Project Design Phase-I
Proposed Solution

Team ID PNT2022TMID06812

Project Name IOT based safety gadget for child safety monitoring and notification

Maximum marks 2 marks

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	**1.** Use Safety Gates to help prevent falls down stairs and to keep children from entering rooms and other areas with possible dangers. Look for safety gates that children cannot dislodge easily, but that adults can open and close without difficulty. For the top of stairs, only use gates that screw to the wall. Use safety gates that meet current safety standards. Replace older safety gates that have "V" shapes that are large enough to entrap a child's head and neck. **2.** Use Door Knob Covers and Door Locks to help prevent children from entering rooms and other areas with possible dangers. Door knob covers and doorlocks can help keep children away from places with hazards. Be sure the door knob cover is sturdy, and allows a door to be opened quickly by an adult in case of emergency.

2.	Idea / Solution description	**1. Temperature Sensor:** It is used to determine the temperature of the child's immediate environment. To achieve average accuracies, the LM35 Sensor does not require any external trimming. The LM35 is temperature-calibrated directly in degrees Celsius (Centigrade). It can be directly connected to an Arduino. The output of the LM35 sensor can either be fed into a comparator circuit and used as a temperature controller, or it can be used as a temperature indicator by using a simple relay. The LM35 gadget runs between 4 and 30 volts and has a temperature range of 55°C to 150°C. It provides a 0.5°C precision guarantee (at 25°C), is low-cost due to wafer-level trimming, and has a current draw of less than 60 mA. **2. Heartbeat and SpO2 Sensor:** Maxim's MAX30100 integrated pulse oximetry and a heart-rate sensor are included in the Heart Rate click. It's an optical sensor that measures the absorbance of pulsating blood through a photodetector after emitting two wavelengths of light from two LEDs – a red and an infrared one. This specific LED colour combination is ideal for reading data with the tip of one's finger. A low-noise analogue signal processing device processes the signal before sending it to the target MCU through the micro BUS I2C interface. Excess motion and temperature variations might also have a negative impact on the measurements. Furthermore, too much pressure can limit capillary

		blood flow, reducing the data's trustworthiness. There's also a programmable INT pin. This device runs on a 3.3V power supply. **3**. **Battery:** The LG INR18650 M26 2600mAh Lithium-Ion Battery is a high-performance battery that provides excellent value for money. It has a capacity of 2600mAh and a rated voltage of 3.7 volts. With a capacity of 2600 mAh, it is a single cell, small, and powerful battery cell. **Features:** High energy density High working voltage for single battery cells Pollution-free with a Long cycle lif No memory effect Capacity, resistance, Voltage, platform time consistency is good. Lightweight, small size
3.	Novelty / Uniqueness	**1.** The main concept is to create a device that may be used to check health and as a safety system. **2.** When the panic button is touched, the system should send an SMS as well as a call alarm to the caregiver, along with a live GPS location. **3.** To create a dependable and secure system that can detect a fall and deliver a warning message using an accelerometer. **4.** It can monitor heart rate, spo2, and temperature, as well as deliver periodic updates. **5.** Another goal is to show the potential for increased productivity, efficiency, and cost savings, as well as to integrate optimised components into an existing design.
4.	Social Impact / Customer Satisfaction	***** Technology allows children to connect with their family, friends, and others in ways that enrich their relationships, especially when using video chat and other real-time interactions. ***** Parents and caregivers are learning to slow down and tone down the applications, games, and other content children use to avoid overloading their senses. This teaches children how to moderate their own use of technology. ***** Rather than trying to eliminate all risk to children when using technology, the goal should be reducing the risk and adapting when problems arise, such as preventing children from accessing devices at specific times of the day.
5.	Business Model (Revenue Model)	❖ The device used for protecting infants from drowning, death, and harm is known as baby safety gadgets. Babies and their parents can now communicate in real-time due to gadgets like

		baby monitors that have been made possible by technological advances. ❖ The Global Baby Safety Gadgets Market size is expected to reach $4.8 billion by 2028, rising at a market growth of 7.7% CAGR during the forecast period. ❖ A few of the technology options, such as video monitors, have made it unnecessary for parents to watch their children in person while also giving parents additional peace of mind when they are away. Some infant safety devices feature implants like GPS tracking chips that have made it easier for new parents to monitor their children's whereabouts. ❖ **COVID-19 Impact Analysis:** The infant safety gadget supply chain has expanded significantly as a result of e-commerce, which enables businesses to sell a wide range of goods and meet customer demands. To stop the spread of coronavirus diseases, customers have also started to switch to online shopping, hesitate, and avoid making in-store purchases. The limitations, however, are preventing it from growing and acting as a barrier to achieving the growth value. Customers are discouraged from buying safety accessories due to the rising costs of safety equipment.
6.	Scalability of the Solution	This wearable device has a superior mode for viewing and locating the children\'s whereabouts with correct latitude and longitude, which is especially useful when using Google maps. This could assist to reduce the number of attacks on children while also making them feel protected and secure. The major goal of this project is to create a device that protects youngsters from risky circumstances while also assisting them in combating them.