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Child Safety Monitoring Gadget Using IoT

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ABSTRACT*:* The goal of this project is mainly to use modern technology to invent a gadget that provides "Smart Child Safety" to protect children, which will be more effective than current methods. Technology is constantly evolving due to this action occurs continue in various place. The IoT device is used to monitor and GPS (Global Positioning System) that allows the children to be monitored all times. It contains various sensors that connect to the device and is designed to capture precise signals such as pressure, temperature and other dangerous signals and alert parents. When the range of temperature, pressure and oxygen exceeds the limits, parents realize that their child is in some trouble. In this event of a power, the wearable serves as a backup. A GPS module is utilized to access their current location whenever they are in dangerous situation. We can able to view the data through the child tracker application. In this approach, the device is trying to provide child safety.

KEYWORDS: Child safety, Security, GPS Tracker, Route prediction, Child Tracker App, Mobile phone, IoT device, monitoring health, IBM Platform.

I. INTRODUCTION

Internet of Things (IoT) plays an important role in our day-to-day life. All over the world, the crime is increasing in number against the children and it is a right time to offer the safety support for the children like going to schools. This paper focus on child tracking safety system for every school children based on Sensors and WSN (Wireless Sensor Network). In our day-to-day life, technology is growing rapidly and it results all the importance and effective solution for their requirement. If the child in outdoor facing any issue they may not be able to handle by them and also it difficult to know the situation of a child by the parents. Lack of bonding between the parents and children. Lack of preventive health care, domestic abuse, violence at home and in school etc. an example of IoT devices like Smart home automation, Smart Industries, Smart Cities and the list goes on.

The major advantage of this device is used to help the parents to know about their location and health conditions easily. Therefore, this paper is explained that how sensors are interconnected with the devices in an simulation pattern. It can send an alert to the parents whenever the child is in critical situation to notify by the data which is gathered by the sensors. This device is used to measure the physical conditions like body temperature, pressure, oxygen along with the location tracker data. If the data given by the sensor range is in abnormal then it alert the parents like their kids are in dangerous situation. This proposed idea will use Child Tracker Application for communication as a medium to ensure about the data transfer and also for the updating.

II. EXISTING SYSTEM

The existing system of the child tracker system is an application which is used to monitor and track the child location. The system should be able to track the location of child in real time. This system can track the physical activities like walking and distance travelling. This information can help parents to monitor their child activities of the location. The system can active till the battery is ON condition.

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III. PROPOSED SOLUTION

After analysis of many child tracking device is introduced for the child safety. It is also similar to wearable one like watch. The proposed ideology is to ensure the communication and also it should reach them easily. Parents are guardian assured his/her children safety monitoring under their control as well. The location of the child is detected and sends a notification about their location and also their health conditions. Here, in this paper we have incorporated with many applications. The followings are:

IBM Watson: IBM Watson (IBM – International Business Machines Corporation) is the one of the platform in which Node-Red is been used to detect the physical conditions like temperature, pressure and oxygen of the child by this way is easy to know about the health by their parents. The Node-Red is linked with the IBM Watson with the help of device id and device type, status, class id and data.

Node-Red: The Node-Red is a simulator platform; it is interconnected with the CloudantDB. The output of the data will be store in the cloud and also the data will be connected with the third party app.

MIT-App Inventor: In MIT app inventor we can design the app for android OS as per the requirement. By using this MIT app inventor we have created a child tracking app for monitoring the child in the entire environment.

IBM Cloudant DB: The IBM Cloudant DB is interfaced with the Node-Red from the IBM Platform. The database is stored data forever in the cloud. Whenever the data is required we can access from it via internet.

Firebase: The firebase is a platform in which we can store the user credentials for the admin purpose. Once the user account is verified by the firebase application then the user will get an access of the child tracker application. This verification process is done over the email.

