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SoftApp

A Music Recommendation App



INTRODUCTION

SoftApp is an innovative mobile application crafted to enhance the workout experience by seamlessly synchronizing music with the user's heart rate and exercise intensity.

Rather than requiring users to manually curate playlists or select specific songs for their workouts, SoftApp automates the process by dynamically generating song suggestions in real-time. Whether it's an upbeat tempo to power through high-intensity intervals or a more relaxed rhythm for cooldowns, SoftApp ensures that the music always matches the intensity, enhancing performance and enjoyment.

DESIGN ARCHITECTURE

Front End (User Interface)



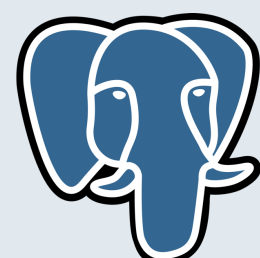
The front end of SoftApp is developed using Swift, Apple's programming language for iOS applications. SoftApp's thoughtful UI design provides effortless navigation, user creation and customization, as well as heart rate tracking capabilities.

Back End (Server)



SoftApp's back-end server is built on Node.js and acts as a communicator between the front end and the database. It handles the logic for calculating and testing against specific heart rate thresholds and utilizes Spotify API to generate and queue music tailored to each user's preferences and workout intensity.

Database (Data Management)



SoftApp utilizes a PostgreSQL database hosted on Amazon Web Services (AWS) to store and manage user data and preferences securely.

METHODOLOGY

Initial Playlist Suggestion

Following account creation or login, users are prompted to select their preferred type of music and workout for the session. This information will be transmitted to the backend, where SoftApp's server algorithms analyze the user's selections and predict the intensity of the workout. Based on this analysis, an initial group of songs are obtained from Spotify, filtered based on their "energy" to match workout intensity, and then queued in the user's Spotify.

