Aqua

Generated by Doxygen 1.9.1

1 Class Index 1

1.1 Class List . . . 1

2 Class Documentation 3

2.1 aq::Fish Class Reference . . . 4

2.2 aq::Force Class Reference . . . 6

2.3 aq::Net::LocalisedIterator Class Reference . . . 7

2.4 aq::Net Class Reference . . . 9

2.5 GLSL::PerlinNoise Class Reference . . . 10

2.5.1 Detailed Description . . . 12

2.5.2 Member Function Documentation . . . 13

2.5.2.1 colorFromHeight() . . . 13

2.5.2.2 fractalNoise() . . . 13

2.5.2.3 perlin() . . . 13

2.5.2.4 randomGradient() . . . 14

2.6 aq::Net::Settings Struct Reference . . . 14

Index 15

Chapter 1

Class Index

1.1 Class List

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

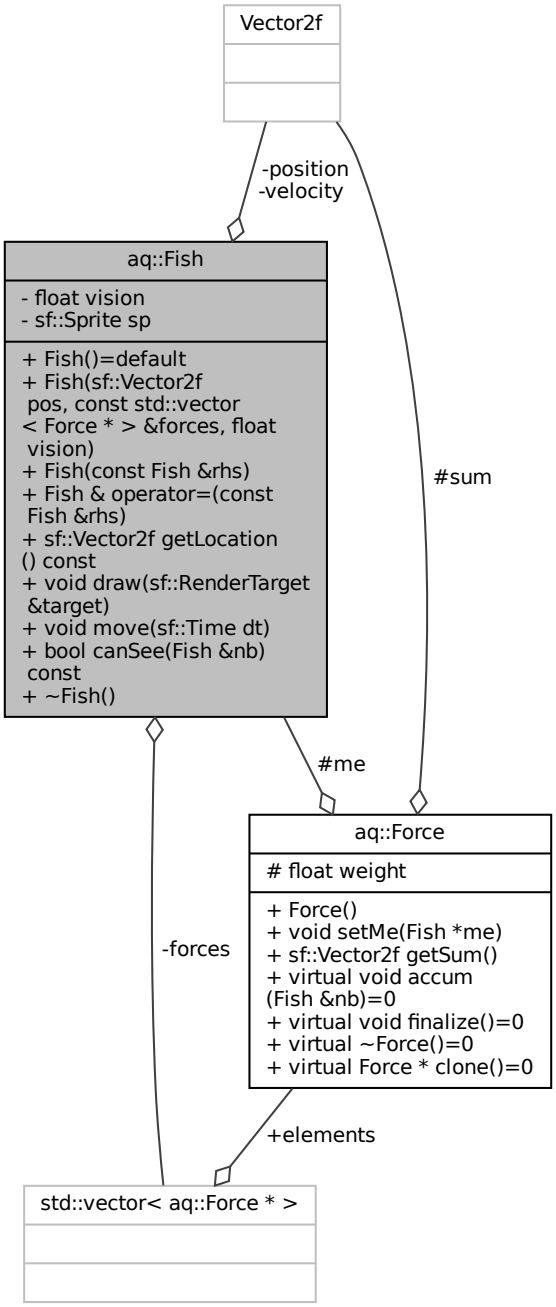
aq::Fish 4
aq::Force 6
aq::Net::LocalisedIterator 7
aq::Net 9
GLSL::PerlinNoise
    Simple 2D perlin noise shader 10
aq::Net::Settings 14

Chapter 2

Class Documentation

2.1 aq::Fish Class Reference

Collaboration diagram for aq::Fish:



Public Member Functions

- **Fish** (sf::Vector2f pos, const std::vector< Force * > &forces, float vision)
- **Fish** (const Fish &rhs)
- Fish & **operator=** (const Fish &rhs)
- sf::Vector2f **getLocation** () const
- void **draw** (sf::RenderTarget &target)
- void **move** (sf::Time dt)
- bool **canSee** (Fish &nb) const

