CLEANHOME : CONVENIENT SERVICE

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***Abstract*— This article introduces CleanHome - a convenient service platform. There are many service needs in the current market, but due to the inherent problems of traditional housekeeping services, such as difficulty in making appointments and quality assurance, it is difficult for users to obtain a satisfactory service experience. To solve this problem, we have developed a convenient service platform, which provides one-stop housekeeping services through mobile applications and websites, including household cleaning, machine repair, gardening and other services. Users can easily book and pay for services through the platform. And this platform also provides multiple service providers that allow users to compare and choose. The platform also provides a path for users to give feedback, and Cleanhome will continue to improve to provide users with better services.**

***Keywords*— convenient service platform, one-stop, easily book and pay, multiple service providers, feedback.**

I. INTRODUCTION

As the pressure of urban life continues to increase, more and more people need domestic services to reduce the burden of daily life. However, there are many problems in traditional housekeeping services, such as opaque services, difficulty in making appointments, and difficulty in guaranteeing service quality. In recent years, with the popularization of the Internet and mobile technology, housekeeping services based on network platforms have begun to rise, becoming a new choice for people looking for convenient and efficient housekeeping services.

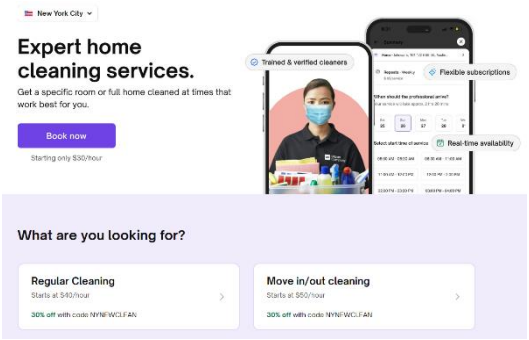
This paper proposes a web-based convenient service platform, aiming to provide users with more efficient, transparent and professional housekeeping services. This platform uses mobile applications and websites as carriers to provide one-stop housekeeping services, including household cleaning, electrical repair, gardening and other services. Users can easily book and pay for services through the platform, and we also provide professional housekeeping service guarantee and after-sales service. Moreover, the CleanHome platform promises that users can easily cancel or modify orders without charging any fees.

II. LITERATURE REVIEW

This section provides four similar apps and analyzes their main functions and modes.

A. Urban Company

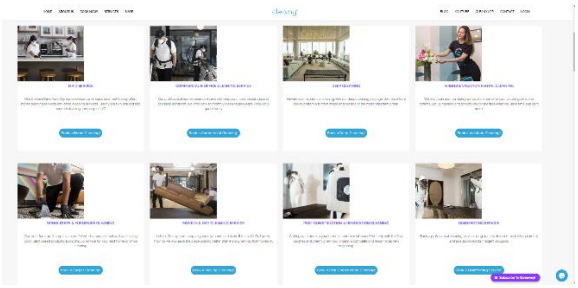
Urban Company is a web-based housekeeping service platform. This platform provides on -site housekeeping services. The main service provided is the cleaning of the room. And they are charged for hours, and some areas need to be charged separately, such as cabinets and bathrooms. This platform provides two service modes, one is regular cleaning, and the other is the move in/out cleaning. Except for cleaning, the platform does not provide other services.



B. Cleany NYC

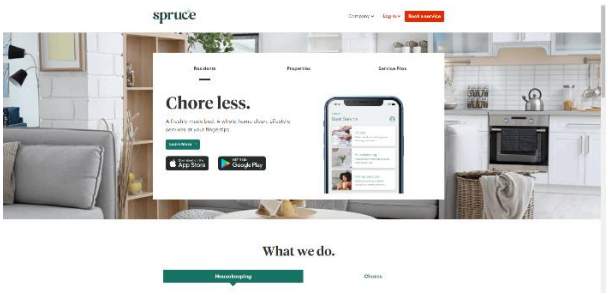
Cleany Nyc is a web -based housekeeping service platform. Its main target customers are people living in New York. It is very detailed in the division of service types. It includes Commercial & Office Cleaning Service, upholsted & Furnitive Cleaning, Disinfecting Service, etc. The main interface of this platform is a brief introduction to this platform. If the user wants to make an appointment for the housekeeping service, the user needs to jump

multiple pages to find the appointment interface.



