R-Type - Engine

Generated by Doxygen 1.9.1

1 Engine 1
1.1 Compilation . . . 1
1.1.1 Linux . . . 1

2 Hierarchical Index 3
2.1 Class Hierarchy . . . 3

3 Class Index 5
3.1 Class List . . . 5

4 Class Documentation 7
4.1 Archetypes Class Reference . . . 7
4.2 Audio Class Reference . . . 7
4.3 Components Class Reference . . . 7
4.4 DrawableComponent Class Reference . . . 7
4.5 Entity Class Reference . . . 8
4.5.1 Detailed Description . . . 9
4.5.2 Constructor & Destructor Documentation . . . 9
4.5.2.1 Entity() [1/2] . . . 9
4.5.2.2 Entity() [2/2] . . . 9
4.5.2.3 ~Entity() . . . 10
4.5.3 Member Function Documentation . . . 10
4.5.3.1 addComponent() . . . 10
4.5.3.2 getComponent() . . . 10
4.5.3.3 getName() . . . 11
4.5.3.4 initEntity() . . . 11
4.5.3.5 setName() . . . 12
4.6 EntityManager Class Reference . . . 12
4.6.1 Constructor & Destructor Documentation . . . 12
4.6.1.1 EntityManager() . . . 12
4.6.1.2 ~EntityManager() . . . 13
4.6.2 Member Function Documentation . . . 13
4.6.2.1 addEntity() . . . 13
4.6.2.2 getEntities() . . . 14
4.6.2.3 getEntity() . . . 14
4.6.2.4 getEntityMap() . . . 14
4.7 EntityManagerTest Class Reference . . . 15
4.8 EntityTest Class Reference . . . 15
4.9 EventEngine Class Reference . . . 16
4.9.1 Detailed Description . . . 16
4.9.2 Constructor & Destructor Documentation . . . 16
4.9.2.1 EventEngine() . . . 16
4.9.2.2 ~EventEngine() . . . 17

4.9.3 Member Function Documentation . . . 17
4.9.3.1 addKeyPressed() . . . 17
4.9.3.2 getEvent() . . . 17
4.9.3.3 getKeyPressedMap() . . . 18
4.9.3.4 init() . . . 18
4.10 EventTest Class Reference . . . 19
4.11 GameEngine Class Reference . . . 19
4.11.1 Detailed Description . . . 20
4.11.2 Constructor & Destructor Documentation . . . 20
4.11.2.1 GameEngine() [1/2] . . . 20
4.11.2.2 GameEngine() [2/2] . . . 21
4.11.2.3 ~GameEngine() . . . 21
4.11.3 Member Function Documentation . . . 22
4.11.3.1 addWorld() . . . 22
4.11.3.2 eventGameEngine() . . . 22
4.11.3.3 getCurrentWorld() . . . 22
4.11.3.4 getEventEngine() . . . 23
4.11.3.5 getFilesTexture() . . . 23
4.11.3.6 getMapTexture() . . . 23
4.11.3.7 getWindow() . . . 24
4.11.3.8 getWorld() . . . 24
4.11.3.9 getWorldMap() . . . 24
4.11.3.10 initialize() . . . 25
4.11.3.11 initializeSprite() . . . 25
4.11.3.12 initializeTexture() . . . 26
4.11.3.13 initializeWorldMap() . . . 26
4.11.3.14 isWindowOpen() . . . 26
4.11.3.15 renderGameEngine() . . . 27
4.11.3.16 run() [1/2] . . . 27
4.11.3.17 run() [2/2] . . . 27
4.11.3.18 setCurrentWorld() . . . 28
4.11.3.19 setWindow() . . . 28
4.11.3.20 updateGameEngine() . . . 28
4.12 GameEngineTest Class Reference . . . 29
4.13 Sprite Class Reference . . . 29
4.13.1 Detailed Description . . . 30
4.13.2 Constructor & Destructor Documentation . . . 30
4.13.2.1 Sprite() [1/2] . . . 30
4.13.2.2 Sprite() [2/2] . . . 31
4.13.2.3 ~Sprite() . . . 31
4.13.3 Member Function Documentation . . . 31
4.13.3.1 applyDeferredSprite() . . . 32

