

Design and Construction of Academic Information System Website at PKBM As-salaam using the RAD Method

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Abstract

This research aims to design and develop a web-based information system for Community Learning Activity Center As-Salaam using the Rapid Application Development method. The purpose is based on the fact that the current administrative processes are still carried out manually, either through printed forms or using Microsoft Word, which poses risks of input errors in student data and difficulties in delivering class schedule information to relevant parties. The proposed information system is designed to improve efficiency and accuracy in administrative management, including student registration, class scheduling, and student data processing. The RAD approach is chosen because it enables fast and iterative system development by involving users in every development stage, ensuring that the system is responsive to real user needs. The system will be developed using PHP as the programming language and MySQL as the database. The implementation is expected to facilitate administrative processes, improve data accuracy, accelerate data-driven decision-making, and provide more transparent and efficient services. Ultimately, PKBM As-Salaam is expected to deliver better and more modern non-formal education services.

Keywords: Information System, Website, Rapid Application Development, As-Salaam PKBM

1. Introduction

Advances in information technology have brought fundamental changes to various sectors, including education. Digital transformation encourages educational institutions to optimally utilize technology to improve the effectiveness and efficiency of academic activities, such as student data management, class scheduling, and information distribution. Web-based information systems are a strategic solution for creating more structured, accurate, and accessible academic governance in both formal and non-formal educational settings. Community learning activity centers are educational institutions that exist through ideas and understanding regarding the importance of community participation in the development of non-formal education[1]. However, the reality on the ground shows that PKBM As-Salaam, located on Jalan Raya Baturaja, Tanjung Raman Village, South Prabumulih District, Prabumulih City, still manages its academic activities manually and is not supported by an integrated technology-based system. Important processes such as student registration, class schedule preparation, and student data management are still carried out using paper media or simple document files, which are vulnerable to input errors, data loss, and difficulties in terms of fast and accurate information retrieval. Common concrete problems include the use of printed forms in the new student registration process, which is prone to data duplication, typographical errors, and verification delays. Furthermore, class scheduling without a centralized system tends to be inefficient and disproportionate, disrupting the ongoing teaching and learning process. Meanwhile, student data scattered across various files and documents makes it difficult for administrators to conduct comprehensive and real-time academic monitoring.

In response to these challenges, a web-based academic information system capable of digitally and efficiently integrating all key academic processes is required. To support rapid system development tailored to user needs, a Rapid Application Development approach is used. In developing this website, the RAD method will be used. This approach is suitable for software development with a short turnaround time, directly involving users in designing the system requirements plan. The steps involved in this method include requirements analysis, system design, development, and finally, implementation. This method ensures that the system built meets user expectations and can be completed in a timely manner[2].

By implementing a web-based academic information system at PKBM As-Salaam using the RAD method, it is hoped that processes such as registration, lesson scheduling, and student data management can be carried out in a more systematic and integrated manner. This system also supports improving information quality, accelerating academic service processes, and supporting data-driven decision-making. Furthermore, the development of this system represents a concrete step in promoting the sustainable digitalization of non-formal education that is responsive to technological developments.

2. Theoretical Basis

2.1. Definition of Design

Design is the depiction, planning, and making of sketches or arrangements of several separate elements into a complete and functional unit[3]. Design is a process that is needed to create or create a new system to make it easier for researchers to overcome problems that exist in the research object[4].

2.2. Definition of Website

A website is a media that has many interconnected pages (hyperlinks), where the website has the function of providing information in the form of text, images, videos, sound and animation or a combination of all of them[5]. A website or web site is a collection of web pages that are interconnected and can be accessed via the internet[6].

2.3. Definition of Information System

An information system is a collection of hardware, software, people, databases, and procedures that work together to collect, store, manage, and disseminate information that is important to an organization[7]. An information system can be defined as a set of procedures that collect or retrieve, process, store, and disseminate information to support organizational decision making, creating and controlling[8].

2.4. Definition of community learning activity center

Community learning activity center (PKBM) is a non-formal educational institution that functions as a learning center for people who want to improve their quality of life through education[9]. Community learning activity center (PKBM) is an institution that organizes various types of non-formal and informal educational activities[10].

2.5. Definition of the RAD Method

RAD (Rapid Application Development) is a software development method that emphasizes iterative analysis and development. In this system, early versions of the software play a crucial role as a foundation for further development[11].

