Development of A Web Based Badminton Court Rental Information System With The Laravel Framework

Muhammad Rizal Adinoval[1*],Rizkysari Mei Maharani[2], Ahmad Jazuli[3]

[1,2,3]Informatics Engineering Study Program , Faculty of Engineering, Muria Kudus University, Jawa Tengah, Indonesia
[*] Corresponding Author:
Email: 202151182@std.umk.ac.id

Abstract.

The rental process of badminton courts in Sengonbugel, Mayong, Jepara is still predominantly conducted manually, such as by visiting the location directly or through communication media like telephone and WhatsApp. This manual process often leads to various problems, including limited access to court schedule information, the risk of double booking due to the absence of an integrated recording system, and inefficiencies in administrative procedures for both users and court managers. This study aims to design and develop a web-based badminton court rental information system that facilitates online reservation, provides real-time court availability information, and assists managers in managing rental data, schedules, and transactions in a more structured manner. The research method consists of system requirements analysis, system design, and system implementation. The system is developed using the Laravel framework with MySQL as the database management system. The features provided include court booking, schedule and rental duration selection, payment proof upload, and an admin dashboard for managing courts, bookings, and schedules. The results show that the web-based badminton court rental information system is able to improve the efficiency of the rental process, reduce recording errors and the occurrence of double booking, and enhance the quality of services for both users and court managers.

Keywords : *Information System; Badminton Court Rental; Website; Laravel and MySQL.*

I. INTRODUCTION

Badminton is one of the most popular sports in Indonesia and is loved by various groups, both children, teenagers, and adults. The high public interest in this sport is not comparable to the number of badminton courts available, especially in the Sengonbugel Mayong Jepara area, so the existing facilities are still limited and often a struggle to rent. In practice, the field rental process is still mostly done manually, for example by coming directly to the location, by phone, or using WhatsApp messages. This method often causes various problems, such as limited access to field schedule information, the occurrence of double booking due to the absence of an integrated recording system, and the lack of efficiency of the administrative process for both users and managers. This condition shows the need for an information system that is able to facilitate the process of renting badminton courts in a more practical, transparent, and efficient manner. Along with the development of information technology, people's needs for digital-based services are increasing. One of the solutions that can be applied to overcome the problem of renting badminton courts is to build a web-based information system that can be accessed online anytime and anywhere. This system is expected to be able to provide convenience for users in making field bookings, checking schedule availability, and getting reservation certainty in real time.

On the other hand, for field managers, this system can be a tool in managing rental data, transactions, and financial statements in a more structured manner. By utilizing the Laravel framework which is known for its security, speed, and ease of application development, this web-based badminton court rental information system is expected to provide real benefits for both users and managers, as well as being the first step in digitizing the management of sports facilities in the modern era.In addition, the existence of a web-based field rental information system can also be a means to increase the competitiveness of field managers in providing more professional services to the community. With a digital system, booking and transaction data will be stored more securely and easily accessed again if needed. This not only helps managers in maintaining administrative neatness, but can also increase user trust as the leasing process becomes more transparent. The presence of this system is expected to be able to answer the challenge of limited field facilities in the region, as well as encourage managers to utilize information technology in supporting the development of badminton sports in Sengonbugel Mayong Jepara.

II. METHODS

This research is a qualitative research with a research and development (R&D) method that aims to produce and test a web-based badminton court rental information system according to user needs. The population in this study is all parties involved in the process of renting badminton courts in PB. Jati Alam Jepara Regency, while the research sample was determined purposively, includes the main manager of the field and several tenants or potential users who are actively making reservations. Data collection techniques are carried out through direct observation of the manual rental process, structured interviews with managers and users to explore system needs, as well as documentation in the form of schedule data, manual recording, and other supporting information. The data analysis technique uses qualitative descriptive analysis, namely by processing and interpreting the results of observations, interviews, and documentation to identify problems, formulate the functional and non-functional needs of the system, and become the basis for the design, development, and evaluation of the developed badminton court rental information system.

