

Tetris2D

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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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GeradorPecas	10
Hold	14
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Chapter 2

Class Index

2.1 Class List

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Chapter 3

File Index

3.1 File List

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headers/PecaS.hpp	98
headers/PecaT.hpp	99
headers/PecaZ.hpp	100
headers/stb_image.h	??

Chapter 4

Class Documentation

4.1 Eight Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Eight \(\)](#)

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.1.1 Constructor & Destructor Documentation

4.1.1.1 Eight()

```
Eight::Eight ( )
```

4.1.2 Member Data Documentation

4.1.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Eight::g_texture_buffer_data [static]
```

4.1.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Eight::g_vertex_buffer_data [static]
```

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

- [headers/Font.hpp](#)
- [Font.cpp](#)

4.2 Five Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Five\(\)](#)

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.2.1 Constructor & Destructor Documentation

4.2.1.1 Five()

```
Five::Five ( )
```

4.2.2 Member Data Documentation

4.2.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Five::g_texture_buffer_data [static]
```

4.2.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Five::g_vertex_buffer_data [static]
```

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

- [headers/Font.hpp](#)
- [Font.cpp](#)

4.3 Four Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Four\(\)](#)

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.3.1 Constructor & Destructor Documentation

4.3.1.1 Four()

```
Four::Four ( )
```

4.3.2 Member Data Documentation

4.3.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Four::g_texture_buffer_data [static]
```

Initial value:

```
= {
    0.51f, 1.0f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 0.76f,

    0.51f, 1.0f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 0.76f,

    0.51f, 1.0f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 0.76f,
}
```

4.3.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Four::g_vertex_buffer_data [static]
```

Initial value:

```
= {
    0.0f, 0.7f, 0.0f,
    1.0f, 0.7f, 0.0f,
    0.0f, 0.9f, 0.0f,
    1.0f, 0.7f, 0.0f,
    0.0f, 0.9f, 0.0f,
    1.0f, 0.9f, 0.0f,

    0.0f, 0.7f, 0.0f,
    0.2f, 0.7f, 0.0f,
    0.0f, 1.6f, 0.0f,
    0.2f, 0.7f, 0.0f,
    0.0f, 1.6f, 0.0f,
    0.2f, 1.6f, 0.0f,

    0.8f, 0.0f, 0.0f,
    1.0f, 0.0f, 0.0f,
    0.8f, 1.6f, 0.0f,
    1.0f, 0.0f, 0.0f,
    0.8f, 1.6f, 0.0f,
    1.0f, 1.6f, 0.0f,
}
```

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

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.4 GeradorPecas Class Reference

```
#include <GeradorPecas.hpp>
```

Public Member Functions

- [GeradorPecas](#) ()
- [GeradorPecas](#) (int, int, int, int, int **, int)
- void [criaPecaZ](#) (int **, int)
- void [criaPecaT](#) (int **, int)
- void [criaPecaJ](#) (int **, int)
- void [criaPecaS](#) (int **, int)
- void [criaPecaO](#) (int **, int)
- void [criaPecaL](#) (int **, int)
- void [criaPecal](#) (int **, int)
- [Peca](#) & [getPecaZ](#) ()
- [Peca](#) & [getPecaT](#) ()
- [Peca](#) & [getPecaJ](#) ()
- [Peca](#) & [getPecaS](#) ()
- [Peca](#) & [getPecaO](#) ()
- [Peca](#) & [getPecaL](#) ()
- [Peca](#) & [getPecal](#) ()

4.4.1 Constructor & Destructor Documentation

4.4.1.1 GeradorPecas() [1/2]

```
GeradorPecas::GeradorPecas ( )
```

4.4.1.2 GeradorPecas() [2/2]

```
GeradorPecas::GeradorPecas (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.4.2 Member Function Documentation

4.4.2.1 criaPecal()

```
void GeradorPecas::criaPecaI (
    int ** gameGrid,
    int iGameLevel )
```

4.4.2.2 criaPecaJ()

```
void GeradorPecas::criaPecaJ (
    int ** gameGrid,
    int iGameLevel )
```

4.4.2.3 criaPecaL()

```
void GeradorPecas::criaPecaL (
    int ** gameGrid,
    int iGameLevel )
```

4.4.2.4 criaPecaO()

```
void GeradorPecas::criaPecaO (
    int ** gameGrid,
    int iGameLevel )
```

4.4.2.5 criaPecaS()

```
void GeradorPecas::criaPecaS (
    int ** gameGrid,
    int iGameLevel )
```

4.4.2.6 criaPecaT()

```
void GeradorPecas::criaPecaT (
    int ** gameGrid,
    int iGameLevel )
```

4.4.2.7 criaPecaZ()

```
void GeradorPecas::criaPecaZ (
    int ** gameGrid,
    int iGameLevel )
```

4.4.2.8 getPecal()

[Peca](#) & GeradorPecas::getPecaI ()

4.4.2.9 getPecaJ()

[Peca](#) & GeradorPecas::getPecaJ ()

4.4.2.10 getPecaL()

[Peca](#) & GeradorPecas::getPecaL ()

4.4.2.11 getPecaO()

[Peca](#) & GeradorPecas::getPecaO ()

4.4.2.12 getPecaS()

[Peca](#) & GeradorPecas::getPecaS ()

4.4.2.13 getPecaT()

[Peca](#) & GeradorPecas::getPecaT ()

4.4.2.14 getPecaZ()

[Peca](#) & GeradorPecas::getPecaZ ()

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

- [headers/GeradorPecas.hpp](#)
- [GeradorPecas.cpp](#)

4.5 Hold Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Hold](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.5.1 Constructor & Destructor Documentation

4.5.1.1 Hold()

```
Hold::Hold ( )
```

4.5.2 Member Data Documentation

4.5.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Hold::g_texture_buffer_data [static]
```

4.5.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Hold::g_vertex_buffer_data [static]
```

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

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.6 Level Class Reference

```
#include <Font.hpp>
```


Public Member Functions

- [Level](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.6.1 Constructor & Destructor Documentation

4.6.1.1 Level()

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

4.6.2 Member Data Documentation

4.6.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Level::g_texture_buffer_data [static]
```

4.6.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Level::g_vertex_buffer_data [static]
```

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

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.7 Lines Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Lines](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.7.1 Constructor & Destructor Documentation

4.7.1.1 Lines()

```
Lines::Lines ( )
```

4.7.2 Member Data Documentation

4.7.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Lines::g_texture_buffer_data [static]
```

4.7.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Lines::g_vertex_buffer_data [static]
```

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

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.8 Next Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Next](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.8.1 Constructor & Destructor Documentation

4.8.1.1 Next()

```
Next::Next ( )
```

4.8.2 Member Data Documentation

4.8.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Next::g_texture_buffer_data [static]
```

4.8.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Next::g_vertex_buffer_data [static]
```

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

- [headers/Font.hpp](#)
- [Font.cpp](#)

4.9 Nine Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Nine](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.9.1 Constructor & Destructor Documentation

4.9.1.1 Nine()

```
Nine::Nine ( )
```

4.9.2 Member Data Documentation

4.9.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Nine::g_texture_buffer_data [static]
```

4.9.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Nine::g_vertex_buffer_data [static]
```

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

- [headers/Font.hpp](#)
- [Font.cpp](#)

4.10 One Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [One\(\)](#)

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.10.1 Constructor & Destructor Documentation

4.10.1.1 One()

```
One::One ( )
```

4.10.2 Member Data Documentation

4.10.2.1 g_texture_buffer_data

```
std::vector< GLfloat > One::g_texture_buffer_data [static]
```

Initial value:

```
= {
    0.51f,  1.0f,
    0.74f,  1.0f,
    0.51f,  0.76f,
    0.74f,  1.0f,
    0.51f,  0.76f,
    0.74f,  0.76f,
}
```

4.10.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > One::g_vertex_buffer_data [static]
```

Initial value:

```
= {
    0.8f, 0.0f, 0.0f,
    1.0f, 0.0f, 0.0f,
    0.8f, 1.6f, 0.0f,
    1.0f, 0.0f, 0.0f,
    0.8f, 1.6f, 0.0f,
    1.0f, 1.6f, 0.0f,
}
```

