Elevator Logic

Software Requirement Specification

For Elevator prioritization

Version 1.1

Revision History

Date	Version	Description	Author
6-17-16	1.0	Ultimate Software BA pre-employment exercise	Amanda Ring-Rissler
6-17-16	1.1	Revision after time expired	Amanda Ring-Rissler

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1.0 Overview

Objective

A 100 story building has two elevators running simultaneously. The project objective is create a complete system which directs the mechanical components of the elevators. The highest priority is to reduce the amount of time a user waits for an elevator after pressing the call button. The solution will account for all possible combinations of upward and downward calls on each of the 100 floors.

System Integrations

System Name	Integration Type	Notes
Fire Department	Audio/phone/VOI	Elevator connects to fire department in case of emergency
Building phone system	Audio/phone/VOI	Elevator connects to phone line to enable communication with building maintenance in case of emergency

User Roles and Responsibility

User Class	Type of User	User Responsibilities
Administrator	User who has ability to override logic and manually control elevator	Call elevator, take elevator offline, disable fire alarm, change call logic for special events
General	User who selects up or down	Select up or down to call elevator and select button corresponding to desired floor.

2.0 Functional Requirements

Product Backlog

#	User Story	Acceptance Criteria
1.0	As a user, I want the up button to illuminate when I press it on floors 1-99, so that I know the system has received the signal to call the elevator.	• The up button sends a signal to the system with the floor number and upward call. • The button illuminates when the signal is received.
1.1	As a user, I want the down button to illuminate when I press it on floors 2-100, so that I know the system has received the signal to call the elevator.	• The down button sends a signal to the system with the floor number and downward call. • The button illuminates when the signal is received.
1.2	As a user, I want the system to select and send the elevator that will arrive quickest when I select the up button, so that my wait time is reduced and I arrive on my desired floor in the shortest amount of time.	• The system select/send the elevator that is in upward motion **and** below the call_floor. • When **both** elevators are in motion upward **and** below the call_floor the system selects/sends the elevator with least floors to travel upward to reach the call_floor. • When **booth** elevators are in motion upward, **but** are above the call_floor the system compares the highest selected button and selects/sends the elevator with least floors to travel downward to the call_floor. • When one elevator is moving downward, **but** the other is not moving the system select/sends the idol elevator. • When **booth** elevators are in motion downward the system compares the lowest selected

		floor in each elevator selects/sends the elevator with least floors to travel upward to the call_floor.
1.3	As a user, I want the system to select the elevator that will arrive quickest when I select the down button, so that my wait time is reduced and I arrive on my desired floor in the shortest amount of time.	• The system select/send the elevator that is in downward motion **and** above the call_floor. • When **both** elevators are in motion downward **and** above the call_floor the system select/sends the elevator with least floors to travel downward to reach the call_floor. • When **booth** elevators are in motion downward, **but** are below the call_floor the system compares the lowest selected button of each elevator and selects/sends the elevator with least floors to travel upward to the call_floor. • When one elevator is moving upward, **but** the other is not moving the system select/sends the idol elevator. • When **booth** elevators are in motion upward the system compares the highest selected floor in each elevator and selects/sends the elevator with least floors to travel downward to the call_floor.
1.4	As a user, I want the button to illuminate when I select the floor of my choice from 1-100, so that the system will direct the elevator to travel to my selected floor .	• The elevator sends a signal to the system when buttons 1-100 are selected. • The button illuminates when the signal is received. • The elevator travels to the selected floor. • When more than one floor is selected the elevator travels in sequential order depending on the upward or downward direction.

1.5	As an administrative user, I want to configure the amount of time a elevators remains idle when no floors are selected before returning to the 1st floor, so that I can determine the amount of time appropriate for the elevator to wait for a call to reduce wait time.	• Elevator sits idle for the configured amount of time before returning 1st floor.
1.6	As a user, I want to prevent the door from closing automatically, so that more people can enter the elevator and reduce the wait time for the group.	• The door stays open when the hold button is pressed. • The door closes after the open door button is released and no motion is detected for 4 seconds.
1.7	As a user, I want the door to close automatically after I enter, so that time is not wasted once I enter and select my floor..	• The door automatically closes when a floor is selected and no motion is detected for 4 seconds.
1.8	As an administrative user, I want to override the system with a key on elevator 1, so that I can load moving materials into an elevator and stop it from making stops.	• When the administrative key is entered elevator 1 does not respond to floor calls. • Elevator 2 responds to all calls. • Elevator 2 completes downward trip first. • Elevator 2 reacts to 1st floor calls after completing downard trips.
1.9	As an administrative user, I want to override the system with a key on elevator 2, so that I can load moving materials into an elevator and stop it from making stops.	• When the administrative key is entered elevator 2 does not respond to floor calls. • Elevator 1 responds to all calls. • Elevator 1 completes downward trip first. • Elevator 1 reacts to 1st floor calls after completing downard trips.