III. RESULT AND DISCUSSION

Table Schema Design

Table 1. Users Table

Name	***Type***	**Remarks**
id	Bigint	Primary Key
Name	Varchar(255)	
E-mail	Varchar(255)	foreign key
is_admin	tinyint(1)	
email_verified_at	Timestamp	
Lost your password?	Varchar(255)	
remember_token	Pig(100)	
created_at	Timestamp	
updated_at	Timestamp	

Table 2. Bookings Table

Name	***Type***	**Remarks**
id	Bigint	Primary Key
user_id	Bigint	foreign key
court_id	Bigint	foreign key
Date	Date	
start_time	Time	
end_time	Time	
total_price	decimal(12.2)	
Status	enum('pending','confirmed','cancelled')	
payment_proof	Varchar(255)	
payment_status	enum('pending',paid,'rejected')	
created_at	Timestamp	
updated_at	Timestamp	

Table 1. Table Shorts

Name	***Type***	**Remarks**
id	Bigint	Primary Key
Name	Varchar(255)	
Description	Text	
Price_per_hour	Decimal(10.2)	
image	Varchar(255)	
created_at	Timestamp	
updated_at	Timestamp	

Table 4. Table Failed_jobs

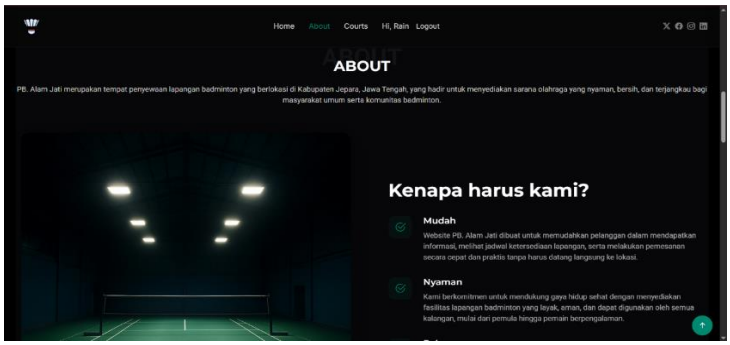
Name	***Type***	**Remarks**
id	Bigint	Primary Key
uuid	Varchar(255)	
Connection	Text	

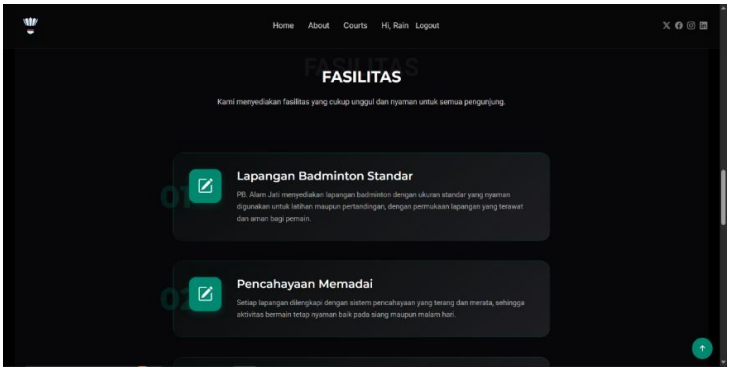
Tail	Text
Payload	Longtext
exception	Longtext
failed_at	Timestamp

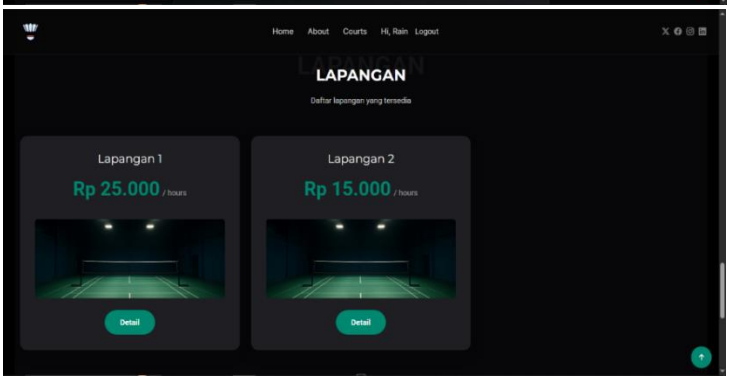
System Implementation

The result of designing a website-based badminton court reservation website for the online booking system at PB. The nature of Teak is as follows:

User/Visitor *Page*



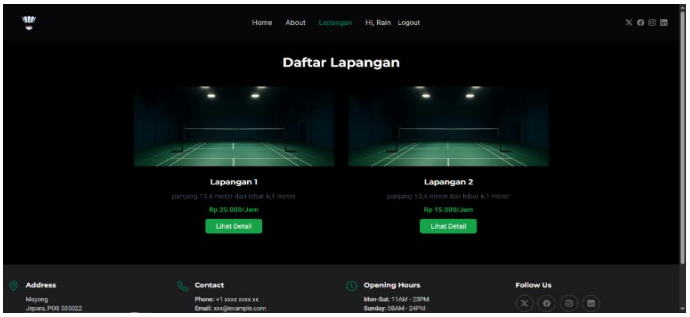




Home page of PB badminton court booking website. Jati Alam Jepara is designed as an informative and easy-to-use information center and ordering service, where the *About Us* section shows a brief overview of PB. Jati Alam as a provider of badminton sports facilities in Jepara Regency that is committed to supporting a healthy lifestyle and providing comfortable court rental services, then in the Facilities section various supporting facilities are explained such as standard courts, adequate lighting, waiting rooms, parking

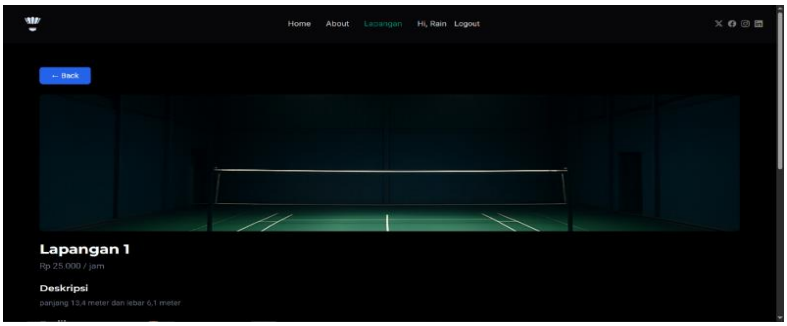
areas, and online booking systems to support user comfort. Then in the field list section, users can see the available field options complete with price information and access to the booking page. And the bottom part is the Footer which contains contact information and social media to support trust and ease of communication between managers and users.

Field List

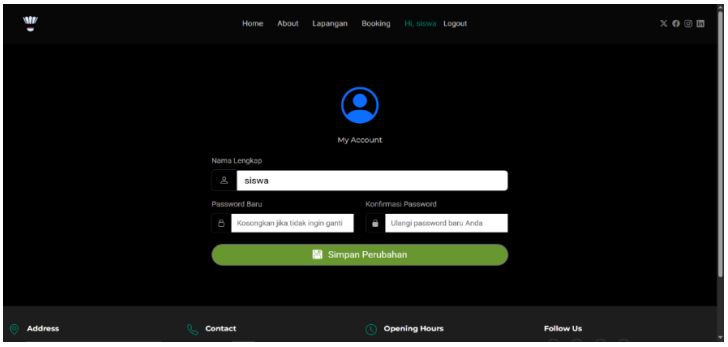


Field list page on the PB badminton court booking website. Jati Alam Jepara functions to display all available fields in a clear and informative manner, where each field is presented in the form of *a card* that displays the name of the field, field drawings, field descriptions, and hourly rental price information, so that users can easily compare and choose the field as needed, and is equipped with a "View Details" button that directs users to the field details page.

Field Details



The court details page on this badminton court booking application displays complete information about the court chosen by the user. In this example, the field shown is "Field 1", with the main visual being a large image of a field that has been managed by the admin. Below it, there is important information such as descriptions, prices, facilities and rules that customers must abide by.This *booking* page is designed to make it easier for users to make online field bookings quickly and in a structured manner, where users can determine playing dates, choose hourly duration packages, and view real-time availability complete with price information, so that the booking process becomes more transparent, efficient, and reduces the risk of schedule conflicts, as well as being equipped with a clear payment flow before *booking* Confirmed



My Account page on the PB badminton court booking system. Jati Alam Jepara is used to manage user account data, where users can view and update their full name and make password changes through the form that has been provided, with the provision that the password column can be blanked if they do not want to make changes, so that account management becomes safer, more flexible, and provides convenience for users in maintaining their personal information.