3. Research Methods

3.1. Data Source

- a. **Primary Data**
Primary data is data collected directly by researchers[12].
- b. **Secondary Data**
Secondary data is data that has been collected by other people before so that researchers cannot guarantee the accuracy of the data[12].

3.2. Data Collection Technique

In this study, the data collection technique used by the author is:

- a. **Observation**
Researchers collected data by conducting direct observations during academic services at the As-Salaam Community Learning Center (PKBM).
- b. **Interview**
Researchers collected data by directly interviewing administrative staff at the As-Salaam Community Learning Center.
- c. **Literature Review**
Based on this research, the research method is carried out by collecting data and information from various sources such as journal articles, e-books, notebooks and even documents containing various theoretical bases needed by researchers.

4. System Analysis And Design

4.1. Proposed Class Diagram

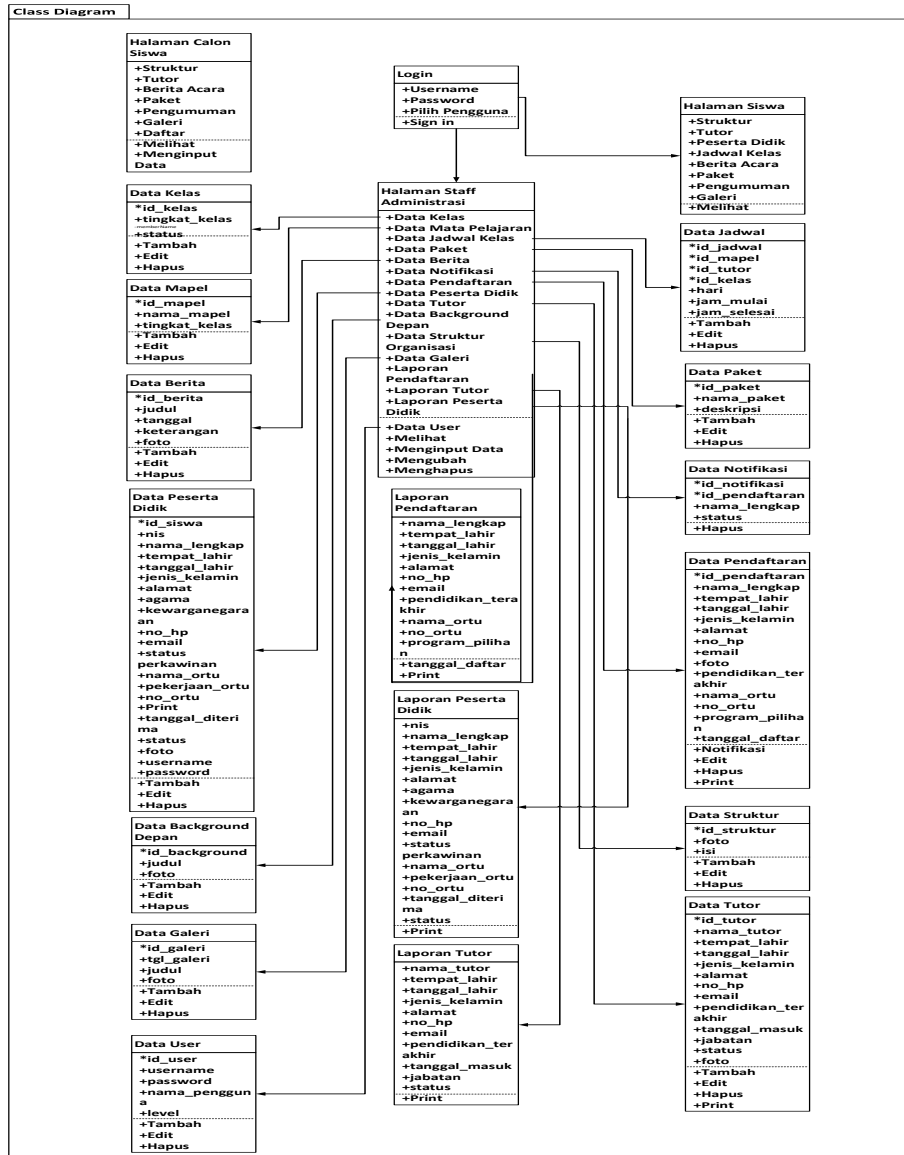


Fig. 1 : Proposed Class Diagram

This class diagram illustrates the structure of the website-based information system used to manage data at PKBM As-Salaam. The diagram displays various interrelated entities within the system, such as login entities, administrative staff, prospective students, active students, and various other supporting data.

