

R-Type - Engine

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Chapter 1

Engine

1.1 Compilation

1.1.1 Linux

Use the following command to compile the engine:

```
cmake -Bbuild  
make -Cbuild
```

Use the following command to compile the engine and its tests:

```
cmake -Bbuild -DBUILD_TESTS=ON  
make -Cbuild
```

Use the following command for create the package (.tgz or .zip) after compile:

```
cd build  
cpack
```


Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

Archetypes	7
Color	8
Components	9
Entity	13
EntityManager	21
World	89
GameEngine	32
Music	48
Sound	54
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Rect< T >	49
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DrawableComponent	11
Sprite	62
Text	76
EventEngine	27
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testing::Test	
AudioTest	7
EntityManagerTest	25
EntityTest	26
EventTest	31
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TransformTest	86
toSFML	78
Sprite	62
Vector2< T >	87
Vector2< float >	87

Chapter 3

Class Index

3.1 Class List

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

Archetypes	7
AudioTest	7
Color	8
Components	
Components class: Components is a class that represents a component in the game	9
DrawableComponent	
DrawableComponent class: DrawableComponent is a class that represents a drawable component in the game	11
Entity	
Entity class: Entity is a class that represents an entity in the game	13
EntityManager	21
EntityManagerTest	25
EntityTest	26
EventEngine	
EventEngine class: EventEngine is a class that represents the event engine of the game	27
EventTest	31
GameEngine	
GameEngine class: GameEngine is a class that represents the game engine	32
GameEngineTest	46
Music	48
Rect< T >	
Rect class: Rect is a class that represents a rectangle	49
Script	54
Sound	
Sound class: Sound is a class that represents the audio properties of a Component	54
Sprite	
Sprite class: Sprite is a class that represents the rendering properties of a Component	62
SpriteTest	74
TestWorld	75
Text	76
toSFML	
toSFML class: toSFML is a class that convert some class into SFML class	78
Transform	
Transform class: Transform is a class that represents the transform of a Component	80
TransformTest	86

Vector2< T >	
Vector class: Vector is a class that represents a vector in 2 dimensions	87
World	
World class: World is a class that represents the world of the game	89

Chapter 4

Class Documentation

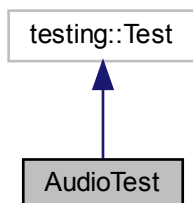
4.1 Archetypes Class Reference

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

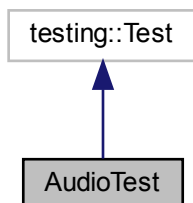
- `src/Archetype/include/Archetypes.h`

4.2 AudioTest Class Reference

Inheritance diagram for AudioTest:



Collaboration diagram for AudioTest:



Protected Member Functions

- void **SetUp** () override
- void **TearDown** () override

Protected Attributes

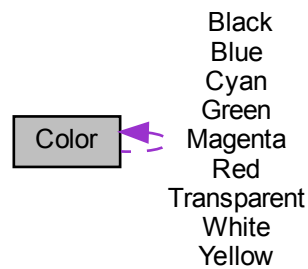
- Audio **audio**

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

- tests/Components/all_components/TestAudio.cpp

4.3 Color Class Reference

Collaboration diagram for Color:



Public Member Functions

- int **getRed** () const
- int **getGreen** () const
- int **getBlue** () const
- int **getAlpha** () const
- void **setRed** (int newRed)
- void **setGreen** (int newGreen)
- void **setBlue** (int newBlue)
- void **setAlpha** (int newAlpha)
- **operator sf::Color** () const

Static Public Member Functions

- static **Color fromSFMLColor** (const sf::Color &sfColor)

Static Public Attributes

- static const **Color Black** = Color::fromSFMLColor(sf::Color::Black)
- static const **Color White** = Color::fromSFMLColor(sf::Color::White)
- static const **Color Red** = Color::fromSFMLColor(sf::Color::Red)
- static const **Color Green** = Color::fromSFMLColor(sf::Color::Green)
- static const **Color Blue** = Color::fromSFMLColor(sf::Color::Blue)
- static const **Color Yellow** = Color::fromSFMLColor(sf::Color::Yellow)
- static const **Color Magenta** = Color::fromSFMLColor(sf::Color::Magenta)
- static const **Color Cyan** = Color::fromSFMLColor(sf::Color::Cyan)
- static const **Color Transparent** = Color::fromSFMLColor(sf::Color::Transparent)

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

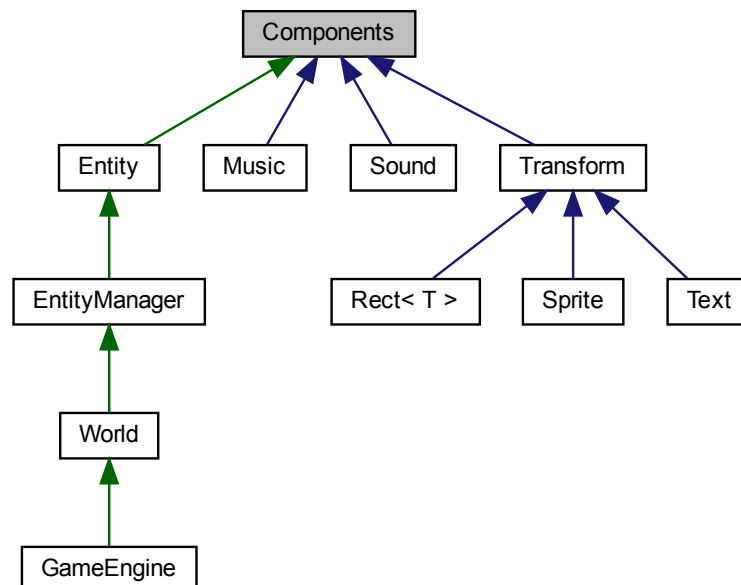
- src/Other/include/Color.h
- src/Other/Color.cpp

4.4 Components Class Reference

Components class: **Components** is a class that represents a component in the game.

```
#include <Components.h>
```

Inheritance diagram for Components:



Public Member Functions

- [Components](#) ()=default
Default [Components](#) constructor.
- virtual [~Components](#) ()=default
[Components](#) destructor.
- virtual bool [init](#) ()
[init\(\)](#): Initialize the component
- virtual void [update](#) (sf::Time timeDelta)=0

4.4.1 Detailed Description

[Components](#) class: [Components](#) is a class that represents a component in the game.

[Components](#) are the building blocks of the game. They are attached to entities and define their behavior.

4.4.2 Constructor & Destructor Documentation

4.4.2.1 Components()

```
Components::Components ( ) [default]
```

Default [Components](#) constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.4.2.2 ~Components()

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

[Components](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.4.3 Member Function Documentation

4.4.3.1 init()

```
virtual bool Components::init ( ) [inline], [virtual]
```

[init\(\)](#): Initialize the component

Parameters

<i>void</i>	
-------------	--

Returns

bool: true if the component is initialized, false otherwise

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

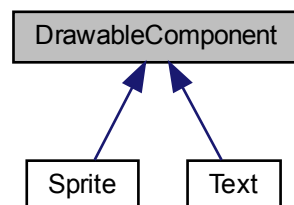
- `src/Components/include/Components.h`

4.5 DrawableComponent Class Reference

[DrawableComponent](#) class: [DrawableComponent](#) is a class that represents a drawable component in the game.

```
#include <DrawableComponent.h>
```

Inheritance diagram for DrawableComponent:



Public Member Functions

- virtual [~DrawableComponent](#) ()=default
Default [DrawableComponent](#) constructor.
- virtual void [draw](#) (sf::RenderWindow &window) const =0
[draw\(\)](#): Draw the component

4.5.1 Detailed Description

[DrawableComponent](#) class: [DrawableComponent](#) is a class that represents a drawable component in the game.

DrawableComponents are components that can be drawn on the screen.

4.5.2 Constructor & Destructor Documentation

4.5.2.1 ~DrawableComponent()

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

Default [DrawableComponent](#) constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.5.3 Member Function Documentation

4.5.3.1 draw()

```
virtual void DrawableComponent::draw (
    sf::RenderWindow & window ) const [pure virtual]
```

[draw\(\)](#): Draw the component

Parameters

<i>window</i>	Window to draw the component on
---------------	---------------------------------

Returns

void

Implemented in [Text](#), and [Sprite](#).

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

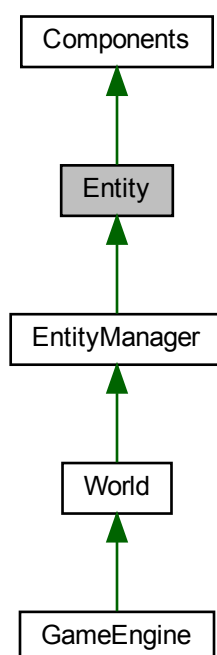
- `src/Components/include/DrawableComponent.h`

4.6 Entity Class Reference

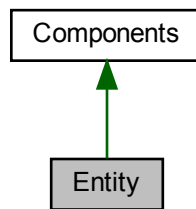
[Entity](#) class: [Entity](#) is a class that represents an entity in the game.

```
#include <entity.h>
```

Inheritance diagram for Entity:



Collaboration diagram for Entity:



Public Member Functions

- [Entity](#) ()=default
Default [Entity](#) constructor.
- [Entity](#) (std::string nameEntity, [Archetypes](#) newArchetype=[Archetypes](#)())
[Entity](#) constructor.
- [~Entity](#) () override=default
[Entity](#) destructor.
- bool [initEntity](#) ()
[init\(\)](#): Initialize the entity
- std::string [getName](#) () const
[genName\(\)](#): Get the name of the entity
- void **update** (sf::Time deltaTime) override
- void [setName](#) (std::string newName)
[setName\(\)](#): Set the name of the entity
- void [addDrawable](#) ([Components](#) *component)
[addDrawable\(\)](#): Add a drawable component to the entity
- void [drawEntity](#) (sf::RenderWindow &window)
[drawEntity\(\)](#): Draw the entities
- template<typename T , typename... TArgs>
T & [addComponent](#) (TArgs &&... args)
[addComponent\(\)](#): Add a component to the entity
- template<typename T >
T & [getComponent](#) ()
[getComponent\(\)](#): Get a component from the entity
- template<typename T >
std::size_t [getComponentTypeID](#) () noexcept
[getComponentTypeID\(\)](#): Get the ID of a component
- std::bitset< 6 > [getComponentBitset](#) () const
[getComponentBitset\(\)](#): Get the bitset of the components
- std::vector< [DrawableComponent](#) * > [getDrawableComponents](#) () const
[getDrawableComponents\(\)](#): Get the drawable components of the entity
- std::array< [Components](#) *, 6 > [getComponentArrays](#) () const
[getComponentArrays\(\)](#): Get the array of components

Additional Inherited Members

4.6.1 Detailed Description

[Entity](#) class: [Entity](#) is a class that represents an entity in the game.

