Deep-sea Developers

Project Proposal

Team Members

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Prepared for

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Overview

Our project idea is to create a database for a device used to gather sensor readings from the ocean in order to assist in oceanographic research. This database will collect, store, and manage data related to oceanographic research, namely sensor readings about the water mapped to a time of sampling and GPS coordinates of where the sample was collected. By providing the means for accessing and analyzing oceanography data, our project aims to support scientific advancements, collaboration, and conservation efforts in the field. The database will facilitate easy retrieval of data, promote knowledge sharing among researchers, and contribute to a better understanding of the ocean ecosystem. The main problems addressed by the project idea are efficient storage with respect to memory so that the device may be deployed for as long as possible. The idea is to have a device that can run autonomously while collecting data for a prolonged period of time, in the magnitude of days. This will help researchers and scientists in the field of oceanography to better understand and study the ocean ecosystem, leading to advancements in research and conservation efforts.

Related or Existing Solutions

A CTD (conductivity, temperature, depth) device is a computer system that is thrown into the ocean and idly collects data readings many times a second about the surrounding water and its contents. It can function while in place or in motion, allowing it to be dragged behind a boat or similar vessel. We aim to design and develop the software for storing data collected by this device. This idea already partially exists for example the World Ocean Database (WOD) collects ocean profile data and makes it available to the public. There is much to explore in our oceans. 80% of the ocean has never been mapped or explored by humans. This database would only benefit future exploration and mapping. Our idea could be different by telling users the closest GPS coordinates to their location and allowing for entries into the database to be made by researchers.

Planned Functionality and Data Elements

Data Elements: Dataset, GPS coordinates, Temperature, Conductivity, Depth, Time of collection (Month, Day, Year, Time down to the second). Features:

- Chart by time
    - A feature that automatically formats the data points into a linear chart organized by the time of collection
- [POSSIBLY] Chart by GPS
    - Similar to above, but organized by GPS location and projected on a map.
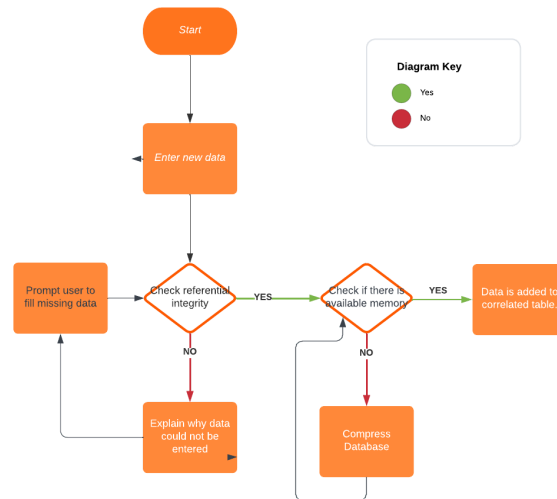
Project Plan and Skill Set

Team Leader: Veasna
Will set clear team goals for each deliverable, set task deadlines, track progress, organize weekly meetings, motivate other team members, submit required deliverables on Canvas.

Makai: I have previously worked with a SQLite database in Java. I have a small bit of experience with C, MATLAB, Erlang, etc. Primarily code with Java. I will contribute towards front and back-end code.

Miguel: I'm currently taking oceanography so I can work with my professor to design the database. I'm experienced with object-oriented and functional programming languages, and have programmed mySQL databases before. I'm comfortable with public speaking.

Veasna: I've completed a client/server class for the internet and gained experience in CSS, HTML, JavaScript, and RESTful-Server API. I am very comfortable with front-end web applications. My strongest programming language is Java.

Hassan: I have not previously worked with SQL, but have recently got into SQLite databases. I have a lot of experience with front-end web development with Java being my language of preference.Although SQL is a new area for me, I am enthusiastic about learning and utilizing it effectively.