

GENERAL CABIN IOT

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OVERVIEW

Developing a web application that **enables users to select moods** and control cabin features such as **temperature, lighting, and sound** using a Raspberry Pi Pico W. This system enhances the cabin experience by allowing users to **customize** their environment based on their **preferences**.

Cabin Mood Control

Customize your cabin environment to match your mood

Temperature
 22.5°C

Humidity
 45%



Relaxing

Calm and peaceful atmosphere



Romantic

Perfect for special moments



Cozy

Warm and comfortable setting



Energizing

Boost your energy levels



Sleep

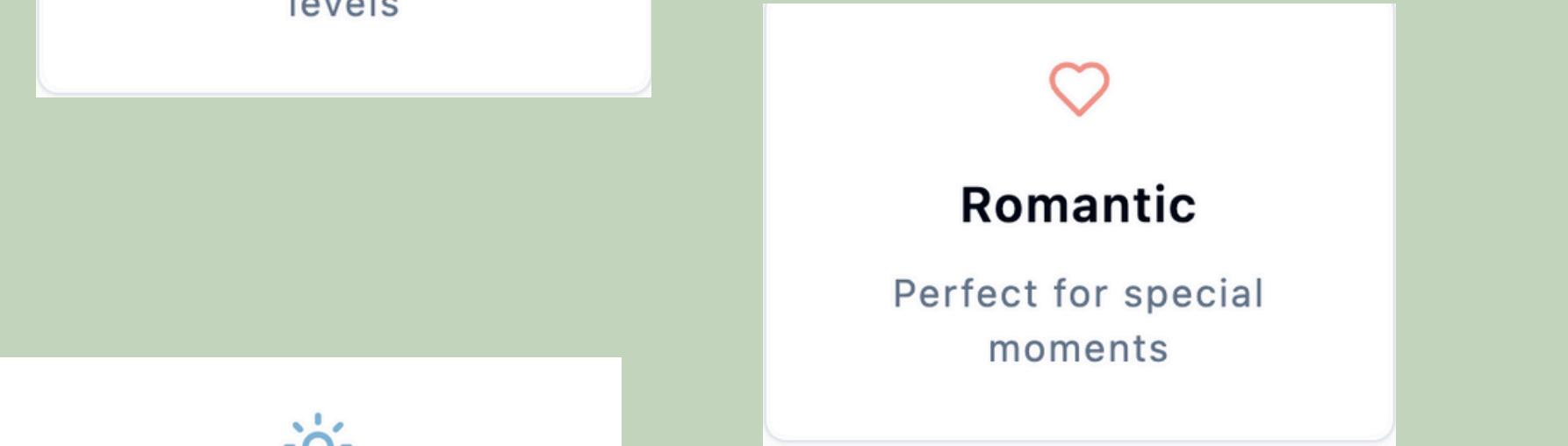
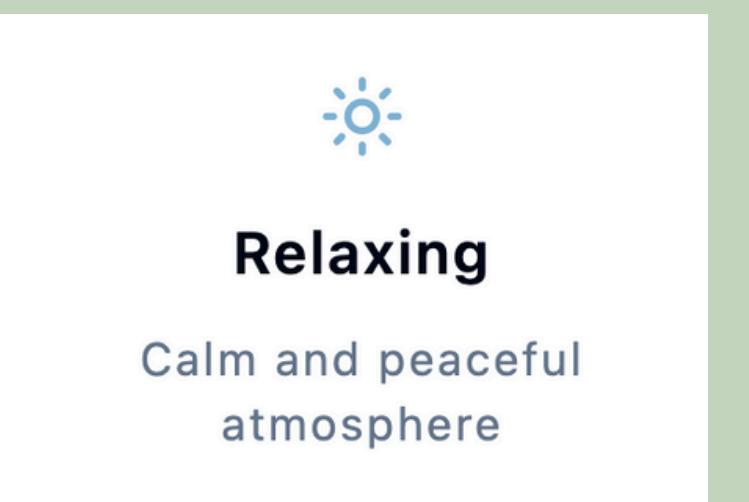
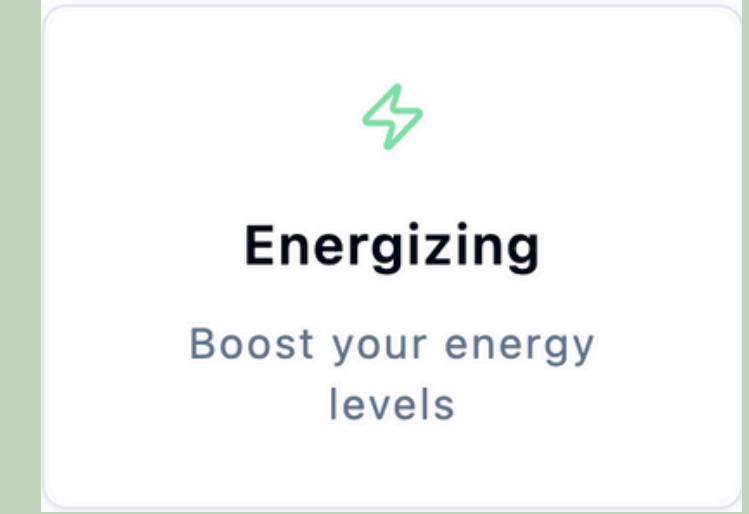
Optimal conditions for rest



Simple and accessible website showing all the necessary information

Key Features

Mood Selection: Users can choose from predefined moods (Relaxing, Romantic, Cozy, Energizing, Sleep Mode), each associated with specific settings for temperature, lighting, and sound.