The [Entity](#) class manages components associated with the entity.

4.6.2 Constructor & Destructor Documentation

4.6.2.1 Entity() [1/2]

```
Entity::Entity ( ) [default]
```

Default [Entity](#) constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.6.2.2 Entity() [2/2]

```
Entity::Entity (
    std::string nameEntity,
    Archetypes newArchetype = Archetypes() ) [inline], [explicit]
```

[Entity](#) constructor.

Parameters

<i>nameEntity</i>	name of the entity
<i>newArchetype</i>	archetype of the entity (optional, default = new archetype)

Returns

void

4.6.2.3 ~Entity()

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

[Entity](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.6.3 Member Function Documentation

4.6.3.1 addComponent()

```
template<typename T , typename... TArgs>
template Text & Entity::addComponent< Text > (
    TArgs &&... args )
```

[addComponent\(\)](#): Add a component to the entity

Template Parameters

<i>T</i>	Type of the component
<i>TArgs</i>	Variadic template for component constructor arguments.

Parameters

<i>args</i>	arguments of the component
-------------	----------------------------

Returns

T&: reference of the component

4.6.3.2 addDrawable()

```
void Entity::addDrawable (
    Components * component )
```

[addDrawable\(\)](#): Add a drawable component to the entity

Parameters

<i>component</i>	component to add
------------------	------------------

Returns

void

4.6.3.3 drawEntity()

```
void Entity::drawEntity (
    sf::RenderWindow & window )
```

[drawEntity\(\)](#): Draw the entities

Parameters

<i>window</i>	window where the entities are drawn
---------------	-------------------------------------

Returns

void

4.6.3.4 getComponent()

```
template<typename T >
template Text & Entity::getComponent< Text > ( )
```

[getComponent\(\)](#): Get a component from the entity

Template Parameters

<i>T</i>	Type of the component
----------	-----------------------

Parameters

<i>void</i>	
-------------	--

Returns

T&: reference of the component

4.6.3.5 GetComponentArrays()

```
std::array<Components*, 6> Entity::GetComponentArrays ( ) const [inline]
```

[GetComponentArrays\(\)](#): Get the array of components

Parameters

<i>void</i>	
-------------	--

Returns

std::array<Components*, 6>: array of components

4.6.3.6 GetComponentBitset()

```
std::bitset<6> Entity::GetComponentBitset ( ) const [inline]
```

[GetComponentBitset\(\)](#): Get the bitset of the components

Parameters

<i>void</i>	
-------------	--

Returns

std::bitset<6>: bitset of the components

4.6.3.7 GetComponentTypeID()

```
template<typename T >
template std::size_t Entity::GetComponentTypeID< Text > ( ) [noexcept]
```

[GetComponentTypeID\(\)](#): Get the ID of a component

Template Parameters

<i>T</i>	Type of the component
----------	-----------------------

Parameters

<i>void</i>	
-------------	--

Returns

std::size_t: ID of the component

4.6.3.8 getDrawableComponents()

```
std::vector<DrawableComponent*> Entity::getDrawableComponents ( ) const [inline]
```

[getDrawableComponents\(\)](#): Get the drawable components of the entity

Parameters

<i>void</i>	
-------------	--

Returns

std::vector<DrawableComponent*>: drawable components of the entity

4.6.3.9 getName()

```
std::string Entity::getName ( ) const
```

[getName\(\)](#): Get the name of the entity

Parameters

<i>void</i>	
-------------	--

Returns

std::string: name of the entity

4.6.3.10 initEntity()

```
bool Entity::initEntity ( )
```

[init\(\)](#): Initialize the entity

Parameters

<i>void</i>	
-------------	--

Returns

bool: true if the entity is initialized, false otherwise

4.6.3.11 setName()

```
void Entity::setName (
    std::string newName )
```

[setName\(\)](#): Set the name of the entity

Parameters

<i>newName</i>	new name of the entity
----------------	------------------------

Returns

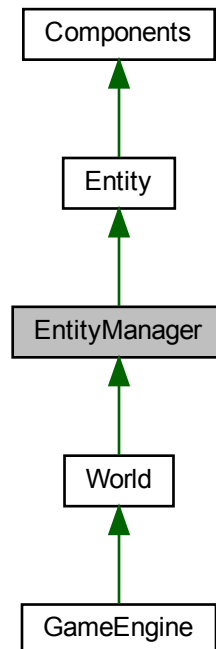
void

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

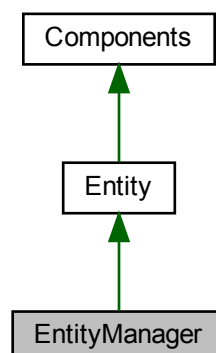
- src/Entity/include/entity.h
- src/Entity/entity.cpp

4.7 EntityManager Class Reference

Inheritance diagram for EntityManager:



Collaboration diagram for EntityManager:



Public Member Functions

- [EntityManager](#) ()=default
Default [EntityManager](#) constructor.
- [~EntityManager](#) ()=default
[EntityManager](#) destructor.
- [Entity](#) & [addEntity](#) (std::string nameEntity, [Archetypes](#) newArchetype=[Archetypes](#)())
[addEntity\(\)](#): Create and add a new entity to the entity manager.
- [Entity](#) & [getEntity](#) (std::string nameEntity)
[getEntity\(\)](#): Get an entity from the entity manager by its name.
- std::map< std::string, [Entity](#) * > [getEntities](#) () const
[getEntities\(\)](#): Get the [EntityManager](#)'s entities.
- std::map< std::string, [Entity](#) * > [getEntityMap](#) () const
[getEntityMap\(\)](#): Get the [EntityManager](#)'s entity map.
- bool [initEntityManager](#) ()
[initEntityManager\(\)](#): Initialize the [EntityManager](#).

Additional Inherited Members

4.7.1 Constructor & Destructor Documentation

4.7.1.1 EntityManager()

```
EntityManager::EntityManager ( ) [default]
```

Default [EntityManager](#) constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.7.1.2 ~EntityManager()

```
EntityManager::~~EntityManager ( ) [default]
```

[EntityManager](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.7.2 Member Function Documentation

4.7.2.1 addEntity()

```
Entity & EntityManager::addEntity (
    std::string nameEntity,
    Archetypes newArchetype = Archetypes() )
```

addEntity(): Create and add a new entity to the entity manager.

Template Parameters

<i>T</i>	Type of the entity.
<i>TArgs</i>	Type of the arguments.

Parameters

<i>args</i>	Arguments of the entity.
-------------	--------------------------

4.7.2.2 getEntities()

```
std::map< std::string, Entity * > EntityManager::getEntities ( ) const
```

getEntities(): Get the **EntityManager**'s entities.

Parameters

<i>void</i>	
-------------	--

Returns

std::map<std::string, Entity *>: Entities.

4.7.2.3 getEntity()

```
Entity & EntityManager::getEntity (
    std::string nameEntity )
```

getEntity(): Get an entity from the entity manager by its name.

Template Parameters

<i>T</i>	Type of the entity.
----------	---------------------

Parameters

<i>nameEntity</i>	Name of the entity.
-------------------	---------------------

Returns

T&: Reference of the entity.

4.7.2.4 `getEntityMap()`

```
std::map<std::string, Entity*> EntityManager::getEntityMap ( ) const [inline]
```

`getEntityMap()`: Get the [EntityManager](#)'s entity map.

Parameters

<i>void</i>	
-------------	--

Returns

Entity::EntityMap: [Entity](#) map.

4.7.2.5 `initEntityManager()`

```
bool EntityManager::initEntityManager ( ) [inline]
```

`initEntityManager()`: Initialize the [EntityManager](#).

Parameters

<i>void</i>	
-------------	--

Returns

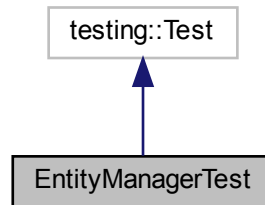
bool: true if the [EntityManager](#) is initialized, false otherwise.

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

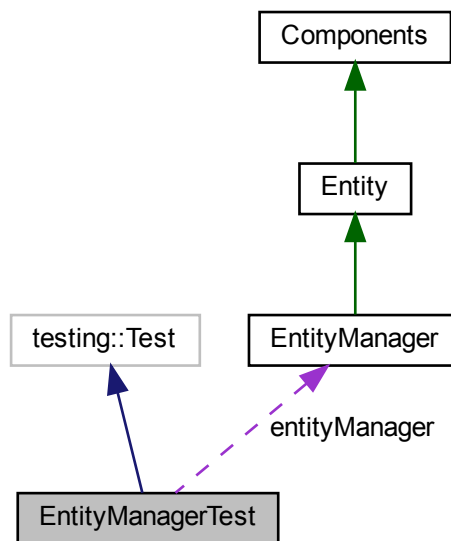
- `src/Entity/include/entityManager.h`
- `src/Entity/entityManager.cpp`

4.8 EntityManagerTest Class Reference

Inheritance diagram for EntityManagerTest:



Collaboration diagram for EntityManagerTest:



Protected Member Functions

- void **SetUp** () override
- void **TearDown** () override

Protected Attributes

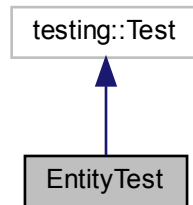
- [EntityManager](#) entityManager {}

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

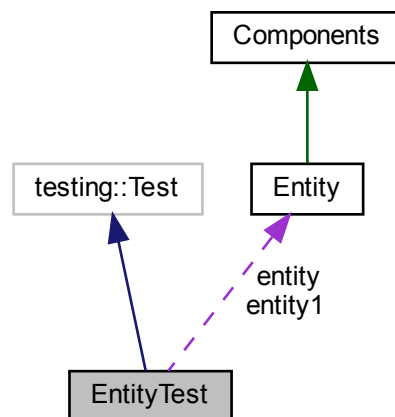
- tests/Entity/TestEntityManager.cpp

4.9 EntityTest Class Reference

Inheritance diagram for EntityTest:



Collaboration diagram for EntityTest:



Protected Attributes

- [Entity](#) entity
- [Entity](#) entity1

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

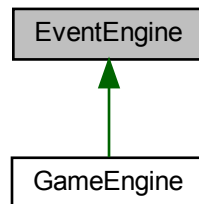
- tests/Entity/TestEntity.cpp

4.10 EventEngine Class Reference

`EventEngine` class: `EventEngine` is a class that represents the event engine of the game.

```
#include <eventEngine.h>
```

Inheritance diagram for `EventEngine`:



Public Member Functions

- `EventEngine ()=default`
Default `EventEngine` constructor.
- `virtual ~EventEngine ()=default`
`EventEngine` destructor.
- `bool init () const`
`init()`: Initialize the `EventEngine`.
- `sf::Event & getEvent ()`
`getEvent()`: Get the SFML Event.
- `void addKeyPressed (sf::Keyboard::Key keyboard, std::function< void()> function)`
`addKeyPressed()`: Add a key pressed to the map.
- `void addMouseButtonPressed (sf::Mouse::Button mouse, std::function< void()> function)`
`addMouseButtonPressed()`: Add a mouse button pressed to the map.
- `void addMouseMoved (std::string nameEntity, std::function< void()> function)`
`addMouseMoved()`: Add a mouse moved to the map.
- `std::map< sf::Keyboard::Key, std::function< void()> > & getKeyPressedMap ()`
`getKeyPressedMap()`: Get the map of the key pressed.
- `std::map< sf::Mouse::Button, std::function< void()> > & getMouseButtonPressedMap ()`
`getMouseButtonPressedMap()`: Get the map of the mouse button pressed.
- `std::map< std::string, std::function< void()> > & getMouseMovedMap ()`
`getMouseMovedPressedMap()`: Get the map of the key pressed.

