SwipeQuest - Project Report

Group 6

Members

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Github Link: https://github.com/Rafael-Remigio/SwipeQuest

Motivation

The mobile application has been exclusively developed to cater to the needs of role-playing game (RPG) enthusiasts, offering a simple array of features and functionalities aimed at optimizing and elevating the overall gaming experience. This app encompasses tools that are designed to facilitate efficiency and organization during both tabletop and virtual gaming sessions. We enable users to effortlessly manage various aspects of their gaming sessions, such as character creation and sharing, rule references and dice rolling. This mobile app empowers users to focus on the core elements of the game and enjoy the RPG experience.

Solution

1) **Create and manage your character sheets**
    a) We make use of Hive, a lightweight and efficient NoSQL database solution, in order to locally store and manage multiple Characters and their Abilities
2) **Share Character**
    a) Using camera capabilities we can scan QR Codes corresponding to other player's characters and add them to our collection
3) **Dice Rolling**
    a) Users can in the page of their Character create abilities which involve dice rolling. These abilities can then be used by "rolling the dice". We utilize the device's accelerometer in order to capture a shaking movement. This is then added to the history of used abilities by the player, along with its timestamp and value.
4) **View new RPG Events near me**
    a) Integrating the Google Maps Geolocation API and making HTTP requests we can obtain the device's location. We can also rely on Google Maps API to render and show a visual representation of the user's location as well as RPG Events that are happening near the user
5) **Read the D&D RuleSet**
    a) Making use of a public API, users can read and view D&D's ruleset.

Sensors & mobile functionalities

Camera and QR Code scanning - Trading and sharing character sheets
QR Code Generation - Sharing character sheets
Accelerometer - Dice rolling
Maps UI - to be shared among users the location of RPG Sessions
Use external resources - Access rule books
Local Storage with Hive (NoSQL Database) - Save Characters and their abilities
State Management with State Provider

Architecture

Application structure

The application is composed of 5 main sections.

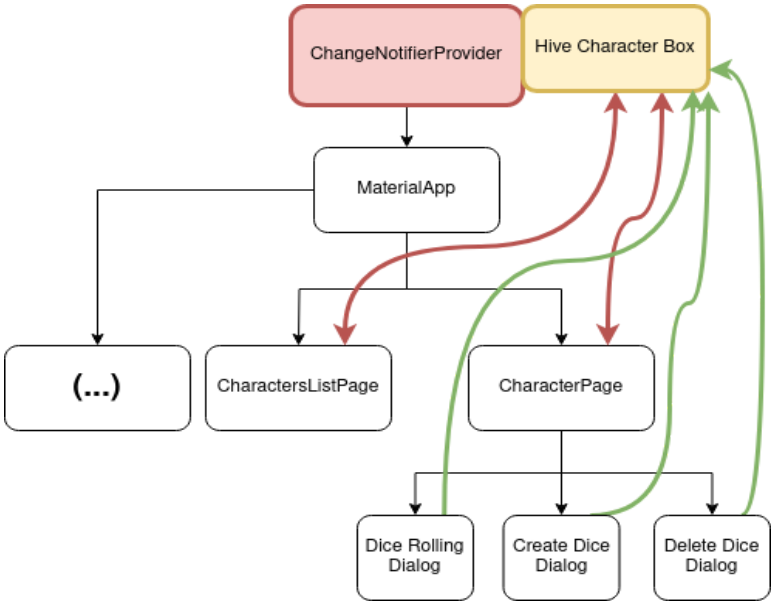
The home page which contains the Google Maps UI and the current RPG Events near the user. We made use of the Google Maps API to render this page and the Geolocator Plugin to get the current location of the device.

The documentation page is used to display information relative to the D&D ruleset, possible character classes and their abilities, as well as possible character races and their specifications. We made use of a public remote API, the D&D 5e API (https://www.dnd5eapi.co/docs). In order to conduct asynchronous API calls we utilized Dart's **async** package and Future functions. We also utilized FutureBuilder to handle the asynchronous operations and update the UI accordingly.

There is also a Character List Page which contains all the users characters. In this page the user also has the option to create or select a Character . These characters are loaded and saved in local storage using Hive. This HiveBox is instantiated once and accessed with the use of ChangeNotifierProvider.

The Character Page displays information about the character such as its abilities and a history of the abilities used marked with a value and a time stamp. Abilities can be used by clicking them and shaking the device, simulating the throw of the die. This is achieved by taking advantage of the device's accelerometer. A user can also create new abilities, delete a Character's history, update the Character's information, such as name or system, and share it via QR Code. QR Code sharing is achieved with the use of the **qr_flutter** library. We simply encode the Character object into a JSON String using the **json_serializable** package and use this String to generate the QR Code. State management in this page is achieve with the use of ChangeNotifierProvider as described in the widget graph underneath.