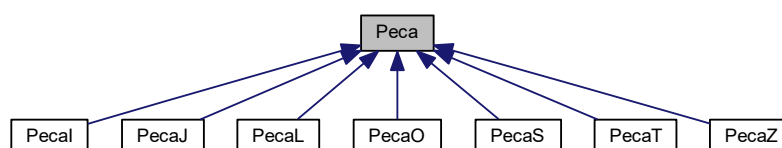
The documentation for this class was generated from the following files:

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.11 Peca Class Reference

```
#include <Peca.hpp>
```

Inheritance diagram for Peca:



Public Member Functions

- [Peca](#) ()
- virtual [~Peca](#) ()
- virtual void [preencheRealVertex](#) (GLfloat, GLfloat)=0
- virtual void [modificaQuadricula](#) (GLfloat, GLfloat)=0
- virtual void [realVertexBuffer](#) ()=0
- virtual bool [atualizaMatriz](#) ()=0
- virtual bool [avaliaColisao](#) ()=0
- virtual void [atualizaPos](#) ()=0
- virtual void [rotacaoPeca](#) (glm::mat4 &rot)=0
- virtual void [translacaoPeca](#) (glm::mat4 &trans, bool)=0
- virtual void [translacaoPecaContorno](#) (glm::mat4 &trans)=0
- virtual int [dropAccordingToLevel](#) (double)=0
- virtual int [collisionYPos](#) ()=0
- virtual int ** [getGameGrid](#) ()=0
- virtual int [getNumberRotate](#) ()=0
- virtual int [getNumberTranslation](#) ()=0
- virtual int [getNumberDown](#) ()=0
- virtual int [getXPosD](#) ()=0
- virtual int [getXPosE](#) ()=0
- virtual bool [hasCollidedBottom](#) ()=0
- virtual bool [hasCollidedLeft](#) ()=0
- virtual bool [hasCollidedRight](#) ()=0
- virtual bool [rotationAllowed](#) ()=0
- virtual void [incNumberRotate](#) ()=0
- virtual void [incNumberTranslation](#) ()=0
- virtual void [decNumberTranslation](#) ()=0
- virtual void [incNumberDown](#) ()=0
- virtual void [drawObject](#) ()=0

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)
- static std::vector< GLfloat > [g_real_vertex_buffer](#)

4.11.1 Constructor & Destructor Documentation

4.11.1.1 Peca()

```
Peca::Peca ( ) [inline]
```

4.11.1.2 ~Peca()

```
virtual Peca::~Peca ( ) [inline], [virtual]
```

4.11.2 Member Function Documentation

4.11.2.1 atualizaMatriz()

```
virtual bool Peca::atualizaMatriz ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaO](#), and [PecaT](#).

4.11.2.2 atualizaPos()

```
virtual void Peca::atualizaPos ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.3 avaliaColisao()

```
virtual bool Peca::avaliaColisao ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaJ](#), [PecaL](#), [PecaT](#), [PecaZ](#), and [PecaO](#).

4.11.2.4 collisionYPos()

```
virtual int Peca::collisionYPos ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.5 decNumberTranslation()

```
virtual void Peca::decNumberTranslation ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.6 drawObject()

```
virtual void Peca::drawObject ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.7 dropAccordingToLevel()

```
virtual int Peca::dropAccordingToLevel (
    double ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.8 getGameGrid()

```
virtual int** Peca::getGameGrid ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.9 getNumberDown()

```
virtual int Peca::getNumberDown ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.10 getNumberRotate()

```
virtual int Peca::getNumberRotate ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.11 getNumberTranslation()

```
virtual int Peca::getNumberTranslation ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.12 getXPosD()

```
virtual int Peca::getXPosD ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.13 getXPosE()

```
virtual int Peca::getXPosE ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.14 hasCollidedBottom()

```
virtual bool Peca::hasCollidedBottom ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.15 hasCollidedLeft()

```
virtual bool Peca::hasCollidedLeft ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.16 hasCollidedRight()

```
virtual bool Peca::hasCollidedRight ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.17 incNumberDown()

```
virtual void Peca::incNumberDown ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.18 incNumberRotate()

```
virtual void Peca::incNumberRotate ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.19 incNumberTranslation()

```
virtual void Peca::incNumberTranslation ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.20 modificaQuadricula()

```
virtual void Peca::modificaQuadricula (
    GLfloat ,
    GLfloat ) [pure virtual]
```

Implemented in [Pecal](#), [PecaJ](#), [PecaL](#), [PecaO](#), [PecaS](#), [PecaT](#), and [PecaZ](#).

4.11.2.21 preencheRealVertex()

```
virtual void Peca::preencheRealVertex (
    GLfloat ,
    GLfloat ) [pure virtual]
```

Implemented in [Pecal](#), [PecaJ](#), [PecaL](#), [PecaO](#), [PecaS](#), [PecaT](#), and [PecaZ](#).

4.11.2.22 realVertexBuffer()

```
virtual void Peca::realVertexBuffer ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaJ](#), [PecaL](#), [PecaO](#), [PecaS](#), [PecaT](#), and [PecaZ](#).

4.11.2.23 rotacaoPeca()

```
virtual void Peca::rotacaoPeca (
    glm::mat4 & rot ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.24 rotationAllowed()

```
virtual bool Peca::rotationAllowed ( ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.25 translacaoPeca()

```
virtual void Peca::translacaoPeca (
    glm::mat4 & trans,
    bool ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.2.26 translacaoPecaContorno()

```
virtual void Peca::translacaoPecaContorno (
    glm::mat4 & trans ) [pure virtual]
```

Implemented in [Pecal](#), [PecaS](#), [PecaZ](#), [PecaJ](#), [PecaL](#), [PecaT](#), and [PecaO](#).

4.11.3 Member Data Documentation

4.11.3.1 g_real_vertex_buffer

```
std::vector<GLfloat> Peca::g_real_vertex_buffer [static]
```

4.11.3.2 g_texture_buffer_data

```
std::vector<GLfloat> Peca::g_texture_buffer_data [static]
```

4.11.3.3 g_vertex_buffer_data

```
std::vector<GLfloat> Peca::g_vertex_buffer_data [static]
```

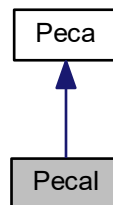
The documentation for this class was generated from the following file:

- headers/[Peca.hpp](#)

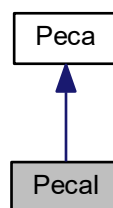
4.12 Pecal Class Reference

```
#include <PecaI.hpp>
```

Inheritance diagram for Pecal:



Collaboration diagram for Pecal:



Public Member Functions

- [Pecal](#) ()
- [Pecal](#) (int, int, int, int, int **, int)
- void [preencheRealVertex](#) (GLfloat, GLfloat)
- void [modificaQuadricula](#) (GLfloat, GLfloat)
Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.
- void [realVertexBuffer](#) ()
- bool [preencheMatriz](#) (int, int)
- bool [atualizaMatriz](#) ()
- bool [avaliaPotencialRotacao](#) (int, int, int, int, int)
- bool [avaliaColisao](#) ()
- void [atualizaPos](#) ()
- void [rotacaoPeca](#) (glm::mat4 &rot)
*glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot*
- void [translacaoPeca](#) (glm::mat4 &trans, bool)

- int [collisionYPos](#) ()
- void [translacaoPecaContorno](#) (glm::mat4 &trans)
- int [dropAccordingToLevel](#) (double)
Modificar o valor de tempo de acordo com o nivel de jogo.
- int ** [getGameGrid](#) ()
- int [getNumberRotate](#) ()
- int [getNumberTranslation](#) ()
- int [getNumberDown](#) ()
- int [getXPosD](#) ()
- int [getXPosE](#) ()
- bool [hasCollidedBottom](#) ()
- bool [hasCollidedLeft](#) ()
- bool [hasCollidedRight](#) ()
- bool [rotationAllowed](#) ()
- void [incNumberRotate](#) ()
- void [incNumberTranslation](#) ()
- void [decNumberTranslation](#) ()
- void [incNumberDown](#) ()
- void [drawObject](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
Desenho da peca.
- static std::vector< GLfloat > [g_texture_buffer_data](#)
Textura da peca.
- static std::vector< GLfloat > [g_real_vertex_buffer](#) = {}
- static std::vector< GLfloat > [g_vertex_buffer_dataPos](#)
- static std::vector< GLfloat > [g_texture_buffer_dataPos](#)
Textura da posicao de colisao da peca.

4.12.1 Constructor & Destructor Documentation

4.12.1.1 Pecal() [1/2]

```
PecaI::PecaI ( )
```

4.12.1.2 Pecal() [2/2]

```
PecaI::PecaI (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.12.2 Member Function Documentation

4.12.2.1 atualizaMatriz()

```
bool PecaI::atualizaMatriz ( ) [virtual]
```

Implements [Peca](#).

