# Software Documentation

Generated by Doxygen 1.9.4

**1 Hierarchical Index** 1

1.1 Class Hierarchy . . . 1

**2 Class Index** 3

2.1 Class List . . . 3

**3 File Index** 5

3.1 File List . . . 5

**4 Class Documentation** 7

4.1 Flow Class Reference . . . 7

4.1.1 Constructor & Destructor Documentation . . . 7

4.1.1.1 ~Flow() . . . 8

4.1.2 Member Function Documentation . . . 8

4.1.2.1 expression() . . . 8

4.1.2.2 getName() . . . 8

4.1.2.3 getSystemBegin() . . . 8

4.1.2.4 getSystemEnd() . . . 8

4.1.2.5 getValue() . . . 8

4.1.2.6 setName() . . . 9

4.1.2.7 setSystemBegin() . . . 9

4.1.2.8 setSystemEnd() . . . 9

4.1.2.9 setValue() . . . 9

4.2 FlowImplementation Class Reference . . . 10

4.2.1 Detailed Description . . . 11

4.2.2 Constructor & Destructor Documentation . . . 11

4.2.2.1 ~FlowImplementation() . . . 11

4.2.2.2 FlowImplementation() . . . 11

4.2.3 Member Function Documentation . . . 12

4.2.3.1 expression() . . . 12

4.2.3.2 getName() . . . 12

4.2.3.3 getSystemBegin() . . . 12

4.2.3.4 getSystemEnd() . . . 12

4.2.3.5 getValue() . . . 12

4.2.3.6 operator=() . . . 12

4.2.3.7 setName() . . . 13

4.2.3.8 setSystemBegin() . . . 13

4.2.3.9 setSystemEnd() . . . 13

4.2.3.10 setValue() . . . 14

4.2.4 Member Data Documentation . . . 14

4.2.4.1 name . . . 14

4.2.4.2 systemBegin . . . 14

4.2.4.3 systemEnd . . . 14

4.2.4.4 value . . . 15
4.3 Model Class Reference . . . 15
4.3.1 Constructor & Destructor Documentation . . . 15
4.3.1.1 ~Model() . . . 15
4.3.2 Member Function Documentation . . . 16
4.3.2.1 add() [1/2] . . . 16
4.3.2.2 add() [2/2] . . . 16
4.3.2.3 getName() . . . 16
4.3.2.4 getTime() . . . 16
4.3.2.5 setName() . . . 16
4.3.2.6 setTime() . . . 17
4.3.2.7 simulate() . . . 17
4.4 ModelImplementation Class Reference . . . 17
4.4.1 Detailed Description . . . 18
4.4.2 Constructor & Destructor Documentation . . . 18
4.4.2.1 ~ModelImplementation() . . . 18
4.4.2.2 ModelImplementation() . . . 18
4.4.3 Member Function Documentation . . . 19
4.4.3.1 add() [1/2] . . . 19
4.4.3.2 add() [2/2] . . . 19
4.4.3.3 getName() . . . 19
4.4.3.4 getTime() . . . 20
4.4.3.5 operator=() . . . 20
4.4.3.6 setName() . . . 20
4.4.3.7 setTime() . . . 20
4.4.3.8 simulate() . . . 21
4.4.4 Member Data Documentation . . . 21
4.4.4.1 flows . . . 21
4.4.4.2 name . . . 21
4.4.4.3 systems . . . 21
4.4.4.4 time . . . 22
4.5 System Class Reference . . . 22
4.5.1 Constructor & Destructor Documentation . . . 22
4.5.1.1 ~System() . . . 22
4.5.2 Member Function Documentation . . . 22
4.5.2.1 getName() . . . 23
4.5.2.2 getValue() . . . 23
4.5.2.3 setName() . . . 23
4.5.2.4 setValue() . . . 23
4.6 SystemImplementation Class Reference . . . 24
4.6.1 Detailed Description . . . 25
4.6.2 Constructor & Destructor Documentation . . . 25

4.6.2.1 ~SystemImplementation() . . . 25
4.6.2.2 SystemImplementation() . . . 25
4.6.3 Member Function Documentation . . . 25
4.6.3.1 getName() . . . 25
4.6.3.2 getValue() . . . 26
4.6.3.3 operator=() . . . 26
4.6.3.4 setName() . . . 26
4.6.3.5 setValue() . . . 26
4.6.4 Member Data Documentation . . . 27
4.6.4.1 name . . . 27
4.6.4.2 value . . . 27

**5 File Documentation** **29**

5.1 src/lib/Flow.h File Reference . . . 29
5.2 Flow.h . . . 30
5.3 src/lib/FlowImplementation.cpp File Reference . . . 31
5.4 src/lib/FlowImplementation.h File Reference . . . 32
5.5 FlowImplementation.h . . . 32
5.6 src/lib/Model.h File Reference . . . 33
5.7 Model.h . . . 34
5.8 src/lib/ModelImplementation.cpp File Reference . . . 35
5.9 src/lib/ModelImplementation.h File Reference . . . 37
5.10 ModelImplementation.h . . . 38
5.11 src/lib/System.h File Reference . . . 38
5.12 System.h . . . 39
5.13 src/lib/SystemImplementation.cpp File Reference . . . 40
5.14 src/lib/SystemImplementation.h File Reference . . . 40
5.15 SystemImplementation.h . . . 41

**Index** **43**

# Chapter 1

# Hierarchical Index

## 1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:


Flow . . . . . 7
FlowImplementation . . . . . 10
Model . . . . . 15
ModelImplementation . . . . . 17
System . . . . . 22
SystemImplementation . . . . . 24

# Chapter 2

# Class Index

## 2.1 Class List

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


Flow . . . . . 7
FlowImplementation . . . . . 10
Model . . . . . 15
ModelImplementation . . . . . 17
System . . . . . 22
SystemImplementation . . . . . 24

