

Development of a Web-Based Free Homecoming Registration System by the Department of Transportation of South Sumatra Province

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Received: 13 Jan 2025 Reviewed: 20 Jan 2025 Accepted: 02 Feb 2025

Abstract : This research aims to design and develop a web-based free homecoming registration system for the Department of Transportation of South Sumatra Province. The website is designed to assist administrators in managing and monitoring registrant data according to their travel routes, streamline the filtering process, and facilitate the storage and retrieval of large volumes of data. This improvement enables a more efficient registration process and accommodates an increasing number of participants each year. The development process employs Macromedia Dreamweaver 8 as the text editor, PHP as the programming language, phpMyAdmin for database management, and Google Chrome as the testing browser. The resulting website provides an integrated and user-friendly platform that enhances administrative efficiency and accessibility for registrants. The findings of this study are expected to contribute to better data management and service delivery within the Department of Transportation of South Sumatra Province.

Keywords: Web application, PHP, Registration system, South Sumatra

Abstrak : Penelitian ini bertujuan untuk merancang dan mengembangkan sistem pendaftaran mudik gratis berbasis web untuk Dinas Perhubungan Provinsi Sumatera Selatan. Website ini dirancang untuk membantu administrator dalam mengelola dan memantau data pendaftar sesuai dengan rute perjalanan mereka, mempermudah proses penyaringan data, serta memfasilitasi penyimpanan dan pengambilan data dalam jumlah besar. Pengembangan ini memungkinkan proses pendaftaran menjadi lebih efisien dan mampu menampung peningkatan jumlah peserta setiap tahunnya. Proses pengembangan menggunakan Macromedia Dreamweaver 8 sebagai text editor, PHP sebagai bahasa pemrograman, phpMyAdmin untuk pengelolaan basis data, dan Google Chrome sebagai peramban pengujian. Website yang dihasilkan memberikan platform terpadu dan ramah pengguna yang meningkatkan efisiensi administrasi serta kemudahan akses bagi pendaftar. Hasil penelitian ini diharapkan dapat berkontribusi pada peningkatan pengelolaan data dan pelayanan di lingkungan Dinas Perhubungan Provinsi Sumatera Selatan..

Kata kunci: Sistem berbasis web, mudik gratis, Pengelolaan data, Dinas Perhubungan

1. INTRODUCTION

In the era of rapid advancements in information and communication technology, the use of digital solutions has become a key factor in enhancing the quality and efficiency of public services. One essential public service that requires particular attention is transportation,

especially during the homecoming season (*mudik*), when the surge of passengers and vehicles often poses significant challenges for the government in managing and delivering adequate services.

In Indonesia, the tradition of returning to one's hometown has become an integral part of cultural and religious life, particularly during

major celebrations such as Eid al-Fitr. The sharp increase in passenger and vehicle numbers during this period frequently results in traffic congestion, overcrowded terminals and stations, and other logistical issues that can affect public safety and comfort.

To address these challenges and improve service delivery, the Department of Transportation plays a vital role in organizing free homecoming programs. However, the use of technology in managing these programs has not yet been fully optimized. The main issue identified in the current system lies in the use of Google Forms for registration, where the stored data cannot be aligned with specific travel routes, making it difficult for administrators to filter registrants effectively. Furthermore, Google Forms has limited server capacity up to a maximum of 10 GB which restricts its ability to handle large datasets. According to data from the Department of Transportation of South Sumatra Province in 2024, the existing form with a 1 GB capacity recorded 700 registrants, of which 632 successfully passed the selection process.

To overcome these limitations, the Department of Transportation envisions the use of a dedicated web-based registration platform to simplify data filtering and enable the public to register for free homecoming trips more easily and efficiently. A website functions as an information delivery medium that employs hyperlinks to facilitate navigation and access to various online resources [1]. It consists of interconnected documents stored on a web server, typically written in HTML and enriched with multimedia elements such as text, images,

and videos to provide an interactive and comprehensive information platform [1]. Motivated by these considerations, this study focuses on developing a free homecoming registration website using *Macromedia Dreamweaver 8*, a professional HTML editor that supports visual design and efficient management of web pages.