4.13.3.2 createSprite() [1/3] . . . 32
4.13.3.3 createSprite() [2/3] . . . 32
4.13.3.4 createSprite() [3/3] . . . 33
4.13.3.5 draw() . . . 33
4.13.3.6 getBit() . . . 33
4.13.3.7 getSprite() . . . 34
4.13.3.8 getTexture() . . . 34
4.13.3.9 initSprite() . . . 34
4.13.3.10 isTextureLoaded() . . . 35
4.13.3.11 setDeferredSprite() . . . 35
4.13.3.12 setSprite() [1/2] . . . 35
4.13.3.13 setSprite() [2/2] . . . 36
4.13.3.14 setTexture() . . . 36
4.14 SpriteTest Class Reference . . . 37
4.15 TestWorld Class Reference . . . 37
4.16 Transform Class Reference . . . 37
4.16.1 Detailed Description . . . 38
4.16.2 Constructor & Destructor Documentation . . . 38
4.16.2.1 Transform() [1/2] . . . 38
4.16.2.2 Transform() [2/2] . . . 38
4.16.2.3 ∼Transform() . . . 38
4.16.3 Member Function Documentation . . . 39
4.16.3.1 getBit() . . . 39
4.16.3.2 getPositionVector() . . . 39
4.16.3.3 getRotationVector() . . . 39
4.16.3.4 getScaleVector() . . . 41
4.16.3.5 setTransform() . . . 41
4.17 TransformTest Class Reference . . . 42
4.18 World Class Reference . . . 42
4.18.1 Detailed Description . . . 43
4.18.2 Constructor & Destructor Documentation . . . 43
4.18.2.1 World() . . . 43
4.18.2.2 ∼World() . . . 43
4.18.3 Member Function Documentation . . . 43
4.18.3.1 addEntityManager() . . . 44
4.18.3.2 createEntities() . . . 44
4.18.3.3 getEntityManager() . . . 44
4.18.3.4 getEntityManagerMap() . . . 45
4.18.3.5 getNameWorld() . . . 45
4.18.3.6 initWorld() . . . 45
4.18.3.7 setNameWorld() . . . 46

