

E-health web app for IoT devices

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Abstract

Wearable and remotely accessible medical sensors are the new frontier in healthcare and this technology is primarily driven by the **Internet of Things (IoT)**. In this project, we propose the backbone infrastructure for a modular **e-health system**. The IoT side is powered by a **microcontroller** (with WiFi module and medical sensors) that collect **real-time health data** (pulse, ECG, EEG, etc.) from the user. This is forwarded and updated in a **cloud server database** in the back-end. Finally, a **graphical web interface** in the front-end allows the user or a medical professional to examine and analyse the data from any remote location across the world.

Architecture

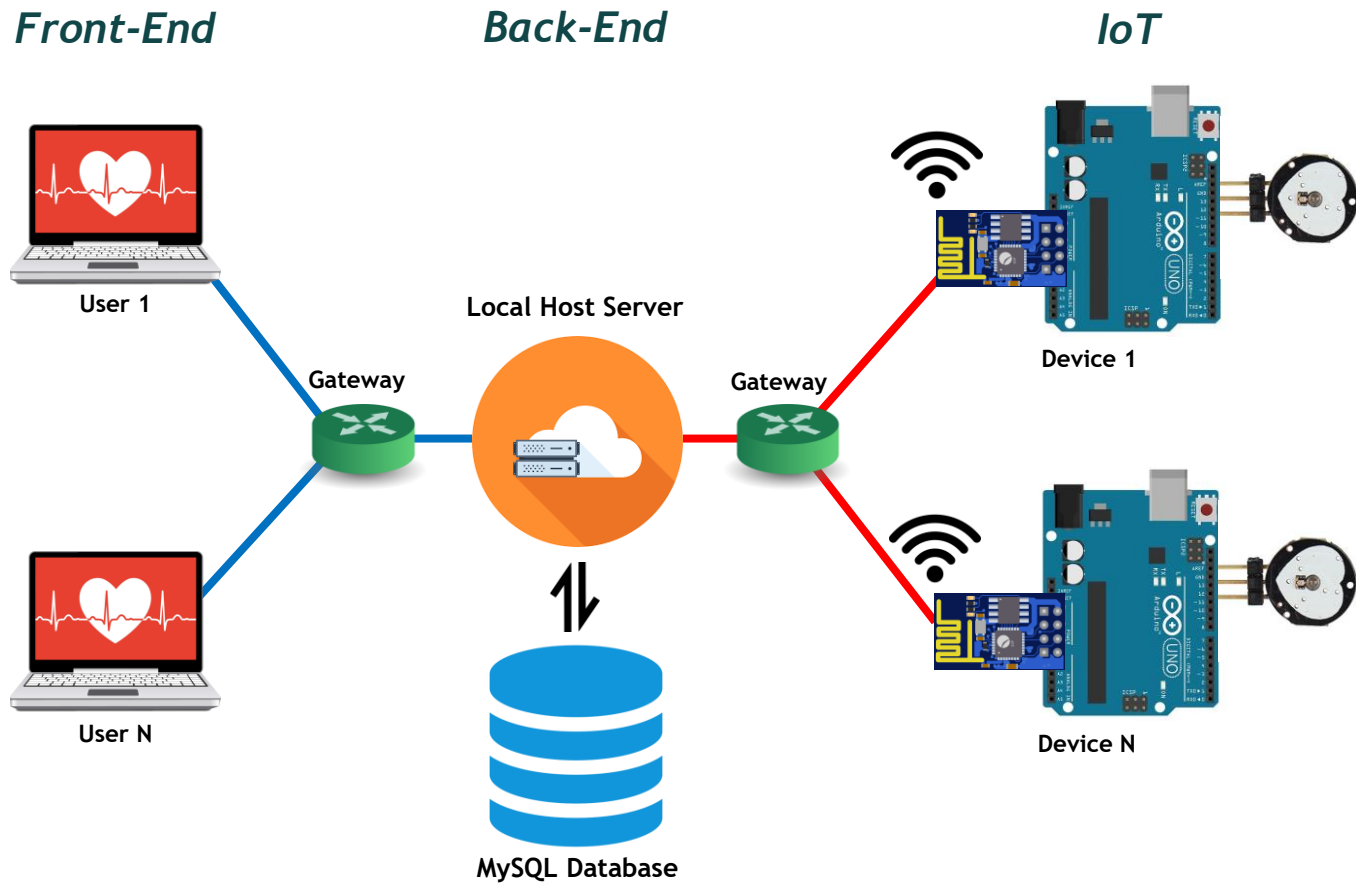


Fig 1: Mockup for the Sign-in Page

Mockups

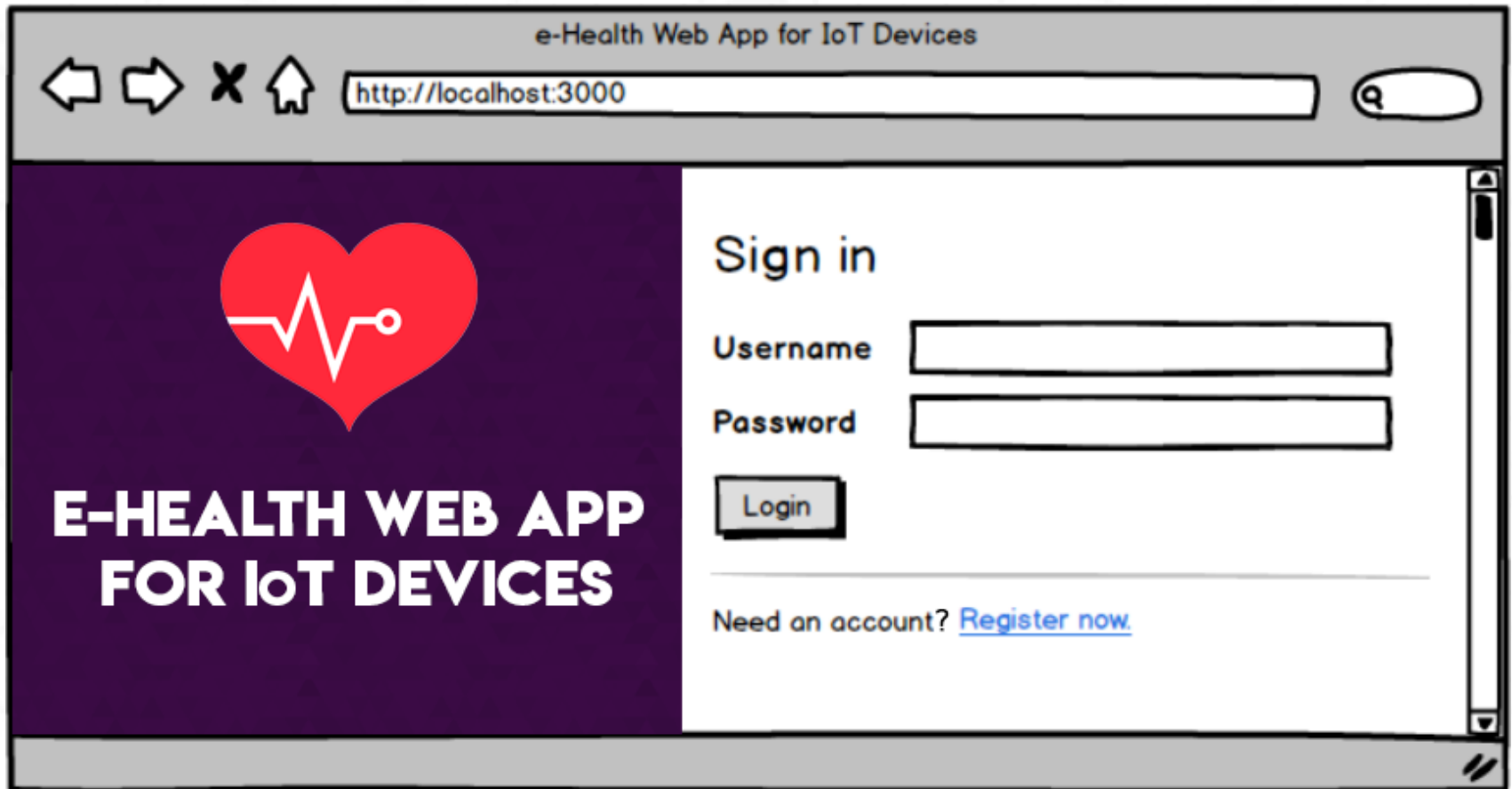


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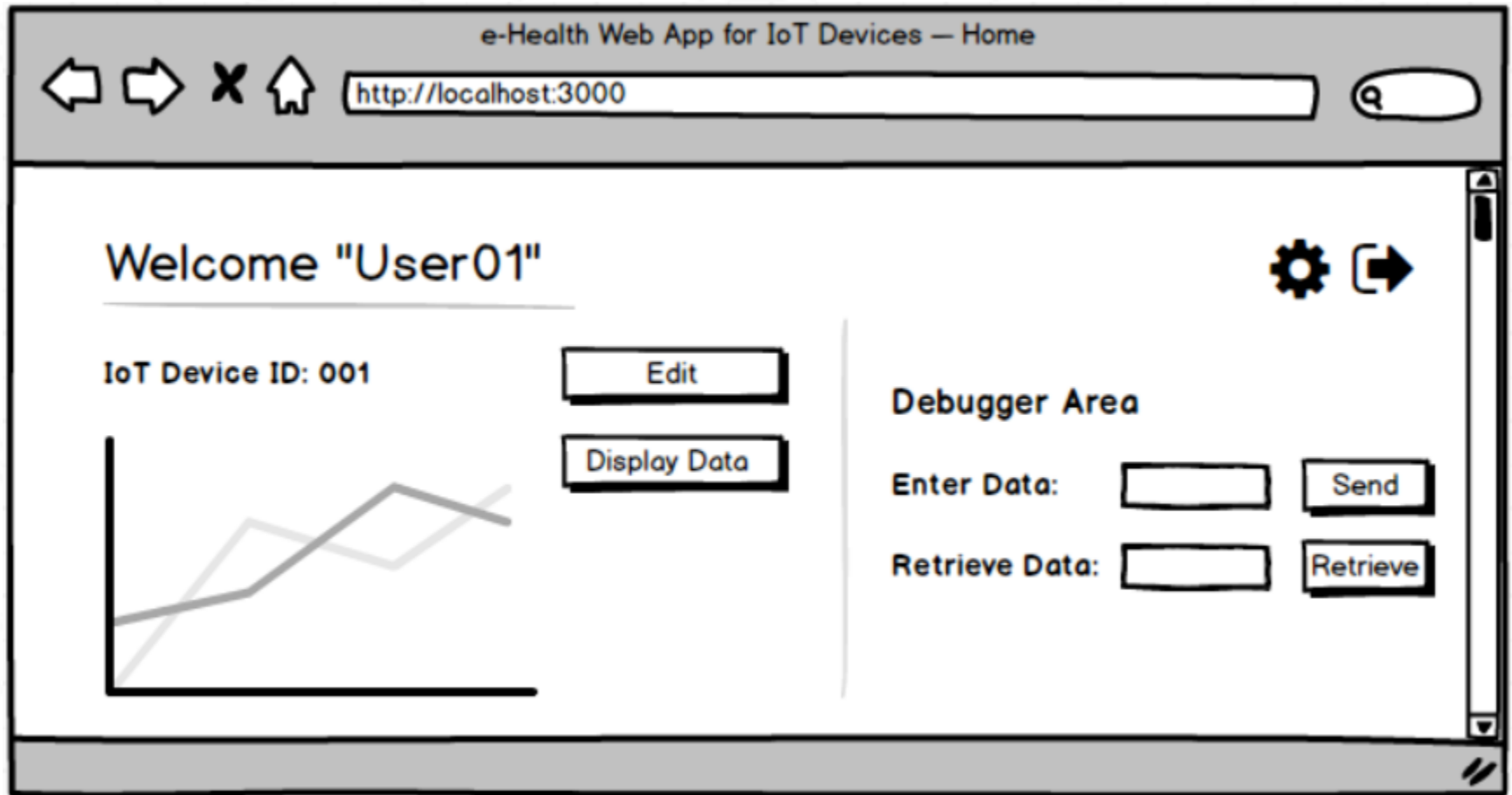


Fig 1: Mockup for the Home Page

Mockups

The mockup shows a web browser window with the title "e-Health Web App for IoT Devices — User Settings". The address bar contains "http://localhost:3000". The page content includes a "User Settings" heading, a home icon, and three password input fields labeled "Enter Current Password:", "Enter New Password:", and "Repeat Password:". An "Update" button is located below the input fields. The browser interface includes navigation buttons (back, forward, close, home) and a search icon in the address bar.

e-Health Web App for IoT Devices — User Settings

http://localhost:3000

User Settings

Enter Current Password:

Enter New Password:

Repeat Password:

Fig 1: Mockup for the Home Page

Mockups

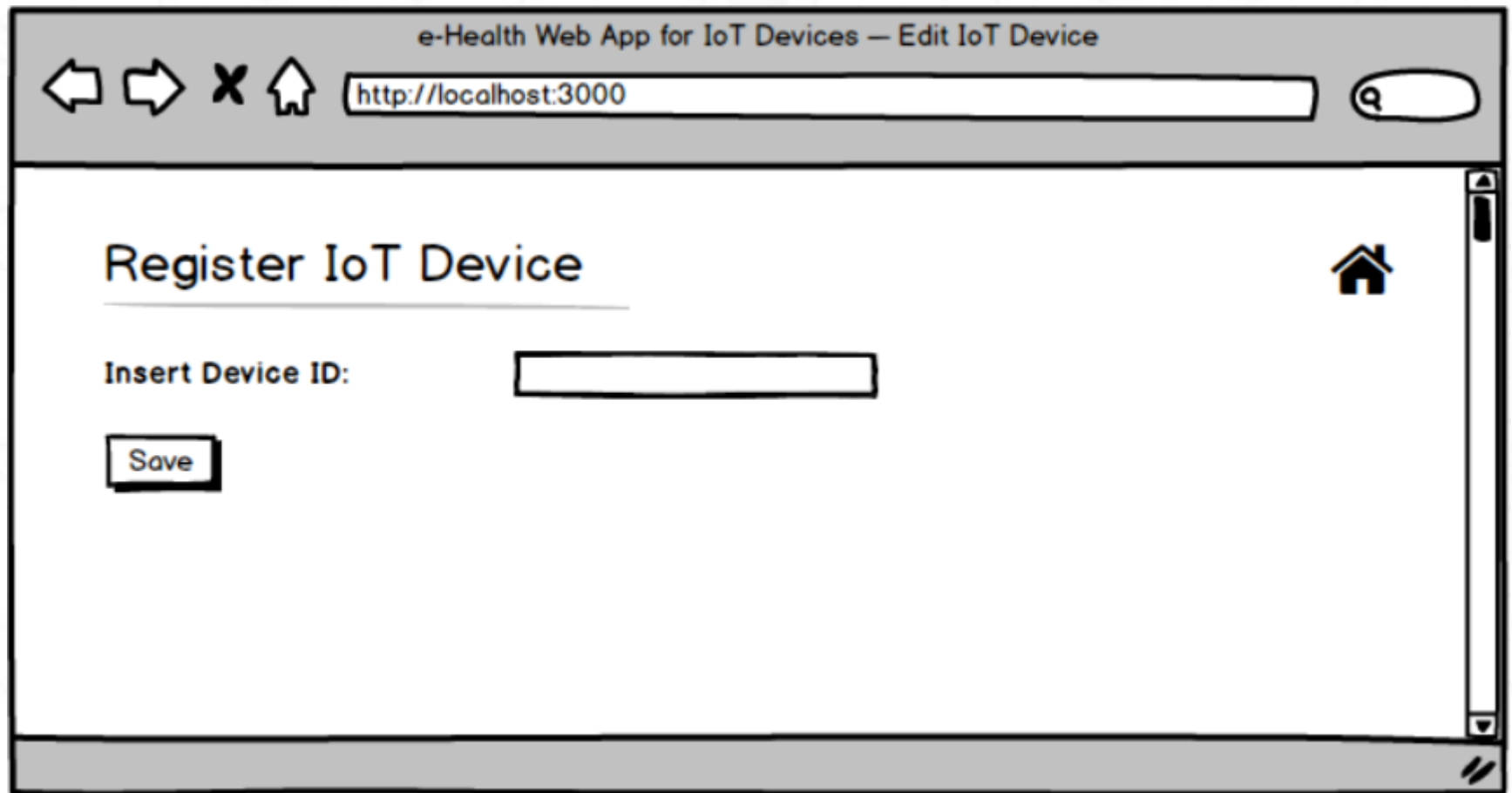


Fig 1: Mockup for the Home Page

Mockups

The mockup shows a web browser window with a title bar that reads "e-Health Web App for IoT Devices — Registration". The address bar contains the URL "http://localhost:3000". The main content area features a "Sign up" heading, a home icon in the top right, and three input fields for "Username:", "Password:", and "Repeat Password:". A "Register" button is located below the input fields. The browser window includes standard navigation buttons (back, forward, stop, home) and a search icon in the address bar.

e-Health Web App for IoT Devices — Registration

http://localhost:3000

Sign up

Username:

Password:

Repeat Password:

Fig 1: Mockup for the Home Page

Languages, ENV, TECH

Server/Client

Languages:

JavaScript (+ Node.js, JQuery)

HTML

CSS

Tracing/Visualisation:

Fiddler

Environment:

XAMPP (MySQL)

Visual Studio Code



IoT

Languages:

Embedded C

Hardware:

ESP8266 WiFi Module

DSD TECH USB-TTL Serial Converter

Arduino UNO

Tragoods Heart Rate Monitor Sensor

Tracing/Visualisation:

Proteus Professional Simulation

Serial Terminal Program*

Environment:

Arduino IDE/Atmel Studio

*To Be Decided

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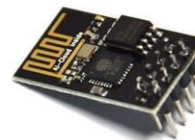
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Proteus Professional Simulation