# Chapter 3

# File Index

## 3.1 File List

Here is a list of all files with brief descriptions:


src/lib/Flow.h . . . . . 29
src/lib/FlowImplementation.cpp . . . . . 31
src/lib/FlowImplementation.h . . . . . 32
src/lib/Model.h . . . . . 33
src/lib/ModelImplementation.cpp . . . . . 35
src/lib/ModelImplementation.h . . . . . 37
src/lib/System.h . . . . . 38
src/lib/SystemImplementation.cpp . . . . . 40
src/lib/SystemImplementation.h . . . . . 40

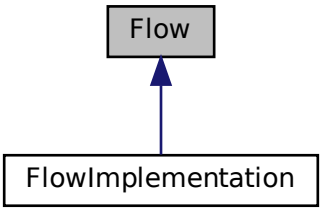
# Chapter 4

# Class Documentation

## 4.1 Flow Class Reference

`#include <Flow.h>`

Inheritance diagram for Flow:




### Public Member Functions

- virtual ~Flow ()=default
- virtual std::string getName () const =0
- virtual void setName (std::string)=0
- virtual double getValue () const =0
- virtual void setValue (double)=0
- virtual void expression ()=0
- virtual System * getSystemBegin () const =0
- virtual void setSystemBegin (System *)=0
- virtual System * getSystemEnd () const =0
- virtual void setSystemEnd (System *)=0

### 4.1.1 Constructor & Destructor Documentation

#### 4.1.1.1 ~Flow()

```
virtual Flow::~Flow ( )  [virtual], [default]
```

### 4.1.2 Member Function Documentation

#### 4.1.2.1 expression()

```
virtual void Flow::expression ( )  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.2 getName()

```
virtual std::string Flow::getName ( ) const  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.3 getSystemBegin()

```
virtual System * Flow::getSystemBegin ( ) const  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.4 getSystemEnd()

```
virtual System * Flow::getSystemEnd ( ) const  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.5 getValue()

```
virtual double Flow::getValue ( ) const  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.6 setName()

```
virtual void Flow::setName (
            std::string  )  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.7 setSystemBegin()

```
virtual void Flow::setSystemBegin (
            System *  )  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.8 setSystemEnd()

```
virtual void Flow::setSystemEnd (
            System *  )  [pure virtual]
```

Implemented in FlowImplementation.

#### 4.1.2.9 setValue()

```
virtual void Flow::setValue (
            double  )  [pure virtual]
```

Implemented in FlowImplementation.

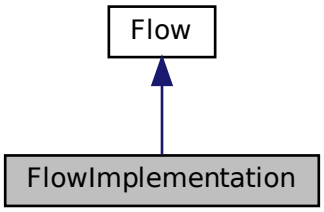
The documentation for this class was generated from the following file:

- src/lib/Flow.h

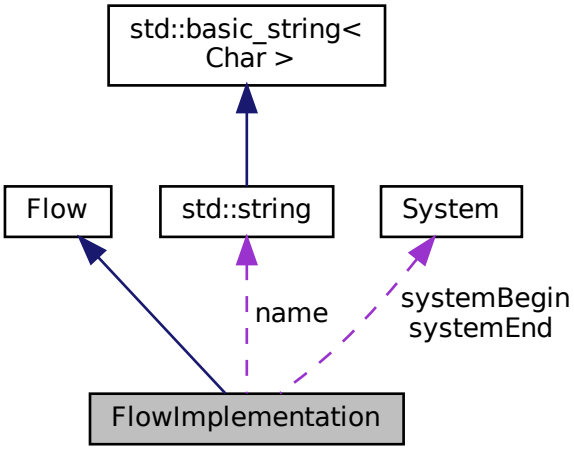
## 4.2 FlowImplementation Class Reference

`#include <FlowImplementation.h>`

Inheritance diagram for FlowImplementation:




Collaboration diagram for FlowImplementation:




### Public Member Functions

- ~FlowImplementation () override
- FlowImplementation (std::string name, double value, System *systemBegin, System *systemEnd)
- FlowImplementation & operator= (const Flow &flow)
- void expression () override=0
- std::string getName () const override
- void setName (std::string n) override
- double getValue () const override

- void setValue (double v) override
- System * getSystemBegin () const override
- void setSystemBegin (System *system) override
- System * getSystemEnd () const override
- void setSystemEnd (System *system) override

## Protected Attributes

- std::string name
- double value
- System * systemBegin
- System * systemEnd

### 4.2.1 Detailed Description

Flow that converges energy from a model to another

### 4.2.2 Constructor & Destructor Documentation

#### 4.2.2.1 ~FlowImplementation()

```
FlowImplementation::~FlowImplementation ( )  [override], [default]
```

Default destructor

#### 4.2.2.2 FlowImplementation()

```
FlowImplementation::FlowImplementation (
            std::string name,
            double value,
            System * systemBegin,
            System * systemEnd )
```

Default constructor

**Parameters**

| | |
|---|---|
| *name* | Inital flow name |
| *value* | Inital flow value |
| *systemBegin* | Inital system where the flow comes from |
| *systemEnd* | Inital system where the flow goes to |

**Returns**

Flow with initial name, value, systemBegin and systemEnd

### 4.2.3 Member Function Documentation

#### 4.2.3.1 expression()

```
void FlowImplementation::expression ( )  [override], [pure virtual]
```

Sets the expression of the flow

Implements Flow.

#### 4.2.3.2 getName()

```
std::string FlowImplementation::getName ( ) const  [override], [virtual]
```

Get system name

Implements Flow.

#### 4.2.3.3 getSystemBegin()

```
System * FlowImplementation::getSystemBegin ( ) const  [override], [virtual]
```

Get systemBegin

Implements Flow.

#### 4.2.3.4 getSystemEnd()

```
System * FlowImplementation::getSystemEnd ( ) const  [override], [virtual]
```

Get systemEnd

Implements Flow.

#### 4.2.3.5 getValue()

```
double FlowImplementation::getValue ( ) const  [override], [virtual]
```

Get system value

Implements Flow.

#### 4.2.3.6 operator=()