The camera Page is responsible for reading and parsing a QR Code and creating a Character from the data it contains . In order to scan QR Codes in text format we make use of the mobile_scanner package.



Overall Assessment

Overall, the app's main functionalities have been successfully implemented, but we have clear opportunities for improvement and new features that can be implemented in order to introduce a better user experience.

+ The Good

+ Sharing and scanning QR codes in order to share Characters sheets allows for ease of use and makes the process of Character creation faster.
+ Using the accelerometer to mimic the movement of shaking dice works accurately..
+ Data persistence using the device's own memory, making the application functional offline.
+ Saving an history of abilities used with a TimeStamp reduces the chances of cheating due to dice rolling by players.

- The Bad

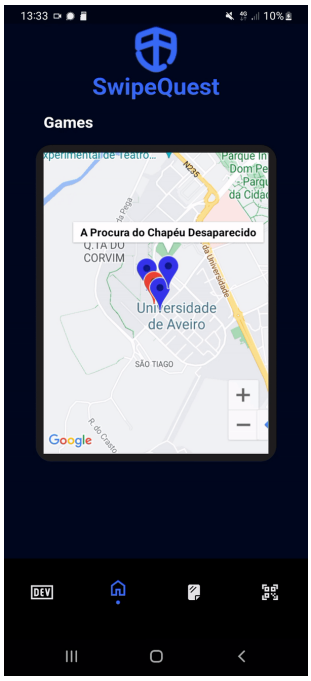
- Simplified layout
- No functionalities that allow communication between players.

Contributions

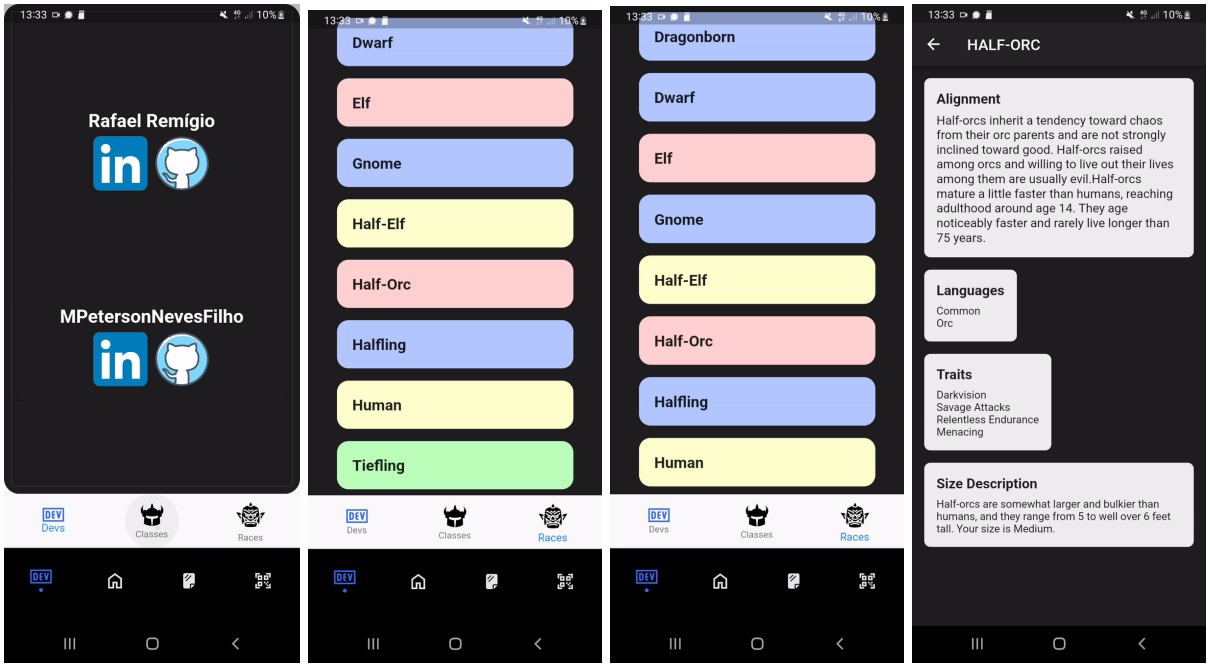
	Rafael - 50%	**Marcus - 50%**
Appearance/Structure	Sheets Page QR Reader	Mockup (Figma) Most of the UI
Functionalities	Camera and QR Code Remote API Access Local Storage	Current Location Map Accelerometer
Time	+-20h	+-20h

