

Hi there! This document serves as the documentation for all the code I've written for the programming challenge.

My main source of design influence was the Unity Game Engine. Similar to how Components are attached to GameObjects that are placed in a Unity Scene, in my engine Attachments are attached to Entities, which are then placed in a Level.

What follows is an automatically generated documentation file that outlines and explains the object oriented structure behind my code. The explanations for the methods and classes have been generated using the Javadoc style comments I've written throughout my code files.

Ubisoft Next - Oktay Comu

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

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

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Chapter 2

Class Index

2.1 Class List

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

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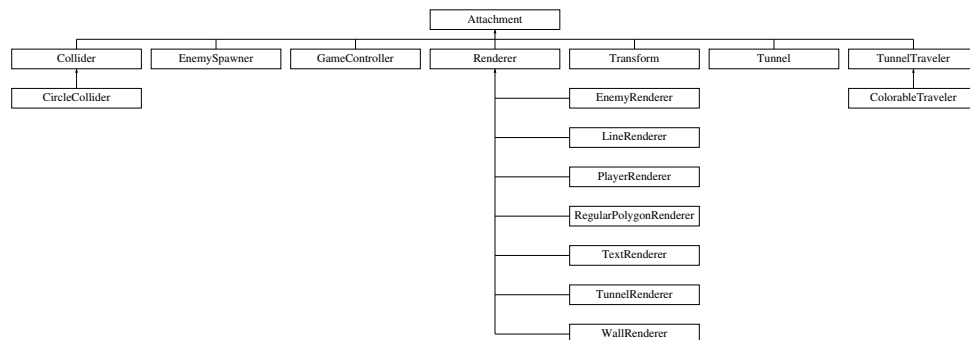
Chapter 3

Class Documentation

3.1 Attachment Class Reference

```
#include <Attachment.h>
```

Inheritance diagram for Attachment:



Public Member Functions

- [Attachment](#) ([Entity](#) *ent)
- bool [IsActive](#) ()
- void [SetActive](#) (bool val)
- [Entity](#) * [GetEntity](#) ()
- virtual void [Init](#) ()
- virtual void [Update](#) (float deltaTime)
- virtual void [OnCollision](#) ([Collider](#) *other)

3.1.1 Detailed Description

Baseclass for anything that can be attached to an [Entity](#). Attachments can be used to define behaviour, controls or rendering options for an [Entity](#).

3.1.2 Constructor & Destructor Documentation

3.1.2.1 Attachment()

```
Attachment::Attachment (
    Entity * ent )
```

Constructor for [Attachment](#). Constructs an new [Attachment](#).

Parameters

| | |
|---------------------|--|
| ent | The Entity to which this Attachment is attached. |
|---------------------|--|

3.1.3 Member Function Documentation

3.1.3.1 GetEntity()

```
Entity * Attachment::GetEntity ( )
```

Get the [Entity](#) that this [Attachment](#) is attached to.

Returns

The [Entity](#) that this [Attachment](#) is attached to.

3.1.3.2 Init()

```
void Attachment::Init ( ) [virtual]
```

Initialize this [Attachment](#).

Reimplemented in [GameController](#), [Tunnel](#), [TunnelTraveler](#), [EnemySpawner](#), [Transform](#), [Renderer](#), and [TunnelRenderer](#).

3.1.3.3 IsActive()

```
bool Attachment::IsActive ( )
```

Check if [Attachment](#) is active.

Returns

true of [Attachment](#) is active, false otherwise

3.1.3.4 OnCollision()

```
void Attachment::OnCollision (
    Collider * other ) [virtual]
```

Method to call when the [Entity](#) is colliding with another [Entity](#) that has a [Collider](#).

Parameters

| | |
|--------------|--|
| <i>other</i> | The other Collider with which the Entity collided. |
|--------------|--|

Reimplemented in [PlayerTraveler](#), and [EnemyTraveler](#).

3.1.3.5 SetActive()

```
void Attachment::SetActive (
    bool val )
```

Activate or deactivate [Attachment](#).

Parameters

| | |
|------------|---|
| <i>val</i> | Activate if true, deactivate otherwise. |
|------------|---|

3.1.3.6 Update()

```
void Attachment::Update (
    float deltaTime ) [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented in [GameController](#), [Tunnel](#), [TunnelTraveler](#), [EnemySpawner](#), [PlayerTraveler](#), [Transform](#), [Renderer](#), [ColorableTraveler](#), [EnemyTraveler](#), and [BulletTraveler](#).

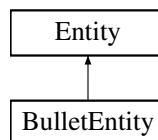
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/Attachment.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/Attachment.cpp

3.2 BulletEntity Class Reference

```
#include <BulletEntity.h>
```

Inheritance diagram for BulletEntity:



Public Member Functions

- [BulletEntity](#) ()

3.2.1 Detailed Description

Preset Bullet [Entity](#).

3.2.2 Constructor & Destructor Documentation

3.2.2.1 BulletEntity()

```
BulletEntity::BulletEntity ( )
```

Constructor for [BulletEntity](#). Constructs an new [BulletEntity](#).

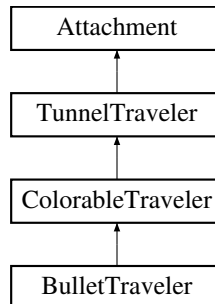
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/presets/BulletEntity.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/presets/BulletEntity.cpp

3.3 BulletTraveler Class Reference

```
#include <BulletTraveler.h>
```

Inheritance diagram for BulletTraveler:



Public Member Functions

- [BulletTraveler](#) ([Entity](#) *ent)
- virtual void [Update](#) (float deltaTime) override

Additional Inherited Members

3.3.1 Detailed Description

Traveler class representing a bullet.

3.3.2 Constructor & Destructor Documentation

3.3.2.1 BulletTraveler()

```
BulletTraveler::BulletTraveler (  
    Entity * ent ) [inline]
```

Constructor for [BulletTraveler](#). Constructs an new [BulletTraveler](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this BulletTraveler is attached. |
|------------|--|

3.3.3 Member Function Documentation

3.3.3.1 Update()

```
void BulletTraveler::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [ColorableTraveler](#).

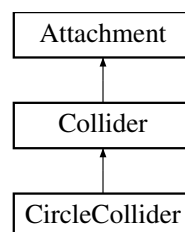
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/BulletTraveler.↔
h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/BulletTraveler.↔
cpp

3.4 CircleCollider Class Reference

```
#include <CircleCollider.h>
```

Inheritance diagram for CircleCollider:



Public Member Functions

- [CircleCollider](#) ([Entity](#) *ent)
- virtual bool [CollidesWith](#) ([Collider](#) *other) override

Public Attributes

- float [radius](#)

3.4.1 Detailed Description

[Collider](#) with circular shape that isn't affected by [Entity](#) scale.

