**Homework 3 – Elevator Simulation Report**

## Problem statement:

## Requirements:

## Assumptions:

## Class Rationale:

**Building:**Contains all the floors and the elevator for the building. When a floors button is pressed will tell elevator to move to that floor if the elevator is currently at an idle position (no people in the cart)

**Elevator:**Will have what floor it is currently on. Ability to move to any floor. Ability to open and close its door. Will have what direction its currently traveling in. This direction will only reset if the cart reaches the max or min floor, or if no floors have an active up or down button. Holds people in its car.

These people in its car will be sorted into a heap, min or max depending on the direction its going. This heap will be sorted on the desired floors of the people inside, so going down, we stop at the highest desired floor number within the cart that would also implicitly be less than the current floor and the opposite for going up.

**Floor:**Holds people waiting in the lobby, has 2 buttons to indicate which direction people in the lobby would like to travel.

These buttons when pressed will prompt the building to tell the elevator that a floor is requesting the elevator so if the elevator is in idle position it will begin to move.

**Door:**Is attached to the elevator. Can be opened or closed. Will be closed while elevator is in motion and open when the elevator is at rest.

**Clock:**Just a pulse that prompts the scheduler to make a new person, and the elevator to move a floor or to pick up new people. Will also be used to calculate average wait time for people at end of simulation.

Will just be keeping track of an integer as the “time unit” for the whole system.

**Person:**Push buttons at a floor to summon elevator car to go up or down. Once in the car, persons press car panel button for the destination floor. All persons waiting at each floor should be kept in a queue, and once they board the car this list should be rearranged into a priority queue

Person will have a starting floor, desired floor, and arrival time. Floor integers will be defined by the scheduler and the arrival time will be defined based on the current clock cycle.

**Button:**Has a pressed state. Can be pressed and can technically be “unpressed” but in this simulation a person will not be able to unpress the button, the button will only become unpressed once the elevator visits the floor the button was on

**Scheduler:**  
randomly creates persons who arrive at each floor at a given arrival time and with an intended destination floor