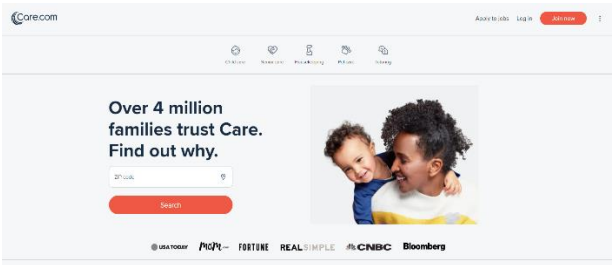
C. Spruce: Cleaning & Chores

Spruce: Cleaning & Chores is a mobile app. Its main service is housekeeping and chores. It has only three main interface Book Service, My Booking and Profile. This makes the APP look very concise and convenient for users. It has a very convenient time choice function and segmented the cleaning area. Users can choose to clean according to their needs, and they will not worry about waste.



D. Care.com

The Care.com APP has a mobile version and web version. Its service is very comprehensive. There are Child Care, Senior Care, PET CARE, Housekeeping, Special Needs and Tutoring. Its main function is housekeeping services and care for children and pets. And it shows the detailed information of the service provider in the APP. This solves the problem of trust in the field of housekeeping services. Users can make service booking based on the information of these service providers.



III. EVALUATION AND ANALYSIS

A. In comparison to traditional housekeeping services, CleanHome offers several key advantages. The platform's one-stop shop approach provides users with a convenient and efficient way to book a wide range of services, while also offering the ability to compare and choose between multiple service providers. The platform's easy-to-use interface and streamlined booking and payment process also set it apart from traditional housekeeping services.

B. In comparison to other network-based housekeeping platforms, CleanHome's emphasis on user feedback and continual improvement sets it apart. Our platform provides a dedicated feedback channel for users to share their experiences and suggestions, which allows us to continually improve the quality of our services.

C. In the future, we plan to integrate more services, such as pet care and personal shopping, and expand our service coverage to more geographical areas. We also plan to automate and optimize the reservation and payment process to provide a more streamlined user experience.

IV. PROJECT REQUIREMENTS

A. Introduction

The aim of this project is to develop a web-based application that provides users with a convenient and efficient way of booking and paying for housekeeping services. The web app will be designed to meet the needs of modern urban life by offering a one-stop solution for all housekeeping needs of users. The project requirements are as follows:

B. Functionality

The web application should provide the following functionality:

1. Services Provided

The application should provide a wide range of housekeeping services, including household cleaning, electrical repair, gardening, and other services.

2. Booking and Payment
The application should allow users to easily book and pay for services through the website. Users should be able to select the service they need, choose a service provider, and confirm the booking. Payments should be made online through various payment options, including credit/debit cards, e-wallets, and other electronic payment methods.

3. Multiple Service Providers
The application should provide multiple service providers, allowing users to compare and choose the service provider that best suits their needs. This should ensure that users get quality services at competitive prices.

4. Feedback and Reviews
The application should provide a path for users to give feedback on the services received, which will help the platform to improve and provide better services to the users. Users should also be able to read reviews and ratings of service providers before making a booking.

5. Service Guarantee and After-sales Service
The application should promise to provide professional housekeeping service guarantees and after-sales services. If users are not satisfied with the services received, they should be able to contact the platform for a refund or a re-service.

C. Design and User Experience
The web application should be designed to provide a seamless and user-friendly experience. The application should be intuitive, easy to navigate, and aesthetically pleasing. The design should be optimized for desktop and mobile devices and should be responsive to different screen sizes.

D. Technical Requirements
The web application should meet the following technical requirements:

1. Browser Compatibility
The application should be compatible with all major web browsers, including Chrome, Firefox, Safari, and Edge.

2. Security
The application should use secure and encrypted connections for all data transfers and should comply with industry-standard security protocols.

3. Performance
The application should be optimized for fast and responsive performance, even in low-bandwidth environments.

4. Scalability
The application should be designed to handle a large number of users and service providers without compromising performance or stability.