4.10.1 Detailed Description

`EventEngine` class: `EventEngine` is a class that represents the event engine of the game.

The `EventEngine` class manages the events of the game.

4.10.2 Constructor & Destructor Documentation

4.10.2.1 EventEngine()

```
EventEngine::EventEngine ( ) [default]
```

Default [EventEngine](#) constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.10.2.2 ~EventEngine()

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

[EventEngine](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.10.3 Member Function Documentation

4.10.3.1 addKeyPressed()

```
void EventEngine::addKeyPressed (
    sf::Keyboard::Key keyboard,
    std::function< void()> function )
```

[addKeyPressed\(\)](#): Add a key pressed to the map.

Parameters

<i>keyboard</i>	SFML Keyboard::Key of the key pressed.
<i>function</i>	Function to execute when the key is pressed.

Returns

void

4.10.3.2 addMouseButtonPressed()

```
void EventEngine::addMouseButtonPressed (
    sf::Mouse::Button mouse,
    std::function< void()> function )
```

[addMouseButtonPressed\(\)](#): Add a mouse button pressed to the map.

Parameters

<i>mouse</i>	SFML Mouse::Button of the mouse button pressed.
<i>function</i>	Function to execute when the mouse button is pressed.

Returns

void

4.10.3.3 addMouseMoved()

```
void EventEngine::addMouseMoved (
    std::string nameEntity,
    std::function< void()> function )
```

[addMouseMoved\(\)](#): Add a mouse moved to the map.

Parameters

<i>nameEntity</i>	: Name of the Entity you want.
<i>function</i>	Function to execute when the mouse moved on entity.

Returns

void

4.10.3.4 `getEvent()`

```
sf::Event& EventEngine::getEvent ( ) [inline]
```

[`getEvent\(\)`](#): Get the SFML Event.

Parameters

<i>void</i>	
-------------	--

Returns

sf::Event: The SFML Event.

4.10.3.5 `getKeyPressedMap()`

```
std::map<sf::Keyboard::Key, std::function<void()> >& EventEngine::getKeyPressedMap ( ) [inline]
```

[`getKeyPressedMap\(\)`](#): Get the map of the key pressed.

Parameters

<i>void</i>	
-------------	--

Returns

std::map<sf::Keyboard::Key, std::function<void()>>: The map of the key pressed.

4.10.3.6 `getMouseButtonPressedMap()`

```
std::map<sf::Mouse::Button, std::function<void()> >& EventEngine::getMouseButtonPressedMap ( ) [inline]
```

[`getMouseButtonPressedMap\(\)`](#): Get the map of the mouse button pressed.

Parameters

<i>void</i>	
-------------	--

Returns

std::map<sf::Mouse::Button, std::function<void()>>: The map of the mouse button pressed.

4.10.3.7 getMouseMovedMap()

```
std::map<std::string, std::function<void()> >& EventEngine::getMouseMovedMap ( ) [inline]
```

getMouseMovedPressedMap(): Get the map of the key pressed.

Parameters

<i>void</i>	
-------------	--

Returns

std::map<std::string, std::function<void()>>: The map of the mouse moved.

4.10.3.8 init()

```
bool EventEngine::init ( ) const [inline]
```

init(): Initialize the [EventEngine](#).

Parameters

<i>void</i>	
-------------	--

Returns

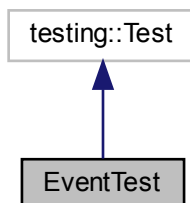
bool: True if the [EventEngine](#) is initialized, false otherwise.

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

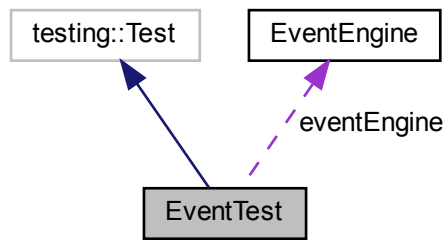
- src/Event/include/eventEngine.h
- src/Event/eventEngine.cpp

4.11 EventTest Class Reference

Inheritance diagram for EventTest:



Collaboration diagram for EventTest:



Protected Attributes

- [EventEngine](#) `eventEngine`

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

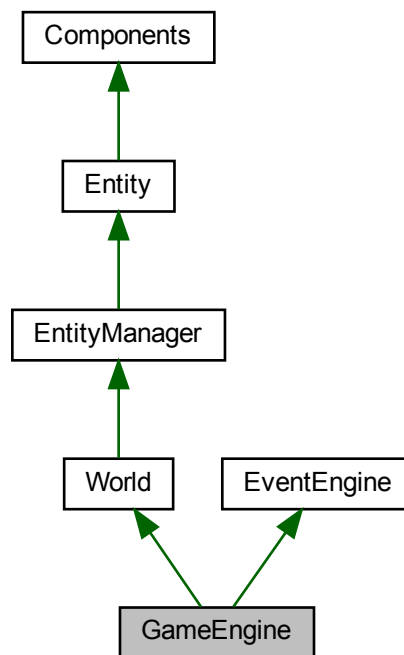
- `tests/Event/TestEvent.cpp`

4.12 GameEngine Class Reference

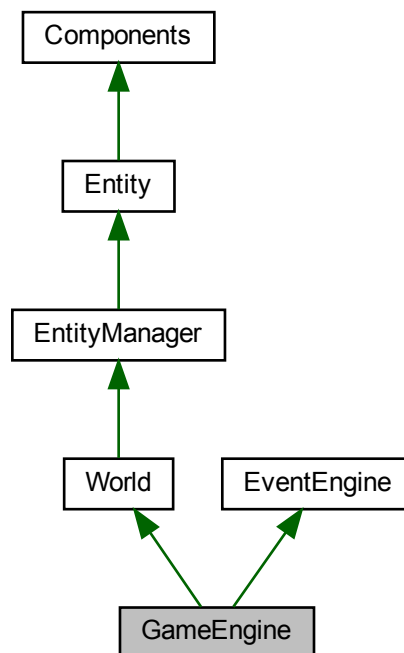
[GameEngine](#) class: [GameEngine](#) is a class that represents the game engine.

```
#include <gameEngine.h>
```


Inheritance diagram for GameEngine:



Collaboration diagram for GameEngine:



Public Member Functions

- [GameEngine](#) ()=default
< Time of the game. Using with the Clock.
- [GameEngine](#) (sf::VideoMode mode, std::string type, sf::String title, sf::Uint32 style=sf::Style::Default, const sf::ContextSettings &settings=sf::ContextSettings())
GameEngine constructor with parameters.
- [~GameEngine](#) ()=default
GameEngine destructor.
- void [run](#) (std::map< std::string, std::unique_ptr< [World](#) >> mapWorld, std::map< std::string, std::string > pathRessources, std::string firstScene)
run(): Run the game engine (with parameters).
- void [run](#) ()
run(): Run the game engine (without parameters).
- void [renderGameEngine](#) ()
renderGameEngine(): Render the game engine.
- void [eventGameEngine](#) ()
eventGameEngine(): Manage the events of the game engine.
- bool [isWindowOpen](#) ()
isWindowOpen(): Check if the window is open.
- void [updateGameEngine](#) ()
updateGameEngine(): Update the game engine.
- std::vector< std::string > [getFilesRessources](#) (std::string pathDirectory)

- getFilesRessources()*: Get all the ressources type files in the given directory.
- void **initialize** (std::map< std::string, std::unique_ptr< **World** >> mapWorld, std::map< std::string, std::string > pathRessources, std::string firstScene)
 - initialize()*: Initialize the game engine.
- void **initializeSpriteFunction** ()
 - initializeSpriteFunction()*: Initialize the sprites function.
- void **initializeSoundFunction** ()
 - initializeSoundFunction()*: Initialize the sound function.
- void **initializeMusicFunction** ()
 - initializeMusicFunction()*: Initialize the music function.
- void **initializeTextFunction** ()
- void **initializeAllFiles** (std::map< std::string, std::string > pathRessources)
 - initializeAllFiles()*: Initialize all the ressources files the engine need.
- void **initializeTexture** (std::string path)
 - initializeTexture()*: Initialize the textures with their path.
- void **initializeSound** (std::string path)
 - initializeSound()*: Initialize the sound with their path.
- void **initializeMusic** (std::string path)
 - initializeMusic()*: Initialize the music with their path.
- void **initializeFont** (std::string path)
- void **initializeWorldMap** (std::map< std::string, std::unique_ptr< **World** >> mapWorld)
 - initializeWorldMap()*: Initialize the world map.
- const auto & **getWindow** ()
 - getWindow()*: Get the window.
- void **setWindow** ()
 - setWindow()*: Set the window.
- **EventEngine** & **getEventEngine** ()
 - getEventEngine()*: Get the event engine.
- void **setCurrentWorld** (**World** *world)
 - setCurrentWorld()*: Set **GameEngine**'s current world.
- **World** * **getCurrentWorld** ()
 - getCurrentWorld()*: Get **GameEngine**'s current world.
- **World** & **addWorld** (std::string nameWorld, std::unique_ptr< **World** > world)
 - addWorld()*: Add a world to the world map.
- **World** & **getWorld** (std::string nameWorld)
 - getWorld()*: Get a world from the world map with its name.
- std::map< std::string, std::shared_ptr< sf::Texture > > **getMapTexture** () const
 - getMapTexture()*: Get **GameEngine**'s map of the textures.
- std::map< std::string, **World** * > **getWorldMap** () const
 - getWorldMap()*: Get **GameEngine**'s map of the worlds.
- std::map< std::string, std::shared_ptr< sf::Music > > **getMapMusic** () const
 - getMapMusic()*: Get **GameEngine**'s map of the music.
- std::map< std::string, std::shared_ptr< sf::SoundBuffer > > **getMapSound** () const
- std::map< std::string, std::shared_ptr< sf::Font > > **getMapFont** () const

Additional Inherited Members

4.12.1 Detailed Description

GameEngine class: **GameEngine** is a class that represents the game engine.

The **GameEngine** class manages the game engine.

