1/30/2024

System Overview

We will be creating an android application. Users will require an android device where they will download our application. Our app will have 6 focal views, the home page, create report page, edit report page, account page, login page, and the view sightings page. Our application will store reports created locally where they can be viewed and edited. Our application will also communicate with a remote server where our database of all submitted reports and user accounts are held.

Stakeholders and Users

List and describe the stakeholders. You should name their role and level in the onion model.

Primary:
Citizen scientist
Scientist
School teacher
Middle & High School Students

Secondary:
Herp Atlas
Robert Pastel

Tertiary:
General public
Michigan government

Personas

Amateur Herpetologist: Sarah

Demographics:

Age: 25
Occupation: Student
Location: Urban area
Education: Biology major

Behaviors and Goals:

Enthusiastic about herpetology as a hobby.
Loves exploring local parks and nature reserves to observe and document herptiles.
Wants to keep a personal log of sightings, including species, location, and behavior.
Interested in learning more about different herptile species and their habitats.

Wildlife Photographer: Alex
Demographics:

Age: 35
Occupation: Freelance Wildlife Photographer
Location: Travels frequently to remote areas
Education: Photography and Environmental Science

Behaviors and Goals:

Captures high-quality images of herptiles in their natural habitats for publications.
Needs a tool to log the details of each photographic encounter, including date, location, and species.
Interested in sharing observations and images with the community.
Seeks an app that is efficient and does not disrupt the photography process.

Citizen Scientist: Juanita

Demographics:

Age: 40
Occupation: Environmental Educator
Location: Suburban area
Education: Environmental Science degree
Behaviors and Goals:

Engages community members in herptile monitoring projects.
Collects data for conservation initiatives and educational programs.
Needs a comprehensive app to record and analyze data for scientific purposes.

Values collaboration and wants to involve others in the project.

User Scenarios

Sarah Scenario
While having a picnic at a local park, Sarah came across a frog. She already had the HERP ATLAS app downloaded on her Android phone. Sarah did not log in to the app yet. Sarah made her observation about the frog, filling in the form to the best of her abilities. The app saved her record for upload later in the day. After she finished her picnic, she returned home. She remembered that she did not upload her observation yet. She opens the app on her phone and logs in. She then uploads her observations and exits the app.

Juanita Scenario
Juanita is out on her nightly walk. She sees a turtle on the side of the road. She is close enough to home to still have service on her phone. She opens the HERP ATLAS app on her phone. She fills out her observation and clicks submit. The observation is immediately uploaded because she has an internet connection. Juanita finishes her walk.

Alex Scenario
Alex is taking photographs in a local bog. He sees a frog. Alex opens the HERP ATLAS app and gets to work. However, Alex has a hard time grasping the app and its design. The design is confusing to Alex and he cannot navigate through the app effectively. Once he finds the form, the amount of things that Alex needs to record overwhelms him. Looking at his watch, Alex realizes that he does not have enough time to gather all of the info to successfully complete the form. Thinking it is a waste of time, Alex closes the app and just admires the frog, storing its image in his mind before he has to leave.

User Environment

The user will most likely be in one of two environments

- Outside:
  The user will be outside with their Android device looking for or having found a herp.
  - Within Cell Service
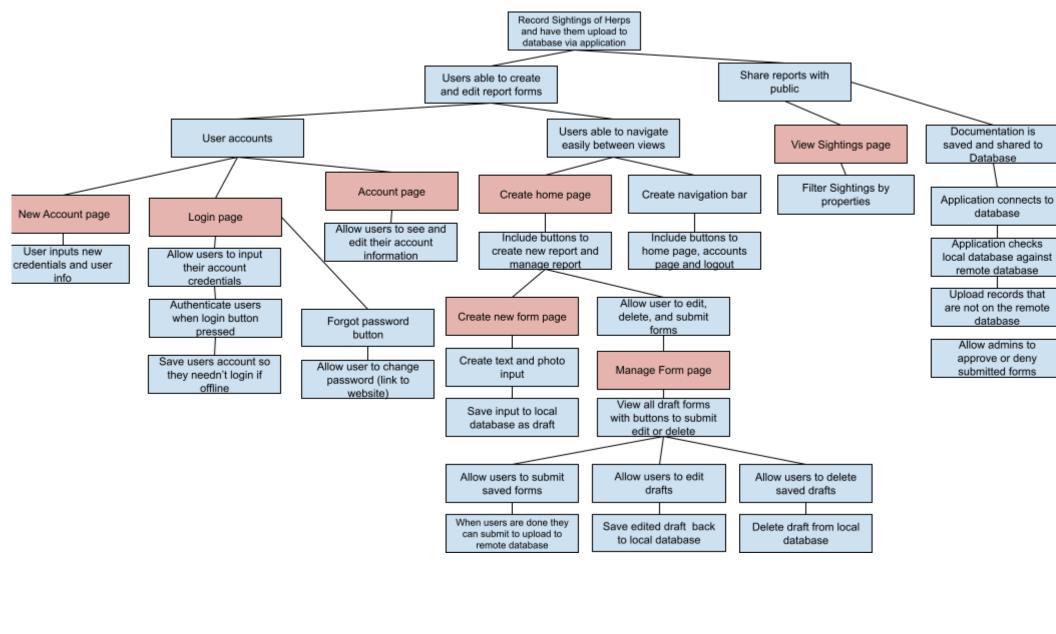   - Users can upload their report to the database
  - Outside Cell Service
    - Users need to save their report as a draft that can later be uploaded to the remote server
- Inside:
  The user will be inside with their Android device. We expect these users will be editing, or uploading their reports or viewing other sightings

