



# Web-connected device for personal organization

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CSE 123 - Supervised by Prof. David Harrison and Charlie Alders



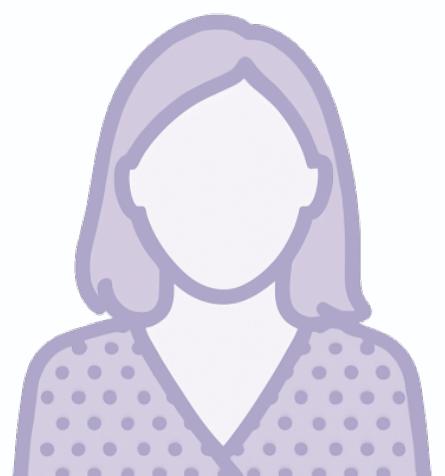
## Introduction

Existing software-based scheduling solutions lack the ability to exercise greater precedence over distractions when organizing responsibilities. Our product is a dedicated device that classifies activities by necessity, urgency, or frequency.

Our design objectives include:

- Presence:** Device must command user attention in a way that is systematic but not overly frequent.
- Configurable:** Device software must be compatible with existing tools such as Google Calendar.
- Accessible:** Device must integrate intuitive user interface and must contain backups for device failures.

### Target Audience:



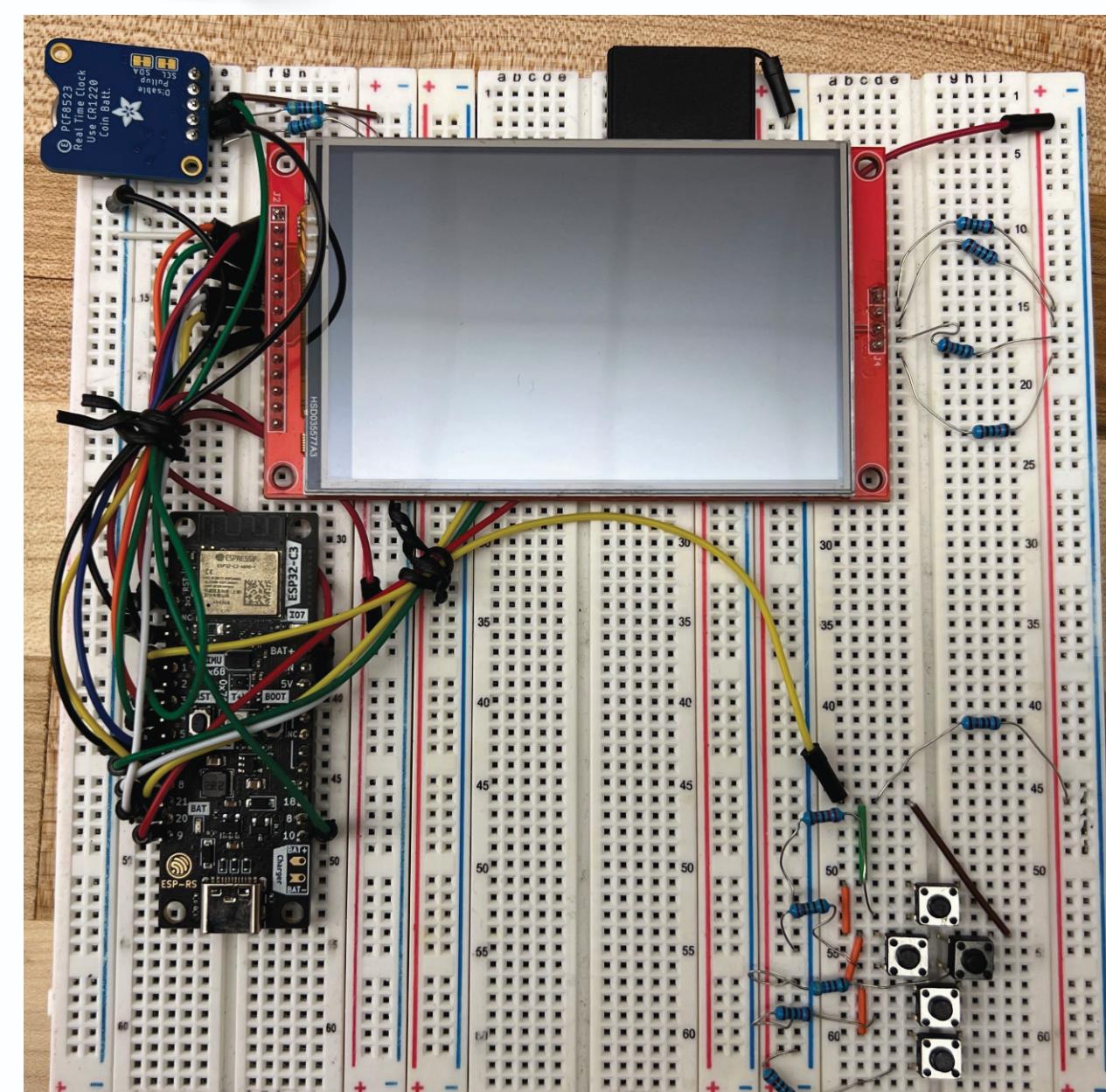
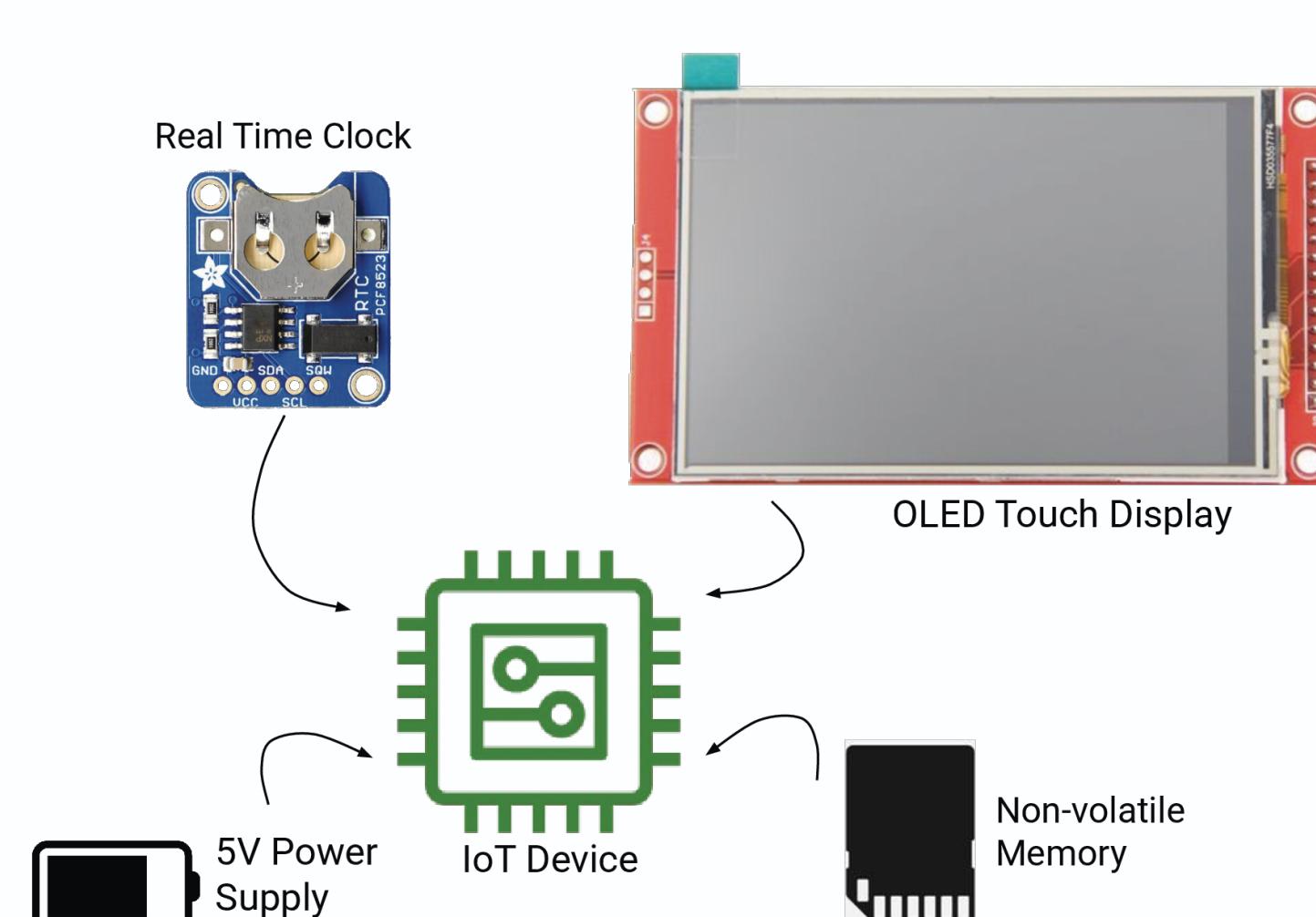
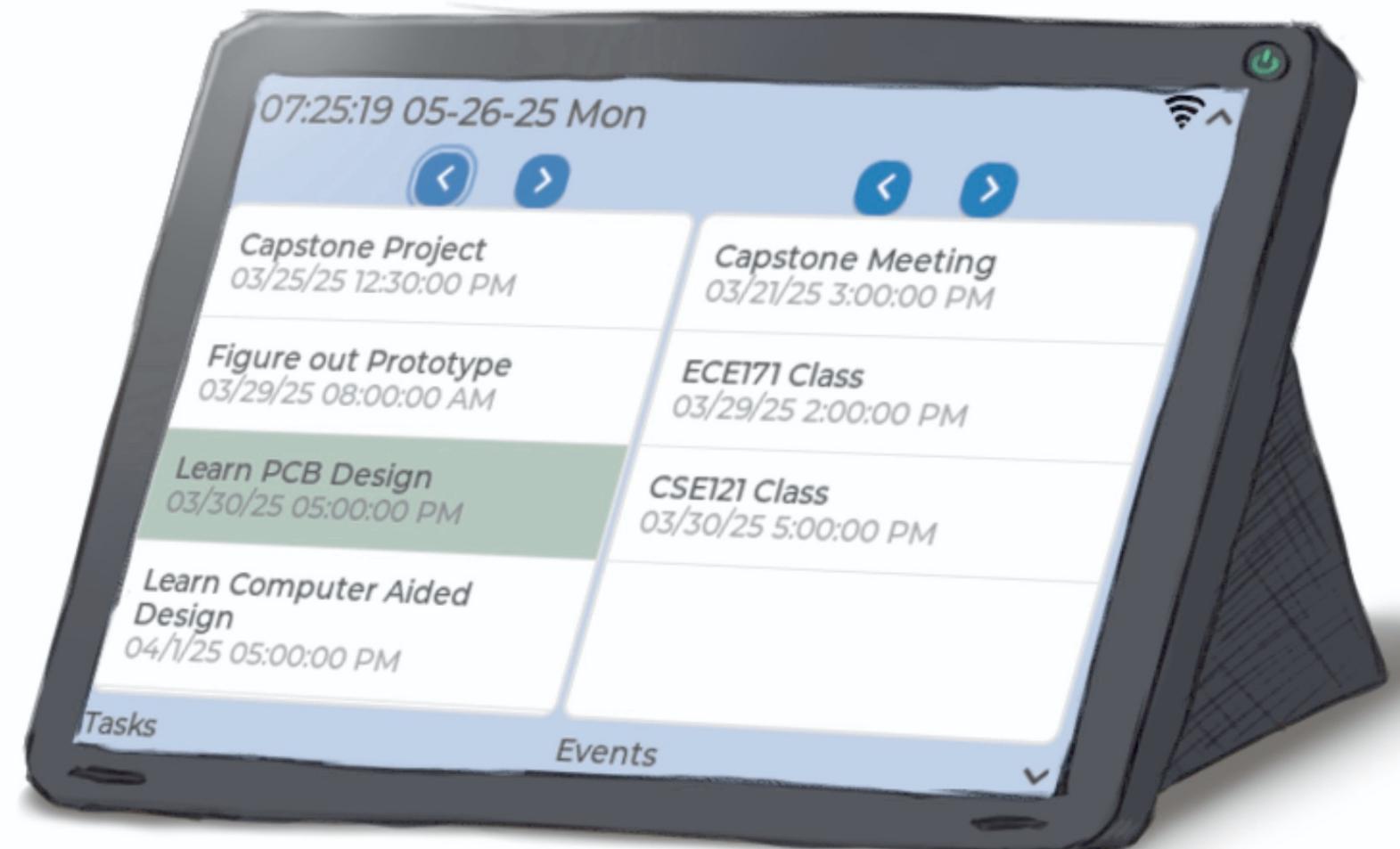
#### Mary - University Student

