UH6461002 MATHEMATICS WITH COMPUTER GRAPHICS

FACULTY OF SCIENCE AND NATURAL RESOURCES

SEMESTER 2 SESSION 2022/2023

SC32203 COMPUTER INTERFACE PROGRAMMING

Mini Project

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TASK 1

LINK:

https://www.figma.com/file/sVKQGnTysnAavhgzOTo7Ne/Design-Template?type=design&node-id=0%3A1&mode=design&t=XfdMosmsdaFxtZDs-1

PROTOTYPE:

https://www.figma.com/proto/sVKQGnTysnAavhgzOTo7Ne/Design-Template?page-id=0%3A1&type=design&node-id=12-45&viewport=807%2C351%2C0.61&scaling=scale-down&starting-point-node-id=12%3A45&mode=design&t=NQCBQ8zsNJOYRTT2-1

OVERVIEW

Whale watching is a popular activity enjoyed by millions of people worldwide. It involves observing whales and dolphins in their natural habitat and has significant economic benefits for coastal communities. However, countries like Malaysia have a scarcity of dolphins and whales in the sea, highlighting the need for responsible whale-watching guidelines. According to Currie *et al*. (2021), vessels are platforms for collecting whale and dolphin-related data but are also causes of collision with many marine lives (National Marine Sanctuaries). Furthermore, loud noises from ships and vessels can have a negative impact on marine mammals, causing changes in behaviour such as decreased feeding and lower fertility (Ashworth, 2022). According to Taras Oceanographic Foundation (2020), many illegal human activities pose additional threats to marine life. For example, whales and dolphins as they are particularly vulnerable to entanglement in fishing gear.

A study has shown that tourists' participation plays a significant role in influencing their perceived value during whale-watching experiences (Xie *et al*., 2020). Therefore, engagement and involvement from tourists are important to preserve whale watching as an activity that not only serves recreational purposes but also contributes to scientific research and educational endeavours.

Therefore, the area of choice is the marine field. This project proposes a whale-watching application. This application has two users, enthusiasts, and professionals. However, we only focus on the features within the enthusiast account. This project aims to enhance user engagement throughout the activity through digital applications. The application's goal is to make users feel satisfied throughout the activity as well as they also play their role in sustaining the marine ecosystem.

USER ANALYSIS

a) Persona

Sarah, 25 years old, is an avid nature enthusiast who has recently developed a passion for whale watching. She is environmentally conscious and believes in actively contributing to the preservation of marine ecosystems. As a busy professional, she values technology and seeks a user-friendly mobile application that enhances her whale-watching experience while allowing her to contribute valuable data for conservation efforts.

b) Scenario

Sarah is planning a weekend. She heard about a new whale-watching application and decides to download it to enhance her experience. Sarah opens the app and logs in using her account. She navigates to the trip recording feature and starts documenting details such as date, time, and location.

As the boat sets sail, Sarah eagerly uses the app's sighting feature to log every whale and dolphin encounter she witnesses. She can enter details like species and behaviour. Sarah appreciates the interactive map provided by the app, which helps her identify the sighting distribution.

the trip, Sarah notices an unusual marine incident involving debris endangering a whale. With the app's reporting feature, she quickly captures photos, adds a description, and reports it to the relevant authorities for immediate action.

c) Goals

i. **Enhanced Engagement:** Sarah's goal is to have a fulfilling experience, allowing her to interact with the app's features while watching the activity and contribute her own observations and data.

ii. **Contributing to Conservation**: By using the app to document whale and dolphin sightings and report marine incidents, Sarah aims to contribute to conservation efforts and make a positive impact on marine biodiversity.

iii. **Environmental Awareness**: Sarah seeks educational resources within the app that can provide insights to deepen her understanding of whale and dolphin species, marine conservation, and raise her environmental awareness.

APPLICATION FEATURES

a) Record Trip

This feature allows users to document and keep a record of their marine trips and experiences. Users can record information such as the start and end of their trips, and upload pictures and videos of the activities held. They can choose to share the trip compilation made from this feature on other social media platforms such as WhatsApp, TikTok, or Instagram, enabling them to share their experiences with others.

b) Report Sighting

This feature provides users with a convenient way to document whale and dolphin sightings. Users have the option to upload pictures or videos of the sighting. The application utilizes AI technology to automatically detect the species in the media content. The data collected through this feature enables the distribution mapping of various species.

c) Report Incident

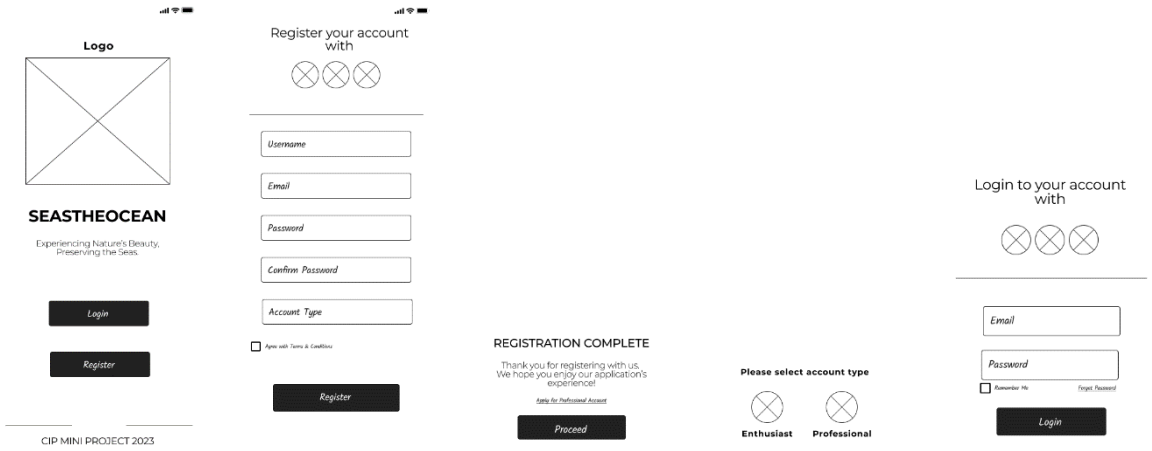
This feature allows users to report marine-related incidents. These incidents can include situations such as encountering dead or sick cetaceans, trapped turtles, and large amounts of marine litter. If a user comes across an incident that requires immediate attention or assistance, the application provides a hotline contact number for them to contact the appropriate authorities or organizations. By providing an accessible platform for reporting incidents, the application encourages users to contribute to the monitoring and conservation of marine ecosystems.