2. RESEARCH METHOD

2.1. Waterfall Method

The system development method employed in this study is the Waterfall Model, which is widely used by system analysts for its structured and methodical approach. This model follows a linear and sequential process, ensuring that each phase is completed before proceeding to the next. Such an approach promotes a clear framework for project management and enhances the overall organization of the development process.

The Waterfall Model provides a systematic framework for the software development lifecycle, beginning with the requirements analysis phase, followed by system design, implementation (coding), and concluding with testing and evaluation. Each stage must be fully completed and validated before transitioning to the subsequent phase, thereby ensuring thoroughness, consistency, and control throughout the software development process[2].

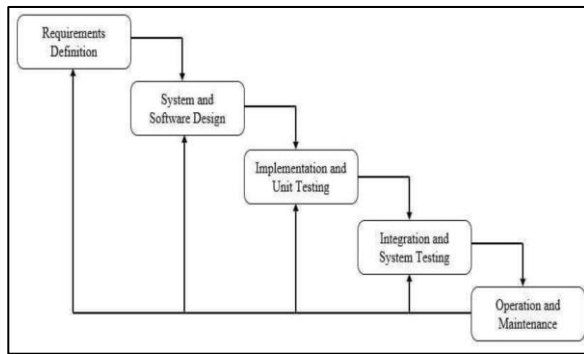


Figure 1 Waterfall Method

1. Requirement Analysis and Definition

In this stage, the researcher gathers and analyzes information obtained through observation, interviews, and literature review to identify and define the system requirements at the research site. This comprehensive approach provides a thorough understanding of user needs and the functional specifications necessary for effective system development. Observation involves the researcher directly examining the environment to understand the contextual aspects of the data within a broader social setting, thereby gaining a holistic perspective. This method enables an in-depth understanding of behaviors, interactions, and dynamics occurring within the observed environment [3]. *Interviews* are structured dialogues conducted between the researcher and respondents to exchange information and insights through a systematic questioning process. This method allows for the collection of detailed perspectives and experiences, facilitating a deeper understanding of the issues being investigated [3]. The literature review method involves collecting and analyzing information from various written sources,

including previous research studies, academic journals, books, and other scholarly publications relevant to the research topic. This process helps establish a theoretical foundation and supports the identification of key factors related to the system being developed [4].

2. System and Software Design

This stage focuses on the process of designing the software system. The design phase translates the analyzed requirements and specifications into a structured model that serves as the foundation for subsequent development activities. The website design was developed using *Macromedia Dreamweaver*, a web development tool that offers an intuitive visual interface for creating and managing web pages efficiently. *Macromedia Dreamweaver*, developed by Adobe Systems, is widely used by web developers due to its ease of use, flexible design capabilities, and support for multiple coding environments. It enables both visual (WYSIWYG) and code-based editing, making it suitable for developing dynamic and interactive websites [5]. The system design process also employs *Unified Modeling Language (UML)*, a standardized modeling language used to visualize, specify, construct, and document the components of a system. UML provides a variety of diagram types, including *use case diagrams*, *activity diagrams*, and *class diagrams*, which represent different perspectives of the system architecture. The use of UML ensures that the system design

is comprehensive, coherent, and well-structured [6], [7].