E. Conclusion
In conclusion, the project requirements are aimed at developing a web-based application that provides a convenient and efficient way for users to book and pay for housekeeping services. The web app should provide a one-stop solution for all housekeeping needs of users, with a focus on quality, convenience, and user experience. The application should be compatible with all major web browsers and should meet industry-standard security protocols and performance requirements.

V. Tech Stack

CleanHome is a service platform that provides convenient and professional housekeeping services to users. Its technology stack combines various front-end and back-end technologies to deliver a seamless user experience.

The front-end of CleanHome is built using popular web technologies such as JavaScript, HTML, and CSS. Vue.js, a popular JavaScript framework, is also used to build the user interface and manage the application's state. The combination of these technologies allows for the creation of a responsive and dynamic user interface.

On the back-end, CleanHome uses Java as the primary programming language to develop its core functionality. Java is a popular language known for its reliability, scalability, and security. MySQL, a popular open-source relational database management system, is used to store user data and service information. Python, a popular programming language, is used for data analysis and other backend processes. Navicat, a database management tool, is also used to manage the database and perform other administrative tasks.

Together, the technology stack used in CleanHome enables the platform to provide a seamless and efficient service to users, with a responsive and intuitive user interface and reliable, secure backend functionality.

VI. SYSTEM DIAGRAM

A. Conceptual Diagram

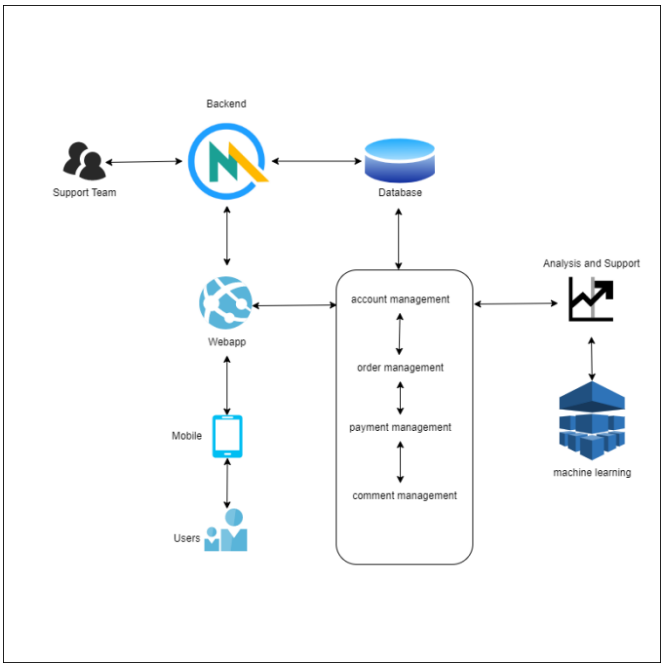


Figure 5.1 Conceptual Diagram

Figure 4.1 shows Conceptual Diagram. The arrangement and relationship of key factors in this Diagram system. Users access to applications, user personal information, order information, feedback will be stored in the database. Support Team can view and change the information through the back end. And the research will use machine learning to analyze the user's behavior habits based on databases.

B. Sequence Diagram

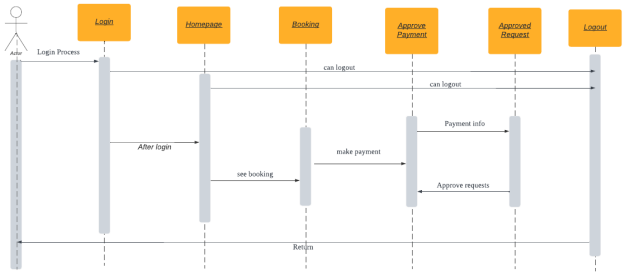


Figure 5.2 Sequence Diagram

Figure 4.2 shows Sequence Diagram. Sequence diagram shows object interactions arranged in time sequences. The user enters home page through Login. Booking at home page. Then pay the bill. At last, system generate orders. The user returns the login interface after logout.