IMPLEMENTATION

The figures below show the wireframes and interface designs proposed for the following interfaces.

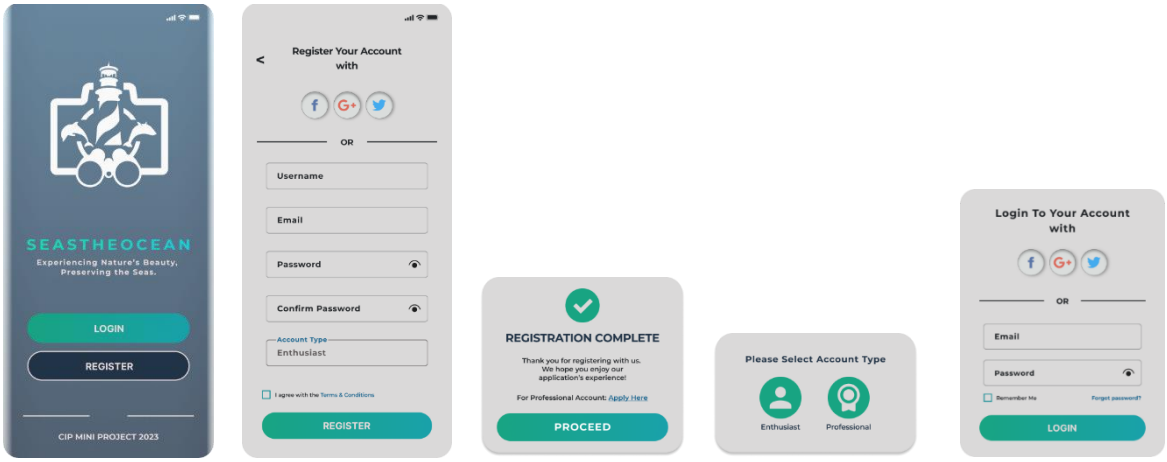
a) LogIn Interface

The login interface consists of two features, login and register. After successfully registering, an overlay will show up as shown in Figure 2(c). An overlay also appears before logging in to ask the user for the type of account as shown in Figure 2(d). Once login is complete, frame will switch to the *Home* interface.



(a) (b) (c) (d) (e)

Figure 1 *LogIn* Low-Fidelity Prototype

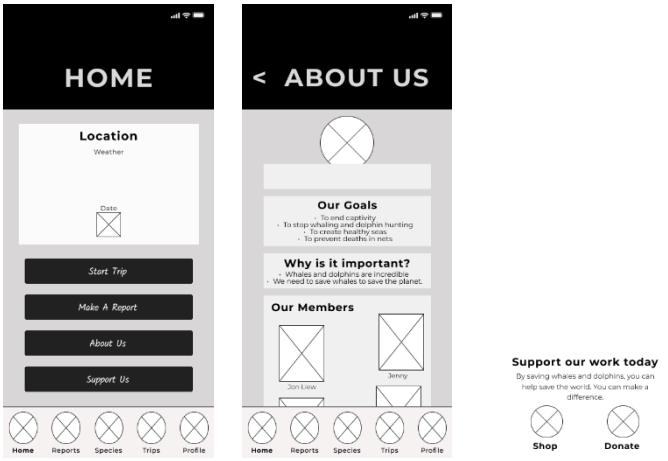


(a) (b) (c) (d) (e)

Figure 2 *LogIn* High-Fidelity Prototype

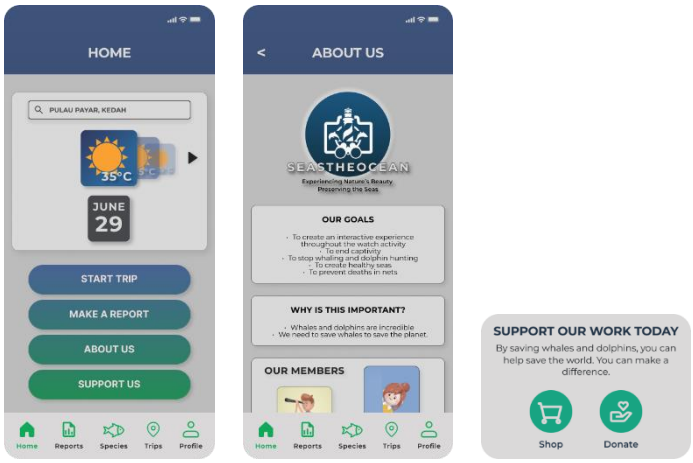
b) Home Interface

The *Home* interface consists of a weather forecast feature to help users predict the weather during their trip. The proposed interface design is shown in Figure 4. Users can also start documenting the details of their trip in advance, report sightings or marine-related incidents as shown in Figure 6(b), learn more about the people behind this organisation as shown in Figure 4(b), and support their efforts in marine conservation.