Index 47

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 -BUILD_TEST=ON
make -Cbuild
```

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

Archetypes . . . 7
Audio . . . 7
Components . . . 7
  Entity . . . 8
    EntityManager . . . 12
      World . . . 42
        GameEngine . . . 19
  Sprite . . . 29
  Transform . . . 37
DrawableComponent . . . 7
  Sprite . . . 29
EventEngine . . . 16
  GameEngine . . . 19
testing::Test
  EntityManagerTest . . . 15
  EntityTest . . . 15
  EventTest . . . 19
  GameEngineTest . . . 29
  SpriteTest . . . 37
  TestWorld . . . 37
  TransformTest . . . 42

Chapter 3

Class Index

3.1 Class List

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

Archetypes . . . 7
Audio . . . 7
Components . . . 7
DrawableComponent . . . 7
Entity
    Entity class: Entity is a class that represents an entity in the game . . . 8
EntityManager . . . 12
EntityManagerTest . . . 15
EntityTest . . . 15
EventEngine
    EventEngine class: EventEngine is a class that represents the event engine of the game . . . 16
EventTest . . . 19
GameEngine
    GameEngine class: GameEngine is a class that represents the game engine . . . 19
GameEngineTest . . . 29
Sprite
    Sprite class: Sprite is a class that represents the rendering properties of a Component . . . 29
SpriteTest . . . 37
TestWorld . . . 37
Transform
    Transform class: Transform is a class that represents the transform of a Component . . . 37
TransformTest . . . 42
World
    World class: World is a class that represents the world of the game . . . 42

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 Audio Class Reference

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

- src/Components/all_components/include/Audio.h

4.3 Components Class Reference

Inheritance diagram for Components:

Public Member Functions

- virtual bool **init** ()
- virtual void **update** ()

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

- src/Components/include/Components.h

4.4 DrawableComponent Class Reference

Inheritance diagram for DrawableComponent:

Public Member Functions

- virtual void **draw** (sf::RenderWindow &window) const =0

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

- src/Components/include/DrawableComponent.h

4.5 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 setName (std::string newName)
  setName(): Set the name of the entity
- void **addDrawable** (Components *component)
- void **drawEntity** (sf::RenderWindow &window)
- 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
- std::bitset< 3 > **getComponentBitset** () const
- std::vector< DrawableComponent * > **getDrawableComponents** () const
- std::array< Components *, 3 > **getComponentArrays** () const

Additional Inherited Members

4.5.1 Detailed Description

Entity class: Entity is a class that represents an entity in the game.

The Entity class manages components associated with the entity.

4.5.2 Constructor & Destructor Documentation

4.5.2.1 Entity() [1/2]

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

Default Entity constructor.

Parameters

void	

Returns

void

4.5.2.2 Entity() [2/2]

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

Entity constructor.

Parameters

nameEntity	name of the entity
newArchetype	archetype of the entity (optional, default = new archetype)

Returns

void

4.5.2.3 ~Entity()

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

Entity destructor.

Parameters

void	

Returns

void

4.5.3 Member Function Documentation

4.5.3.1 addComponent()

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

addComponent(): Add a component to the entity

Template Parameters

T	Type of the component
TArgs	Variadic template for component constructor arguments.

Parameters

args	arguments of the component

Returns

T&: reference of the component

4.5.3.2 getComponent()

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

getComponent(): Get a component from the entity

Template Parameters

T	Type of the component

Parameters

void	

Returns

T&: reference of the component

4.5.3.3 getName()

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

genName(): Get the name of the entity

Parameters

void	

Returns

std::string: name of the entity

4.5.3.4 initEntity()

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

init(): Initialize the entity

Parameters

void	

Returns

bool: true if the entity is initialized, false otherwise

4.5.3.5 setName()

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

setName(): Set the name of the entity

Parameters

newName	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

4.6 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** ()

Additional Inherited Members

4.6.1 Constructor & Destructor Documentation

4.6.1.1 EntityManager()

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

Default EntityManager constructor.

Parameters

void	

Returns

void

4.6.1.2 ~EntityManager()

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

EntityManager destructor.

Parameters

void	

Returns

void

4.6.2 Member Function Documentation

4.6.2.1 addEntity()

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

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

Template Parameters

T	Type of the entity.
TArgs	Type of the arguments.

Parameters

args	Arguments of the entity.

4.6.2.2 getEntities()

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

getEntities(): Get the EntityManager's entities.

Parameters