- Has to balance school work, chores and social life.
- Productivity phone apps distract her.

Our prototype uses the ESP-IDF platform targeting the ESP32-C3, with the following approach of separating the device and the server:

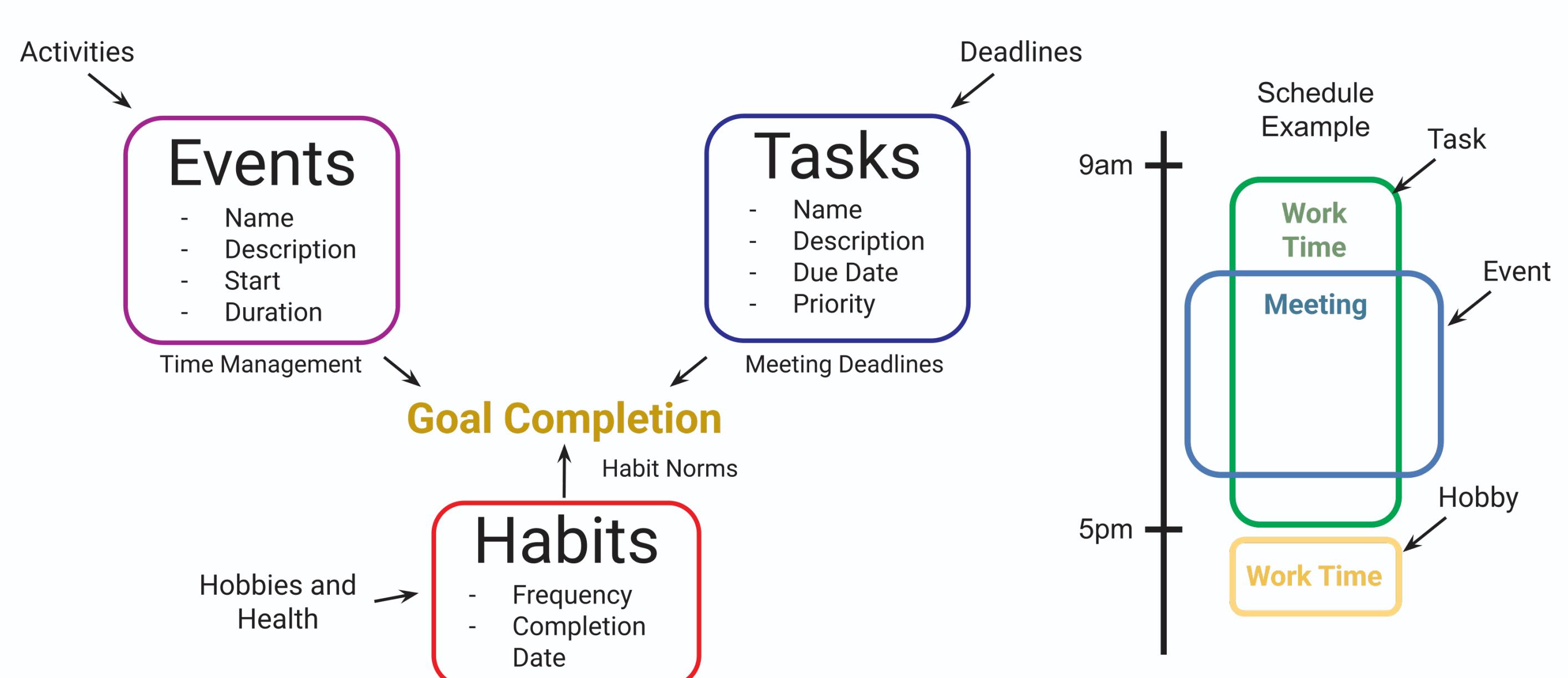
- Device Implementation** Users modify the status of tasks/events/habits on the device to be synced later.
- Server Implementation** Users manage their data on the web server, producing entries that are accessible to their device.
- Synchronization** Device periodically syncs by uploading local changes and retrieving the latest data from the server.

