

**Project Title:** "Cloud-based IoT System for Remote Control and Monitoring of Electronic Devices"

**Team Members:**

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**Abstract:**

In this project, we propose to build a cloud-based IoT system that enables remote control and monitoring of electronic devices, such as lights, fans, water pumps, and other appliances. The system will use sensors and microcontrollers to collect data about the devices and transmit them to a cloud-based database, providing users with valuable data about their devices' usage and energy consumption. Users will be able to control the devices and monitor their status using a web-based interface, which will be designed to be user-friendly and accessible from anywhere. Automation features, such as timers and other triggers, will be available to enable users to automate their devices and save time and effort. The proposed solution will have several benefits, including increased reliability, reduced risk of human error and saving time and effort by enabling remote control of devices.

**Description:**

The problem of managing electronic devices remotely has become increasingly important in recent years. With the growing trend of smart homes and IoT, people are looking for ways to control their devices remotely. However, existing solutions often require complex hardware and software setups, which can be difficult and expensive to implement. Moreover, these solutions may not be reliable, and users may face difficulties in monitoring their devices remotely.

To address this problem, we propose to build a cloud-based IoT system that will enable users to control and monitor their devices remotely. The system will use sensors and microcontrollers to collect data about the devices and transmit them to a cloud-based database. Users will be able to control the devices and monitor their status using a web-based interface. The system will help users save time and effort by enabling remote control of devices and reduce the risk of human error.

The system will use a variety of sensors to collect data about the devices, such as current sensors to monitor the status of the device. By using current sensors, we can avoid false signals and ensure

that the device is actually turned on when the user sees the status on the website. Moreover, the system will use cloud-based storage to store data securely and ensure that users can access the data anytime and anywhere.