3.4.2 Constructor & Destructor Documentation

3.4.2.1 CircleCollider()

```
CircleCollider::CircleCollider (
    Entity * ent ) [inline]
```

Constructor for [CircleCollider](#). Constructs an new [CircleCollider](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this CircleCollider is attached. |
|------------|--|

3.4.3 Member Function Documentation

3.4.3.1 CollidesWith()

```
bool CircleCollider::CollidesWith (
    Collider * other ) [override], [virtual]
```

Collision check with another [Collider](#).

Parameters

| | |
|--------------|---|
| <i>other</i> | The other Collider to check collision with. |
|--------------|---|

Implements [Collider](#).

3.4.4 Member Data Documentation

3.4.4.1 radius

```
float CircleCollider::radius
```

The radius of the circle that describes the [CircleCollider](#)

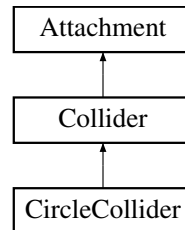
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/colliders/CircleCollider.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/colliders/CircleCollider.cpp

3.5 Collider Class Reference

```
#include <Collider.h>
```

Inheritance diagram for Collider:



Public Member Functions

- [Collider](#) ([Entity](#) *ent)
- virtual bool [CollidesWith](#) ([Collider](#) *other)=0

3.5.1 Detailed Description

The [Collider Attachment](#) is used to check collisions with other entites that have Colliders.

3.5.2 Constructor & Destructor Documentation

3.5.2.1 Collider()

```
Collider::Collider (
    Entity * ent ) [inline]
```

Constructor for [Collider](#). Constructs an new [Collider](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this Collider is attached. |
|------------|--|

3.5.3 Member Function Documentation

3.5.3.1 CollidesWith()

```
virtual bool Collider::CollidesWith (
    Collider * other ) [pure virtual]
```

Collision check with another [Collider](#).

Parameters

| | |
|--------------|---|
| <i>other</i> | The other Collider to check collision with. |
|--------------|---|

Implemented in [CircleCollider](#).

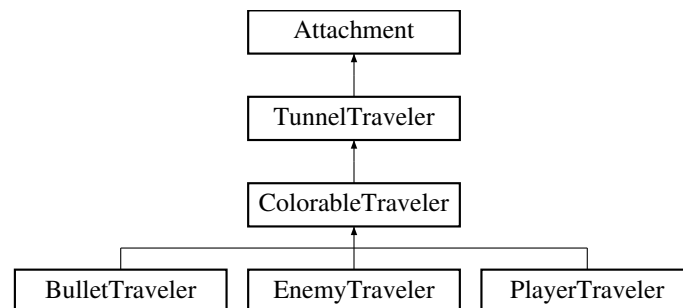
The documentation for this class was generated from the following file:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/colliders/Collider.h

3.6 ColorableTraveler Class Reference

```
#include <ColorableTraveler.h>
```

Inheritance diagram for ColorableTraveler:



Public Member Functions

- [ColorableTraveler](#) ([Entity](#) *ent)
- virtual void [Update](#) (float deltaTime) override

Public Attributes

- [ColorType::Color](#) [colorType](#)

3.6.1 Detailed Description

Traveler whose color changes according to its colorType.

3.6.2 Constructor & Destructor Documentation

3.6.2.1 ColorableTraveler()

```
ColorableTraveler::ColorableTraveler (
    Entity * ent ) [inline]
```

Constructor for [ColorableTraveler](#). Constructs an new [ColorableTraveler](#).

Parameters

| | |
|------------|---|
| <i>ent</i> | The Entity to which this ColorableTraveler is attached. |
|------------|---|

3.6.3 Member Function Documentation

3.6.3.1 Update()

```
void ColorableTraveler::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [TunnelTraveler](#).

Reimplemented in [PlayerTraveler](#), [EnemyTraveler](#), and [BulletTraveler](#).

3.6.4 Member Data Documentation

3.6.4.1 colorType

```
ColorType::Color ColorableTraveler::colorType
```

The color type of this [ColorableTraveler](#). The color type determines the color in which the [Entity](#) is rendered and which Entities it can interact with.

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

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/travelers/Colorable↔Traveler.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/travelers/Colorable↔Traveler.cpp

3.7 ColorType Class Reference

Public Types

- enum **Color** { **red**, **green**, **blue**, **white** }

Static Public Member Functions

- static Color **RandomColor** ()

Static Public Attributes

- static const int **colorCount** = 3

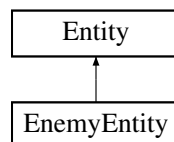
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/ColorType.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/ColorType.cpp

3.8 EnemyEntity Class Reference

```
#include <EnemyEntity.h>
```

Inheritance diagram for EnemyEntity:



Public Member Functions

- [EnemyEntity](#) ()

3.8.1 Detailed Description

Preset Enemy [Entity](#).

3.8.2 Constructor & Destructor Documentation

3.8.2.1 EnemyEntity()

```
EnemyEntity::EnemyEntity ( )
```

Constructor for [EnemyEntity](#). Constructs a new [EnemyEntity](#).

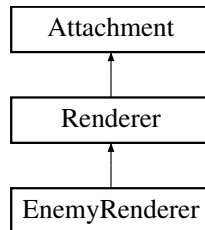
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/presets/EnemyEntity.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/presets/EnemyEntity.cpp

3.9 EnemyRenderer Class Reference

```
#include <EnemyRenderer.h>
```

Inheritance diagram for EnemyRenderer:



Public Member Functions

- [EnemyRenderer](#) ([Entity](#) *ent)
- virtual void [Draw](#) () override

Additional Inherited Members

3.9.1 Detailed Description

[Renderer](#) that is used to display enemy ships.

3.9.2 Constructor & Destructor Documentation

3.9.2.1 EnemyRenderer()

```
EnemyRenderer::EnemyRenderer (  
    Entity * ent ) [inline]
```

Constructor for [EnemyRenderer](#). Constructs an new [EnemyRenderer](#).

Parameters

| | |
|------------|---|
| <i>ent</i> | The Entity to which this EnemyRenderer is attached. |
|------------|---|

3.9.3 Member Function Documentation

3.9.3.1 Draw()

```
void EnemyRenderer::Draw ( ) [override], [virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implements [Renderer](#).

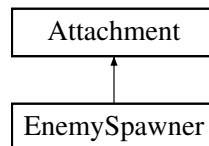
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/Enemy↵
Renderer.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/Enemy↵
Renderer.cpp

3.10 EnemySpawner Class Reference

```
#include <EnemySpawner.h>
```

Inheritance diagram for EnemySpawner:



Public Member Functions

- [EnemySpawner](#) ([Entity](#) *ent)
- void [SpawnEnemy](#) ()
- void [SpawnWall](#) ()
- virtual void [Init](#) () override
- virtual void [Update](#) (float deltaTime) override

Public Attributes

- float [enemySpawnInterval](#)
- float [wallSpawnInterval](#)

3.10.1 Detailed Description

[Attachment](#) that is used to spawn enemies and walls. Requires the [Tunnel](#) attachment.