C. Class Diagram

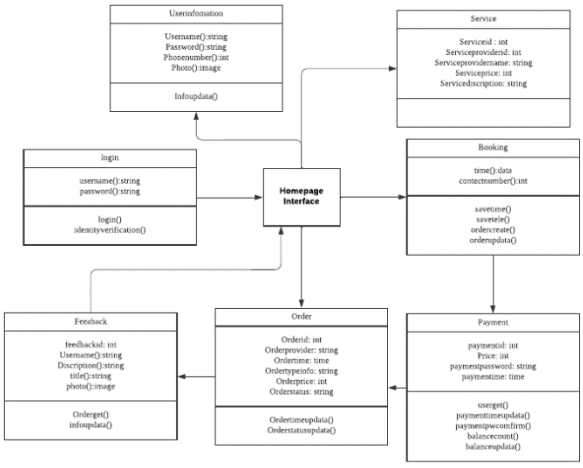


Figure 5.3 Class Diagram

Figure 4.3 Show Class Diagram. Class diagram is a static structure diagram. It shows the structure, attributes and operation of the Cleanhome system.

User information Class: User information Class includes attributes such as user ID, user name, password, contact phone number.

Service class: Service class represents the services provided by the Cleanhome platform. Service Class includes attributes such as service ID, service name, service description, service price.

Login Class: Login Class represents the login system of the Cleanhome platform. Login class includes username and password.

Booking Class: Booking Class means that the user's service order on the Cleanhome platform. Booking class includes the scheduled time, contact phone number and other attributes.

Order Class: Order Class represents the user's order information on the Cleanhome platform. Order Class includes attributes such as order ID, service type, service provider, service price, service time and other attributes. The order category also includes methods related to order status.

Payment class: Payment class means that users pay service fees on the Cleanhome platform. Payment classes include payment ID, payment method, payment time and other attributes.

Feedback Class: Feedback Class represents the user's feedback on the service experience. Feedback class includes feedback ID, feedback content, feedback time and other attributes.

D. Use case Diagram

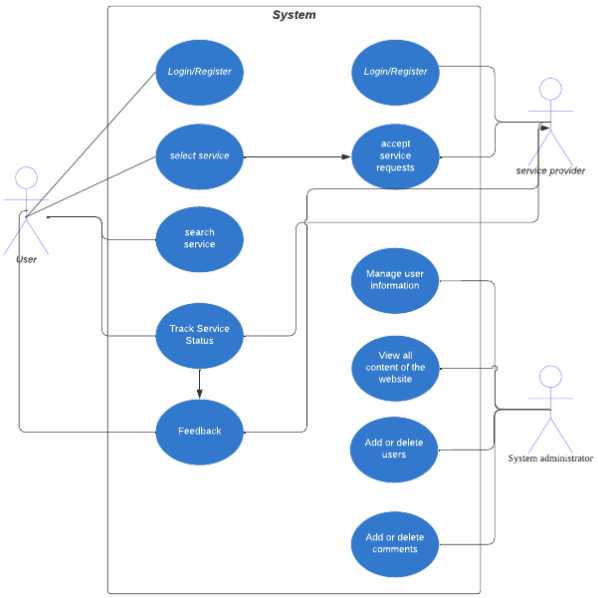


Figure 5.4 Use case Diagram

Figure 4.4 shows Use case Diagram. The Use case Diagram shows the relationship between users, service providers, system administrators and use cases related to Cleanhome.

VII. USER REVIEW ANALYSIS

In this study we used machine learning to analyze user reviews. The model of machine learning is sentiment analysis, which is a type of text model.

Sentiment analysis is a powerful tool that can be used to analyze and understand customer feedback and opinions about a particular product or service. In the case of

Cleanhome, sentiment analysis could be used to analyze customer reviews and feedback about their cleaning services. By using sentiment analysis, Cleanhome could gain valuable insights into what customers like and dislike about their services, and use that information to improve their offerings. For example, if a significant number of customers consistently mention that they are unhappy with the quality of the cleaning, Cleanhome could use sentiment analysis to identify specific areas where they need to improve their service. They could then take steps to address those issues and improve the overall quality of their cleaning services.

The type we used in this study belongs to NLTK (Natural Language Toolkit). NLTK (Natural Language Toolkit) is a popular open-source platform that provides tools and resources for working with human language data in Python programming language. It offers a suite of libraries and programs for tasks such as tokenization, stemming, tagging, parsing, and machine learning for natural language processing (NLP). NLTK is widely used in academic research and industry applications, such as sentiment analysis, topic modeling, language translation, and speech recognition.