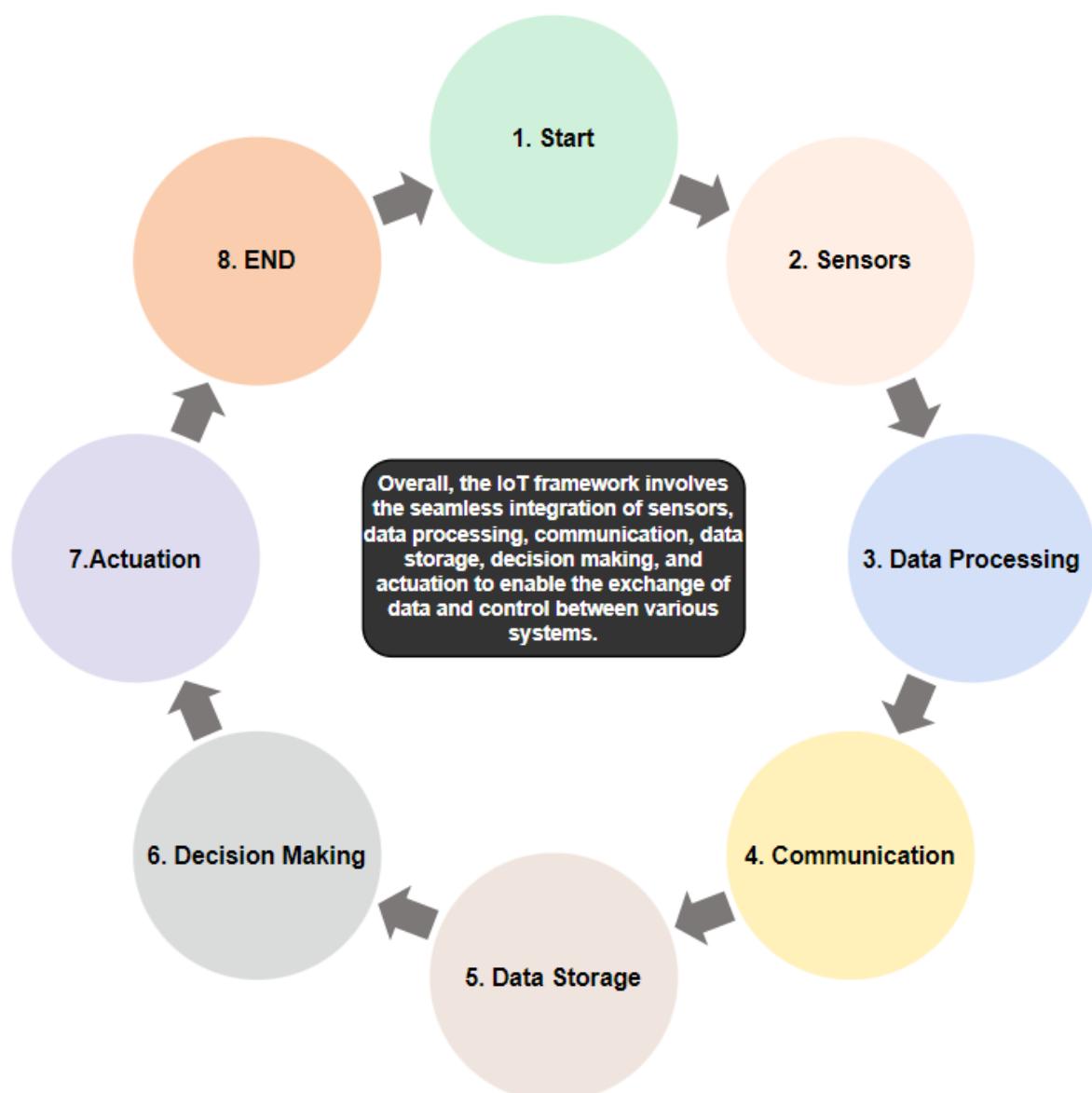
**Proposed Idea/Solution:**

- The proposed solution consists of a cloud-based IoT system that will enable users to control and monitor their devices remotely. The system will consist of the following components:
- IoT devices: We will use microcontrollers such as Arduino or ESP32 to control the devices and collect data from the sensors.
- Sensors: We will use a variety of sensors to collect data about the devices, such as current sensors to monitor the status of the device.
- Cloud-based database: We will use a cloud-based database such as Firebase or AWS to store data securely and ensure that users can access the data anytime and anywhere.
- Web-based interface: We will create a web-based interface that will enable users to control the devices and monitor their status.
- Automation: We will enable users to automate their devices using timers and other triggers. For example, in a farm, users can set a timer to turn on the water pump at specific times.
- The proposed solution will have several benefits. Firstly, it will enable users to control their devices remotely, saving time and effort. Secondly, it will reduce the risk of human error and increase the reliability of the system. Finally, it will provide users with valuable data about their devices, such as usage statistics and energy consumption, which can help them make informed decisions about their usage. According to a recent study, remote control of electronic devices can save up to 20% of the total energy consumption of a household.

**Target Community:**

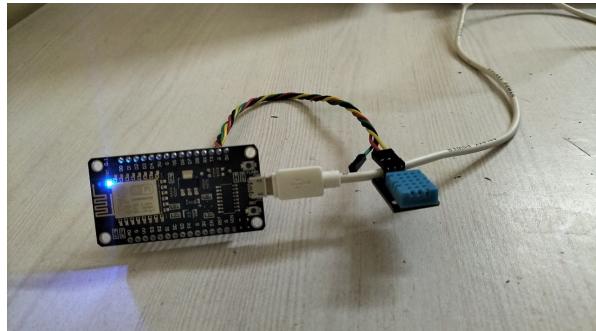
The target community for this solution includes households, farms, and other environments where remote control and monitoring of electronic devices are required. The solution can be used to control a wide range of devices, such as lights, fans, water pumps, and other appliances.

**Process Flow/Block Diagram:**

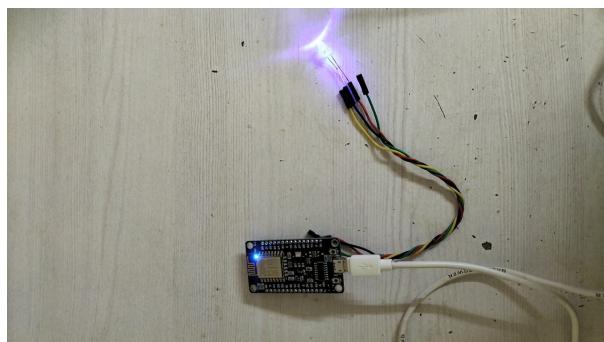


### Initial Results (with Images):

DHT sensor: showing live humidity and temperature values on the website



LED: remotely controlling a led through a website while showing how long it's been on.