3.10.2 Constructor & Destructor Documentation

3.10.2.1 EnemySpawner()

```
EnemySpawner::EnemySpawner (
    Entity * ent ) [inline]
```

Constructor for [EnemySpawner](#). Constructs an new [EnemySpawner](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this EnemySpawner is attached. |
|------------|--|

3.10.3 Member Function Documentation

3.10.3.1 Init()

```
void EnemySpawner::Init ( ) [override], [virtual]
```

Initialize this [Attachment](#).

Reimplemented from [Attachment](#).

3.10.3.2 SpawnEnemy()

```
void EnemySpawner::SpawnEnemy ( )
```

Spawn an enemy in a random track on the tunnel.

3.10.3.3 SpawnWall()

```
void EnemySpawner::SpawnWall ( )
```

Spawn a randomized array of walls.

3.10.3.4 Update()

```
void EnemySpawner::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [Attachment](#).

3.10.4 Member Data Documentation

3.10.4.1 enemySpawnInterval

```
float EnemySpawner::enemySpawnInterval
```

The time between two enemy spawns in milliseconds.

3.10.4.2 wallSpawnInterval

```
float EnemySpawner::wallSpawnInterval
```

The time between two wall spawns in milliseconds.

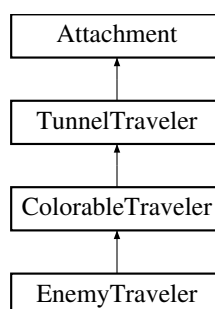
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/EnemySpawner.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/EnemySpawner.cpp

3.11 EnemyTraveler Class Reference

```
#include <EnemyTraveler.h>
```

Inheritance diagram for EnemyTraveler:



Public Member Functions

- [EnemyTraveler](#) ([Entity](#) *ent)
- void [ShootBullet](#) ()
- virtual void [Update](#) (float deltaTime) override
- virtual void [OnCollision](#) ([Collider](#) *other) override

Additional Inherited Members

3.11.1 Detailed Description

[TunnelTraveler](#) attachment that describes enemy ship behaviours.

3.11.2 Constructor & Destructor Documentation

3.11.2.1 EnemyTraveler()

```
EnemyTraveler::EnemyTraveler (
    Entity * ent ) [inline]
```

Constructor for [EnemyTraveler](#). Constructs an new [EnemyTraveler](#).

Parameters

| | |
|------------|---|
| <i>ent</i> | The Entity to which this EnemyTraveler is attached. |
|------------|---|

3.11.3 Member Function Documentation

3.11.3.1 OnCollision()

```
void EnemyTraveler::OnCollision (
    Collider * other ) [override], [virtual]
```

Method to call when the [Entity](#) is colliding with another [Entity](#) that has a [Collider](#).

Parameters

| | |
|--------------|--|
| <i>other</i> | The other Collider with which the Entity collided. |
|--------------|--|

Reimplemented from [Attachment](#).

3.11.3.2 ShootBullet()

```
void EnemyTraveler::ShootBullet ( )
```

Spawn a new random bullet.

3.11.3.3 Update()

```
void EnemyTraveler::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [ColorableTraveler](#).

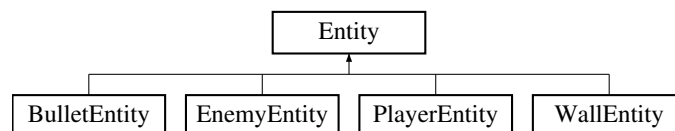
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/EnemyTraveler.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/EnemyTraveler.cpp

3.12 Entity Class Reference

```
#include <Entity.h>
```

Inheritance diagram for Entity:



Public Member Functions

- [Entity](#) ()
- [~Entity](#) ()
- bool [IsActive](#) ()
- void [SetActive](#) (bool val)
- template<class T >
T * [AddAttachment](#) ()
- template<class T >
T * [GetAttachment](#) ()
- template<class T >
[LinkedList](#)< T > * [GetAttachments](#) ()
- void [Init](#) ()
- void [Update](#) (float deltaTime)
- void [Render](#) ()
- void [OnCollision](#) ([Collider](#) *other)

3.12.1 Detailed Description

Baseclass for anything that can be placed in a [Level](#). Every [Entity](#) is a collection of Attachments, all of which define its position, its behaviour and how its going to be rendered.

3.12.2 Constructor & Destructor Documentation

3.12.2.1 Entity()

```
Entity::Entity ( )
```

Constructor for [Entity](#). Constructs an new [Entity](#).

3.12.2.2 ~Entity()

```
Entity::~~Entity ( )
```

Destructor for [Entity](#). Destructs the [Entity](#) by deleting its Attachments.

3.12.3 Member Function Documentation

3.12.3.1 AddAttachment()

```
template<class T >  
T * Entity::AddAttachment [inline]
```

Create and add new [Attachment](#) of type T to the [Entity](#).

Returns

The newly created [Attachment](#).

3.12.3.2 GetAttachment()

```
template<class T >  
T * Entity::GetAttachment [inline]
```

Method to access Attachments on this [Entity](#).

Returns

The first [Attachment](#) of type T that is found in the attachment list of the [Entity](#).

3.12.3.3 GetAttachments()

```
template<class T >
LinkedList< T > * Entity::GetAttachments [inline]
```

Method to retrieve a list of Attachments on this [Entity](#).

Returns

A [LinkedList](#) of the attachments found.

3.12.3.4 Init()

```
void Entity::Init ( )
```

Initialize this [Entity](#). Initializes this [Entity](#) and the Attachments attached to it.

3.12.3.5 IsActive()

```
bool Entity::IsActive ( )
```

Check if [Entity](#) is active.

Returns

true of [Entity](#) is active, false otherwise

3.12.3.6 OnCollision()

```
void Entity::OnCollision (
    Collider * other )
```

Trigger Collision calls on all Attachments.

Parameters

| | |
|--------------|---|
| <i>other</i> | The Collider that the Entity collided with. |
|--------------|---|

3.12.3.7 Render()

```
void Entity::Render ( )
```

Render this [Entity](#). Render this [Entity](#) according to its [Renderer](#) attachment, if it has one.

3.12.3.8 SetActive()

```
void Entity::SetActive (
    bool val )
```

Activate or deactivate [Entity](#).