## System Architecture



- Input:** Touch screen for navigating menus and making modifications to data.
- Software:** Components manage task storage and management, rendering of the user interface, wireless communication, and initial setup.
- Display:** 7.5" OLED screen displays time, connection status, and user data.
- Persistence:** RTC keeps time even when powered off, and onboard flash memory maintains user data between resets.
- Configuration:** Device enters access point mode during set up to allow for Wi-Fi provisioning.

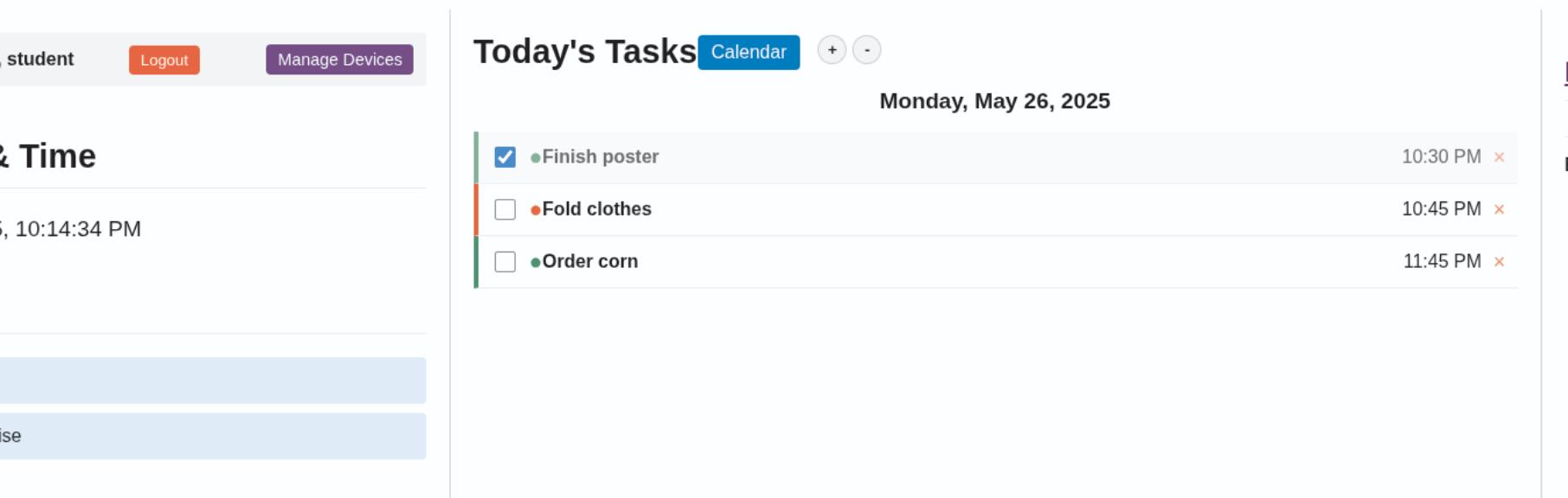
## Goal Driven Design



To achieve their goals and maintain a healthy routine, device has three tools to tackle the day.