4.12.2 Constructor & Destructor Documentation

4.12.2.1 `GameEngine()` [1/2]

```
GameEngine::GameEngine ( ) [default]
```

< Time of the game. Using with the Clock.

Default [GameEngine](#) constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.2.2 `GameEngine()` [2/2]

```
GameEngine::GameEngine (
    sf::VideoMode mode,
    std::string type,
    sf::String title,
    sf::Uint32 style = sf::Style::Default,
    const sf::ContextSettings & settings = sf::ContextSettings() ) [explicit]
```

[GameEngine](#) constructor with parameters.

Parameters

<i>mode</i>	Video mode.
<i>type</i>	Type of the graphics ("2D" or "3D").
<i>title</i>	Title of the window.
<i>style</i>	Style of the window (sf::Style::Default by default).
<i>settings</i>	Settings of the window.

Returns

void

4.12.2.3 ~GameEngine()

```
GameEngine::~~GameEngine ( ) [default]
```

[GameEngine](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3 Member Function Documentation

4.12.3.1 addWorld()

```
World & GameEngine::addWorld (
    std::string nameWorld,
    std::unique_ptr< World > world )
```

[addWorld\(\)](#): Add a world to the world map.

Parameters

<i>nameWorld</i>	Name of the world.
<i>world</i>	World to add.

Returns

[World&](#): The world.

4.12.3.2 eventGameEngine()

```
void GameEngine::eventGameEngine ( )
```

[eventGameEngine\(\)](#): Manage the events of the game engine.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.3 getCurrentWorld()

```
World* GameEngine::getCurrentWorld ( ) [inline]
```

[getCurrentWorld\(\)](#): Get [GameEngine](#)'s current world.

Parameters

<i>void</i>	
-------------	--

Returns

World*: [GameEngine](#)'s current world.

4.12.3.4 getEventEngine()

```
EventEngine& GameEngine::getEventEngine ( ) [inline]
```

[getEventEngine\(\)](#): Get the event engine.

Parameters

<i>void</i>	
-------------	--

Returns

[EventEngine&](#): [GameEngine](#)'s [EventEngine](#).

4.12.3.5 getFilesRessources()

```
std::vector< std::string > GameEngine::getFilesRessources (
    std::string pathDirectory )
```

[getFilesRessources\(\)](#): Get all the ressources type files in the given directory.

Parameters

<i>pathDirectory</i>	Path of the directory.
----------------------	------------------------

Returns

`std::vector<std::string>`: Vector of the ressources type files' names.

4.12.3.6 getMapMusic()

```
std::map<std::string, std::shared_ptr<sf::Music> > GameEngine::getMapMusic ( ) const [inline]
```

[getMapMusic\(\)](#): Get [GameEngine](#)'s map of the music.

Parameters

<i>void</i>	
-------------	--

Returns

`std::map<std::string, std::shared_ptr<sf::Music>>`: [GameEngine](#)'s map of the musics.

4.12.3.7 getMapTexture()

```
std::map<std::string, std::shared_ptr<sf::Texture> > GameEngine::getMapTexture ( ) const [inline]
```

[getMapTexture\(\)](#): Get [GameEngine](#)'s map of the textures.

Parameters

<i>void</i>	
-------------	--

Returns

`std::map<std::string, std::shared_ptr<sf::Texture>>`: [GameEngine](#)'s map of the textures.

4.12.3.8 getWindow()

```
const auto& GameEngine::getWindow ( ) [inline]
```

[getWindow\(\)](#): Get the window.

Parameters

<i>void</i>	
-------------	--

Returns

`std::variant<std::unique_ptr<sf::Window>, std::unique_ptr<sf::RenderWindow>>`: The [GameEngine](#)'s window

4.12.3.9 `getWorld()`

```
World & GameEngine::getWorld (
    std::string nameWorld )
```

[getWorld\(\)](#): Get a world from the world map with its name.

Parameters

<i>nameWorld</i>	Name of the world.
------------------	--------------------

Returns

[World&](#): [GameEngine](#)'s world.

4.12.3.10 `getWorldMap()`

```
std::map<std::string, World *> GameEngine::getWorldMap ( ) const [inline]
```

[getWorldMap\(\)](#): Get [GameEngine](#)'s map of the worlds.

Parameters

<i>void</i>	
-------------	--

Returns

`std::map<std::string, World*>`: [GameEngine](#)'s map of the worlds.

4.12.3.11 `initialize()`

```
void GameEngine::initialize (
    std::map< std::string, std::unique_ptr< World >> mapWorld,
    std::map< std::string, std::string > pathResources,
    std::string firstScene )
```

[initialize\(\)](#): Initialize the game engine.

Parameters

<i>mapWorld</i>	Map of World classes' unique pointers.
<i>pathRessources</i>	Map of the path of the ressources (assets).
<i>firstScene</i>	Name of the first scene.

Returns

void

4.12.3.12 initializeAllFiles()

```
void GameEngine::initializeAllFiles (
    std::map< std::string, std::string > pathRessources )
```

[initializeAllFiles\(\)](#): Initialize all the ressources files the engine need.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.13 initializeMusic()

```
void GameEngine::initializeMusic (
    std::string path )
```

[initializeMusic\(\)](#): Initialize the music with their path.

Parameters

<i>path</i>	Path of the texture.
-------------	----------------------

Returns

void

4.12.3.14 initializeMusicFunction()

```
void GameEngine::initializeMusicFunction ( )
```

[initializeMusicFunction\(\)](#): Initialize the music function.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.15 initializeSound()

```
void GameEngine::initializeSound (
    std::string path )
```

[initializeSound\(\)](#): Initialize the sound with their path.

Parameters

<i>path</i>	Path of the texture.
-------------	----------------------

Returns

void

4.12.3.16 initializeSoundFunction()

```
void GameEngine::initializeSoundFunction ( )
```

[initializeSoundFunction\(\)](#): Initialize the sound function.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.17 initializeSpriteFunction()

```
void GameEngine::initializeSpriteFunction ( )
```

[initializeSpriteFunction\(\)](#): Initialize the sprites function.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.18 initializeTexture()

```
void GameEngine::initializeTexture (
    std::string path )
```

[initializeTexture\(\)](#): Initialize the textures with their path.

Parameters

<i>path</i>	Path of the texture.
-------------	----------------------

Returns

void

4.12.3.19 initializeWorldMap()

```
void GameEngine::initializeWorldMap (
    std::map< std::string, std::unique_ptr< World >> mapWorld )
```

[initializeWorldMap\(\)](#): Initialize the world map.

Parameters

<i>mapWorld</i>	Map of World classes' unique pointers.
-----------------	--

Returns

void

4.12.3.20 isWindowOpen()

```
bool GameEngine::isWindowOpen ( )
```

[isWindowOpen\(\)](#): Check if the window is open.

Parameters

<i>void</i>	
-------------	--

Returns

bool: True if the window is open, false otherwise.

4.12.3.21 renderGameEngine()

```
void GameEngine::renderGameEngine ( )
```

[renderGameEngine\(\)](#): Render the game engine.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.22 run() [1/2]

```
void GameEngine::run ( )
```

[run\(\)](#): Run the game engine (without parameters).

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.23 run() [2/2]

```
void GameEngine::run (
    std::map< std::string, std::unique_ptr< World >> mapWorld,
    std::map< std::string, std::string > pathResources,
    std::string firstScene )
```

[run\(\)](#): Run the game engine (with parameters).

Parameters

<i>mapWorld</i>	Map of World classes' unique pointers.
<i>pathResources</i>	Map of the path of the ressources (assets).
<i>firstScene</i>	Name of the first scene.

Returns

void

4.12.3.24 setCurrentWorld()

```
void GameEngine::setCurrentWorld (
    World * world )
```

[setCurrentWorld\(\)](#): Set [GameEngine](#)'s current world.

Parameters

<i>world</i>	World to set.
--------------	-------------------------------

Returns

void

4.12.3.25 setWindow()

```
void GameEngine::setWindow ( )
```

[setWindow\(\)](#): Set the window.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.12.3.26 updateGameEngine()

```
void GameEngine::updateGameEngine ( )
```

[updateGameEngine\(\)](#): Update the game engine.

Parameters

<i>void</i>	
-------------	--

Returns

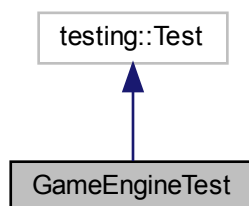
void

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

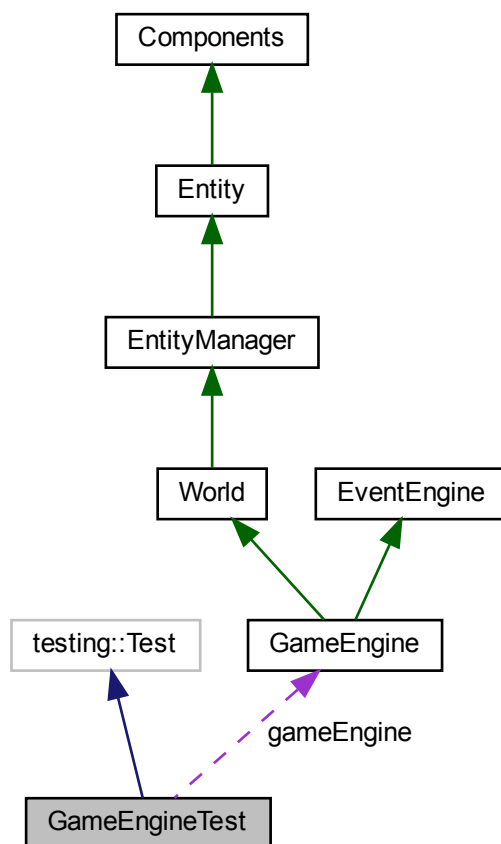
- src/GameEngine/include/gameEngine.h
- src/GameEngine/gameEngine.cpp

4.13 GameEngineTest Class Reference

Inheritance diagram for GameEngineTest:



Collaboration diagram for GameEngineTest:



Protected Member Functions

- void **TearDown** () override

Protected Attributes

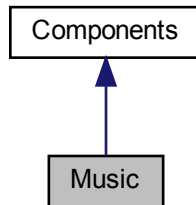
- [GameEngine](#) * **gameEngine**

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

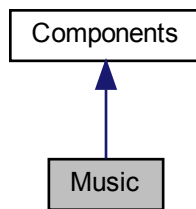
- tests/GameEngine/TestGameEngine.cpp

4.14 Music Class Reference

Inheritance diagram for Music:



Collaboration diagram for Music:



Public Member Functions

- void **setMusic** (std::map< std::string, std::shared_ptr< sf::Music >> mapMusic, std::string nameMusic)
- void **setDeferredMusic** (std::function< void()> setter)
- void **applyDeferredMusic** ()
- std::shared_ptr< sf::Music > **getMusic** () const
- void **play** ()
- void **play** (int seconds)
- void **stop** ()
- int **getBit** () const

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

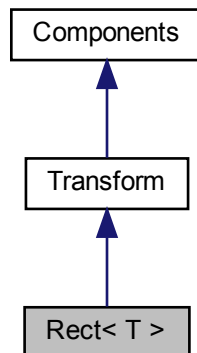
- src/Components/all_components/include/Music.h
- src/Components/all_components/Music.cpp

4.15 Rect< T > Class Template Reference

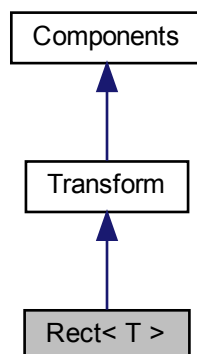
Rect class: Rect is a class that represents a rectangle.

```
#include <Rect.h>
```

Inheritance diagram for Rect< T >:



Collaboration diagram for Rect< T >:



Public Member Functions

- Rect (T left, T top, T width, T height)
 < Rect is the variable you can use for change the data in RectStruct.
- ~Rect ()=default

- *Rect* destructor.
- RectStruct [getRect](#) () const
getRect(): Get the using RectStruct.
- T [getLeft](#) () const
getLeft(): Get the using RectStruct left.
- T [getTop](#) () const
getTop(): Get the using RectStruct top.
- T [getWidth](#) () const
getWidth(): Get the using RectStruct width.
- T [getHeight](#) () const
getHeight(): Get the using RectStruct height.
- bool [contains](#) (T x, T y) const
contains(): Check if a point is in the rectangle.

