Minimal Disks Simulation

Generated by Doxygen 1.13.2

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 files with brief descriptions:

Chapter 3

Class Documentation

3.1 Disk Class Reference

A simple class representing hard disks.

`#include <disk.h>`

Public Member Functions

- Disk (double x, double y, double r)
- void move (double dx, double dy)
- double distance (Disk &d)

Public Attributes

- double x
- double y
- double radius

3.1.1 Detailed Description

A simple class representing hard disks.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 Disk()

```
Disk::Disk (
            double x,
            double y,
            double r)
```

3.1.3 Member Function Documentation

3.1.3.1 distance()

```
double Disk::distance (
            Disk & d)
```

3.1.3.2 move()

```
void Disk::move (
            double dx,
            double dy)
```

3.1.4 Member Data Documentation

3.1.4.1 radius

```
double Disk::radius
```

3.1.4.2 x

```
double Disk::x
```

3.1.4.3 y

```
double Disk::y
```

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

- disk.h
- disk.cpp

3.2 System Class Reference

A simple class containing the system's parameters.

```
#include <system.h>
```

Public Member Functions

- System (int N, double displacement, double radius, double box_size, int seed)
- void step ()
- void save (const std::string &filename)
- bool overlap (int i)
- void enforceBoundaries (Disk &disk)
- double uniform (double min, double max)

Public Attributes

- std::vector< Disk > disks
- double boxSize
- double displacement
- std::mt19937 gen
- std::uniform_real_distribution< double > dist

3.2.1 Detailed Description

A simple class containing the system's parameters.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 System()

```
System::System (
            int N,
            double displacement,
            double radius,
            double box_size,
            int seed)
```

3.2.3 Member Function Documentation

3.2.3.1 enforceBoundaries()

```
void System::enforceBoundaries (
            Disk & disk)
```

3.2.3.2 overlap()

```
bool System::overlap (
            int i)
```

3.2.3.3 save()

```
void System::save (
            const std::string & filename)
```

3.2.3.4 step()

```
void System::step ()
```

3.2.3.5 uniform()

```
double System::uniform (
            double min,
            double max)
```

3.2.4 Member Data Documentation

3.2.4.1 boxSize

```
double System::boxSize
```

3.2.4.2 disks

```
std::vector<Disk> System::disks
```

3.2.4.3 displacement

```
double System::displacement
```

3.2.4.4 dist

```
std::uniform_real_distribution<double> System::dist
```

3.2.4.5 gen

```
std::mt19937 System::gen
```

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

- system.h
- system.cpp

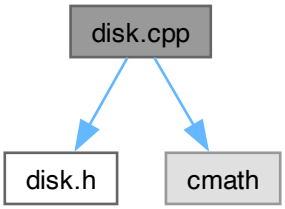
Chapter 4

File Documentation

4.1 disk.cpp File Reference

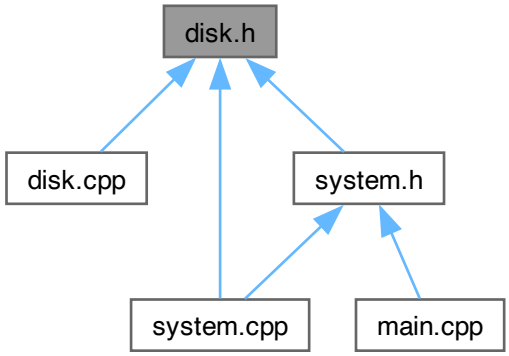
```
#include "disk.h"
#include <cmath>
```

Include dependency graph for disk.cpp:



4.2 disk.h File Reference

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



Classes

- class Disk

  A simple class representing hard disks.

4.3 disk.h

Go to the documentation of this file.