(a) (b) (c)

Figure 3 *Home* Low-Fidelity Prototype

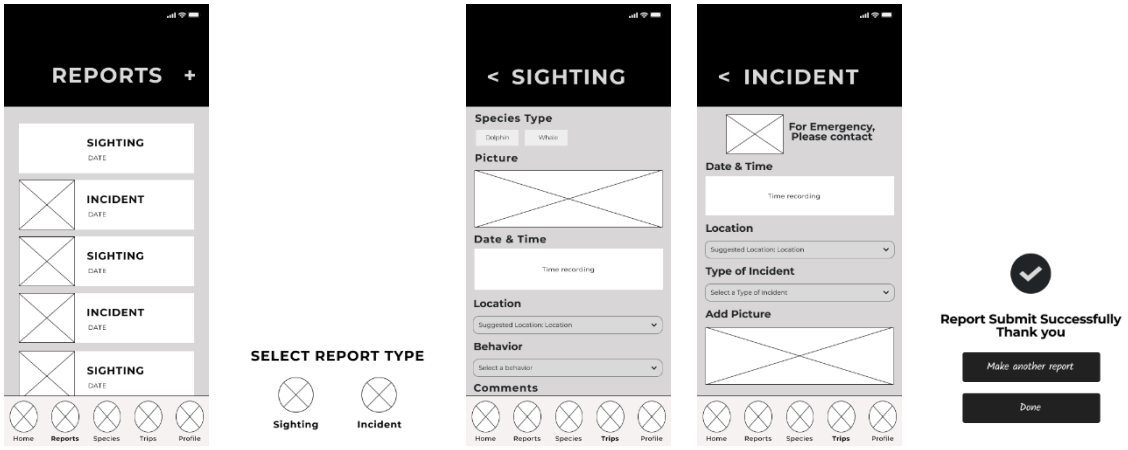


(a) (b) (c)

Figure 4 *Home* High-Fidelity Prototype

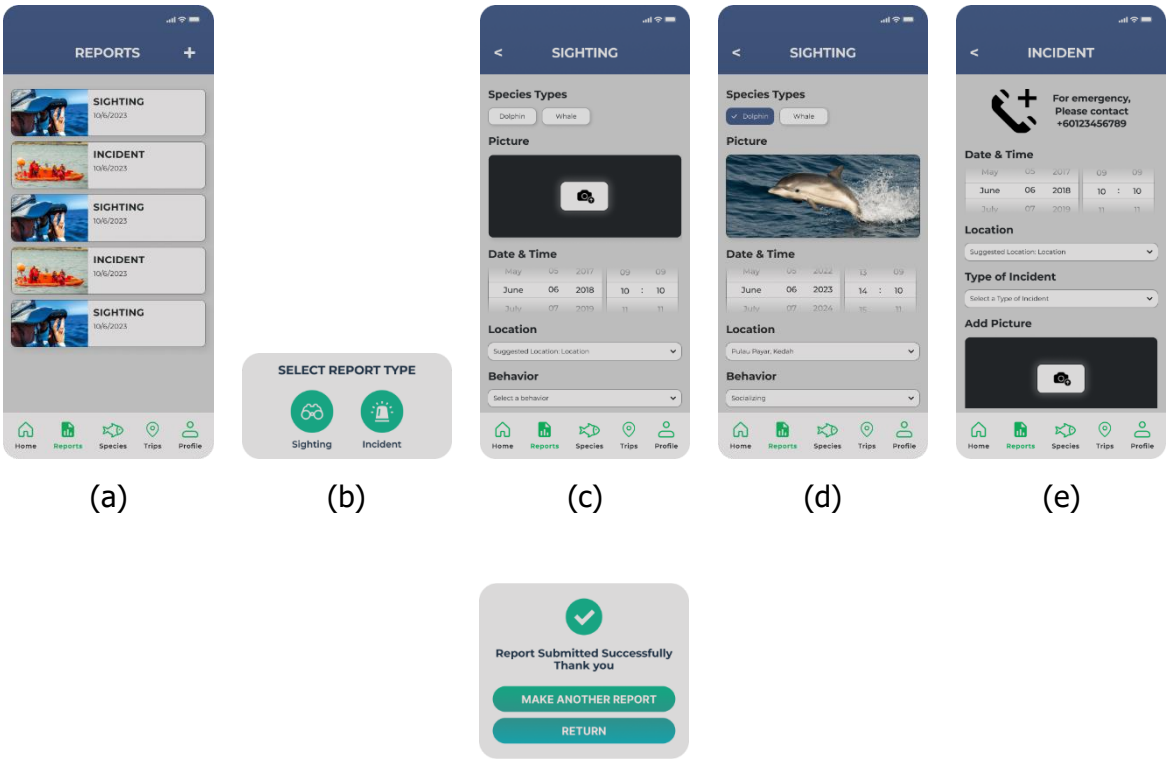
c) Reports Interface

The *Reports* interface consists of a list of past submitted reports. The proposed interface design is shown in Figure 6. Users can view details of past reports (Figure 6(d)) by clicking on the button in the list of the main *Reports* interface. Users can make start making a report at the top right + button. An overlay (Figure 6(b)) will pop up. Once the report is submitted, the user will be notified as shown in Figure 6(f).