Heart Rate Capture

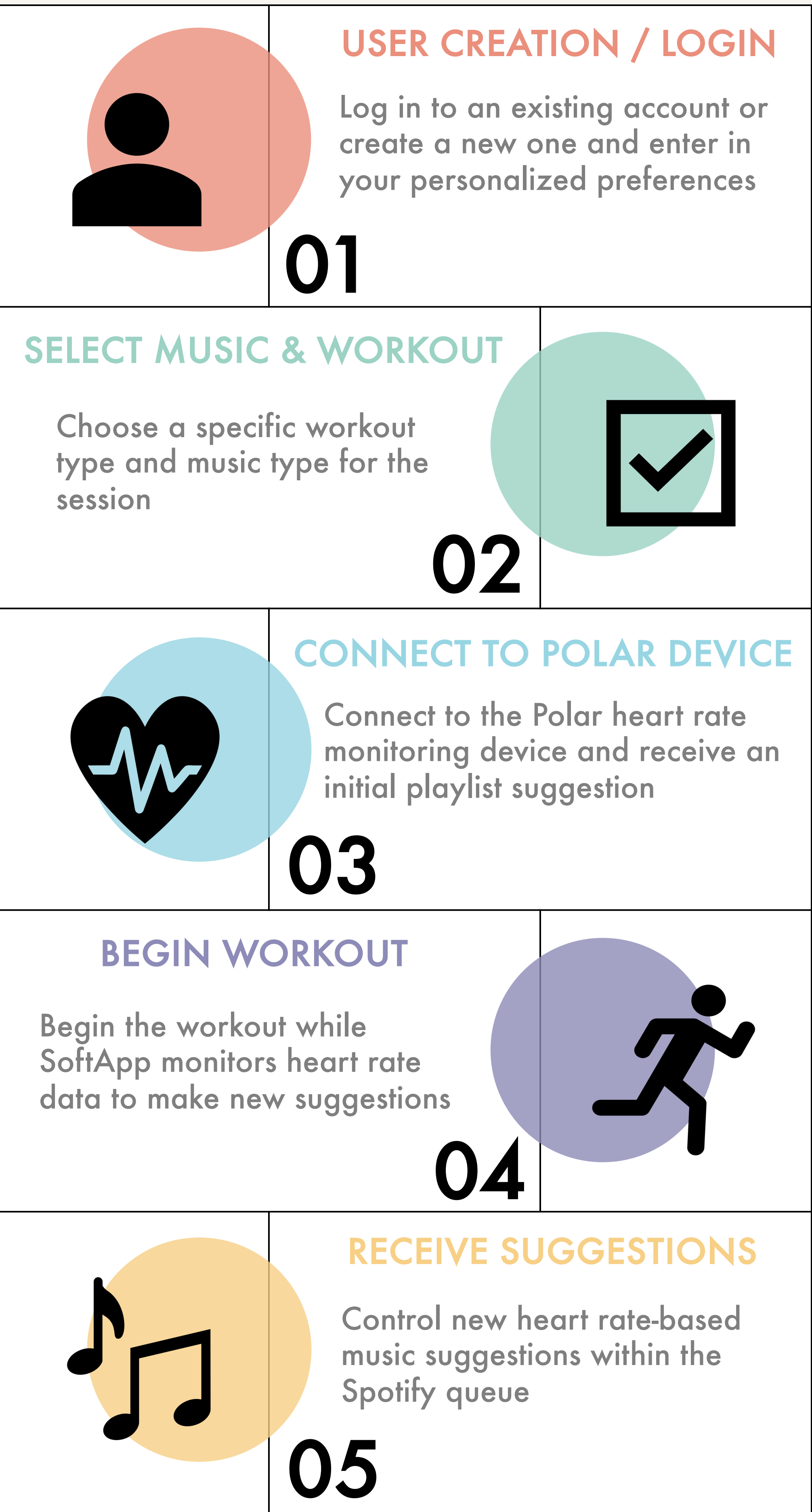
Simultaneously, users are prompted to ensure that their Polar heart rate monitoring device is connected and functional. The app seamlessly captures heart rate data from the device and displays it in real-time, providing users with valuable insights into their exercise intensity and performance.

Heart Rate-Based Suggestions

As users begin their workout session, heart rate data is continuously transmitted to the backend server for monitoring. If the user's heart rate exceeds or falls below predefined thresholds, the server will queue new Spotify songs that align with the updated intensity, providing users with a tailored and engaging music experience throughout their workout session.



The above graph showcases heart rate data in zones for a 'Sprint' workout to model the conditions for when new music suggestions should be made.



The above graph showcases heart rate data in zones for a 'Long Run' workout to model the conditions for when new music suggestions should be made.

APP FEATURES

Functional Features

With intuitive user account management, SoftApp users can effortlessly create profiles and tailor their preferences. Integration with Polar heart rate monitors allows real-time data capture, empowering users to monitor their exertion levels. The server algorithms provide data-driven music suggestions that match users' intensity to enhance workout performance and enjoyment. Additionally, user-controlled playlist management allows individuals to reject queued songs, providing greater autonomy over the personalized playlist.

Non-Functional Features

SoftApp provides an easy-to-use UI that allows users to quickly and easily get set up and ready to go. SoftApp prioritizes scalability by ensuring that all workout and music types are dynamically stored and can be expanded in the future. Additionally, SoftApp is designed to leverage the computing power of the server to reduce front end computing requirements and provide a seamless and reliable experience.

CONCLUSION

SoftApp represents a groundbreaking solution for enhancing the workout experience through personalized music integration. By synchronizing music with users' heart rate and exercise intensity, SoftApp empowers individuals to track their exertion and received tailored music suggestions to match. SoftApp offers a unique and transformative approach to fitness, fostering motivation, performance, and enjoyment in every workout session. Say goodbye to generic playlists and hello to a personalized and immersive workout experience with SoftApp!