```
FlowImplementation & FlowImplementation::operator= (
            const Flow & flow )
```

Copy Assignment Operator

**Parameters**

| | |
|---|---|
| *flow* | Flow to copy from |

**Returns**

Copied flow

#### 4.2.3.7 setName()

```
void FlowImplementation::setName (
            std::string n )  [override], [virtual]
```

Set system name

**Parameters**

| | |
|---|---|
| *n* | Name for the flow |

Implements Flow.

#### 4.2.3.8 setSystemBegin()

```
void FlowImplementation::setSystemBegin (
            System * system )  [override], [virtual]
```

Set systemBegin

**Parameters**

| | |
|---|---|
| *system* | SystemBegin for the flow |

Implements Flow.

#### 4.2.3.9 setSystemEnd()

```
void FlowImplementation::setSystemEnd (
            System * system )  [override], [virtual]
```

Set systemBegin

**Parameters**

| | |
|---|---|
| *system* | SystemEnd for the flow |

Implements Flow.

#### 4.2.3.10 setValue()

```
void FlowImplementation::setValue (
            double v )  [override], [virtual]
```

Set system value

**Parameters**

| | |
|---|---|
| *v* | Value for the flow |

Implements Flow.

### 4.2.4 Member Data Documentation

#### 4.2.4.1 name

```
std::string FlowImplementation::name  [protected]
```

#### 4.2.4.2 systemBegin

```
System* FlowImplementation::systemBegin  [protected]
```

#### 4.2.4.3 systemEnd

```
System* FlowImplementation::systemEnd  [protected]
```

#### 4.2.4.4 value

```
double FlowImplementation::value  [protected]
```

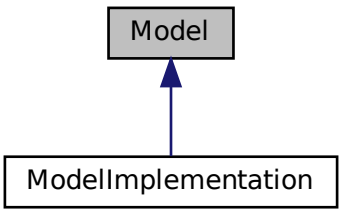
The documentation for this class was generated from the following files:

- src/lib/FlowImplementation.h
- src/lib/FlowImplementation.cpp

## 4.3 Model Class Reference

```
#include <Model.h>
```

Inheritance diagram for Model:




### Public Member Functions

- virtual ~Model ()=default
- virtual void simulate (double, double, double)=0
- virtual std::string getName () const =0
- virtual void setName (std::string)=0
- virtual double getTime () const =0
- virtual void setTime (std::string)=0
- virtual void add (System *)=0
- virtual void add (Flow *)=0

### 4.3.1 Constructor & Destructor Documentation

#### 4.3.1.1 ~Model()

```
virtual Model::~Model ( )  [virtual], [default]
```

### 4.3.2 Member Function Documentation

#### 4.3.2.1 add() [1/2]

```
virtual void Model::add (
            Flow *  )  [pure virtual]
```

Implemented in ModelImplementation.

#### 4.3.2.2 add() [2/2]

```
virtual void Model::add (
            System *  )  [pure virtual]
```

Implemented in ModelImplementation.

#### 4.3.2.3 getName()

```
virtual std::string Model::getName ( ) const  [pure virtual]
```

Implemented in ModelImplementation.

#### 4.3.2.4 getTime()

```
virtual double Model::getTime ( ) const  [pure virtual]
```

Implemented in ModelImplementation.

#### 4.3.2.5 setName()

```
virtual void Model::setName (
            std::string  )  [pure virtual]
```

Implemented in ModelImplementation.

#### 4.3.2.6 setTime()

```
virtual void Model::setTime (
            std::string  )  [pure virtual]
```

Implemented in ModelImplementation.

#### 4.3.2.7 simulate()

```
virtual void Model::simulate (
            double ,
            double ,
            double  )  [pure virtual]
```

Implemented in ModelImplementation.

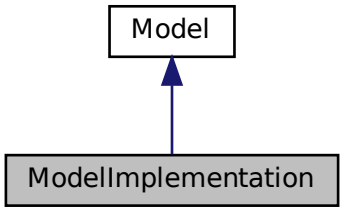
The documentation for this class was generated from the following file:

- src/lib/Model.h

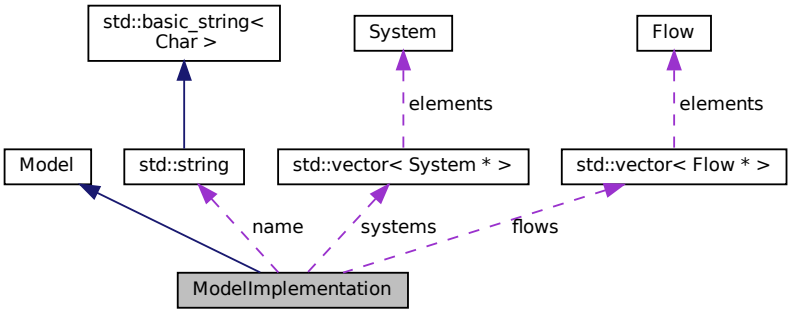
## 4.4 ModelImplementation Class Reference

`#include <ModelImplementation.h>`

Inheritance diagram for ModelImplementation:




Collaboration diagram for ModelImplementation:



## Public Member Functions

- ~ModelImplementation () override
- ModelImplementation (std::string name, double time)
- ModelImplementation & operator= (const ModelImplementation &model)
- void simulate (double start, double end, double timestep) override
- std::string getName () const override
- void setName (std::string n) override
- double getTime () const override
- void setTime (std::string t) override
- void add (System *system) override
- void add (Flow *flow) override

## Protected Attributes

- std::string name
- double time
- std::vector< System * > systems
- std::vector< Flow * > flows

### 4.4.1 Detailed Description

Model that simulates the energy flow through models

### 4.4.2 Constructor & Destructor Documentation

#### 4.4.2.1 ~ModelImplementation()

```
ModelImplementation::~ModelImplementation ( )  [override]
```

Default destructor

#### 4.4.2.2 ModelImplementation()