Admin Page

Admin section on the PB badminton court booking system. Jati Alam Jepara functions as a data management and operational center, where admins can monitor activity summaries through the Admin Dashboard which displays information on the total field, number of *pending bookings*, confirmed *bookings*, and canceled *bookings*, making it easier to make decisions quickly and accurately. It is also equipped with a Field Management menu to add, change, or delete field data, as well as Manage *Booking* to view all bookings, verify payments, and manage *booking status* so that the rental process runs orderly and controlled. The court management page in the admin section serves to manage all badminton court data available in PB. Jati Alam Jepara, where admins can view a complete list of fields with images, field names, field descriptions, and hourly rental prices, and has the Add Field feature to add new field data, Edit to update field information, and Delete to delete field data that is no longer in use, so that facility management can be carried out in a structured, efficient, and easily controlled manner through one centralized page.The add field page in the admin system is used to add new badminton field data to the system, where the admin can input the name of the field, court description, field photos, and hourly rental price through the form that has been provided, so that the added field data can be stored in a structured manner and directly displayed on the field list page, as well as making it easier for managers to update and develop the facilities available in PB. Jepara Nature Identity.

The Edit Field Data page in the admin system functions to update previously stored badminton court information, where the admin can change the name of the court, court description, court photos, and hourly rental price through a form that has been automatically filled with old data, so that the data update process can be carried out quickly and accurately without having to re-input all the information, and ensure that the field information displayed to users is always up-to-date and in accordance with the actual conditions in the PB. Jepara Nature Identity.The Manage bookings page in the admin system is used to manage all badminton court booking data made by users, where admins can view complete booking information including user name, reserved courts, date and time of play, as well as proof of payment, as well as manage booking status such as *pending*, *confirmed*, or *canceled* through the action menu, so that the payment verification process and schedule arrangements can be carried out in a structured, transparent, and controlled manner to prevent booking conflicts at PB. Jepara Nature Identity.The schedule check page (Field Booking Schedule) in the admin system functions to display and monitor all badminton court booking schedules in a structured manner based on dates, where admins can see complete information in the form of booking dates, court names, start times, end hours, and user names, as well as equipped with a date filter feature to make it easier to find certain schedules, so that the management of court usage time can be done by being neater, accurate, and minimizing the occurrence of schedule clashes in PB. Jepara Nature Identity.

System Testing

The results of *this web-based furniture sales* e-commerce application were tested using *the black box testing* method, which will be explained in the table below:

Table 2. Black Box Testing User

Yes	Features tested	Input	Output	Status
1	User registration	Name, Email, Password	The account was successfully created and redirected to the login page.	Success
2	Login *to Your Blog*	Email and password are valid.	Log in to your account and be redirected to the *homepage*.	Success
3	Login *to Your Blog*	Incorrect username or password.	The system displays a failed login notification.	Success
4	See the list of fields	Access the field page.	The list of fields is displayed.	Success
5	Check the field schedule	Select the date and duration of the booking.	The availability status of the field is displayed.	Success
6	Booking a field	Complete booking data.	The booking was successfully saved.	Success
7	*Upload* proof of payment	JPG or PNG image files.	Proof of payment was successfully uploaded.	Success
8	*Upload* proof of payment	Files other than images.	The system rejected the file.	Success
9	Edit account	Change of name and password.	The account data was successfully updated.	Success
10	*Logout User*	Click the signout button.	User logs out of the system.	Success

Table 6. Black Box Testing Admin

Yes	Features tested	Input	Output	Results
1	Login to your admin	Fill in a valid username and password.	The admin managed to get to the dashboard.	Success
2	Add field	Fill out the form field name, hourly price, description, and field photos.	Field data is successfully saved.	Success
3	Edit fields	Change the name of the field, hourly price, description, and photos of an existing field.	Updated field data.	Success
4	Clear field	Select the field data.	Field data is deleted.	Success
5	Manage *bookings*	User's booking data.	Booking data is displayed.	Success
6	Payment verification	Proof of payment is valid.	Booking status becomes "*confirmed*"	Success
7	Decline payment	Proof of payment is invalid.	Booking status becomes "*canceled*"	Success
8	Manage your schedule	Schedule data.	The booking schedule is displayed based on the date filter.	Success
9	Logout admin	Click the signout button.	The admin is out of the system.	Success

IV. CONCLUSION

Based on the results of the design, implementation, and testing of the web-based badminton court rental information system, it can be concluded that the system built is able to overcome court rental problems that were previously carried out manually, such as limited schedule information, the risk of double booking, and the lack of efficient administrative processes. This system makes it easier for users to make field bookings online by providing real-time field availability information and clear booking flows, while for system managers this helps in managing field data, schedules, and transactions in a structured manner. The implementation of the Laravel framework and MySQL database supports the development of a secure and organized system, and the test results show that all system functions run according to needs, so that this web-based badminton court rental information system is suitable for use as a digital solution in the management of sports facilities

V. ACKNOWLEDGMENTS

Thank you to all parties who have provided support, assistance, and contributions during the process of conducting research and writing this article. The author would like to thank the managers and users of the research object who have been willing to take the time to provide the information and data needed. Appreciation was also conveyed to colleagues and other parties who have provided input, suggestions, and moral support so that this research can be completed properly. Hopefully the results of this research can provide benefits for the development of science and become a reference for future research.

