Smart Automated Alarm Service App – Time to Go

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Abstract—We aimed to develop an application that integrates mobility, alarm, and calendar features to provide keyword-based notifications and departure time alerts based on schedules. This project was carried out over approximately three weeks as part of the Techno-Business Administration course. Due to the course's focus on the entrepreneurial process rather than app implementation, and given the limited time, we were unable to incorporate advanced features such as recommendation algorithms or map API. Instead, we concluded the project with a simplified prototype that demonstrates the core concept.

I. INTRODUCTION

The alarm, calendar, and navigation apps play a crucial role. People use alarm and calendar apps to set target times and navigation apps to check the estimated time to a destination. However, in actual use, there are some inconviences. For instance, it is not always easy to check the last train schedule during social gatherings, and while navigation apps provide estimated arrival times, users must manually calculate appropriate departure times. To solve these issues, we proposed an integrated application that combines mobility, alarm, and calendar features to provide keyword alerts and departure time notifications. The basic UX / UI of the application was implemented using Flutter and the overall design was finalized using Figma.

II. BACKGROUND

A. Market Analysis

According to WiseApp Retail, a mobile app market analysis firm, approximately 89% of all smartphone users in 2023 had mobility apps installed [1]. Furthermore, the number of users began to rebound in 2021, reaching approximately 37.27 million mobility app users by 2023. The total mobile app market in Korea is estimated to be around 12 trillion KRW, with the combined market size of mobility, alarm, and calendar apps projected to be about 250 billion KRW. When narrowing the target market to university students and shift workers. The potential market size for our app is estimated to be approximately 80 billion KRW.

B. Survey

We conducted a survey of 49 participants from June 28 to June 30. Respondents noted that existing mobility apps are useful for reaching destinations, however they face difficulties in calculating total travel time during multiple transfers and find it inconvenient to repeatedly check departure times. Moreover, approximately 83% of respondents indicated that they would use an app with a departure time notification feature, suggesting strong market potential for our application. The most desired features included departure time alerts and personalized services based on individual walking speed. From a profit strategy, when asked about their willingness to pay for such personalized features, only 40% expressed interest in a paid version, highlighting the need for a cautious approach to monetization strategies.

C. Business Model

We focused on integrating mobility, alarm, and calendar functionalities with keyword-based recommendations and personalized user preferences to define the core differentiators of our app. Based on this approach, we adopted a dual revenue model combining free-mium and advertising strategies. The free-mium model consists of three tiers. The first tier offered for free, includes route planning and departure time suggestions but limits the number of schedules a user can save. The second tier adds personalized departure time notifications based on walking speed and travel habits. And The third tier removes schedule limits and offers advanced AI-based features that reflect real-time traffic and weather conditions. For advertising, we plan to incorporate splash screens and banner ads displayed during app usage.

III. METHODOLOGY

A. Prototype Application with Flutter

Due to the limited time, the prototype app developed using Flutter was implemented primarily to visualize the user interface [2]. The first screen of the app features a calendar at the top, where selecting a date displays the saved schedules below. Users can scroll to hide the calendar and view only the list of schedules. A button

at the bottom right allows users to add new events, and each schedule block includes edit and delete options.
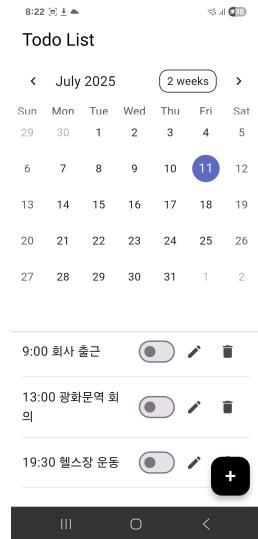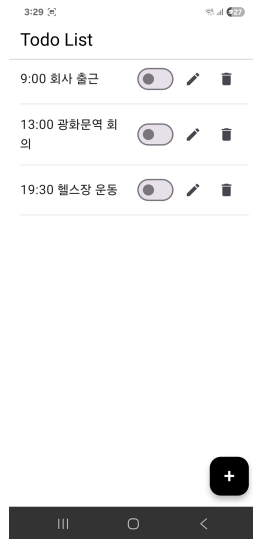

Fig. 1: Main Screen

Fig. 2: Scrolled Screen

In the alarm toggle screen, turning on the toggle activates the alarm function, which recommends a departure time to ensure timely arrival. In the top right corner, a keyword appears when the toggle is active. This keyword enables context-aware alerts. For example, suggesting early arrival for meetings or recommending the last train time for evening appointments.
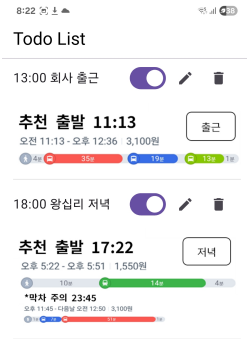

Fig. 3: Page with Toggle Activated

We improved this prototype by recreating the full user interface in Figma, reflecting the intended functionality and design of our app.