```
ModelImplementation::ModelImplementation (
            std::string name,
            double time )
```

Default constructor

**Parameters**

| | |
|---|---|
| *name* | Inital model name |
| *time* | Inital model time |

**Returns**

Model with initial name and time

### 4.4.3 Member Function Documentation

#### 4.4.3.1 add() [1/2]

```
void ModelImplementation::add (
            Flow * flow )  [override], [virtual]
```

Add a flow to the model

**Parameters**

| | |
|---|---|
| *flow* | Flow to be added to the model |

Implements Model.

#### 4.4.3.2 add() [2/2]

```
void ModelImplementation::add (
            System * system )  [override], [virtual]
```

Add a system to the model

**Parameters**

| | |
|---|---|
| *system* | System to be added to the model |

Implements Model.

#### 4.4.3.3 getName()

```
std::string ModelImplementation::getName ( ) const  [override], [virtual]
```

Get model name

Implements Model.

#### 4.4.3.4 getTime()

```
double ModelImplementation::getTime ( ) const  [override], [virtual]
```

Get model time

Implements Model.

#### 4.4.3.5 operator=()

```
ModelImplementation & ModelImplementation::operator= (
            const ModelImplementation & model )
```

Copy Assignment Operator

**Parameters**

| | |
|---|---|
| *model* | Model to copy from |

**Returns**

Copied model

#### 4.4.3.6 setName()

```
void ModelImplementation::setName (
            std::string n )  [override], [virtual]
```

Set model name

**Parameters**

| | |
|---|---|
| *n* | Name for the system |

Implements Model.

#### 4.4.3.7 setTime()

```
void ModelImplementation::setTime (
            std::string t )  [override], [virtual]
```

Set model time

**Parameters**

| | |
|---|---|
| *t* | Name for the system |

Implements Model.

#### 4.4.3.8 simulate()

```
void ModelImplementation::simulate (
            double start,
            double end,
            double timestep )  [override], [virtual]
```

Simulates the model during a period of time between start and end time values with a specified timestep

**Parameters**

| | |
|---|---|
| *start* | Time where the simulation starts |
| *end* | Time where the simulation ends |
| *timestep* | Timestep value to simulate with |

Implements Model.

### 4.4.4 Member Data Documentation

#### 4.4.4.1 flows

```
std::vector<Flow*> ModelImplementation::flows  [protected]
```

#### 4.4.4.2 name

```
std::string ModelImplementation::name  [protected]
```

#### 4.4.4.3 systems

```
std::vector<System*> ModelImplementation::systems  [protected]
```

#### 4.4.4.4 time

```
double ModelImplementation::time  [protected]
```

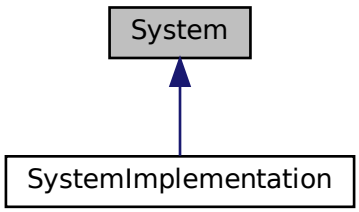
The documentation for this class was generated from the following files:

- src/lib/ModelImplementation.h
- src/lib/ModelImplementation.cpp

## 4.5 System Class Reference

```
#include <System.h>
```

Inheritance diagram for System:




### Public Member Functions

- virtual ~System ()=default
- virtual std::string getName () const =0
- virtual void setName (std::string)=0
- virtual double getValue () const =0
- virtual void setValue (double)=0

### 4.5.1 Constructor & Destructor Documentation

#### 4.5.1.1 ~System()

```
virtual System::~System ( )  [virtual], [default]
```

### 4.5.2 Member Function Documentation

#### 4.5.2.1 getName()

```
virtual std::string System::getName ( ) const  [pure virtual]
```

Implemented in SystemImplementation.

#### 4.5.2.2 getValue()

```
virtual double System::getValue ( ) const  [pure virtual]
```

Implemented in SystemImplementation.

#### 4.5.2.3 setName()

```
virtual void System::setName (
            std::string  )  [pure virtual]
```

Implemented in SystemImplementation.

#### 4.5.2.4 setValue()

```
virtual void System::setValue (
            double  )  [pure virtual]
```

Implemented in SystemImplementation.

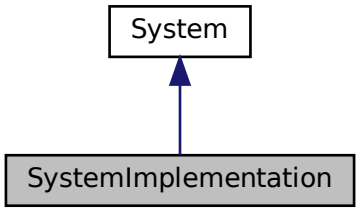
The documentation for this class was generated from the following file:

- src/lib/System.h

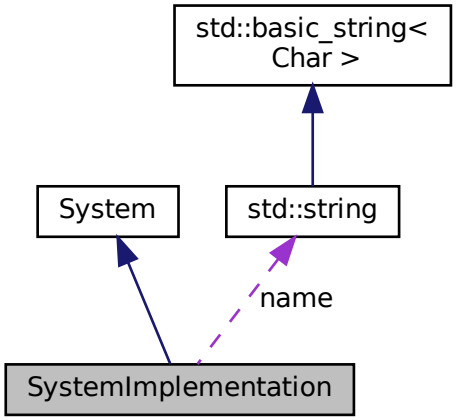
## 4.6 SystemImplementation Class Reference

`#include <SystemImplementation.h>`

Inheritance diagram for SystemImplementation:




Collaboration diagram for SystemImplementation:




### Public Member Functions

- ~SystemImplementation () override
- SystemImplementation (std::string name, double value)
- SystemImplementation & operator= (const SystemImplementation &system)
- std::string getName () const override
- void setName (std::string n) override
- double getValue () const override
- void setValue (double v) override

## Protected Attributes

- std::string name
- double value

### 4.6.1 Detailed Description

System that stores energy

### 4.6.2 Constructor & Destructor Documentation

#### 4.6.2.1 ~SystemImplementation()

```
SystemImplementation::~SystemImplementation ( )  [override], [default]
```

Default destructor

#### 4.6.2.2 SystemImplementation()