Private Attributes

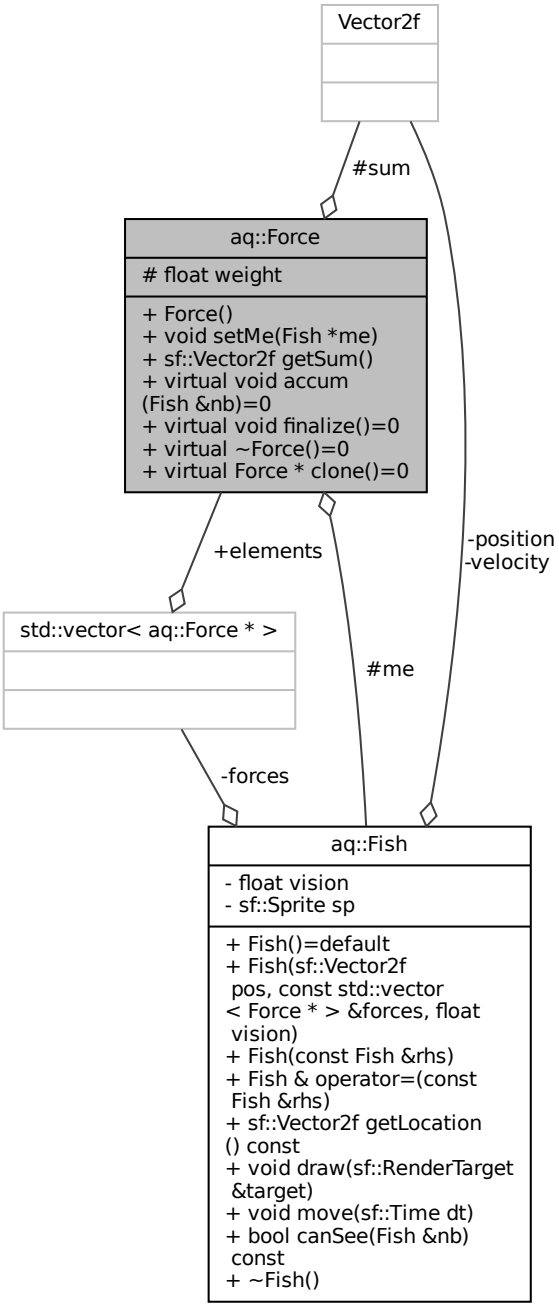
- sf::Vector2f **position**
- sf::Vector2f **velocity**
- std::vector< Force * > **forces**
- float **vision**
- sf::Sprite **sp**

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

- inc/fish.hpp
- src/fish.cpp

2.2 aq::Force Class Reference

Collaboration diagram for aq::Force:



Public Member Functions

- void **setMe** (Fish ∗me)
- sf::Vector2f **getSum** ()

- virtual void **accum** (Fish &nb)=0
- virtual void **finalize** ()=0
- virtual Force ∗ **clone** ()=0

