

ABSTRAK
**Rancang Bangun Alat Pemindai Barcode Berbasis
Mikrokontroler untuk Inventori Obat di Apotek Alfa
Gadjahnata Medika**

(Muhammad Taufan Akbar Al Ghozi 2025: 54)

Pengelolaan inventori obat di apotek masih banyak dilakukan secara manual sehingga rawan kesalahan pencatatan, keterlambatan pelayanan, serta pemborosan akibat kelebihan atau kekurangan stok. Laporan akhir ini membahas perancangan dan implementasi **alat pemindai barcode berbasis mikrokontroler ESP32** yang terintegrasi dengan sistem inventori berbasis web untuk Apotek Alfa Gadjahnata Medika. Perangkat keras terdiri atas modul barcode scanner GM66, OLED display, tombol input-output, serta catu daya baterai. Perangkat lunak dikembangkan menggunakan bahasa pemrograman PHP, JavaScript, dan database MySQL yang dijalankan melalui XAMPP. Hasil pengujian menunjukkan alat mampu membaca barcode dengan baik pada jarak optimal **2–14 cm**, serta data hasil pemindaian dapat tercatat secara otomatis ke dalam sistem inventori. Website inventori yang dikembangkan menyediakan fitur login, pencatatan barang masuk dan keluar, pemantauan stok, serta pencetakan laporan. Sistem ini terbukti meningkatkan akurasi pencatatan, mempercepat proses monitoring, dan mempermudah pembuatan laporan stok obat. Dengan demikian, rancang bangun ini diharapkan dapat membantu apotek dalam meningkatkan efisiensi pengelolaan inventori sekaligus kualitas pelayanan kepada konsumen.

Kata kunci : barcode, mikrokontroler ESP32, inventori obat, sistem berbasis web

ABSTRACT

Design and Development of a Microcontroller-Based Barcode Scanner Device for Drug Inventory at Alfa Gadjahnata Medika Pharmacy

(Muhammad Taufan Akbar Al Khozi 2025: 54)

Drug inventory management in pharmacies is often conducted manually, which is prone to recording errors, service delays, and inefficiencies caused by stock shortages or surpluses. This final project presents the design and implementation of a **barcode scanner device based on the ESP32 microcontroller** integrated with a web-based inventory system for Alfa Gadjahnata Medika Pharmacy. The hardware consists of a GM66 barcode scanner module, an OLED display, input-output buttons, and a rechargeable battery supply. The software was developed using PHP, JavaScript, and MySQL database operated through XAMPP. Testing results show that the device can accurately read barcodes within an optimal distance of **2–14 cm**, and scanned data is automatically recorded into the inventory system. The developed inventory website provides features such as user login, recording of incoming and outgoing drugs, stock monitoring, and report printing. This system improves data accuracy, accelerates monitoring processes, and simplifies inventory reporting. Therefore, the proposed design is expected to support pharmacies in enhancing inventory management efficiency as well as improving service quality for customers.

Keywords: barcode, ESP32 microcontroller, drug inventory, web-based system