3. Implementation and Unit Testing

The software design that has been created is implemented into program code using a programming language. This phase involves translating the design specifications into actual code, which will form the functional application. This website is built using PHP, CSS, XAMPP, and MySQL. PHP is utilized for server-side scripting, CSS for styling and layout, XAMPP as the local server environment, and MySQL for database management, providing a comprehensive framework for the development of dynamic web applications. PHP (HyperText PreProcessor) is a server-side programming language. Its primary role in web development is to manage data within the database. PHP enables dynamic content generation, user authentication, and data manipulation, making it essential for creating interactive and data-driven websites [8]. CSS (Cascading Style Sheets) is a web programming language used to style and organize various elements on a website, ensuring that the site's appearance is more orderly, structured, and consistent. CSS allows developers to define layouts, colors, fonts, and other design aspects, enhancing the overall user experience [9]. XAMPP is software for Windows that includes several services, such as Apache, MySQL, and PHP. It provides a comprehensive and easy-to-install package that enables developers to set up a local

server environment for developing and testing web applications efficiently [10]. MySQL is a database server software capable of quickly receiving and sending data. It supports access by multiple users and utilizes standard SQL commands, making it a widely used solution for managing relational databases in various applications [11].

4. Integration and System Testing

In this stage, testing is conducted to ensure that the software meets the desired requirements and is capable of fulfilling user needs. This process involves various testing methods to identify and resolve any issues, ensuring the application functions as intended before deployment.

5. Operation and Maintenance

This final stage is the last phase of the software development process, where the system that has successfully passed the testing phase will undergo maintenance to ensure optimal functionality. This maintenance includes updates, bug fixes, and enhancements to keep the system running smoothly and to address any emerging issues over time.

2.2. Use Case Diagram

Use case and use case diagrams are modeling techniques used to illustrate how the information system being developed operates [12]. These techniques help define the interactions between users (actors) and the system, capturing the system's functional

requirements and providing a clear visualization of the processes involved [13].

In Figure 2, the use case diagram models the behavior of the system to be developed. It features two actors with different access levels. The first actor is the registrant, who can view travel route information, fill out the registration form, and view announcements. The second actor is the admin, who has access to view registrants, filter registrants, and create announcements.

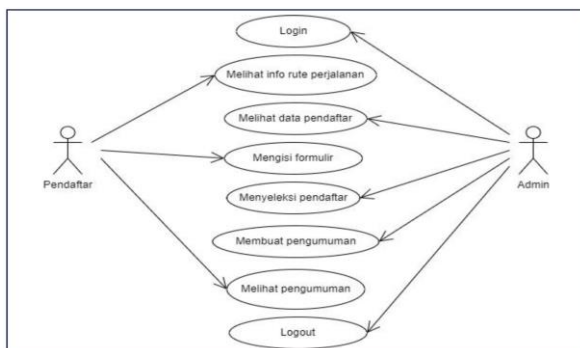


Figure 2 Use Case Diagram

2.3. Activity Diagram

An Activity Diagram in the *Unified Modeling Language (UML)* represents the dynamic behavior of a system by illustrating the flow of control and activities within a process. It visualizes sequences of actions, decision points, and parallel processes, providing a clear understanding of system workflows and supporting the analysis and design of complex system behaviors. [14].

2.3.1. Registrant Activity Diagram

In Figure 3, there is an activity diagram for the registrant, starting from opening the website, which is then responded to by the system with the display of the main menu page. The registrant selects a travel route and then fills

out the registration form, which is directly saved in the database. Finally, the registrant simply waits for the announcement results.