4.12.2.2 atualizaPos()

```
void PecaI::atualizaPos ( ) [virtual]
```

Implements [Peca](#).

4.12.2.3 avaliaColisao()

```
bool PecaI::avaliaColisao ( ) [virtual]
```

Implements [Peca](#).

4.12.2.4 avaliaPotencialRotacao()

```
bool PecaI::avaliaPotencialRotacao (
    int x,
    int y,
    int iPieceHeight,
    int xPosE,
    int xPosD )
```

4.12.2.5 collisionYPos()

```
int PecaI::collisionYPos ( ) [virtual]
```

Implements [Peca](#).

4.12.2.6 decNumberTranslation()

```
void PecaI::decNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.12.2.7 drawObject()

```
void PecaI::drawObject ( ) [virtual]
```

Implements [Peca](#).

4.12.2.8 dropAccordingToLevel()

```
int PecaI::dropAccordingToLevel (
    double x ) [virtual]
```

Modificar o valor de tempo de acordo com o nivel de jogo.

Implements [Peca](#).

4.12.2.9 getGameGrid()

```
int ** PecaI::getGameGrid ( ) [virtual]
```

Implements [Peca](#).

4.12.2.10 getNumberDown()

```
int PecaI::getNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.12.2.11 getNumberRotate()

```
int PecaI::getNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.12.2.12 `getNumberTranslation()`

```
int PecaI::getNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.12.2.13 `getXPosD()`

```
int PecaI::getXPosD ( ) [virtual]
```

Implements [Peca](#).

4.12.2.14 `getXPosE()`

```
int PecaI::getXPosE ( ) [virtual]
```

Implements [Peca](#).

4.12.2.15 `hasCollidedBottom()`

```
bool PecaI::hasCollidedBottom ( ) [virtual]
```

Implements [Peca](#).

4.12.2.16 `hasCollidedLeft()`

```
bool PecaI::hasCollidedLeft ( ) [virtual]
```

Implements [Peca](#).

4.12.2.17 `hasCollidedRight()`

```
bool PecaI::hasCollidedRight ( ) [virtual]
```

Implements [Peca](#).

4.12.2.18 incNumberDown()

```
void PecaI::incNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.12.2.19 incNumberRotate()

```
void PecaI::incNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.12.2.20 incNumberTranslation()

```
void PecaI::incNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.12.2.21 modificaQuadricula()

```
void PecaI::modificaQuadricula (
    GLfloat x,
    GLfloat y ) [virtual]
```

Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.

Implements [Peca](#).

4.12.2.22 preencheMatriz()

```
bool PecaI::preencheMatriz (
    int x,
    int y )
```

4.12.2.23 preencheRealVertex()

```
void PecaI::preencheRealVertex (
    GLfloat x,
    GLfloat y ) [virtual]
```

Preenchimento do vertexBuffer de acordo com rotacao da peca e local de colisao, para armazenamento do vertex↔ Buffer das pecas ja jogadas (em Projeto.cpp)

Implements [Peca](#).

4.12.2.24 realVertexBuffer()

```
void PecaI::realVertexBuffer ( ) [virtual]
```

[Peca](#) quando desenhada esta na origem. A colisao de peca, promove a invocacao deste metodo que tratara de representar a peca, sob a forma de vertexBuffer, tendo em conta local onde esta colidiu e a rotacao da peca.

Implements [Peca](#).

4.12.2.25 rotacaoPeca()

```
void PecaI::rotacaoPeca (
    glm::mat4 & rot ) [virtual]
```

glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot

Implements [Peca](#).

4.12.2.26 rotationAllowed()

```
bool PecaI::rotationAllowed ( ) [virtual]
```

Implements [Peca](#).

4.12.2.27 translacaoPeca()

```
void PecaI::translacaoPeca (
    glm::mat4 & trans,
    bool bPause ) [virtual]
```

Implements [Peca](#).

4.12.2.28 translacaoPecaContorno()

```
void PecaI::translacaoPecaContorno (
    glm::mat4 & trans ) [virtual]
```

Implements [Peca](#).

4.12.3 Member Data Documentation

4.12.3.1 g_real_vertex_buffer

```
std::vector< GLfloat > PecaI::g_real_vertex_buffer = {} [static]
```

4.12.3.2 g_texture_buffer_data

```
std::vector< GLfloat > PecaI::g_texture_buffer_data [static]
```

Textura da peca.

4.12.3.3 g_texture_buffer_dataPos

```
std::vector< GLfloat > PecaI::g_texture_buffer_dataPos [static]
```

Textura da posicao de colisao da peca.

4.12.3.4 g_vertex_buffer_data

```
std::vector< GLfloat > PecaI::g_vertex_buffer_data [static]
```

Desenho da peca.

4.12.3.5 g_vertex_buffer_dataPos

```
std::vector<GLfloat> PecaI::g_vertex_buffer_dataPos [static]
```

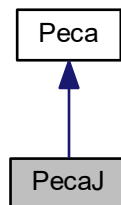
The documentation for this class was generated from the following files:

- headers/[Pecal.hpp](#)
- [Pecal.cpp](#)

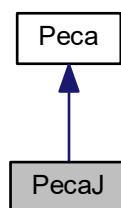
4.13 PecaJ Class Reference

```
#include <PecaJ.hpp>
```

Inheritance diagram for PecaJ:



Collaboration diagram for PecaJ:



Public Member Functions

- [PecaJ](#) ()
- [PecaJ](#) (int, int, int, int, int **, int)
- void [preencheRealVertex](#) (GLfloat, GLfloat)
- void [modificaQuadricula](#) (GLfloat, GLfloat)
 - Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.*
- void [realVertexBuffer](#) ()
- bool [preencheMatriz](#) (int, int, int, int)
- bool [atualizaMatriz](#) ()
- bool [avaliaPotencialRotacao](#) (int, int, int, int, int, int, int)
- bool [avaliaColisao](#) ()
- void [atualizaPos](#) ()
- void [rotacaoPeca](#) (glm::mat4 &rot)
 - glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot*
- void [translacaoPeca](#) (glm::mat4 &trans, bool)

- int [collisionYPos](#) ()
- void [translacaoPecaContorno](#) (glm::mat4 &trans)
- int [dropAccordingToLevel](#) (double)
Modificar o valor de tempo de acordo com o nivel de jogo.
- int ** [getGameGrid](#) ()
- int [getNumberRotate](#) ()
- int [getNumberTranslation](#) ()
- int [getNumberDown](#) ()
- int [getXPosD](#) ()
- int [getXPosE](#) ()
- bool [hasCollidedBottom](#) ()
- bool [hasCollidedLeft](#) ()
- bool [hasCollidedRight](#) ()
- bool [rotationAllowed](#) ()
- void [incNumberRotate](#) ()
- void [incNumberTranslation](#) ()
- void [decNumberTranslation](#) ()
- void [incNumberDown](#) ()
- void [drawObject](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
Desenho da peca.
- static std::vector< GLfloat > [g_texture_buffer_data](#)
Textura da peca.
- static std::vector< GLfloat > [g_real_vertex_buffer](#) = {}
- static std::vector< GLfloat > [g_vertex_buffer_dataPos](#)
- static std::vector< GLfloat > [g_texture_buffer_dataPos](#)
Textura da posicao de colisao da peca.

4.13.1 Constructor & Destructor Documentation

4.13.1.1 PecaJ() [1/2]

```
PecaJ::PecaJ ( )
```

4.13.1.2 PecaJ() [2/2]

```
PecaJ::PecaJ (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.13.2 Member Function Documentation

4.13.2.1 atualizaMatriz()

```
bool PecaJ::atualizaMatriz ( ) [virtual]
```

Implements [Peca](#).