Parameters

| | |
|------------|---|
| <i>val</i> | Activate if true, deactivate otherwise. |
|------------|---|

3.12.3.9 Update()

```
void Entity::Update (
    float deltaTime )
```

Update this [Entity](#). Updates every [Attachment](#) on this [Entity](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

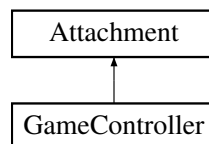
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/Entity.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/Entity.cpp

3.13 GameController Class Reference

```
#include <GameController.h>
```

Inheritance diagram for GameController:



Public Member Functions

- [GameController](#) ([Entity](#) *ent)
- void [StartGame](#) ()
- void [EndGame](#) ()
- void [SpawnPlayer](#) ()
- virtual void [Init](#) () override
- virtual void [Update](#) (float deltaTime) override

Static Public Member Functions

- static void [IncrementScore](#) ()
- static void [EndCurrentGame](#) ()

Static Public Attributes

- static [GameController](#) * [currentController](#) = NULL

3.13.1 Detailed Description

Main [Attachment](#) that controls the game. Starts and ends the game, keeps track of score, controls the [Tunnel](#) and [Spawner](#).

3.13.2 Constructor & Destructor Documentation

3.13.2.1 GameController()

```
GameController::GameController (  
    Entity * ent ) [inline]
```

Constructor for [GameController](#). Constructs an new [GameController](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this GameController is attached. |
|------------|--|

3.13.3 Member Function Documentation

3.13.3.1 EndCurrentGame()

```
void GameController::EndCurrentGame ( ) [static]
```

End the game being controlled by the [currentController](#).

3.13.3.2 EndGame()

```
void GameController::EndGame ( )
```

End the game. Ending the game displays a gameover text and prompts the user to replay by pressing SPACE.

3.13.3.3 IncrementScore()

```
void GameController::IncrementScore ( ) [static]
```

Increment the score.

3.13.3.4 Init()

```
void GameController::Init ( ) [override], [virtual]
```

Initialize this [Attachment](#).

Reimplemented from [Attachment](#).

3.13.3.5 SpawnPlayer()

```
void GameController::SpawnPlayer ( )
```

Spawns a new player controlled [Entity](#).

3.13.3.6 StartGame()

```
void GameController::StartGame ( )
```

Start the game. Starting the game resets the score and activates Attachments that drive the game.

3.13.3.7 Update()

```
void GameController::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [Attachment](#).

3.13.4 Member Data Documentation

3.13.4.1 currentController

```
GameController * GameController::currentController = NULL [static]
```

The current [GameController](#) that is controlling the game. This is the last [GameController](#) object to be instantiated.

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

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/GameController.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/GameController.cpp

3.14 Level Class Reference

```
#include <Level.h>
```

Public Member Functions

- [Level](#) ()
- [~Level](#) ()
- void [Init](#) ()
- void [Update](#) (float deltaTime)
- void [Render](#) ()
- void [AddEntity](#) ([Entity](#) *ent)
- void [RemoveEntity](#) ([Entity](#) *ent)
- void [MarkForDestruction](#) ([Entity](#) *ent)

Static Public Member Functions

- static void [SpawnEntity](#) ([Entity](#) *ent)
- static void [DestroyEntity](#) ([Entity](#) *ent)
- template<class T >
static T * [FindAttachment](#) ()
- template<class T >
static T * [FindAttachment](#) ()

Static Public Attributes

- static [Level](#) * [currentLevel](#) = NULL

3.14.1 Detailed Description

Class representing a level in the game. Each [Level](#) is simply a list of Entities that are present in that level.

3.14.2 Constructor & Destructor Documentation

3.14.2.1 Level()

```
Level::Level ( )
```

Constructor for [Level](#). Constructs an new [Level](#).

3.14.2.2 ~Level()

```
Level::~~Level ( )
```

Destructor for [Level](#). Destructs the [Level](#) by deleting the Entities in it.

3.14.3 Member Function Documentation

3.14.3.1 AddEntity()

```
void Level::AddEntity (
    Entity * ent )
```

Add an [Entity](#) to this [Level](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | Pointer to an Entity object. |
|------------|--|

3.14.3.2 DestroyEntity()

```
void Level::DestroyEntity (
    Entity * ent ) [static]
```

Destroy an [Entity](#) on the current [Level](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to destroy. |
|------------|--|

3.14.3.3 FindAttachment()

```
template<class T >
static T* Level::FindAttachment ( ) [static]
```

Look for an [Attachment](#) of type T in the current level.

3.14.3.4 Init()

```
void Level::Init ( )
```

Initialize all Entities in this [Level](#).

3.14.3.5 MarkForDestruction()

```
void Level::MarkForDestruction (
    Entity * ent )
```

Mark an [Entity](#) for destruction. Marked Entities will be destroyed after the next Update call.

3.14.3.6 RemoveEntity()

```
void Level::RemoveEntity (
    Entity * ent )
```

Remove an [Entity](#) from this [Level](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | Pointer to an Entity object. |
|------------|--|

3.14.3.7 Render()

```
void Level::Render ( )
```

Render all Entities in this [Level](#).

3.14.3.8 SpawnEntity()

```
void Level::SpawnEntity (
    Entity * ent ) [static]
```

Spawn an [Entity](#) on the current [Level](#).

Parameters

| | |
|------------|--------------------------------------|
| <i>ent</i> | The Entity to spawn. |
|------------|--------------------------------------|

3.14.3.9 Update()

```
void Level::Update (
    float deltaTime )
```

Update all Entities in this [Level](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

3.14.4 Member Data Documentation

3.14.4.1 currentLevel

```
Level * Level::currentLevel = NULL [static]
```

The current [Level](#) that is being run. This is the last [Level](#) object to be instantiated.

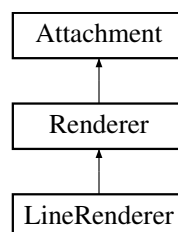
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/Level.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/Level.cpp

3.15 ModelRenderer Class Reference

```
#include <ModelRenderer.h>
```

Inheritance diagram for ModelRenderer:



Public Member Functions

- [ModelRenderer](#) ([Entity](#) *ent)
- void [Draw](#) () override

Additional Inherited Members

3.15.1 Detailed Description

[Renderer](#) that draws a line. The [LineRenderer](#) draws a line according to its list of points.

3.15.2 Constructor & Destructor Documentation

3.15.2.1 LineRenderer()

```
LineRenderer::LineRenderer (
    Entity * ent ) [inline]
```

Constructor for [LineRenderer](#). Constructs an new [LineRenderer](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this LineRenderer is attached. |
|------------|--|

3.15.3 Member Function Documentation

3.15.3.1 Draw()

```
void LineRenderer::Draw ( ) [override], [virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implements [Renderer](#).