5. Implementation and Testing

5.1. Implementation Interface System

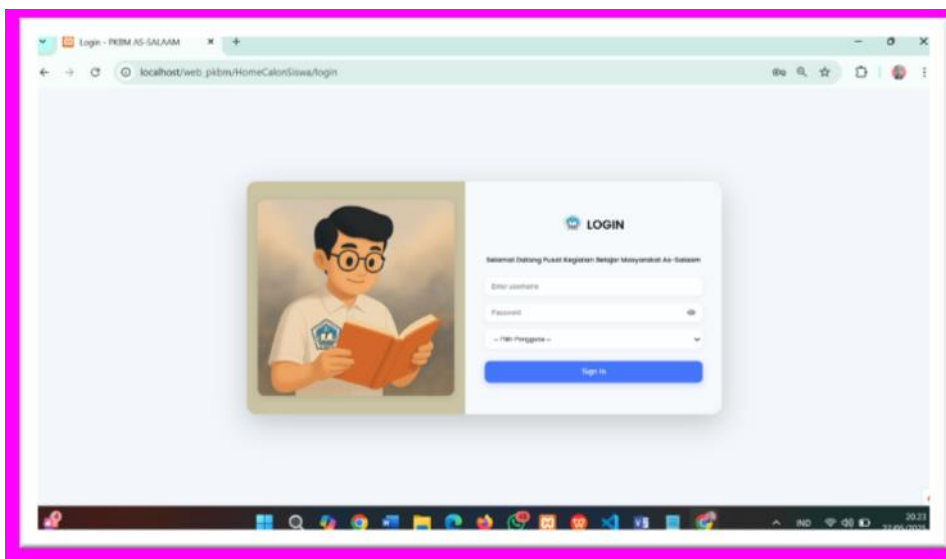


Fig. 2 : System Login Page

The login page is only for administrative staff and students who have been granted access to their respective pages as determined by the developer. Each user's access rights have a different appearance, reflecting their roles and responsibilities within the system.

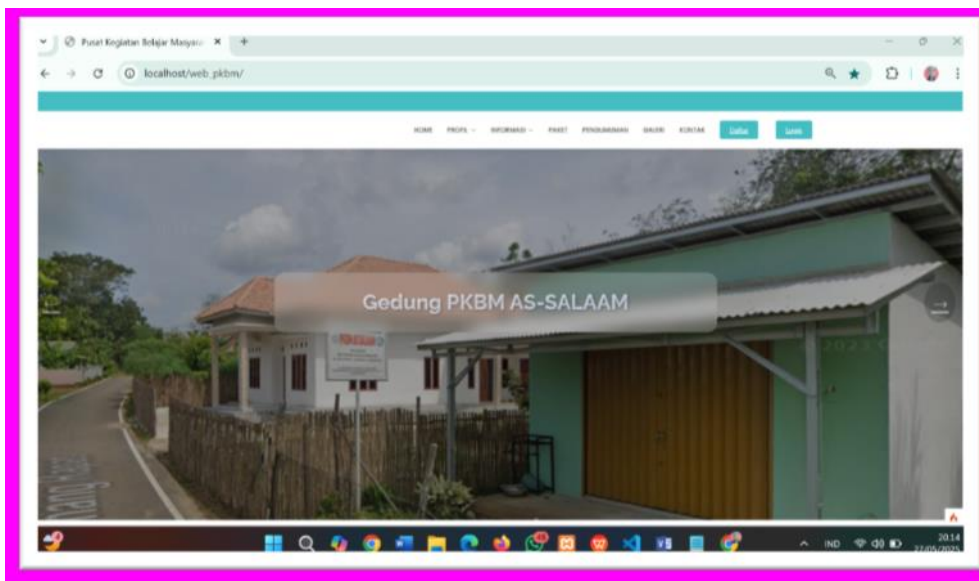


Fig. 3 : System Home Page

The front page of the As-Salaam PKBM academic information system can be seen by prospective students and students when they want to visit the website to see the information on As-Salaam PKBM.