(a) (b) (c) (d) (e)

Figure 5 *Reports* Low-Fidelity Prototype



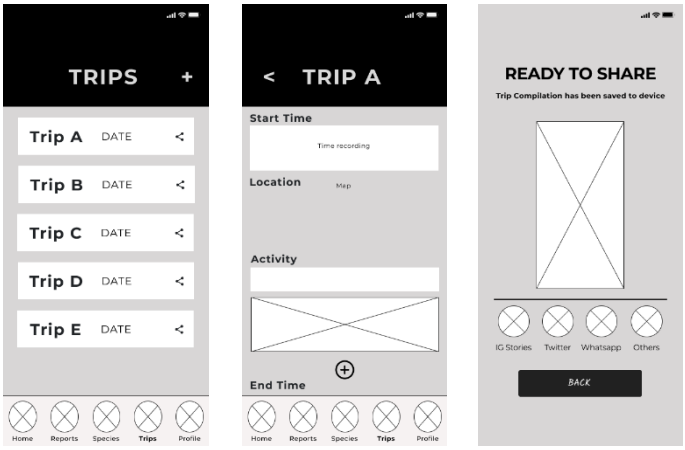
(a) (b) (c) (d) (e)

(f)

Figure 6 *Reports* High-Fidelity Prototype

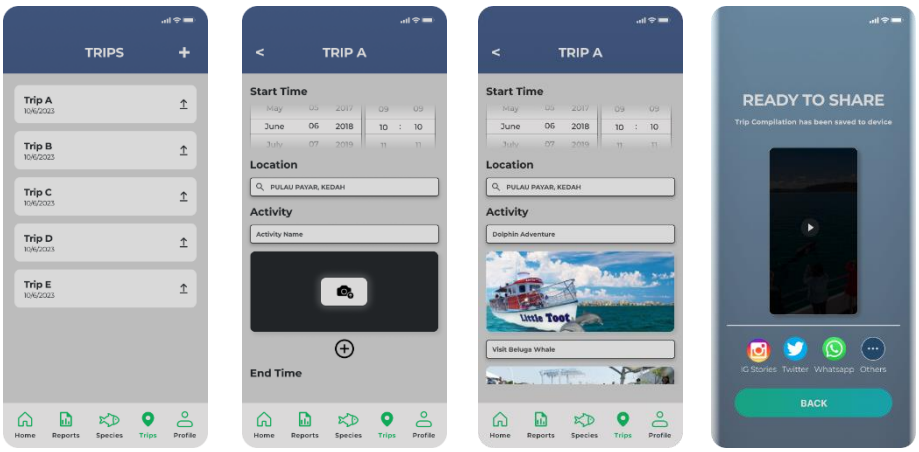
d) Trips Interface

The *Trips* interface consists of a list of past documented trips. The proposed interface design is shown in Figure 8. Users can view and edit details of past trips (Figure 8(c)) by clicking on the button in the list of the main *Trips* interface. Users can make start documenting their trip at the top right + button. Users can also export and share their trip compilations on other social media (Figure 8(d)).



(a) (b) (c)

Figure 7 *Trips* Low-Fidelity Prototype

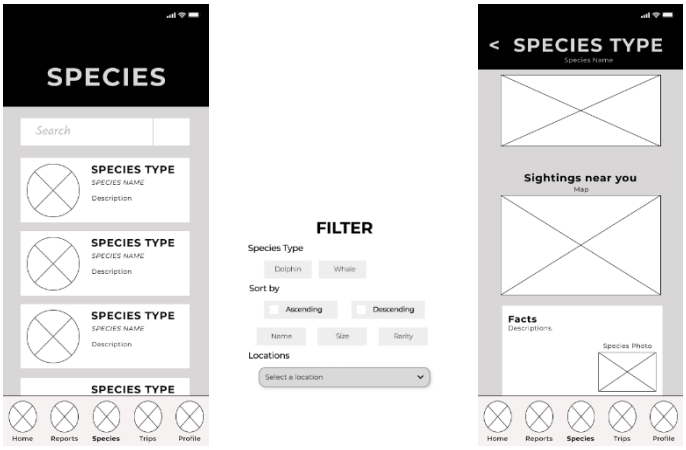


(a) (b) (c) (d)

Figure 8 *Trips* High-Fidelity Prototype

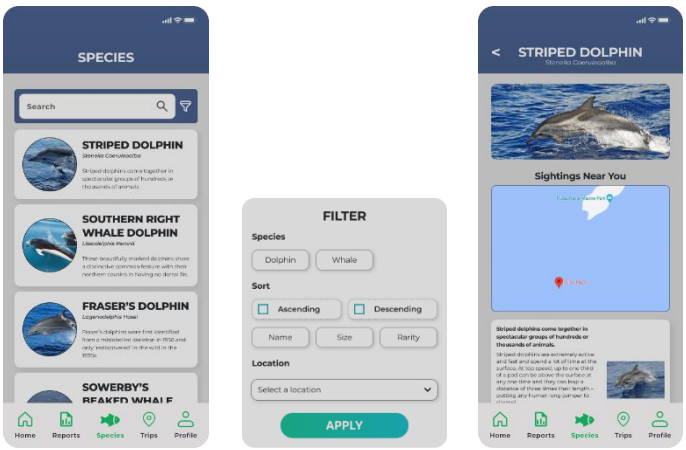
e) Species Interface

The *Species* interface consists of a list of dolphin and whale species information. The proposed interface design is shown in Figure 10. Users can search based on species' names or filter categories (Figure 10(b)). Users can look up information such as species distribution and their characteristics in Figure 10(c).