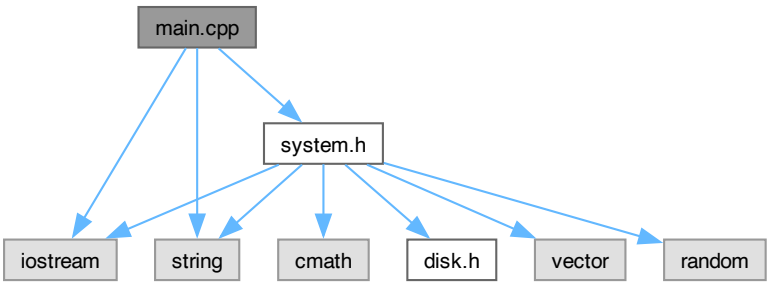
```
00001
00002 #ifndef DISK_H
00003 #define DISK_H
00004
00009 class Disk {
00010 public:
00011     double x, y, radius;
00012     Disk(double x, double y, double r) ;
00013
00014     void move(double dx, double dy) ;
00015     double distance(Disk& d) ;
00016 };
00017
00018 #endif // !DISK_H
```

4.4 main.cpp File Reference

```
#include <iostream>
#include <string>
```

```
#include "system.h"
```

Include dependency graph for main.cpp:



Functions

- int main ()

  Entry point of the program.

4.4.1 Function Documentation

4.4.1.1 main()

```
int main ()
```

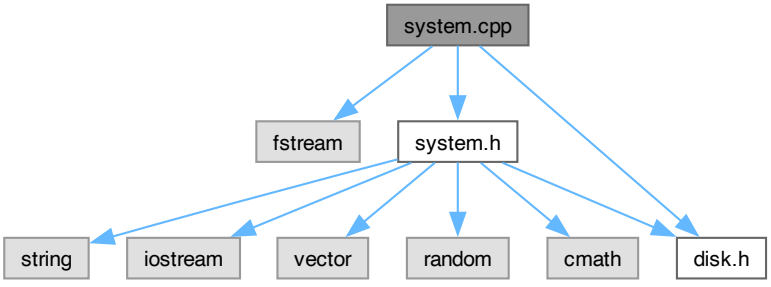
Entry point of the program.

This function initializes the program and manages execution.

4.5 system.cpp File Reference

```
#include <fstream>
#include "system.h"
#include "disk.h"
```

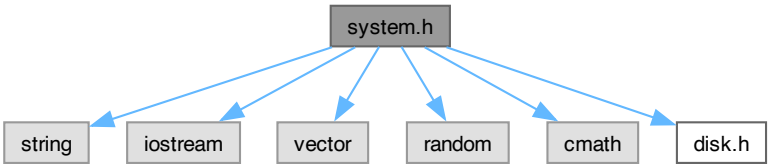
Include dependency graph for system.cpp:



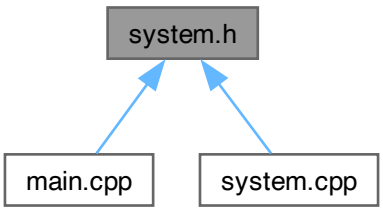
4.6 system.h File Reference

```
#include <string>
#include <iostream>
#include <vector>
#include <random>
#include <cmath>
#include "disk.h"
```

Include dependency graph for system.h:



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



Classes

- class System

  A simple class containing the system's parameters.

4.7 system.h

Go to the documentation of this file.

```
00001 #ifndef SYSTEM_H
00002 #define SYSTEM_H
00003
00004 #include <string>
00005 #include <iostream>
00006 #include <vector>
00007 #include <random>
```

```
00008 #include <cmath>
00009 #include "disk.h"
00010
00015 class System {
00016 public:
00017     std::vector<Disk> disks;
00018     double boxSize;
00019     double displacement;
00020     std::mt19937 gen;
00021     std::uniform_real_distribution<double> dist;
00022
00023     System(int N, double displacement,double radius, double box_size, int seed);
00024
00025     void step() ;
00026
00027     void save(const std::string &filename);
00028
00029     bool overlap(int i);
00030
00031     void enforceBoundaries(Disk & disk) ;
00032     double uniform(double min, double max);
00033 };
00034 #endif // !SYSTEM_H
```

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