```
SystemImplementation::SystemImplementation (
            std::string name,
            double value )
```

Default constructor

**Parameters**

| | |
|---|---|
| *name* | Inital system name |
| *value* | Inital system value |

**Returns**

System with initial name and value

### 4.6.3 Member Function Documentation

#### 4.6.3.1 getName()

```
std::string SystemImplementation::getName ( ) const  [override], [virtual]
```

Get system name

Implements System.

#### 4.6.3.2 getValue()

```
double SystemImplementation::getValue ( ) const  [override], [virtual]
```

Get system value

Implements System.

#### 4.6.3.3 operator=()

```
SystemImplementation & SystemImplementation::operator= (
            const SystemImplementation & system )
```

Copy Assignment Operator

**Parameters**

| | |
|---|---|
| *system* | System to copy from |

**Returns**

Copied system

#### 4.6.3.4 setName()

```
void SystemImplementation::setName (
            std::string n )  [override], [virtual]
```

Set system name

**Parameters**

| | |
|---|---|
| *n* | Name for the system |

Implements System.

#### 4.6.3.5 setValue()

```
void SystemImplementation::setValue (
            double v )  [override], [virtual]
```

Set system value

**Parameters**

| | |
|---|---|
| *v* | Value for the system |

Implements System.

### 4.6.4 Member Data Documentation

#### 4.6.4.1 name

```
std::string SystemImplementation::name  [protected]
```

#### 4.6.4.2 value

```
double SystemImplementation::value  [protected]
```

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

- src/lib/SystemImplementation.h
- src/lib/SystemImplementation.cpp

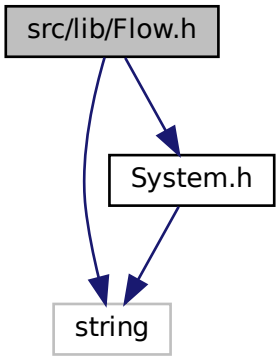
# Chapter 5

# File Documentation

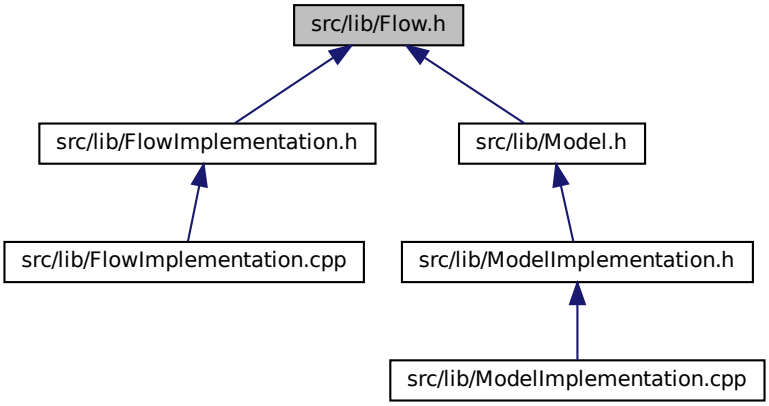
## 5.1 src/lib/Flow.h File Reference

```
#include <string>
#include "System.h"
```

Include dependency graph for Flow.h:



This graph shows which files directly or indirectly include this file:




## Classes

- class Flow

# 5.2 Flow.h

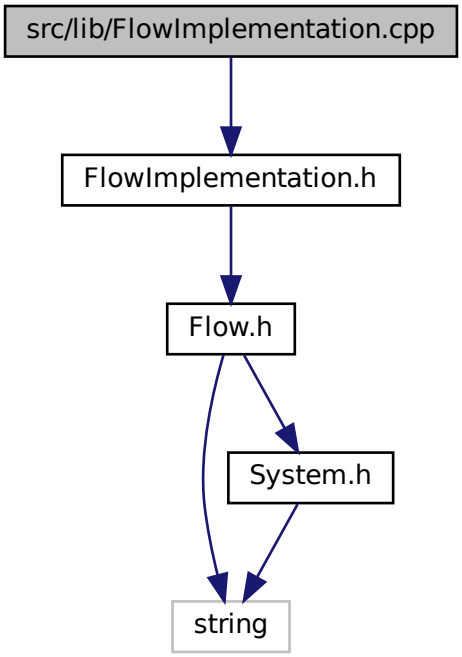
Go to the documentation of this file.

```
1 //
2 // Created by joaozenobio on 27/04/2022.
3 //
4
5 #ifndef ENG1_FLOW_H
6 #define ENG1_FLOW_H
7
8 #include <string>
9
10 #include "System.h"
11
12 class Flow {
13 public:
14     virtual ~Flow() = default;
15     virtual std::string getName() const = 0;
16     virtual void setName(std::string) = 0;
17     virtual double getValue() const = 0;
18     virtual void setValue(double) = 0;
19     virtual void expression() = 0;
20     virtual System* getSystemBegin() const = 0;
21     virtual void setSystemBegin(System*) = 0;
22     virtual System* getSystemEnd() const = 0;
23     virtual void setSystemEnd(System*) = 0;
24 };
25
26
27 #endif //ENG1_FLOW_H
```

## 5.3 src/lib/FlowImplementation.cpp File Reference

```
#include "FlowImplementation.h"
```

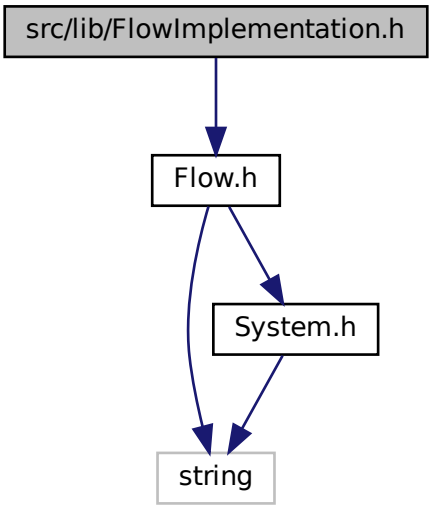
Include dependency graph for FlowImplementation.cpp:



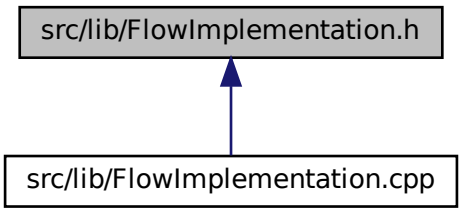
## 5.4 src/lib/FlowImplementation.h File Reference