Tutorial

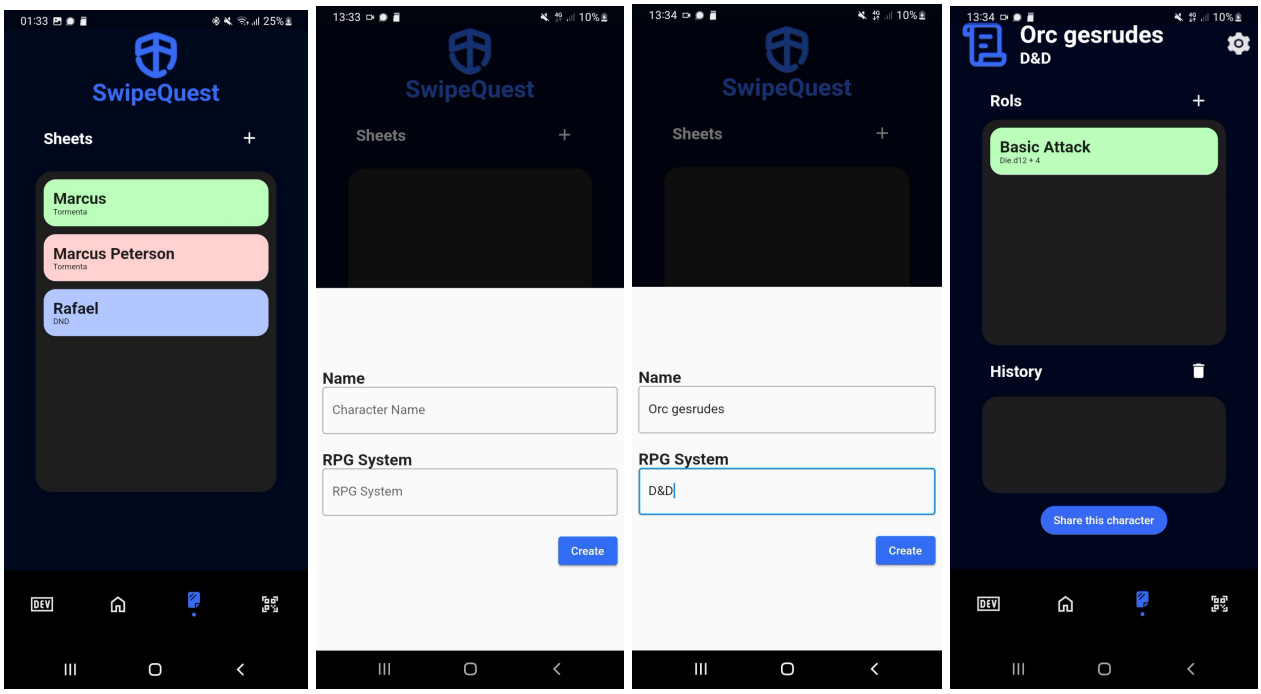
This first screen displays information about the location of the user and RPG Events close to the user