4.15.1 Detailed Description

```
template<typename T>
class Rect< T >
```

[Rect](#) class: [Rect](#) is a class that represents a rectangle.

This create a rectangle and using for what you want.

4.15.2 Constructor & Destructor Documentation

4.15.2.1 Rect()

```
template<typename T >
Rect< T >::Rect (
    T left,
    T top,
    T width,
    T height ) [inline]
```

< [Rect](#) is the variable you can use for change the data in RectStruct.

[Rect](#) constructor with parameters.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>left</i>	Position x.
<i>top</i>	Position y.

Parameters

<i>width</i>	Width of your rectangle.
<i>height</i>	Height of your rectangle.

Returns

void

4.15.2.2 ~Rect()

```
template<typename T >
Rect< T >::~~Rect ( ) [default]
```

Rect destructor.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>void</i>	
-------------	--

Returns

void

4.15.3 Member Function Documentation**4.15.3.1 contains()**

```
template<typename T >
template bool Rect< T >::contains (
    T x,
    T y ) const
```

[contains\(\)](#): Check if a point is in the rectangle.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>x</i>	: Position x of the point.
<i>y</i>	: Position y of the point.

Returns

T : T is the type you want (float, int,...).

4.15.3.2 getHeight()

```
template<typename T >
T Rect< T >::getHeight ( ) const [inline]
```

[getHeight\(\)](#): Get the using RectStruct height.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>void</i>	
-------------	--

Returns

T : T is the type you want (float, int,...).

4.15.3.3 getLeft()

```
template<typename T >
T Rect< T >::getLeft ( ) const [inline]
```

[getLeft\(\)](#): Get the using RectStruct left.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>void</i>	
-------------	--

Returns

T : T is the type you want (float, int,...).

4.15.3.4 getRect()

```
template<typename T >
RectStruct Rect< T >::getRect ( ) const [inline]
```

[getRect\(\)](#): Get the using RectStruct.

Parameters

<i>void</i>	
-------------	--

Returns

[Rect](#)

4.15.3.5 getTop()

```
template<typename T >
T Rect< T >::getTop ( ) const [inline]
```

[getTop\(\)](#): Get the using RectStruct top.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>void</i>	
-------------	--

Returns

T : T is the type you want (float, int,...).

4.15.3.6 getWidth()

```
template<typename T >
T Rect< T >::getWidth ( ) const [inline]
```

[getWidth\(\)](#): Get the using RectStruct width.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>void</i>	
-------------	--

Returns

T : T is the type you want (float, int,...).

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

- src/Other/include/Rect.h
- src/Other/Rect.cpp

4.16 Script Class Reference

Public Member Functions

- virtual void **execute** ()=0

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

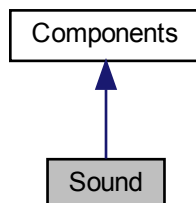
- src/Script/include/Script.h

4.17 Sound Class Reference

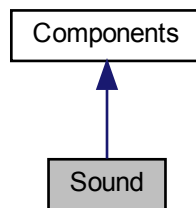
[Sound](#) class: [Sound](#) is a class that represents the audio properties of a Component.

```
#include <Sound.h>
```

Inheritance diagram for Sound:



Collaboration diagram for Sound:



Public Member Functions

- **Sound** ()=default
*Default **Sound** constructor.*
- **Sound** (const sf::SoundBuffer &buffer)
***Sound** constructor with an existing sound buffer. Automatically set the sound.*
- **~Sound** () override=default
***Sound** destructor.*
- bool **loadSoundBuffer** (const std::string &filePath)
***loadSoundBuffer()**: Load the sound buffer from a file. Automatically set the component sound. //! Only supports .wav, .ogg and FLAC files.*
- bool **setSoundBuffer** (const sf::SoundBuffer &buffer)
***setSoundBuffer()**: Set the sound buffer with an existing one. Automatically set the component sound.*
- const sf::SoundBuffer & **getSoundBuffer** () const
***getSoundBuffer()**: Get the current sound buffer.*
- bool **setSound** (const sf::Sound &sound)
***setSound()**: Set the sound with an existing one. Automatically set the component sound buffer.*
- void **setSound** (std::map< std::string, std::shared_ptr< sf::SoundBuffer >> mapSound, std::string name← Sound)
- void **setDeferredSound** (std::function< void()> setter)
- void **applyDeferredSound** ()
- const sf::Sound & **getSound** () const
***getSound()**: Get the current sound.*
- void **play** ()
***play()**: Play the audio.*
- void **pause** ()
***pause()**: Pause the audio.*
- void **stop** ()
***stop()**: Stop the audio.*
- void **setLoop** (bool loop)
***setLoop()**: Set whether the audio should loop or not.*
- void **setVolume** (float volume)
***setVolume()**: Set the volume of the audio.*
- float **getVolume** () const
***getVolume()**: Get the current volume level.*
- bool **isPlaying** () const
***isPlaying()**: Check if the audio is currently playing.*
- int **getBit** () const

4.17.1 Detailed Description

[Sound](#) class: [Sound](#) is a class that represents the audio properties of a Component.

The [Sound](#) class manages the audio representation of a Component using SFML.

4.17.2 Constructor & Destructor Documentation

4.17.2.1 [Sound\(\)](#) [1/2]

```
Sound::Sound ( ) [default]
```

Default [Sound](#) constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.17.2.2 [Sound\(\)](#) [2/2]

```
Sound::Sound (
    const sf::SoundBuffer & buffer ) [explicit]
```

[Sound](#) constructor with an existing sound buffer. Automatically set the sound.

Parameters

<i>buffer</i>	SFML SoundBuffer for audio.
---------------	-----------------------------

Returns

void

4.17.2.3 [~Sound\(\)](#)

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

[Sound](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.17.3 Member Function Documentation

4.17.3.1 `getSound()`

```
const sf::Sound & Sound::getSound ( ) const
```

[`getSound\(\)`](#): Get the current sound.

Parameters

<i>void</i>	
-------------	--

Returns

sf::Sound: SFML [Sound](#) for audio.

4.17.3.2 `getSoundBuffer()`

```
const sf::SoundBuffer & Sound::getSoundBuffer ( ) const
```

[`getSoundBuffer\(\)`](#): Get the current sound buffer.

Parameters

<i>void</i>	
-------------	--

Returns

sf::SoundBuffer: SFML SoundBuffer for audio.

4.17.3.3 `getVolume()`

```
float Sound::getVolume ( ) const
```

`getVolume()`: Get the current volume level.

Parameters

<i>void</i>	
-------------	--

Returns

float: Volume level (0 to 100).

4.17.3.4 isPlaying()

```
bool Sound::isPlaying ( ) const
```

[isPlaying\(\)](#): Check if the audio is currently playing.

Parameters

<i>void</i>	
-------------	--

Returns

bool: True if the audio is playing, false otherwise.

4.17.3.5 loadSoundBuffer()

```
bool Sound::loadSoundBuffer (
    const std::string & filePath )
```

[loadSoundBuffer\(\)](#): Load the sound buffer from a file. Automatically set the component sound. /\ Only supports .wav, .ogg and FLAC files.

Parameters

<i>filePath</i>	Path to the audio file.
-----------------	-------------------------

Returns

bool: True if the sound buffer has been loaded, false otherwise.

4.17.3.6 pause()

```
void Sound::pause ( )
```

[pause\(\)](#): Pause the audio.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.17.3.7 play()

```
void Sound::play ( )
```

[play\(\)](#): Play the audio.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.17.3.8 setLoop()

```
void Sound::setLoop (
    bool loop )
```

[setLoop\(\)](#): Set whether the audio should loop or not.

Parameters

<i>loop</i>	True to enable looping, false to disable.
-------------	---

Returns

void

4.17.3.9 setSound()

```
bool Sound::setSound (
    const sf::Sound & sound )
```

[setSound\(\)](#): Set the sound with an existing one. Automatically set the component sound buffer.

Parameters

<i>sound</i>	SFML Sound for audio.
--------------	---------------------------------------

Returns

bool: True if the sound has been set, false otherwise.

4.17.3.10 setSoundBuffer()

```
bool Sound::setSoundBuffer (
    const sf::SoundBuffer & buffer )
```

[setSoundBuffer\(\)](#): Set the sound buffer with an existing one. Automatically set the component sound.

Parameters

<i>buffer</i>	SFML SoundBuffer for audio.
---------------	-----------------------------

Returns

bool: True if the sound buffer has been set, false otherwise.

4.17.3.11 setVolume()

```
void Sound::setVolume (
    float volume )
```

[setVolume\(\)](#): Set the volume of the audio.

Parameters

<i>volume</i>	Volume level (0 to 100).
---------------	--------------------------

Returns

void

4.17.3.12 stop()

```
void Sound::stop ( )
```

[stop\(\)](#): Stop the audio.