IV. METHODOLOGY

Requirements:

Software:

- IBM Watson
- Firebase Application
- Node-Red
- MIT App Inventor
- CloudantDB(DB- Database)

Programming Language:

- C Program with json (Node-Red)
- Blocks(MIT App Inventor)

A.DATA FLOW DIAGRAM

The data flow diagram process the proposed design as shown below in fig.1The child tracker application is linked node-red(IBM Platform) which is a simulator platform. The simulator is been working as a backend of the device which is created by the developer and connected with IBM IoT from the Watson platform. It contains the device id, device type, status, class id, data added. The device simulator should be enabling. The device type page will be displayed on the screen. In the payload area we used to write a program form the random value. Since it is a simulator platform to get an random output. Next, save the program and press the sent option then the output is displayed in the browser. The above scenarios are in Watson platform. Further in the connection part of the simulator is done in the Node-Red platform.

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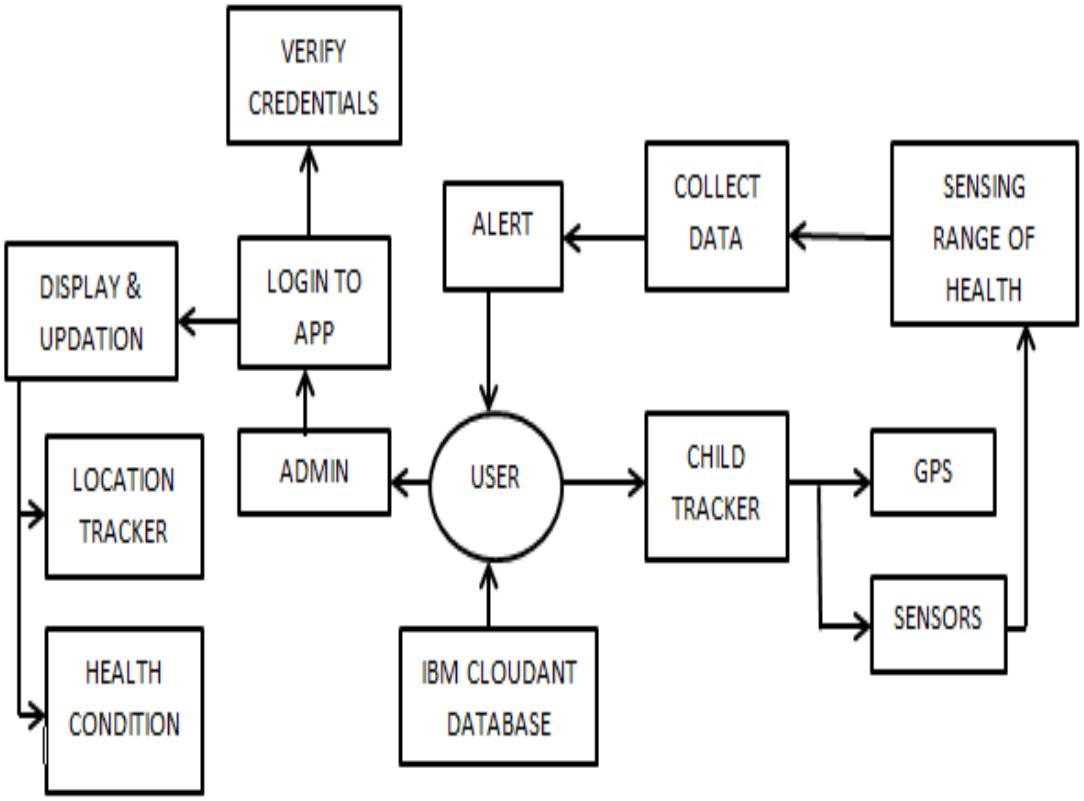

Fig 1. Data flow diagram

Here, the Node-Re is interconnected with the IBM Watson platform. The IBM IoT node is connected with the sensors (functional node) as a physical parameter. They are temperature sensor, pressure sensor, oxygen sensor and they are connected with the payload. The temperature sensor is used to check the physical body temperature of the child by their parents whenever they required. It is similar for the pressure sensor and oxygen sensor too. The three parameters are interfaced as a global functional node which is named as the TempPresOxy. The output of sensor data is stored in the IBM CloudantDB which a database.

