

StyleReserve

- LG Styler Reservation Service that protects your Styler usage, clothes for special occasions, and your own style -

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Abstract—Our team - Dressing Sauce - wants to focus on the Styler-using environment inside the family and workplaces on the expansion, and plan to develop first, a Reservation System that helps to reduce conflict in the process of using the Styler. On top of that, a Calendar-based function that helps to reserve what I want to wear in advance, which helps to prepare clothes the day before appointment.

The "StyleReserve - LG Styler Reservation Service" came to our mind as we thought about ways to solve problems we can face in our daily lives, such as differences in time of returning home, or when we have urgent appointments. Based on the type of clothes you want to wear, the functionality of the Styler you use, and the reservation time, family members can save time and effort by using the Styler together and can provide more people with the opportunity to wear neat clothes. In addition, 'StyleReserve' can provide a seamless experience of using an LG Styler after workplace attendance or after dinner during overtime to help people in the company to use it fairly and efficiently.

We also wanted to create a service that provides a "notification" so that users can "book their clothes in advance" and use the Styler the day before the appointment. For example, in the case of sisters living together, we found out that they often share their clothes together. In this situation, if there is a system in which one can reserve clothes for his or herself in advance on the calendar, then it will prevent small conflicts because of the cases when two people have to wear the same clothes on the same day.

Furthermore, if the system can send a notification the day before the user has a special appointment in order to encourage him or her to use the Styler, it will be able to help users to go out nicely.

Our team expects to further enhance user satisfaction by offering a calendar-based reservation system to provide solutions to the situations that families may experience while using the Styler and to further enhance the functionality of existing Styler to help them dress neatly.

Index Terms—Styler, Reservation System, Calender, Mobile Application, Clothes

I. ROLE ASSIGNMENT

Below is the table of role descriptions. Due to the small members in the team, some roles are distributed to the same person in order to harmoniously progress the project.

Name	Roles	Role Description
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Kim Tae Hyeon	Development Manager	A Development Manager is responsible for managing the overall project. He ensures that the project is progressing well on schedule, that the functions are being implemented well, and that the overall software engineering process of development, UI/UX design, and prototype testings and supplementation are going smoothly. In addition, he continuously monitors whether team members are communicating smoothly and completing the project together.
Park Se Eun	Customer, Product Designer	A Customer thinks about what features they want to add when using the product. For example, in the process of using an LG Styler, after experiencing the moment when it becomes difficult to use because others are already using it, the customer soon reach to a need for the function in these kinds of situations, and intends to use this idea in the process of developing the LG Styler using environment later. A Product Designer is responsible for designing applications to provide the most efficient interface from the user's point of view. She works with developers to think about how to reflect users and deliver functions most efficiently to them.
Lee Se-ung Ho	Software Developer	A Software Developer is responsible for developing software. Based on the needs of Users and Customers, he plan the details of the services that will be effective for them. In addition, these plans are developed later so that they can be realized through code implementation. Moreover, he keeps track on the function by continuously checking whether these codes are operated effectively based on feedback from users and consumers.
Heo Jeong Yoon	User	A User considers the need for new services based on various phenomena that can be experienced in everyday life. For example, in the process of living with her sister and sharing her closet together, she often encountered situations where she had to wear the clothes her sister wanted to wear on the same day. She soon had a need for the existence of a service that could solve this problem. Her needs were positively received by the team, who were considering LG Styler's innovative functions. Since then, she has consistently contributed to the completeness of the service by continuously testing the application, delivering and reviewing feedback on what is lacking and to be supplemented.

II. INTRODUCTION

A. Motivation

According to a survey by the Korean research institute "University Tomorrow's 20th Research Institute," both Generation Z and Millennial selected Styler as household appliances that they want the most to purchase and replace in the future, and found that especially Generation Z are highly willing to buy Styler. In the process, we decided that LG Styler, which were previously in high demand for middle-aged people wearing suits, will be loved by Generation Z in the future, and with Generation Z's eyes, we wanted to think about how the product could provide attractive functions to all members of society to gain the upper hand in the future market share.

LG Styler, the flagship of domestic clothing appliances, is the first clothing management device launched in 2011, and is loved by many for providing a system that can manage clothes at a high level at home without much time and labor. In particular, as the fine dust in Korea has recently become serious, and the need for cleanliness has increased due to COVID-19, interest in Styler is growing more explosively.

Meanwhile, LG Electronics is focusing on establishing an 'UP home appliance' ecosystem based on its application 'LG ThinQ'. Even after purchasing products, they are trying to provide new experiences and differentiate themselves through continuous software upgrades.

As a result, the team would like to propose a new software from a consumer perspective that can solve even minor inconveniences that consumers who use LG Styler may experience, while reflecting the trend of LG Electronics' "UP home appliances" which they are currently pushing for the MZ generation, their long-term partner.

B. Problem Statements

First of all, we were able to hear the story from an acquaintance of Generation Z and an Internet post that she was angry because her sister wore her clothes on the day when she planned to wear for the special day in advance. This case was frequently confirmed in a house with sisters or in a family where sisters live together.

In response, we thought of a system that uses a pre-built closet database within a styling calendar to restrict others from wearing clothes on the same date if someone booked clothes on a specific date already. On top of that, we thought of a function to induce users to wear neat clothes the next day by sending a notification of the use of an LG Styler the day before the scheduled date.

Furthermore, a total of five clothes can be put in the Styler and the functions of the Styler that are executed vary depending on the type of clothes takes as long as 30 minutes to as much as 2 hours. Our team focused on the limited number of clothes that can be put in the Styler and the commuting time, and reached to the point that there is not much time to use the Styler at home.

