

# [Evaluation of the flood detection device](https://assignbuster.com/evaluation-of-the-flood-detection-device/)

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During the testing of device, the researchers encountered a conflict with the shorting of the terminals and sooner determined a solution using an improvised switch. The researchers then concluded that the device was effective, can withstand certain weather for a long period of time, and the materials can be obtain by a number of residents. CHAPTER I INTRODUCTION Background of the Study Flood Is one of the natural disasters and often due to the unawareness of the residents within the area. Commonly flooded areas are mostly found in places near seas and rivers, others caused by clogged drainages.

A local news article states that " Backlog City - Flash Flood, spawned by heavy rainfall since Friday, has affected overall municipalities in the southern parts of Negroes Occidental, according to the Provincial Social Welfare and Development Office. " (www. Lamentations. Com, 2012) Apparently, flood detectors are not often being presented by the government In the province. Since some of the flood detectors that being introduced are expensive, the residents in the province cannot afford the said device.

So, the researchers with the goal to make people aware of the flood will be constructing and testing a flood detection device which will provide the availability of materials within the residents' proficiency in terms of financial expense. Objectives General Objective Specific Objectives This study specifically aims for the following: a. ) To determine the availability of materials of the flood detector. B. ) To determine the durability of the flood detector. C. ) To determine the effectiveness of the flood detector.

Significance of the Study This study will contribute to the following sectors: Residents in flood-prone areas: They can benefit from this study for they will be conscious if the flood reaches their areas and for them to evacuate immediately. Philippine Disaster Management System: They can benefit from this study for they ill disseminate their knowledge to the people and they can help introduce the flood detector. Community: They will use a flood detection device that is practical. Researchers: As a reference for the future similar studies for them to change some of the variables.

Scope and Limitation of the Study Scope of the Study The study was conducted at Amontillado's residence and Negroes Occidental High School, Backlog City on July 2013 - August 2013. Limitation of the Study Due to the weather condition and financial problems, the researchers take 2 months and 17 days to construct and test the device. Definition of Terms For better knowledge about this study the following words are listed and defined below: a. ) Electricity Conceptually: -Is a basic form of energy that is a property of certain fundamental particles of matter and consists of mutually attractive positively and negatively charged particle.

Operationally: -In this study, it is the flow of current from 220 volts AC to 12 volts DC within the circuit of the flood detector. B. ) Direct Current (DC) -An electric current of constant magnitude flowing in one direction only. -In this study, it is the electric current produce by the power supply. C. ) Power Supply Is a device use to convert AC to DC. It consists of a transformer and the circuit provided in the power supply. Operationally: -In this study, it is a device that converts the 220 volts AC to 12 volts DC. D. Alternating Current - Alternating current (AC) electricity is the type of electricity commonly used in homes and businesses throughout the world. AC electricity is created by an AC electric -In this study, it is the current that holds a 220 volts AC or to be exact, it is the source of electric power which use in our appliances. E. ) Alarm System -A system which gives a signal warning of danger In this study, it is the system that is consists of bell and buzzer, which is connected in 220 volts AC, that gives a warning to the residents with in its range.

Conceptual Framework Independent Variable Dependent Variables Figure 1 . A schematic diagram showing the relationships between independent variable and dependent variables. CHAPTER II REVIEW OF RELATED LITERATURE Conceptual Literature Electricity Electricity is the potential energy associated with the forces between charged particles. What most people think of electricity is in fact electric current. Electricity squires a complete path before the charged particles, usually electrons, can move. In the case of lightning, the electrons flow from the cloud to the ground, where they are met by a stream of positively charge ions. Schemata, unknown date) Direct Current (DC) Power Supply A DC power supply has two wires--one with a negative charge and the other with a positive charge. A device called a rectifier is used to turn AC into DC. The central component of a rectifier is the diode. Diodes are one-way electric valves. When the electricity in the circuit turns negative, a diode lets it flow down the negative wire. When the electricity cycles back to positive, that diode closes automatically, and another diode lets the positive current flow down the positive wire.

There are several different types of rectifiers, but they all use diodes in essentially the same way to There are many benefits to using a commercial alarm security system. After all, you can ensure that the security system was professionally set up with state of the art security devices and that any trigger of the alarm will alert the police and emergency services. However, monthly payment plans might limit the amount of home defense you want in order to sleep well at night. One remedy for this is to combine a customized wireless security system with an existing wired security alarm system.

It can be done rather quickly and doesn't have to cost an arm and a leg. (Kessler, unknown date) Research Literature MANILA- Scientist at the University of the Philippines (UP) - Dilemma is pitching in on efforts to improve the country landslide and flood-warning systems. Doctor Sandra Greenroom-Octane, a respected ego-hazards expert, has clinched funding from the Department of Science and Technology for a 3-year project that seeks to create cheap but effective gadgets for flood and landslide monitoring. She is currently a professor at the National Institute for Geological Sciences (NIGH).

Octane's team includes students from the various fields like electrical engineering, civil engineering, and geology. The group studies how rains affect small mounds of dirt placed in containers in an effort to determine the movement of soil before it erodes. The experiment also tests the effectiveness of a sensor that costs no more than P 5, 000, inexpensive compared to other landslide monitoring equipment that cost over P 3 million. Get Flood-warnings by Text While Octane's landslide warning system is still in the experimental stage, another roof of scientists has already developed a low-cost and effective flood-warning device.

The UP College of Science, with the help of scientists like Doctor Carols Primp " CAP" David of NIGH, has developed a contraption that sends flood warnings via cellophane-like device. The device's main component is a tipping bucket that collects rain water and measures exactly how fast or slow rain falls through a sensor. The tipping bucket is hooked up to a monitor that is also hooked to a GSM modem. The GSM modem acts like a cellular phone that can send and receive text messages and calls. At any time, people can send text or prompt " missed calls" to the modem to get information on rainfall data.

