

Flood Alarm System (using Arduino)

Design Thinking Project

Group members: (IoT - A)

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Problem Statement:

- Replenishing groundwater tables across the city after recent rain has become a challenge for several buildings with basements. The high groundwater level is causing flooding of basements and water pumping motors have to be kept running round the clock to prevent inundation.
- Since last month, some commercial buildings in Kodambakkam, Vadapalani, T Nagar and Aminjikarai have been flooded. Metrowater officials, who inspected some of these buildings, said it was due to groundwater table saturation and since basements are at least 10 ft below ground level, it has caused cracks or openings leading to groundwater entering the basement.
- Therefore, we found the need to develop a flood alarm system using arduino technology.

Working:

The circuit of the basement flood alarm is designed to sound off like an alert signal generator when water gets where it doesn't belong. Powered by a compact battery, this alarm will provide an early alert that can help you ward off a damaging flood in your basement or crawl space. The circuit works on the simple, sound, and extensively proven principle of electrical circuits. The flood alarm has an aqua-sensor with two sensor probes. When the sensor probes make contact with water, the water completes the electrical circuit, which allows an alarm to sound.

Client Details:

Useful for houses in:

- Low-lying areas
- Flood-prone areas

We spoke to Mrs. Umasankari (resident of Tansi Nagar) and Mr. Aditya Sivaram (former resident of Tansi Nagar), who have faced the problem of basement flooding previously during the monsoons of Chennai.

Q: Since you live/lived in a flood prone area, can you tell us how useful would it be to have a flood alarm system?

Ahana (19), Hosur:

“Based on personal experience, a flood alarm system would be useful for houses in mid to high-altitude regions that are prone to excessive rain. Frequent showers increase the possibility of flooding at houses. An alert system would save the residents a lot of money and effort. Had there been one in our house last year, we wouldn’t have had to repair the vehicle damages caused by the flooding in the garage.”

Umasankari (67), resident of Tansi Nagar:

“A flood alarm system would have helped us when our house’s basement flooded during the monsoon rain. Since we live in a low lying area, we are more prone to flooding every time it rains. An alarm system would have alerted us to clear our basement when it flooded. An affordable flood alarm system is what we need. A mobile notification would also be helpful since going downstairs to hear the alarm would be difficult every time due to my age.”

Aditya (20), former resident of Tansi Nagar:

“It would definitely be helpful! We can evacuate quickly and keep our important and valuable belongings safe. Essentially, we can be prepared for the worst.”

Project Details:

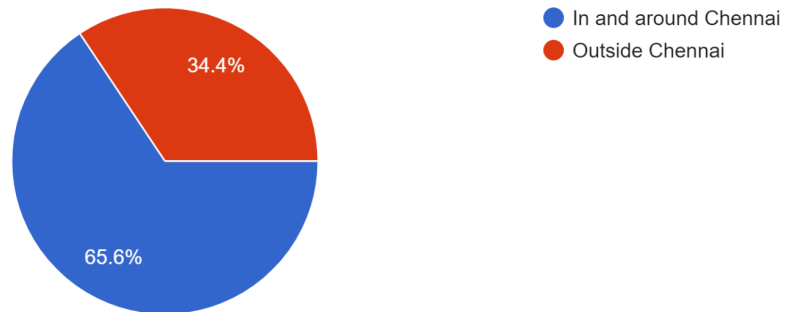
- Existing methods do not use any IoT devices and are built for large scale properties and not for homes.
- We have also made improvements by adding a mobile alert system for home owners.
- Our project is accessible and affordable for everyone.
- The finished system can be wall-mounted at ground height or at a suitable height above ground as per individual need.

Survey Analytics:

To further our research and expand our clientele, we also conducted a public survey. This helped us determine the usefulness and the need for our project.

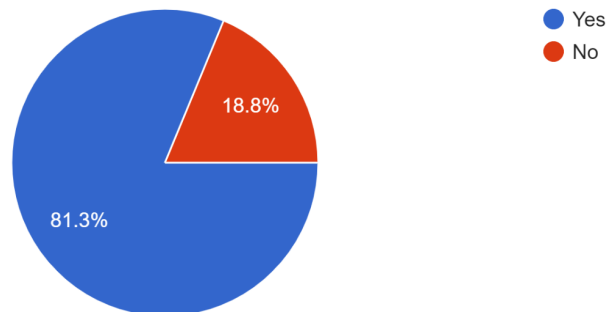
Where do you reside?

32 responses



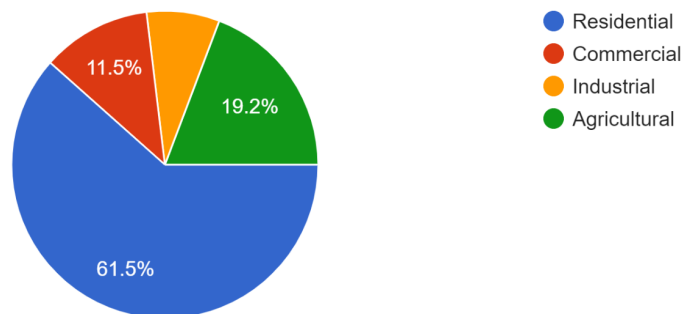
Does your family own a property?