REFERENCES

[1] Al, M., Rizki, K., & Op, A. F. (2021). Design And Build A Website-Based Employee E-Leave Application (Case Study: State Administrative Court). ***Journal Of Information Technology And Systems (Jtsi)***, 2(3), 1–13. Retrieved From Http://Jim.Teknokrat.Ac.Id/Index.Php/Jtsi

[2] Dzikra Azzahra. (2023). Web-Based Badminton Court Rental Information System. Saber: ***Journal Of Informatics Engineering, Science And Communication Sciences***, 2(1), 62–69. Doi: 10.59841/Saber.V2i1.647

[3] Fadly Pranata, R., & Novita, D. (2024). ***Journal Of Information Systems And Technology Engineering*** Volume 1, No 3-February 2024 E-Issn : 3025-888x.

[4] Hidayatullah, D., & Ardiansah, T. (2022). Web-Based Futsal Court Facility Reservation Information System And Rental With Waterfall Method. ***Journal Of Information Technology And Systems (Jtsi)***, 3(3), 64–68. Retrieved From Http://Jim.Teknokrat.Ac.Id/Index.Php/Jtsi

[5] Jurnal, H., Indra Andhika, D., Muharrom, M., Prayitno, E., & Siregar, J. (2022). ***Journal Of Informatics And Computer Technology Design And Build Document Receipt System*** At Pt. Reinsurance Indonesia Utama. July, 2(2), 136–145.

[6] Merdekawati, A., Kanti Rahayu, L., & Cahyo Putra, D. (2021). The Application Of The Rad Method In The Reservation And Rental System Of The Futsal Court As A Medium For Promotion And Information Processing. ***Equatorial Journal Of Informatics***.

[7] Musthofa, N., & Adiguna, M. A. (2022). Designing A Web-Based Computer Spare-Part E-Commerce Application Using Codeigniter At Dhamar Putra Ccomputer Tangerang City. Oktal : ***Journal Of Computer Science And Science***, 1(03). Retrieved From Https://Journal.Mediapublikasi.Id/Index.Php/Oktal

[8] Nilfaidah, N., Sa'ban Miru, A., & Lamada, M. (2021). Realtime Student Attendance System Development Using Php, Mysql, Sms Gateway, And Codeigniter Framework.

[9] Novianto, Y., Aulia, N., & Abidin, D. Z. (2024). ***Journal Of Technology And Information Systems Management (Jms)*** Web-Based Design Of Badminton Court Rental Information System At The Jambi City Gembira Hall. Journal Of Information Technology And Systems Management. Doi: 10.33998/Jms.V4i2

[10] Rasikhah, H., & Adriansyah, A. R. (2022). ***Journal Of Integrated Informatics Design And Implementation Of Field Booking System Using Web-Based Mvc Framework. Journal Of Integrated Informatics***, 8(1), 8–12. Retrieved From Https://Journal.Nurulfikri.Ac.Id/Index.Php/Jit

[11] Rianto Sitanggang, Teddy Urian Dachi, & Immanuel H G Manurung. (N.D.). Journalmanager,+9.+Rianto+Sitanggang+(84-90). 2022.

[12] Ruswandi, R., & Nurfaizal, H. (2021). Design Of A Web-Based Reservation Information System For Futsal And Badminton Court Reservations With Digital Payment Integration: A Case Study At Gor Taruna Mandiri Using The Agile Method. ***Journal Of Technology, Business And Education***. Retrieved From Https://Jurnalmahasiswa.Com/Index.Php/Teknobis

[13] Yoga, V., & Ardhana, P. (2021). The Design Of The Qamarul Huda Pharmacy Information System Uses The Unified Modeling Language (Uml). ***In Qamarul Huda Health Journal*** (Vol. 9).