Parameters

<i>void</i>	
-------------	--

Returns

void

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

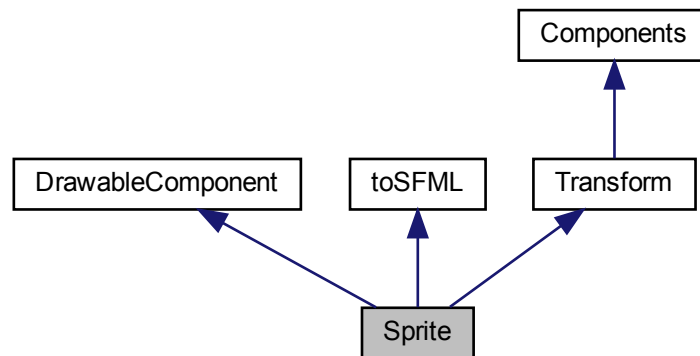
- src/Components/all_components/include/Sound.h
- src/Components/all_components/Sound.cpp

4.18 Sprite Class Reference

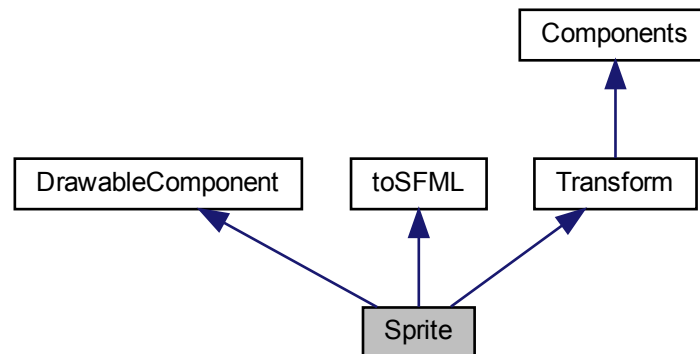
[Sprite](#) class: [Sprite](#) is a class that represents the rendering properties of a Component.

```
#include <Sprite.h>
```

Inheritance diagram for Sprite:



Collaboration diagram for Sprite:



Public Member Functions

- [Sprite](#) ()
< Doing the animation.
- [Sprite](#) (const std::string &texturePath)
Sprite constructor with an existing texture path.
- [~Sprite](#) () override=default
Sprite destructor.
- [Transform](#) * **getTransform** () const
- void **setTransform** ([Transform](#) &newTransform)
- bool **initSprite** () const
init(): Initialize the [Sprite](#).
- int **getBit** () const
getBit(): Get the bit of the [Sprite](#).
- void **draw** (sf::RenderWindow &>window) const override
draw(): Draw the [Sprite](#).
- void **update** (sf::Time deltaTime) override
- void **createSprite** (const std::string &texturePath)
createSprite(): Create the SFML [Sprite](#) with a texture path for rendering.
- void **createSprite** (const sf::Texture &existingTexture)
createSprite(): Create the SFML [Sprite](#) with an existing texture for rendering.
- void **createSprite** ()
createSprite(): Create the SFML [Sprite](#) with the component's texture for rendering.
- sf::Sprite **getSprite** () const
getSprite(): Get the SFML [Sprite](#) for rendering.
- sf::Texture **getTexture** () const
getTexture(): Get the SFML Texture for the sprite.
- bool **isTextureLoaded** () const
isTextureLoaded(): Check if the texture is loaded.
- void **setSprite** (const sf::Sprite &sprite)
setSprite(): Set the SFML [Sprite](#) with an existing one for rendering.

- void `setSprite` (std::map< std::string, std::shared_ptr< sf::Texture >> mapTexture, std::string nameTexture, bool animate=false, std::vector< `Rect`< int >> newFrames=std::vector< `Rect`< int >>(), int durationOfFrame=100)
setSprite(): Set the SFML `Sprite` with a map of string and textures, a texture name and a map of string and vector of floats.
- void `setTransformSprite` (`Vector2`< float > newPosition, float newRotation, `Vector2`< float > newScale)
setTransformSprite(): Set the sprite transform with new value and set the value on the `Transform` component.
- void `setTransformSprite` ()
setTransformSprite(): Set the transform of the sprite based on the `Transform` component value.
- void `setPosition` (`Vector2`< float > newPosition)
setPosition(): Set the position of the sprite with new value.
- void `setPosition` ()
setPosition(): Set the position of the sprite based on the `Transform` component value.
- void `setRotation` (float newRotation)
setRotation(): Set the rotation of the sprite with new value.
- void `setRotation` ()
setRotation(): Set the rotation of the sprite based on the `Transform` component value.
- void `setScale` (`Vector2`< float > newScale)
setScale(): Set the the scale of the sprite with new value.
- void `setScale` ()
setScale(): Set the scale of the sprite based on the `Transform` component value.
- void `setDeferredSprite` (std::function< void()> setter)
setDeferredSprite(): Set the deferred sprite.
- void `applyDeferredSprite` ()
applyDeferredSprite(): Apply the deferred sprite.
- void `setTexture` (const sf::Texture &existingTexture)
setTexture(): Set the texture with an existing one for the sprite.
- `Rect`< float > `getBounds` () const

4.18.1 Detailed Description

`Sprite` class: `Sprite` is a class that represents the rendering properties of a Component.

The `Sprite` class manages the graphical representation of a Component using SFML.

4.18.2 Constructor & Destructor Documentation

4.18.2.1 `Sprite()` [1/2]

```
Sprite::Sprite ( ) [inline]
```

< Doing the animation.

Default `Sprite` constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.2.2 Sprite() [2/2]

```
Sprite::Sprite (
    const std::string & texturePath ) [inline]
```

[Sprite](#) constructor with an existing texture path.

Parameters

<i>texturePath</i>	Path to the texture file for the sprite.
--------------------	--

Returns

void

4.18.2.3 ~Sprite()

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

[Sprite](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.3 Member Function Documentation

4.18.3.1 `applyDeferredSprite()`

```
void Sprite::applyDeferredSprite ( )
```

[`applyDeferredSprite\(\)`](#): Apply the deferred sprite.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.3.2 `createSprite()` [1/3]

```
void Sprite::createSprite ( )
```

[`createSprite\(\)`](#): Create the SFML [Sprite](#) with the component's texture for rendering.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.3.3 `createSprite()` [2/3]

```
void Sprite::createSprite (
    const sf::Texture & existingTexture )
```

[`createSprite\(\)`](#): Create the SFML [Sprite](#) with an existing texture for rendering.

Parameters

<i>existingTexture</i>	SFML Texture for the sprite
------------------------	-----------------------------

Returns

void

4.18.3.4 createSprite() [3/3]

```
void Sprite::createSprite (
    const std::string & texturePath )
```

[createSprite\(\)](#): Create the SFML [Sprite](#) with a texture path for rendering.

Parameters

<i>texturePath</i>	Path to the texture file for the sprite.
--------------------	--

Returns

void

4.18.3.5 draw()

```
void Sprite::draw (
    sf::RenderWindow & window ) const [override], [virtual]
```

[draw\(\)](#): Draw the [Sprite](#).

Parameters

<i>window</i>	SFML RenderWindow where the Sprite will be drawn.
---------------	---

Returns

void

Implements [DrawableComponent](#).

4.18.3.6 getBit()

```
int Sprite::getBit ( ) const [inline]
```

[getBit\(\)](#): Get the bit of the [Sprite](#).

Parameters

<i>void</i>	
-------------	--

Returns

int: The bit of the [Sprite](#).

4.18.3.7 getSprite()

```
sf::Sprite Sprite::getSprite ( ) const
```

[getSprite\(\)](#): Get the SFML [Sprite](#) for rendering.

Parameters

<i>void</i>	
-------------	--

Returns

sf::Sprite: SFML [Sprite](#) for rendering

4.18.3.8 getTexture()

```
sf::Texture Sprite::getTexture ( ) const
```

[getTexture\(\)](#): Get the SFML Texture for the sprite.

Parameters

<i>void</i>	
-------------	--

Returns

sf::Texture: SFML Texture for the sprite

4.18.3.9 initSprite()

```
bool Sprite::initSprite ( ) const [inline]
```

[init\(\)](#): Initialize the [Sprite](#).

Parameters

<i>void</i>	
-------------	--

Returns

bool: True if the [Sprite](#) is initialized, false otherwise.

4.18.3.10 isTextureLoaded()

```
bool Sprite::isTextureLoaded ( ) const [inline]
```

[isTextureLoaded\(\)](#): Check if the texture is loaded.

Parameters

<i>void</i>	
-------------	--

Returns

bool: True if the texture is loaded, false otherwise.

4.18.3.11 setDeferredSprite()

```
void Sprite::setDeferredSprite (
    std::function< void()> setter )
```

[setDeferredSprite\(\)](#): Set the deferred sprite.

Parameters

<i>setter</i>	Function that will set the sprite.
---------------	------------------------------------

Returns

void

4.18.3.12 setPosition() [1/2]

```
void Sprite::setPosition ( )
```

[setPosition\(\)](#): Set the position of the sprite based on the [Transform](#) component value.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.3.13 setPosition() [2/2]

```
void Sprite::setPosition (
    Vector2< float > newPosition )
```

[setPosition\(\)](#): Set the position of the sprite with new value.

Parameters

<i>newPosition</i>	The new Vector2<float> position.
--------------------	--

Returns

void

4.18.3.14 setRotation() [1/2]

```
void Sprite::setRotation ( )
```

[setRotation\(\)](#): Set the rotation of the sprite based on the [Transform](#) component value.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.3.15 setRotation() [2/2]

```
void Sprite::setRotation (
    float newRotation )
```

[setRotation\(\)](#): Set the rotation of the sprite with new value.

Parameters

<i>newRotation</i>	The new float rotation.
--------------------	-------------------------

Returns

void

4.18.3.16 setScale() [1/2]

```
void Sprite::setScale ( )
```

[setScale\(\)](#): Set the scale of the sprite based on the [Transform](#) component value.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.3.17 setScale() [2/2]

```
void Sprite::setScale (
    Vector2< float > newScale )
```

[setScale\(\)](#): Set the the scale of the sprite with new value.

Parameters

<i>newScale</i>	The new Vector2 <float> scale.
-----------------	--

Returns

void

4.18.3.18 setSprite() [1/2]

```
void Sprite::setSprite (
    const sf::Sprite & sprite )
```

[setSprite\(\)](#): Set the SFML [Sprite](#) with an existing one for rendering.

Parameters

<i>sprite</i>	SFML Sprite for rendering
---------------	---

Returns

void

4.18.3.19 setSprite() [2/2]

```
void Sprite::setSprite (
    std::map< std::string, std::shared_ptr< sf::Texture >> mapTexture,
    std::string nameTexture,
    bool animate = false,
    std::vector< Rect< int >> newFrames = std::vector<Rect<int>>(),
    int durationOfFrame = 100 )
```

[setSprite\(\)](#): Set the SFML [Sprite](#) with a map of string and textures, a texture name and a map of string and vector of floats.

Parameters

<i>mapTexture</i>	Map of string and textures.
<i>nameTexture</i>	Name of the texture.
<i>mapTransform</i>	Map of string and vector of floats.

Returns

void

4.18.3.20 setTexture()

```
void Sprite::setTexture (
    const sf::Texture & existingTexture )
```

[setTexture\(\)](#): Set the texture with an existing one for the sprite.