4.13.2.2 atualizaPos()

```
void PecaJ::atualizaPos ( ) [virtual]
```

Implements [Peca](#).

4.13.2.3 avaliaColisao()

```
bool PecaJ::avaliaColisao ( ) [virtual]
```

Implements [Peca](#).

4.13.2.4 avaliaPotencialRotacao()

```
bool PecaJ::avaliaPotencialRotacao (
    int x,
    int y,
    int xAjuste,
    int yAjuste,
    int iPieceHeight,
    int xPosE,
    int xPosD )
```

4.13.2.5 collisionYPos()

```
int PecaJ::collisionYPos ( ) [virtual]
```

Implements [Peca](#).

4.13.2.6 decNumberTranslation()

```
void PecaJ::decNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.13.2.7 drawObject()

```
void PecaJ::drawObject ( ) [virtual]
```

Implements [Peca](#).

4.13.2.8 dropAccordingToLevel()

```
int PecaJ::dropAccordingToLevel (
    double x ) [virtual]
```

Modificar o valor de tempo de acordo com o nivel de jogo.

Implements [Peca](#).

4.13.2.9 getGameGrid()

```
int ** PecaJ::getGameGrid ( ) [virtual]
```

Implements [Peca](#).

4.13.2.10 getNumberDown()

```
int PecaJ::getNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.13.2.11 getNumberRotate()

```
int PecaJ::getNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.13.2.12 `getNumberTranslation()`

```
int PecaJ::getNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.13.2.13 `getXPosD()`

```
int PecaJ::getXPosD ( ) [virtual]
```

Implements [Peca](#).

4.13.2.14 `getXPosE()`

```
int PecaJ::getXPosE ( ) [virtual]
```

Implements [Peca](#).

4.13.2.15 `hasCollidedBottom()`

```
bool PecaJ::hasCollidedBottom ( ) [virtual]
```

Implements [Peca](#).

4.13.2.16 `hasCollidedLeft()`

```
bool PecaJ::hasCollidedLeft ( ) [virtual]
```

Implements [Peca](#).

4.13.2.17 `hasCollidedRight()`

```
bool PecaJ::hasCollidedRight ( ) [virtual]
```

Implements [Peca](#).

4.13.2.18 incNumberDown()

```
void PecaJ::incNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.13.2.19 incNumberRotate()

```
void PecaJ::incNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.13.2.20 incNumberTranslation()

```
void PecaJ::incNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.13.2.21 modificaQuadricula()

```
void PecaJ::modificaQuadricula (
    GLfloat x,
    GLfloat y ) [virtual]
```

Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.

Implements [Peca](#).

4.13.2.22 preencheMatriz()

```
bool PecaJ::preencheMatriz (
    int x,
    int y,
    int xAjuste,
    int yAjuste )
```

4.13.2.23 preencheRealVertex()

```
void PecaJ::preencheRealVertex (
    GLfloat x,
    GLfloat y ) [virtual]
```

Preenchimento do vertexBuffer de acordo com rotacao da peca e local de colisao, para armazenamento do vertex↔ Buffer das pecas ja jogadas (em Projeto.cpp)

Implements [Peca](#).

4.13.2.24 realVertexBuffer()

```
void PecaJ::realVertexBuffer ( ) [virtual]
```

[Peca](#) quando desenhada esta na origem. A colisao de peca, promove a invocacao deste metodo que tratara de representar a peca, sob a forma de vertexBuffer, tendo em conta local onde esta colidiu e a rotacao da peca.

Implements [Peca](#).

4.13.2.25 rotacaoPeca()

```
void PecaJ::rotacaoPeca (
    glm::mat4 & rot ) [virtual]
```

glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot

Implements [Peca](#).

4.13.2.26 rotationAllowed()

```
bool PecaJ::rotationAllowed ( ) [virtual]
```

Implements [Peca](#).

4.13.2.27 translacaoPeca()

```
void PecaJ::translacaoPeca (
    glm::mat4 & trans,
    bool bPause ) [virtual]
```

Implements [Peca](#).

4.13.2.28 translacaoPecaContorno()

```
void PecaJ::translacaoPecaContorno (
    glm::mat4 & trans ) [virtual]
```

Implements [Peca](#).

4.13.3 Member Data Documentation

4.13.3.1 g_real_vertex_buffer

```
std::vector< GLfloat > PecaJ::g_real_vertex_buffer = {} [static]
```

4.13.3.2 g_texture_buffer_data

```
std::vector< GLfloat > PecaJ::g_texture_buffer_data [static]
```

Textura da peca.

4.13.3.3 g_texture_buffer_dataPos

```
std::vector< GLfloat > PecaJ::g_texture_buffer_dataPos [static]
```

Textura da posicao de colisao da peca.

4.13.3.4 g_vertex_buffer_data

```
std::vector< GLfloat > PecaJ::g_vertex_buffer_data [static]
```

Desenho da peca.

4.13.3.5 g_vertex_buffer_dataPos

```
std::vector<GLfloat> PecaJ::g_vertex_buffer_dataPos [static]
```

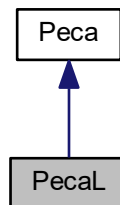
The documentation for this class was generated from the following files:

- headers/[PecaJ.hpp](#)
- [PecaJ.cpp](#)

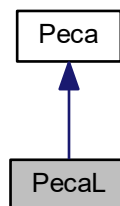
4.14 PecaL Class Reference

```
#include <PecaL.hpp>
```

Inheritance diagram for PecaL:



Collaboration diagram for PecaL:



Public Member Functions

- [PecaL](#) ()
- [PecaL](#) (int, int, int, int, int **, int)
- void [preencheRealVertex](#) (GLfloat, GLfloat)
- void [modificaQuadricula](#) (GLfloat, GLfloat)
- void [realVertexBuffer](#) ()
- bool [preencheMatriz](#) (int, int, int, int)
- bool [atualizaMatriz](#) ()
- bool [avaliaPotencialRotacao](#) (int, int, int, int, int, int, int)
- bool [avaliaColisao](#) ()
- void [atualizaPos](#) ()
- void [rotacaoPeca](#) (glm::mat4 &rot)
*glm::mat4 & rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot*
- void [translacaoPeca](#) (glm::mat4 &trans, bool)
- int [collisionYPos](#) ()

- void [translacaoPecaContorno](#) (glm::mat4 &trans)
- int [dropAccordingToLevel](#) (double)
Modificar o valor de tempo de acordo com o nivel de jogo.
- int ** [getGameGrid](#) ()
- int [getNumberRotate](#) ()
- int [getNumberTranslation](#) ()
- int [getNumberDown](#) ()
- int [getXPosD](#) ()
- int [getXPosE](#) ()
- bool [hasCollidedBottom](#) ()
- bool [hasCollidedLeft](#) ()
- bool [hasCollidedRight](#) ()
- bool [rotationAllowed](#) ()
- void [incNumberRotate](#) ()
- void [incNumberTranslation](#) ()
- void [decNumberTranslation](#) ()
- void [incNumberDown](#) ()
- void [drawObject](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
Desenho da peca.
- static std::vector< GLfloat > [g_texture_buffer_data](#)
Textura da peca.
- static std::vector< GLfloat > [g_real_vertex_buffer](#) = {}
- static std::vector< GLfloat > [g_vertex_buffer_dataPos](#)
- static std::vector< GLfloat > [g_texture_buffer_dataPos](#)
Textura da posicao de colisao da peca.

4.14.1 Constructor & Destructor Documentation

4.14.1.1 PecaL() [1/2]

```
PecaL::PecaL ( )
```

4.14.1.2 PecaL() [2/2]

```
PecaL::PecaL (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.14.2 Member Function Documentation

4.14.2.1 atualizaMatriz()

```
bool PecaL::atualizaMatriz ( ) [virtual]
```

Implements [Peca](#).