According to Earl Mendoza, an electrical engineer assigned to the project, that they collate those sensors to a controller. The controller extracts data from all the sensors. Then the controller collates those into one message. Once it receive a query by or missed calls, it can text via short message services. The rain gauge can be set to a specific warning level- when rain falls extremely fast and hard- that triggers the modem to send flood warnings to all cellophane numbers stored in its memory. Manitowoc, T. J. ABS-CB News) Model-Based Monitoring for Early Warning Flood Detection According to Bash et al, predictive environmental sensor networks provide complex engineering and systems challenges. Those systems must withstand the event of interest, remain functional over long time periods when no events occur, cover large geographical regions of interest to the event, and support the variety of sensor types needed to detect the phenomenon. Prediction of the phenomenon on the network complicates the system further, requiring additional computation on the sensor networks.

In addition, Bash et al explores the application of river flood prediction using their architecture, describing their work on a centralized form of the prediction model, network implementation, component testing and infrastructure development in Honduras, deployment on a river in Massachusetts, and results of the field experiments. Their system uses only a small number of nodes to cover basins of 1, 000 - 10, 000 square kilometers using a unique heterogeneous communication structure to provide real-time sensed data, incorporating self-monitoring for failure, and adapting measurement schedules to capture events of interest.

Bash et al, 2008) CHAPTER Ill METHODOLOGY Research Design The study uses a descriptive research which allows the researchers to develop a Flood Detector and test it in terms of performance on the field, durability and effectiveness. Apparently, the researchers studied basic electronics that gives them additional knowledge in constructing the Flood Detector.

Materials and Equipment The researchers has use porcelain receptacle, 2 PVC (Polyvinyl chloride) pipe, wooden box, transformer, four rectifier diodes (MINION), 6 volts 5 amperes relay, three #22 solid wire with the length of 16 meters, three #22 stranded wire with the length f 1 meter, #16 flat cable wire with the length of 5 meters, six 1 kilo ohm 1/8 watts resistor, five green light-emitting diodes (LED), one electrolytic capacitor 1000 micro farad 16 volts, 8 T-Joints, range selector switch, bulb, buzzer, 2 elbows, six bolts and nuts, mini drill, soldering iron, soldering lead, multi- tester, screwdrivers, pliers, electrical tape, wire stripped, male plug, and ferric chloride. RESEARCH DIAGRAM AND VISUAL Figure 2. B. A sample sketch of the actual device. Flow Chart GATHER ALL MATERIALS NEEDED POWER SUPPLY CIRCUIT DETECTION CIRCUIT ALARM SYSTEM Procedure

The followings are the procedures on how to develop and test the flood detector. First, gather all materials needed. Then, after collecting all the materials proceed to the power supply circuit. For the Power Supply Circuit, prepare and gather the following materials: one meter flat cable wire (#16), transformer, four rectifier diodes (MINION), electrolytic capacitor (1000 micro farad 16 volts), soldering iron, soldering lead, male plug and wire stripped. After gathering all materials, follow the following instructions. Strip the both end of the flat cable wire with a wire stripped approximately 1 1/2 inches and connect both the other end of the wire to the male plug as shown in Figure 2. . Connect the flat cable wire to the terminals of the primary winding of the transformer using a soldering iron and soldering lead as shown in Figure 2. 2. From the secondary winding, connect the both terminals of the secondary winding to the four rectifier diodes according to their position based on Figure 2. 3. Connect the electrolytic capacitor to the terminals from the rectifier diodes according to its polarity as shown in Figure 2. 4. Then, connect the resistor parallel to he electrolytic capacitor as shown in Figure 2. 5. There will be two terminals left from the circuit as shown in Figure 2. 6 which will produce a 12 volts DC supply.

Next, prepare the following materials for the Detection Circuit: five 1 kilo ohm 1/8 watts resistor, five green LED, PVC pipe, and T-Joint. The following are the procedures for Detection Circuit. From the positive terminal of the power supply, connect a 5 series connection of resistor and LED 12 volts parallel to each other as shown in Figure 2. 7. Lead the other ends of the series connections to the 5 levels of the PVC pipe according to their specific level, shown in Figure 2. 8. Connect the negative terminal (12 volts) to the PVC pipe paired with each 5 ends of the series connection of resistor and LED based on the wiring diagram in Figure 2. 9.

Afterward, gather the following materials for the Alarm System: 12 volts 3 amperes relay, range selector switch, buzzer, bulb, porcelain receptacle, #22 stranded and solid wire, #16 flat cable wire, and pliers. Proceed to the procedures of the Alarm System. Connect from the positive terminal (12 volts) to the first terminal in the 12 volts of the relay as shown in Figure 3 ND connect the other terminal in the 12 volts to the common terminal of the range selector switch as shown in Figure 3. 1 . Connect the other terminal to the PVC pipe to the pairs in each specific water level as shown in Figure 3. 2. Then, connect from main line one to the flat cable connected to the first terminal of the 220 volts in the relay as shown in Figure 3. 3.

After that, connect the second terminal in the 220 volts of the relay to the buzzer and the receptacle parallel to each other, shown in Figure 3. 4. Finally, connect the remaining terminals of the buzzer and the receptacle to the main nine two as shown in Figure 3. 5. The last procedure is the Testing of the Flood Detector. Gather the following materials: multi-tester and electrical tape. Use the multi-tester to check if the Flood Detector is in good condition. Test each terminal good condition. After checking, cover all the open wires with an electrical tape. Finally, test each level of the Flood Detector using a plastic drum and fill it with a certain level of water for each level in the Flood Detector..