### Website:

 **IoT Framework**

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#### WELCOME TO THE IOT LANDING PAGE

IoT Framework is a platform that provides the necessary tools and functionalities for building Internet of Things (IoT) applications. It is designed to simplify the development process of IoT applications by providing a set of pre-built components and features, including device management, data collection, storage, analytics, and visualization.

Easy integration with different devices and protocols   Scalable and flexible architecture   Real-time data processing and analytics   Customizable dashboard and visualization

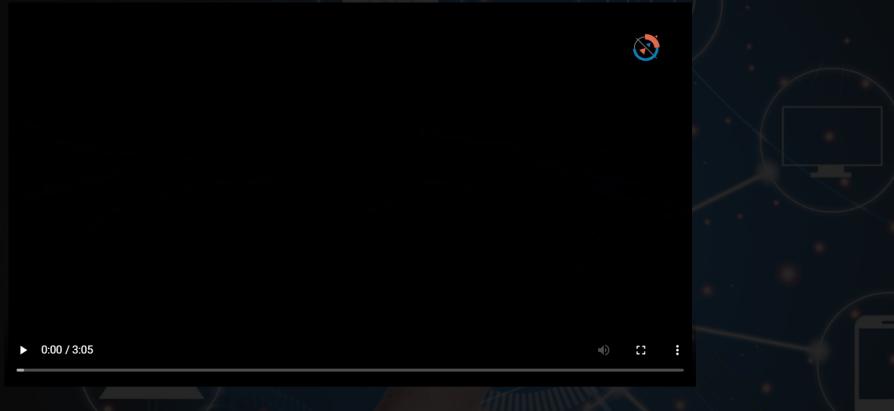
#### OUR VISION

to provide a comprehensive and customizable interface that allows users to monitor and control their IoT devices and systems. The dashboard should provide real-time analytics and insights, allowing users to easily visualize and understand their IoT data. It should also allow for easy integration with different types of IoT devices and systems, regardless of the manufacturer or communication protocol.

The framework should be scalable, secure, and flexible enough to handle large-scale IoT deployments, while also providing support for cloud-based and edge computing architectures. Additionally, it should enable the development of custom applications and services that can leverage the data generated by IoT devices.

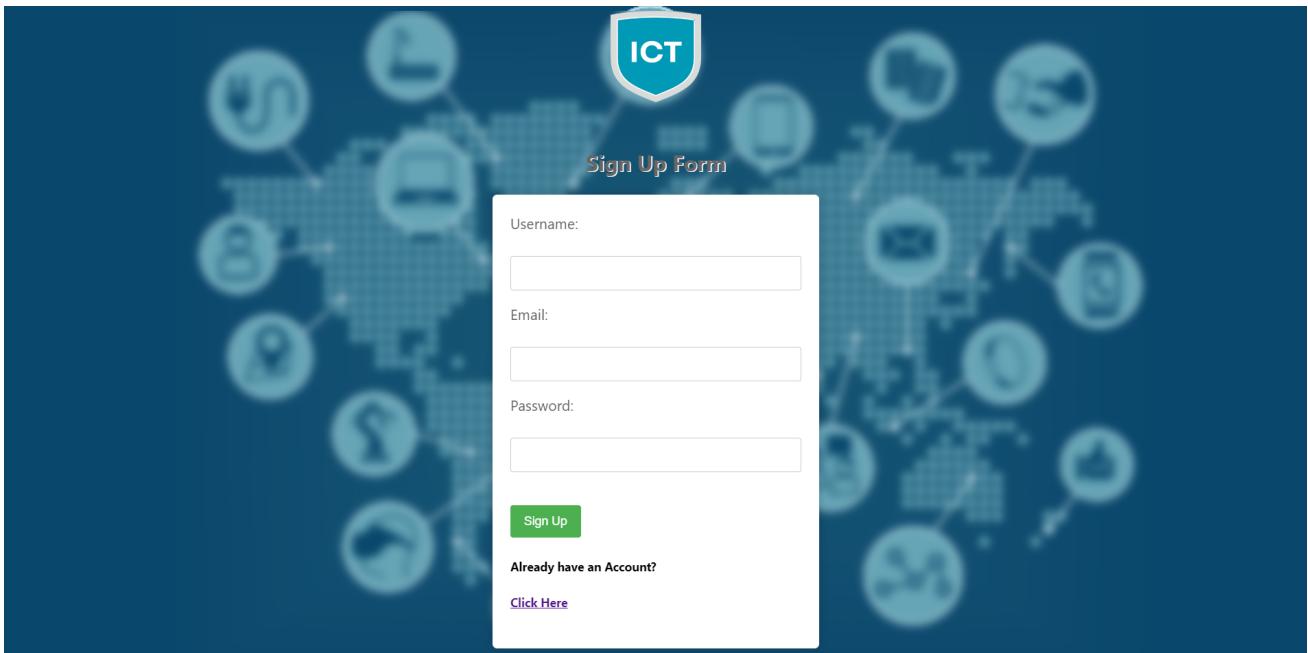
Overall, the vision for an IoT dashboard and framework is to provide a seamless and intuitive user experience, empowering users to make data-driven decisions and optimize their IoT systems for maximum efficiency and performance.