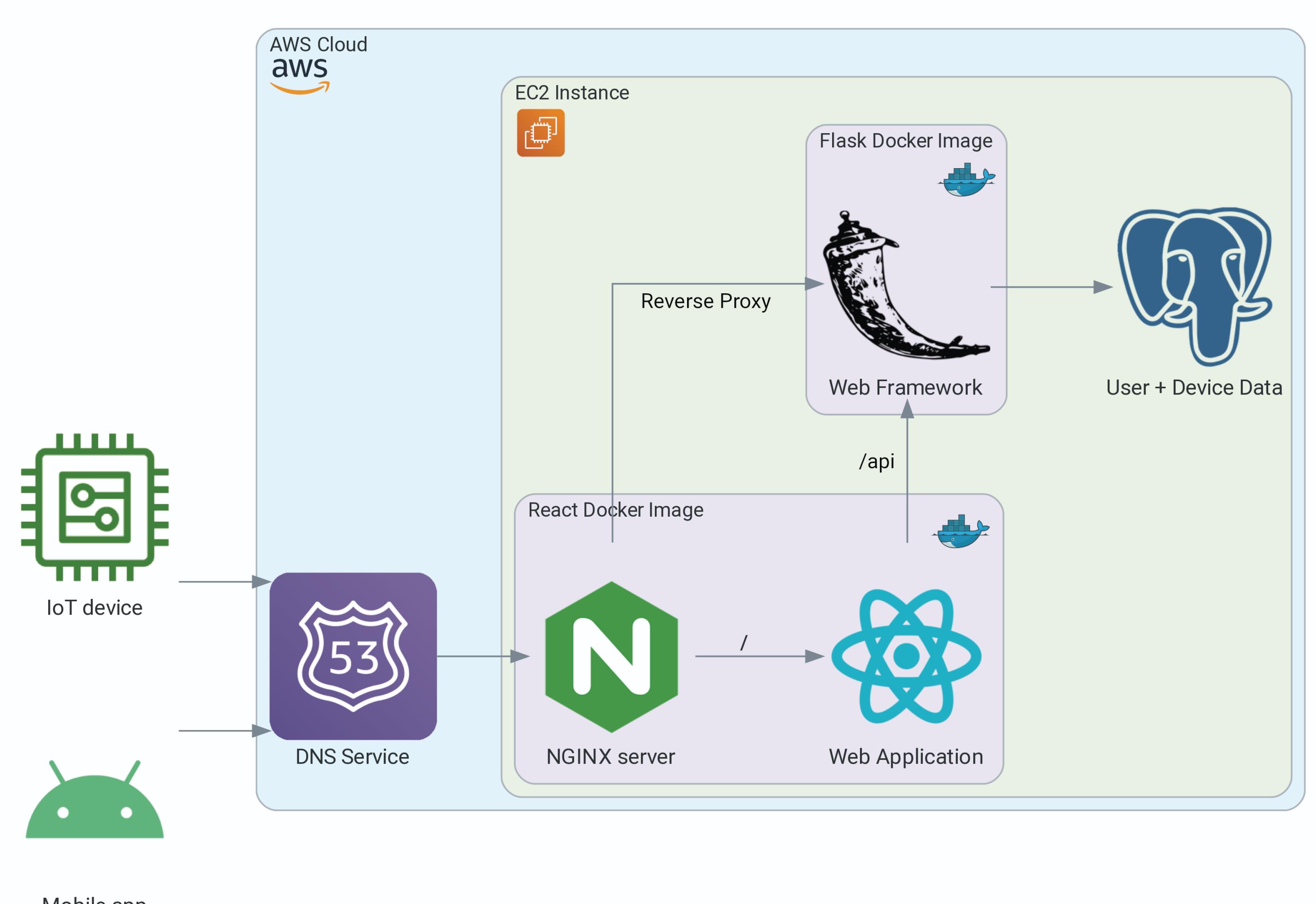
## Web Interface

- Daily overview:** A landing page for devices's data that displays today's tasks, habits, and events.
- Entry creation and modification:** Create and modify entries to be sent to the device from the cloud.
- Monthly overview:** View scheduled tasks and events in a calendar view.
- Many-to-many usage:** Multiple users may share multiple devices with others.
- User configuration:** Sign up as a new user, or add/remove devices as a returning user.