Figure 6.1 Text Splitting

In this model, the entire text is first split. It splits a sentence into individual words. Then classify each word. At the end of Figure 6.1, it shows the analysis for each individual word or symbol. The symbols are RB, NN, etc. For these symbols, we need to compare the NLTK pos tag.

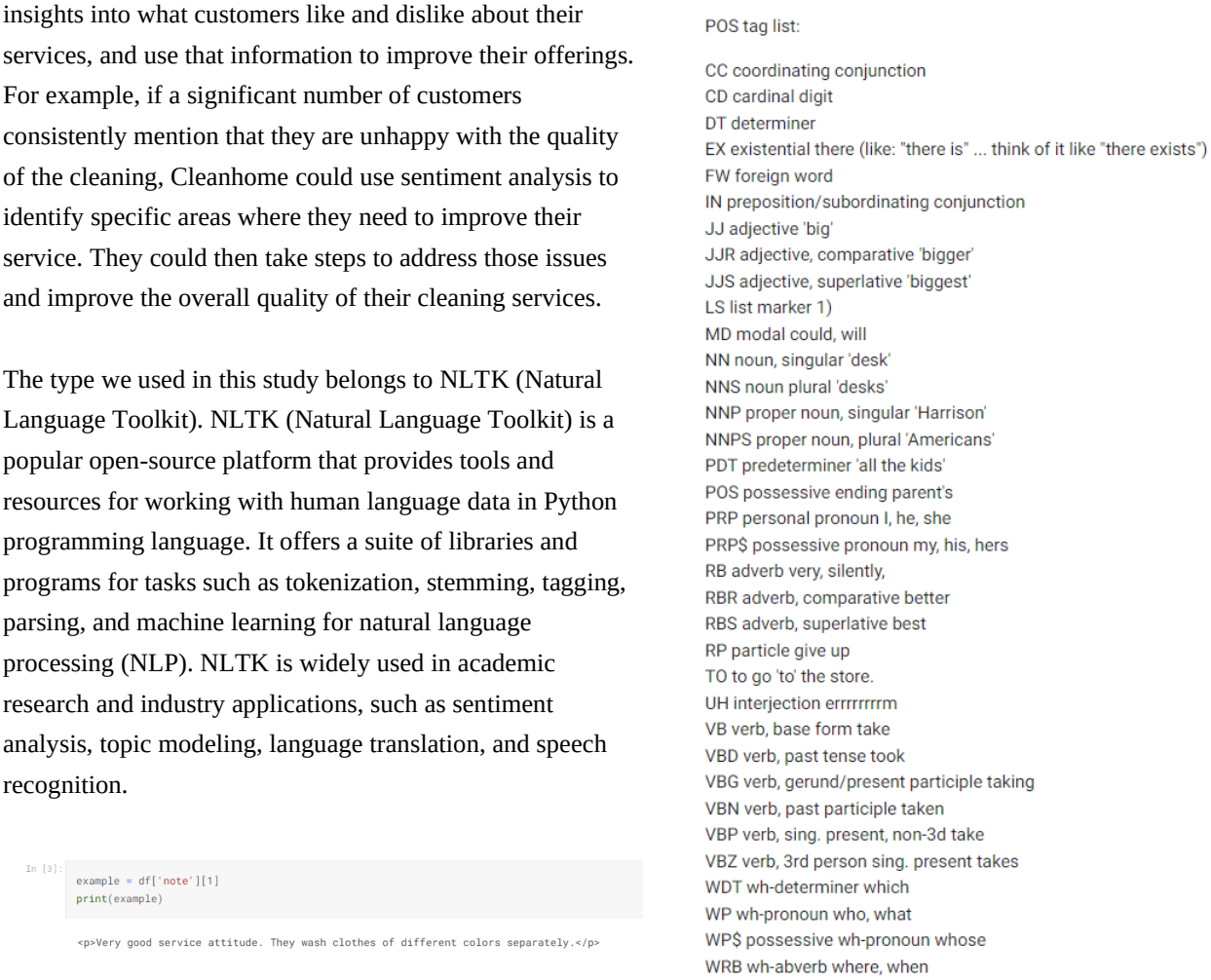


Figure 6.2 NLTK pos tag

In this model, it scores each type of word and classifies whether the word is positive or negative. Combining these scores, the model will come up with a final result.