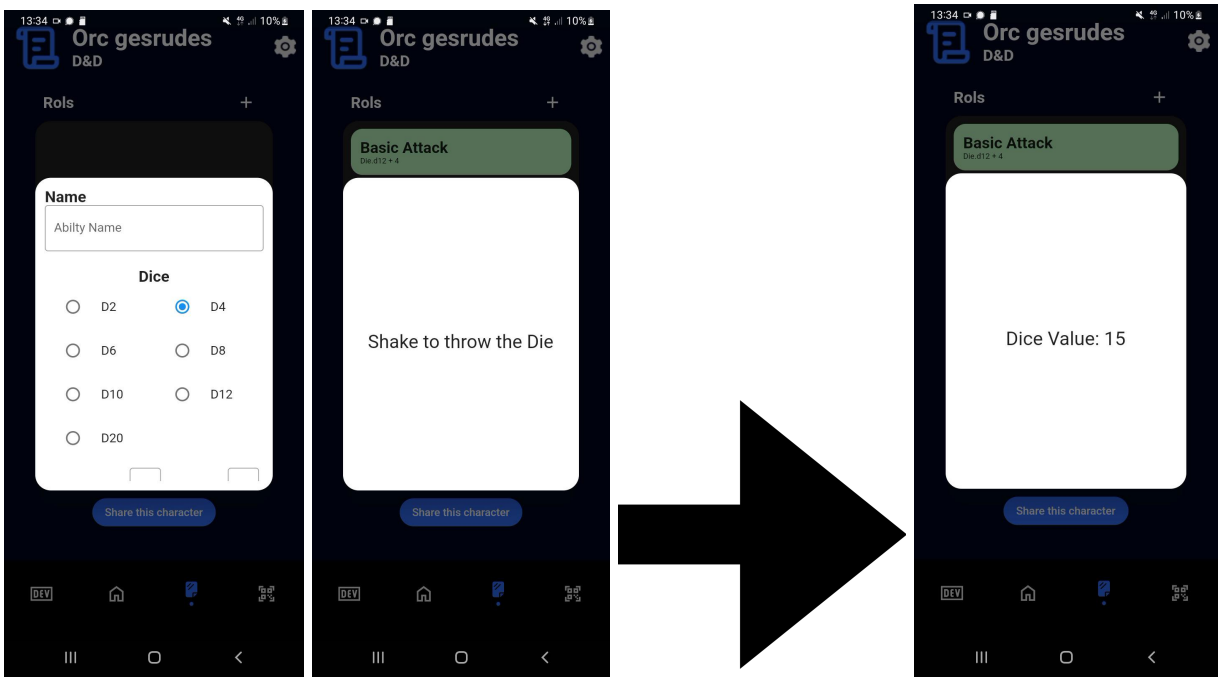
By using the bottom nav bar we can navigate to the screen that contains the D&D Documentation. We can scroll or use the second bottom nav bar to traverse to the *classes* pages or *races* page. If we tap on a race or a class we can get specific information about it.



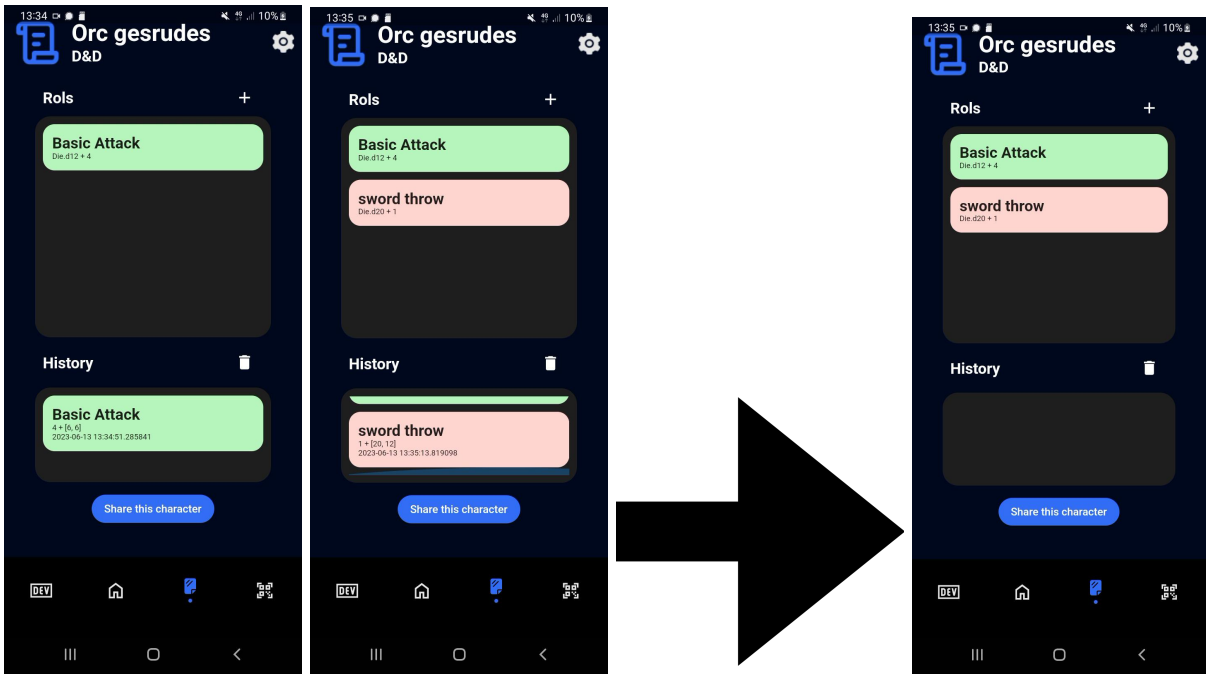
On the next page we can see our list of characters. We can create a character by clicking the add button, or simply select one by tapping it.