4.14.2.2 atualizaPos()

```
void PecaL::atualizaPos ( ) [virtual]
```

Implements [Peca](#).

4.14.2.3 avaliaColisao()

```
bool PecaL::avaliaColisao ( ) [virtual]
```

Implements [Peca](#).

4.14.2.4 avaliaPotencialRotacao()

```
bool PecaL::avaliaPotencialRotacao (
    int x,
    int y,
    int xAjuste,
    int yAjuste,
    int iPieceHeight,
    int xPosE,
    int xPosD )
```

4.14.2.5 collisionYPos()

```
int PecaL::collisionYPos ( ) [virtual]
```

Implements [Peca](#).

4.14.2.6 decNumberTranslation()

```
void PecaL::decNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.14.2.7 drawObject()

```
void PecaL::drawObject ( ) [virtual]
```

Implements [Peca](#).

4.14.2.8 dropAccordingToLevel()

```
int PecaL::dropAccordingToLevel (
    double x ) [virtual]
```

Modificar o valor de tempo de acordo com o nivel de jogo.

Implements [Peca](#).

4.14.2.9 getGameGrid()

```
int ** PecaL::getGameGrid ( ) [virtual]
```

Implements [Peca](#).

4.14.2.10 getNumberDown()

```
int PecaL::getNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.14.2.11 getNumberRotate()

```
int PecaL::getNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.14.2.12 `getNumberTranslation()`

```
int PecaL::getNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.14.2.13 `getXPosD()`

```
int PecaL::getXPosD ( ) [virtual]
```

Implements [Peca](#).

4.14.2.14 `getXPosE()`

```
int PecaL::getXPosE ( ) [virtual]
```

Implements [Peca](#).

4.14.2.15 `hasCollidedBottom()`

```
bool PecaL::hasCollidedBottom ( ) [virtual]
```

Implements [Peca](#).

4.14.2.16 `hasCollidedLeft()`

```
bool PecaL::hasCollidedLeft ( ) [virtual]
```

Implements [Peca](#).

4.14.2.17 `hasCollidedRight()`

```
bool PecaL::hasCollidedRight ( ) [virtual]
```

Implements [Peca](#).

4.14.2.18 incNumberDown()

```
void PecaL::incNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.14.2.19 incNumberRotate()

```
void PecaL::incNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.14.2.20 incNumberTranslation()

```
void PecaL::incNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.14.2.21 modificaQuadricula()

```
void PecaL::modificaQuadricula (
    GLfloat x,
    GLfloat y ) [virtual]
```

Implements [Peca](#).

4.14.2.22 preencheMatriz()

```
bool PecaL::preencheMatriz (
    int x,
    int y,
    int xAjuste,
    int yAjuste )
```

4.14.2.23 preencheRealVertex()

```
void PecaL::preencheRealVertex (
    GLfloat x,
    GLfloat y ) [virtual]
```

Preenchimento do vertexBuffer de acordo com rotacao da peca e local de colisao, para armazenamento do vertex↵ Buffer das pecas ja jogadas (em Projeto.cpp)

Implements [Peca](#).

4.14.2.24 realVertexBuffer()

```
void PecaL::realVertexBuffer ( ) [virtual]
```

[Peca](#) quando desenhada esta na origem. A colisao de peca, promove a invocacao deste metodo que tratara de representar a peca, sob a forma de vertexBuffer, tendo em conta local onde esta colidiu e a rotacao da peca.

Implements [Peca](#).

4.14.2.25 rotacaoPeca()

```
void PecaL::rotacaoPeca (
    glm::mat4 & rot ) [virtual]
```

glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot

Implements [Peca](#).

4.14.2.26 rotationAllowed()

```
bool PecaL::rotationAllowed ( ) [virtual]
```

Implements [Peca](#).

4.14.2.27 translacaoPeca()

```
void PecaL::translacaoPeca (
    glm::mat4 & trans,
    bool bPause ) [virtual]
```

Implements [Peca](#).

4.14.2.28 translacaoPecaContorno()

```
void PecaL::translacaoPecaContorno (
    glm::mat4 & trans ) [virtual]
```

Implements [Peca](#).

4.14.3 Member Data Documentation

4.14.3.1 g_real_vertex_buffer

```
std::vector< GLfloat > PecaL::g_real_vertex_buffer = {} [static]
```

4.14.3.2 g_texture_buffer_data

```
std::vector< GLfloat > PecaL::g_texture_buffer_data [static]
```

Textura da peca.

4.14.3.3 g_texture_buffer_dataPos

```
std::vector< GLfloat > PecaL::g_texture_buffer_dataPos [static]
```

Textura da posicao de colisao da peca.

4.14.3.4 g_vertex_buffer_data

```
std::vector< GLfloat > PecaL::g_vertex_buffer_data [static]
```

Desenho da peca.

4.14.3.5 g_vertex_buffer_dataPos

```
std::vector<GLfloat> PecaL::g_vertex_buffer_dataPos [static]
```

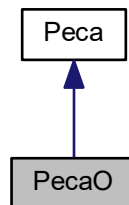
The documentation for this class was generated from the following files:

- headers/[PecaL.hpp](#)
- [PecaL.cpp](#)

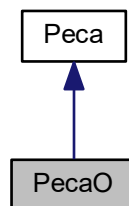
4.15 PecaO Class Reference

```
#include <PecaO.hpp>
```

Inheritance diagram for PecaO:



Collaboration diagram for PecaO:



Public Member Functions

- [PecaO](#) ()
- [PecaO](#) (int, int, int, int, int **, int)
- void [preencheRealVertex](#) (GLfloat, GLfloat)
- void [modificaQuadricula](#) (GLfloat, GLfloat)
- void [realVertexBuffer](#) ()
- bool [preencheMatriz](#) (int, int)
- bool [atualizaMatriz](#) ()
- bool [avaliaColisao](#) ()
- void [atualizaPos](#) ()
- void [rotacaoPeca](#) (glm::mat4 &rot)
*glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot*
- void [translacaoPeca](#) (glm::mat4 &trans, bool)
- int [collisionYPos](#) ()
- void [translacaoPecaContorno](#) (glm::mat4 &trans)

- int [dropAccordingToLevel](#) (double)
- int ** [getGameGrid](#) ()
- int [getNumberRotate](#) ()
- int [getNumberTranslation](#) ()
- int [getNumberDown](#) ()
- int [getXPosD](#) ()
- int [getXPosE](#) ()
- bool [hasCollidedBottom](#) ()
- bool [hasCollidedLeft](#) ()
- bool [hasCollidedRight](#) ()
- bool [rotationAllowed](#) ()
- void [incNumberRotate](#) ()
- void [incNumberTranslation](#) ()
- void [decNumberTranslation](#) ()
- void [incNumberDown](#) ()
- void [drawObject](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
Desenho da peca.
- static std::vector< GLfloat > [g_texture_buffer_data](#)
Textura da peca.
- static std::vector< GLfloat > [g_real_vertex_buffer](#) = {}
- static std::vector< GLfloat > [g_vertex_buffer_dataPos](#)
- static std::vector< GLfloat > [g_texture_buffer_dataPos](#)
Textura da posicao de colisao da peca.

4.15.1 Constructor & Destructor Documentation

4.15.1.1 PecaO() [1/2]

```
PecaO::PecaO ( )
```

4.15.1.2 PecaO() [2/2]

```
PecaO::PecaO (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.15.2 Member Function Documentation

4.15.2.1 atualizaMatriz()

```
bool PecaO::atualizaMatriz ( ) [virtual]
```

Implements [Peca](#).

