

Fast OpenGL Library

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Chapter 1

WIP: FastOGLib - Fast OpenGL Library

Fast and scalable library, able to create OpenGL programs on osx/linux/windows machines.

1.1 Instalation of Library

Actually does not provide plug in solution. Saying that so it's needed to download all source codes of Lib and dependent libs.

```
git stash
git pull
git submodule sync && git submodule update --init
```

1.1.1 Linux/OSX

After checking out the desired version of library building is straight forward:

```
mkdir build
cd build
cmake ..
make
```

1.1.2 Windows

Unfortunately on Windows the GNU compiler with make is required (MVC option is not tested - Feel free to test it, I will try to help my best). In order to build the app it's needed to select correct compiler:

```
mkdir build
git stash
git pull
git submodule sync && git submodule update --init
cd build
cmake .. -G "MinGW Makefiles"
mingw32-make.exe -j 10 -l 10
```

1.1.3 Developing the application

Actually in order of development on this library the `main.cpp` file has to be modified. In future months I'll be adding more functionality, which can be monitored in issues, and after some time, I'll provide CMake style libraries.

1.2 Contributors

@mwawrzkow - Marcin Wawrzków - owner

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

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Chapter 3

Class Index

3.1 Class List

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

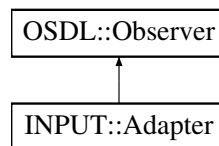
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Chapter 4

Class Documentation

4.1 INPUT::Adapter Class Reference

Inheritance diagram for INPUT::Adapter:



Public Member Functions

- void **Notify** (OSDL::Subject *)
- bool **isKeyPressed** (KeyBoardKey)
- bool **isKeyHold** (KeyBoardKey)

Private Attributes

- std::map< KeyBoardKey, bool > **keyPressed**
- std::map< KeyBoardKey, bool > **keyHold**

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

- Engine/Core/core/InputAdapter.hpp
- Engine/Core/core/InputAdapter.cpp

4.2 INPUT::AdapterHandler Class Reference

Inheritance diagram for INPUT::AdapterHandler:



Public Types

- enum **KeyActionType** { **Hold**, **Press_down**, **Press_Up** }

Public Member Functions

- AdapterHandler** ([AdapterHandler](#) &other)=delete
- void **operator=** (const [AdapterHandler](#) &)=delete
- [AdapterHandler](#) * **getInstance** ()
- KeyboardKey **getKey** ()
- KeyActionType **getAction** ()

Static Public Member Functions

- static void **onKeyUpdate** (GLFWwindow *window, int key, int status, int action, int mods)

Private Member Functions

- void **UpdateKey** (int)

Private Attributes

- KeyboardKey **key**
- KeyActionType **Action**

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

- Engine/Core/core/InputAdapter.hpp
- Engine/Core/core/InputAdapter.cpp

4.3 GPU::ArrayHandler Class Reference

Public Member Functions

- bool [areFreeBuffers](#) ()
Check if any buffers are available.
- bool [allocateBuffer](#) (int)
Allocates GPU space for x buffers.
- [GPU_Ref](#) * [getFirstAvailableBuffer](#) ()
Returns pointer to first Available Buffer.
- void [releaseBuffer](#) (int)
Releases the buffer, if buffer is not taken does nothing.

Private Member Functions

- bool [areRepetitions](#) (unsigned int[], int)
check if are repetitions in Array

Private Attributes

- `std::vector< GPU_Ref > GPUSpace`

4.3.1 Member Function Documentation

4.3.1.1 `allocateBuffer()`

```
bool GPU::ArrayHandler::allocateBuffer (
    int size )
```

Allocates GPU space for x buffers.

Parameters

| | |
|------------|------------------------|
| <i>int</i> | size amount of buffers |
|------------|------------------------|

Note

Return values

| | |
|-------------|-------------------------|
| <i>bool</i> | if buffers were created |
|-------------|-------------------------|

4.3.1.2 `areFreeBuffers()`

```
bool GPU::ArrayHandler::areFreeBuffers ( )
```

Check if any buffers are available.

Note

Return values

| | |
|-------------|----------------------|
| <i>bool</i> | are any buffers free |
|-------------|----------------------|

4.3.1.3 areRepetitions()

```
bool GPU::ArrayHandler::areRepetitions (
    unsigned int array[],
    int size ) [private]
```

check if are repetitions in Array

Note

Parameters

| | |
|--------------|---------------|
| <i>int[]</i> | array |
| <i>int</i> | size of array |

Return values

| | |
|--------------|-----------------------------|
| <i>true</i> | If they're repetition |
| <i>false</i> | if there are no repetitions |

4.3.1.4 getFirstAvailavleBuffer()

```
GPU_Ref * GPU::ArrayHandler::getFirstAvailavleBuffer ( )
```

Returns pointer to first Available Buffer.