Whenever the parents required those data in-case of emergency situation, they can access the data from the cloud via the internet. The stored data is display in the child tracker application which is created by the MIT App Inventor. The Child Tracker application contains first page with the login and signup. For the first time the user need to sign-up by using the email-id second page contains health option and also location. By clicking the Health option we can know about the health condition of the children like temperature, pressure and oxygen. By clicking the location option we can know about the current location of the children. In the home page by swiping the right side we can see the dashboard which contains the few options like Home, Profile, about us, logout. The user profile data and images are store in the Tiny DB. Whenever we open the profile the data will be present in the application.

B. SIMULATION

The simulation diagram of the proposed approach is given in the below fig.2 This image describes about the connection of Temperature, Pressure and Oxygen in Node-Red of IBM Platform and also the data which stored in the Cloudant DB and those resulted data will be display in mobile phone (Child tracker application)

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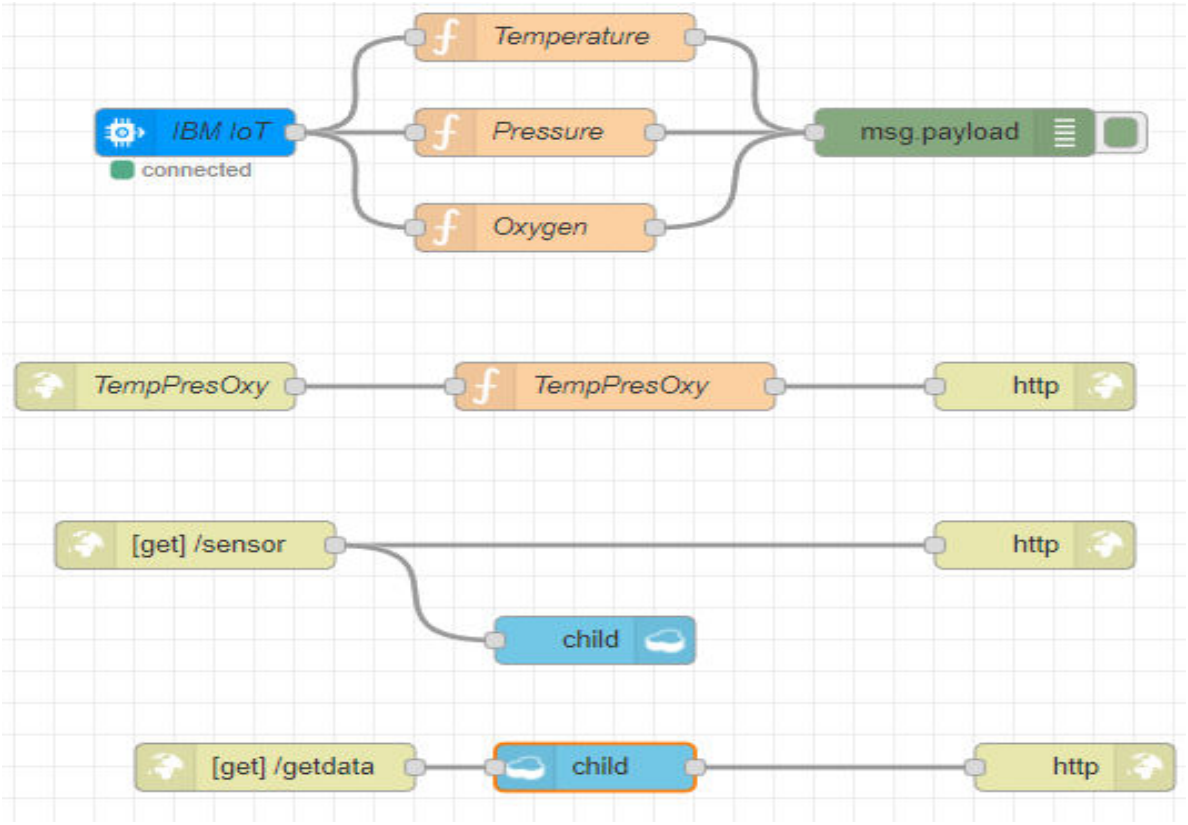

Fig 2.Simulation of sensors

The output of the above program which is displayed in the browser is given below fig.3