```
#include "Flow.h"
```

Include dependency graph for FlowImplementation.h:




This graph shows which files directly or indirectly include this file:




### Classes

- class FlowImplementation

## 5.5 FlowImplementation.h

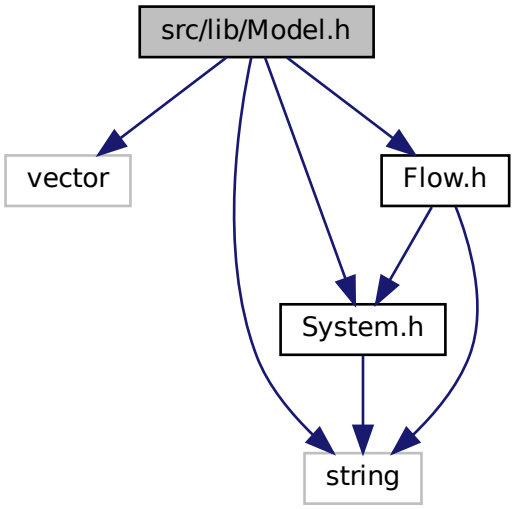
Go to the documentation of this file.

```
1 //
2 // Created by joaozenobio on 28/04/2022.
3 //
4
5 #ifndef ENG1_FLOWIMPLEMENTATION_H
6 #define ENG1_FLOWIMPLEMENTATION_H
7
8
9 #include "Flow.h"
10
14 class FlowImplementation : public Flow {
15
16 private:
22     FlowImplementation(const FlowImplementation& flow);
23
24 protected:
25     std::string name;
26     double value;
27     System* systemBegin;
28     System* systemEnd;
29
30 public:
34     ~FlowImplementation() override;
35
44     FlowImplementation(std::string name, double value, System* systemBegin, System* systemEnd);
45
51     FlowImplementation& operator=(const Flow& flow);
52
56     void expression() override = 0;
57
61     std::string getName() const override;
62
67     void setName(std::string n) override;
68
72     double getValue() const override;
73
78     void setValue(double v) override;
79
83     System* getSystemBegin() const override;
84
89     void setSystemBegin(System* system) override;
90
94     System* getSystemEnd() const override;
95
100     void setSystemEnd(System* system) override;
101 };
102
103
104 #endif //ENG1_FLOWIMPLEMENTATION_H
```

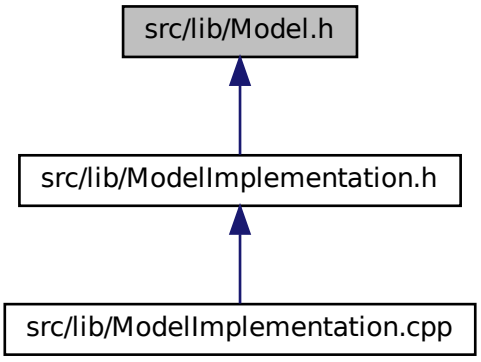
## 5.6 src/lib/Model.h File Reference

```
#include <vector>
#include <string>
#include "System.h"
#include "Flow.h"
```

Include dependency graph for Model.h:




This graph shows which files directly or indirectly include this file:




### Classes

- class Model

## 5.7 Model.h

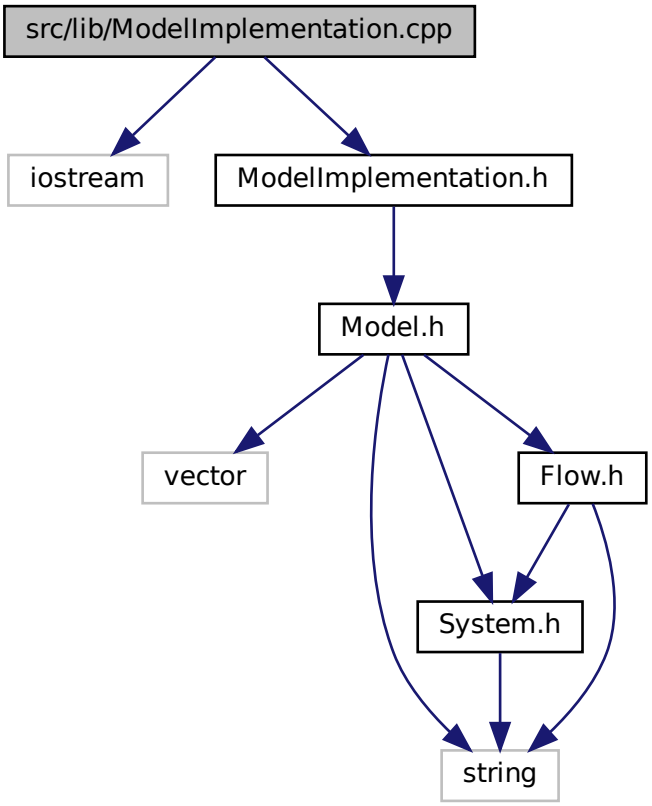
Go to the documentation of this file.