We felt that we had to use the LG Styler urgently within the family unit, but it could cause problems such as other

people are already using it, and that users could put the same line of clothes into the Styler together, but since there was no communication, they had to activate the Styler twice, wasting time and power. As a result, our team came to think of a reservation system that allows other family members to use the Styler together by taking clothes from a pre-built closet database and booking the use of the Styler if there are any seats left. The application also shows a timeline for using the Styler, so the user can conveniently check and take the time zone when the Styler is available.

From this point of view, the problem that occurs in offices that share Styler is more clear. More people use it together than using a Styler at home, which sometimes causes multiple people to flock at the same time. In addition, the Styler is very likely to operate inefficiently when used by multiple individuals, as the capacity of the Styler is limited while the course execution time of the Styler is fixed. Our Styler reservation system can solve these problems intuitively and clearly. If such a function is provided in the future, the use environment of the Styler can be expanded not only at home but also to public places such as offices.

In addition to the main functions mentioned above, we would like to create an LG Styler service as a true stylist that helps with styling A to Z, considering the ultra-personalized customization service that recommends clothes for users.

C. Research on Any Relative Software

- Space cloud: The Space Cloud application provides the ability to freely reserve, share, and use the space you need on a hourly basis. Users can select the desired space among various categories (meeting/practice/shooting/shared office, etc.) in real time, enter the scheduled time, number of people or purposes to use together, and reserve a place rental. On the reservation history page, you can see the status of your reservation at a glance. However, the reservation details are not visible to the people who are planning to use the space together, so there is a regret that the reservation person has to inform the reservation details in another way.
- Naver Calendar: The service created by Naver provides a function to set my schedule and display it on the calendar. In addition, various additional functions such as attaching stickers, decorating colors, and setting goals are provided, so the demand is high for Generation Z who prefer to decorate their own diary.

Above all, the web and mobile environment are highly interconnected, so the schedule created on the mobile can be synchronized immediately and checked on the PC. You can also mark the weather forecast for a week on your calendar for reference.

- TO-DO MATE: TO-DO MATE is an application that combines scheduler and SNS(Social Network Service) functions and provides the ability to share and communicate one's schedule with others. By organizing the checklist and completing the daily schedule or checklist, users can express empathy and praise with emojis such

as "Like", and can see the progress of their schedules and routines at a glance, providing motivation effects. In particular, it also provides an alarm function to remind you if you have an important or forgotten schedule.

III. REQUIREMENT ANALYSIS

A. The ability to log in or create an account

If the application is not logged in, family members who use the Styler together can create their own account and log in. Social login is also possible through KakaoTalk.

- Sign up: You can log in by setting your email and password or through KakaoTalk account.
- Sign in: Move to the main page.

B. Linking with Styler

A logged in account can add an LG Styler to its own account using the Styler's QR code and password. Several people can register as users in the same Styler, so the service is available for families or small members. When you click on the Styler icon, the styling calendar is displayed on the screen.

C. Closet database construction function

Closet databases can be organized for each LG Styler. When you take a picture of your clothes in the application, you remove the background and send it to the server's database. Since one Styler provides only same databases, people who use the same Styler will use the same closet database. When you select a clothing type when registering clothes, a small icon is automatically assigned, and this icon is displayed on the calendar. You can click on the calendar entry to see pictures of clothes taken with a camera.

D. Database duplication protection

When adding clothing to a closet database, it checks whether the same clothing is already stored to prevent duplicate data from being stored. If the system determines that it is the same garment, the user is asked whether to really add the data by showing the existing garment data as a picture. If the user responds that it is okay to add it because it is not duplicated, the clothing can be added to the closet database as it is.

E. Styling Calendar Feature

Individuals can register their clothes by date on their own calendar. Clothes can be taken from a shared database and added to the calendar. If one user adds clothes to the calendar, another user who uses the same Styler cannot add the clothes to the calendar on the same day.(Prevention of Duplicate) You can see the use of clothes in real time when you import clothes from the closet database. Send a notification the day before the appointment to induce the use of a Styler if the clothes are not well organized.

push alarm.(Recommended to make a reservation if there are any reserved seats left)

On your personal calendar, make sure that you can see the clothes and the time zone you reserved the Styler.

F. Check Other's Calendar

It is necessary to have a function that allows people who use the same closet database to know each other when and what clothes to wear. This feature allows you to check other people's style calendars. Of course, if you set it as private, No one else can't see it. For example, it is possible to leave emoticons of emotion on other people's calendars. The types of emoticons contain simple and clear messages such as "request for clothes concession, heart, joy, sadness, and fun."

G. Styler Reservation Calendar

Users will have two calendars - Styling Calendar and Styler Reservation Calendar - In your personal calendar, you can make a reservation by taking clothes from the closet database. Set it so that no one else can book the same clothes on the same day. You can schedule the use of a Styler in the schedule calendar. From what time to what time one person makes a reservation for the course, and if there are any seats left, other people can also make reservations together. At the time of reservation, the Styler is set and operated as scheduled.

- Styler operation start time may be delayed within the reservation time. For example, if the Styler reservation time is from 10:00 PM to 8:00 AM and the course operation time is 1 hour, it should be operated at 7:00 AM.
- Whenever the Styler starts or stops working during the time period reserved by an individual, it sends a push alarm to the app.
- If you operate the Styler directly without making a reservation, access the calendar from the Styler to add a reservation directly for the selected course.

H. Styler status check function

Styler status check function: The user can check the status of the Styler by clicking the icon on the main page. Shows whether it is currently working, and if it is, shows the course in progress and the time remaining. It is also possible to check the condition of the drain bucket of the Styler.

If there are clothes you are wearing today in your personal calendar, we recommend you to put them in the Styler as a