




SQElevator

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Team 6

Project Details

- Wielander Inc.
- ECC idea
- Implementing RemoteConsole
- Monitoring elevators

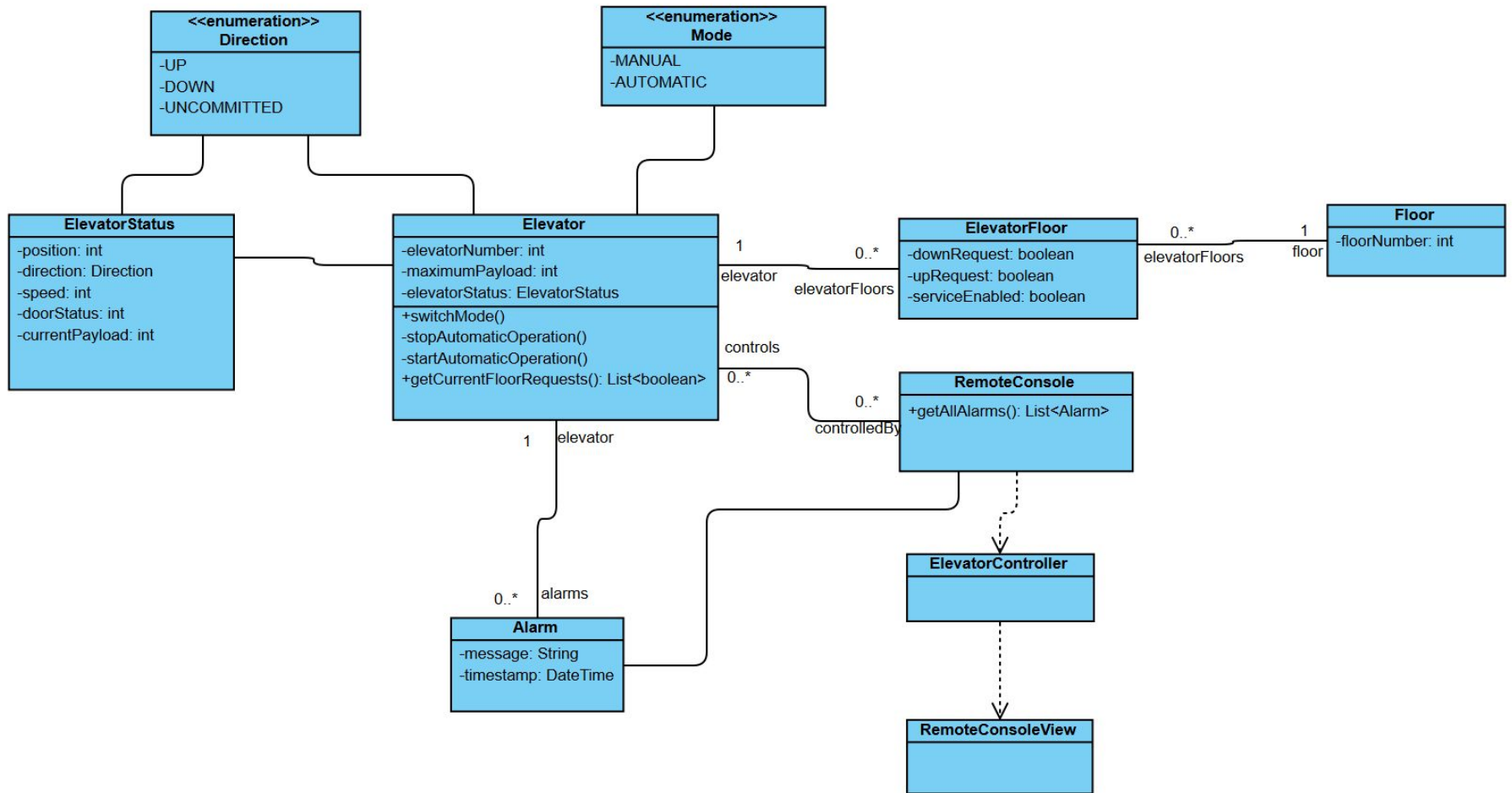
Requirements

- Graphical Visualization
- Automatic and manual modes
- Alarm list
- RMI Interface polling