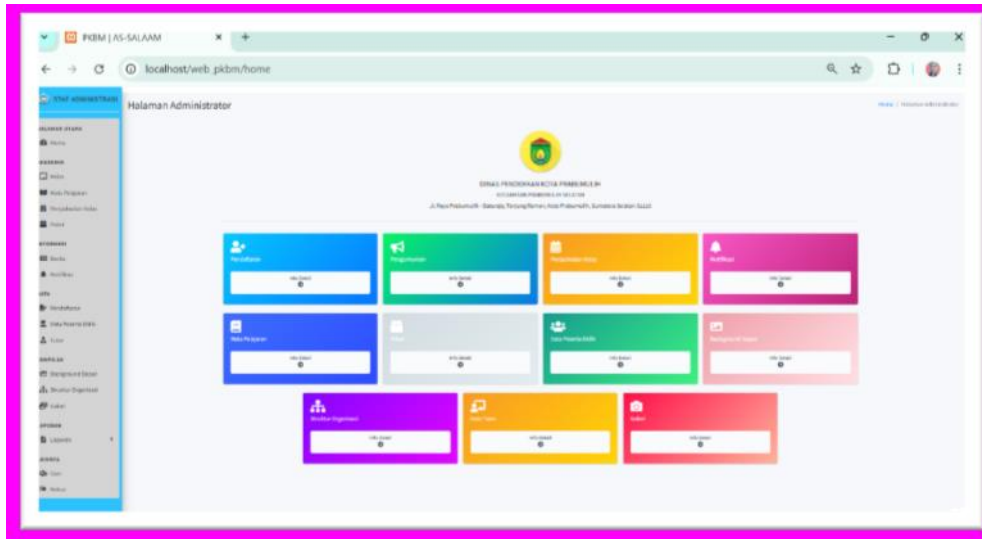


Fig. 4 : System administration staff home page

This main page displays the initial page displayed after administrative staff successfully log in to the As-Salaam Community Learning Center (PKBM) information system. This page serves as the main control center, providing various information and quick access to important system features.

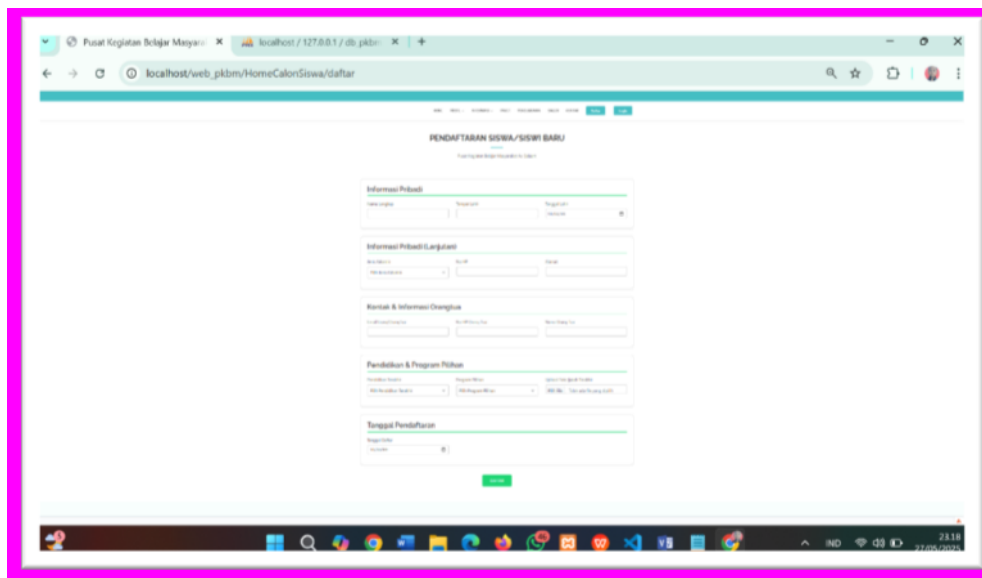


Fig. 5 : Sign Up Page

This page displays the registration form for prospective new students. The form is designed with several important sections, such as personal data, additional information, parent contact information, program options, and registration date. There's also a feature for uploading supporting documents, such as final diplomas. The form is neatly designed and easy to complete, streamlining the online registration process.