```
1 //
2 // Created by joaozenobio on 27/04/2022.
3 //
4
5 #ifndef ENG1_MODEL_H
6 #define ENG1_MODEL_H
7
8
9 #include <vector>
10 #include <string>
11
12 #include "System.h"
13 #include "Flow.h"
14
15 class Model {
16 public:
17     virtual ~Model() = default;
18     virtual void simulate(double, double, double) = 0;
19     virtual std::string getName() const = 0;
20     virtual void setName(std::string) = 0;
21     virtual double getTime() const = 0;
22     virtual void setTime(std::string) = 0;
23     virtual void add(System*) = 0;
24     virtual void add(Flow*) = 0;
25 };
26
27
28 #endif //ENG1_MODEL_H
```

## 5.8 src/lib/ModelImplementation.cpp File Reference

```
#include <iostream>
#include "ModelImplementation.h"
```

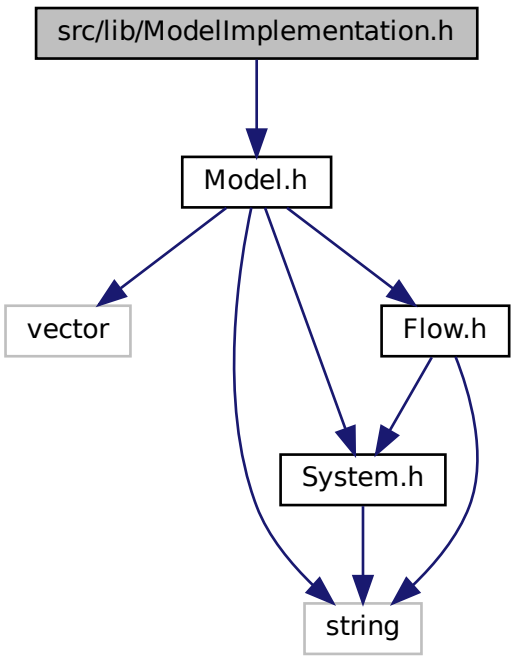
Include dependency graph for ModelImplementation.cpp:



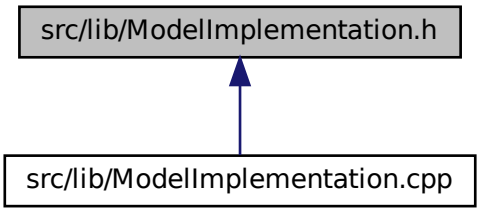
## 5.9 src/lib/ModelImplementation.h File Reference

```
#include "Model.h"
```

Include dependency graph for ModelImplementation.h:




This graph shows which files directly or indirectly include this file:




### Classes

- class ModelImplementation

## 5.10 ModelImplementation.h

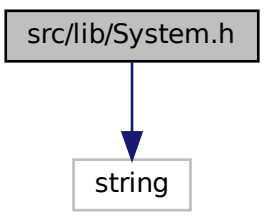
Go to the documentation of this file.

```
1 //
2 // Created by joaozenobio on 28/04/2022.
3 //
4
5 #ifndef ENG1_MODELIMPLEMENTATION_H
6 #define ENG1_MODELIMPLEMENTATION_H
7
8
9 #include "Model.h"
10
14 class ModelImplementation: public Model {
15
16 private:
22     ModelImplementation(const ModelImplementation& model);
23
24 protected:
25     std::string name;
26     double time;
27     std::vector<System*> systems;
28     std::vector<Flow*> flows;
29
30 public:
34     ~ModelImplementation() override;
35
42     ModelImplementation(std::string name, double time);
43
49     ModelImplementation& operator=(const ModelImplementation& model);
50
57     void simulate(double start, double end, double timestep) override;
58
62     std::string getName() const override;
63
68     void setName(std::string n) override;
69
73     double getTime() const override;
74
79     void setTime(std::string t) override;
80
85     void add(System* system) override;
86
91     void add(Flow* flow) override;
92 };
93
94
95 #endif //ENG1_MODELIMPLEMENTATION_H
```

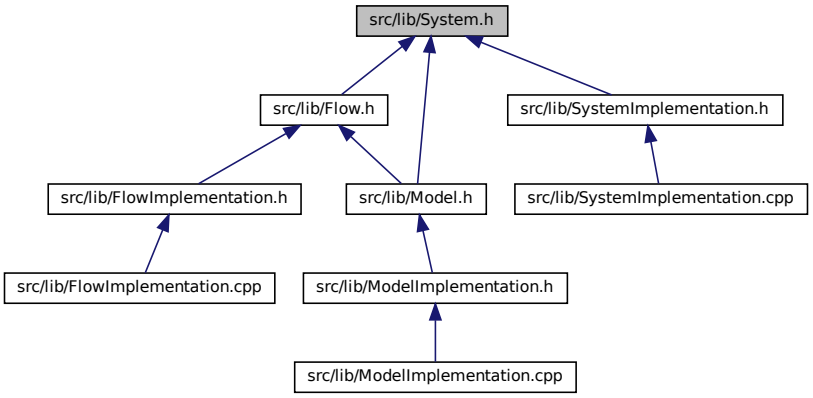
## 5.11 src/lib/System.h File Reference

`#include <string>`

Include dependency graph for System.h:



This graph shows which files directly or indirectly include this file:




## Classes

- class System

# 5.12 System.h

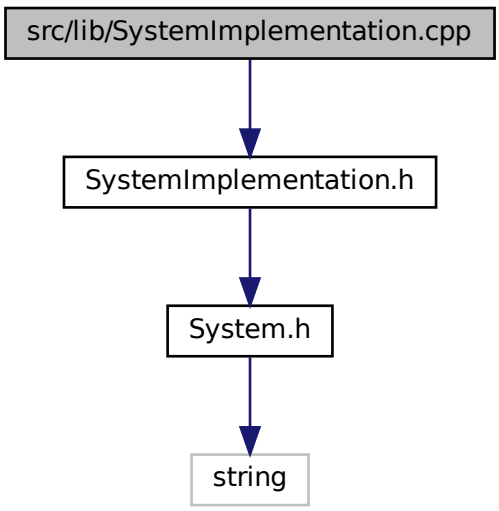
Go to the documentation of this file.

