SW Engineering CSC648/848
Section 04

Team 03, AquaMate

Milestone 2
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Revision History

Date	Notes
06 March 2024	Initial publication of M1 document
20 March 2024	Removed M1 requirements Inserted completed M2 requirements

1. Data Definitions V2

1. Users: Used to store user data such as username, id, password, etc. Used to check login information for a user.
    a. Id
    b. email
    c. Username
    d. Password

2. Fauna: This is used to store the properties of the different fishes. These include the common name, scientific name, pH levels necessary for the fish, compatibility with other fish, etc. This will be used to display the information for each fish on the web page to help the user decide which ones to choose for their aquarium.
    a. id
    b. commonName
    c. scientificName
    d. Type(salt/fresh)
    e. Difficulty
    f. Incompatible
    g. lifeSpan
    h. maxSize
    i. specificG
    j. Temp
    k. Ph
    l. dGH
    m. maxAmmonia
    n. maxNitrite
    o. maxNitrate
    p. dietRec
    q. notes

3. Flora: This will be used to store information about different plants. The properties included will be plant name, scientific name, light level, growth speed, etc. This will also be used to show information about the plants to educate the user and help them choose the right plants for their aquarium.
    a. id
    b. commonName
    c. scientificName
    d. type(fresh/Salt)
    e. Ph
    f. Difficulty
    g. LightLevel
    h. growthRate
    i. AttachmentStyle

    j. roughBulk
    k. notes

4. Tanks: These include the information of different types of tanks you can buy for your aquarium. Primary use in the aquarium builder.
    a. Id
    b. Capacity
    c. shape

2. Functional Requirements V2

R.01 User Authentication and Authorization (P2)

- Users shall be able to create accounts and log in securely. (P1)
- An authorized user shall be a user that has and id, email, and password contained in the database (P2)
    - Authorized users shall be able to submit additions to the database (P2)
- A moderating user shall be one of the founding members and have a special id
    - A moderating user shall be able to directly add to the database (P1)

R.02 Search and Lookup Functionality (P1)

- Users shall be able to type in their query (P1)
- Typed queries shall display results in real time that match the most characters if possible (P2)
- The search bar shall have GPT enhanced functionality to open an interactive chatbot (P3)
    - This chatbot shall provide suggestions and advice to the user when asked (P3)

R.03 Gallery Display (P1)

- Gallery will display a random mix of flora and fauna within a grid of pictures (P1)
- Each picture will have the name of the subject (P1)
- Each picture will be clickable, leading to that subjects information page (P1)
- The user shall be able to filter what they see (P1)
    - The user shall be able to filter the fauna (P1)
        - Fauna shall be filterable by size (P1)
        - Fauna shall be filterable by type (salt or fresh) (P1)
        - Fauna shall be filterable by difficulty (P1)
        - Fauna shall be filterable by alphabetization (P1)
    - The user shall be able to filter the flora (P1)
        - Flora shall be filterable by size (P1)
        - Flora shall be filterable by type (salt or fresh) (P1)
        - Flora shall be filterable by light requirement (P1)
        - Flora shall be filterable by alphabetization (P1)

R.04 Aquarium Builder Tool (P1)