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

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/LineRenderer.↵
h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/LineRenderer.↵
cpp

3.16 LinkedList< T > Class Template Reference

```
#include <LinkedList.h>
```

Public Member Functions

- [LinkedList](#) ()
- [~LinkedList](#) ()
- bool [IsEmpty](#) ()
- T * [Get](#) (int index)
- void [Add](#) (T *element)
- void [Remove](#) (T *element)
- int [Size](#) ()
- bool [Contains](#) (T *element)
- [LinkedListIterator](#)< T > * [Iterator](#) ()

3.16.1 Detailed Description

```
template<class T>
class LinkedList< T >
```

Generic [LinkedList](#) class. A generic [LinkedList](#) class that can store elements of type T.

3.16.2 Constructor & Destructor Documentation

3.16.2.1 [LinkedList\(\)](#)

```
template<class T >
LinkedList< T >::LinkedList
```

Constructor for [LinkedList](#). Constructs an empty [LinkedList](#).

3.16.2.2 [~LinkedList\(\)](#)

```
template<class T >
LinkedList< T >::~~LinkedList
```

Destructor for [LinkedList](#). Destructs the [LinkedList](#) by deallocating all nodes.

3.16.3 Member Function Documentation

3.16.3.1 [Add\(\)](#)

```
template<class T >
void LinkedList< T >::Add (
    T * element )
```

Push method for [LinkedList](#). Places a new element at the end of the [LinkedList](#).

Parameters

| | |
|----------------|---|
| <i>element</i> | The element to be added to the LinkedList . |
|----------------|---|

3.16.3.2 Contains()

```
template<class T >
bool LinkedList< T >::Contains (
    T * element )
```

Check if [LinkedList](#) contains an element.

Parameters

| | |
|----------------|--------------------------------|
| <i>element</i> | The element to be checked for. |
|----------------|--------------------------------|

3.16.3.3 Get()

```
template<class T >
T * LinkedList< T >::Get (
    int index )
```

Indexing method for [LinkedList](#). Index into [LinkedList](#) and return the indexed element.

Parameters

| | |
|--------------|-------------------------------------|
| <i>index</i> | The index of the element to return. |
|--------------|-------------------------------------|

Returns

Pointer to the element at given index.

3.16.3.4 IsEmpty()

```
template<class T >
bool LinkedList< T >::IsEmpty
```

Check if [LinkedList](#) is empty.

Returns

true if [LinkedList](#) is empty, false otherwise.

3.16.3.5 Iterator()

```
template<class T >
LinkedListIterator< T > * LinkedList< T >::Iterator
```

Iterator for the [LinkedList](#)

Returns

A new iterator that points to the head of the [LinkedList](#).

3.16.3.6 Remove()

```
template<class T >
void LinkedList< T >::Remove (
    T * element )
```

Remove method for [LinkedList](#). Removes the given element from the [LinkedList](#).

Parameters

| | |
|----------------|---|
| <i>element</i> | The element to be removed from the LinkedList . |
|----------------|---|

3.16.3.7 Size()

```
template<class T >
int LinkedList< T >::Size
```

Size of [LinkedList](#).

Returns

Current size of the [LinkedList](#).

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

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/LinkedList.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/LinkedList.cpp

3.17 LinkedListIterator< T > Class Template Reference

```
#include <LinkedList.h>
```

Public Member Functions

- [LinkedListIterator](#) ([node](#)< T > *start)
- void [Reset](#) ()
- T * [Next](#) ()
- bool [HasNext](#) ()

3.17.1 Detailed Description

```
template<class T>
class LinkedListIterator< T >
```

Generic class used to iterate over LinkedLists. A generic class that can be used to iterate over a [LinkedList](#) specialized to type T.

3.17.2 Constructor & Destructor Documentation

3.17.2.1 LinkedListIterator()

```
template<class T >
LinkedListIterator< T >::LinkedListIterator (
    node< T > * start )
```

Constructor for [LinkedListIterator](#). Constructs a [LinkedListIterator](#) starting at the node <start>.

Parameters

| | |
|--------------|---|
| <i>start</i> | The node at which iteration will start. |
|--------------|---|

3.17.3 Member Function Documentation

3.17.3.1 HasNext()

```
template<class T >
bool LinkedListIterator< T >::HasNext
```

Check for next element. Check and return whether or not there is any more elements left to iterate over.

Returns

true if there is an element left to iterate over, false otherwise.

3.17.3.2 Next()

```
template<class T >
T * LinkedListIterator< T >::Next
```

Get next item the the iterator. Return the next element that the iterator is pointing to.

Returns

A pointer to next element if there is a next element to be found, NULL otherwise.

3.17.3.3 Reset()

```
template<class T >
void LinkedListIterator< T >::Reset
```

Reset the iterator to the start. Reset the iterator to point to the starting node.

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

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/LinkedList.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/LinkedList.cpp

3.18 node< T > Struct Template Reference

Public Member Functions

- **node** (T *dat)

Public Attributes

- T * **data**
- **node**< T > * **next**

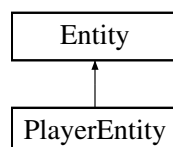
The documentation for this struct was generated from the following file:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/LinkedList.h

3.19 PlayerEntity Class Reference

```
#include <PlayerEntity.h>
```

Inheritance diagram for PlayerEntity:



Public Member Functions

- [PlayerEntity](#) ()

3.19.1 Detailed Description

Preset player entity.

3.19.2 Constructor & Destructor Documentation

3.19.2.1 PlayerEntity()

```
PlayerEntity::PlayerEntity ( )
```

Constructor for [PlayerEntity](#). Constructs an new [PlayerEntity](#).

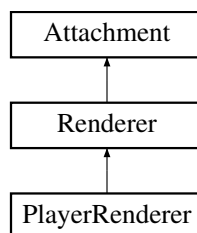
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/presets/PlayerEntity.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/presets/PlayerEntity.cpp

3.20 PlayerRenderer Class Reference

```
#include <PlayerRenderer.h>
```

Inheritance diagram for PlayerRenderer:



Public Member Functions

- [PlayerRenderer](#) ([Entity](#) *ent)
- virtual void [Draw](#) () override

Additional Inherited Members

3.20.1 Detailed Description

[Renderer](#) used to display the player.

