Aquaria Design Document

Version 2

# Background

Fishkeeping is a popular hobby, practiced by aquarists, which revolves around caring for fish in aquariums or other contained bodies of water like a garden pond.

For novices to the hobby, taking care of fish might seem like a trivial task - feed the fish and clean the aquarium every once in a while. This is a misconception commonly held by a lot of people, however, as specific species and breeds of fish - such as goldfish - are sensitive to changes in the water’s parameters and their general environment. Indeed, goldfish in captivity live on average only for 1-3 years [need source]. To put that into perspective, goldfish can theoretically have an average lifespan of 30 years (Brown, Wolfenden, & Sneddon, 2018) - as long as the lifespan of a dog. This stark difference in the actual and expected lifespans of goldfish are caused primarily by poor water quality [need source] - which itself is brought about by a myriad of smaller factors.

To ensure that a fish is living its life happily, and to allow aquarists to enjoy their pet fish for much longer, they will need to keep track of a variety of factors. First and foremost, is the water quality [need source] which is the single most important factor in keeping a fish alive for its entire expected lifespan and to keep it happy. Indeed, it is the main factor that needs to be indirectly controlled by maintaining the population, and various water parameters (such as pH level, and ammonia level).

# Objective

The prime objective of Aquaria is to develop an application that will aid aquarists in maintaining the robustness of their pet fish’s health. To this end, the specific objectives of the application are laid out, categorized into functional and non-functional requirements:

## Functional Requirements

1. Develop a facility to calculate the volume of an aquarium, given the shape of the aquarium and the measurement of their edges.
2. Develop a service to log an aquarium’s water parameters, population information, and expenses.
3. Develop a mechanism for allowing the user to synchronize their data with a cloud storage service.

## Non-functional requirements

1. Develop a user interface (UI) that is intuitive and easy-to-use.

# Works Cited

Brown, C., Wolfenden, D., & Sneddon, L. (2018). Goldfish (Carassius auratus). *Companion Animal Care and Welfare: The UFAW Companion Animal Handbook*.