4.15.2.2 atualizaPos()

```
void PecaO::atualizaPos ( ) [virtual]
```

Implements [Peca](#).

4.15.2.3 avaliaColisao()

```
bool PecaO::avaliaColisao ( ) [virtual]
```

Implements [Peca](#).

4.15.2.4 collisionYPos()

```
int PecaO::collisionYPos ( ) [virtual]
```

Implements [Peca](#).

4.15.2.5 decNumberTranslation()

```
void PecaO::decNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.15.2.6 drawObject()

```
void PecaO::drawObject ( ) [virtual]
```

Implements [Peca](#).

4.15.2.7 dropAccordingToLevel()

```
int PecaO::dropAccordingToLevel (
    double x ) [virtual]
```

Implements [Peca](#).

4.15.2.8 getGameGrid()

```
int ** PecaO::getGameGrid ( ) [virtual]
```

Implements [Peca](#).

4.15.2.9 getNumberDown()

```
int PecaO::getNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.15.2.10 getNumberRotate()

```
int PecaO::getNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.15.2.11 getNumberTranslation()

```
int PecaO::getNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.15.2.12 getXPosD()

```
int PecaO::getXPosD ( ) [virtual]
```

Implements [Peca](#).

4.15.2.13 getXPosE()

```
int PecaO::getXPosE ( ) [virtual]
```

Implements [Peca](#).

4.15.2.14 hasCollidedBottom()

```
bool PecaO::hasCollidedBottom ( ) [virtual]
```

Implements [Peca](#).

4.15.2.15 hasCollidedLeft()

```
bool PecaO::hasCollidedLeft ( ) [virtual]
```

Implements [Peca](#).

4.15.2.16 hasCollidedRight()

```
bool PecaO::hasCollidedRight ( ) [virtual]
```

Implements [Peca](#).

4.15.2.17 incNumberDown()

```
void PecaO::incNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.15.2.18 incNumberRotate()

```
void PecaO::incNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.15.2.19 incNumberTranslation()

```
void PecaO::incNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.15.2.20 modificaQuadricula()

```
void PecaO::modificaQuadricula (
    GLfloat x,
    GLfloat y ) [virtual]
```

Implements [Peca](#).

4.15.2.21 preencheMatriz()

```
bool PecaO::preencheMatriz (
    int x,
    int y )
```

4.15.2.22 preencheRealVertex()

```
void PecaO::preencheRealVertex (
    GLfloat x,
    GLfloat y ) [virtual]
```

Implements [Peca](#).

4.15.2.23 realVertexBuffer()

```
void PecaO::realVertexBuffer ( ) [virtual]
```

[Peca](#) quando desenhada esta na origem. A colisao de peca, promove a invocacao deste metodo que tratara de representar a peca, sob a forma de vertexBuffer, tendo em conta local onde esta colidiu e a rotacao da peca.

Implements [Peca](#).

4.15.2.24 rotacaoPeca()

```
void PecaO::rotacaoPeca (
    glm::mat4 & rot ) [virtual]
```

glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot

Implements [Peca](#).

4.15.2.25 rotationAllowed()

```
bool PecaO::rotationAllowed ( ) [virtual]
```

Implements [Peca](#).

4.15.2.26 translacaoPeca()

```
void PecaO::translacaoPeca (
    glm::mat4 & trans,
    bool bPause ) [virtual]
```

Implements [Peca](#).

4.15.2.27 translacaoPecaContorno()

```
void PecaO::translacaoPecaContorno (
    glm::mat4 & trans ) [virtual]
```

Implements [Peca](#).

4.15.3 Member Data Documentation

4.15.3.1 g_real_vertex_buffer

```
std::vector< GLfloat > PecaO::g_real_vertex_buffer = {} [static]
```

4.15.3.2 g_texture_buffer_data

```
std::vector< GLfloat > PecaO::g_texture_buffer_data [static]
```

Textura da peca.

4.15.3.3 g_texture_buffer_dataPos

```
std::vector< GLfloat > PecaO::g_texture_buffer_dataPos [static]
```

Textura da posicao de colisao da peca.

4.15.3.4 g_vertex_buffer_data

```
std::vector< GLfloat > PecaO::g_vertex_buffer_data [static]
```

Desenho da peca.

4.15.3.5 g_vertex_buffer_dataPos

```
std::vector<GLfloat> PecaO::g_vertex_buffer_dataPos [static]
```

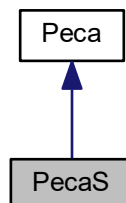
The documentation for this class was generated from the following files:

- [headers/PecaO.hpp](#)
- [PecaO.cpp](#)

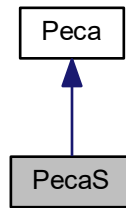
4.16 PecaS Class Reference

```
#include <PecaS.hpp>
```

Inheritance diagram for PecaS:



Collaboration diagram for PecaS:



Public Member Functions

- [PecaS](#) ()
- [PecaS](#) (int, int, int, int, int **, int)
- void [preencheRealVertex](#) (GLfloat, GLfloat)
- void [modificaQuadricula](#) (GLfloat, GLfloat)
- void [realVertexBuffer](#) ()
- bool [preencheMatrizCaso0e2](#) (int, int)
- bool [preencheMatrizCaso1e3](#) (int, int)
- bool [atualizaMatriz](#) ()
- bool [avaliaPotencialRotacaoCaso0e2](#) (int, int, int)
- bool [avaliaPotencialRotacaoCaso1e3](#) (int, int, int)
- bool [avaliaColisao](#) ()
- void [atualizaPos](#) ()
- void [rotacaoPeca](#) (glm::mat4 &rot)
*glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot*
- void [translacaoPeca](#) (glm::mat4 &trans, bool)
- int [collisionYPos](#) ()
- void [translacaoPecaContorno](#) (glm::mat4 &trans)
- int [dropAccordingToLevel](#) (double)
Modificar o valor de tempo de acordo com o nivel de jogo.
- int ** [getGameGrid](#) ()
- int [getNumberRotate](#) ()
- int [getNumberTranslation](#) ()
- int [getNumberDown](#) ()
- int [getXPosD](#) ()
- int [getXPosE](#) ()
- bool [hasCollidedBottom](#) ()
- bool [hasCollidedLeft](#) ()
- bool [hasCollidedRight](#) ()
- bool [rotationAllowed](#) ()
- void [incNumberRotate](#) ()
- void [incNumberTranslation](#) ()
- void [decNumberTranslation](#) ()
- void [incNumberDown](#) ()
- void [drawObject](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
Desenho da peca.
- static std::vector< GLfloat > [g_texture_buffer_data](#)
Textura da peca.
- static std::vector< GLfloat > [g_real_vertex_buffer](#) = {}
- static std::vector< GLfloat > [g_vertex_buffer_dataPos](#)
- static std::vector< GLfloat > [g_texture_buffer_dataPos](#)
Textura da posicao de colisao da peca.

4.16.1 Constructor & Destructor Documentation

4.16.1.1 PecaS() [1/2]

```
PecaS::PecaS ( )
```

4.16.1.2 PecaS() [2/2]

```
PecaS::PecaS (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.16.2 Member Function Documentation

4.16.2.1 atualizaMatriz()

```
bool PecaS::atualizaMatriz ( ) [virtual]
```

Implements [Peca](#).

4.16.2.2 atualizaPos()

```
void PecaS::atualizaPos ( ) [virtual]
```

Implements [Peca](#).

4.16.2.3 `avaliaColisao()`

```
bool PecaS::avaliaColisao ( ) [virtual]
```

Implements [Peca](#).

4.16.2.4 `avaliaPotencialRotacaoCaso0e2()`

```
bool PecaS::avaliaPotencialRotacaoCaso0e2 (
    int x,
    int y,
    int iPieceWidth )
```

4.16.2.5 `avaliaPotencialRotacaoCaso1e3()`

```
bool PecaS::avaliaPotencialRotacaoCaso1e3 (
    int x,
    int y,
    int iPieceHeight )
```

4.16.2.6 `collisionYPos()`

```
int PecaS::collisionYPos ( ) [virtual]
```

Implements [Peca](#).

