**Prerequisites**
**IBM Cloud Services**

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| Date | 27 August 2022 |
| Team ID | PNT2022TMID18337 |
| Project Name | Project - IoT Based Safety Gadget for Child Safety Monitoring and Notification |

**IBM CLOUD:**

IBM Cloud is the cloud for innovative businesses trusted by thousands of international Organizations. It helps us to Grasp how you can impart dependable and uninterrupted security for your cloud environment.

Types: Full Stack Cloud Platform, Hybrid Cloud, Data and AI Capabilities

IBM also builds cloud environments for customers that are futile on the SmartCloud Platform. For example, the attributes of the SmartCloud platform—such as Tivoli management software or IBM Systems Director virtualization—can be integrated individually as part of a non-IBM cloud forum. The SmartCloud platform consists exclusively of IBM hardware, software, services, and practices.

**IBM Watson IoT platform**

IBM Watson IoT Platform is a managed, cloud-hosted service designed to make it simple to derive value from your Internet of Things devices. STMicroelectronics is an IBM Partner and provides development platforms allowing users to develop applications with direct connection to the IBM Watson IoT platform.By using Watson IoT Platform, you can collect connected device data and perform analytics on realtime data. The IBM Watson IoT Platform is a fully managed, Cloud-hosted service that provides device management capabilities as well as data collection and management in a time series format.The Lite service plan provides a free, lightweight development environment to get you started with the connectivity capabilities of Watson IoT Platform.IBM Watson IoT forum is a wholly controlled, cloud-hosted assistance that makes it elemental to acquire value from the Internet of Things (IoT) devices.Register and affix your device, be it a sensor, a gateway, or something else, to the Watson IoT Platform and start transmitting data steadily up to the cloud utilizing the open, lightweight MQTT messaging protocol.You can establish and manage your devices employing your online dashboard or our secure APIs, so that your apps can ingress and use your live and archival data.

**Device management:**

Using the device management service, we can execute device exertion like restarting or refurbishing firmware, acquire device diagnostics and metadata, and carry out a vast device addition and removal.

**Responsive and scalable connectivity:**

It aids the industry standard MQTT protocol to link devices and requisition. MQTT is designed for the adequate exchange of data to and from devices in real-time.

**Secure communication:**

It helps to Securely receive data from and transmit commands to your devices. It is executed using MQTT with TLS to secure all intercommunication between the gadget and IBM cloud services.

**NODE-RED SERVICE**

Node-RED is a programming tool for wiring together hardware devices, APIs and online services in new and interesting ways. It provides a browser-based editor that makes it easy to wire together flows using the wide range of nodes in the palette that can be deployed to its runtime in a single-click. Node-RED is an open-source programming tool, for connecting hardware devices, APIs and online services creatively and easily.

Basic commands one should know to start using Node-Red

- target - Set or view the target URL and port like http://localhost:1880
- login - Log user in to the target of the Node-RED admin API
- list - List all of the installed nodes
- info - Display more information about the module or node
- enable - Enable the specified module or node set
- disable - Disable the specified module or node set
- search - Search for Node-RED modules to install
- install - Install the module from NPM to Node-RED
- remove - Remove the NPM module from Node-RED
- hash-pw - Create a password hash that can be used with the adminAuth and httpNodeAuth settings

Node-RED is a flow-based programming tool for wiring together hardware devices, initially expanded by IBM's Emerging Technology Services team and currently a division of the OpenJS Foundation.

Node-RED consists of Node.js on the grounds of runtime. Within the browser, we can design the application by dragging nodes from the palette into the workspace and can begin to wire them together. With a single click, the software is ranged back to the runtime.

The range of nodes can be effortlessly enlarged by fixing new nodes fabricated by the community and the connections created can be easily shared as JSON files.

**Browser-based flow editing:**

Node-Red facilitates a browser-based flow editor that makes it uncomplicated to wire together. Javascript roles can be created within the editor with the help of a rich text editor. A built-in library permits to save useful function templates or flows for reuse.

**Social development:**

The flows created in Node-Red are stoked using JSON which can be easily imported and inspected for sharing with others. An online flow library grants to share the best flows with the world.

**IBM Cloudant:**

IBM cloudant is a fully managed, distributed directory enhanced for massive workloads. Growing web and mobile apps, IBM cloudant scales throughput and storage, and its API and duplicate protocols are adaptable with apache CouchDB for hybrid or multicloud architecture.

**Serverless web app and API:**

It will produce a serverless web application by having static website content on GitHub pages and executing the application back-end, with the assistance of IBM cloud applications mobile app. It uses IBM cloud functions along with cognitive and data services to construct a serverless back end for a mobile app.

**Find Anomalier in IoT data:**

It sets up IoT devices and musters data in the IBM Watson IoT platform. It will create visualizations and use advanced ML services to examine authentic data and disclose anomalier.

**Open Hybrid Multicloud:**

It displays how to match the API and powerful duplicate protocol of cloudant with Apache clouchDB in a hybrid cloud environment.

**Cloudant document database:**

IBM Cloudant is a fully managed JSON document database that offers independent serverless scaling of throughput capacity and storage.
A fully managed, distributed database optimized for heavy workloads and fast-growing web and mobile apps, IBM Clouda