

## **STUDENT RESIDENTIAL SEARCHING INTEGRATED WITH GOOGLE MAPS AND WHATSAPP API**

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**ABSTRACT** - Every year, the university receives many students from all over the state or country. Consequently, the college facilities at the university are unable to accommodate the volume of students who recently enrolled sufficiently. Because of this, some old students do not get college facilities because the university gives those facilities to newly registered students. This causes some students to experience problems in finding a rental room that suits their needs. Therefore, Student Residential Searching Integrated with Google Maps and WhatsApp API is a web-based application that allows students, especially non-resident students to find and rent rooms for rent near UiTM Arau, Perlis, while allowing landlords to advertise the rooms they want to rent. The rental rooms displayed on this website are rental rooms that the landlord wants to rent. Landlords can register the rental rooms they want to rent by logging into the website, while tenants can only rent the house after logging in. Besides, the Student Residential Searching System also was integrated with the WhatsApp API, enabling the admin to notify the landlord if the information such as the electric or water bill they uploaded, was invalid. The system uses the System Development Life Cycle (SDLC) by implementing the waterfall model as the methodology. Usability testing was conducted to determine user acceptance using a set of questionnaires where thirty participants were chosen to test and evaluate the Student Residential Searching Integrated with Google Maps and WhatsApp API system. The findings and analysis showed that the system was manageable, usable, and reached participants' achievement. Hence, the system helps the rental management between admin, landlord, and tenant to be more effective and smoother to complete the process.

**Keywords:** Student residential searching, Google Maps, WhatsApp API, non-resident students, landlords

### **1. INTRODUCTION**

The university's inability to accommodate all enrolled students leads to difficulties in finding suitable rental rooms, prompting the development of a web-based application called Student Residential Searching Integrated with Google Maps and WhatsApp API. This application allows non-resident students to easily find and rent rooms near UiTM Arau, Perlis while enabling landlords to advertise available rooms. Through the integration of Google Maps, students can locate rental options conveniently. Landlords can register their rental rooms on the website, while tenants can access and rent them after logging in. In addition, the tenant can search for a rental room based on their preference such as location and range of price. To make tenants able to find a house based on the distance from UiTM Arau. Geocoding is used to convert addresses into JSON format and decode them into latitude and longitude. After the address has been changed to latitude and longitude, it will be calculated by using the haversine formula. This system follows the System Development Life Cycle (SDLC) using the waterfall model as the methodology. Usability testing with thirty participants confirms the system's manageability, usability, and effectiveness.

### **2. METHODOLOGY**

The Waterfall Model was chosen as the methodology for Student Residential Searching Integrated with Google Maps and WhatsApp API. There are five phases which are Preliminary Study, Analysis, Design, Development and Testing. The Preliminary Study was an important phase where the researcher had to identify problem statements and define the project objective, scope, and significance. Then, the Analysis phase was to analyze this project's related topics, including rental service, web application, google Maps, geocoding, WhatsApp API, and related work. Other than that, the Design phase describes the interface system, Data Flow Diagram and Site Map of the system. Furthermore, to develop this website, visual studio code has been used to write and run the programming code. To complete the development process of Student Residential Searching system, integration with google maps, geocoding, and WhatsApp API was done during the development phase. Lastly, the Testing phase. The testing phase was the last phase in this methodology and consists of two activities, which measure system effectiveness, satisfy requirements, and carry out usability testing. By conducting these activities, it will achieve the third objective of this project which

was to evaluate the usability of this Student Residential Searching Integrated with Google Maps and WhatsApp API.

### **3. RESULTS AND DISCUSSION**

The usability testing for the Student Residential Searching Integrated with Google Maps and WhatsApp API was carried out by randomly selecting 30 people from the UiTM Perlis community, comprising admin, landlord and tenant, to test on the web-based system in accordance with the task assigned, as well as sending a notification to their WhatsApp application. The questionnaires were separated into two parts which are Part A and Part B. Part A is for personal information while Part B is for Usability Interface Satisfaction, Usefulness and Ease of Use, and Notification System. Based on the comments from respondents, it was demonstrated that the Student Residential Searching Integrated with Google Maps and WhatsApp API was usable, manageable, and met the participants' goals. Finally, the third goal of this project, evaluating the usability of the web-based application system through Usability Testing, was met.

### **4. NOVELTY OF RESEARCH / PRODUCT**

The Student Residential Searching System is a software application that addresses the specific challenge of finding suitable rental accommodations for non-resident students. By developing a dedicated web-based application, the study aims to provide an efficient and user-friendly solution to help students overcome the difficulties associated with finding appropriate housing options (Voumick et al., 2021). The integration of the WhatsApp API introduces a seamless communication and notification system within the platform. This enables direct interaction between students and landlords, facilitating quick inquiries, property viewing arrangements, and timely notifications (H. Li & Zhijian, 2010). The novelty lies in the integration of Google Maps and the WhatsApp API into a single platform for student residential searching. This combination offers a comprehensive solution by leveraging location-based services and real-time messaging capabilities (Marinova, 2020).

### **5. CONCLUSION**

The Web-Based Student Residential Searching Integrated with Google Maps and WhatsApp API has facilitated non-resident students to find rental rooms nearest to UiTM Arau, Perlis. Integration of WhatsApp and Google Maps enhances the functionality of the Student Residential Searching System. The future work for this system is to make virtual tour functionalities or 360-degree images to give students a comprehensive view of the rental rooms. This immersive experience can help them make more informed decisions without physical visits.

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