ElevatorControlSystem

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Contents

Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 2

File Index

2.1 File List

Here is a list of all documented files with brief descriptions:

Chapter 3

Class Documentation

3.1 Elevator Class Reference

Public Types

- enum **State** { **kUp** = 1, **kDown** = -1, **kIdle** = 0 }

Public Member Functions

- Elevator (int elevator_id, int story_number)

  Constructor for Elevator.
- std::tuple< int, int, std::set< int >, std::set< int, std::greater< int > > > GetStatus ()

  Getting function which returns the status of an Elevator.
- void SetPickupGoal (int pickup_floor, int goal_floor)

  Function which inserts pickup floor and goal floor into requests sets.
- void SetCurrentGoal (int current_floor, std::set< int > up_requests, std::set< int, std::greater< int >> down_requests)

  Setting function which sets the current floor and requests for an Elevator.
- bool IsIdle ()

  Boolean function which check if an Elevator is idle.
- bool IsUp ()

  Boolean function which check if an Elevator is going up.
- bool IsDown ()

  Boolean function which check if an Elevator is going down.
- int GetCurrentFloor ()

  Getting function which returns the current floor.
- void SetState (State state)

  Setting function which sets the state of an Elevator.
- void Move ()

  Function which perform one step for all Elevators in simulation.

3.1.1 Constructor & Destructor Documentation

3.1.1.1 Elevator()

```
Elevator::Elevator (
             int elevator_id,
             int story_number )
```

Constructor for Elevator.

Parameters

elevator_id	ID of an Elevator
story_number	Number of stories in the building

3.1.2 Member Function Documentation

3.1.2.1 GetCurrentFloor()

```
int Elevator::GetCurrentFloor ( )
```

Getting function which returns the current floor.

Returns

int Current floor

3.1.2.2 GetStatus()

```
std::tuple< int, int, std::set< int >, std::set< int, std::greater< int > > > Elevator::↩
GetStatus ( )
```

Getting function which returns the status of an Elevator.

Returns

std::tuple<int, int, std::set<int>, std::set<int, std::greater<int>>> Status of an Elevator in a tuple: <ID, current floor, up requests, down requests>

3.1.2.3 IsDown()

```
bool Elevator::IsDown ( )
```

Boolean function which check if an Elevator is going down.

Returns

true Elevator goes down
false Elevator doesn't go down

3.1.2.4 IsIdle()

```
bool Elevator::IsIdle ( )
```

Boolean function which check if an Elevator is idle.

Returns

true Elevator is idle
false Elevator is not idle

3.1.2.5 IsUp()

```
bool Elevator::IsUp ( )
```

Boolean function which check if an Elevator is going up.

Returns

true Elevator goes up
false Elevator doesn't go up

3.1.2.6 SetCurrentGoal()

```
void Elevator::SetCurrentGoal (
             int current_floor,
             std::set< int > up_requests,
             std::set< int, std::greater< int >> down_requests )
```

Setting function which sets the current floor and requests for an Elevator.

Parameters

current_floor	Current floor
up_requests	Requests for going up
down_requests	Requests for going down

3.1.2.7 SetPickupGoal()

```
void Elevator::SetPickupGoal (
             int pickup_floor,
             int goal_floor )
```

Function which inserts pickup floor and goal floor into requests sets.

Parameters

pickup_floor	pickup floor to be inserted
goal_floor	goal floor to be inserted

3.1.2.8 SetState()

```
void Elevator::SetState (
             State state )
```

Setting function which sets the state of an Elevator.

Parameters

state	State of an Elevator

The documentation for this class was generated from the following files:

- Elevator.h
- Elevator.cc

3.2 Simulation Class Reference

Public Member Functions

- Simulation (int elevator_number, int story_number)

  Constructor for Simulation.
- std::vector< std::tuple< int, int, std::set< int >, std::set< int, std::greater< int > > > > Status ()

Function which returns the status of Elevators in simulation.

- void Update (int elevator_id, int current_floor, std::set< int > up_requests, std::set< int, std::greater< int >> down_requests)

    Function which updates information about an Elevator.

- void Pickup (int pickup_floor, int goal_floor)

    Function which picks up passengers in simulation.

- void Step ()

    Function which performs one moving step for simulation system.

3.2.1 Constructor & Destructor Documentation

3.2.1.1 Simulation()

```
Simulation::Simulation (
            int elevator_number,
            int story_number )
```

Constructor for Simulation.

Parameters

elevator_number	Number of Elevators in simulation
story_number	Number of stories in the building

3.2.2 Member Function Documentation

3.2.2.1 Pickup()

```
void Simulation::Pickup (
            int pickup_floor,
            int goal_floor )
```

Function which picks up passengers in simulation.

Parameters

pickup_floor	Pickup floor
goal_floor	Goal floor

3.2.2.2 Status()

```
std::vector< std::tuple< int, int, std::set< int >, std::set< int, std::greater< int > > >
> Simulation::Status ( )
```

Function which returns the status of Elevators in simulation.

Returns

> std::vector<std::tuple<int, int, std::set<int>, std::set<int, std::greater<int>>>> Vector of status of Elevators

3.2.2.3 Update()

```
void Simulation::Update (
             int elevator_id,
             int current_floor,
             std::set< int > up_requests,
             std::set< int, std::greater< int >> down_requests )
```

Function which updates information about an Elevator.

Parameters

elevator_id	ID
current_floor	Current floor
up_requests	Requests for going up
down_requests	Requests for going down

The documentation for this class was generated from the following files:

- Simulation.h
- Simulation.cc

Chapter 4

File Documentation

4.1 Elevator.cc File Reference

Implementation of Elevator class.

```
#include "Elevator.h"
#include <tuple>
#include <vector>
#include <set>
```

4.1.1 Detailed Description

Implementation of Elevator class.

Author

Zihan Qi

Date

2018-05-15

4.2 Elevator.h File Reference

Elevator class.

```
#include <iostream>
#include <tuple>
#include <vector>
#include <set>
```

Classes

- class Elevator

4.2.1 Detailed Description

Elevator class.

Author

Zihan Qi

Date

2018-05-15

4.3 Simulation.cc File Reference

Implementation of Simulation class.

```
#include "Simulation.h"
#include <iostream>
#include <set>
#include <vector>
#include <algorithm>
#include "Elevator.h"
```

Variables

- const int **kMaxElevatorNumber** = 16

4.3.1 Detailed Description

Implementation of Simulation class.

Author

Zihan Qi

Date

2018-05-15

4.4 Simulation.h File Reference

Simulation class.

```
#include <vector>
#include "Elevator.h"
```

Classes

- class Simulation

4.4.1 Detailed Description

Simulation class.

Author

Zihan Qi

Date

2018-05-15

Index