Parameters

<i>existingTexture</i>	SFML Texture for the sprite
------------------------	-----------------------------

Returns

void

4.18.3.21 setTransformSprite() [1/2]

```
void Sprite::setTransformSprite ( )
```

[setTransformSprite\(\)](#): Set the transform of the sprite based on the [Transform](#) component value.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.18.3.22 setTransformSprite() [2/2]

```
void Sprite::setTransformSprite (
    Vector2< float > newPosition,
    float newRotation,
    Vector2< float > newScale )
```

[setTransformSprite\(\)](#): Set the sprite transform with new value and set the value on the [Transform](#) component.

Parameters

<i>newPosition</i>	The new Vector2 <float> position.
<i>newRotation</i>	The new float rotation.
<i>newScale</i>	The new Vector2 <float> scale.

Returns

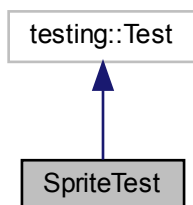
void

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

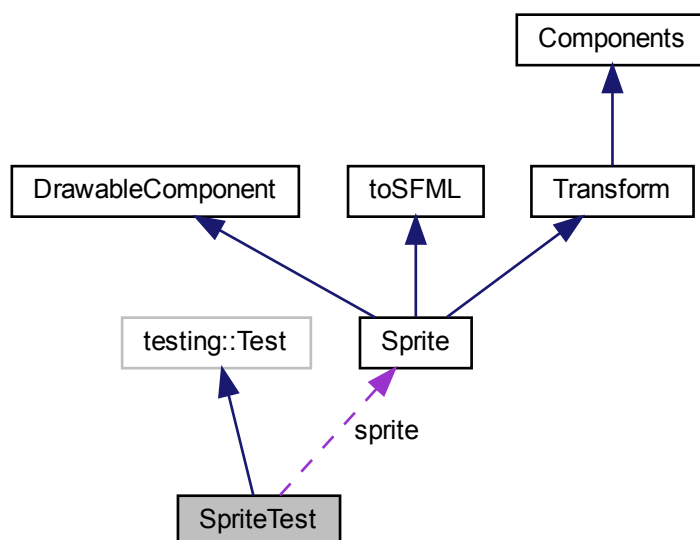
- src/Components/all_components/include/Sprite.h
- src/Components/all_components/Sprite.cpp

4.19 SpriteTest Class Reference

Inheritance diagram for SpriteTest:



Collaboration diagram for SpriteTest:



Protected Attributes

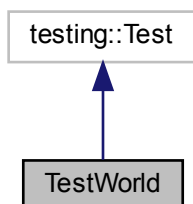
- `Sprite sprite`

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

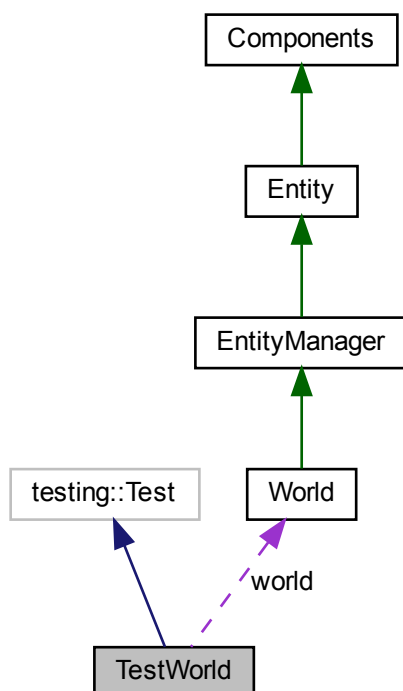
- `tests/Components/all_components/TestSprite.cpp`

4.20 TestWorld Class Reference

Inheritance diagram for TestWorld:



Collaboration diagram for TestWorld:



Protected Attributes

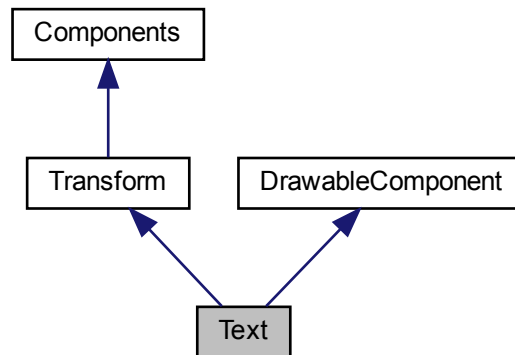
- [World](#) world

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

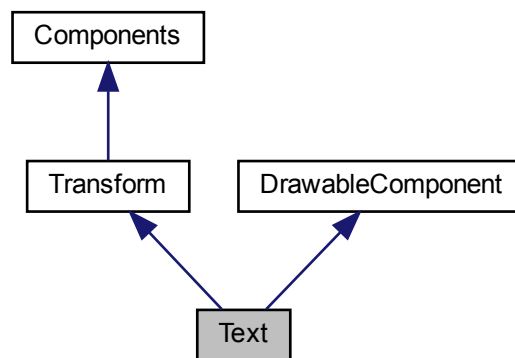
- tests/World/TestWorld.cpp

4.21 Text Class Reference

Inheritance diagram for Text:



Collaboration diagram for Text:



Public Member Functions

- int **getBit** () const
- void **draw** (sf::RenderWindow &window) const override
draw(): Draw the component
- void **update** (sf::Time deltaTime) override
- void **setText** (std::map< std::string, std::shared_ptr< sf::Font >> mapFont, std::string nameFont, std::string newStringText, int sizeText, Color color)

- void **setText** (std::map< std::string, std::shared_ptr< sf::Font >> mapFont, std::string nameFont, std::string newStringText, int sizeText, [Color](#) newColorFill, [Color](#) newColorOutline)
- void **setFont** (std::map< std::string, std::shared_ptr< sf::Font >> mapFont, std::string nameFont)
- void **setString** (std::string nameText)
- void **setSize** (int sizeText)
- void **setOutlineColor** ([Color](#) color)
- void **setFillColor** ([Color](#) color)
- void **setPosition** ([Vector2](#)< float > position)
- void **setRotation** (float rotation)
- void **setScale** ([Vector2](#)< float > scale)
- sf::Text **getText** () const
- sf::Font **getFont** () const
- std::string **getStringText** () const
- int **getSize** () const
- [Color](#) **getColorFill** () const
- [Color](#) **getColorOutline** () const
- [Transform](#) * **getTransform** () const
- void **setTransform** ([Transform](#) &newTransform)
- void **setDeferredText** (std::function< void()> setter)
- void **applyDeferredText** ()

4.21.1 Member Function Documentation

4.21.1.1 draw()

```
void Text::draw (
    sf::RenderWindow & window ) const [override], [virtual]
```

[draw\(\)](#): Draw the component

Parameters

<i>window</i>	Window to draw the component on
---------------	---------------------------------

Returns

void

Implements [DrawableComponent](#).

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

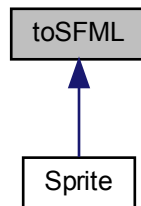
- src/Components/all_components/include/Text.h
- src/Components/all_components/Text.cpp

4.22 toSFML Class Reference

`toSFML` class: `toSFML` is a class that convert some class into SFML class.

```
#include <toSFML.h>
```

Inheritance diagram for `toSFML`:



Public Member Functions

- `toSFML()`=default
Default `toSFML` constructor.
- `~toSFML()`=default
`toSFML` destructor.
- `template<typename T>`
`sf::Rect< T > toSFMLRect (Rect< T > rect)`
`toSFMLRect()`: Convert your `Rect<T>` into `sf::Rect<T>`.

4.22.1 Detailed Description

`toSFML` class: `toSFML` is a class that convert some class into SFML class.

Convert some class in SFML class.

4.22.2 Constructor & Destructor Documentation

4.22.2.1 toSFML()

```
toSFML::toSFML ( ) [default]
```

Default `toSFML` constructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.22.2.2 ~toSFML()

```
toSFML::~~toSFML ( ) [default]
```

[toSFML](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.22.3 Member Function Documentation**4.22.3.1 toSFMLRect()**

```
template<typename T >
template sf::Rect< float > toSFML::toSFMLRect (
    Rect< T > rect )
```

[toSFMLRect\(\)](#): Convert your Rect<T> into sf::Rect<T>.

Template Parameters

<i>T</i>	Type of the rect.
----------	-------------------

Parameters

<i>rect</i>	The rect you want to convert.
-------------	-------------------------------

Returns

sf::Rect<T>: SFML rect.

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

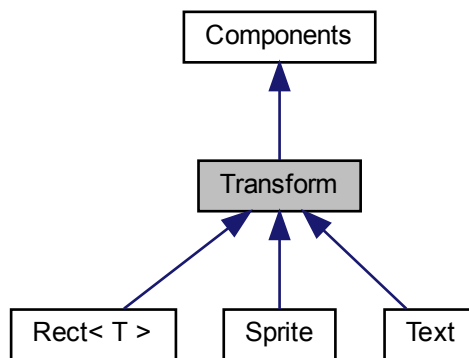
- src/toSFML/include/toSFML.h
- src/toSFML/toSFML.cpp

4.23 Transform Class Reference

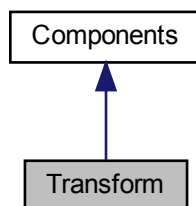
Transform class: [Transform](#) is a class that represents the transform of a Component.

```
#include <Transform.h>
```

Inheritance diagram for Transform:



Collaboration diagram for Transform:



Public Member Functions

- [Transform](#) ()
Default [Transform](#) constructor.
- bool [init](#) () const
[init\(\)](#): Initialize the component
- [~Transform](#) () override=default
[Transform](#) destructor.
- void **update** (sf::Time deltaTime) override
- int [getBit](#) () const
[getBit\(\)](#): Get the bitmask of the component
- [Vector2](#)< float > [getPosition](#) () const
[getPositionVector\(\)](#): Get the position vector of the component;
- float [getRotation](#) () const
[getRotationVector\(\)](#): Get the rotation vector of the component;
- [Vector2](#)< float > [getScale](#) () const
[getScaleVector\(\)](#): Get the scale vector of the component;
- TransformStruct [getTransformStruct](#) () const
[getTransformStruct\(\)](#): Get the the transform of the component;
- void [setTransform](#) ([Vector2](#)< float > newPosition, float newRotation, [Vector2](#)< float > newScale)
[setTransformStruct\(\)](#): Set the transform of the component;
- void [setTransformPosition](#) ([Vector2](#)< float > newPosition)
[setTransformPosition\(\)](#): Set the transform position of the component;
- void [setTransformRotation](#) (float newRotation)
[setTransformRotation\(\)](#): Set the transform rotation of the component;
- void [setTransformScale](#) ([Vector2](#)< float > newScale)
[setTransformScale\(\)](#): Set the transform scale of the component;

4.23.1 Detailed Description

[Transform](#) class: [Transform](#) is a class that represents the transform of a Component.

The [Transform](#) class manages the position, rotation and scale of a Component.

4.23.2 Constructor & Destructor Documentation

4.23.2.1 Transform()

```
Transform::Transform ( ) [inline]
```

Default [Transform](#) constructor.

