QZone - A Location Based Survey Platform

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Github: https://github.com/Spectual/QZone

1. App Concept & Primary Use Case

QZone is a next-generation mobile survey platform developed in Kotlin for Android. It aims to improve the survey experience by connecting survey creators (researchers, marketers, etc.) with a diverse and engaged user base through a geo-targeted reward system.

The process is simple: users open the app to find a list of nearby surveys, complete them for points, and redeem those points for tangible rewards. For instance, after leaving a store, a user might get a push notification to review their shopping experience in exchange for points.

QZone's mission is to transform the traditionally tedious task of filling out surveys into a fast, engaging, and valuable experience for both participants and researchers.

2. Target Users & Problem Being Solved

Target Users:

- Survey Participants (App Users): Students, young professionals, and any individual interested in sharing their opinions for rewards.
- Survey Creators (Web Clients): Academic researchers, market research firms, product managers, and small businesses needing targeted user feedback.

Problems:

- For Users: Current survey tools (e.g., web forms, email links) often provide a clunky, unengaging user experience on mobile devices. The motivation to participate is low due to a lack of immediate and valuable incentives. This leads to high drop-off rates and "survey fatigue."
- For Clients: It is challenging and expensive to acquire high-quality, geographically diverse data samples. Existing platforms lack the ability to dynamically target users based on their real-world location.

Our Solution: QZone addresses these issues by creating a centralized, mobile-first platform that gamifies the survey process with a rewards system and provides creators with a powerful geo-targeting tool, increasing both the quantity and quality of survey responses.

3. Planned Features

We have divided our feature development into two phases: the core experience (MVP) and future enhancements (Stretch Goals).

3.1 Minimum Viable Product (MVP) - The Core Experience

Onboarding & Authentication: Effortless user registration and login, including third-party support for Google, Meta, and X to minimize friction.

Location-Based Survey Feed: Use the device's GPS to fetch and display a list of surveys relevant to the user's current area. This is the central feature of our app.
Reward & Points System: Users earn a base number of points for every completed survey, with the potential for bonus points set by the survey creator.
Multimedia Survey Interface: A native, intuitive interface for answering various question types, with support for embedded text, images, audio, and video content.
User Profile Management: A section for users to manage basic information, such as their profile picture, region, and personal interests.
Modern & Personalized UI/UX:

- Built with a focus on beauty and usability, ensuring a branded, consistent design.
- Essential user preferences like system-wide Dark/Light mode support and leverages Material3's dynamic theming.

3.2 Stretch Goals - Future Enhancements

Advanced Survey Discovery & Targeting:

- Profile-Based Matching: Push surveys based on user-provided interests and demographic tags.
- Active Search & Filtering: Allow users to search for surveys using tags, keywords, or exclusive invitation codes.
- Interactive Map View: Display nearby surveys on a map, allowing users to actively explore and select them.

Enhanced User Interaction & Gamification:

- Shake-to-Refresh: Utilize the gyroscope sensor to allow users to refresh their survey feed with a simple shake gesture.
- In-App Reward Redemption: A built-in store where users can redeem their points for digital gift cards, coupons, or other rewards.

Accessibility Features:
We implement accessibility best practices, including specialized color themes for users with color blindness, dynamic font scaling, high contrast ratios option.

3.3 The Client-Side Platform (Conceptual Overview):

We will also have a powerful, browser-based web portal for survey creators. While its development is not part of this Android project, its planned features include:

- **Intuitive Survey Builder:** A user-friendly interface for clients to publish surveys.
- **AI-Assisted Creation & Templates:** Offer pre-built templates for common use cases and leverage AI to help generate questions based on simple prompts.
- **Analytics Dashboard:** Provide clients with a dashboard to monitor survey responses in real-time, complete with data visualizations, charts, and exportable reports.
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4. Technical Plan

Our **architecture** will be **MVVM** with **Jetpack Compose**, separating UI from logic. For example, a SurveyFeedViewModel will be responsible for calling a Repository to fetch surveys based on the user's location. This ViewModel will expose the survey list as an observable StateFlow. Our Compose UI will then subscribe to this flow and automatically re-render the list whenever the data changes, without needing manual UI updates. This declarative approach keeps our UI simple and state-driven, while

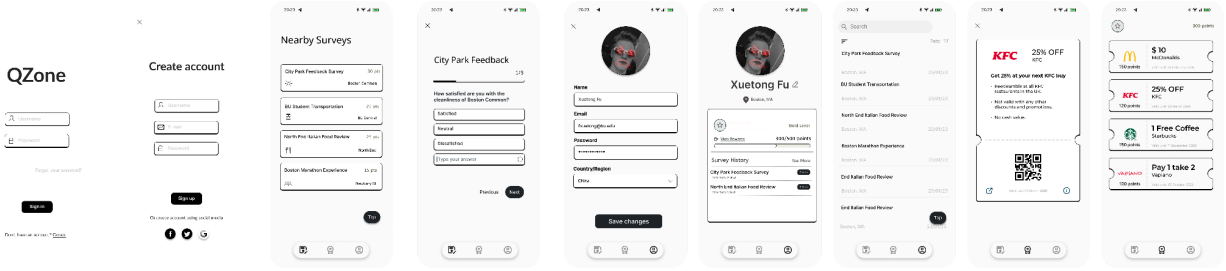
allowing us to independently test the logic within our ViewModels, ensuring a robust and maintainable application.

External APIs: Google Identity Services, Firebase Authentication / Firestore, Google Maps SDK for Android.
Onboard Sensors:GPS / Network Location, Gyroscope, Camera API, Microphone API
Data Storage: Proto DataStore(local data caching)

5. Navigation Map

Onboarding: Splash Screen -> Login/Register Screen (with social login options) -> Profile Setup.
Main Interface:

- Home (Survey Feed): The default screen. A scrollable list of available surveys nearby.
- Map View (Stretch Goal): An interactive map showing survey locations.
- Rewards: A screen displaying the user's point balance and the reward redemption store.
- Profile: User profile, settings, and survey history.
- Survey Flow: Select Survey from Feed -> Survey Detail Page -> Survey Interface (questions) -> Completion & Reward Confirmation.



6. Team Collaboration Plan & Responsibilities

As a collaborative team of three, we will share all design and architecture decisions. To ensure progress, we have assigned primary focus areas, but we will all contribute to the entire codebase through pair programming and code reviews.

Yifei Bao: Product & UX; user onboarding/auth; profile & basic recommendation design.
Xuetong Fu: Survey engine & data; questionnaire flow; storage & submission
Zhenyang Qian: Location & geofencing; rewards/points; platform integrations