

Project: Reprise of Locker Access System

Problem Statement

Currently, the lockers in the senior design room in ECPE department are secured with standard combination padlocks. The disadvantages of using this type of lock are previous users might still know the padlock combinations numbers, the padlocks is difficult to be used especially for first time user and administrators are not able to assign and update locker efficiently.

Solution

The problem can be solved by designing a control system that allows locker access to authorized users by using their ISU card. The system will have administrative tools and easy expandable number of locker module.

Functional Requirements

- User should be able to slide ISU card or enter ID number
- User display should show the status of the system
- Administrators must be able to add lockers to the system
- Access information should be stored in SD card
- Control module communicates wirelessly with locker modules
- System should alert user when locker module has low battery

Non Functional Requirements

- The shape and color of the case of both Control and Locker Module
- Security of the wireless connection

Operating Environment

- Location: Senior Design room Coover 1301
- Temperature: 69 to 74 degrees Fahrenheit
- Room Dimension: 44' x 28'

Intended users

- Senior Design students in ECPE department
- Administrators: Faculty and staff in ECPE department

Testing

- Testing Environment: Indoor with room temperature
- Testing :
- Tested the whole system by using one Control Module and three Locker modules
- Xbee-Tested the distance of the communication between two Xbee

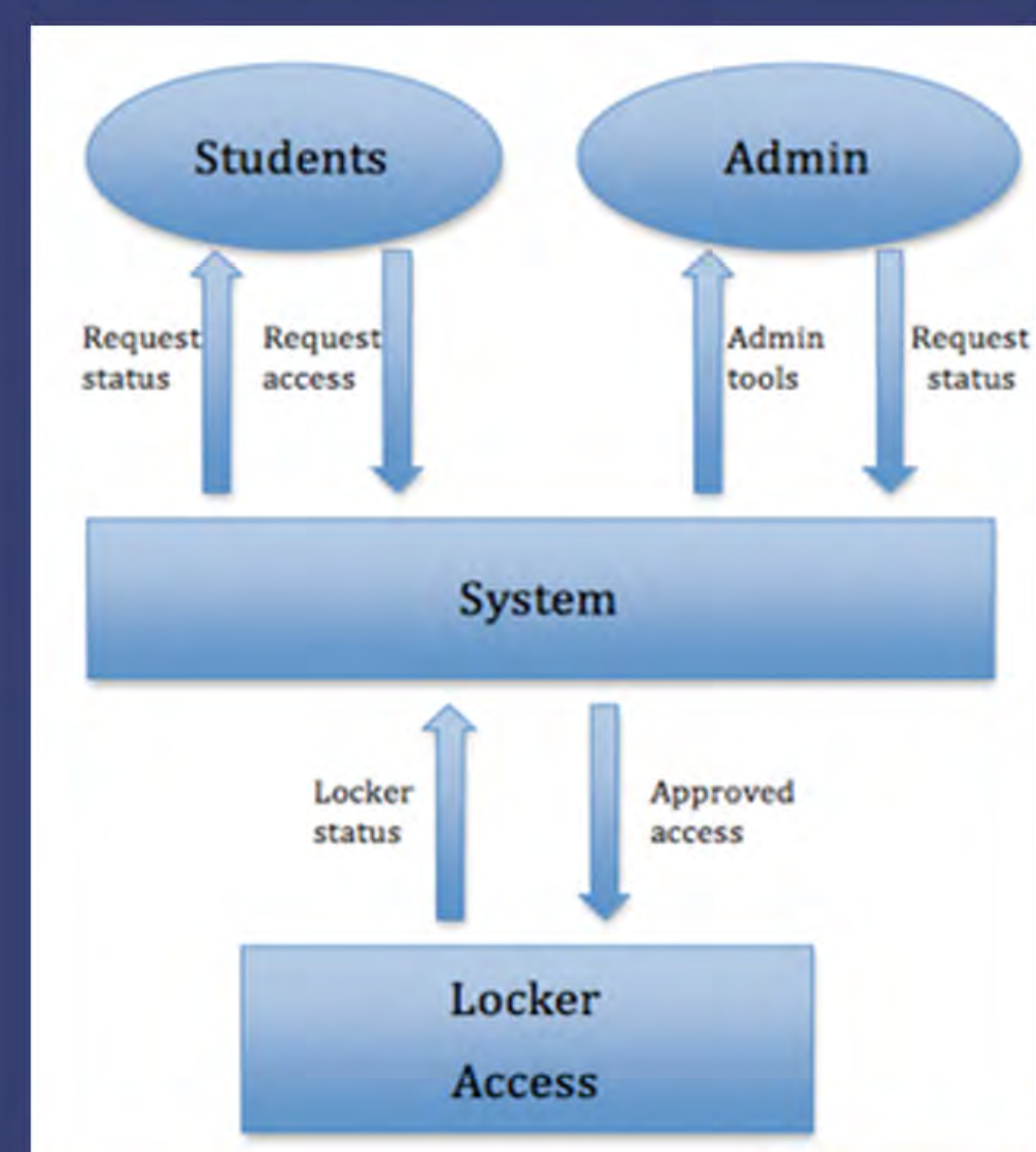
Hardware

- Atmega 328 Microprocessor- Gathers data and communicates with Xbee, keypad, LCD, SD Card and card reader.
- Xbee-Does two way communication between Control Module and Locker Module
- Card Reader Reads the magnetic strip on ISU card
- SD Card-Stores information regarding locker access

