



ICT 3143 Embedded System Lab Synopsis

July – November 2025

Vth Semester B.Tech. (CCE)

Date of Submission: 30/09/2025

Project Title

RFID-based Scan and Edit System using LPC1768 with LCD Display

Brief Description about the Project

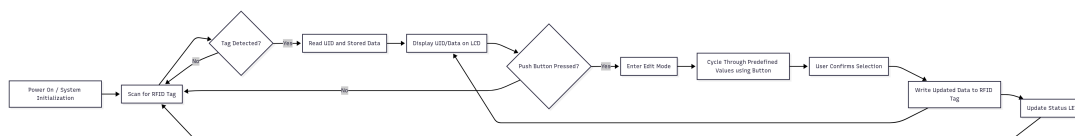
This project implements an RFID-based embedded system using the LPC1768 ARM Cortex-M3 microcontroller. The system scans RFID tags using the RC522 module, reads the unique identifier (UID) and stored data, and displays the information on a 16x2 LCD screen. It also supports an edit mode that allows the user to modify the data on the RFID tag. Changes are input via a push button, which cycles through predefined values stored in the microcontroller. Once the desired value is selected, it is written back to the RFID tag and displayed on the LCD, completing a “scan, view, and edit” workflow.

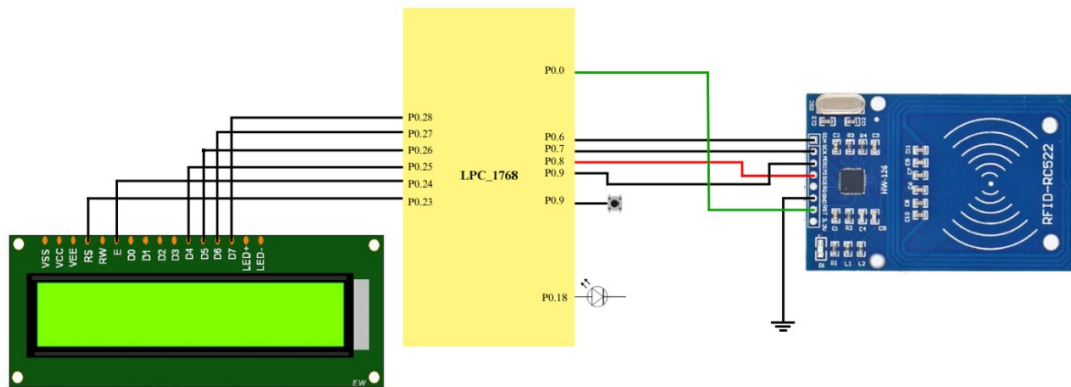
The LPC1768 communicates with the RC522 module using the SPI protocol for reliable data transfer, while the LCD operates in 4-bit parallel mode to save I/O pins. A push button enables edit mode, and on-board LEDs provide visual status feedback for operations such as successful read/write or errors.

The software flow continuously scans for tags on power-up, retrieves UID and stored data when detected, and displays them on the LCD. Pressing the push button enters edit mode, where updated values are written to the tag and reflected on the display.

Potential applications include access control systems with dynamic permission updates, academic attendance tracking, and inventory management where stock details can be modified in real time. The project demonstrates practical use of RFID technology, peripheral interfacing, and interactive embedded system design.

Methodology and Diagrams





Port Lines Used

- **RC522 RFID Module (SPI Interface)**

- SCK → P0.7
- MOSI → P0.9
- MISO → P0.8
- SDA/SS → P0.6
- RST → P0.0

- **16x2 LCD Display (4-bit mode)**

- RS → P0.23
- E → P0.24
- D4 → P0.25
- D5 → P0.26
- D6 → P0.27
- D7 → P0.28

- **Push Button: P0.10**

- **On-board LED (Status): P1.18**

Components Required

1. LPC1768 Microcontroller Board (Mbed-enabled)
2. RC522 RFID Module with RFID tags
3. 16x2 LCD Display
4. Push Button
5. Breadboard and jumper wires
6. Power supply (USB / 5V)

Team Members

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