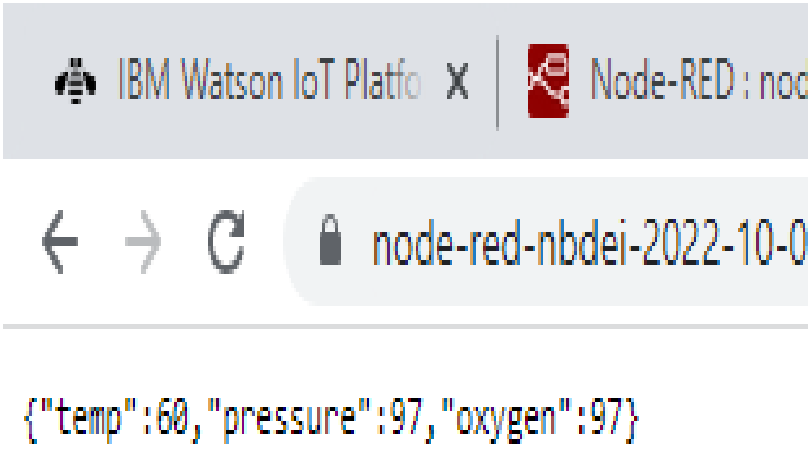

Fig 3. Browser Output

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V. RESULT

This image shows the live output of the physical health condition of the child which is displayed in the child tracker application fig.4

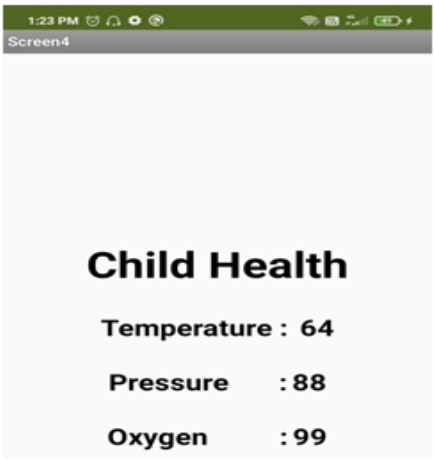

Fig.4 Health condition of the child

Fig.5 Live result of child

The above image shows the live result of child tracking by their parents. Fig. 5

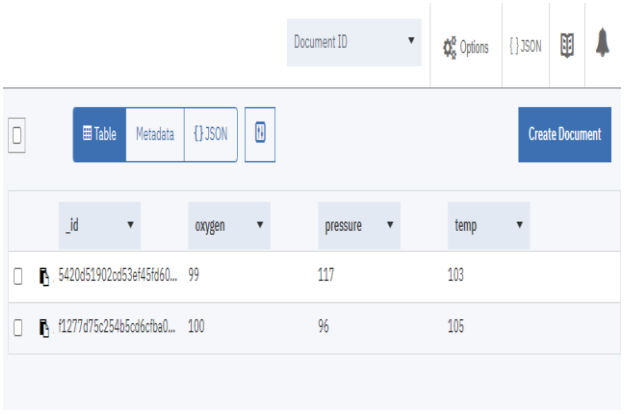

Fig.6 Cloud database

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VI. CONCLUSION

In this project we are going to conclude that the parent, especially if they live in urban areas, have to work day and night to support their families, and as a result, there is the fact that they do not know where their children are going during working hours. However, with the child tracking app, parent can track and monitor their child with just a simple app. Most parents have to go to work, so it is impossible for parents to be with their children all the time. This child tracking system allows parents to track their child's location. In order to avoid the kidnapping cases, the child tracking system is needed. This also helps us better identify changes in the child that may indicate a problem. Monitoring who is involved in children's lives is especially important to protect them from harm and abuse.

The advantages of this child trackers are the parent can track the child current location when they are in outdoor environment. Parent can know the child Physical health condition like temperature, oxygen and pressure. By this child tracker app we can track the child location and also know about the information of the current location. The main advantage of this system is to reduce the child abuse in society. By this project working parents are more beneficial because they can monitor their child at any time. This project will reduces the stress and also anxiety level of the parents. The project would be beneficial because it satisfies the need of the customer. The school monitoring system with the website has the advantages for availability, management and running costs comparing with the previous monitoring system.

