Advanced Java Assignment 1

Lift Simulation

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# Achievements

## Stage 1

|  |  |
| --- | --- |
| Specification | Status |
| Freeze simulation | Done |
| Slow down/speed Up | Done |
| Track individual person/Lift | Done |
| Read configuration from file | Done |
| Menu item to exit(with statistics saved) | Done |
| Display configuration parameters | Done |
| Display about | Done |
| Show Statistics | Done |
| Display lifts as rectangles | Done |
| Reflect lift moving up/down | Done |
| Reflect acceleration | Done |
| Reflect lift empty/part-full/full | Done |
| Up/Down button(illuminated if pressed) | Done |
| Show floor up/down queue | Done |
| Show a single user trip time | Done |
| Write summary statistics as file (appended) | Done |
| Show lifts debug information | Done |

## Stage 2

|  |  |
| --- | --- |
| Zooming & scrolling and allow user to click on a particular floor or lift to see more details | Done |
| Provide the ability to slow down or speed up the simulation | Done |
| Implement more than one scenario (all three and can switch) | Done |

## Extra features

* After animation panel zoom in, the panel is drag-able to scroll up/down and left/right

# Bugs

There might be more bugs but after my long time testing, the flowing bugs are confirmed.

Lift scheduling problems are not considered as bugs. I am keeping optimize it.

|  |  |
| --- | --- |
| Bugs | Possibilities |
| Unknown reason software freeze after long time (more than 3 hours) speed up running | Very low |
| At Speed up running status the pop up menu might not show correctly but still clickable (content cannot shown properly) | Occasionally |

# Outside Help

* The clock used in the system is based on Michael Kölling and David J. Barnes’s work (The author of Objects First with Java)
* Open source MigLayout library

# Object Model of the System

The whole UML is located in the report directory in format of PDF.

# Lift Sate-transition Model

The whole state diagram is the report directory in format of PDF.

# Brief Simulator Manual

## Compile and Run the Application

In command line terminal, change the directory to the project folder.

Run command: ant –f builda.xml run can run the program

Run command: ant –f builda.xml compile can compile the program

Run command: ant – f builda.xml Javadoc can generate the Javadoc

Run command: ant –f builda.xml clean can clear generated .jar file

Run command: ant –f builda.xml cam compile the program and generate the Javadoc (notice: it will not run the program)

## Start the Simulation

Click the “Start” button

## Pause the Simulation

Click the “Stop” button

## Resume the Simulation

Click the “Continue” button

## End the Simulation

Click “End” button or click the “Application” menu and click “Close”

## Check the Simulation Parameters

Click “Simulation” menu and click “Simulation specifications”

## Scene Select

Once click the “Start” button, the morning scene will be loaded automatically.

Click “Scene Select” menu and click one of items among “Morning”, “Daily” and “Lunch”.

Notice: you can only select scene after “Start” the simulation;

## Change Speed

Click a speed factor in “Speed Control” Panel and click “Apply” button.

## Lift Tracker

1. Click a “Up” or “Down” button among floors
2. Click a number button in “Lift Tracker” panel before lift arrived (you can speed down the simulation to achieve this)
3. After the algorithm assign a lift to this task, the lift will be shown in “Lift Tracker” Panel

## Zoom In and Out

Click drag the button in the slider bar in “Zoom Toolkit”. To right can zoom in while lift can zoom out.

The zoomed in animation panel can be dragged by mouse to reposition it or you can click slider bar button of animation panel to reposition it.

## About

Click “Help” menu and click “About”

## Change Configuration

The configuration is located in the “config” folder within the project folder.

The configure file looks like figure 1



Figure Sample configuration file

The following tables explains its meaning

For the first line

|  |  |
| --- | --- |
| Building Floors | Building Lift Number |
| 10 | 2 |

For the second Line

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Idle Time | Acceleration | Door Close/Open Time | Maximum Speed | Home Floor | Lift Capacity | Enter In People per Second(Empty) | Enter In People Per Second (All most full) |
| 1000 | 2 | 1000 | 1 | 2 | 20 | 2 | 1 |

## Read Simulation Result

The simulation results including all statistics are appended to the “result.text” in the “result” folder within the project folder every time you close the simulator (either via menu or button).