

Basic Embedded System Projects

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Abstract

- This project report presents three fundamental Embedded System projects:
 - - Biometric Attendance System
 - - Smart Irrigation System
 - - LED Display
- Demonstrates data handling, user interaction, sensors and automated controls and algorithm implementation.

Methodology

- -Modular development with structured coding principles
- - Technologies: Embedded c, Arduino uno, built-in libraries
- - Process: Identify requirements → Develop code → Simulation → Test functionality → Debug and optimize

Biometric Attendance System

- - Manage daily tasks with fingerprint recognition , facial recognition, iris scanning, real-time attendance
- - Displays task biometric attendance system
- - Code implemented using Embedded c functions and Conditional Statement

Smart Irrigation System

- - Install soil moisture sensors to monitor soil moisture, and weather sensors to adjust irrigation based on current and forecasted conditions.
- - Use microcontroller to process sensor data automatically control water valves according to soil moisture levels.
- - Add Wi-Fi or IOT connectivity for remote monitoring and control through a mobile app .

LED Display

- - LED Display like 7 segment display.
- - Matrix display or LCD screen.
- - LED contain 2 rows and 16 column.

Testing

- - *Unit testing for each function*
- - *Testing user inputs and boundary conditions*
- - *Error handling verification*

Results & Discussion

- - *All projects met objectives*
- - *Proper implementation and testing*
- - *Efficient execution with minimal errors*

Future Scope

- - Identification, Tracking, Security, Reporting, Integration, Management
- - Automation , Monitoring, optimization, Control, Alerts
- - Display, Resolution, Multimedia, Connectivity , Scheduling, Interactivity, Durability

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