Additionally, it should enable the development of custom applications and services that can leverage the data generated by IoT devices. Overall, the vision for an IoT dashboard and framework is to provide a seamless and intuitive user experience, empowering users to make data-driven decisions and optimize their IoT systems for maximum efficiency and performance.



### HOW IT WORKS..?





**ICT**

**Sign Up Form**

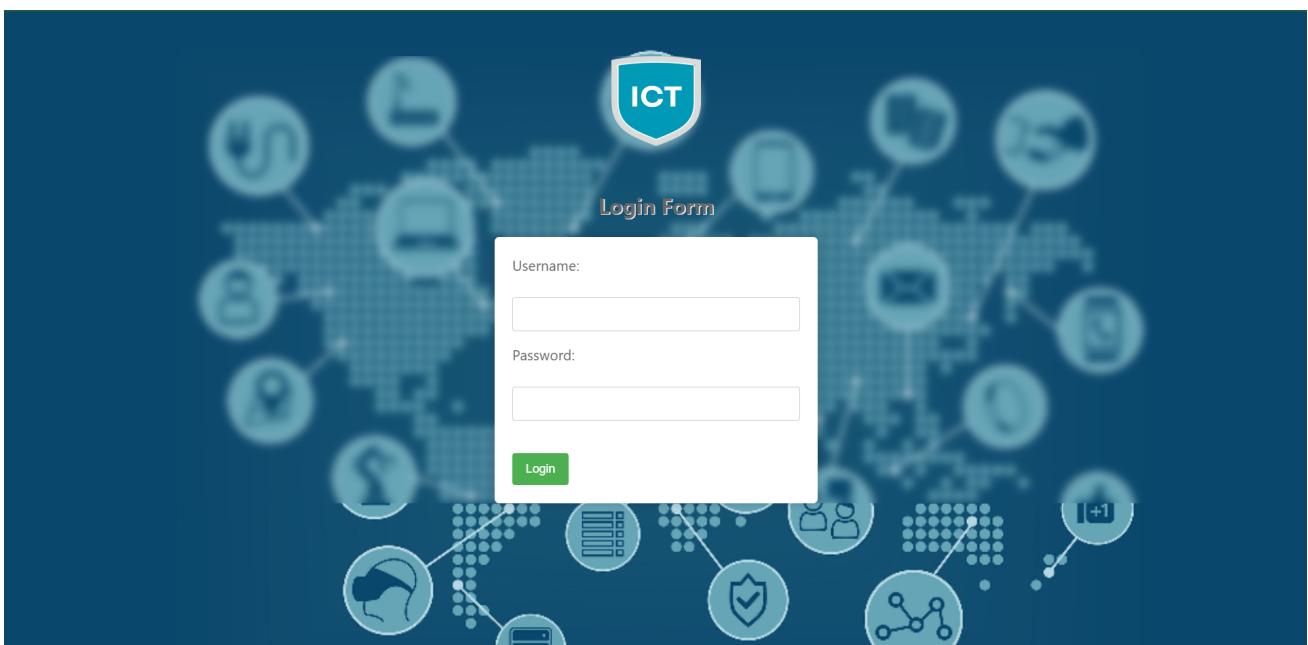
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Email:

Password:

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### ICT IoT Framework

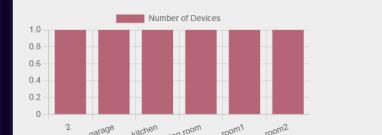
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- Data Visualization
- Analytics & Insights
- User Management
- Performance



Temperature (°C)



Number of Devices

Location	Count
garage	1
kitchen	1
living room	1
room1	1
room2	1



HUMIDITY



TEMPERATURE

ID	Type	Location	User_Id	Status
1	sensor	room1	1	online
2	sensor	room2	1	offline
3	actuator	kitchen	2	online
4	gateway	living room	2	offline
5	sensor	garage	3	malfunctioning
6	sensor	2	3	Inactive

Div 6

Turn On LED

Turn Off LED

Coming Soon

### Device Management

Filter by User ID:  Filter

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ID	Type	Location	User ID	Status	Edit	Delete
1	sensor	room1	1	online	<span style="color: blue;">Edit</span>	<span style="color: blue;">Delete</span>
2	sensor	room2	1	offline	<span style="color: blue;">Edit</span>	<span style="color: blue;">Delete</span>
3	actuator	kitchen	2	online	<span style="color: blue;">Edit</span>	<span style="color: blue;">Delete</span>
4	gateway	living room	2	offline	<span style="color: blue;">Edit</span>	<span style="color: blue;">Delete</span>
5	sensor	garage	3	malfunctioning	<span style="color: blue;">Edit</span>	<span style="color: blue;">Delete</span>
6	sensor	2	3	Inactive	<span style="color: blue;">Edit</span>	<span style="color: blue;">Delete</span>

Type:

Location:

User ID:

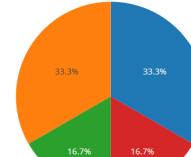
Status:

Add Device

### Device Management

Temperature (°C)

Device status breakdown

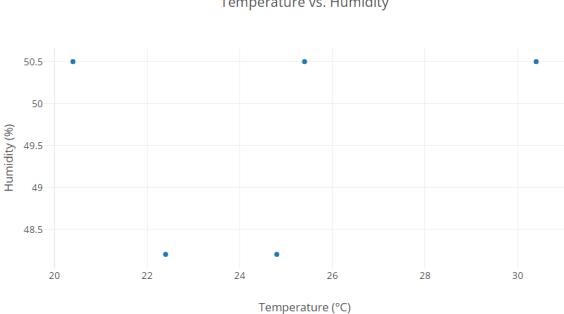


Status	Percentage
offline	33.3%
online	33.3%
inactive	16.7%
malfunctioning	16.7%



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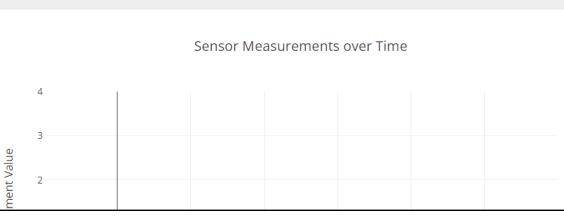
### Temperature vs. Humidity



A scatter plot titled "Temperature vs. Humidity". The x-axis is labeled "Temperature (°C)" and ranges from 20 to 30. The y-axis is labeled "Humidity (%)" and ranges from 48.5 to 50.5. There are five data points plotted:

Temperature (°C)	Humidity (%)
20.5	50.5
22.0	48.8
24.0	49.2
25.5	50.5
30.0	50.5

### Sensor Measurements over Time



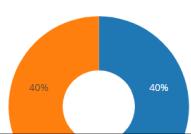
A line chart titled "Sensor Measurements over Time". The y-axis is labeled "Measurement Value" and ranges from -1 to 4. The x-axis is labeled "Time" and ranges from -1 to 6. A single vertical line is drawn at Time = 0 with a value of approximately 3.8.