void	

Returns

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

4.6.2.3 getEntity()

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

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

Template Parameters

T	Type of the entity.

Parameters

nameEntity	Name of the entity.

Returns

T&: Reference of the entity.

4.6.2.4 getEntityMap()

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

getEntityMap(): Get the EntityManager's entity map.

Parameters

void	

Returns

Entity::EntityMap: Entity map.

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

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

4.7 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

4.8 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

4.9 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.
- std::map< sf::Keyboard::Key, std::function< void()> > & getKeyPressedMap ()
  getKeyPressedMap(): Get the map of the key pressed.

4.9.1 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.

4.9.2 Constructor & Destructor Documentation

4.9.2.1 EventEngine()

`EventEngine::EventEngine ( ) [default]`

Default EventEngine constructor.

Parameters

void	

Returns

void

4.9.2.2 ~EventEngine()

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

EventEngine destructor.

Parameters

void	

Returns

void

4.9.3 Member Function Documentation

4.9.3.1 addKeyPressed()

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

addKeyPressed(): Add a key pressed to the map.

Parameters

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

Returns

void

4.9.3.2 getEvent()

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

getEvent(): Get the SFML Event.

Parameters

void	

Returns

sf::Event: The SFML Event.

4.9.3.3 getKeyPressedMap()

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

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

Parameters

void	

Returns

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

4.9.3.4 init()

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

init(): Initialize the EventEngine.

Parameters

void	

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

4.10 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

4.11 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

  < *EventEngine class which manages the events.*
- 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 > getFilesTexture (std::string pathDirectory)

  getFilesTexture(): Get all the textures 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 initializeSprite ()

  initializeSprite(): Initialize the sprites.
- void initializeTexture (std::string path)

  initializeTexture(): Initialize the textures with their 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.

Additional Inherited Members

4.11.1 Detailed Description

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

The GameEngine class manages the game engine.

4.11.2 Constructor & Destructor Documentation

4.11.2.1 GameEngine() [1/2]

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

< EventEngine class which manages the events.

Default GameEngine constructor.

Parameters

void	

Returns

void

4.11.2.2 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

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

Returns

void

4.11.2.3 ~GameEngine()

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

GameEngine destructor.

Parameters

void	

Returns

void

4.11.3 Member Function Documentation

4.11.3.1 addWorld()

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

addWorld(): Add a world to the world map.

Parameters

nameWorld	Name of the world.
world	World to add.

Returns

World&: The world.

4.11.3.2 eventGameEngine()

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

eventGameEngine(): Manage the events of the game engine.

Parameters

void	

Returns

void

4.11.3.3 getCurrentWorld()

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

getCurrentWorld(): Get GameEngine's current world.

Parameters

void	

Returns

World∗: GameEngine's current world.

4.11.3.4 getEventEngine()

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

getEventEngine(): Get the event engine.

Parameters

void	

Returns

EventEngine&: GameEngine's EventEngine.

4.11.3.5 getFilesTexture()

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

getFilesTexture(): Get all the textures files in the given directory.

Parameters

pathDirectory	Path of the directory.

Returns

std::vector<std::string>: Vector of the textures files' names.

4.11.3.6 getMapTexture()

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

getMapTexture(): Get GameEngine's map of the textures.

Parameters

void	

Returns

std::map<std::string, std::shared_ptr<sf::Texture>>: GameEngine's map of the textures.

4.11.3.7 getWindow()

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

getWindow(): Get the window.

Parameters

void	

Returns

std::variant<std::unique_ptr<sf::Window>, std::unique_ptr<sf::RenderWindow>>: The GameEngine's window

4.11.3.8 getWorld()

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

getWorld(): Get a world from the world map with its name.

Parameters

nameWorld	Name of the world.

Returns

World&: GameEngine's world.

4.11.3.9 getWorldMap()

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

getWorldMap(): Get GameEngine's map of the worlds.

Parameters

void	

Returns

std::map<std::string, World*>: GameEngine's map of the worlds.

4.11.3.10 initialize()