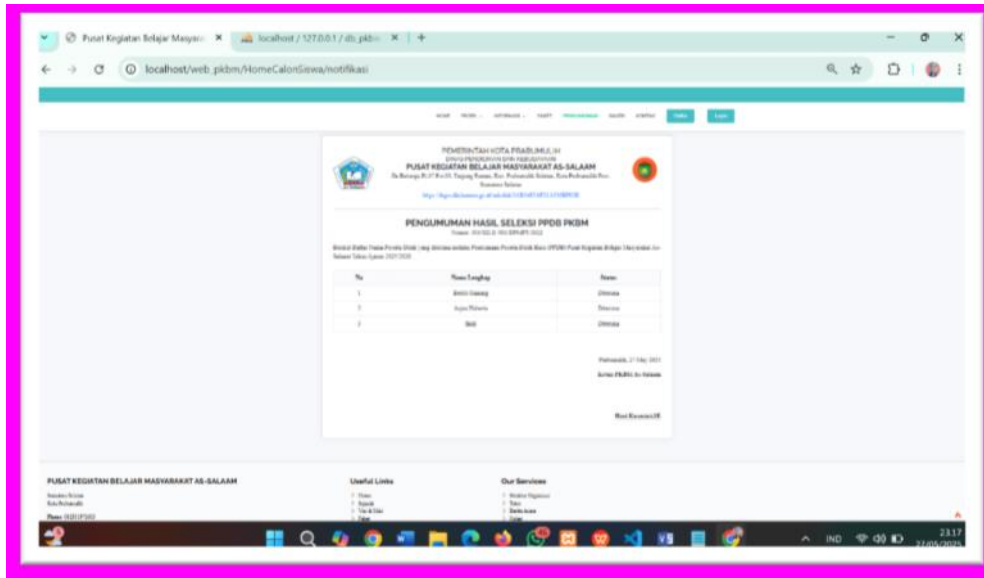


Fig. 6 : Announcement Results Page

The announcement page for the new student selection results is designed to resemble an official letter format. This design includes the agency's letterhead, letter number, and a signature section for the head of the institution for legal validation. Information about accepted participants is displayed in a simple yet informative table, allowing users to easily understand the announcement's contents.

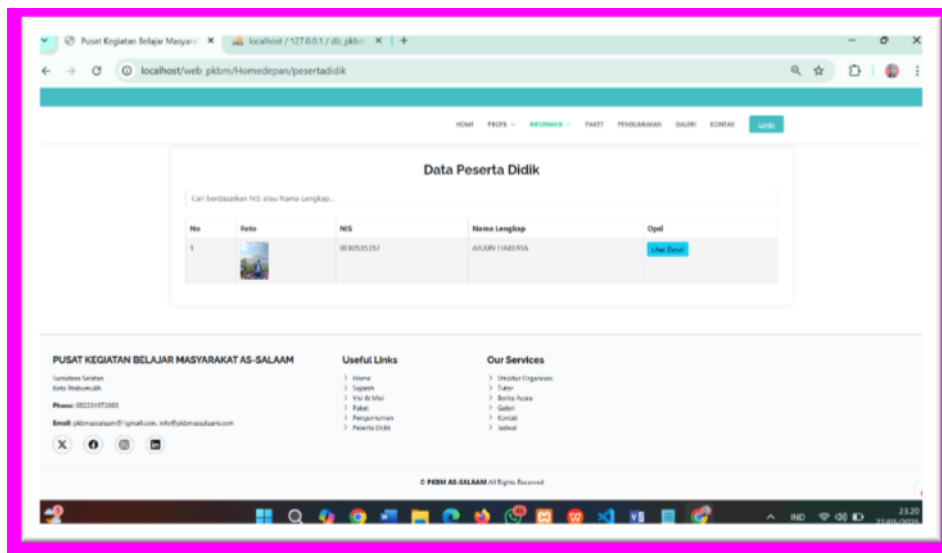


Fig. 7 : Final Student Page

This page displays student data in tabular form. Information includes student number, photo, student ID number, full name, and action buttons to view details. A search bar also allows users to easily find data by student ID number or name. This interface helps administrators and general users quickly and organizedly access student information.

