TEAM:

ELECTRO POWER

Team Members:

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Inspiration:

1. Babies are sensitive to hot water as excessive hot water can scald a baby's soft skin and cause dryness so optimum temperature is necessary. If the temperature is not ideal for baby, it might cause an adverse effect on the skin and also on the health of the baby. It can cause a sudden increase or decrease in the baby's body temperature. So, inspired by the idea of solving this issue, we came up with this idea of making a **Baby Shower Monitoring System**.
2. Sometimes the water storage gets overflowed as we overlook the level of water as sometimes, we forget to turn off the water flow. Water wastage is a huge problem nowadays as the amount of water demand globally is projected to increase **by 55% between 2000 and 2050**. Jay Famiglietti, senior water scientist at Nasa, said that "**the water table is dropping all over the world**. There's not an infinite supply of water." Keeping this issue in mind we all decided to our project which works on saving the water wastage by monitoring the height until which the water container is full.
3. As we planned to save water by telling the user the water level using a series of LED lights, another big issue of electricity wastage arose. As the LEDs where glowing the entire time our system was connected to a power supply, it was consuming a lot of valuable electric power. Even as India hardly produces enough energy to fulfil its domestic demand, a major portion of the electricity produced is being wasted. **Nearly 20 per cent of the electricity is lost due to technical and commercial reasons** (AT&C Losses), according to the Ministry of Power. To solve this issue, we all decided to use a PIR motion sensor. Whenever we sense the motion, only then we glow the LEDs and not otherwise.

Project – Details:

1. Usage of water temperature sensor and buzzer:

- We first decided to use dht11 sensor for measuring the approximate temperature of the air above the water container and then calibrating it to find the approximate water temperature but the calibration didn't seem very easy and we wanted a sensor which was water proof and can tell us the exact temperature of water as we can't take any risks in measuring the temperature. So, we came to a conclusion of using DS18B20 sensor which has an quoted accuracy of +- 0.5 degree Celsius.
- This sensor measures the temperature of water and we sound a buzzer if the temperature is above or below optimal range. So, if the buzzer is sounding, we can tell that the water is not suitable for a baby to take bath.

2. Usage of PIR:

- Our main motive of using PIR sensor is to save electricity considering the depletion of conventional sources of energy we need to save electricity, so the whole system of the LEDs works only if there is some motion detected by PIR sensor. Otherwise LEDs will not glow and thus saving electricity.
- Basically, LED’S glow only when there is motion in front of PIR sensor.

3. Usage of led display:

- We measure the level of water in a tank using the ultrasonic sensor and glow the LEDs based upon the level of water.
- If the tank is fully filled all the LEDs along with green led glows.
- Otherwise, they glow in accordance to the water level sensed by the ultrasonic sensor i.e. if the water level is very low just one LED will glow and if greater than that, 2 LEDs will glow and so on.

4. Usage of Ultrasonic sensor:

- This sensor basically senses the level of the water and the LEDs glow according to the level measured by it.
- The depth measured by the sensor is actually the height of the container that is empty. So, the water level is inversely dependent on the value of distance measured by the ultrasonic sensor.
- We decided to use ultrasonic instead of water level sensor because of its high range compared to water level sensor.

5. Usage of Thingspeak and OneM2M:

- We use thingspeak and OneM2M to see the well sorted report of what all the sensors are measuring and so that it is possible to improve the product in future as we will have the previous readings of the sensor.

Market Competition:

1. https://www.amazon.in/Thermometer-Checking-Temperature-Newborns-Elderly/dp/B01MY98912
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Our Product is better because:

1. They must be used each time manually, along with difficulties in sensor readings (As no separate system).
2. Products are reported to be damaged once put in water due to faulty behavior of temperature sensor once wet, along with calibration issues in them.

Scope in future:

- As we know conventional energy resources are limited and will expire one day liming the energy usage increase the scope of this system in future.
- Also, as there is not much competition to this product in the market and also the cost of making this is much more cheaper as compared to the products that are already in the market, this product has a huge possibility of being a huge success.
- Since we use Thingspeak and OneM2M, we easily can improve or modify our project according to what market wants and thus increasing the scope of this project in future.
- Further, we can use pH Sensor for measuring the correct pH value of water for babies soft skins (Very important in areas with high water solubilities)
- We can also make a water heater cum cooler for the tank, for maintaining the correct temperature as when needed, for hassle-free experience.