Simplified Hierarchical Task Analysis

HERP Android App Simplified HTA

```mermaid
graph TD
    A[Record Sightings of Herps and have them upload to database via application]
    B[Users able to create and edit report forms]
    C[Share reports with public]

    A --> B
    A --> C

    B --> D[User accounts]
    B --> E[Users able to navigate easily between views]
    C --> F[View Sightings page]
    C --> G[Documentation is saved and shared to Database]

    D --> H[New Account page]
    D --> I[Login page]
    D --> J[Account page]

    H --> H1[User inputs new credentials and user info]

    I --> I1[Allow users to input their account credentials]
    I1 --> I2[Authenticate users when login button pressed]
    I2 --> I3[Save users account so they needn't login if offline]
    I --> K[Forgot password button]
    K --> K1[Allow user to change password (link to website)]

    J --> J1[Allow users to see and edit their account information]

    E --> L[Create home page]
    E --> M[Create navigation bar]

    L --> L1[Include buttons to create new report and manage report]
    M --> M1[Include buttons to home page, accounts page and logout]

    L1 --> N[Create new form page]
    L1 --> O[Allow user to edit, delete, and submit forms]

    N --> N1[Create text and photo input]
    N1 --> N2[Save input to local database as draft]

    O --> P[Manage Form page]
    P --> P1[View all draft forms with buttons to submit edit or delete]

    P1 --> Q[Allow users to submit saved forms]
    P1 --> R[Allow users to edit drafts]
    P1 --> S[Allow users to delete saved drafts]

    Q --> Q1[When users are done they can submit to upload to remote database]
    R --> R1[Save edited draft back to local database]
    S --> S1[Delete draft from local database]

    F --> F1[Filter Sightings by properties]

    G --> T[Application connects to database]
    T --> T1[Application checks local database against remote database]
    T1 --> T2[Upload records that are not on the remote database]
    T2 --> T3[Allow admins to approve or deny submitted forms]
```

- Home page
  - Create New Report
    - Multimedia
      - Photo
      - Video
    - Info
      - Species
        - Recorded By (Name)
        - Recorded By (Email)
        - Date
        - Security
        - Source
        - Visibility
        - Record #
        - Group
        - Species Code
        - Taxon
        - Age
        - Sex
        - Quantity
        - Body Temp.
        - Body Temp. Units
        - Presence of Disease
        - Time
        - County
        - TRS
        - Latitude
        - Longitude
        - Accuracy (in meters for new records)
        - Coordinate Method
        - Locale
        - Datum
        - Method
        - Elevation
        - Habitat
        - Air Temp.
        - Air Temp. Units
        - Ground Temp.
        - Ground Temp. Units
        - Humidity
        - Sky
        - Moon
        - Pressure
        - Notes
        - Admin Notes
        - Search Time
        - Observers
        - Vouchers
  - View Sightings
    - View Stats
      - *Filter Data

- ● *View Species
  - ■ View Maps
    - ● *Navigation
    - ● *Filter Data
- ○ Manage your reports
  - ■ Edit Form
    - ● *Save
    - ● *Cancel
  - ■ Submit Form
    - ● *Submit
    - ● *Cancel
  - ■ Delete Form
    - ● *Delete
    - ● *Cancel
- ● Login page
  - ○ User name & password field
  - ○ Forgot password (link to change password via website)
  - ○ Create new account
    - ■ Username, Password, confirm password, Email, and Name fields
  - ○ Account page
    - ■ Edit account info
    - ■ logout

Database Schema

Record (Form Entry)
Recorded By (Name)
Recorded By (Email)
Date
Security
Source
Visibility
Record #
Group
Species Code
Taxon
Age
Sex
Quantity
Body Temp.
Body Temp. Units
Presence of Disease
Time
County
TRS
Latitude
Longitude
Accuracy (in meters for new records)
Coordinate Method
Locale
Datum
Method
Elevation
Habitat
Air Temp.
Air Temp. Units
Ground Temp.
Ground Temp. Units
Humidity
Sky
Moon
Pressure
Notes
Admin Notes
Search Time
Observers
Vouchers
Approved

User Information
Account ID
Username
Name
Password
Email