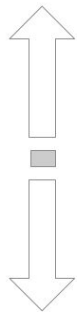


Project Roadmap

- Draft the first prototype
- Test Driven Development
- Write tests before
- Implementation later on
- Confirm implementation by some manual testing



Position



Floor Request #1

Floor 3

Service Enabled

Up

Down

Floor Request #

Floor 2

Service Enabled

Up

Down

Floor Request #

Floor 1

Service Enabled

Up

Down

Floor Request #

Floor 0

Service Enabled

Up

Down

Floor Request #

Floor -1

Service Enabled

Up

Down

Mode

Automatic

Manual

Doors

Open

Closed

Speed:

7km/h

Payload: 200kg



Interface Refresh

Current Target Floor:

1

Elevator List:

Elevator 1

Elevator 2

Elevator 3

Elevator 4

Elevator 5

Alarm List:

Error E1

Error E2

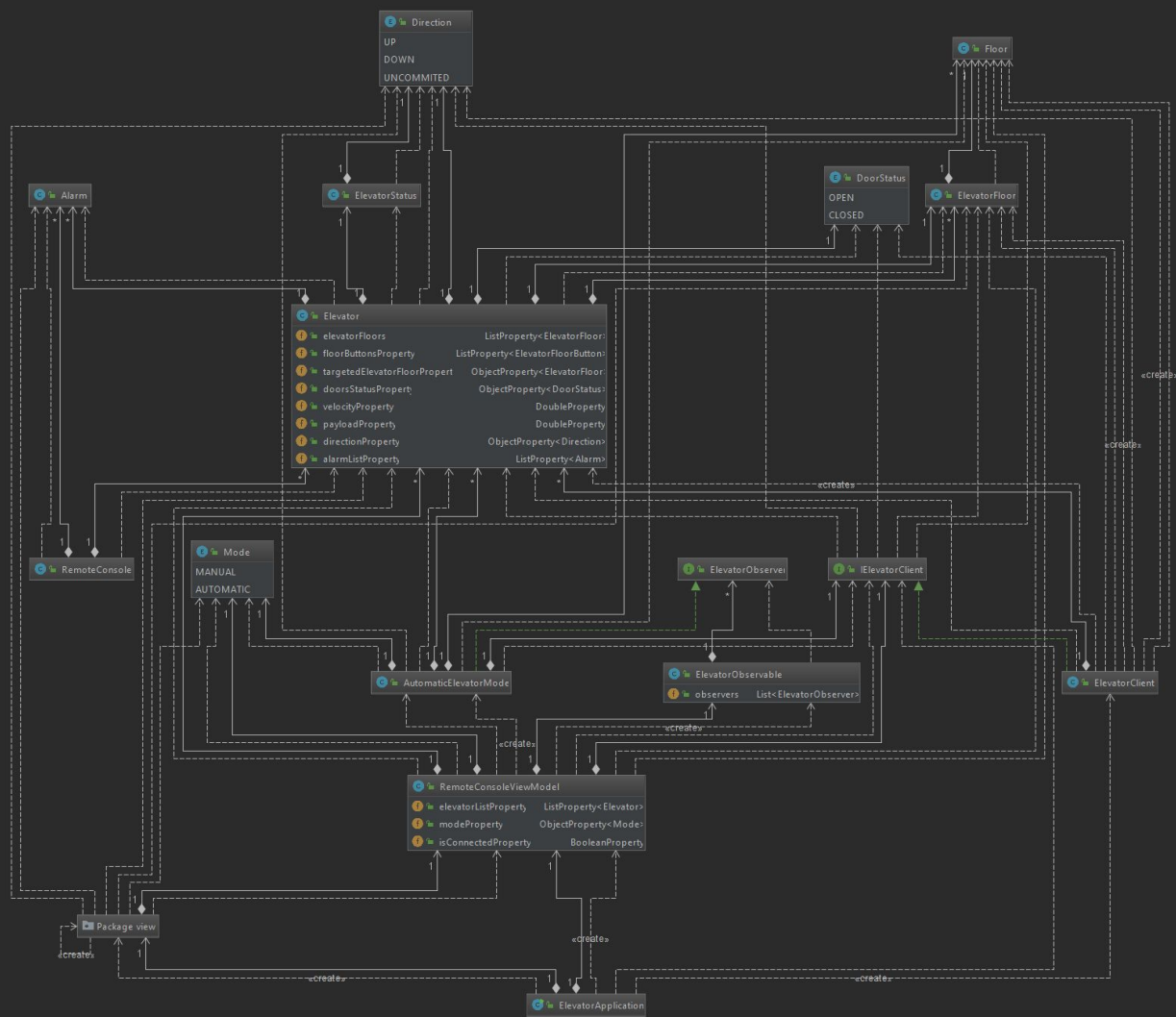
Error E1

Error E4

System Error 1

Project Roadmap - The Truth

- Make a working prototype
- Confirm with minimum tests
- Split up prototype to make it test- and maintainable
- Focus on testing efforts
 - More Unit Tests
 - Integration Testing



Elevator Status

	Floor 4	Service enabled	Up	Down
	Floor 3	Service enabled	Up	Down
	Floor 2	Service enabled	Up	Down
	Floor 1	Service enabled	Up	Down
	Floor 0	Service enabled	Up	Down

Elevator Control

Mode

Automatic

Manual

Doors

Open

Closed

Speed: 0.0 km/h

Payload: 761.0 kg

Elevator Buttons

- 4
- 3
- 2
- 1
- 0

● connected to system

Alarm List

2020-02-11T09:22:06.381142200 Payload

Unit Tests

Elevator 0Elevator 1Elevator 2

Elevator Status

Floor 4

Service enabled

UpDown

Floor 3

Service enabled

UpDown

Floor 2

Service enabled

UpDown

Floor 1

Service enabled