(a) (b) (c)

Figure 9 *Species* Low-Fidelity Prototype

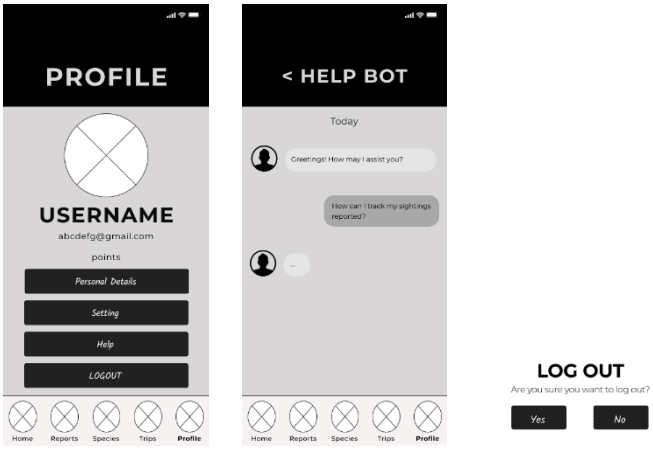


(a) (b) (c)

Figure 10 *Species* High-Fidelity Prototype

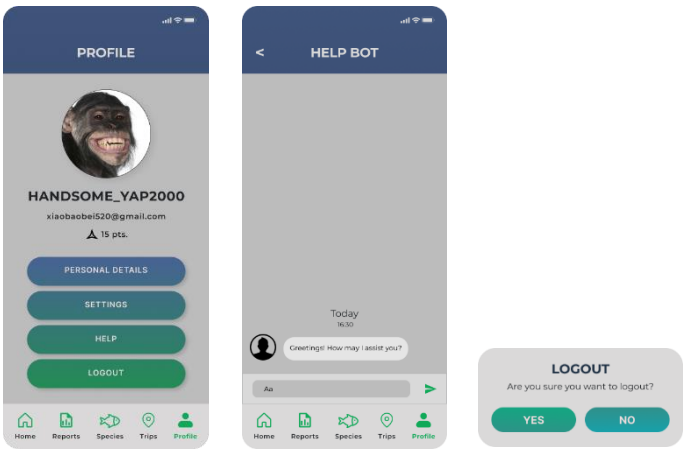
f) Profile Interface

The *Profile* interface consists of user's profile details, settings, application tutorial, and logout. The proposed interface design is shown in Figure 12. Users will be prompted for confirmation before logging out as shown in Figure 12(c).



(a) (b) (c)

Figure 11 *Profile* Low-Fidelity Prototype



(a) (b) (c)