Protected Attributes

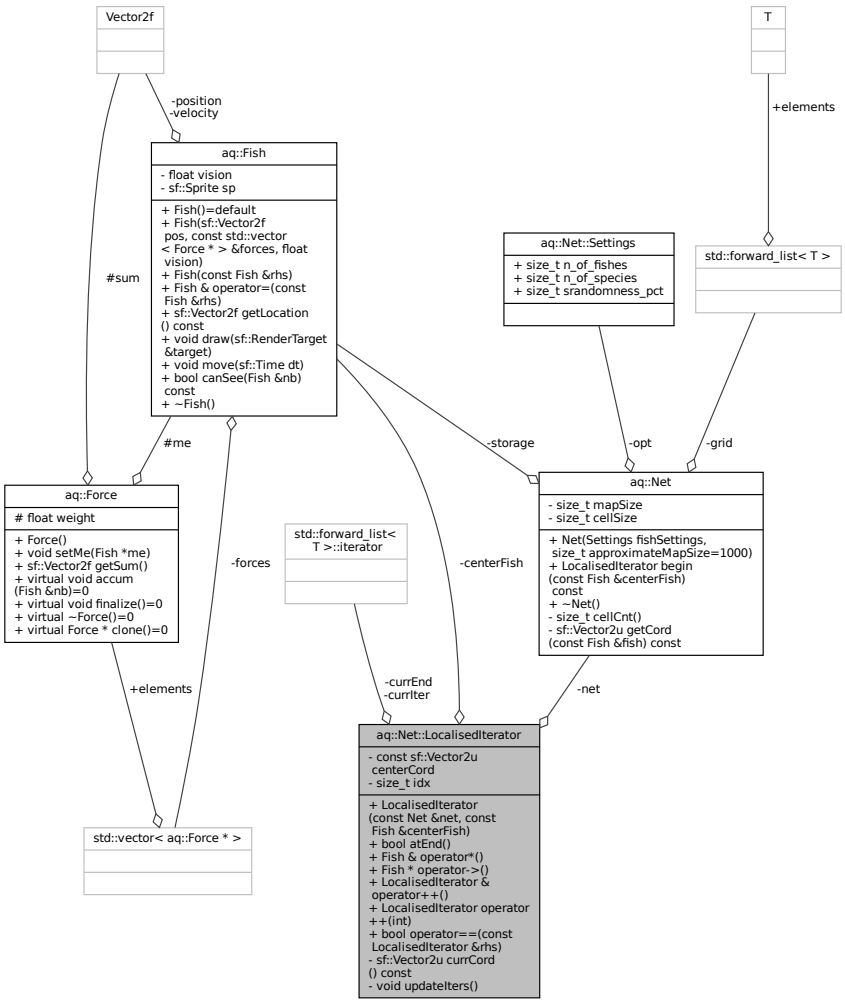
- Fish ∗ **me**
- sf::Vector2f **sum**
- float **weight**

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

- inc/force.hpp
- src/force.cpp

2.3 aq::Net::LocalisedIterator Class Reference

Collaboration diagram for aq::Net::LocalisedIterator:



Public Member Functions

- **LocalisedIterator** (const Net &net, const Fish &centerFish)
- bool **atEnd** ()
- Fish & **operator**∗ ()
- Fish ∗ **operator->** ()
- LocalisedIterator & **operator++** ()
- LocalisedIterator **operator++** (int)
- bool **operator==** (const LocalisedIterator &rhs)

Private Member Functions

- sf::Vector2u **currCord** () const
- void **updateIters** ()