VII. FUTURE SCOPE

In future this scope of the project is by adding Camera and Audio Recorder will help the parents to view the child surrounding whenever they are in emergency situation. Also to overcome the disadvantage of this project like network issue by implementing the GSM Technology via this technology parents can get information as SMS.Rather than using a different sensors like pressure and oxygen which can be proposed into a single sensor to reduce the complexity in this device.

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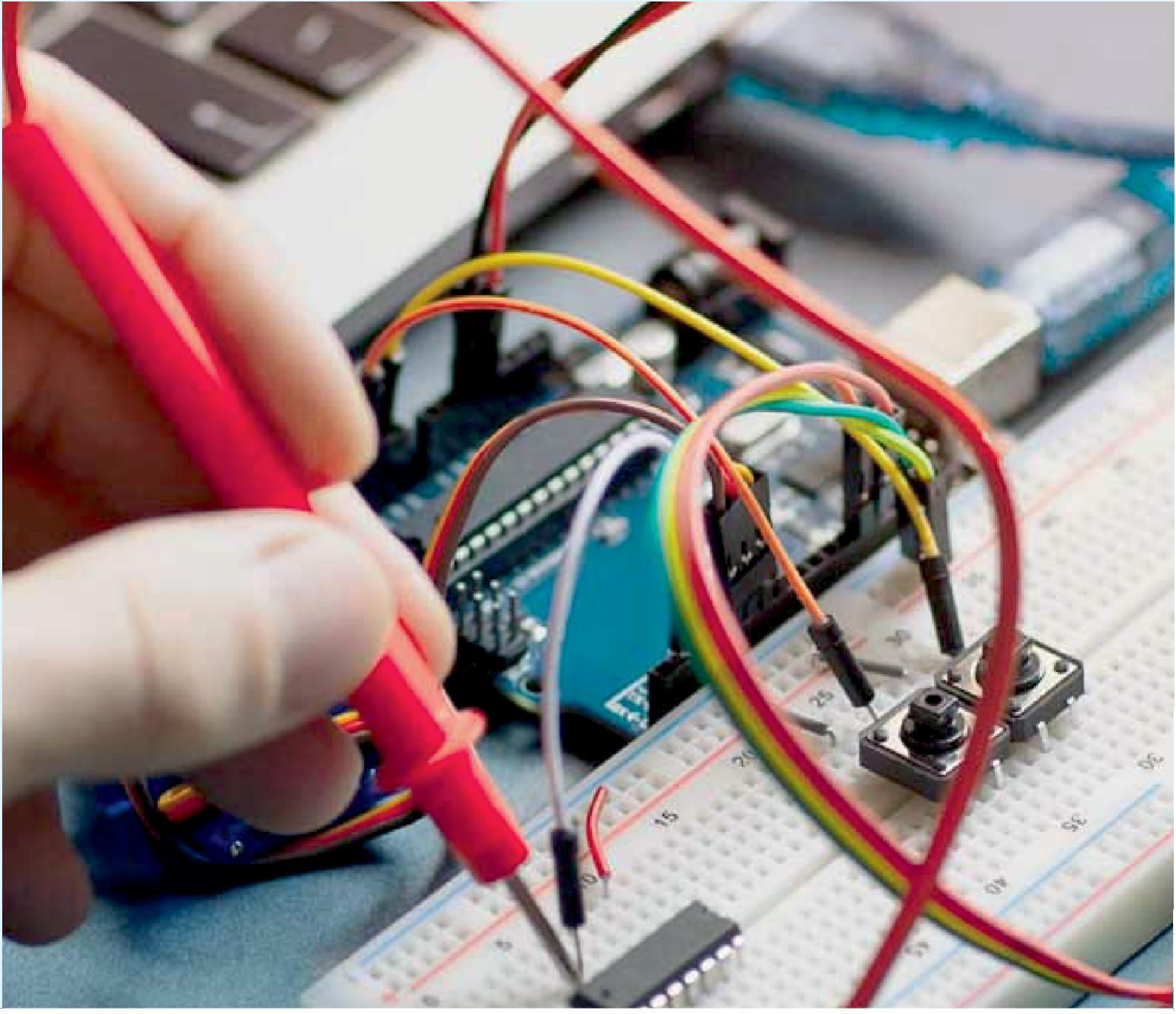

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