Figure 12 *Profile* High-Fidelity Prototype

TASK 2

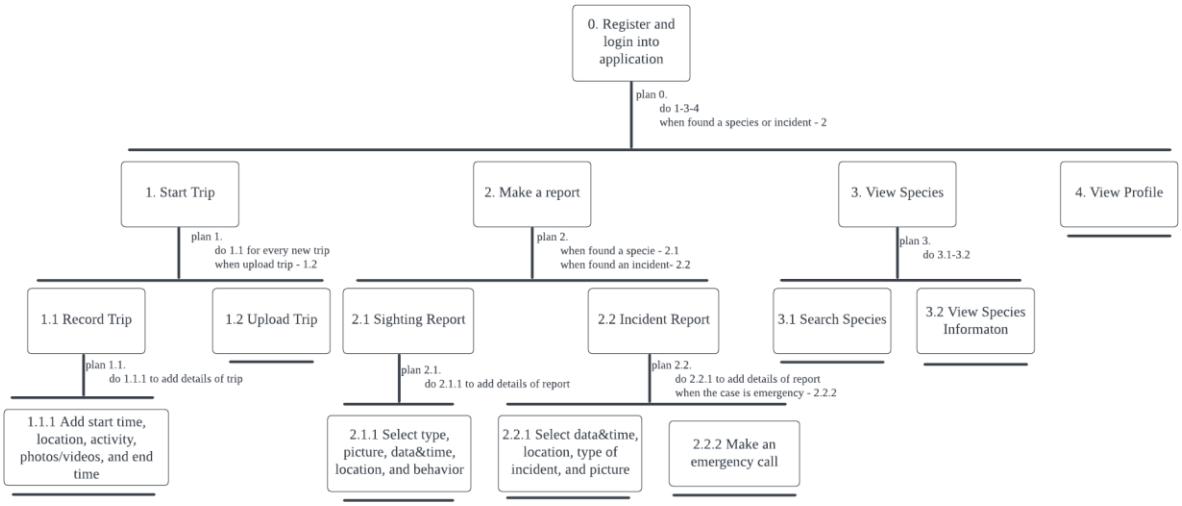


Figure 13 Hierarchical Task Analysis of the system

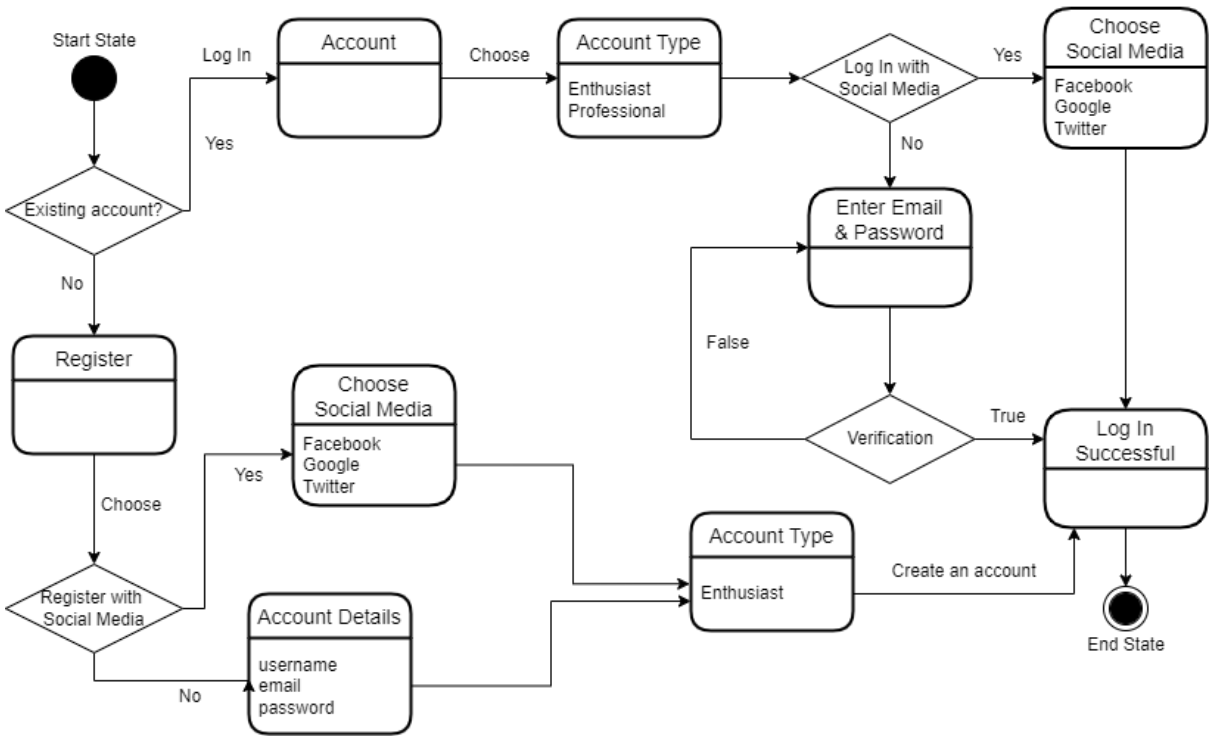


Figure 14 State Chart Diagram of *LogIn* Page

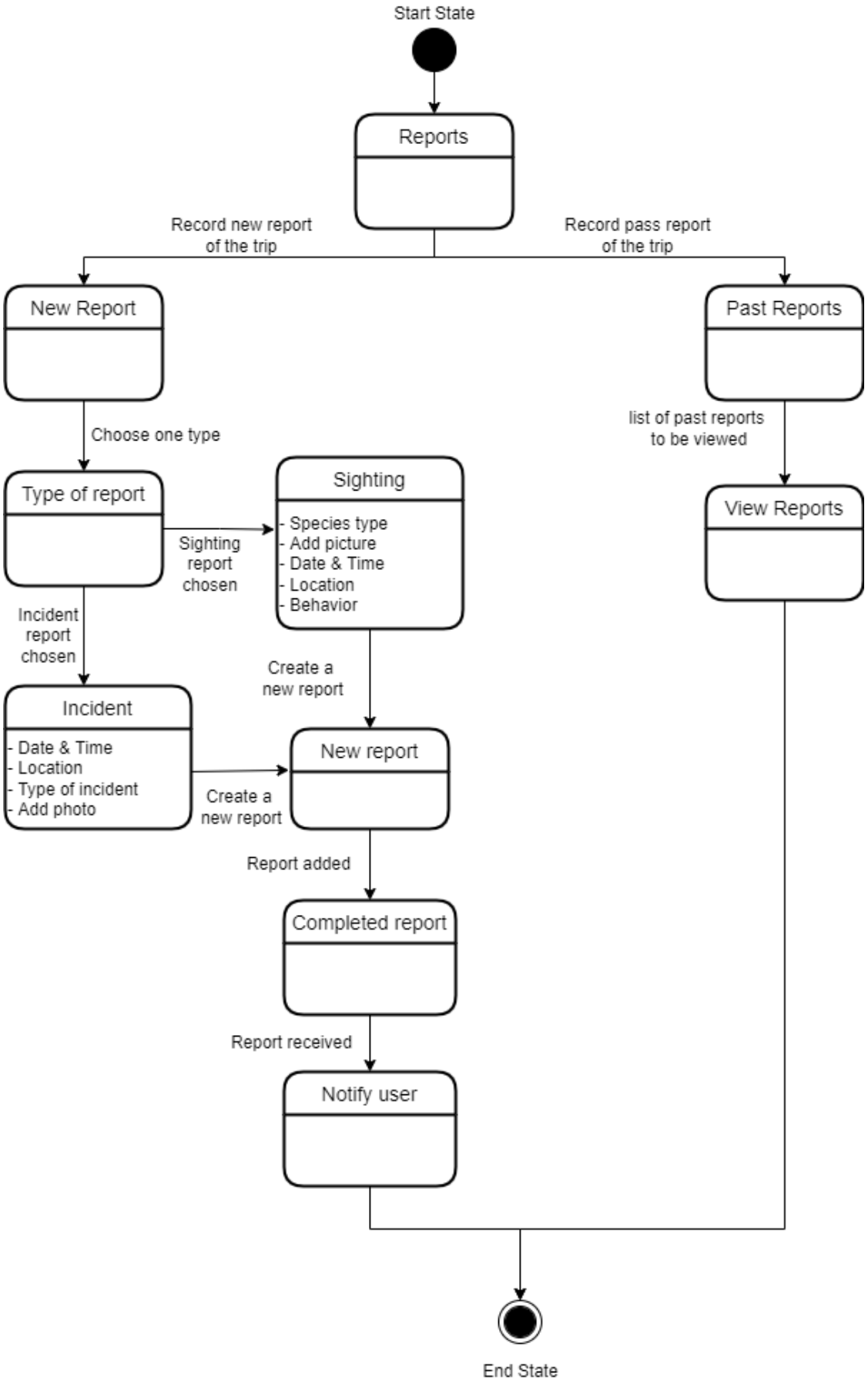


Figure 15 State Chart Diagram of *Report* Page