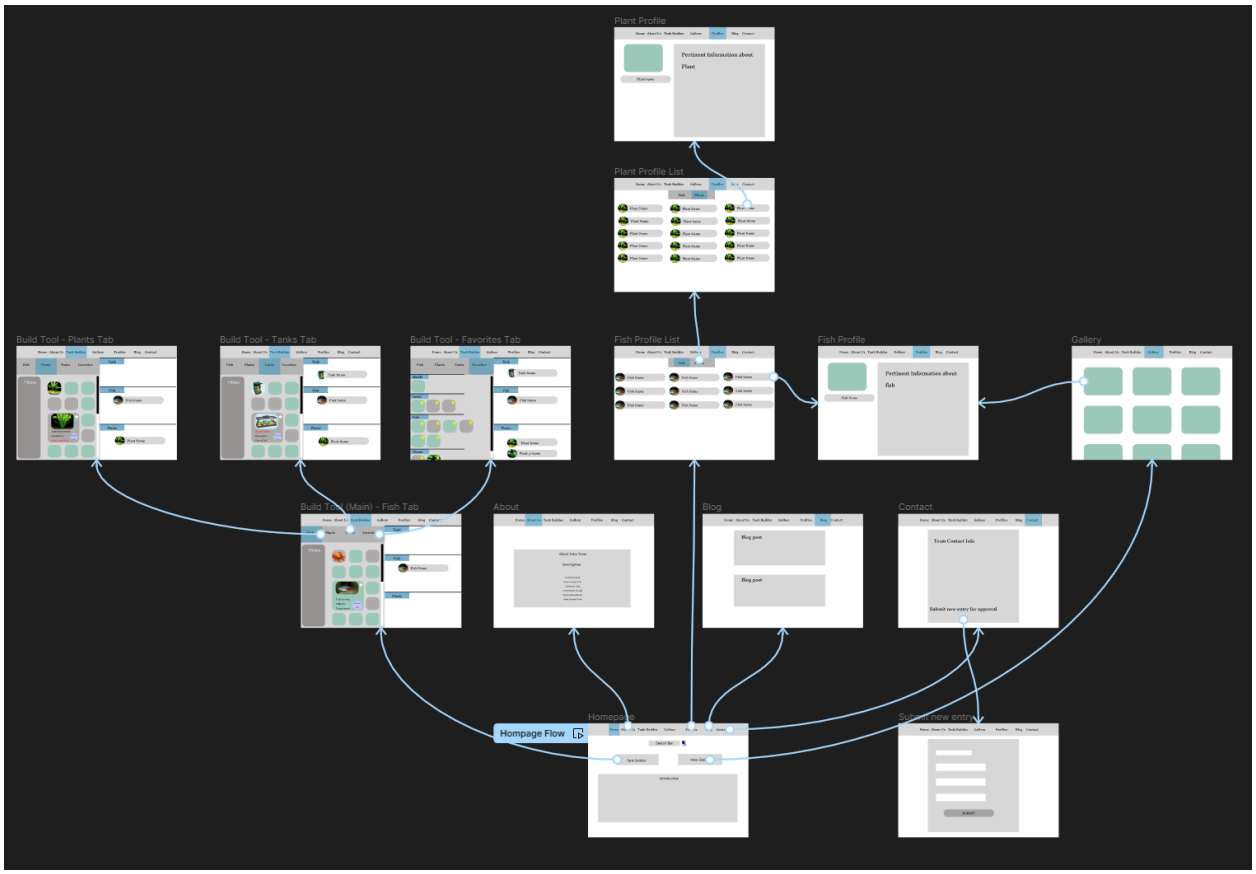
- Users shall be able to pick fauna from a search menu and add them to “builds” (P1)
- Users shall be able to pick flora from a search menu and add them to “builds” (P1)

- Users shall be able to pick tank(s) from a search menu and add them to “builds” (P1)
    - A build will be a list of chosen subjects that constitute what would be a functional aquarium (P1)
        - A list will be shown to the user so that they may keep track of items they have added (P1)
    - The build will be also be displayed in 2D to give the user a sense of what it will look like (P3)
    - The menus from which the users search for subjects shall have both search functionality as well as selection functionality. A user shall be able to search for what they want to have an easier time locating their desired subject, but may also simply scroll down the menu (P1)
        - Menus shall take the form of a dropdown menu (P1)
        - Menus shall show grayed out, unclickable results if there would be a naturally conflict with any item on the list (e.g. a betta fish and a crystal red shrimp - the betta’s would most likely eat the shrimp) (P1)
        - Warning pop-up message shall be displayed if an incompatible selection is made (P2)
- An additional menu segment shall allow for the input of peripheral tank components (e.g heater, filter, substrate, wood, rocks, etc.) (P3)
- Users shall be able to remove selected components (P1)
    - As choices are removed, the menus will update to reflect additional availabilities based on updated compatibilities (P1)

R.05 Administration panel (P3)

- Moderating users shall have access to the administration panel (P3)
- The panel should allow administrators to add, modify, or delete information on fish, plants, and other relevant content. (P3)
- Additionally, administrators should be able to manage user accounts and permissions. (P3)