4.16.2.7 `decNumberTranslation()`

```
void PecaS::decNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.16.2.8 `drawObject()`

```
void PecaS::drawObject ( ) [virtual]
```

Implements [Peca](#).

4.16.2.9 dropAccordingToLevel()

```
int PecaS::dropAccordingToLevel (
    double x ) [virtual]
```

Modificar o valor de tempo de acordo com o nivel de jogo.

Implements [Peca](#).

4.16.2.10 getGameGrid()

```
int ** PecaS::getGameGrid ( ) [virtual]
```

Implements [Peca](#).

4.16.2.11 getNumberDown()

```
int PecaS::getNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.16.2.12 getNumberRotate()

```
int PecaS::getNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.16.2.13 getNumberTranslation()

```
int PecaS::getNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.16.2.14 getXPosD()

```
int PecaS::getXPosD ( ) [virtual]
```

Implements [Peca](#).

4.16.2.15 getXPosE()

```
int PecaS::getXPosE ( ) [virtual]
```

Implements [Peca](#).

4.16.2.16 hasCollidedBottom()

```
bool PecaS::hasCollidedBottom ( ) [virtual]
```

Implements [Peca](#).

4.16.2.17 hasCollidedLeft()

```
bool PecaS::hasCollidedLeft ( ) [virtual]
```

Implements [Peca](#).

4.16.2.18 hasCollidedRight()

```
bool PecaS::hasCollidedRight ( ) [virtual]
```

Implements [Peca](#).

4.16.2.19 incNumberDown()

```
void PecaS::incNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.16.2.20 incNumberRotate()

```
void PecaS::incNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.16.2.21 incNumberTranslation()

```
void PecaS::incNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.16.2.22 modificaQuadricula()

```
void PecaS::modificaQuadricula (
    GLfloat x,
    GLfloat y ) [virtual]
```

Implements [Peca](#).

4.16.2.23 preencheMatrizCaso0e2()

```
bool PecaS::preencheMatrizCaso0e2 (
    int x,
    int y )
```

4.16.2.24 preencheMatrizCaso1e3()

```
bool PecaS::preencheMatrizCaso1e3 (
    int x,
    int y )
```

4.16.2.25 preencheRealVertex()

```
void PecaS::preencheRealVertex (
    GLfloat x,
    GLfloat y ) [virtual]
```

Preenchimento do vertexBuffer de acordo com rotacao da peca e local de colisao, para armazenamento do vertex↔ Buffer das pecas ja jogadas (em Projeto.cpp)

Implements [Peca](#).

4.16.2.26 realVertexBuffer()

```
void PecaS::realVertexBuffer ( ) [virtual]
```

[Peca](#) quando desenhada esta na origem. A colisao de peca, promove a invocacao deste metodo que tratara de representar a peca, sob a forma de vertexBuffer, tendo em conta local onde esta colidiu e a rotacao da peca.

Implements [Peca](#).

4.16.2.27 rotacaoPeca()

```
void PecaS::rotacaoPeca (
    glm::mat4 & rot ) [virtual]
```

glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot

Implements [Peca](#).

4.16.2.28 rotationAllowed()

```
bool PecaS::rotationAllowed ( ) [virtual]
```

Implements [Peca](#).

4.16.2.29 translacaoPeca()

```
void PecaS::translacaoPeca (
    glm::mat4 & trans,
    bool bPause ) [virtual]
```

Implements [Peca](#).

4.16.2.30 translacaoPecaContorno()

```
void PecaS::translacaoPecaContorno (
    glm::mat4 & trans ) [virtual]
```

Implements [Peca](#).

4.16.3 Member Data Documentation

4.16.3.1 g_real_vertex_buffer

```
std::vector< GLfloat > PecaS::g_real_vertex_buffer = {} [static]
```

4.16.3.2 g_texture_buffer_data

```
std::vector< GLfloat > PecaS::g_texture_buffer_data [static]
```

Textura da peca.

4.16.3.3 g_texture_buffer_dataPos

```
std::vector< GLfloat > PecaS::g_texture_buffer_dataPos [static]
```

Textura da posicao de colisao da peca.

4.16.3.4 g_vertex_buffer_data

```
std::vector< GLfloat > PecaS::g_vertex_buffer_data [static]
```

Desenho da peca.

4.16.3.5 g_vertex_buffer_dataPos

```
std::vector<GLfloat> PecaS::g_vertex_buffer_dataPos [static]
```

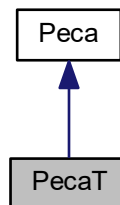
The documentation for this class was generated from the following files:

- [headers/PecaS.hpp](#)
- [PecaS.cpp](#)

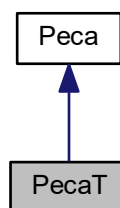
4.17 PecaT Class Reference

```
#include <PecaT.hpp>
```

Inheritance diagram for PecaT:



Collaboration diagram for PecaT:



Public Member Functions

- [PecaT](#) ()
- [PecaT](#) (int, int, int, int, int **, int)
- void [preencheRealVertex](#) (GLfloat, GLfloat)
- void [modificaQuadricula](#) (GLfloat, GLfloat)
Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.
- void [realVertexBuffer](#) ()
- bool [preencheMatriz](#) (int, int, int, int)
- bool [atualizaMatriz](#) ()
- bool [avaliaPotencialRotacao](#) (int, int, int, int, int, int, int)
- bool [avaliaColisao](#) ()
- void [atualizaPos](#) ()
- void [rotacaoPeca](#) (glm::mat4 &rot)
*glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot*
- void [translacaoPeca](#) (glm::mat4 &trans, bool)

- int [collisionYPos](#) ()
- void [translacaoPecaContorno](#) (glm::mat4 &trans)
- int [dropAccordingToLevel](#) (double)
Modificar o valor de tempo de acordo com o nivel de jogo.
- int ** [getGameGrid](#) ()
- int [getNumberRotate](#) ()
- int [getNumberTranslation](#) ()
- int [getNumberDown](#) ()
- int [getXPosD](#) ()
- int [getXPosE](#) ()
- bool [hasCollidedBottom](#) ()
- bool [hasCollidedLeft](#) ()
- bool [hasCollidedRight](#) ()
- bool [rotationAllowed](#) ()
- void [incNumberRotate](#) ()
- void [incNumberTranslation](#) ()
- void [decNumberTranslation](#) ()
- void [incNumberDown](#) ()
- void [drawObject](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
Desenho da peca.
- static std::vector< GLfloat > [g_texture_buffer_data](#)
Textura da peca.
- static std::vector< GLfloat > [g_real_vertex_buffer](#) = {}
- static std::vector< GLfloat > [g_vertex_buffer_dataPos](#)
- static std::vector< GLfloat > [g_texture_buffer_dataPos](#)
Textura da posicao de colisao da peca.

4.17.1 Constructor & Destructor Documentation

4.17.1.1 PecaT() [1/2]

```
PecaT::PecaT ( )
```

4.17.1.2 PecaT() [2/2]

```
PecaT::PecaT (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.17.2 Member Function Documentation

4.17.2.1 atualizaMatriz()

```
bool PecaT::atualizaMatriz ( ) [virtual]
```

Implements [Peca](#).

4.17.2.2 atualizaPos()

```
void PecaT::atualizaPos ( ) [virtual]
```

Implements [Peca](#).

4.17.2.3 avaliaColisao()

```
bool PecaT::avaliaColisao ( ) [virtual]
```

Implements [Peca](#).

4.17.2.4 avaliaPotencialRotacao()

```
bool PecaT::avaliaPotencialRotacao (
    int x,
    int y,
    int xAjuste,
    int yAjuste,
    int iPieceHeight,
    int xPosE,
    int xPosD )
```

4.17.2.5 collisionYPos()

```
int PecaT::collisionYPos ( ) [virtual]
```

Implements [Peca](#).