```
void GameEngine::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.

Parameters

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

Returns

void

4.11.3.11 initializeSprite()

```
void GameEngine::initializeSprite ( )
```

initializeSprite(): Initialize the sprites.

Parameters

void	

Returns

void

4.11.3.12 initializeTexture()

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

initializeTexture(): Initialize the textures with their path.

Parameters

path	Path of the texture.

Returns

void

4.11.3.13 initializeWorldMap()

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

initializeWorldMap(): Initialize the world map.

Parameters

mapWorld	Map of World classes' unique pointers.

Returns

void

4.11.3.14 isWindowOpen()

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

isWindowOpen(): Check if the window is open.

Parameters

void	

Returns

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

4.11.3.15 renderGameEngine()

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

renderGameEngine(): Render the game engine.

Parameters

void	

Returns

void

4.11.3.16 run() [1/2]

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

run(): Run the game engine (without parameters).

Parameters

void	

Returns

void

4.11.3.17 run() [2/2]

```
void GameEngine::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).

Parameters

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

Returns

void

4.11.3.18 setCurrentWorld()

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

setCurrentWorld(): Set GameEngine's current world.

Parameters

world	World to set.

Returns

void

4.11.3.19 setWindow()

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

setWindow(): Set the window.

Parameters

void	

Returns

void

4.11.3.20 updateGameEngine()

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

updateGameEngine(): Update the game engine.

Parameters

void	

Returns

void

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

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

4.12 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

4.13 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 ()=default

  Default Sprite constructor.
- Sprite (const std::string &texturePath)

  Sprite constructor with an existing texture path.
- ~Sprite () override=default

  Sprite destructor.
- 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 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, std::map< std::string, std::vector< float >> &mapTransform)

  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 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.

4.13.1 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.

4.13.2 Constructor & Destructor Documentation

4.13.2.1 Sprite() [1/2]

```
Sprite::Sprite ( )  [default]
```

Default Sprite constructor.

Parameters

void	

Returns

void

4.13.2.2 Sprite() [2/2]

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

Sprite constructor with an existing texture path.

Parameters

texturePath	Path to the texture file for the sprite.

Returns

void

4.13.2.3 ~Sprite()

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

Sprite destructor.

Parameters

void	

Returns

void

4.13.3 Member Function Documentation

4.13.3.1 applyDeferredSprite()

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

applyDeferredSprite(): Apply the deferred sprite.

Parameters

void	

Returns

void

4.13.3.2 createSprite() [1/3]

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

createSprite(): Create the SFML Sprite with the component's texture for rendering.

Parameters

void	

Returns

void

4.13.3.3 createSprite() [2/3]

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

createSprite(): Create the SFML Sprite with an existing texture for rendering.

Parameters

existingTexture	SFML Texture for the sprite

Returns

void

4.13.3.4 createSprite() [3/3]

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

createSprite(): Create the SFML Sprite with a texture path for rendering.

Parameters

texturePath	Path to the texture file for the sprite.

Returns

void

4.13.3.5 draw()

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

draw(): Draw the Sprite.

Parameters

window	SFML RenderWindow where the Sprite will be drawn.

Returns

void

Implements DrawableComponent.

4.13.3.6 getBit()

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

getBit(): Get the bit of the Sprite.

Parameters

void	

Returns

int: The bit of the Sprite.

4.13.3.7 getSprite()

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

getSprite(): Get the SFML Sprite for rendering.

Parameters

void	

Returns

sf::Sprite: SFML Sprite for rendering

4.13.3.8 getTexture()

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

getTexture(): Get the SFML Texture for the sprite.

Parameters

void	

Returns

sf::Texture: SFML Texture for the sprite

4.13.3.9 initSprite()

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

init(): Initialize the Sprite.

Parameters

void	

Returns

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

4.13.3.10 isTextureLoaded()

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

isTextureLoaded(): Check if the texture is loaded.

Parameters

void	

Returns

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

4.13.3.11 setDeferredSprite()

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

setDeferredSprite(): Set the deferred sprite.

Parameters

setter	Function that will set the sprite.

Returns

void

4.13.3.12 setSprite() [1/2]

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

setSprite(): Set the SFML Sprite with an existing one for rendering.

Parameters

sprite	SFML Sprite for rendering

Returns

void

4.13.3.13 setSprite() [2/2]

```
void Sprite::setSprite (
            std::map< std::string, std::shared_ptr< sf::Texture >> mapTexture,
            std::string nameTexture,
            std::map< std::string, std::vector< float >> & mapTransform )
```

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

mapTexture	Map of string and textures.
nameTexture	Name of the texture.
mapTransform	Map of string and vector of floats.

Returns

void

4.13.3.14 setTexture()

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

setTexture(): Set the texture with an existing one for the sprite.

Parameters

existingTexture	SFML Texture for the sprite

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

4.14 SpriteTest Class Reference

Inheritance diagram for SpriteTest:

4.15 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

4.16 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
  Default Transform constructor.
- bool **init** () const
- Transform (std::map< std::string, std::vector< float >> &mapTransform)
  Transform constructor.
- ~Transform () override=default
  Transform destructor.
- int getBit () const
  getBit(): Get the bitmask of the component
- std::vector< float > getPositionVector () const
  getPositionVector(): Get the position vector of the component;
- std::vector< float > getRotationVector () const
  getRotationVector(): Get the rotation vector of the component;
- std::vector< float > getScaleVector () const
  getScaleVector(): Get the scale vector of the component;
- void setTransform (const std::map< std::string, std::vector< float >> &mapTransform)
  setTransform(): Set the transformation properties of the component

4.16.1 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.

4.16.2 Constructor & Destructor Documentation

4.16.2.1 Transform() [1/2]