```
1 //
2 // Created by joaozenobio on 27/04/2022.
3 //
4
5 #ifndef ENG1_SYSTEM_H
6 #define ENG1_SYSTEM_H
7
8 #include <string>
9
10 class System {
11 public:
12     virtual ~System() = default;
13     virtual std::string getName() const = 0;
14     virtual void setName(std::string) = 0;
15     virtual double getValue() const = 0;
16     virtual void setValue(double) = 0;
17 };
18
19
20 #endif //ENG1_SYSTEM_H
```

## 5.13 src/lib/SystemImplementation.cpp File Reference

```
#include "SystemImplementation.h"
```

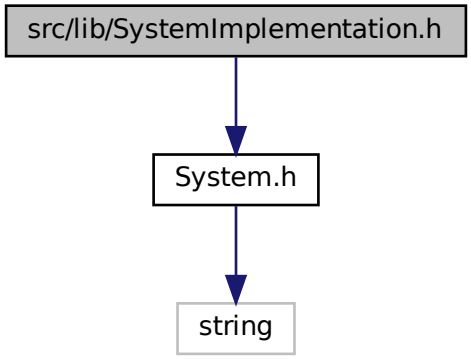
Include dependency graph for SystemImplementation.cpp:



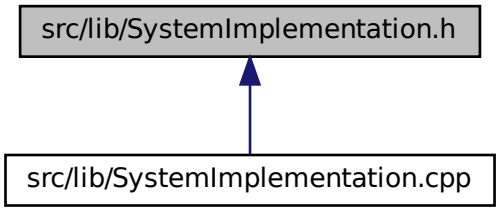

## 5.14 src/lib/SystemImplementation.h File Reference

```
#include "System.h"
```

Include dependency graph for SystemImplementation.h:



This graph shows which files directly or indirectly include this file:




### Classes

- class SystemImplementation

## 5.15 SystemImplementation.h

Go to the documentation of this file.

```
1 //
2 // Created by joaozenobio on 28/04/2022.
3 //
4
5 #ifndef ENG1_SYSTEMIMPLEMENTATION_H
6 #define ENG1_SYSTEMIMPLEMENTATION_H
7
8 #include "System.h"
9
13 class SystemImplementation : public System {
14
15 private:
21     SystemImplementation(const SystemImplementation& system);
22
23 protected:
24     std::string name;
25     double value;
26
27 public:
31     ~SystemImplementation() override;
32
39     SystemImplementation(std::string name, double value);
40
46     SystemImplementation& operator=(const SystemImplementation& system);
47
51     std::string getName() const override;
52
57     void setName(std::string n) override;
58
62     double getValue() const override;
63
68     void setValue(double v) override;
69 };
70
71
72 #endif //ENG1_SYSTEMIMPLEMENTATION_H
```

# Index


~Flow
  Flow, 7
~FlowImplementation
  FlowImplementation, 11
~Model
  Model, 15
~ModelImplementation
  ModelImplementation, 18
~System
  System, 22
~SystemImplementation
  SystemImplementation, 25

add
  Model, 16
  ModelImplementation, 19

expression
  Flow, 8
  FlowImplementation, 12

Flow, 7
  ~Flow, 7
  expression, 8
  getName, 8
  getSystemBegin, 8
  getSystemEnd, 8
  getValue, 8
  setName, 8
  setSystemBegin, 9
  setSystemEnd, 9
  setValue, 9
FlowImplementation, 10
  ~FlowImplementation, 11
  expression, 12
  FlowImplementation, 11
  getName, 12
  getSystemBegin, 12
  getSystemEnd, 12
  getValue, 12
  name, 14
  operator=, 12
  setName, 13
  setSystemBegin, 13
  setSystemEnd, 13
  setValue, 14
  systemBegin, 14
  systemEnd, 14
  value, 14
flows
  ModelImplementation, 21

getName
  Flow, 8
  FlowImplementation, 12
  Model, 16
  ModelImplementation, 19
  System, 22
  SystemImplementation, 25
getSystemBegin
  Flow, 8
  FlowImplementation, 12
getSystemEnd
  Flow, 8
  FlowImplementation, 12
getTime
  Model, 16
  ModelImplementation, 19
getValue
  Flow, 8
  FlowImplementation, 12
  System, 23
  SystemImplementation, 25

Model, 15
  ~Model, 15
  add, 16
  getName, 16
  getTime, 16
  setName, 16
  setTime, 16
  simulate, 17
ModelImplementation, 17
  ~ModelImplementation, 18
  add, 19
  flows, 21
  getName, 19
  getTime, 19
  ModelImplementation, 18
  name, 21
  operator=, 20
  setName, 20
  setTime, 20
  simulate, 21
  systems, 21
  time, 21

name
  FlowImplementation, 14
  ModelImplementation, 21

SystemImplementation, 27

operator=
FlowImplementation, 12
ModelImplementation, 20
SystemImplementation, 26

setName
Flow, 8
FlowImplementation, 13
Model, 16
ModelImplementation, 20
System, 23
SystemImplementation, 26
setSystemBegin
Flow, 9
FlowImplementation, 13
setSystemEnd
Flow, 9
FlowImplementation, 13
setTime
Model, 16
ModelImplementation, 20
setValue
Flow, 9
FlowImplementation, 14
System, 23
SystemImplementation, 26
simulate
Model, 17
ModelImplementation, 21
src/lib/Flow.h, 29, 30
src/lib/FlowImplementation.cpp, 31
src/lib/FlowImplementation.h, 32
src/lib/Model.h, 33, 34
src/lib/ModelImplementation.cpp, 35
src/lib/ModelImplementation.h, 37, 38
src/lib/System.h, 38, 39
src/lib/SystemImplementation.cpp, 40
src/lib/SystemImplementation.h, 40, 41
System, 22
~System, 22
getName, 22
getValue, 23
setName, 23
setValue, 23
systemBegin
FlowImplementation, 14
systemEnd
FlowImplementation, 14
SystemImplementation, 24
~SystemImplementation, 25
getName, 25
getValue, 25
name, 27
operator=, 26
setName, 26
setValue, 26
SystemImplementation, 25
value, 27
systems
ModelImplementation, 21

time
ModelImplementation, 21

value
FlowImplementation, 14
SystemImplementation, 27