UpDown

Floor 0

Service enabled

UpDown

Elevator Control

Mode

AutomaticManual

Doors

OpenClosed

Speed: 0.0 km/h

Payload: 761.0 kg

Elevator Buttons

4

3

2

1

0

Alarm List

2020-02-11T09:22:06.381142200 Payload

connected to system

Unit Tests

[illegible]

Integration Tests

The screenshot displays the Elevator Control System interface, which is divided into three main panels: Elevator Status, Elevator Control, and Alarm List.

Elevator Status Panel: This panel shows the status of five floors (Floor 0 to Floor 4). Each floor has a corresponding icon (a square with a dashed border) and a "Service enabled" status indicator (a green box with the text "Service enabled"). Below the status indicator are two buttons: "Up" and "Down". Floor 1 is highlighted in green, indicating it is the current floor.

Elevator Control Panel: This panel contains three sections. The top section shows the "Mode" (Automatic and Manual, with Manual selected). The middle section shows the "Doors" status (Open and Closed, with Open selected). The bottom section shows the "Speed" (0.0 km/h) and "Payload" (761.0 kg). Below these sections is a large area labeled "Elevator Buttons" which contains a vertical stack of five circular buttons labeled 0, 1, 2, 3, and 4. Button 3 is highlighted in yellow, indicating it is the selected button.

Alarm List Panel: This panel displays a list of alarms. The first alarm is "2020-02-11T09:22:06.381142200 Payload" and is marked as "Payd".

At the bottom of the interface, there is a status bar that reads "connected to system" with a green dot icon.