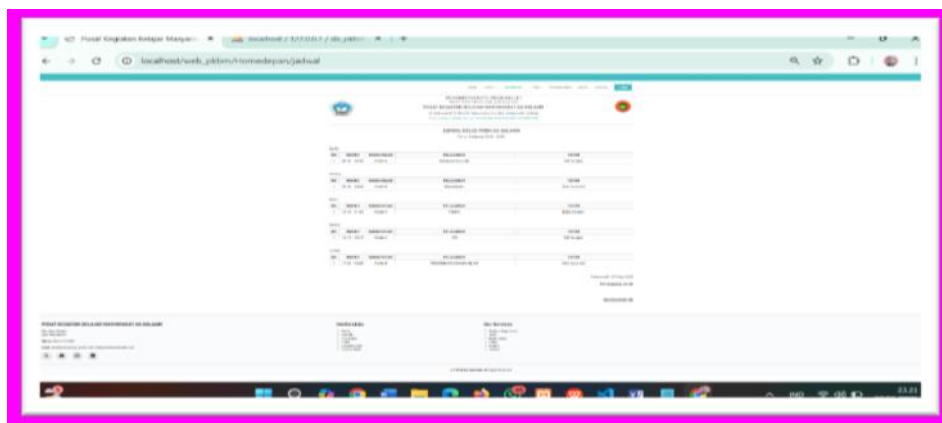


Fig. 8 : Class Schedule Page

This page displays the complete class schedule for As-Salaam Community Learning Center (PKBM) for one week. The table organizes the data by day, time, class name, subject, and tutor's name. The page's design is simple yet informative for easy reading by users, especially students and parents who want to know the time and instructor for each subject. The date and the name of the person in charge are listed at the bottom to demonstrate formality and accountability for the information presented.

5.2. System Test Results

Table. 1 : BlackBox Testing Results

No.	Item Pengujian	Detail Pengujian	Jenis Pengujian	Kesimpulan
1.	Login	Verifikasi data login	BlackBox Testing	Valid
2.	Pengolahan data kelas	Menambah, mengedit, menghapus data kelas	BlackBox Testing	Valid
3.	Pengolahan data mata pelajaran	Menambah, mengedit, menghapus data mata pelajaran	BlackBox Testing	Valid
4.	Pengolahan data paket	Menambah, mengedit, menghapus data paket	BlackBox Testing	Valid
5.	Pengolahan data berita acara	Menambah, mengedit, menghapus data berita acara	BlackBox Testing	Valid
6.	Pengolahan data notifikasi	Menghapus data notifikasi	BlackBox Testing	Valid
7.	Pengolahan data pendaftaran	Notifikasi, mengedit, menghapus data pendaftaran	BlackBox Testing	Valid
8.	Pengolahan data peserta didik	Print, menambah, mengedit, menghapus data peserta didik	BlackBox Testing	Valid
9.	Pengolahan data tutor	Print, menambah, mengedit, menghapus data tutor	BlackBox Testing	Valid
10.	Pengolahan data <i>background</i> depan	Menambah, mengedit, menghapus data <i>background</i> depan	BlackBox Testing	Valid
11.	Pengolahan data struktur organisasi	Menambah, mengedit, menghapus data struktur organisasi	BlackBox Testing	Valid
12.	Pengolahan data galeri	Menambah, mengedit, menghapus data galeri	BlackBox Testing	Valid
13.	Pengolahan data <i>user</i>	Menambah, mengedit, menghapus data <i>user</i>	BlackBox Testing	Valid

6. Conclusion

Based on the research and design of a website-based academic information system at PKBM As-Salaam using the Rapid Application Development method, it can be concluded that the system developed can improve efficiency in academic management. This system was designed to address data management needs that were previously handled manually and without integration. The conclusions of this research are as follows:

- The developed system includes key features such as student registration, class scheduling, and centralized and structured student data management, which helps speed up the academic process and improve data accuracy.
- The application of the Rapid Application Development (RAD) method in the development process allows the system to be built quickly and adaptively, with direct user involvement at every stage, resulting in a system that is more suited to real needs in the field.
- System testing using the black box method showed that all features functioned well. Each input produced the appropriate output, and no significant errors were found in the system's operation.
- The user interface is designed with ease of use in mind, so that it can help administrative staff and students in carrying out activities more efficiently and transparently.

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