor Q1will get turned on and make LED to glow and also Q2 will also be turned ON. When the Q2 is saturated, the capacitor C1 will be shorted and make the transistor Q3 to be turned ON. C1 will get charged by the resistor R4. The reset pin of 555timer which is connected to the emitter of Q3 will be made positive when Q3 reaches to the saturation mode.

- The 555 timer is configured in astable mode. When the reset pin of the 555 timer is made positive because of saturation mode of Q3, it will generate the pulse at the pin 3 and make speaker to ring alarm. Capacitor is connected in between the pin 3 of 555 timer and speaker because to block the DC signal and allow only the variations in the signal which make the speaker to make sound. The diode D2 will not allow any reverse current from the timer.

- Because of the resistor R4 and capacitor C1, Q3 will get in cut-off after sometime and make the reset pin of 555timer in negative and speaker will stops making sound. The time for 555timer to make speaker sound depends on the values of C1 and R4.

- When there is no rain, the aluminum wire of the sensor will not have any resistance or conduction cannot trigger the circuit.

Note:

- Rain senor should be kept in the open place at 30 to 40 degrees from the ground. As a result, rain water will not present on the sensor for long time.
- This circuit will automatically switch of the alarm after sometime and LED will glow continuously until the rain stops.

Applications of Rain Alarm Project:

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 to 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 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.

Source: http://www.electronicshub.org/rain-alarm-project/