Automatic Mode

- Strategy Pattern used
 - -> Strategy injected with DI
- Current Strategy when executed
 - initialize on first execution (inside requests, current targets, last known positions)
 - free up of current targets + stuck elevator workaround
 - retrieve outside requests
 - retrieve inside requests
 - start of elevator routine

Automatic Mode - Elevator Routine

- iterate through all elevators
 - if inside requests not empty, target to next inside request
 - if current target is not null, find nearest inside request
 - find intermediate inside or outside requests on the way
 - set current target to nearest request
 - set elevator target to nearest request
- point available elevators to nearest outside request
 - find available elevators
 - not working too well
 - target to nearest outside request

Stuck Elevator Workaround

- Sometimes elevator gets stuck
 - a new target is set
 - but elevator does not move to new target, because the doors don't close
- Workaround
 - keep track of the last known position of the elevators
 - keep track of the time the last known position was set
 - if elevator does not move in a too long timespan, set target to current floor
 - interrupt for a few millisecs
 - set target to current target
 - interrupt for a few millisecs



Problems with Testing

- Threading (untestable code $\leftarrow \rightarrow$ bindings)
- Automatic Mode Complexity
- SonarCloud Suggestions
- JavaFX and TestFX

JaCoCo Report

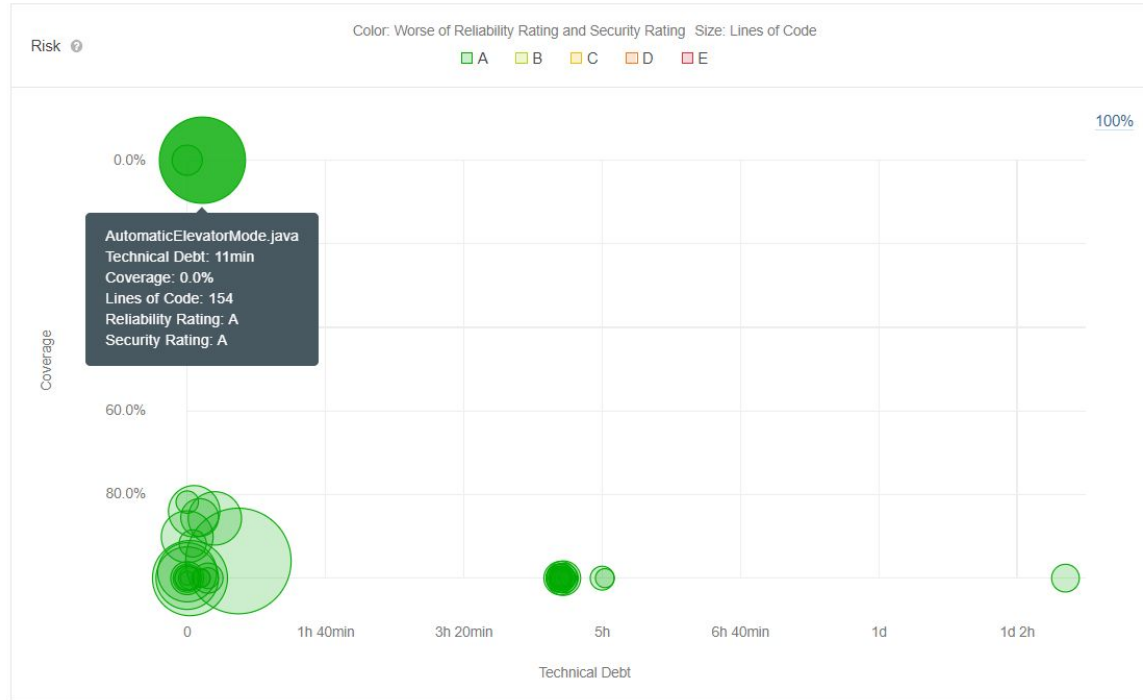
sqelevator

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
