

TimeCodi

Team B

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Abstract. This document is a proposal which discusses the need for a service that simplifies the process of coordinating schedules with multiple people, as it can be cumbersome and time-consuming to do so manually. Although there are existing scheduling applications, none have emerged that can efficiently solve this problem. To address this issue, we propose a web application called TimeCodi, which gets the schedules of multiple people and generates a list of available times for all members. By using this application, users can reduce the burden of sharing their schedules every time they need to coordinate with someone, especially when dealing with a large group. TimeCodi provides both the function of saving schedule data in user accounts and coming up with time slots that are available to multiple users, making it more efficient than any existing scheduling application.

Keywords: schedule coordination · multiple people

1 Introduction

We share our daily lives with others by going to school, work, hanging out with friends, or collaborating with colleagues. What do these things have in common? The commonality is that they require schedule coordination with multiple people. Even when we have to get together to do team projects, like us, we need to coordinate our schedules. We are constantly sharing our time with others. We have to coordinate with multiple people often every month, and it can be very cumbersome to ask each person for their availability and repeat the process until we find a good time. Although there are many applications that can help with this process, a service that can solve the repetitive task of coordinating schedules with multiple people has not yet emerged. To solve this problem, we have created an application called “TimeCodi”, which gets the schedules of multiple people and generates a list of available times for all members. By using this application, we can reduce the burden of sharing our schedules every time we need to coordinate with someone, especially when dealing with a large group.

2 Motivation and Objective

In daily life, we often encounter situations where we need to coordinate schedules with various people. Whenever this happens, we usually check our friends’

schedules on the Everytime app or ask each other about their available times on group messenger chats, especially when it's not a one-on-one meeting. It's comparatively easy to find a time that works for two or three people, but when the group size exceeds four, it becomes very difficult to find a time that works for everyone. We have to go through the cumbersome process of having each person state their available time slot until we find a time that works for everyone. Even after we go through this tedious process, we still have to list our entire schedule one by one the next time we encounter a similar situation. Our daily lives are filled with meetings with others, and having to repeat this process every time is a huge waste of time and can be seen as a major obstacle. Therefore, we need a service that is optimized for efficient and simple scheduling, especially for multiple people. At this point, we propose the TimeCodi service for this purpose. When a group is created and members are designated, the TimeCodi service figures out the available time slots for all members based on their entered schedule databases. In addition, once a user registers their schedule data, it is stored in their account information, so they don't have to enter it every time. This relieves the burden of having to enter their schedule every time they need to coordinate with others. Furthermore, the service provides a feature that recommends the best time slot for a meeting and also provides a voting service so that the members can vote to choose among various available time slots. Through this, TimeCodi makes schedule coordinating more convenient and efficient than any other scheduling service.

3 Related Work and Current Services

3.1 When2Meet

When2Meet is a service that allows multiple people invited to a link to register their schedules, and based on the stored schedule data, everyone can see the available time slots at a glance. In addition, the entire timetable is displayed, and the number of people available at each time slot is represented by the intensity of the color, making it highly visible, and you can also see who is available at that time slot if you select a specific time. However, a fatal drawback of this service is that you have to enter your schedule every time you create a new group. Also, you cannot check a specific person's entire schedule.

3.2 Everytime

Everytime is an application that allows college students to save their schedules and share them with friends. It has the advantage of reducing the hassle of entering information every time by storing user schedule information in the users' account, and allowing one to check the schedules of specific people. However, this application only supports the function of storing and checking users' schedules, and it does not provide a function to find a time slot that multiple members agrees on, so it is highly inefficient for scheduling purposes.

3.3 Doeneun-sigan

Doeneun-sigan supports various functions related to team meetings, and because users can save personal schedule information in their accounts, they do not have to enter information every time they coordinate their schedules. However, this application is inefficient for groups with multiple people because it is based on the form of making reservations for the available time of the other person one-to-one, without providing a function to find a time slot that everyone can agree on.

4 Problem Statement / Proposed Solution

Existing scheduling services, as mentioned above, each have a fatal flaw. To summarize, if they provide a function to save schedule data in user accounts, they do not have a function to come up with time slots that are available to multiple users, and if they provide the latter function, they do not have the former. Ultimately, any service taken to schedule with multiple people will result in some form of inconvenience. Therefore, a new scheduling service that provides both of these important functions is needed. In response to this need, we propose the new service called TimeCodi. TimeCodi provides both of these important functions simultaneously, as well as additional features, making it a more efficient service than any existing scheduling application.

5 Main Function

The key feature of TimeCodi is its ability to recommend available time slots that work for multiple users. Users can input their availability, and the information is stored in a database. They can then invite other users and create a group.

5.1 Marking Time Zone

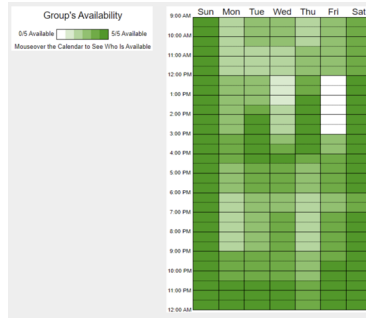


Fig. 1. Example of group timetable

Each user can input their available time slots. If they have schedules stored in Google Calendar, they can sync the information without having to input it manually. The inputted information is stored in a database, and users can view a timetable that reflects the availability of all members in the same group. The colors on the timetable, as shown in Fig.1, indicate the number of people available during each time slot.