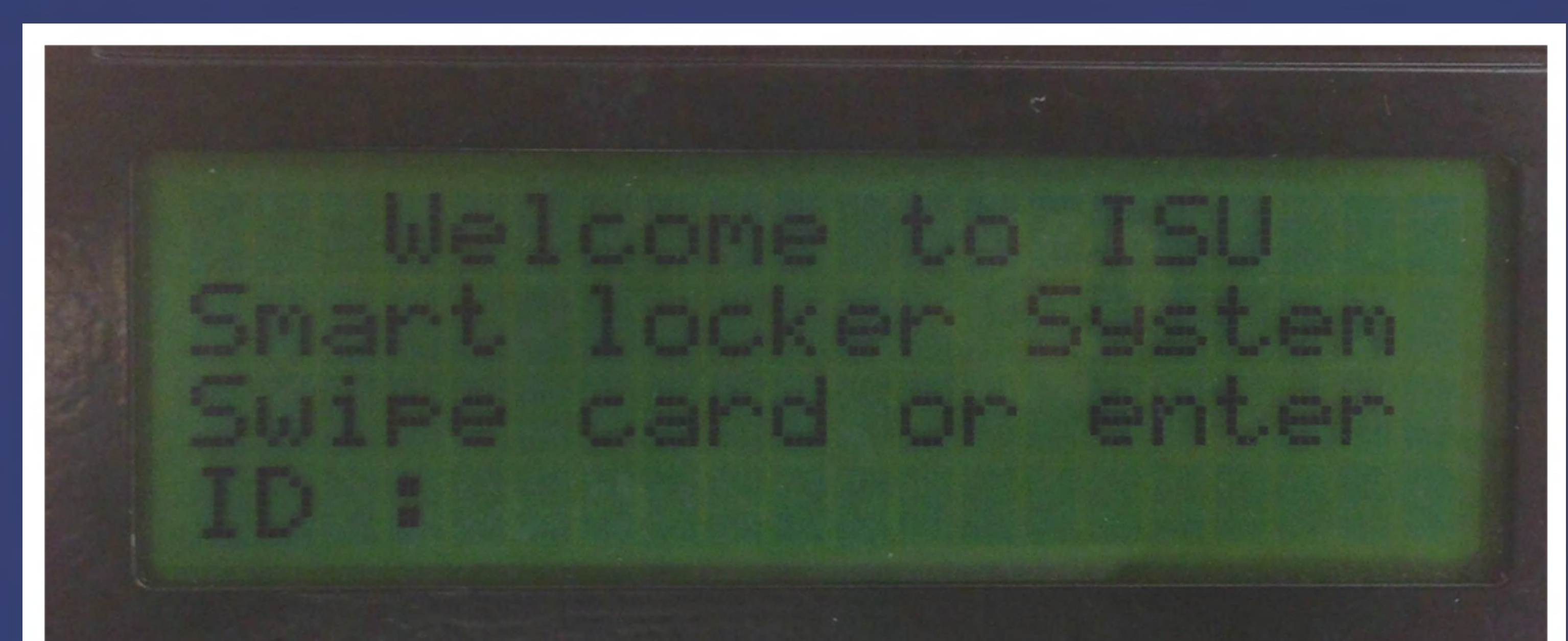
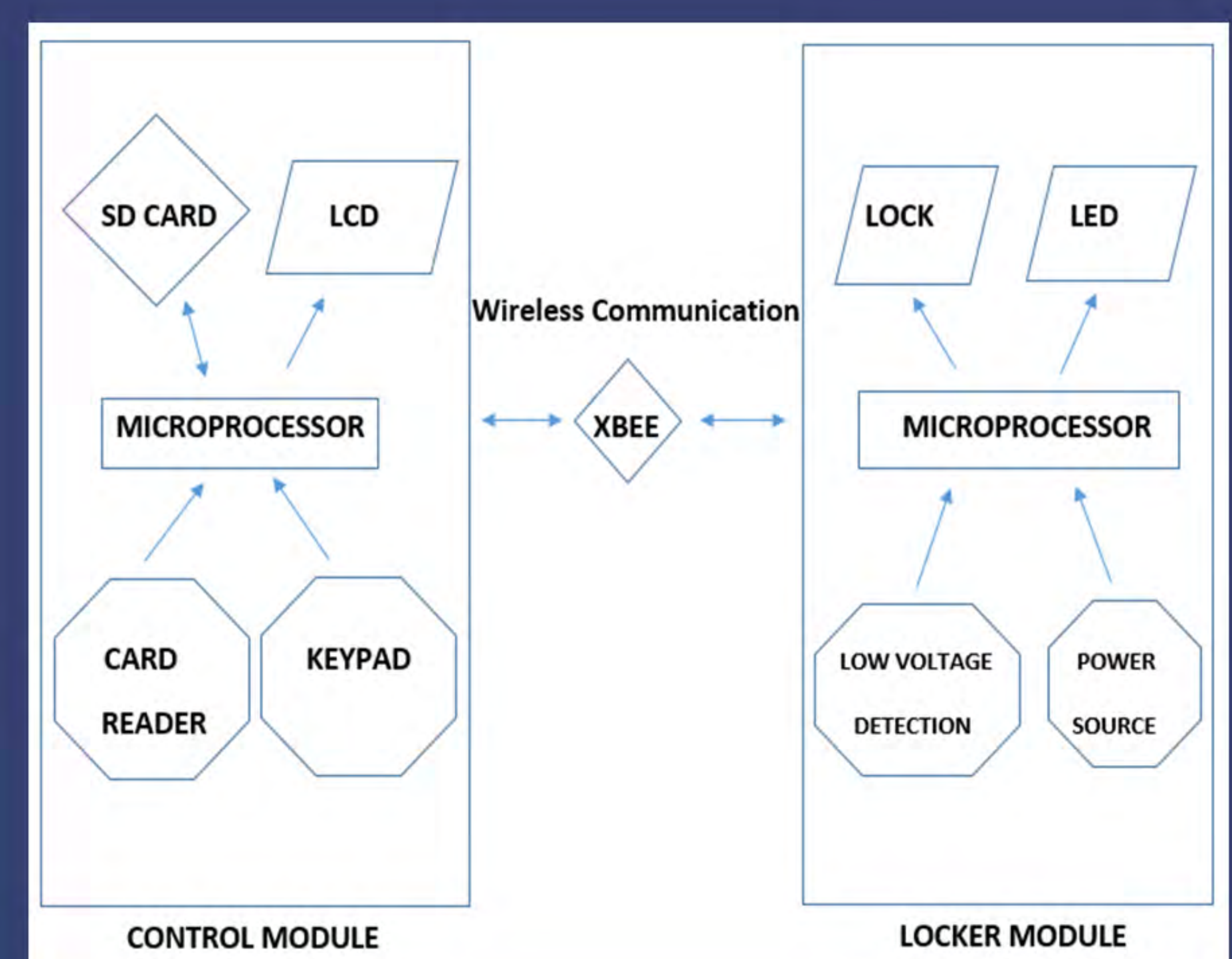
Software

- Programming Language Arduino Processing C Programmer/Compiler
- Libraries Arduino Libraries, Xbee Libraries, Software Serial Communication

Concept sketch



Block diagram



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