Note

Return values

| | |
|--------------------------------|------------------------------------------------------------|
| <i>GPU_Ref</i> | Pointer to buffer, in not buffers available return nullptr |
|--------------------------------|------------------------------------------------------------|

4.3.1.5 releaseBuffer()

```
void GPU::ArrayHandler::releaseBuffer (
    int idx )
```

Releases the buffer, if buffer is not taken does nothing.

Note

Exceptions

| | |
|------|--|
| | |
|------|--|

Return values

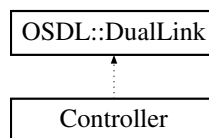
| | |
|------|--|
| None | |
|------|--|

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

- Engine/Core/core/OpenGLArrays/ArrayHandler.hpp
- Engine/Core/core/OpenGLArrays/ArrayHandler.cpp

4.4 Controller Class Reference

Inheritance diagram for Controller:



Additional Inherited Members

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

- Engine/Core/patterns/MVC/Controller.hpp

4.5 Lights::DirectLight Class Reference

Public Member Functions

- **DirectLight** (float, float, float, float, float, float, float, float, float)
- void **setPosition** (float, float)
- void **Move** (float, float)
- void **setColor** (float, float, float)
- void **setLumen** (float)
- void **setAlpha** (float)
- float **getX** ()
- float **getY** ()
- float **getLumen** ()
- float **getAlpha** ()
- float **getR** ()
- float **getG** ()
- float **getB** ()
- float **getConeAngle** ()
- float **getConeWidth** ()
- float **getConeLength** ()

Private Attributes

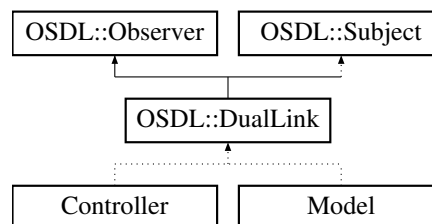
- float **x**
- float **y**
- float **lumen**
- float **alpha** = 1.0f
- float **r**
- float **g**
- float **b**
- float **coneAngle**
- float **coneWidth**
- float **coneLength**

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

- Engine/Core/core/primitives/Light/DirectLight.hpp
- Engine/Core/core/primitives/Light/DirectLight.cpp

4.6 OSDL::DualLink Class Reference

Inheritance diagram for OSDL::DualLink:



Additional Inherited Members

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

- Engine/Core/patterns/ObserverSubject/DualLink.hpp

4.7 Lights::GlobalLight Class Reference

Public Member Functions

- **GlobalLight** (float, float, float, float, float, float)
- void **setPosition** (float, float)
- void **Move** (float, float)
- void **setColor** (float, float, float)
- void **setLumen** (float)
- void **setAlpha** (float)
- float **getX** ()
- float **getY** ()
- float **getLumen** ()
- float **getAlpha** ()
- float **getR** ()
- float **getG** ()
- float **getB** ()

Private Attributes

- float **x**
- float **y**
- float **lumen**
- float **alpha** = 1.0f
- float **r**
- float **g**
- float **b**

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

- Engine/Core/core/primitives/Light/GlobalLight.hpp
- Engine/Core/core/primitives/Light/GlobalLight.cpp

4.8 GPU::GPU_Ref Class Reference

Public Member Functions

- **GPU_Ref** (int, int, int)
- const unsigned int & **getVAO** ()
- const unsigned int & **getVBO** ()
- const unsigned int & **getEBO** ()

Protected Member Functions

- void **Release** ()
- bool & **Taken** ()
- [GPU_Ref](#) * **Take** ()

Private Attributes

- unsigned int **VAO**
- unsigned int **VBO**
- unsigned int **EBO**
- bool **taken**

Friends

- class **ArrayHandler**

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

- Engine/Core/core/OpenGLArrays/ArrayHandler.hpp
- Engine/Core/core/OpenGLArrays/ArrayHandler.cpp

4.9 Lights::LightManager Class Reference

Public Member Functions

- void **addDirectLight** ([DirectLight](#) *)
- void **addSphericalLight** ([SphericalLight](#) *)
- void **addGlobalLight** ([GlobalLight](#) *)
- void **removeDirectLight** ([DirectLight](#) *)
- void **removeSphericalLight** ([SphericalLight](#) *)
- void **removeGlobalLight** ([GlobalLight](#) *)
- void **addDirectLight** (float, float, float, float, float, float, float, float, float)
- void **addSphericalLight** (float, float, float, float, float, float, float)
- void **addGlobalLight** (float, float, float, float, float, float, float)
- void **draw** ([Primitives::PrimitivesManager](#) primitives)