3.20.2 Constructor & Destructor Documentation

3.20.2.1 PlayerRenderer()

```
PlayerRenderer::PlayerRenderer (
    Entity * ent ) [inline]
```

Constructor for [PlayerRenderer](#). Constructs an new [PlayerRenderer](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this PlayerRenderer is attached. |
|------------|--|

3.20.3 Member Function Documentation

3.20.3.1 Draw()

```
void PlayerRenderer::Draw ( ) [override], [virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implements [Renderer](#).

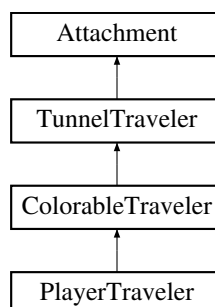
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/Player↵
Renderer.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/Player↵
Renderer.cpp

3.21 PlayerTraveler Class Reference

```
#include <PlayerTraveler.h>
```

Inheritance diagram for PlayerTraveler:



Public Member Functions

- [PlayerTraveler](#) ([Entity](#) *ent)
- bool [IsMouthOpen](#) ()
- void [MakeImmune](#) (float duration)
- void [ShootBullet](#) ()
- virtual void [Update](#) (float deltaTime) override
- virtual void [TunnelUpdate](#) (float deltaTime, [Tunnel](#) *refTunnel) override
- virtual void [OnCollision](#) ([Collider](#) *other) override

Additional Inherited Members

3.21.1 Detailed Description

[Attachment](#) for a [TunnelTraveler](#) that is player controlled using the mouse.

3.21.2 Constructor & Destructor Documentation

3.21.2.1 PlayerTraveler()

```
PlayerTraveler::PlayerTraveler (
    Entity * ent ) [inline]
```

Constructor for [PlayerTraveler](#). Constructs an new [PlayerTraveler](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this PlayerTraveler is attached. |
|------------|--|

3.21.3 Member Function Documentation

3.21.3.1 IsMouthOpen()

```
bool PlayerTraveler::IsMouthOpen ( )
```

Method to inquire upon the openness of the player's mouth.

3.21.3.2 MakeImmune()

```
void PlayerTraveler::MakeImmune (
    float duration )
```

Make the player immune for a duration.

Parameters

| | |
|-----------------|---|
| <i>duration</i> | The duration for which the player remains immune in milliseconds. |
|-----------------|---|

3.21.3.3 OnCollision()

```
void PlayerTraveler::OnCollision (
    Collider * other ) [override], [virtual]
```

Method to call when the [Entity](#) is colliding with another [Entity](#) that has a [Collider](#).

Parameters

| | |
|--------------|--|
| <i>other</i> | The other Collider with which the Entity collided. |
|--------------|--|

Reimplemented from [Attachment](#).

3.21.3.4 ShootBullet()

```
void PlayerTraveler::ShootBullet ( )
```

Spawn a new bullet that has the same colorType as the player.

3.21.3.5 TunnelUpdate()

```
void PlayerTraveler::TunnelUpdate (
    float deltaTime,
    Tunnel * refTunnel ) [override], [virtual]
```

Update method to be called by a [Tunnel](#) class. Handles updates related to the [Tunnel](#).

Parameters

| | |
|------------------|---|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
| <i>refTunnel</i> | The Tunnel that this TunnelTraveler is attached to. |

Reimplemented from [TunnelTraveler](#).

3.21.3.6 Update()

```
void PlayerTraveler::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [ColorableTraveler](#).

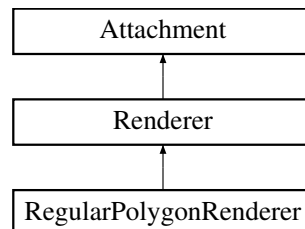
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/PlayerTraveler.↔
h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/PlayerTraveler.↔
cpp

3.22 RegularPolygonRenderer Class Reference

```
#include <RegularPolygonRenderer.h>
```

Inheritance diagram for RegularPolygonRenderer:



Public Member Functions

- [RegularPolygonRenderer](#) ([Entity](#) *ent)
- void [Draw](#) () override

Public Attributes

- float [radius](#)
- float [vertexCount](#)

3.22.1 Detailed Description

Class used to render regular polygons.

3.22.2 Constructor & Destructor Documentation

3.22.2.1 RegularPolygonRenderer()

```
RegularPolygonRenderer::RegularPolygonRenderer (
    Entity * ent ) [inline]
```

Constructor for [RegularPolygonRenderer](#). Constructs an new [RegularPolygonRenderer](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this RegularPolygonRenderer is attached. |
|------------|--|

3.22.3 Member Function Documentation

3.22.3.1 Draw()

```
void RegularPolygonRenderer::Draw ( ) [override], [virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implements [Renderer](#).

3.22.4 Member Data Documentation

3.22.4.1 radius

```
float RegularPolygonRenderer::radius
```

The polygon's radius

3.22.4.2 vertexCount

```
float RegularPolygonRenderer::vertexCount
```

The polygon's number of vertices

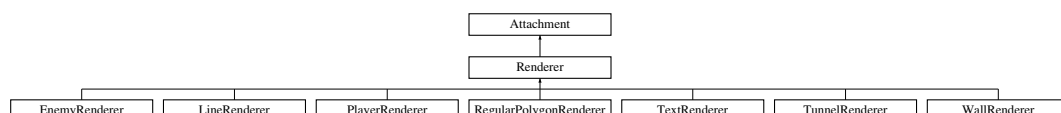
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/RegularPolygonRenderer.h↵
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/RegularPolygonRenderer.cpp↵

3.23 Renderer Class Reference

```
#include <Renderer.h>
```

Inheritance diagram for Renderer:



Public Member Functions

- [Renderer](#) ([Entity](#) *ent)
- virtual void [Draw](#) ()=0
- virtual void [Init](#) () override
- virtual void [Update](#) (float deltaTime) override

Public Attributes

- float [r](#)
- float [g](#)
- float [b](#)

3.23.1 Detailed Description

Abstract [Renderer](#) class. Declares the signature of the Draw method which will draw onto the screen according to subclass implementations.

3.23.2 Constructor & Destructor Documentation

3.23.2.1 [Renderer\(\)](#)

```
Renderer::Renderer (
    Entity * ent ) [inline]
```

Constructor for [Renderer](#). Constructs an new [Renderer](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this Renderer is attached. |
|------------|--|

3.23.3 Member Function Documentation

3.23.3.1 [Draw\(\)](#)

```
virtual void Renderer::Draw ( ) [pure virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implemented in [TextRenderer](#), [RegularPolygonRenderer](#), [LineRenderer](#), [TunnelRenderer](#), [EnemyRenderer](#), [PlayerRenderer](#), and [WallRenderer](#).

3.23.3.2 Init()

```
void Renderer::Init ( ) [override], [virtual]
```

Initialize this [Attachment](#).

Reimplemented from [Attachment](#).

Reimplemented in [TunnelRenderer](#).

3.23.3.3 Update()

```
void Renderer::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [Attachment](#).

3.23.4 Member Data Documentation

3.23.4.1 r

```
float Renderer::r
```

Floats defining the color of the drawing

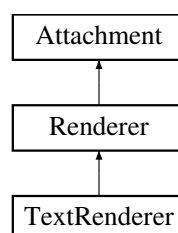
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/renderers/Renderer.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/renderers/Renderer.cpp

3.24 TextRenderer Class Reference

```
#include <TextRenderer.h>
```

Inheritance diagram for TextRenderer:



Public Member Functions

- [TextRenderer](#) ([Entity](#) *ent)
- void [Draw](#) () override

Public Attributes

- char [text](#) [64]
- [Vector2](#) [position](#)

3.24.1 Detailed Description

[Renderer](#) used to display text on to the screen.

3.24.2 Constructor & Destructor Documentation

3.24.2.1 TextRenderer()

```
TextRenderer::TextRenderer (  
    Entity * ent ) [inline]
```

Constructor for [TextRenderer](#). Constructs an new [TextRenderer](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this TextRenderer is attached. |
|------------|--|

3.24.3 Member Function Documentation

3.24.3.1 Draw()

```
void TextRenderer::Draw ( ) [override], [virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implements [Renderer](#).

