RFID login/registration demo

Tomáš Macháček

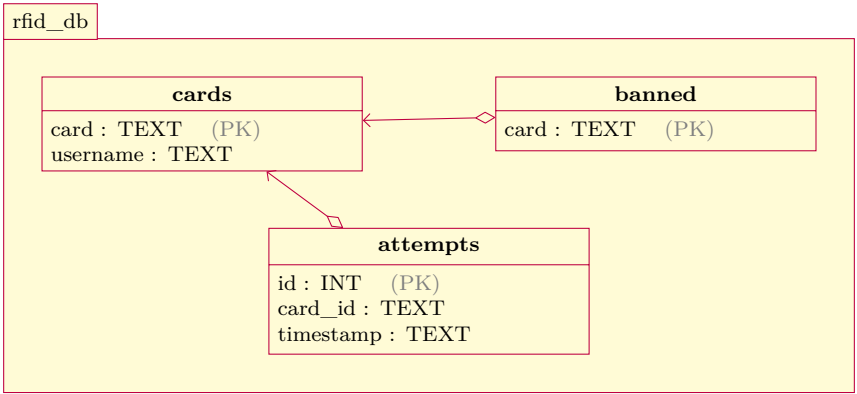
May 29, 2025

Outline

Introduction

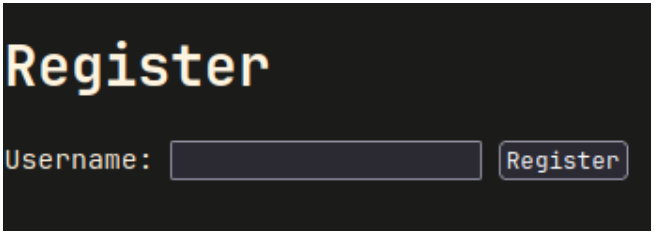
- A robust yet user-friendly registration and login system
- MQTT-based communication between the Raspberry Pi and Flask server
- A centralized database for banned users

Database structure



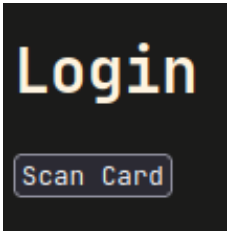
Registration Workflow

- The user enters a desired username.
- The Flask server publishes an MQTT message to initiate scanning on the Raspberry Pi.
- The user has up to three attempts to register. Registration will fail if:
  - The card or username already exists.
  - The card is listed in the banned-users database.



Login Workflow

- The user presses the scan button to begin authentication.
- The system verifies that the card:
  1. Is registered in the database.
  2. Is not present in the banned-users list.



RFID Communication Protocol

- The Flask server starts the sequence by publishing a “start” message via MQTT.
- The Raspberry Pi subscribes to the corresponding Mosquitto broker topic.
- A 3-second window opens for the RFID scan.
- Upon a successful scan, the Raspberry Pi publishes the RFID tag data with QoS=1.

Questions?