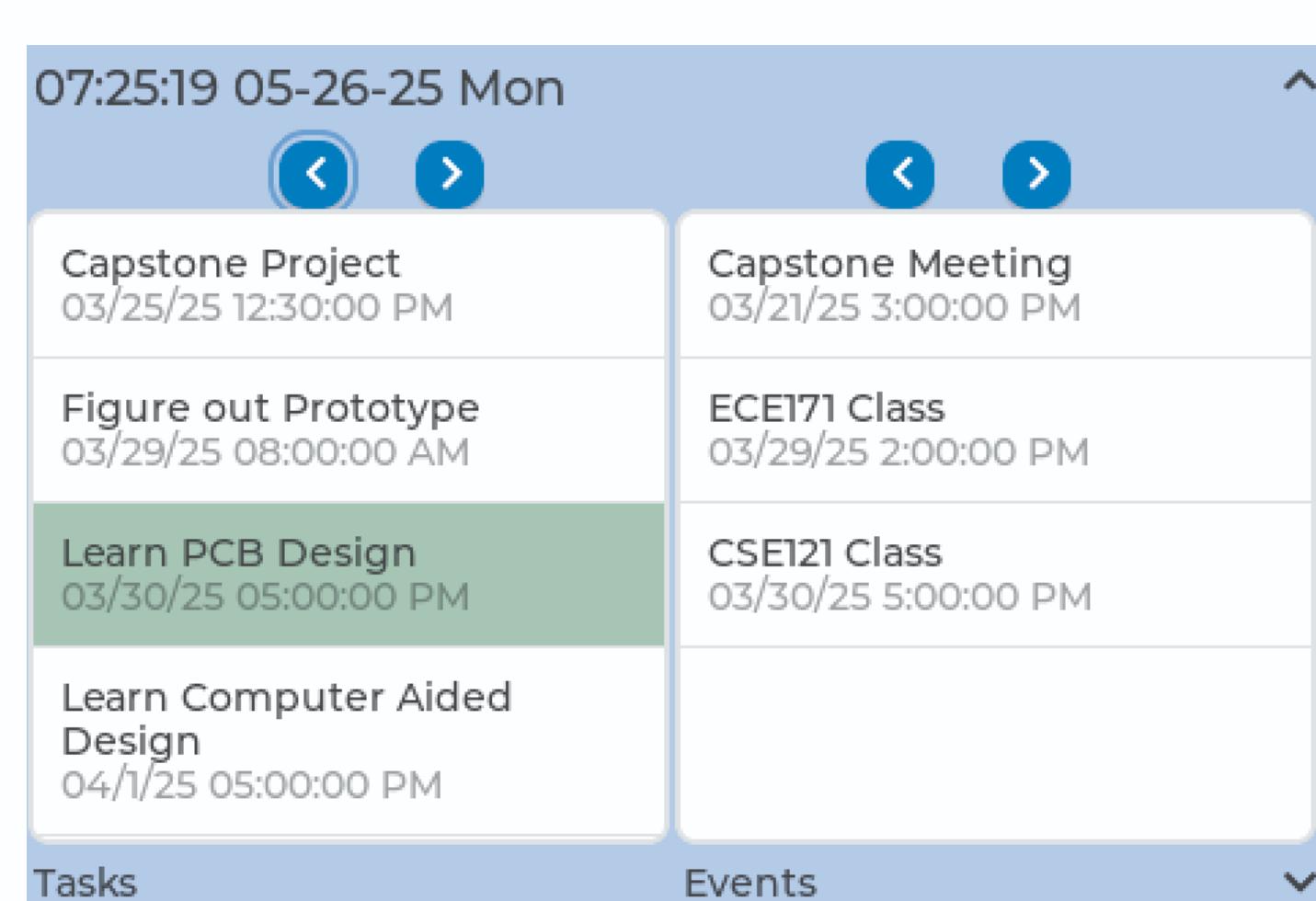


## Server Architecture

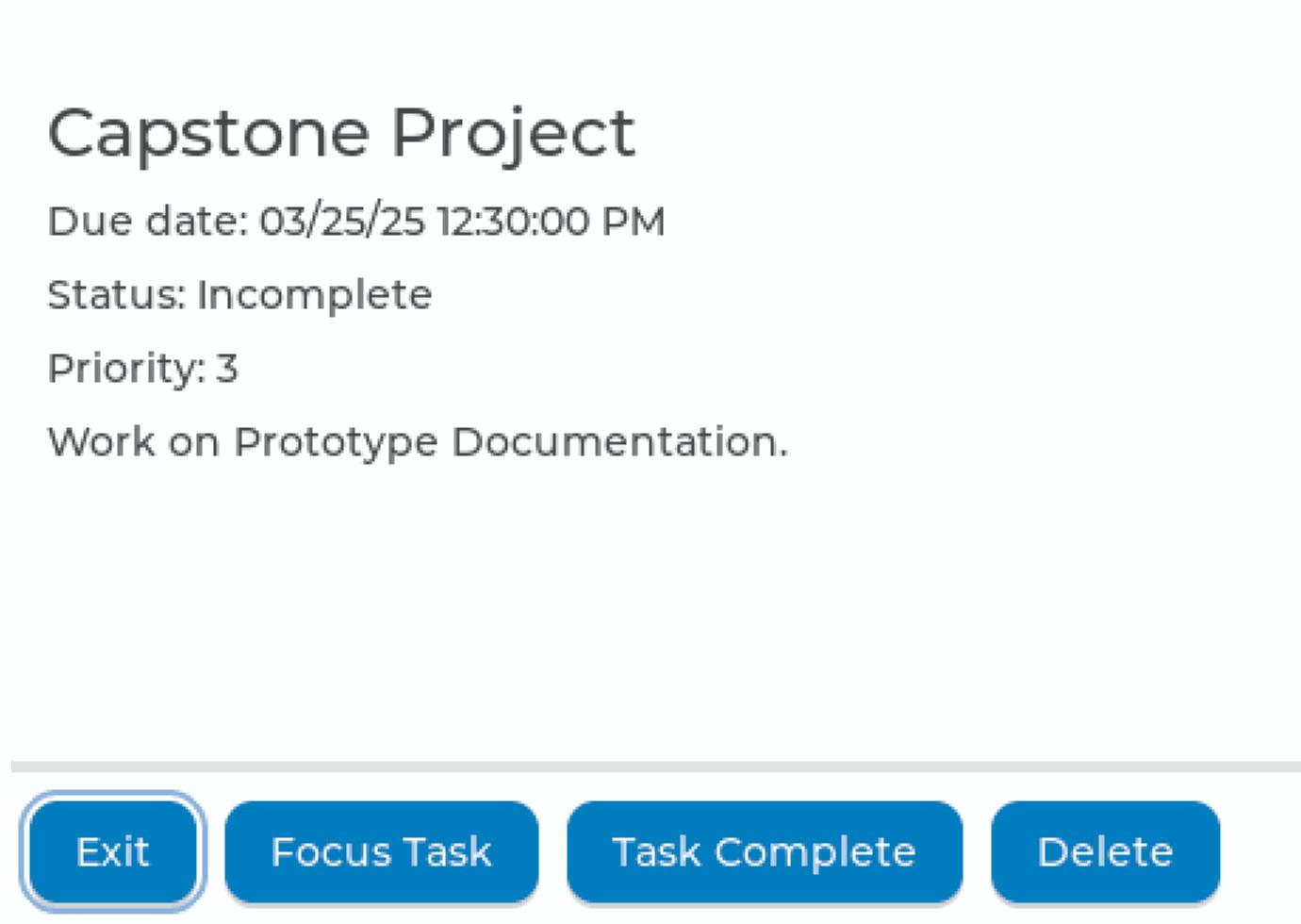
- Both the device and app connect to the server with HTTPS
- Requests made to "/api" are forwarded to flask by NGINX
- Requests made to "/" are forwarded to react
- PostgreSQL stores device and user data, accessed by the web app and the device
- Server software is deployed on an EC2 in docker containers