Private Member Functions

- void **drawDirectLights** ([Primitives::PrimitivesManager](#) primitives)
- void **drawSphericalLights** ([Primitives::PrimitivesManager](#) primitives)
- void **drawGlobalLights** ([Primitives::PrimitivesManager](#) primitives)

Private Attributes

- std::vector< [DirectLight](#) * > **directLights**
- std::vector< [SphericalLight](#) * > **sphericalLights**
- std::vector< [GlobalLight](#) * > **globalLights**

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

- Engine/Core/core/primitives/Lights.hpp
- Engine/Core/core/primitives/Lights.cpp

4.10 Primitives::Line Class Reference

Public Member Functions

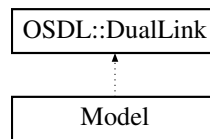
- **Line** (int x0, int y0, int x1, int y1)

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

- Engine/Core/core/primitives/Line.hpp

4.11 Model Class Reference

Inheritance diagram for Model:



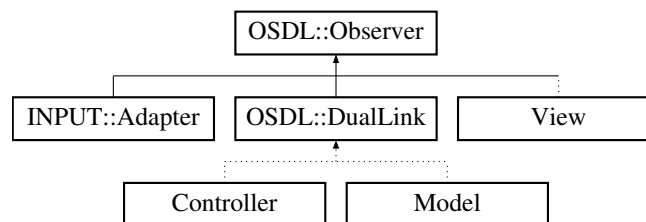
Additional Inherited Members

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

- Engine/Core/patterns/MVC/Model.hpp

4.12 OSDL::Observer Class Reference

Inheritance diagram for OSDL::Observer:



Public Member Functions

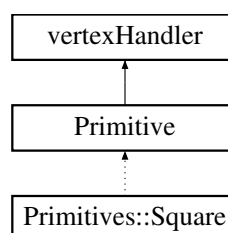
- virtual void **Notify** ([Subject](#) *)

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

- Engine/Core/patterns/ObserverSubject/Observer.hpp

4.13 Primitive Class Reference

Inheritance diagram for Primitive:



Public Member Functions

- **Primitive** (prim_type)
- virtual bool **isVisible** ()=0
- virtual bool **isNear** (float, float, float)=0

Protected Types

- enum **prim_type** { RECTANAGLE, TRIANGLE, SQUARE }

Protected Attributes

- enum Primitive::prim_type **TYPE**

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

- Engine/Core/core/base/Primitive.hpp
- Engine/Core/core/base/Primitive.cpp

4.14 Primitives::PrimitivesManager Class Reference

Public Member Functions

- void **addPrimitive** (Primitive *)
- void **removePrimitive** (Primitive *)
- void **removePrimitive** (int)
- void **removeAllPrimitives** ()
- void **DisplayAll** ()
- PrimitivesRef **getPrimitives** ()
- Primitives **getPrimitivesNear** (float, float, float)

Private Attributes

- Primitives **primitives**

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

- Engine/Core/core/primitives/PrimitivesManager.hpp
- Engine/Core/core/primitives/PrimitivesManager.cpp

4.15 Lights::SphericalLight Class Reference

Public Member Functions

- **SphericalLight** (float x, float y, float lumen, float r, float g, float b)
- void **setPosition** (float, float)
- void **Move** (float, float)
- void **setColor** (float, float, float)
- void **setLumen** (float)
- void **setAlpha** (float)
- float **getX** ()
- float **getY** ()
- float **getLumen** ()
- float **getAlpha** ()
- float **getR** ()
- float **getG** ()
- float **getB** ()

Private Attributes

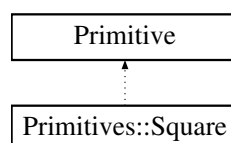
- float **x**
- float **y**
- float **lumen**
- float **alpha** = 1.0f
- float **r**
- float **g**
- float **b**

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

- Engine/Core/core/primitives/Light/SphericalLight.hpp
- Engine/Core/core/primitives/Light/SphericalLight.cpp

4.16 Primitives::Square Class Reference

Inheritance diagram for Primitives::Square:



Public Member Functions

- **Square** (float, float, float, float)
- void **setPosition** (float, float)
- void **Move** (float, float)
- void **setTexture** (std::string)
- bool **isVisible** () override
- void **Display** ()
- float **getX** ()
- float **getY** ()
- void **setAlpha** (float)
- bool **isNear** (float, float, float) override

Private Member Functions

- void **calculateMatrixes** ()