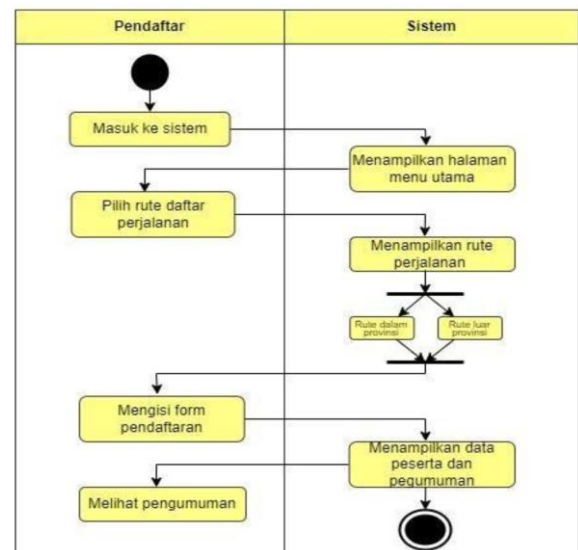


Figure 3 Registrant Activity Diagram

2.3.2. Admin Activity Diagram

In Figure 4, there is an activity diagram for the admin, starting from opening the website, which is then responded to by the system with the display of the main page containing external and internal routes, as well as the selection process. Next, the data of the registrants appears. The admin reviews the registrant data for selection and subsequently creates an announcement of the selection results.

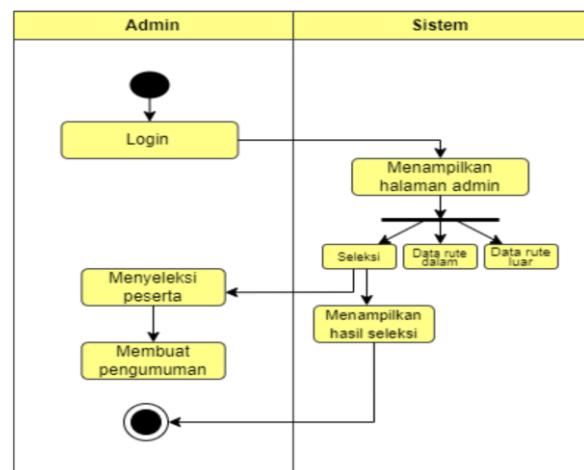


Figure 4 Admin Activity Diagram

2.4. Class Diagram

Class Diagram in the Unified Modeling Language (UML) represents the static structure of a system by showing its classes, attributes, methods, and relationships. It provides a clear overview of the system's architecture and serves as a foundation for object-oriented design and implementation [15].

In Figure 5, there is a class diagram that illustrates the relationships between entities and the system. The class diagram is created to ensure that the program aligns with the design and software specifications. In this class diagram, the author has designed external routes consisting of 6 classes, internal routes consisting of 5 classes, external selection consisting of 6 classes, and internal selection consisting of 5 classes.

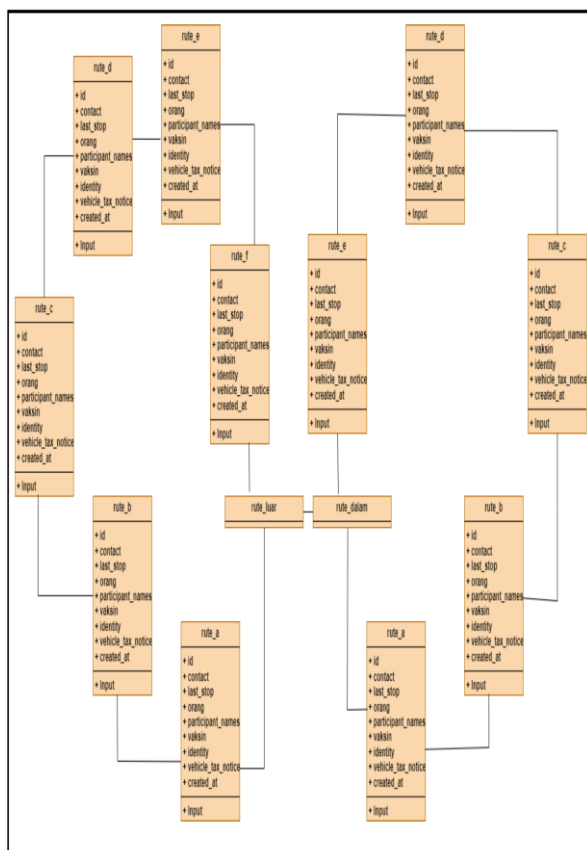


Figure 5 Class Diagram

3. RESULTS AND DISCUSSION

3.1. Result

After implementing the design into the free homecoming registration website system for the Department of Transportation of South Sumatra Province using Macromedia Dreamweaver 8, the system produced several key pages. These include the main menu page, travel route pages for both within and outside the province, the registration form page, and the registration success page. Additionally, there is a login page, an admin main menu, admin route pages for registrants within and outside the province, a page displaying registrant data, selection pages for travel routes, and pages for inputting and viewing selection results, including the announcement page.