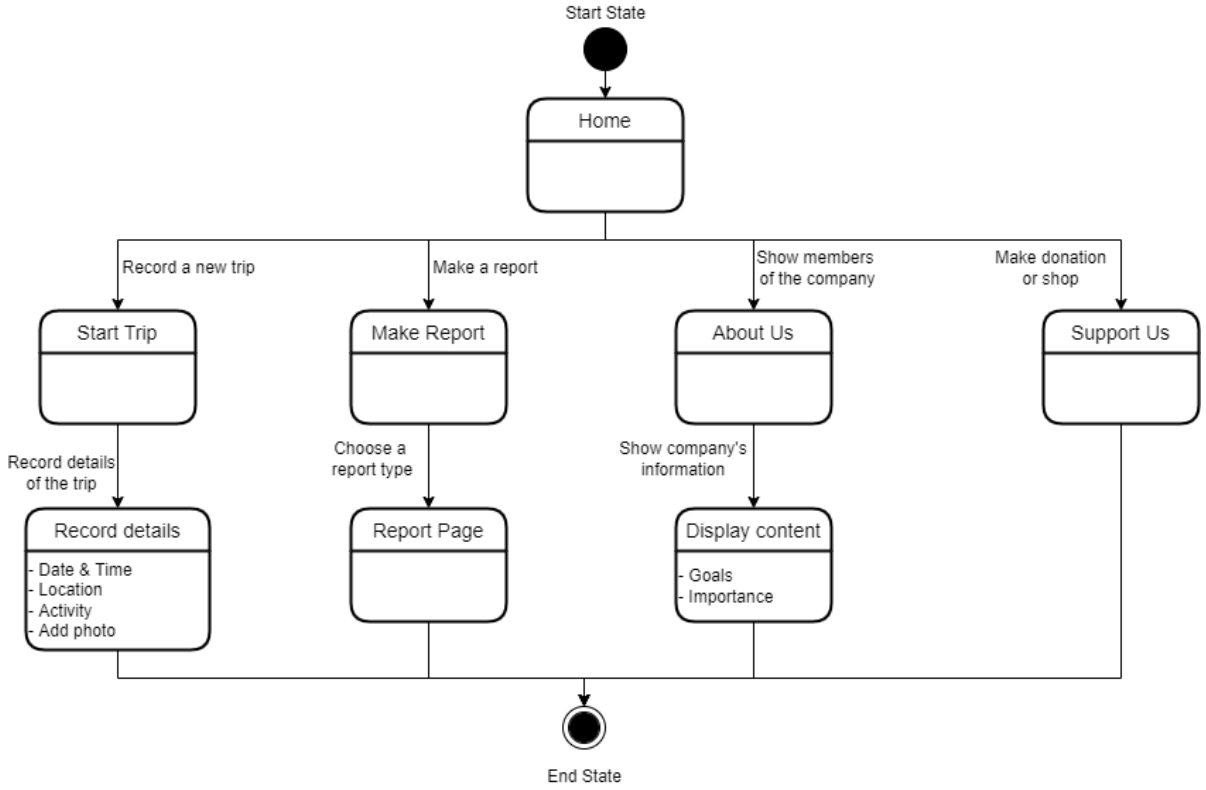


Figure 16 State Chart Diagram of *Home* Page

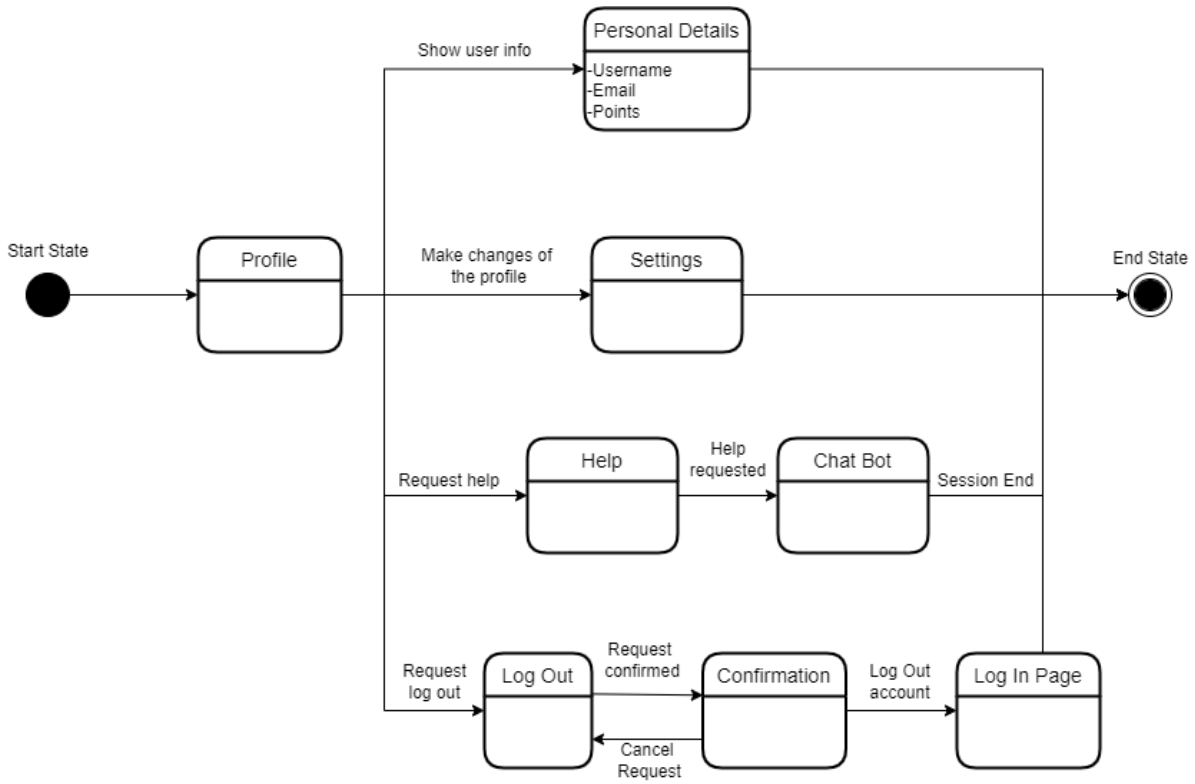


Figure 17 State Chart Diagram of *Profile* Page

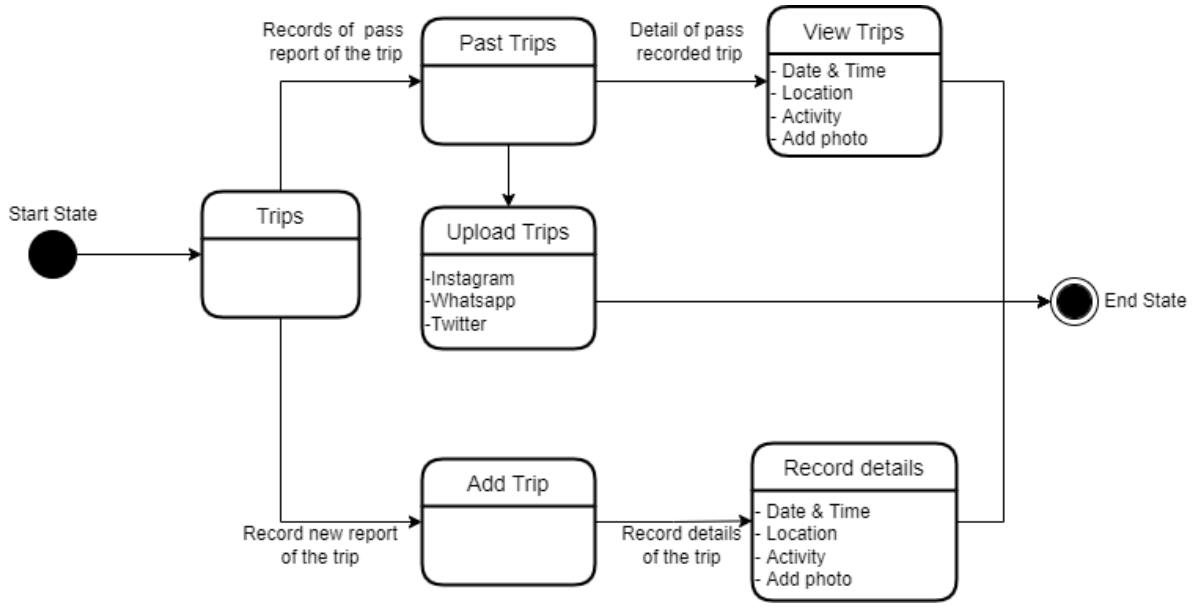


Figure 18 State Chart Diagram of Trips Page

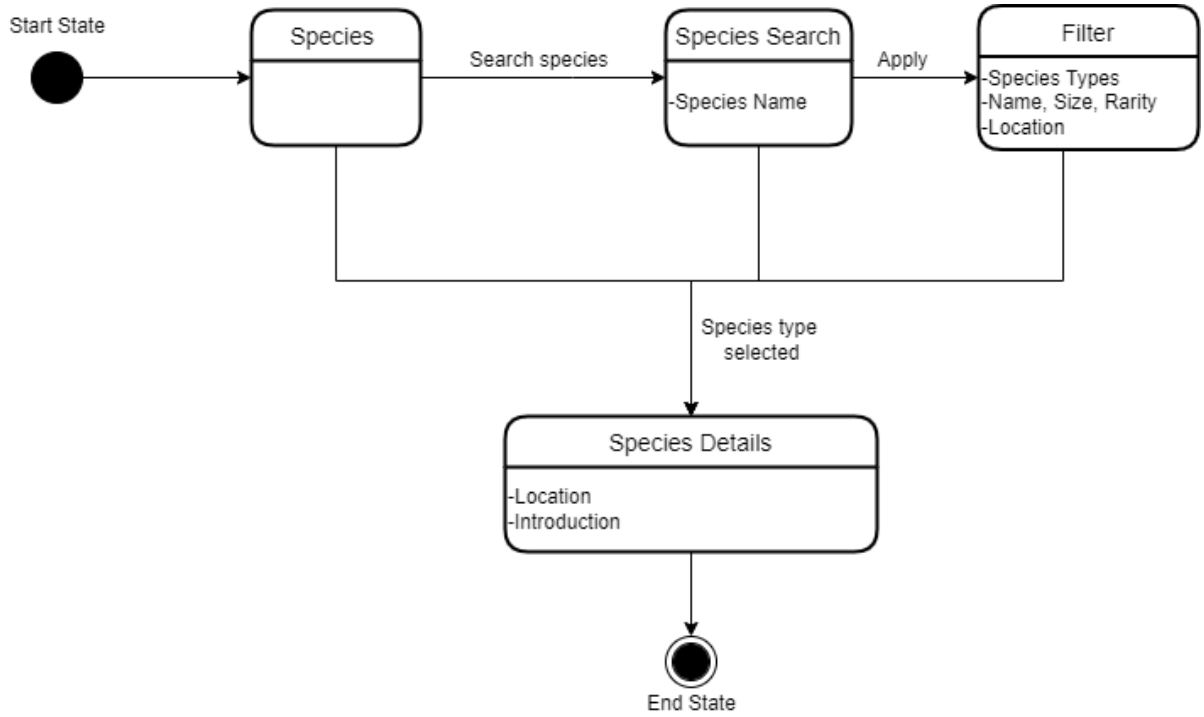


Figure 19 State Chart Diagram of *Species* Page

References

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Xie, J., Tkaczynski, A., & Prebensen, N. K. (2020). Human value co-creation behavior in tourism: Insight from an Australian whale watching experience. *Tourism Management Perspectives*, *35*, 100709. https://doi.org/10.1016/j.tmp.2020.100709