Serial Terminal Program*

Environment:

no IDE/Atmel Studio



*To Be Decided

Moscow table

Server/Client

IoT



User Registration/Login
IoT Device Registration
Front-End Design



User Profile Modification
IoT Device Modification
Data Visualization



Bidirectional Dataflow
User Notifications
Data Encryption
Multiple IoT Device/User



Data Analysis/Diagnosis
Mobile App Version
Connecting with Health Centers

Microcontroller Circuits
Network Modules

Medical Sensors*
Feedback Notifications

Graphical LCD Display
Portability

Wearable Gadgets
Power Management
Firmware Updates

**Based on Approval and Funding*

Gantt chart

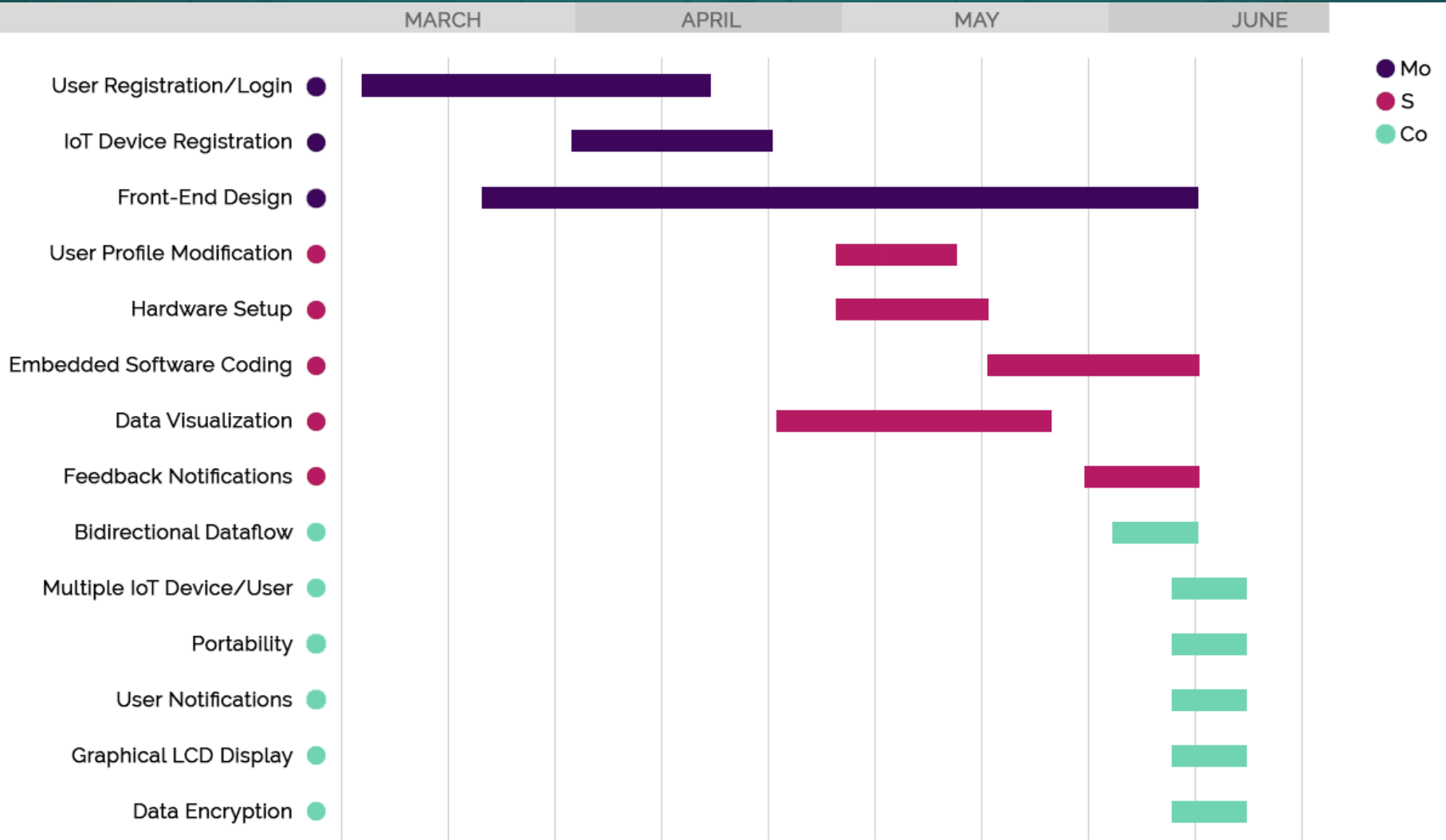


Fig 1: Project Gantt Chart



Thank you.