5.2 Auto-Generated Vote

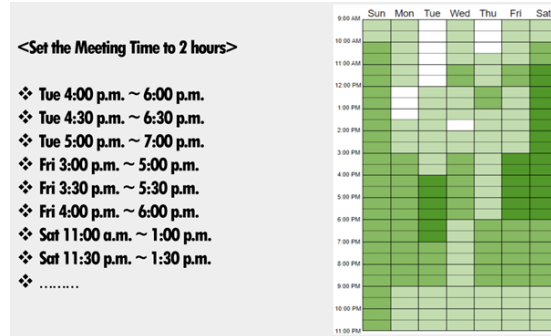


Fig. 2. Example of group timetable

When all members input their available time slots and a meeting time is set, Timecodi finds all available meeting time slots. If there are multiple possible time slots, Timecodi creates a poll where members can vote for their preferred time slot to confirm the meeting time.

5.3 Friends' Available Time Zone



Fig. 3. Example of group timetable

If a user becomes friends with another user, they can view that user’s timetable individually.

5.4 Meeting Info

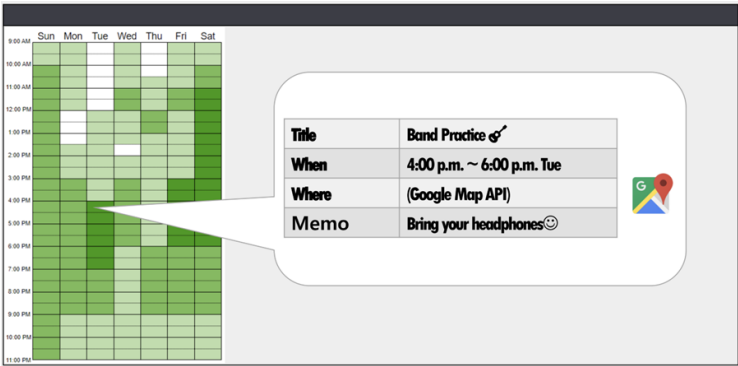


Fig. 4. Example of group timetable

Once a meeting is confirmed, its information can be recorded and later re-viewed. Meeting information includes the meeting name, time, location, and notes. The meeting location is integrated with Google Maps, allowing users to view the location on a map.

5.5 Share to KakaoTalk



Fig. 5. Example of group timetable

Users can configure the system to automatically send reminder notifications through KakaoTalk before scheduled meeting times, including meeting information in the message. Additionally, invitations to join a group can be sent through KakaoTalk messages.

6 Technique

6.1 Front-end

In this project, we will use Figma for design and prototyping, and React for web page development.

Figma

Figma is a web-based design tool for UI and UX design. It can be run directly from the web browser without any environmental constraints. It is specialized in real-time collaboration among multiple users, so people can work at the same time on one draft. It provides various features and plugins for efficient design work, making it suitable for web or app design industries. Figma also has an intuitive vector processing method. This vector network makes vector image creation convenient. We will use Figma to design the prototype.

React

React is a JavaScript library used to create user interfaces. It can be used for developing single-page applications. React is powerful in dynamic web applications. It creates a Virtual DOM rather than manipulate the actual DOM directly. Virtual DOM applies to the part where the data has changed. React compares the differences between actual DOM and Virtual DOM, the changed part is applied to the actual DOM. We will use React to design a web page based on the prototype design created using Figma.

6.2 Back-end

For the back-end, we will use FastAPI web framework for web server and MySQL for database.

FastAPI

FastAPI is a web framework for developing RESTful APIs in Python. FastAPI is one of the fastest Python frameworks with fewer bugs. It is known to be good for micro service development. It also generates API documents automatically, based on OpenAPI, as known as Swagger, and JSON schema. We will use FastAPI to develop APIs.

OpenAPI

We will use Google APIs and KakaoTalk APIs.

Google APIs are used for maps and calendars. The Google Calendar API allows us to copy the schedule in your Google Calendar automatically and The Google Map API is used to save the location when setting up a meeting info.

KakaoTalk APIs are used for inviting friends and sharing a meeting info. We'll invite friends through Friend List Import API, and share a meeting info through message delivery API.

MySQL

MySQL is the open-source relational database management system supported by Oracle, which is the most widely used in the world. MySQL is a multi-threaded, multi-user SQL database management system. It supports multiple programming languages' APIs to access MySQL databases, including Python. We will use MySQL to design and build the database.

7 Plans

7.1 Role

In this project, roles were divided between frontend and backend responsibilities. To facilitate smooth communication between frontend and backend, an additional role was added that is responsible for both frontend and backend.

Table 1. Role of each member

Name	Front-end	Back-end
Kim Soeyeong	O	
Cho Seoyeon	O	
Hong Sihyeon	O	O
Park geunyeong		O
Lee hyunyoung		O

More specifically, the frontend is divided into two roles, one responsible for pages related to timetables and the other for pages related to groups and login. On the other hand, the backend is divided based on API and DB responsibilities.

7.2 Schedule

Schedule	5	6	7	8	9	10	11	12	13	14	15
Frontend	Design Prototype	Login & User Page	Time Zone Setting Page	Friends' Time Zone Page	Others UI	Deploy & Review					
Backend	Design DB Structure	Login & Register Function	Time Zone Setting Function	Invite & Notification Function	Recommendation & Vote Function	Deploy & Review					

Fig. 6. Table of Project Schedule Plan

Taking into consideration the importance of each component and the estimated time required, we have planned the schedule as shown in Fig.6.