Preliminary Design Review (PDR 2)

Problem Statement

This system is intended to manage access to a monitored room by controlling entry and exit based on occupancy limits and verified health status. Entry should be granted only to individuals who meet the health current number of occupants is below a configurable maximum. The system should provide clear feedback to users on whether access is allowed or denied, while ensures accuracy tracking of room occupancy in shared-use environments such as stores, classrooms, or laboratories.

System Requirements

1. The system shall detect when a person attempts to enter the monitored room.
2. The system shall detect when a person exits the monitored room.
3. The system shall maintain, update, and display the current number of occupants in the room.
4. The system shall indicate occupancy levels using clearly defined categories such as empty, low, medium, high, and full.
5. The system shall restrict entry when the maximum occupancy limit is reached. The limit shall be configurable.
6. The system shall verify an individual's health status before allowing entry.
7. The system shall prevent entry if health verification is not completed or not passed, regardless of occupancy.
8. The system shall provide feedback to the individual indicating whether entry is permitted or denied, based on health status and occupancy.
9. The system shall allow unrestricted exit from the room at times.
10. The system shall confirm successful health verification to the individual tempting entry.
11. The system shall ensure that a previously passed health check expires automatically if entry does not occur within a short time frame.
12. The system shall update status indicators and internal state changes to response to user actions.

Block Diagram