32 responses



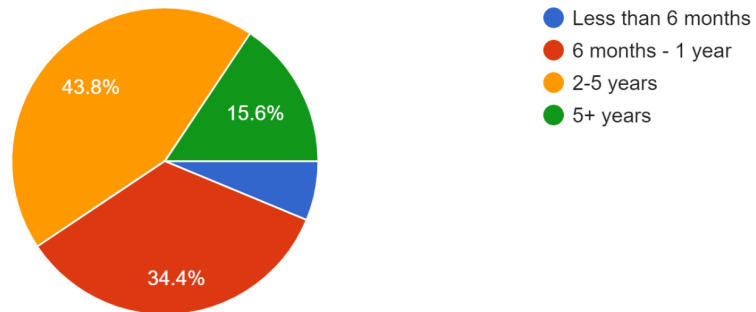
If yes, what is your property type?

26 responses



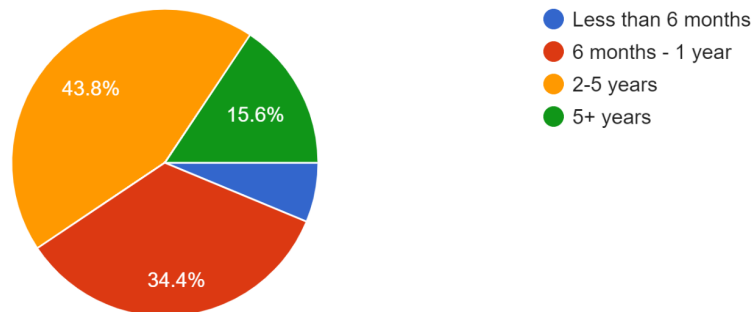
How long have you lived at this address?

32 responses



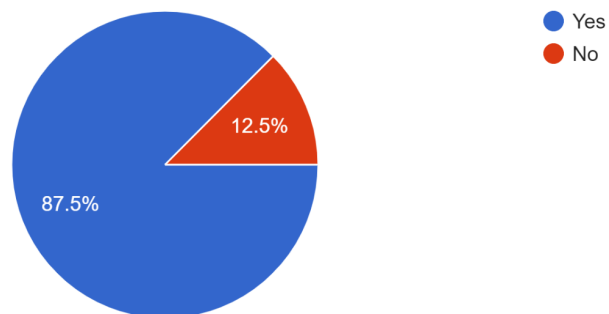
How long have you lived at this address?

32 responses



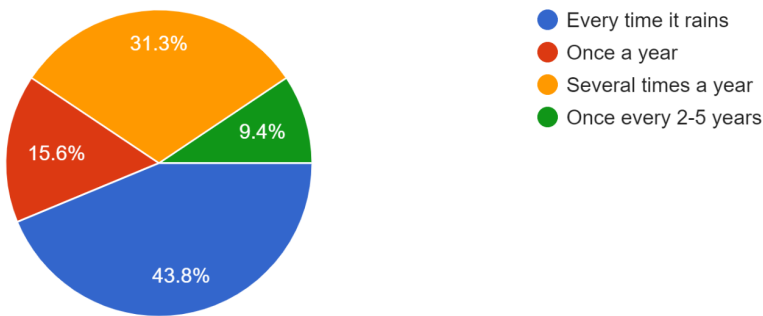
Does rainwater cause flooding or ponding on your property or road frontage?

32 responses



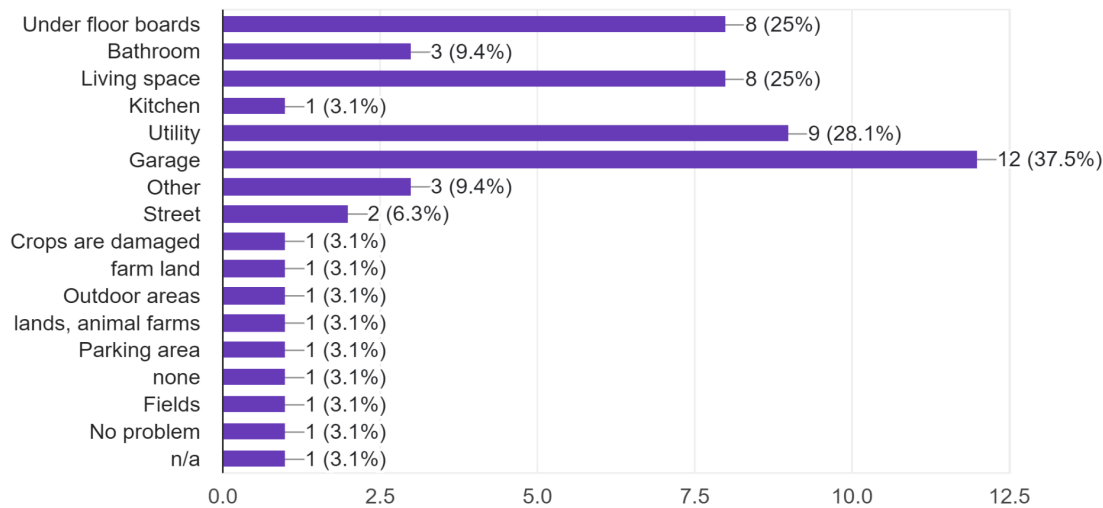
How often does storm water flooding happen?

32 responses



Which areas of your house were flooded?

32 responses



How would you rate your flooding problem?

32 responses

