Rubik Cobe

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1 Hierarchical Index

1.1 Class Hierarchy

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

2 Class Index

2.1 Class List

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

3 Class Documentation

3.1 RBox Class Reference

Represents cube inside Rubiks cube.

`#include <box.h>`

Classes

- struct RFace

  This structure represents one face of the cube.

Public Member Functions

- RBox (SceneManager *mgr, SceneNode *parent, double x, double y, double z, double size)
- SceneNode * getNode ()

  Getter of the SceneNode pointer.
- void addFace (const RBOX_FACE face, const String &color)
- void fillFaces ()

  Sets or faces that were not initialized to black.
- RFace & getFace (const RBOX_FACE face)

  Returns reference to the face.
- const AxisAlignedBox & getBoundingboxFromFace (const RBOX_FACE face)

  Return bounding box of some face. Useful for Raycasting.
- void pitchFaces (bool alternative=false)
- void **yawFaces** (bool alternative=false)
- void **rollFaces** (bool alternative=false)

Static Public Member Functions

- static void generateAllMaterials ()

3.1.1 Detailed Description

Represents cube inside Rubiks cube.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 RBox()

```
RBox::RBox (
        SceneManager * mgr,
        SceneNode * parent,
        double x,
        double y,
        double z,
        double size )
```

Constructs the cube (without initializing any faces)

Parameters

mgr	Pointer to SceneManager
parent	Parent of the cube
x	X coordinate of the cube
y	Y coordinate of the cube
z	Z coordinate of the cube
size	Size of the cube

3.1.3 Member Function Documentation

3.1.3.1 addFace()

```
void RBox::addFace (
        const RBOX_FACE face,
        const String & color )
```

Adds new face to the cube

Parameters

face	Location of the face (FRONT, BACK, etc)
color	Color of the face

3.1.3.2 generateAllMaterials() `void RBox::generateAllMaterials ( ) [static]`

Generates all materials required for the cube to adopt all avaible colors

3.1.3.3 pitchFaces() `void RBox::pitchFaces ( bool alternative = false )`

Box face rotation. Required in order to make data inside RBox usable

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

- box.h
- box.cpp

3.2 RBox::RFace Struct Reference

This structure represents one face of the cube.

`#include <box.h>`

Public Attributes

- MovableObject * plane
  Pointer to the "mesh".
- String color
  Color of the face.

3.2.1 Detailed Description

This structure represents one face of the cube.

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

- box.h

3.3 Rotator Class Reference

This class rotates by 90 degrees group of Nodes around some axis over time.

`#include <rotator.h>`

Public Member Functions

- Rotator (std::vector< Node * > nodes, Vector3 axis)
- Rotator (const Rotator &copy)

  Simple copy contructor.
- bool update (Real dt)

3.3.1 Detailed Description

This class rotates by 90 degrees group of Nodes around some axis over time.

3.3.2 Constructor & Destructor Documentation

3.3.2.1 Rotator() `Rotator::Rotator ( std::vector< Node * > nodes, Vector3 axis )`

Constructor that takes Nodes to be rotated along axis

Parameters

nodes	List of pointers of Nodes to be rotated
axis	Axis that nodes will be rotated along

3.3.3 Member Function Documentation

3.3.3.1 update() `bool Rotator::update ( Real dt )`

Function that should be called every frame to make rotation happen

Parameters

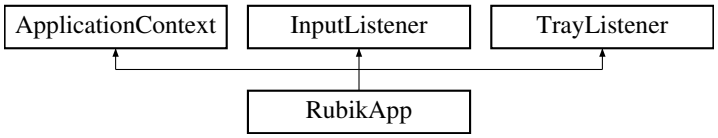
dt	Time interval

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

- rotator.h
- rotator.cpp

3.4 RubikApp Class Reference

Inheritance diagram for RubikApp:



Public Member Functions

- void **setup** () override
- bool **keyPressed** (const OgreBites::KeyboardEvent &evt) override
- bool **keyReleased** (const OgreBites::KeyboardEvent &evt) override
- bool **mouseMoved** (const OgreBites::MouseMotionEvent &evt) override
- bool **mousePressed** (const OgreBites::MouseButtonEvent &evt) override
- bool **mouseReleased** (const OgreBites::MouseButtonEvent &evt) override
- bool **mouseWheelRolled** (const OgreBites::MouseWheelEvent &evt) override
- bool **frameStarted** (const Ogre::FrameEvent &evt) override
- void **buttonHit** (OgreBites::Button ∗b) override

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

- main.cpp

3.5 RubikCube Class Reference

Public Member Functions

- RubikCube (SceneManager ∗scnMgr)
- Rotator rotate (const RubiksRotation rotation, bool alternative=false)
- std::unique_ptr< RBox > & cubeAt (const int x, const int y, const int z)

Public Attributes

- const Vector3 **Origin** = Vector3(0, 0, 0)

3.5.1 Constructor & Destructor Documentation

3.5.1.1 RubikCube() `RubikCube::RubikCube ( SceneManager * scnMgr )`

Default contructor, it takes SceneManager and creates rubik cube at the origin of the scene

3.5.2 Member Function Documentation

3.5.2.1 cubeAt()

```
std::unique_ptr< RBox > & RubikCube::cubeAt (
        const int x,
        const int y,
        const int z )
```

Gets reference to pointer that points to cube at the location (x, y, z), according to RubikData type

3.5.2.2 rotate()

```
Rotator RubikCube::rotate (
        const RubiksRotation rotation,
        bool alternative = false )
```

This function does two things. First of all it applies rotation to internal matrix of boxes. For example for L rotation, where x = 0, rotation works as follows

```
  (OZ - Z axis, OY - Y axis, Numbers are some faces):~

~

        OZ ->                <- OY~

  OY    1  2  3   ROT_L      7  4  1  OZ~

  |     4  5  6  -------->   8  5  2   |~

  v     7  8  9  (not alt)   9  6  3   v    ~

~
```

Above operation is applied with respect to proper rotation type.

Parameters

rotation	Rotation to applied to the cube
alternative	If set to true, makes inverted rotation to the default one

Returns

Rotator object, that represents proper animation

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

- rubik.h
- rubik.cpp

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