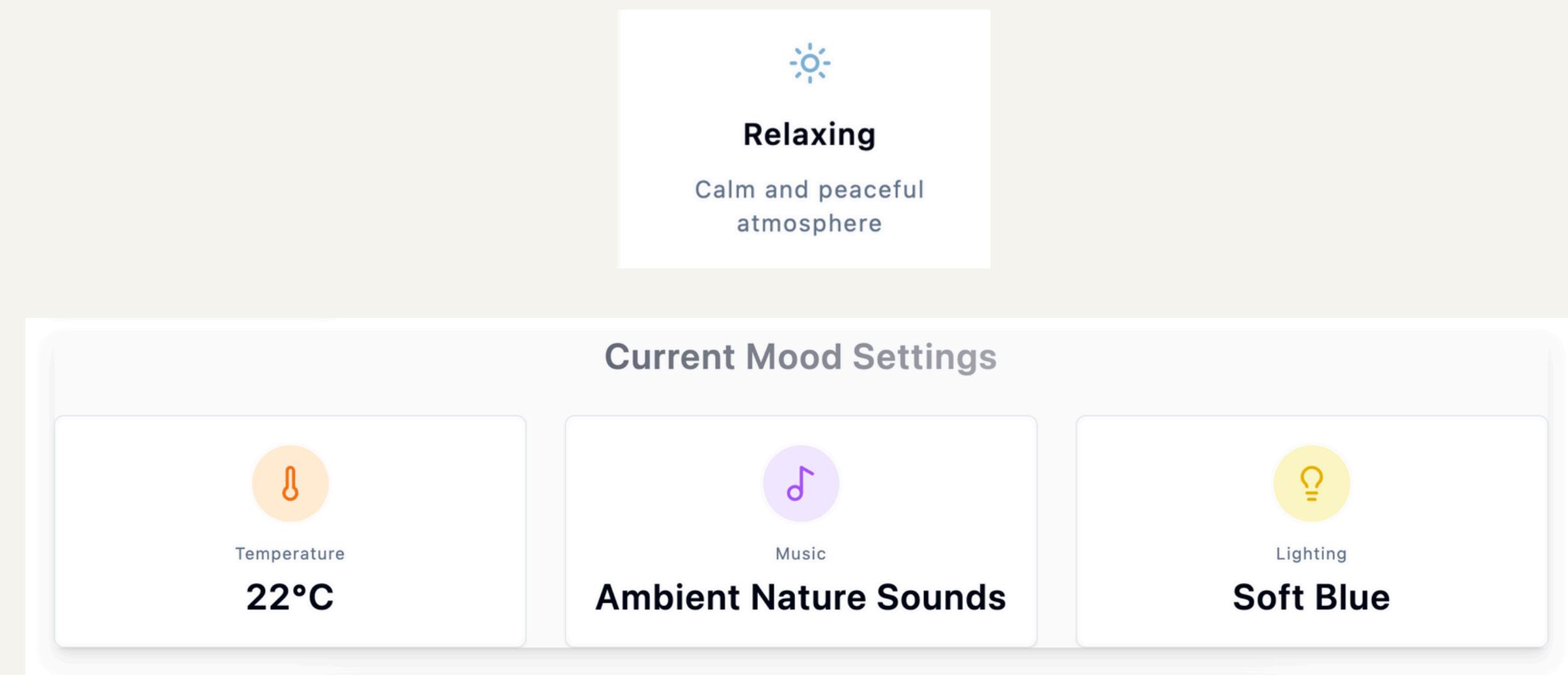


Key Features

Temperature Control: Adjust the cabin's temperature to match the selected mood, ensuring comfort

Lighting Control: Modify brightness and color to create the desired ambiance.

Sound Control: Play ambient sounds or music that complement the chosen mood.



TECHNICAL IMPLEMENTATION

Data handling

- Data is handled by CockroachDB
 - Allows of creation and maintain of separate database shards.
 - Scales reads, writes, and database capacity by simply adding nodes.
 - Multiregion deployment allows for uninterrupted data exchange even when separate regions fail

Sensor and IoT-Device Integration

- Raspberry Pi Pico W
 - Cheap and efficient microcontroller for system usage
- Temperature and Humidity Sensor
- LEDs
 - Mood-based lighting adjustments
- Relays to detect whether temperature adjusting devices are operational
- Sound and temperture devices

Server

- Website and data exchange are handled by Azure Cloud services
 - Widely used with many integrated features
 - Firewall and simple account creation and separation
 - APIs for data handling

System upkeep

Due to simplicity of the program and low cost of the sensors system itself including the database and server are light and cheap