```
Transform::Transform ( )  [default]
```

Default Transform constructor.

Parameters

void	

Returns

void

4.16.2.2 Transform() [2/2]

```
Transform::Transform (
            std::map< std::string, std::vector< float >> & mapTransform )  [inline]
```

Transform constructor.

Parameters

mapTransform	Map containing transformation properties (std::string, std::vector<float>).

Returns

void

4.16.2.3 ~Transform()

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

Transform destructor.

Parameters

void	

Returns

void

4.16.3 Member Function Documentation

4.16.3.1 getBit()

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

getBit(): Get the bitmask of the component

Parameters

void	

Returns

int: bitmask of the component

4.16.3.2 getPositionVector()

```
std::vector< float > Transform::getPositionVector ( ) const
```

getPositionVector(): Get the position vector of the component;

Parameters

void	

Returns

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

4.16.3.3 getRotationVector()

```
std::vector< float > Transform::getRotationVector ( ) const
```

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

Parameters

void	

Returns

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

4.16.3.4 getScaleVector()

```
std::vector< float > Transform::getScaleVector ( ) const
```

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

Parameters

void	

Returns

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

4.16.3.5 setTransform()

```
void Transform::setTransform (
            const std::map< std::string, std::vector< float >> & mapTransform )
```

setTransform(): Set the transformation properties of the component

Parameters

mapTransform	Map containing transformation properties (std::string, std::vector<float>).

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

4.17 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

4.18 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
  < *Name of the world.*
- ~World () override=default
  World destructor.
- void createEntities (std::map< std::string, std::pair< std::unique_ptr< EntityManager >, std::vector< std::string >>> &mapEntityManager, std::string keyEntityManager)
  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

4.18.1 Detailed Description

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

The World class manages the world of the game.

4.18.2 Constructor & Destructor Documentation

4.18.2.1 World()

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

< Name of the world.

Default World constructor.

Parameters

void	

Returns

void

4.18.2.2 ~World()

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

World destructor.

Parameters

void	

Returns

void

4.18.3 Member Function Documentation

4.18.3.1 addEntityManager()

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

addEntityManager(): Add an entity manager to the map.

Parameters

NameEntityManager	Name of the entity manager.

Returns

EntityManager&: The entity manager.

4.18.3.2 createEntities()

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

createEntities(): Create the entities.

Parameters

mapEntityManager	Map of the entities manager's unique pointers.
keyEntityManager	Key of the entities manager.

Returns

void

4.18.3.3 getEntityManager()

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

getEntityManager(): Get the entity manager.

Parameters

NameEntityManager	Name of the entity manager.

Returns

EntityManager&: The entity manager.

4.18.3.4 getEntityManagerMap()

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

getEntityManagerMap(): Get the map of the entity manager.

Parameters

void	

Returns

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

4.18.3.5 getNameWorld()

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