3.2. Discussion

3.2.1. Main Menu Page

The main menu page serves to display information about travel routes for homecomers, allowing them to register based on their desired routes. The layout of the main menu page can be seen in Figure 6. This page provides an overview of available routes, ensuring that users can easily navigate and select the appropriate option for their journey.



Figure 6 Main Menu Page

3.2.2. Internal Province Route Page

The internal province route page is designed to display information about travel routes for home comers, allowing them to register according to their desired route before filling out the registration form. The layout of the internal province route page can be seen in Figure 7, providing users with detailed options and helping them select the correct route before proceeding with registration.



Figure 7 Internal Province Route Page

3.2.3. External Province Route Page

The external province route page is used to display information about travel routes for home comers, allowing them to register based on their desired route before filling out the registration form. The layout of the external province route page can be seen in Figure 8, providing users with the necessary details to select their route prior to completing the registration process.



Figure 8 External Province Route Page

3.2.4. Registration Page

The registration form page is designed for users to fill in their personal information according to the form provided by the website, based on the route they wish to choose, either within the province (Route A, Route B, Route C, Route D, Route E) or outside the province (Route A, Route B, Route C, Route D, Route E, Route F). Since the layout is identical for both options, only one version of the form is displayed. The appearance of the registration form page can be seen in Figure 9.

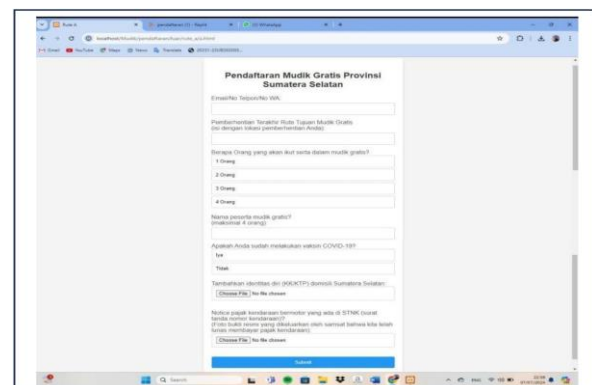


Figure 9 Registration Page

3.2.5. Successfully Registered

The registration success page is designed to inform home comers that their form has been completed successfully. The confirmation of successful registration can be seen in Figure 10, providing assurance that all required information has been filled out correctly.

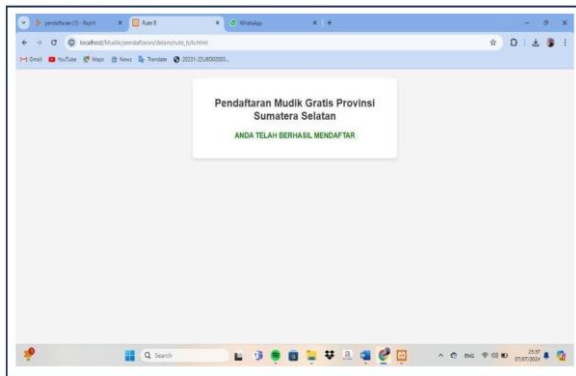


Figure 10 Successfully Registered

3.2.6. Login Page

The login page in the free homecoming registration website system for the Department of Transportation of South Sumatra Province is used by the admin to access the admin main menu. The layout of the login page can be seen in Figure 11, providing a secure entry point for administrative access.