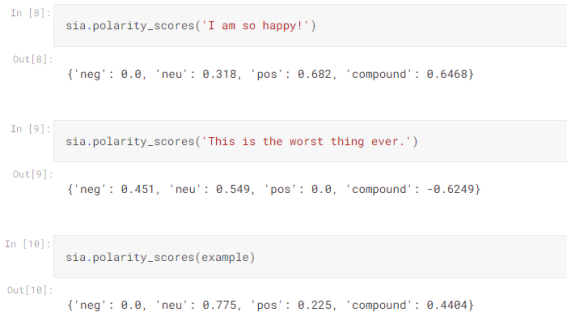


Figure 6.3 NLTK score

An example is given in Figure 6.3. The sentence "This is the worst thing ever." has a negative score of 0.451 in this model and a final total score of -0.6249. A final score greater than 0 in this model represents a positive evaluation. If the final score is less than 0, it represents a negative evaluation.

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In [14]: ax = sns.barplot(data=vaders, x='uid', y='compound')
         ax.set_title('Compund Score')
         plt.show()
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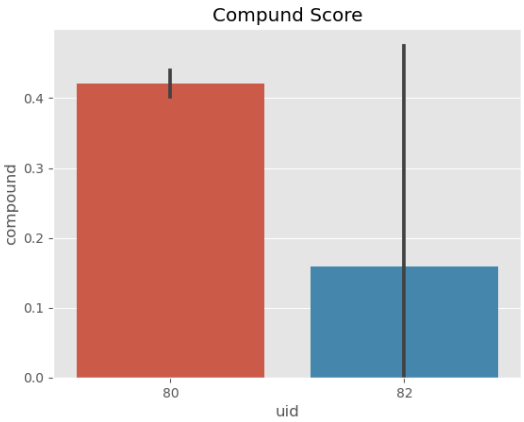

Figure 6.4 User Analysis

In the final stage of this model, we use the method of visual data to display the results, which is convenient for administrators to view. Figure 6.4 shows the overall feedback for each user.

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In [15]: ax = sns.barplot(data=vaders, x='id', y='compound')
         ax.set_title('Compund Score')
         plt.show()
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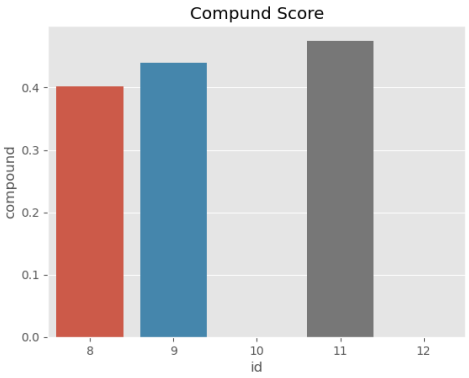

Figure 6.5 Review Analysis

Figure 6.5 shows the visual feedback for each review.

VIII. CONCLUSION

In conclusion, CleanHome is a convenient service platform that provides one-stop housekeeping services for modern urban life. It offers a wide range of services, including household cleaning, electrical repair, gardening, and more. The platform's streamlined booking and payment process, easy-to-use interface, and multiple service providers make it a standout in the housekeeping services market. CleanHome's dedication to user feedback and continual improvement also sets it apart from other network-based housekeeping platforms. In the future, CleanHome plans to expand its service coverage and automate and optimize the reservation and payment process to provide a more streamlined user experience.

IX. SUMMARY

This article presents CleanHome, a convenient service platform designed to provide efficient, transparent, and professional housekeeping services. The platform uses mobile applications and websites to offer one-stop housekeeping services, including household cleaning, electrical repair, gardening, and other services. Users can easily book and pay for services through the platform, and it provides professional housekeeping service guarantees and after-sales service. The platform also promises users the ability to easily cancel or modify orders without charging any fees. The article compares CleanHome to traditional housekeeping services and other network-based housekeeping platforms, emphasizing CleanHome's advantages in providing a streamlined user experience and emphasizing user feedback and continual improvement. Finally, the article outlines the project requirements for developing the web-based application, including a wide range of services provided, booking and payment functionality, multiple service providers, user feedback channels, and automation and optimization of the reservation and payment process.

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