at.fhhagenberg.sqelevator.logic.automaticmode	<div><div></div><div></div></div>	49 %	<div><div></div><div></div></div>	47 %	67	119	98	205	12	33	1	4
at.fhhagenberg.sqelevator	<div><div></div><div></div></div>	0 %		n/a	3	3	19	19	3	3	1	1
at.fhhagenberg.sqelevator.logic	<div><div></div><div></div></div>	92 %	<div><div></div><div></div></div>	93 %	5	42	9	122	3	27	0	3
at.fhhagenberg.sqelevator.data	<div><div></div><div></div></div>	95 %	<div><div></div><div></div></div>	95 %	5	46	4	100	3	23	0	1
at.fhhagenberg.sqelevator.domain	<div><div></div><div></div></div>	99 %		n/a	1	106	2	191	1	106	0	12
at.fhhagenberg.sqelevator.view.controls	<div><div></div><div></div></div>	99 %		n/a	1	15	0	124	1	15	0	8
at.fhhagenberg.sqelevator.view.panes	<div><div></div><div></div></div>	100 %	<div><div></div><div></div></div>	100 %	0	17	0	159	0	15	0	11
at.fhhagenberg.sqelevator.view.style	<div><div></div><div></div></div>	100 %		n/a	0	4	0	17	0	4	0	2
at.fhhagenberg.sqelevator.view	<div><div></div><div></div></div>	100 %	<div><div></div><div></div></div>	100 %	0	3	0	19	0	2	0	1
Total	674 of 4 338	84 %	95 of 253	62 %	82	355	132	956	23	228	2	43

SonarCloud Report



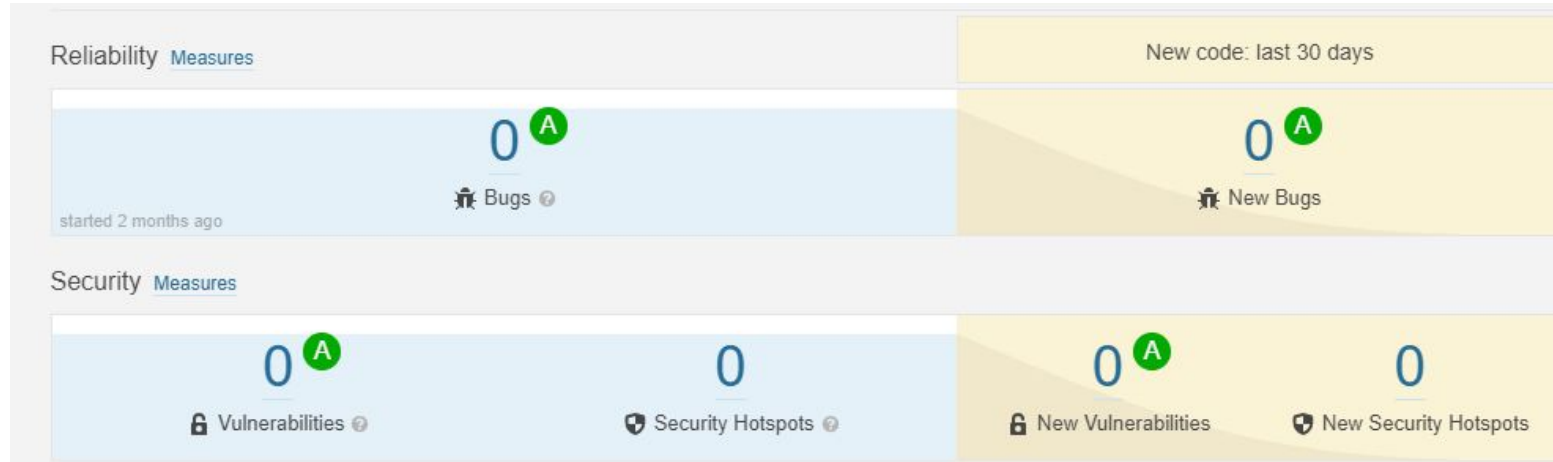
SonarCloud Report



SonarCloud Report



SonarCloud Report



SonarCloud Report

Coverage [Measures](#)



81.2%

Coverage [?](#)

191

Unit Tests [?](#)

80.4%

Coverage on
895 New Lines to Cover

Duplications [Measures](#)



0.0%


Duplications [?](#)

0


Duplicated Blocks [?](#)

0.0%

Duplications on
5.8k New Lines



Thank You
for using
SQElevator!





Questions?