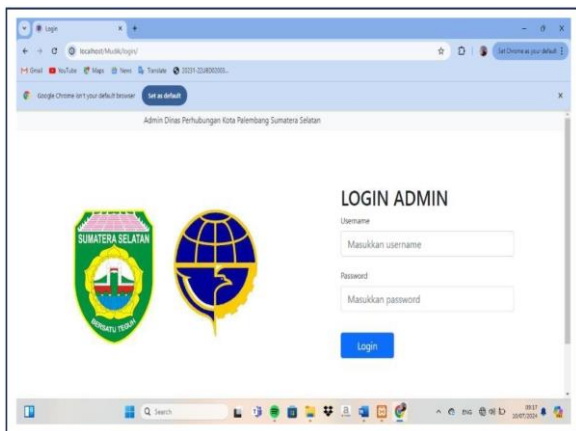


Figure 11 Login Page

3.2.7. Admin's Main Menu Page

The admin main menu page is used to display data related to home comers for internal and external routes, as well as the selection process. The layout of the admin main menu page can be seen in Figure 12, providing the admin with an organized interface to manage and review registrant data and selection activities.

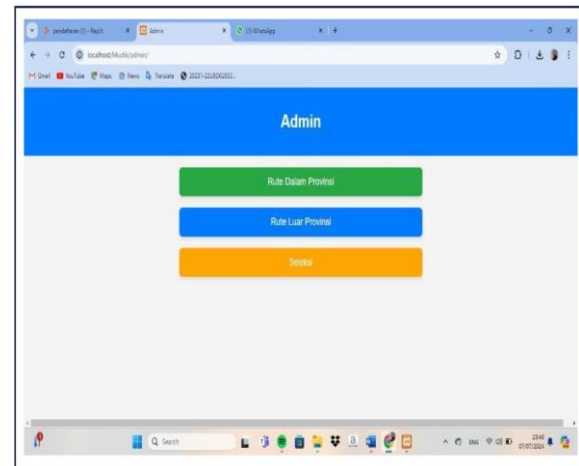


Figure 12 Admin's Main Menu Page

3.2.8. Admin's Internal Province Route Page

The internal province route page for the admin is designed to display travel routes for home comers before reviewing the registrant data. The layout of the internal province route page for the admin can be seen in Figure 13, providing a clear overview of available routes that aids in the management of registrant information.

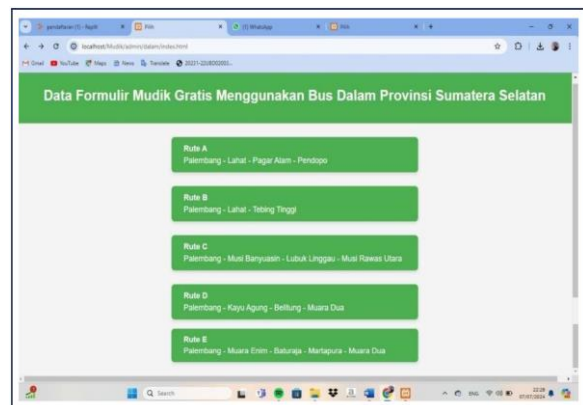


Figure 13 Admin's Internal Province Route Page

3.2.9. Admin's External Province Route Page

The external interprovincial route page for the admin is designed to display travel routes for home comers before reviewing the registrant data. The layout of the external route page for the admin can be seen in Figure 14, providing a

comprehensive overview of the available routes, which assists in managing registrant information effectively.



Figure 14 Admin's External Province Route Page

3.2.10. Registrant Data Page

The registrant data page is designed to display all registrant information based on both internal and external routes. Since the layout is identical for both categories, only one version is shown. The appearance of the data page can be seen in Figure 15, providing a comprehensive overview of all registrant details.