Private Attributes

- [Global::WindowProperties](#) * **window**
- float **x**
- float **y**
- float **size**
- float **alpha** = 1.0f

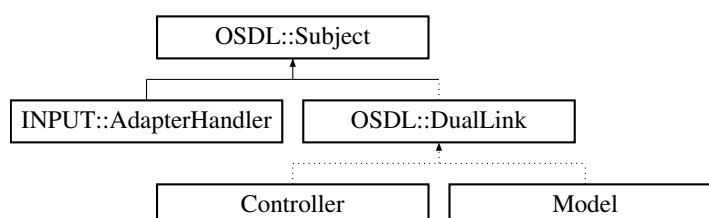
Additional Inherited Members

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

- Engine/Core/core/primitives/Square.hpp
- Engine/Core/core/primitives/Square.cpp

4.17 OSDL::Subject Class Reference

Inheritance diagram for OSDL::Subject:



Public Member Functions

- void **addObserver** ([Observer](#) &)
- void **Notify** ()
- void **NotifyObserver** ([Observer](#) &)
- void **removeObserver** ([Observer](#) &)

Private Attributes

- std::vector< [Observer](#) * > **observers**

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

- Engine/Core/patterns/ObserverSubject/Subject.hpp
- Engine/Core/patterns/ObserverSubject/Subject.cpp

4.18 AEG::Texture Class Reference

Public Member Functions

- **Texture** (std::string, unsigned int)
- const unsigned int & **getTextureID** ()

Protected Member Functions

- const std::string & **getLocation** ()
- void **setTextureLocation** (std::string)
- void **setTextureID** (unsigned int)
- void **Clear** ()

Private Attributes

- unsigned int **ID**
- std::string **location**

Friends

- class **Textures**

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

- Engine/Core/core/base/Texture.hpp
- Engine/Core/core/base/Texture.cpp

4.19 AEG::Textures Class Reference

Public Member Functions

- void **allocateTextureSpace** (unsigned int)
- const unsigned int & **getTextureIndex** (const std::string &)
- void **loadTexture** (const std::string &)
- void **unloadTexture** (const std::string &)
- void **unloadTexture** (unsigned int)

Private Member Functions

- void **LoadTexture** (int, const std::string &)

Private Attributes

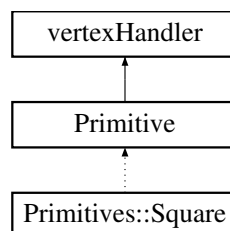
- std::vector< [Texture](#) > **TextureMap**

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

- Engine/Core/core/base/Texture.hpp
- Engine/Core/core/base/Texture.cpp

4.20 vertexHandler Class Reference

Inheritance diagram for vertexHandler:



Public Member Functions

- void **setVertexHandler** (float vertices[], int VerticesSize, unsigned int indices[], int indicesSize)
- void **setTextureData** (const std::string)
- int **getTexture** ()
- int **getVBO** ()
- int **getEBO** ()
- int **getVAO** ()

Private Attributes

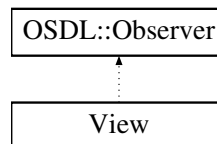
- unsigned int **VBO**
- unsigned int **VAO**
- unsigned int **EBO**
- unsigned int **texture**

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

- Engine/Core/core/base/vertexHandler.hpp
- Engine/Core/core/base/vertexHandler.cpp

4.21 View Class Reference

Inheritance diagram for View:



Additional Inherited Members

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

- Engine/Core/patterns/MVC/View.hpp

4.22 Global::WindowProperties Class Reference

Public Member Functions

- [WindowProperties](#) ([WindowProperties](#) &other)=delete
ArrayHandler for All GPU bindings.
- void **operator=** (const [WindowProperties](#) &)=delete
- [GPU::ArrayHandler](#) * **getAH** ()
- [AEG::Textures](#) * **getTextures** ()
- const int & **getWindowHeight** ()
- const int & **getWindowWidth** ()
- void **setWindowWidth** (int)
- void **setWindowHeight** (int)

Static Public Member Functions

- static [WindowProperties](#) & **getInstance** ()

Private Attributes

- int **windowHeight**
- int **windowWidth**

4.22.1 Constructor & Destructor Documentation

4.22.1.1 WindowProperties()

```
Global::WindowProperties::WindowProperties (
    WindowProperties & other ) [delete]
```

ArrayHandler for All GPU bindings.

Note

Return values

| | |
|-------------|--|
| <i>None</i> | |
|-------------|--|

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

- Engine/Core/core/WindowProperties.hpp
- Engine/Core/core/WindowProperties.cpp

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