3. UI Mockup and UX Flows



4. High level Architecture, Database Organization

MongoDB document examples from each collection

Backend code uses Node/ExpressJS

Fauna


```
{
  "_id": {
    "$oid": "65f241fd7c00a0b2ce2a7d3a"
  },
  "id": 4,                                                  add, delete
  "commonName": "Discus",                                   search, add, display, delete
  "scientificName": "Symphysodon spp.",                     search, add, display, delete
  "saltOrFresh": "F",                                       search, add, display, delete
  "difficulty": "A",                                        search, add, display, delete
  "aggressive": "N/A",                                      add, display, delete
  "maxLifeSpan": 10,                                        add, display, delete
  "maxSize": 8,                                             search, add, display, delete
  "minTankSize": 30,                                        add, display, delete
  "specificGravity": "0",                                   add, display, delete
  "temp": "82-86",                                          add, display, delete
  "pH": "6-7",                                              add, display, delete
  "waterHardness": "2-5",                                   add, display, delete
  "maxAmmonia": 0,                                          add, display, delete
  "maxNitrite": 0,                                          add, display, delete
  "maxNitrate": 20,                                         add, display, delete
  "dietaryRecs": "N/A",                                     add, display, delete
  "notes": "Schooling fish. Recommended groups of 3+"       add, display, delete
}
```


Flora


```
{
  "_id": {
    "$oid": "65f243447c00a0b2ce2a7d53"
  },
  "id": 8,                                                  add, delete
  "commonName": "Cardinal Fower",                           search, add, display, delete
  "scientificName": "Lobelia Cardinalis Wavy",              search, add, display, delete
  "saltOrFresh": "F",                                       search, add, display, delete
  "pH": "6-7.5",                                            add, display, delete
  "difficulty": "E",                                        add, display, delete
```

```
  "lightRequirement": "M",                                  search, add, display, delete
  "growthRate": "M",                                        add, display, delete
  "attachment": "Substrate",                                add, display, delete
  "roughBulk": "5",                                         search, add, display, delete
  "notes": "Place in well-lit area"                         add, display, delete
}
```

Tanks

```
{
  "_id": {
    "$oid": "65f243747c00a0b2ce2a7d66"
  },
  "id": 6,                                                  add, delete
  "size": 20,                                               search, add, display, delete
  "shape": "Rectangle long, Rectangle Tall, Square, Cylinder."
                                                            search, add, display, delete
}
```

Users

```
{
  "_id": {
    "$oid": "65d696ea83bf711e33958a08"
  },
  "id": 1,                                                  add, delete
  "username": "Sample1",                                    add, delete
  "password": "Sample1",                                    add, delete
  "createdAt": "2024-02-21 2:30:00"                         add, delete
}
```

5. Actual Risks

Identification of possible Risk for this web app

Skills Risks

Risk: Specific knowledge gaps may exist, despite full attendance and training sessions.

Mitigation Plan: Offer targeted training during Sunday sessions to address known gaps. Encourage team members to take on tasks related to these new skills under supervision to solidify learning.

Schedule Risks

Risk: Adjusting the project timeline for training sessions may affect overall delivery deadlines.

Mitigation Plan: Integrate training into the project schedule without impacting critical tasks. Use Asana to monitor task dependencies and adjust due dates proactively.

Teamwork Risks

Risk: Despite 100% attendance, there may be risks of unequal contribution levels.

Mitigation Plan: Continuously assess individual contributions and adjust task allocations to ensure a balanced workload. Encourage peer support and pair less experienced members with those more knowledgeable.

Legal/Content Risks

Risk: Proper citation and legal use of data and images need to be consistently managed.

Mitigation Plan: Develop a standard operating procedure for using and citing external content. Assign a team member to oversee compliance with this procedure, and regularly review Asana tasks for adherence.

6. Project Management

For Milestone two, our team used Asana to manage tasks. Everyone was previously split into front-end and back-end groups based on their familiarity with the respective technologies. This made task assignment easier to break up for Asana. Every meeting (Sundays) we set a goal to get work done by friday. On Friday, we check with each other (previously on github) whether our tasks have been completed. Now we can track them in Asana. On Wednesdays, we talk about how our sprint is going and make sure we are all on track. We are in constant communication on Discord to resolve any issues between sections of work. If there are any conflicts, the concerned members will join a call room and talk about their issues as well as sharing screens to better visualize and explain the issues.