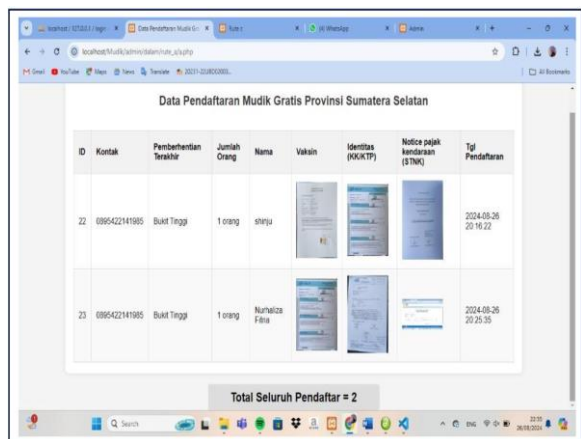


Figure 15 Registrant Data Page

3.2.11. Province Selection Page

This stage appears after selecting the selection option on the admin page. It is designed to filter registrants based on internal and external routes. The layout of the selection

options can be seen in Figure 16, providing the admin with the necessary tools to efficiently manage the selection process for home comers.

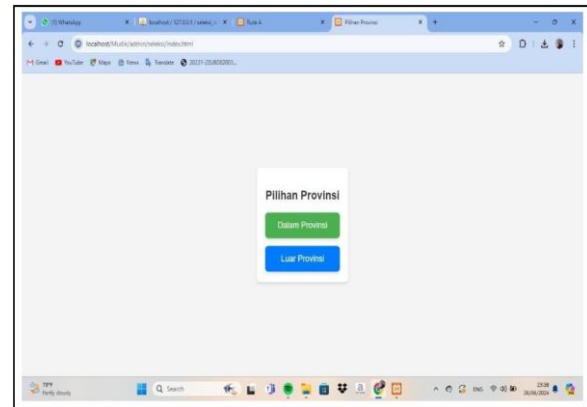


Figure 16 Province Selection Page

3.2.12. Internal Province Route Selection Page

The internal province route selection page is designed to display all available routes within the province before inputting registrant data for the selection process. The layout of the internal province route selection can be seen in Figure 17, providing a clear overview of the routes that will be used for filtering registrants.

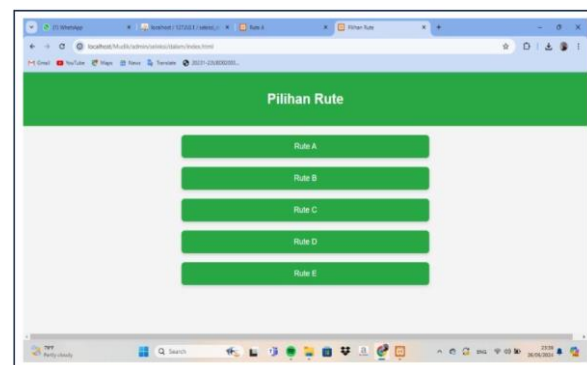


Figure 17 Internal Province Route Selection Page

3.2.13. External Province Route Selection Page

The external province route selection page is designed to display all available routes outside the province before inputting registrant data for

the selection process. The layout of the external province route selection can be seen in Figure 18, providing a comprehensive overview of the routes that will be utilized for filtering registrants.

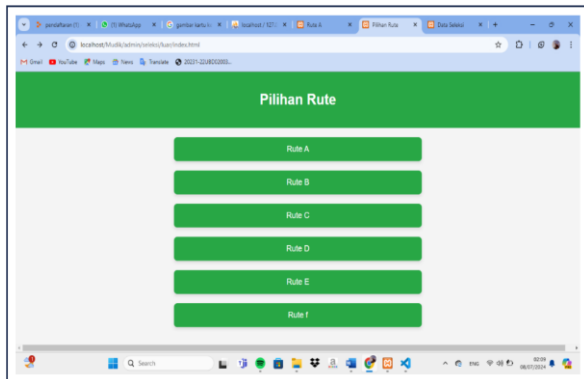


Figure 18 External Province Route Selection Page

3.2.14. Selection Input Page

The selection input page is designed to filter registrants based on internal and external routes using their IDs. It includes a check table to view the data. Since the layout is identical for both categories, only one version is shown. The appearance of the selection input page can be seen in Figure 19, providing the admin with an efficient interface for managing the selection process.

