



UNDERGRADUATE THESIS

**A WEB-BASED VILLAGE ADMINISTRATIVE
SERVICE INFORMATION SYSTEM FOR
LETTER PRIORITIZATION USING THE
ANALYTICAL HIERARCHY PROCESS (AHP)
AND BCRYPT SECURITY AUTHENTICATION:
A CASE STUDY OF BLORO VILLAGE**

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ABSTRACT

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Administrative services in Bloro Village, Besuki District, are still largely conducted manually, resulting in delays in service processing, difficulties in document management, and limitations in monitoring administrative requests. In addition, the absence of a systematic prioritization mechanism for administrative letters and insufficient password authentication security may affect service quality and user data protection. This study aims to develop a web-based village administrative service information system by implementing the *Analytical Hierarchy Process* (AHP) method to determine letter service priorities and the *Bcrypt* algorithm to improve user authentication security. The system was developed using the Laravel framework with MySQL as the database management system. Data collection methods applied in this study included observation, interviews, and literature review. System evaluation was conducted through *Black Box Testing* and usability assessment using the *System Usability Scale* (SUS). The implementation results indicate that the developed system successfully supports online administrative services, facilitates data management, and assists village officials in determining letter priorities through the AHP method. Furthermore, the application of the *Bcrypt* algorithm provides enhanced password protection through hashing mechanisms. Based on usability testing involving 30 respondents, the system obtained an SUS score of 81.08, categorized as excellent with a Grade Scale B, indicating that the system is acceptable and feasible to support administrative services in Bloro Village.

Keywords: Village Information System, Administrative Services, Analytical Hierarchy Process (AHP), Bcrypt, System Usability Scale (SUS)

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The author realizes that this thesis is still far from perfect. Therefore, constructive criticism and suggestions are highly appreciated for future improvements. Finally, the author hopes that this thesis can provide benefits and valuable contributions to readers, future researchers, and the development of knowledge in the field of information systems.

Surabaya, May 24th 2026



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GLOSSARIUM

Istilah	Keterangan
AHP (Analytical Hierarchy Process)	Metode pengambilan keputusan multikriteria yang digunakan untuk menentukan prioritas berdasarkan pembobotan kriteria.
Autentikasi	Proses verifikasi identitas pengguna sebelum memperoleh hak akses sistem.
Black Box Testing	Metode pengujian sistem yang dilakukan dengan menguji fungsi sistem tanpa melihat kode program.
Bcrypt	Algoritma hashing password yang digunakan untuk meningkatkan keamanan autentikasi pengguna.
Bootstrap	Framework CSS yang digunakan untuk membangun antarmuka website secara responsif.
Brute Force Attack	Teknik serangan dengan mencoba berbagai kombinasi password secara berulang hingga berhasil masuk ke sistem.
Cost Factor	Parameter pada algoritma Bcrypt yang menentukan tingkat kompleksitas proses hashing password.
Database	Kumpulan data terstruktur yang disimpan dan dikelola dalam sistem komputer.
Framework	Kerangka kerja perangkat lunak yang digunakan untuk mempermudah pengembangan aplikasi.
Hashing	Proses mengubah data menjadi kode unik menggunakan algoritma tertentu.
Laravel	Framework PHP berbasis MVC yang digunakan dalam pengembangan sistem.

Login	Proses masuk ke dalam sistem menggunakan username dan password.
MD5	Algoritma hashing lama yang memiliki kelemahan keamanan terhadap serangan modern.
MySQL	Sistem manajemen basis data relasional yang digunakan untuk penyimpanan data sistem.
Password	Kata sandi yang digunakan pengguna untuk mengakses sistem.
Plaintext	Data asli yang belum dienkripsi atau belum di-hash.
Prioritas Pelayanan	Urutan tingkat kepentingan pelayanan administrasi berdasarkan kriteria tertentu.
Responsive Web	Tampilan website yang dapat menyesuaikan ukuran layar perangkat pengguna.
Salt	Nilai acak yang ditambahkan pada password sebelum proses hashing untuk meningkatkan keamanan.
SHA-1	Algoritma hashing yang digunakan untuk menghasilkan nilai hash dari data.
Smart Village	Konsep desa berbasis teknologi informasi untuk meningkatkan pelayanan dan tata kelola pemerintahan.
Sistem Informasi	Sistem yang digunakan untuk mengelola, memproses, dan menyajikan informasi.
SQL Injection	Teknik serangan keamanan dengan menyisipkan perintah SQL berbahaya ke dalam input sistem.
SUS (System Usability Scale)	Metode evaluasi usability sistem menggunakan kuesioner untuk mengukur tingkat kemudahan penggunaan.

UML Modeling Language)	(Unified Bahasa pemodelan standar untuk merancang sistem perangkat lunak.
Use Case Diagram	Diagram UML yang menggambarkan interaksi antara pengguna dan sistem.
User Interface	Tampilan antarmuka yang digunakan pengguna untuk berinteraksi dengan sistem.
Verifikasi	Proses pengecekan kebenaran data atau permohonan dalam sistem.
Visual Studio Code	Editor kode sumber yang digunakan dalam proses pengembangan aplikasi.
Web Browser	Aplikasi yang digunakan untuk mengakses halaman web melalui internet.