

Technical Specification

Overview

The purpose of this application is to help the user of a new device to measure, monitor and report the wellness of a person of any age by accurately measuring their hydration level. A generation of people grew up under the general health guidance that they should drink 8 glasses of water a day. Depending upon a person's metabolism and activity level a more specific and easy to use method for determining a person's active hydration level is important to their health and wellness. What they drink and when they drink it are both critical factors for human performance affecting proper hydration. This application interfaces to a new device and collects the data from the instrument, records it and reports it to a mobile device and an online data base for subsequent health monitoring.

This information is important to a variety of users and medical professionals. Athletes can use the device to help them avoid cramping when they need to compete on game day. Medical personnel can use the app to determine the amount and type of fluids to give a patient. People can more specifically and actively monitor their actual fluid level and drink liquids of their choice accordingly. Measuring and maintaining the proper hydration level is important and necessary for actively managing and maintaining good health for people of all ages and cultures.

The Solution to be built will allow users to login, view historical data, and capture new data in order to monitor their hydration activity over time and make necessary adjustments to water intake and lifestyle to achieve peak hydration levels.

Technical Overview

The solution should allow users to login to a Web Application to view previous data capture and record new data entries. Because the hardware solution will not be completed for the end to end solution, a mock data capture mechanism will need to be used. Mock data structure is documented below. The Web Application should communicate with a Web Service built to allow data to transmit between the Web Application and the Database.

Web Application

The Web Application should be built using modern web application technologies (HTML 5, CSS3.0, relevant JavaScript Frameworks such as Angular.js , etc.) and should be support on all modern browsers (Mozilla Firefox, Google Chrome, Internet Explorer 11, Safari 6.2.7 and later).

Web Service

The Web Service should be built as a RESTful Web Service using either Java or .NET C# (up to the teams discretion and expertise). The service should be secure using https for all incoming traffic. The Web Service should have the following methods exposed, but not limited to:

Web Service Public Methods		
Method	Parameters	Description
Login	String Used ID String Password	Handles User login. Returns session key to be used on subsequent requests.
GetUserProfile	String User GUID String SessionKey	Returns base level information about the user that has logged in including historical data (will change in subsequent iterations to call each data set on request rather than eager loading during initialization process). See User Database Table for potential properties to be returned.
AddData	Enum DataType JSONString DataObject	Generic Method for adding entries into the database. Would support Authorized Users and Hydration Data. Each DataObject will have its own format defined below.

Hydration Measurement Data Object		
Property	Type	Description
UserGUID	String	Unique Identifier for the User. Created on User Creation and used for other records. Should be used as part of the hash in the session key.
HydrationLevel	Integer	Number 0-100.
Timestamp	String/DateTime	Timestamp recording of when the data was captured.

The following Table shows the Data Structure of a Hydration Measurement:

Lastly, the Web Service should protect against any type of SQL injection in the methods that call the database.

Database

The database should be built in a database technology the team is comfortable with (MySQL, Oracle 11g Express, or SQL Server are all acceptable). A User Table, a Data Record Table, and a Log Table will need to be created. The design of each can be found below:

User Database Table		
Column	Type	Description
User ID	String	User ID for Login
Password	String	User Password for Login. Hashing Passwords is an optional requirement for this solution.
UserGuid	String	Unique Identifier for each user. Should be created when the user ID and Password are created.

Data Capture Database Table		
Column	Type	Description
HydrationLevel	Integer	Hydration Level reading.
CaptureTime	DateTime	DateTime that the reading was captured
UserGuid	String	Unique Identifier for each user. Should be created when the user ID and Password are created.

Log Database Table		
Column	Type	Description
EventType	String	EventType being logged. For this iteration Login and Data Captures should be the only items captured.
CaptureTime	DateTime	DateTime that the reading was captured
UserGuid	String	Unique Identifier for each user. Should be created when the user ID and Password are created.