getNameWorld(): Get the name of the world.

Parameters

void	

Returns

std::string: The name of the world.

4.18.3.6 initWorld()

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

init(): Initialize the World.

Parameters

void	

Returns

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

4.18.3.7 setNameWorld()

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

setNameWorld(): Set the name of the world.

Parameters

newName	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

Index

~Entity
    Entity, 9
~EntityManager
    EntityManager, 13
~EventEngine
    EventEngine, 17
~GameEngine
    GameEngine, 21
~Sprite
    Sprite, 31
~Transform
    Transform, 38
~World
    World, 43

addComponent
    Entity, 10
addEntity
    EntityManager, 13
addEntityManager
    World, 43
addKeyPressed
    EventEngine, 17
addWorld
    GameEngine, 22
applyDeferredSprite
    Sprite, 31
Archetypes, 7
Audio, 7

Components, 7
createEntities
    World, 44
createSprite
    Sprite, 32

draw
    Sprite, 33
DrawableComponent, 7

Entity, 8
    ~Entity, 9
    addComponent, 10
    Entity, 9
    getComponent, 10
    getName, 11
    initEntity, 11
    setName, 11
EntityManager, 12
    ~EntityManager, 13
    addEntity, 13
    EntityManager, 12
    getEntities, 13
    getEntity, 14
    getEntityMap, 14
EntityManagerTest, 15
EntityTest, 15
EventEngine, 16
    ~EventEngine, 17
    addKeyPressed, 17
    EventEngine, 16
    getEvent, 17
    getKeyPressedMap, 18
    init, 18
eventGameEngine
    GameEngine, 22
EventTest, 19

GameEngine, 19
    ~GameEngine, 21
    addWorld, 22
    eventGameEngine, 22
    GameEngine, 20, 21
    getCurrentWorld, 22
    getEventEngine, 23
    getFilesTexture, 23
    getMapTexture, 23
    getWindow, 24
    getWorld, 24
    getWorldMap, 24
    initialize, 25
    initializeSprite, 25
    initializeTexture, 25
    initializeWorldMap, 26
    isWindowOpen, 26
    renderGameEngine, 26
    run, 27
    setCurrentWorld, 28
    setWindow, 28
    updateGameEngine, 28
GameEngineTest, 29
getBit
    Sprite, 33
    Transform, 39
getComponent
    Entity, 10
getCurrentWorld
    GameEngine, 22
getEntities
    EntityManager, 13

getEntity
EntityManager, 14
getEntityManager
World, 44
getEntityManagerMap
World, 45
getEntityMap
EntityManager, 14
getEvent
EventEngine, 17
getEventEngine
GameEngine, 23
getFilesTexture
GameEngine, 23
getKeyPressedMap
EventEngine, 18
getMapTexture
GameEngine, 23
getName
Entity, 11
getNameWorld
World, 45
getPositionVector
Transform, 39
getRotationVector
Transform, 39
getScaleVector
Transform, 41
getSprite
Sprite, 34
getTexture
Sprite, 34
getWindow
GameEngine, 24
getWorld
GameEngine, 24
getWorldMap
GameEngine, 24

init
EventEngine, 18
initEntity
Entity, 11
initialize
GameEngine, 25
initializeSprite
GameEngine, 25
initializeTexture
GameEngine, 25
initializeWorldMap
GameEngine, 26
initSprite
Sprite, 34
initWorld
World, 45
isTextureLoaded
Sprite, 35
isWindowOpen
GameEngine, 26

renderGameEngine
GameEngine, 26
run
GameEngine, 27

setCurrentWorld
GameEngine, 28
setDeferredSprite
Sprite, 35
setName
Entity, 11
setNameWorld
World, 46
setSprite
Sprite, 35, 36
setTexture
Sprite, 36
setTransform
Transform, 41
setWindow
GameEngine, 28
Sprite, 29
~Sprite, 31
applyDeferredSprite, 31
createSprite, 32
draw, 33
getBit, 33
getSprite, 34
getTexture, 34
initSprite, 34
isTextureLoaded, 35
setDeferredSprite, 35
setSprite, 35, 36
setTexture, 36
Sprite, 30, 31
SpriteTest, 37

TestWorld, 37
Transform, 37
~Transform, 38
getBit, 39
getPositionVector, 39
getRotationVector, 39
getScaleVector, 41
setTransform, 41
Transform, 38
TransformTest, 42

updateGameEngine
GameEngine, 28

World, 42
~World, 43
addEntityManager, 43
createEntities, 44
getEntityManager, 44
getEntityManagerMap, 45
getNameWorld, 45
initWorld, 45

setNameWorld, 46
World, 43