3.24.4 Member Data Documentation

3.24.4.1 position

`Vector2` `TextRenderer::position`

The position where the text will be displayed.

3.24.4.2 text

`char` `TextRenderer::text[64]`

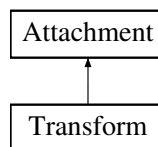
The text that will be displayed by the renderer. Max 63 characters.

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

- `F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/TextRenderer.h`
- `F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/TextRenderer.cpp`

3.25 Transform Class Reference

Inheritance diagram for Transform:



Public Member Functions

- `Transform` (`Entity` *ent)
- virtual void `Init` () override
- virtual void `Update` (float deltaTime) override

Public Attributes

- `Vector2` `position`
- `Vector2` `scale`
- float `rotation`

3.25.1 Constructor & Destructor Documentation

3.25.1.1 Transform()

```

Transform::Transform (
    Entity * ent ) [inline]
  
```

Constructor for `Transform`. Constructs an new `Transform`.

Parameters

| | |
|------------|---|
| <i>ent</i> | The Entity to which this Transform is attached. |
|------------|---|

3.25.2 Member Function Documentation

3.25.2.1 Init()

```
void Transform::Init ( ) [override], [virtual]
```

Initialize this [Attachment](#).

Reimplemented from [Attachment](#).

3.25.2.2 Update()

```
void Transform::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [Attachment](#).

3.25.3 Member Data Documentation

3.25.3.1 position

```
Vector2 Transform::position
```

Position of the [Entity](#) that the [Transform](#) is attached to.

3.25.3.2 rotation

```
float Transform::rotation
```

Rotation of the [Entity](#) that the [Transform](#) is attached to.

3.25.3.3 scale

`Vector2 Transform::scale`

Local scale factor of the [Entity](#) that the [Transform](#) is attached to.

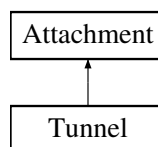
The documentation for this class was generated from the following files:

- `F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/Transform.h`
- `F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/Transform.cpp`

3.26 Tunnel Class Reference

```
#include <Tunnel.h>
```

Inheritance diagram for Tunnel:



Public Member Functions

- [Tunnel](#) ([Entity](#) *ent)
- [~Tunnel](#) ()
- void [AddTraveler](#) ([TunnelTraveler](#) *traveler)
- void [RemoveTraveler](#) ([TunnelTraveler](#) *traveler)
- void [ClearTunnel](#) ()
- virtual void [Init](#) () override
- virtual void [Update](#) (float deltaTime) override

Public Attributes

- float [innerRadius](#)
- float [outerRadius](#)
- float [spinSpeed](#)
- int [trackCount](#)

3.26.1 Detailed Description

[Attachment](#) defining the properties and behaviour of a [Tunnel](#). The tunnel keeps track of and updates the Tunnel↔ Travelers that have been attached to it.

3.26.2 Constructor & Destructor Documentation

3.26.2.1 Tunnel()

```
Tunnel::Tunnel (
    Entity * ent )
```

Constructor for [Tunnel](#). Constructs an new [Tunnel](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this Tunnel is attached. |
|------------|--|

3.26.2.2 ~Tunnel()

```
Tunnel::~~Tunnel ( )
```

Destructor for [Tunnel](#). Destructs the [Tunnel](#) by deleting the [TunnelTravelers](#) in it.

3.26.3 Member Function Documentation

3.26.3.1 AddTraveler()

```
void Tunnel::AddTraveler (
    TunnelTraveler * traveler )
```

Method to add a [TunnelTraveler](#) to the [Tunnel](#).

3.26.3.2 ClearTunnel()

```
void Tunnel::ClearTunnel ( )
```

Destroys all [TunnelTravelers](#) on the [Tunnel](#).

3.26.3.3 Init()

```
void Tunnel::Init ( ) [override], [virtual]
```

Initialize this [Attachment](#).

Reimplemented from [Attachment](#).

3.26.3.4 RemoveTraveler()

```
void Tunnel::RemoveTraveler (
    TunnelTraveler * traveler )
```

Method to remove a [TunnelTraveler](#) from the [Tunnel](#).

3.26.3.5 Update()

```
void Tunnel::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [Attachment](#).

3.26.4 Member Data Documentation

3.26.4.1 innerRadius

```
float Tunnel::innerRadius
```

The tunnels's inner radius

3.26.4.2 outerRadius

```
float Tunnel::outerRadius
```

The polygon's outer radius

3.26.4.3 spinSpeed

```
float Tunnel::spinSpeed
```

The speed at which the tunnel spins in radians per second.

3.26.4.4 trackCount

```
int Tunnel::trackCount
```

The number of tracks on the tunnel

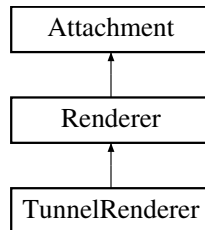
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/Tunnel.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/Tunnel.cpp

3.27 TunnelRenderer Class Reference

```
#include <TunnelRenderer.h>
```

Inheritance diagram for TunnelRenderer:



Public Member Functions

- [TunnelRenderer](#) ([Entity](#) *ent)
- void [Draw](#) () override
- virtual void [Init](#) () override

Additional Inherited Members

3.27.1 Detailed Description

[Renderer](#) used to render a "Tempest-like" tunnel

3.27.2 Constructor & Destructor Documentation

3.27.2.1 TunnelRenderer()

```
TunnelRenderer::TunnelRenderer (
    Entity * ent ) [inline]
```

Constructor for [TunnelRenderer](#). Constructs an new [TunnelRenderer](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this TunnelRenderer is attached. |
|------------|--|

3.27.3 Member Function Documentation

3.27.3.1 Draw()

```
void TunnelRenderer::Draw ( ) [override], [virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implements [Renderer](#).

3.27.3.2 Init()