B. Prototype Application with Figma

Before using the app, users do a short survey to gather their personal preferences. This information is used to analyze user behavior and determine personalized departure times based on their schedules.
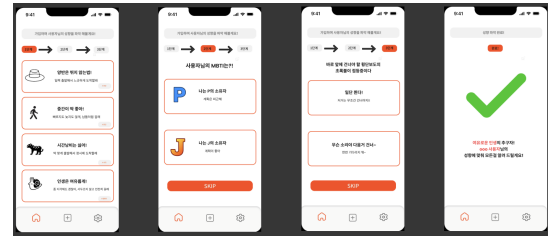

Fig. 4: Examples of Personal Survey

On the main screen, the calendar and daily schedules are displayed together for better visibility. To maintain a clean and user-friendly interface, buttons for adding, editing, and deleting events are intentionally excluded from the main view. When the time alarm is activated, the text color becomes highlighted.
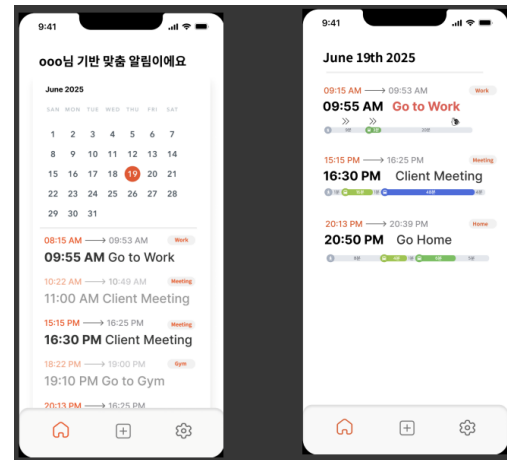

Fig. 5: Main and Scrolled Screens

Users can set an alarm by entering the desired time and destination.
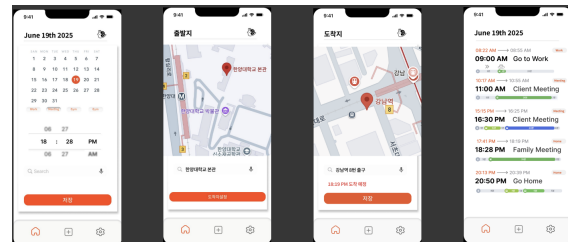

Fig. 6: Setting Schedule Screens

IV. Results and Discussion

We were able to implement the departure time notification and keyword-based alerts that we had envisioned for the app. However, features such as route recommendation algorithms and using AI were not implemented. The current interface focuses primarily on showing the functions we were able to develop.

V. Conclusion

Through the Techno-Business Administration course, We had the opportunity to explore a new area of study. Working with team to identify a problem and develop a solution was a valuable experience that we hadn't encountered in other courses. Although we had always perceived entrepreneurship as something extremely difficult, this class helped us realize that it's not as overwhelming as we once thought.

At first, our team struggled to define a problem, but we eventually found inspiration from a simple, real-life inconvenience. The experience that existing alarm and mobility apps don't notify users of their ideal departure times, often leading to missed schedules. Starting from this basic observation, we were able to build our idea.

We conducted market research, analyzed startup cases, and identified strengths of our app. Creating a strategy canvas helped us refine and visualize our concept. To bring the idea to life, we studied Flutter, a cross-platform development tool, and worked on designing the app interface from each perspectives. We made an effort to incorporate various user feedback throughout the process.

Feedback from the professor and other teams provided us with constructive ways to improve, and the resulting prototype gave us the confidence that we might actually be capable of launching a real startup one day. Although we weren't able to implement the full algorithm within the short summer session, this project gave us the chance to learn a lot over the break and was a meaningful first step into the world of entrepreneurship.

References

[1] WiseApp Retail, "2023년 앱 설치 및 사용 통계," *WiseApp Insight*, accessed July 19, 2025. [Online]. Available: https://www.wiseapp.co.kr/insight/detail/501

[2] T. Kwon, 쉽고 빠른 플러터 앱 개발: *Flutter & Dart*로 화면 구현·상태관리·데이터 처리·디자인 패턴 익히기, Hanbit Media, 2022.