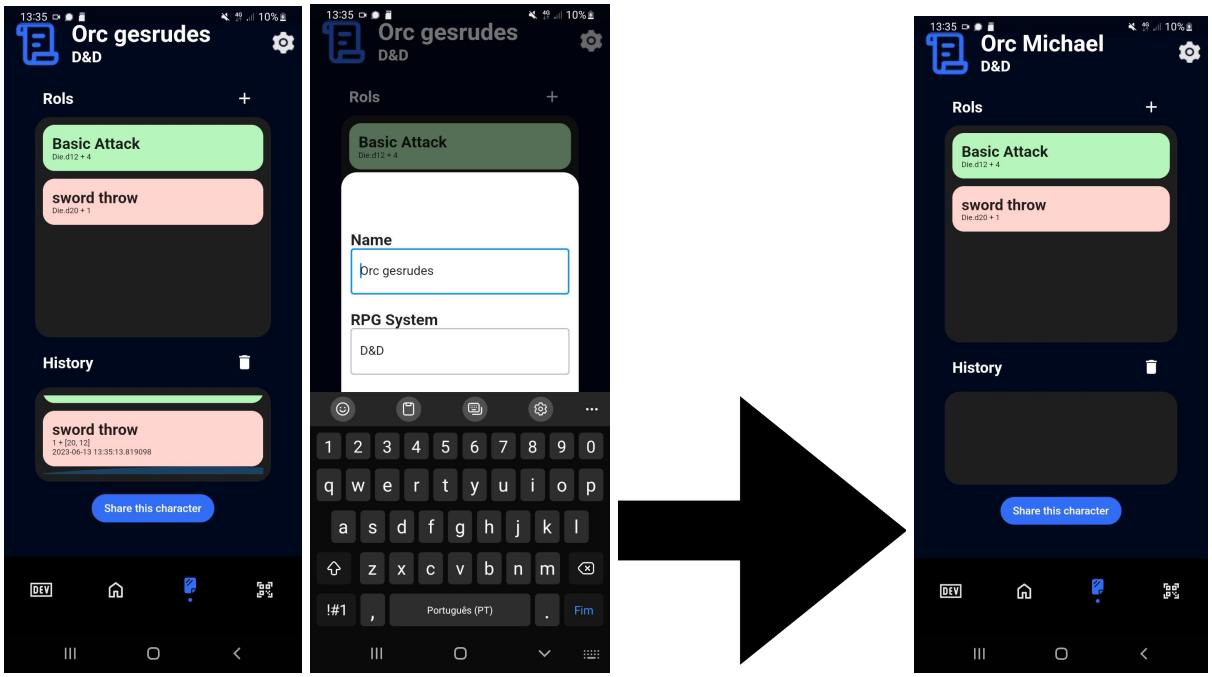
In the Character Page we can create abilities, see our history of used abilities as well as delete, we can use an ability by tapping on it and shaking the screen. We can also update character information such as names.



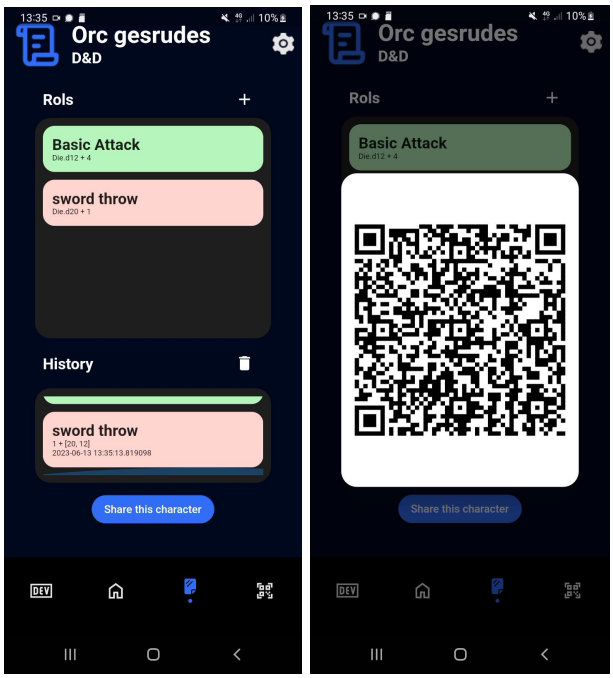
By clicking the delete button above the history we can delete it



We can also share a update a Character's name and RPG System by tapping the Settings Icon on the top of the page



In order to share a character sheet via QR Code we must click the button in the bottom of the screen.



To read a Characters QR Code we must select the QR Code icon in the bottom navigation bar