```
void TunnelRenderer::Init ( ) [override], [virtual]
```

Initialize this [Attachment](#).

Reimplemented from [Renderer](#).

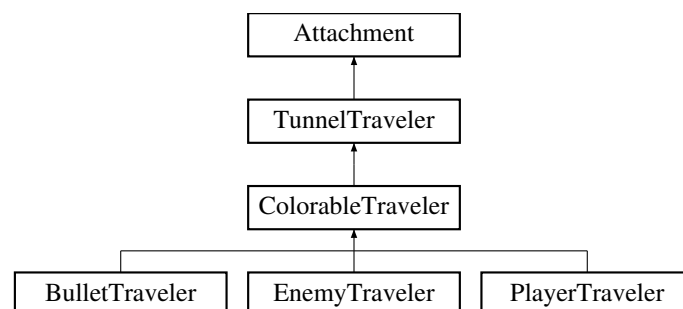
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/Tunnel↔
Renderer.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/renderers/Tunnel↔
Renderer.cpp

3.28 TunnelTraveler Class Reference

```
#include <TunnelTraveler.h>
```

Inheritance diagram for TunnelTraveler:



Public Member Functions

- [TunnelTraveler](#) ([Entity](#) *ent)
- virtual void [TunnelUpdate](#) (float deltaTime, [Tunnel](#) *refTunnel)
- virtual void [Init](#) () override
- virtual void [Update](#) (float deltaTime) override

Public Attributes

- float [radius](#)
- float [velocity](#)
- int [track](#)

3.28.1 Detailed Description

[Attachment](#) for Entities that can travel in a [Tunnel](#).

3.28.2 Constructor & Destructor Documentation

3.28.2.1 TunnelTraveler()

```
TunnelTraveler::TunnelTraveler (  
    Entity * ent ) [inline]
```

Constructor for [TunnelTraveler](#). Constructs an new [TunnelTraveler](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this TunnelTraveler is attached. |
|------------|--|

3.28.3 Member Function Documentation

3.28.3.1 Init()

```
void TunnelTraveler::Init ( ) [override], [virtual]
```

Initialize this [Attachment](#).

Reimplemented from [Attachment](#).

3.28.3.2 TunnelUpdate()

```
void TunnelTraveler::TunnelUpdate (  
    float deltaTime,  
    Tunnel * refTunnel ) [virtual]
```

Update method to be called by a [Tunnel](#) class. Handles updates related to the [Tunnel](#).

Parameters

| | |
|------------------|---|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
| <i>refTunnel</i> | The Tunnel that this TunnelTraveler is attached to. |

Reimplemented in [PlayerTraveler](#).

3.28.3.3 Update()

```
void TunnelTraveler::Update (
    float deltaTime ) [override], [virtual]
```

Update this [Attachment](#).

Parameters

| | |
|------------------|--|
| <i>deltaTime</i> | Time elapsed between the last frame and the current frame. |
|------------------|--|

Reimplemented from [Attachment](#).

Reimplemented in [PlayerTraveler](#), [ColorableTraveler](#), [EnemyTraveler](#), and [BulletTraveler](#).

3.28.4 Member Data Documentation

3.28.4.1 radius

```
float TunnelTraveler::radius
```

Float representing the radius that the traveler is placed in within the tunnel.

3.28.4.2 track

```
int TunnelTraveler::track
```

Integer representing the track number that the traveler is placed in within the tunnel.

3.28.4.3 velocity

```
float TunnelTraveler::velocity
```

Float representing the speed at which the radius is changing relative to seconds.

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

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/Tunnel↔Traveler.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/attachments/travelers/Tunnel↔Traveler.cpp

3.29 Vector2 Class Reference

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

Public Member Functions

- [Vector2](#) ()
- [Vector2](#) (float iX, float iY)

Static Public Member Functions

- static float [Distance](#) ([Vector2](#) v1, [Vector2](#) v2)

Public Attributes

- float [x](#)
- float [y](#)

Static Public Attributes

- static const [Vector2](#) [zero](#)
- static const [Vector2](#) [up](#)
- static const [Vector2](#) [down](#)
- static const [Vector2](#) [left](#)
- static const [Vector2](#) [right](#)
- static const [Vector2](#) [one](#)

3.29.1 Detailed Description

2 Dimensional vector class.

3.29.2 Constructor & Destructor Documentation

3.29.2.1 [Vector2](#)() [1/2]

```
Vector2::Vector2 ( )
```

Constructor for [Vector2](#). Instantiates a [Vector2](#) with values (0, 0).

3.29.2.2 [Vector2](#)() [2/2]

```
Vector2::Vector2 (  
    float iX,  
    float iY )
```

Constructor for [Vector2](#).

Parameters

| | |
|-----------|------------------------------------|
| <i>iX</i> | The initial x value of the Vector. |
| <i>iY</i> | The initial y value of the Vector. |

3.29.3 Member Function Documentation

3.29.3.1 Distance()

```
float Vector2::Distance (
    Vector2 v1,
    Vector2 v2 ) [static]
```

Calculate the distance between two vectors

Parameters

| | |
|-----------|---------------|
| <i>v1</i> | First vector |
| <i>v2</i> | Second vector |

3.29.4 Member Data Documentation

3.29.4.1 x

```
float Vector2::x
```

Values of the vector.

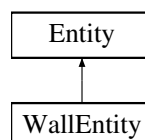
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/Vector2.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/Vector2.cpp

3.30 WallEntity Class Reference

```
#include <WallEntity.h>
```

Inheritance diagram for WallEntity:



Public Member Functions

- [WallEntity](#) ()

3.30.1 Detailed Description

Preset wall entity.

3.30.2 Constructor & Destructor Documentation

3.30.2.1 WallEntity()

```
WallEntity::WallEntity ( )
```

Constructor for [WallEntity](#). Constructs an new [WallEntity](#).

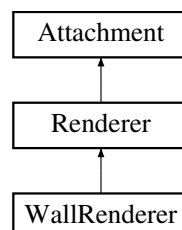
The documentation for this class was generated from the following files:

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/presets/WallEntity.h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/glowEngine/presets/WallEntity.cpp

3.31 WallRenderer Class Reference

```
#include <WallRenderer.h>
```

Inheritance diagram for WallRenderer:



Public Member Functions

- [WallRenderer](#) ([Entity](#) *ent)
- virtual void [Draw](#) () override

Additional Inherited Members

3.31.1 Detailed Description

[Renderer](#) for the wall obstacles.

3.31.2 Constructor & Destructor Documentation

3.31.2.1 WallRenderer()

```
WallRenderer::WallRenderer (
    Entity * ent ) [inline]
```

Constructor for [WallRenderer](#). Constructs an new [WallRenderer](#).

Parameters

| | |
|------------|--|
| <i>ent</i> | The Entity to which this WallRenderer is attached. |
|------------|--|

3.31.3 Member Function Documentation

3.31.3.1 Draw()

```
void WallRenderer::Draw ( ) [override], [virtual]
```

Draw to screen according to the specifications of this [Renderer](#).

Implements [Renderer](#).

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

- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/renderers/WallRenderer.↵
h
- F:/ext_workspace/UbisoftNext/UbiNext2020_0/GameTest/ glowEngine/attachments/renderers/WallRenderer.↵
cpp

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