SMART DOOR

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Feature

- Unlocking by password (keypad).
- Unlocking via NFC-supported phone or NFC card (MFRC522).
- Wrong password 3 times --> block 60s (can't insert password)
- Use LCD to display status of door and the current time.
- Use sensor to detect door is close. (optional)
- Password change capability (via keypad or master NFC card).
  - Example:
    - Keypad: Press # to enter password change mode, enter the old password first, then enter the new password, and press * to save.
    - Master NFC card: Similarly, press # to enter password change mode, tap the master NFC card, then enter the new password, and finally press * to save.
- Can add multiple NFC cards for open door.
- Ability to retrieve door access history (displaying timestamps of door openings/closings) for a specified period (e.g., within 3 days) via a computer (UART).

(In a practical expansion, an app on a phone could be used to access the history of openings/closings, current door status, as well as to grant door access to another NFC card and revoke access rights for that card.)
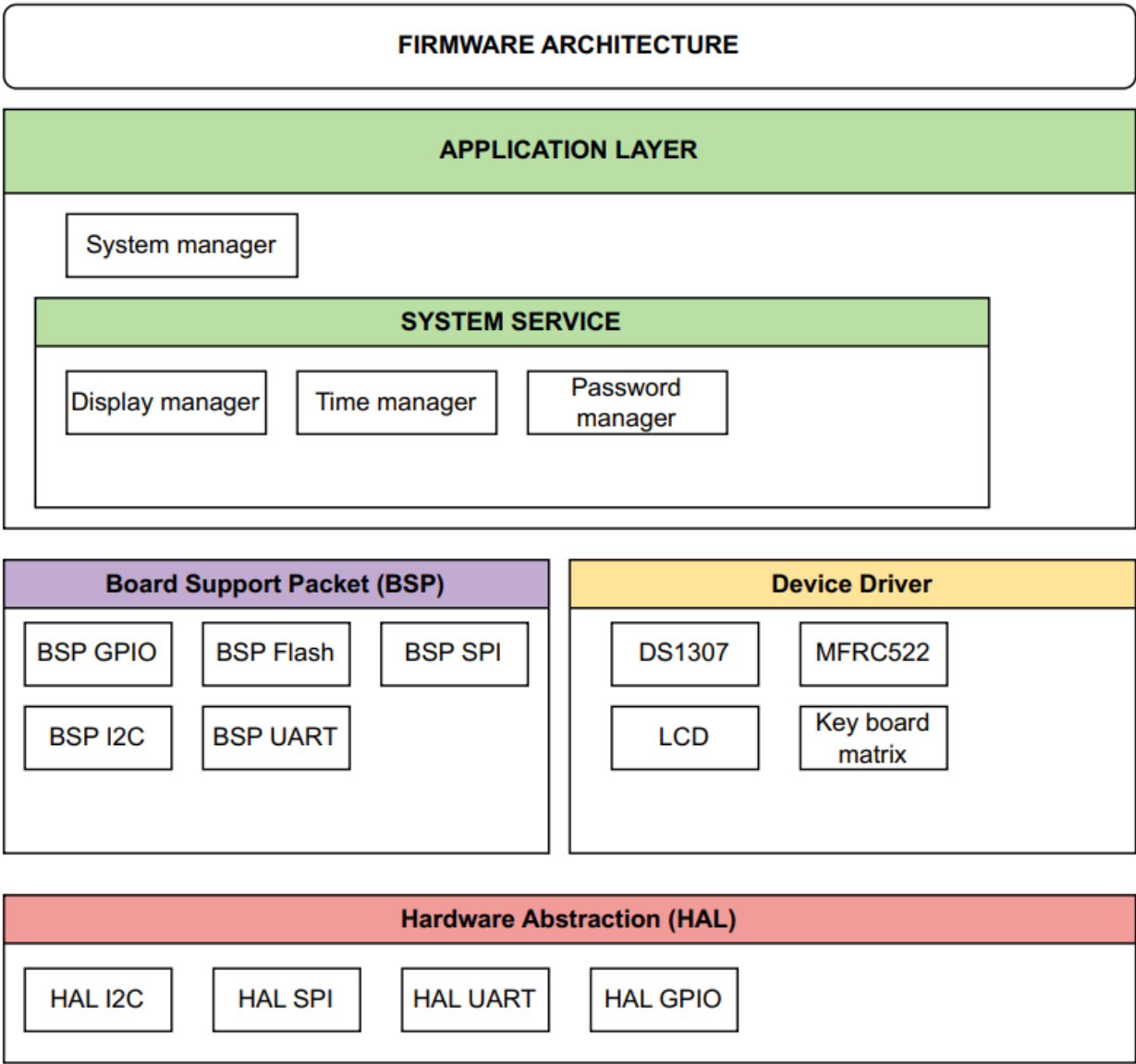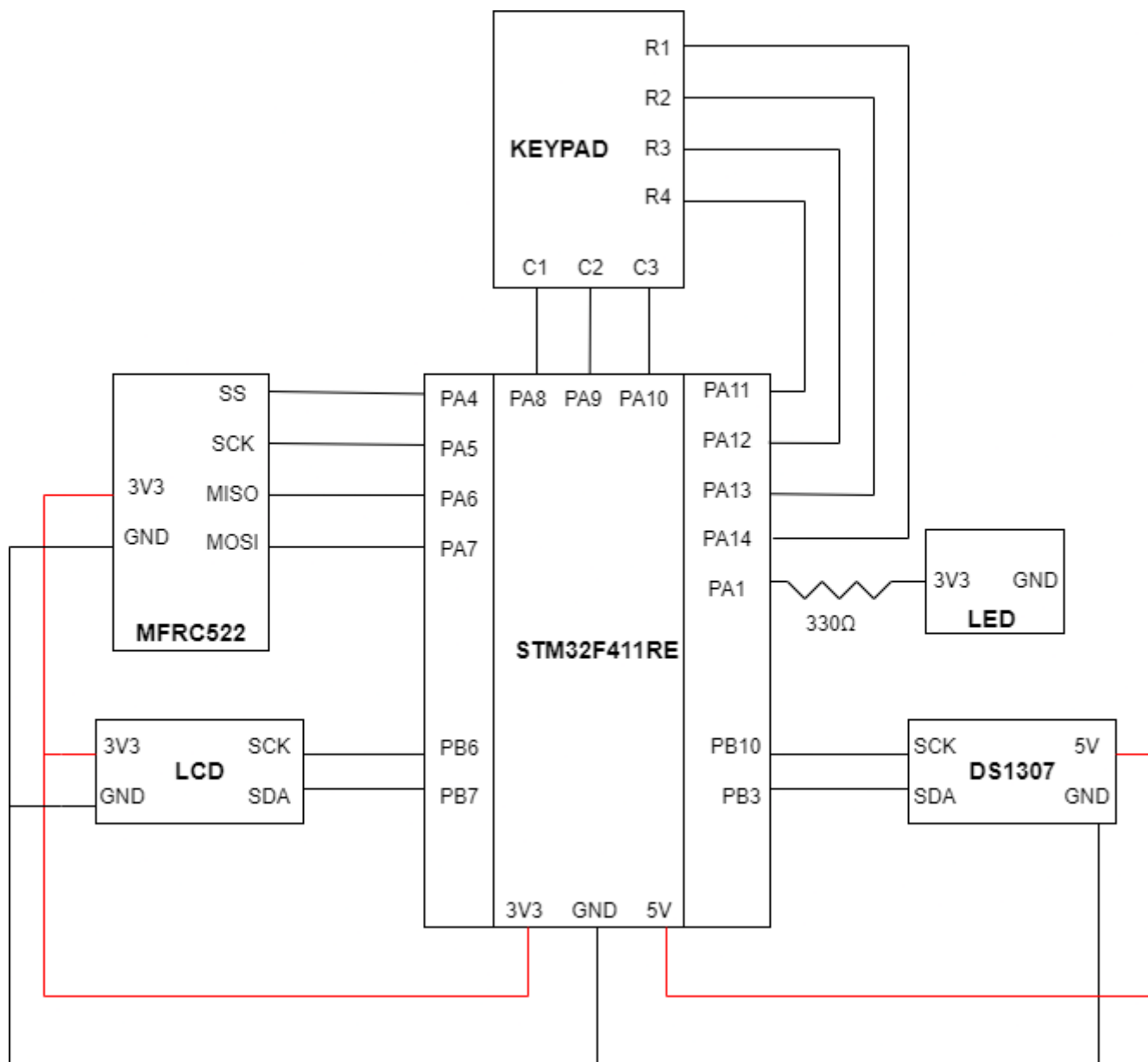
Modules

Module Name	Quantity
STM32F4	1
Keypad 3x4	1
NFC-supported Phone/Card	1
LCD16*2	1
Module I2C	1

Module Name	Quantity
DS1307	1
MXRC522	1
CP2102	1
LED	1

Block Diagram

Schematic

Miss: use uart to connect PC

References

- [STM32f4 datasheet](#)
- [MFRC522 datasheet](#)
- [DS1307 datasheet](#)