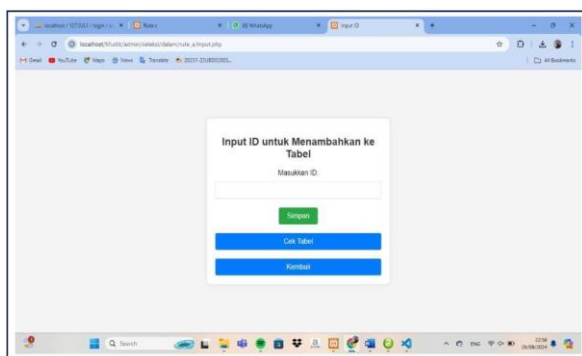


Figure 19 Selection Input Page

3.2.15. Selection Result Page

The selection results page is designed to display all registrants who have been filtered

according to their routes on the admin page. Since the layout is identical for both categories, only one version is shown. The appearance of the selection results page can be seen in Figure 20, providing the admin with a clear overview of the selected registrants.

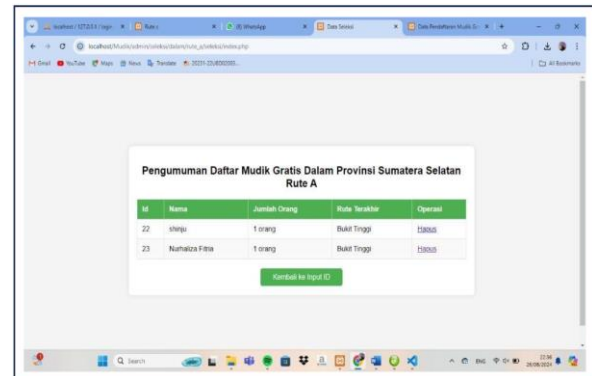


Figure 20 Selection Result Page

3.2.16. Announcements Page

The announcement page is designed to inform registrants whether they have passed the selection process. The requirements for the free homecoming program include that registrants must possess an ID card (KTP) or family card (KK) from South Sumatra, proof of vehicle tax payment (STNK) if they do not own a vehicle, or a statement from the local neighborhood association (RT/RW). Additionally, students without a vehicle can use a college enrollment letter. If all requirements are met, the registrant will pass the selection. The layout of the announcement page can be seen in Figure 21, providing essential information regarding the selection results.

| No | Nama | Jumlah Orang | Rute | Tarif |
|----|----------------------|--------------|-------------|-------|
| 1 | Budi | 2 | Budi Tinggi | A |
| 2 | Muhara Hidayah | 1 | Lahat | A |
| 3 | Syahrani Rizka Naida | 3 | Lahat | A |
| 4 | Imelda Charoah | 1 | Lahat | A |
| 5 | Mutara | 1 | Batuwang | E |

Figure 21 Announcements Page

4. CONCLUSION

Based on the research findings, it can be concluded that the resulting product is a Free Homecoming Registration Website developed for the Department of Transportation of South Sumatra Province. The system was built using PHP as the programming language and *Macromedia Dreamweaver 8* as the primary development tool. The implementation of this website is expected to assist administrators in managing and filtering registrant data more efficiently. Through this system, administrators can easily access and organize registrant information based on specific travel routes, thereby streamlining the data management process. Furthermore, the introduction of this web-based platform is anticipated to enhance public participation by increasing the number of homecoming registrants and available travel routes each year. Overall, the developed website provides a more structured, accessible, and efficient solution for managing free homecoming registration activities within the Department of Transportation of South Sumatra Province.

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