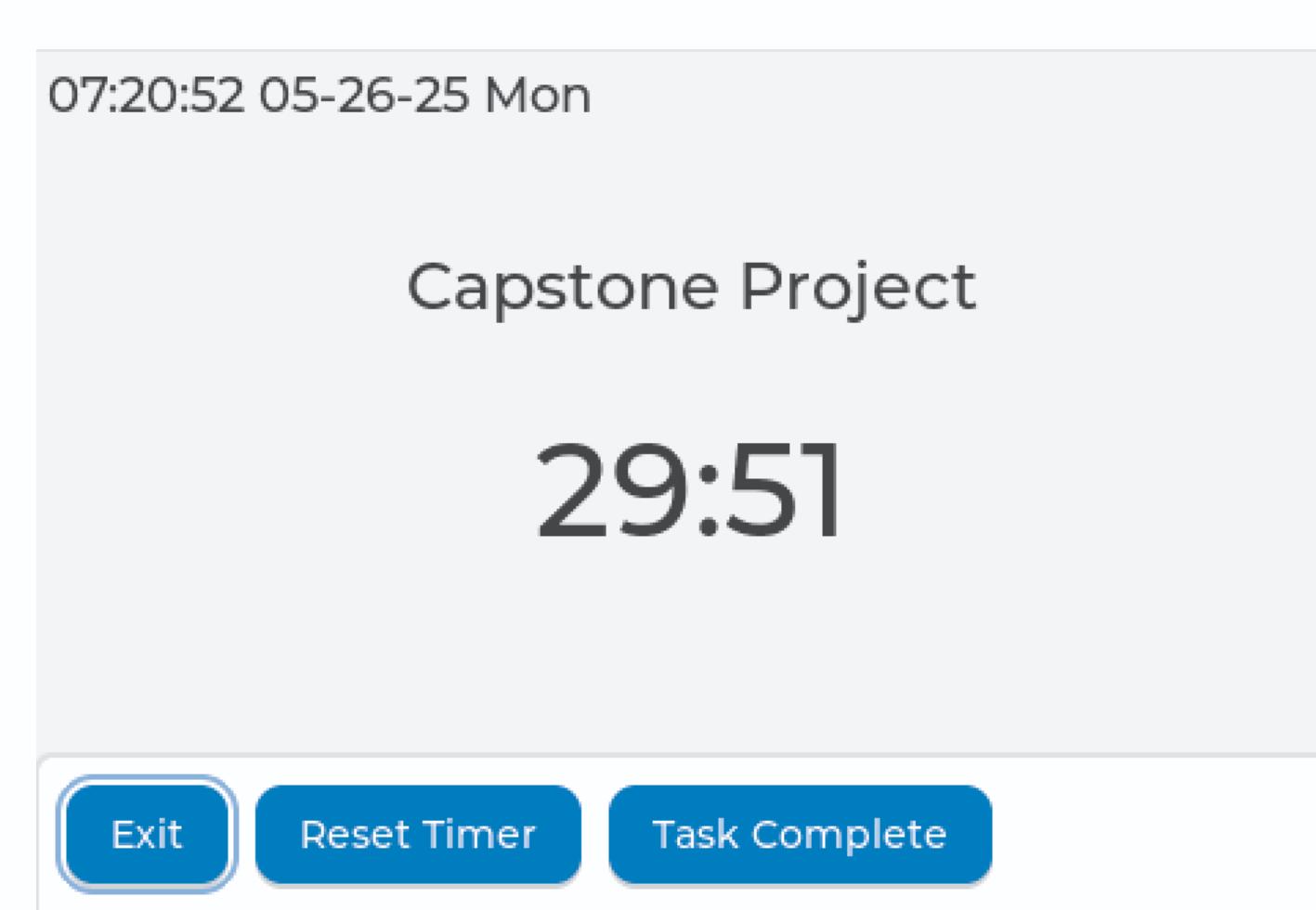
## User interface



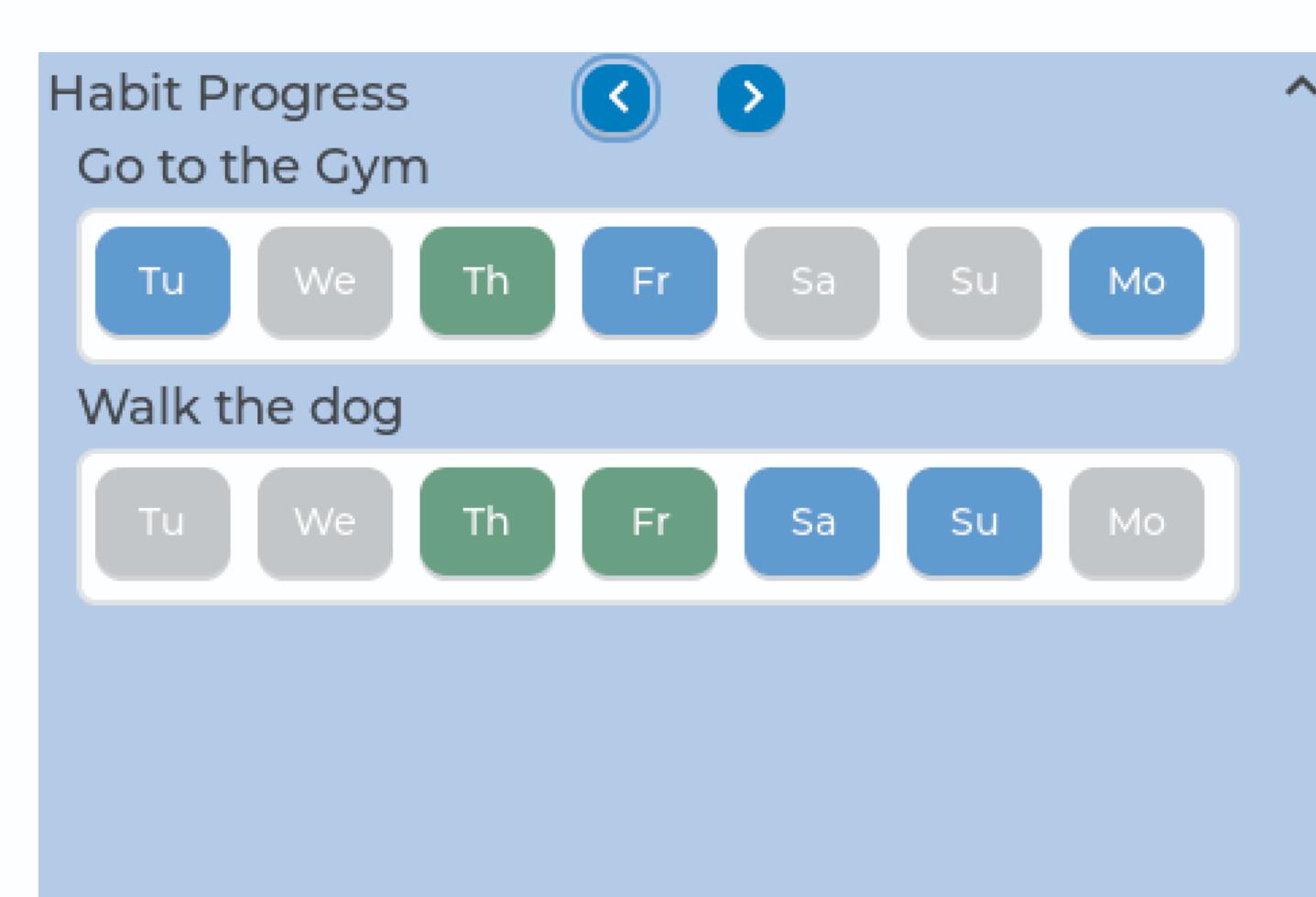
(a) Main Menu



(b) Detailed Task View



(c) Focus Task View



(d) Habit Tracking View