Private Attributes

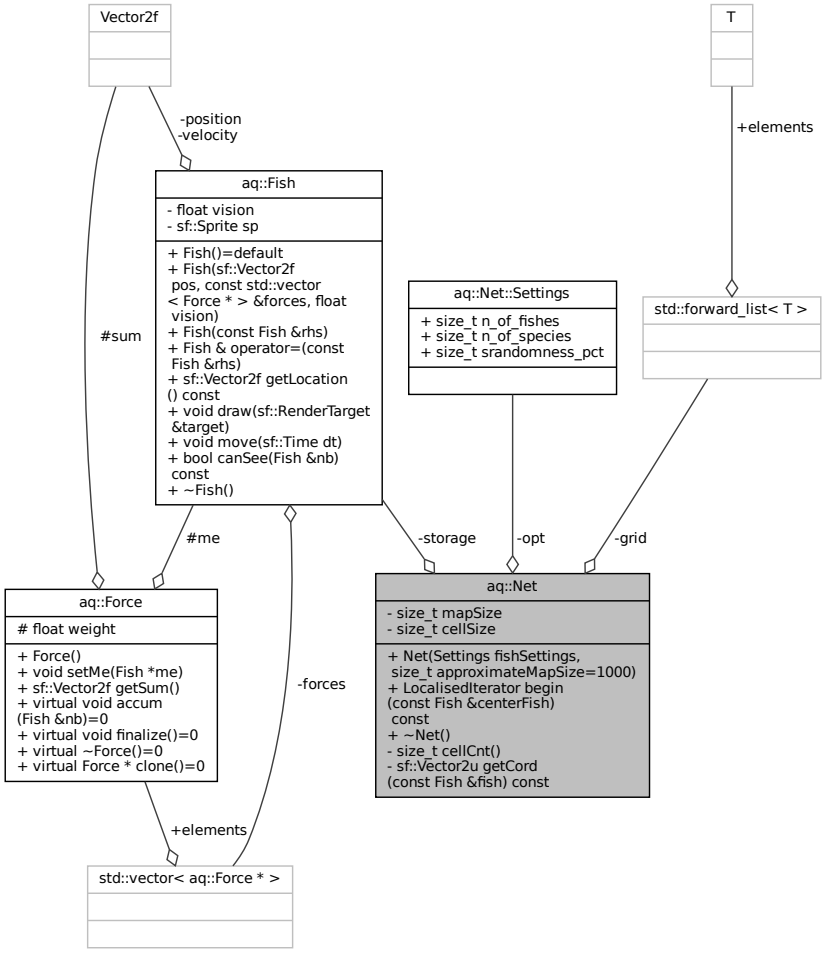
- const Net & **net**
- const Fish & **centerFish**
- const sf::Vector2u **centerCord**
- cell::iterator **currIter**
- cell::iterator **currEnd**
- size_t **idx**

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

- inc/net.hpp

2.4 aq::Net Class Reference

Collaboration diagram for aq::Net:



Classes

- class LocalisedIterator
- struct Settings

Public Types

- typedef std::forward_list< Fish * > **cell**

Public Member Functions

- **Net** (Settings fishSettings, size_t approximateMapSize=1000)
- LocalisedIterator **begin** (const Fish &centerFish) const

Private Member Functions

- size_t **cellCnt** ()
- sf::Vector2u **getCord** (const Fish &fish) const

Private Attributes

- const Settings **opt**
- Fish ∗ **storage**
- cell ∗∗ **grid**
- size_t **mapSize**
- size_t **cellSize** = 1

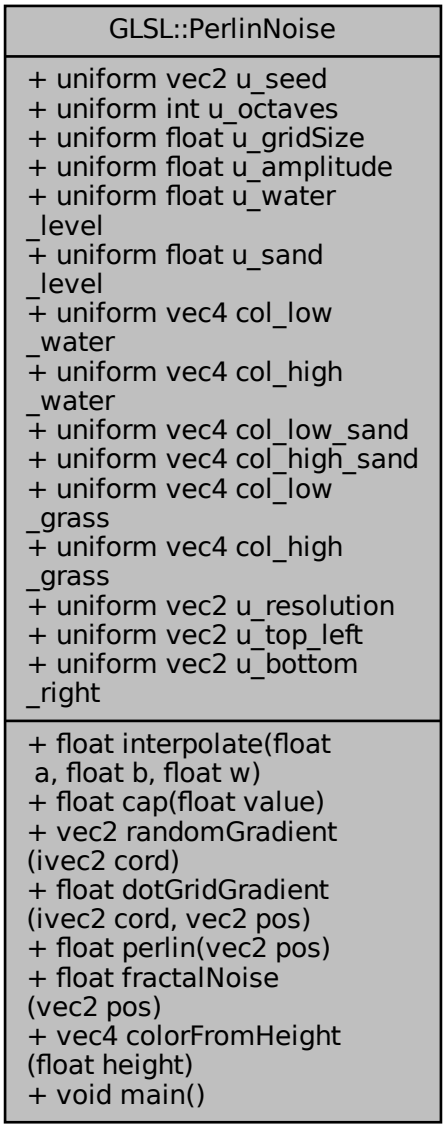
The documentation for this class was generated from the following files:

- inc/net.hpp
- src/net.cpp

2.5 GLSL::PerlinNoise Class Reference

Simple 2D perlin noise shader.