Parameters

<code>void</code>	
-------------------	--

Returns

void

4.23.2.2 ~Transform()

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

[Transform](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.23.3 Member Function Documentation**4.23.3.1 getBit()**

```
int Transform::getBit ( ) const
```

[getBit\(\)](#): Get the bitmask of the component

Parameters

<i>void</i>	
-------------	--

Returns

int: bitmask of the component

4.23.3.2 getPosition()

```
Vector2<float> Transform::getPosition ( ) const [inline]
```

[getPositionVector\(\)](#): Get the position vector of the component;

Parameters

<i>void</i>	
-------------	--

Returns

std::vector<float>: position vector of the component

4.23.3.3 getRotation()

```
float Transform::getRotation ( ) const [inline]
```

getRotationVector(): Get the rotation vector of the component;

Parameters

<i>void</i>	
-------------	--

Returns

std::vector<float>: rotation vector of the component

4.23.3.4 getScale()

```
Vector2<float> Transform::getScale ( ) const [inline]
```

getScaleVector(): Get the scale vector of the component;

Parameters

<i>void</i>	
-------------	--

Returns

std::vector<float>: scale vector of the component

4.23.3.5 getTransformStruct()

```
TransformStruct Transform::getTransformStruct ( ) const [inline]
```

[getTransformStruct\(\)](#): Get the the transform of the component;

Parameters

<i>void</i>	
-------------	--

Returns

TransformStruct: struct of the [Transform](#).

4.23.3.6 init()

```
bool Transform::init ( ) const [inline]
```

[init\(\)](#): Initialize the component

Parameters

<i>void</i>	
-------------	--

Returns

bool: true if the component is initialized, false otherwise

4.23.3.7 setTransform()

```
void Transform::setTransform (
    Vector2< float > newPosition,
    float newRotation,
    Vector2< float > newScale )
```

setTransformStruct(): Set the transform of the component;

Parameters

<i>newPosition</i>	: the new Vector2 <float> position.
<i>newRotation</i>	: the new float rotation.
<i>newScale</i>	: the new Vector2 <float> scale.

Returns

void

4.23.3.8 setTransformPosition()

```
void Transform::setTransformPosition (
    Vector2< float > newPosition )
```

[setTransformPosition\(\)](#): Set the transform position of the component;

Parameters

<i>newPosition</i>	: the new Vector2<float> position.
--------------------	--

Returns

void

4.23.3.9 setTransformRotation()

```
void Transform::setTransformRotation (
    float newRotation )
```

[setTransformRotation\(\)](#): Set the transform rotation of the component;

Parameters

<i>newRotation</i>	: the new float rotation.
--------------------	---------------------------

Returns

void

4.23.3.10 setTransformScale()

```
void Transform::setTransformScale (
    Vector2< float > newScale )
```

[setTransformScale\(\)](#): Set the transform scale of the component;

Parameters

<i>newScale</i>	: the new Vector2<float> scale.
-----------------	---

Returns

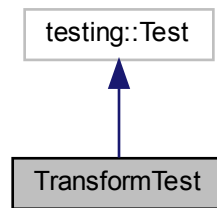
void

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

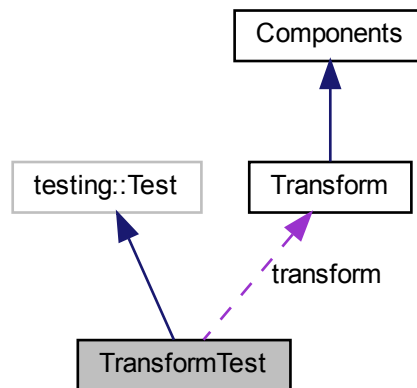
- `src/Components/all_components/include/Transform.h`
- `src/Components/all_components/Transform.cpp`

4.24 TransformTest Class Reference

Inheritance diagram for TransformTest:



Collaboration diagram for TransformTest:



Protected Attributes

- `Transform transform`

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

- `tests/Components/all_components/TestTransform.cpp`

4.25 Vector2< T > Class Template Reference

Vector class: Vector is a class that represents a vector in 2 dimensions.

```
#include <Vector2.h>
```

Public Member Functions

- [Vector2](#) (T x, T y)
< Variable for using the value of the Vector2Struct.
- [~Vector2](#) ()=default
Vector2 destructor.
- Vector2Struct [getVector2Struct](#) () const
getVector2Struct(): Get the using Vector2Struct.
- T [getX](#) () const
getX(): Get x of Vector2Struct.
- T [getY](#) () const
getY(): Get y of Vector2Struct.

4.25.1 Detailed Description

```
template<typename T>
class Vector2< T >
```

Vector class: Vector is a class that represents a vector in 2 dimensions.

This create a vector with 2 value.

4.25.2 Constructor & Destructor Documentation

4.25.2.1 Vector2()

```
template<typename T >
Vector2< T >::Vector2 (
    T x,
    T y ) [inline]
```

< Variable for using the value of the Vector2Struct.

[Vector2](#) constructor with parameters.

Template Parameters

<i>T</i>	Type of the vector.
----------	---------------------

Parameters

<i>x</i>	Position x.
<i>y</i>	Position y.

Returns

void

4.25.2.2 ~Vector2()

```
template<typename T >  
Vector2< T >::~~Vector2 ( ) [default]
```

[Vector2](#) destructor.

Template Parameters

<i>T</i>	Type of the vector.
----------	---------------------

Parameters

<i>void</i>	
-------------	--

Returns

void

4.25.3 Member Function Documentation**4.25.3.1 getVector2Struct()**

```
template<typename T >  
Vector2Struct Vector2< T >::getVector2Struct ( ) const [inline]
```

[getVector2Struct\(\)](#): Get the using Vector2Struct.

Parameters

<i>void</i>	
-------------	--

Returns

Vector2Struct

4.25.3.2 getX()

```
template<typename T >
T Vector2< T >::getX ( ) const [inline]
```

[getX\(\)](#): Get x of Vector2Struct.

Template Parameters

--	--

4.25.3.3 getY()

```
template<typename T >
T Vector2< T >::getY ( ) const [inline]
```

[getY\(\)](#): Get y of Vector2Struct.

Template Parameters

--	--

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

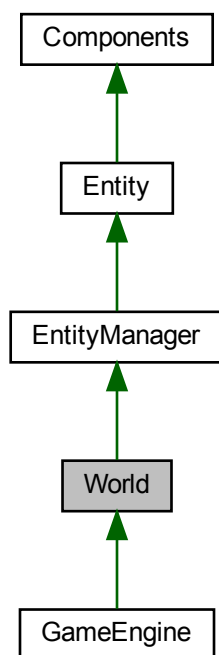
- src/Other/include/Vector2.h

4.26 World Class Reference

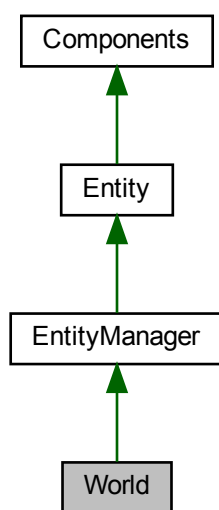
[World](#) class: [World](#) is a class that represents the world of the game.

```
#include <world.h>
```

Inheritance diagram for World:



Collaboration diagram for World:



Public Member Functions

- `World ()`=default
Default `World` constructor.
- `~World ()` override=default
`World` destructor.
- void `createEntities` (std::map< std::string, std::pair< std::unique_ptr< `EntityManager` >, std::vector< std::string >>> &mapEntityManager)
`createEntities()`: Create the entities.
- `EntityManager` & `addEntityManager` (std::string NameEntityManager)
`addEntityManager()`: Add an entity manager to the map.
- `EntityManager` & `getEntityManager` (std::string NameEntityManager)
`getEntityManager()`: Get the entity manager.
- void `setNameWorld` (std::string newName)
`setNameWorld()`: Set the name of the world.
- std::string `getNameWorld` () const
`getNameWorld()`: Get the name of the world.
- std::map< std::string, `EntityManager` * > `getEntityManagerMap` () const
`getEntityManagerMap()`: Get the map of the entity manager.
- bool `initWorld` ()
`init()`: Initialize the `World`.

Additional Inherited Members

4.26.1 Detailed Description

`World` class: `World` is a class that represents the world of the game.

The `World` class manages the world of the game.

4.26.2 Constructor & Destructor Documentation

4.26.2.1 `World()`

```
World::World ( ) [default]
```

Default `World` constructor.

Parameters

<code>void</code>	
-------------------	--

Returns

`void`

4.26.2.2 ~World()

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

[World](#) destructor.

Parameters

<i>void</i>	
-------------	--

Returns

void

4.26.3 Member Function Documentation

4.26.3.1 addEntityManager()

```
EntityManager & World::addEntityManager (
    std::string NameEntityManager )
```

[addEntityManager\(\)](#): Add an entity manager to the map.

Parameters

<i>NameEntityManager</i>	Name of the entity manager.
--------------------------	-----------------------------

Returns

[EntityManager&](#): The entity manager.

4.26.3.2 createEntities()

```
void World::createEntities (
    std::map< std::string, std::pair< std::unique_ptr< EntityManager >, std::vector<
std::string >>> & mapEntityManager )
```

[createEntities\(\)](#): Create the entities.

Parameters

<i>mapEntityManager</i>	Map of the entities manager's unique pointers.
<i>keyEntityManager</i>	Key of the entities manager.

Returns

void

4.26.3.3 getEntityManager()

```
EntityManager & World::getEntityManager (
    std::string NameEntityManager )
```

[getEntityManager\(\)](#): Get the entity manager.

Parameters

<i>NameEntityManager</i>	Name of the entity manager.
--------------------------	-----------------------------

Returns

[EntityManager&](#): The entity manager.

4.26.3.4 getEntityManagerMap()

```
std::map<std::string, EntityManager*> World::getEntityManagerMap ( ) const [inline]
```

[getEntityManagerMap\(\)](#): Get the map of the entity manager.

Parameters

<i>void</i>	
-------------	--

Returns

`std::map<std::string, EntityManager*>`: The map of the entity manager.

4.26.3.5 getNameWorld()

```
std::string World::getNameWorld ( ) const [inline]
```

[getNameWorld\(\)](#): Get the name of the world.

Parameters

<i>void</i>	
-------------	--

Returns

std::string: The name of the world.

4.26.3.6 initWorld()

```
bool World::initWorld ( ) [inline]
```

[init\(\)](#): Initialize the [World](#).

Parameters

<i>void</i>	
-------------	--

Returns

bool: True if the world is initialized, false otherwise.

4.26.3.7 setNameWorld()

```
void World::setNameWorld (
    std::string newName )
```

[setNameWorld\(\)](#): Set the name of the world.

Parameters

<i>newName</i>	New name of the world.
----------------	------------------------

Returns

void

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

- src/World/include/world.h
- src/World/world.cpp

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