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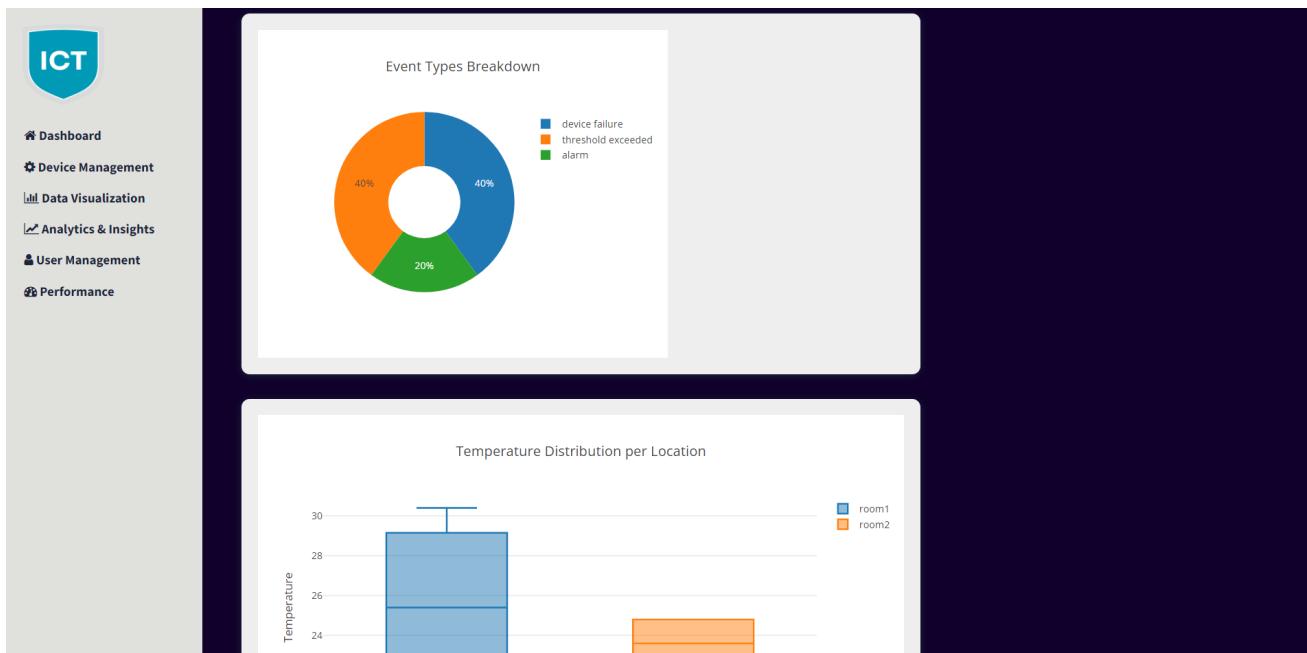
### Event Types Breakdown



A donut chart titled "Event Types Breakdown". It shows the distribution of event types. The legend indicates:

- device failure (Blue)
- threshold exceeded (Orange)
- alarm (Green)

The chart shows two segments: one blue segment (device failure) and one orange segment (threshold exceeded), both labeled 40%.

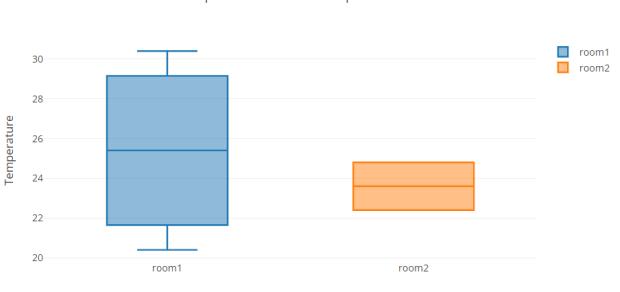


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20%

**Temperature Distribution per Location**



A box plot titled "Temperature Distribution per Location". The y-axis is labeled "Temperature" and ranges from 20 to 30. The x-axis is labeled "Location" and shows two categories: "room1" and "room2". The "room1" box plot has a blue median at approximately 25, a blue box from 22 to 28, and whiskers extending from 21 to 30. The "room2" box plot has an orange median at approximately 24, an orange box from 23 to 25, and whiskers extending from 22 to 26.

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### User Management

User ID	Name	Email	Password	Edit	Delete
1	John Doe	johndoe@example.com	password123	<button>Edit</button>	<button>Delete</button>
2	Jane Smith	janesmith@example.com	password456	<button>Edit</button>	<button>Delete</button>
3	Bob Johnson	bobjohnson@example.com	password789	<button>Edit</button>	<button>Delete</button>
				<button>Add</button>	