Collaboration diagram for GLSL::PerlinNoise:



Public Member Functions

- float interpolate (float a, float b, float w)

  Smoothly interpolates between two values.
- float cap (float value)

  Caps a value between [0, 1].
- vec2 randomGradient (ivec2 cord)

  Computes a pseudo random gradient vector for a given integer coordinate.
- float dotGridGradient (ivec2 cord, vec2 pos)

  Computes the dot product of a random gradient vector and a given position.

- float perlin (vec2 pos)

  2D Perlin noise
- float fractalNoise (vec2 pos)

  Computes a fractal sum of perlin noise.
- vec4 colorFromHeight (float height)

  Computes a color based on the height.
- void main ()

  Main function.

Public Attributes

- uniform vec2 u_seed

  Seed used as offset.
- uniform int u_octaves

  Number of patterns to sum.
- uniform float u_gridSize

  Size of the grid.
- uniform float u_amplitude

  Start amlitude of the noise.
- uniform float u_water_level

  Threshold for water [0, 1].
- uniform float u_sand_level

  Threshold for sand [0, 1].
- uniform vec4 col_low_water

  Color for deep water.
- uniform vec4 col_high_water

  Color for shallow water.
- uniform vec4 col_low_sand

  Color for low sand.
- uniform vec4 col_high_sand

  Color for high sand.
- uniform vec4 col_low_grass

  Color for low grass.
- uniform vec4 col_high_grass

  Color for high grass.
- uniform vec2 u_resolution

  Size of the window.
- uniform vec2 u_top_left

  Top left corner of the visible area.
- uniform vec2 u_bottom_right

  Bottom right corner of the visible area.

2.5.1 Detailed Description

Simple 2D perlin noise shader.

Code based on the the Perlin noise wikipedia page: https://en.wikipedia.org/wiki/Perlin_↩noise

Remarks

Fragment-Shader

2.5.2 Member Function Documentation

2.5.2.1 colorFromHeight()

```
vec4 GLSL::PerlinNoise::colorFromHeight (
            float height )  [inline]
```

Computes a color based on the height.

Parameters

height	in [0, 1]

2.5.2.2 fractalNoise()

```
float GLSL::PerlinNoise::fractalNoise (
            vec2 pos )  [inline]
```

Computes a fractal sum of perlin noise.

Returns

[0, 1]

2.5.2.3 perlin()

```
float GLSL::PerlinNoise::perlin (
            vec2 pos )  [inline]
```

2D Perlin noise

Parameters

pos	Position in 2D space

Returns

[-1, 1]

2.5.2.4 randomGradient()

```
vec2 GLSL::PerlinNoise::randomGradient (
            ivec2 cord )  [inline]
```

Computes a pseudo random gradient vector for a given integer coordinate.

Returns

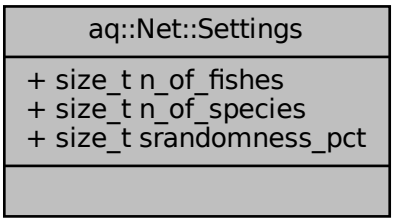
Vector with length 1

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

- src/perlin.frag

2.6 aq::Net::Settings Struct Reference

Collaboration diagram for aq::Net::Settings:



Public Attributes

- size_t **n_of_fishes**
- size_t **n_of_species**
- size_t **srandomness_pct**

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

- inc/net.hpp

Index

aq::Fish, 4
aq::Force, 6
aq::Net, 9
aq::Net::LocalisedIterator, 7
aq::Net::Settings, 14

colorFromHeight
    GLSL::PerlinNoise, 13

fractalNoise
    GLSL::PerlinNoise, 13

GLSL::PerlinNoise, 10
    colorFromHeight, 13
    fractalNoise, 13
    perlin, 13
    randomGradient, 13

perlin
    GLSL::PerlinNoise, 13

randomGradient
    GLSL::PerlinNoise, 13