4.17.2.6 decNumberTranslation()

```
void PecaT::decNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.17.2.7 drawObject()

```
void PecaT::drawObject ( ) [virtual]
```

Implements [Peca](#).

4.17.2.8 dropAccordingToLevel()

```
int PecaT::dropAccordingToLevel (
    double x ) [virtual]
```

Modificar o valor de tempo de acordo com o nivel de jogo.

Implements [Peca](#).

4.17.2.9 getGameGrid()

```
int ** PecaT::getGameGrid ( ) [virtual]
```

Implements [Peca](#).

4.17.2.10 getNumberDown()

```
int PecaT::getNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.17.2.11 getNumberRotate()

```
int PecaT::getNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.17.2.12 `getNumberTranslation()`

```
int PecaT::getNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.17.2.13 `getXPosD()`

```
int PecaT::getXPosD ( ) [virtual]
```

Implements [Peca](#).

4.17.2.14 `getXPosE()`

```
int PecaT::getXPosE ( ) [virtual]
```

Implements [Peca](#).

4.17.2.15 `hasCollidedBottom()`

```
bool PecaT::hasCollidedBottom ( ) [virtual]
```

Implements [Peca](#).

4.17.2.16 `hasCollidedLeft()`

```
bool PecaT::hasCollidedLeft ( ) [virtual]
```

Implements [Peca](#).

4.17.2.17 `hasCollidedRight()`

```
bool PecaT::hasCollidedRight ( ) [virtual]
```

Implements [Peca](#).

4.17.2.18 incNumberDown()

```
void PecaT::incNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.17.2.19 incNumberRotate()

```
void PecaT::incNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.17.2.20 incNumberTranslation()

```
void PecaT::incNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.17.2.21 modificaQuadricula()

```
void PecaT::modificaQuadricula (
    GLfloat x,
    GLfloat y ) [virtual]
```

Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.

Implements [Peca](#).

4.17.2.22 preencheMatriz()

```
bool PecaT::preencheMatriz (
    int x,
    int y,
    int xAjuste,
    int yAjuste )
```

4.17.2.23 preencheRealVertex()

```
void PecaT::preencheRealVertex (
    GLfloat x,
    GLfloat y ) [virtual]
```

Preenchimento do vertexBuffer de acordo com rotacao da peca e local de colisao, para armazenamento do vertex↵ Buffer das pecas ja jogadas (em Projeto.cpp)

Implements [Peca](#).

4.17.2.24 realVertexBuffer()

```
void PecaT::realVertexBuffer ( ) [virtual]
```

[Peca](#) quando desenhada esta na origem. A colisao de peca, promove a invocacao deste metodo que tratara de representar a peca, sob a forma de vertexBuffer, tendo em conta local onde esta colidiu e a rotacao da peca.

Implements [Peca](#).

4.17.2.25 rotacaoPeca()

```
void PecaT::rotacaoPeca (
    glm::mat4 & rot ) [virtual]
```

glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot

Implements [Peca](#).

4.17.2.26 rotationAllowed()

```
bool PecaT::rotationAllowed ( ) [virtual]
```

Implements [Peca](#).

4.17.2.27 translacaoPeca()

```
void PecaT::translacaoPeca (
    glm::mat4 & trans,
    bool bPause ) [virtual]
```

Implements [Peca](#).

4.17.2.28 translacaoPecaContorno()

```
void PecaT::translacaoPecaContorno (
    glm::mat4 & trans ) [virtual]
```

Implements [Peca](#).

4.17.3 Member Data Documentation

4.17.3.1 g_real_vertex_buffer

```
std::vector< GLfloat > PecaT::g_real_vertex_buffer = {} [static]
```

4.17.3.2 g_texture_buffer_data

```
std::vector< GLfloat > PecaT::g_texture_buffer_data [static]
```

Textura da peca.

4.17.3.3 g_texture_buffer_dataPos

```
std::vector< GLfloat > PecaT::g_texture_buffer_dataPos [static]
```

Textura da posicao de colisao da peca.

4.17.3.4 g_vertex_buffer_data

```
std::vector< GLfloat > PecaT::g_vertex_buffer_data [static]
```

Desenho da peca.

4.17.3.5 g_vertex_buffer_dataPos

```
std::vector<GLfloat> PecaT::g_vertex_buffer_dataPos [static]
```

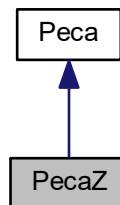
The documentation for this class was generated from the following files:

- headers/[PecaT.hpp](#)
- [PecaT.cpp](#)

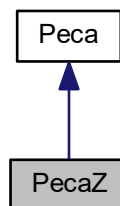
4.18 PecaZ Class Reference

```
#include <PecaZ.hpp>
```

Inheritance diagram for PecaZ:



Collaboration diagram for PecaZ:



Public Member Functions

- [PecaZ](#) ()
- [PecaZ](#) (int, int, int, int, int **, int)
- void [preencheRealVertex](#) (GLfloat, GLfloat)
- void [modificaQuadricula](#) (GLfloat, GLfloat)
 - Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.*
- void [realVertexBuffer](#) ()
- bool [preencheMatrizCaso0e2](#) (int, int)
- bool [preencheMatrizCaso1e3](#) (int, int)
- bool [atualizaMatriz](#) ()
- bool [avaliaColisao](#) ()
- bool [avaliaPotencialRotacaoCaso0e2](#) (int, int, int)
- bool [avaliaPotencialRotacaoCaso1e3](#) (int, int, int)
- void [atualizaPos](#) ()
- void [rotacaoPeca](#) (glm::mat4 &rot)

- `glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot`
- void [translacaoPeca](#) (glm::mat4 &trans, bool)
- int [collisionYPos](#) ()
- void [translacaoPecaContorno](#) (glm::mat4 &trans)
- int [dropAccordingToLevel](#) (double)

Modificar o valor de tempo de acordo com o nivel de jogo.

- int ** [getGameGrid](#) ()
- int [getNumberRotate](#) ()
- int [getNumberTranslation](#) ()
- int [getNumberDown](#) ()
- int [getXPosD](#) ()
- int [getXPosE](#) ()
- bool [hasCollidedBottom](#) ()
- bool [hasCollidedLeft](#) ()
- bool [hasCollidedRight](#) ()
- bool [rotationAllowed](#) ()
- void [incNumberRotate](#) ()
- void [incNumberTranslation](#) ()
- void [decNumberTranslation](#) ()
- void [incNumberDown](#) ()
- void [drawObject](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
Desenho da peca.
- static std::vector< GLfloat > [g_texture_buffer_data](#)
Textura da peca.
- static std::vector< GLfloat > [g_real_vertex_buffer](#) = {}
- static std::vector< GLfloat > [g_vertex_buffer_dataPos](#)
- static std::vector< GLfloat > [g_texture_buffer_dataPos](#)
Textura da posicao de colisao da peca.

4.18.1 Constructor & Destructor Documentation

4.18.1.1 PecaZ() [1/2]

```
PecaZ::PecaZ ( )
```

4.18.1.2 PecaZ() [2/2]

```
PecaZ::PecaZ (
    int xPosInicial,
    int yPosInicial,
    int iHeight,
    int iWidth,
    int ** gameGrid,
    int iGameLevel )
```

4.18.2 Member Function Documentation

4.18.2.1 atualizaMatriz()

```
bool PecaZ::atualizaMatriz ( ) [virtual]
```

Implements [Peca](#).

4.18.2.2 atualizaPos()

```
void PecaZ::atualizaPos ( ) [virtual]
```

Implements [Peca](#).

4.18.2.3 avaliaColisao()

```
bool PecaZ::avaliaColisao ( ) [virtual]
```

Implements [Peca](#).

4.18.2.4 avaliaPotencialRotacaoCaso0e2()

```
bool PecaZ::avaliaPotencialRotacaoCaso0e2 (
    int x,
    int y,
    int iPieceWidth )
```

4.18.2.5 avaliaPotencialRotacaoCaso1e3()

```
bool PecaZ::avaliaPotencialRotacaoCaso1e3 (
    int x,
    int y,
    int iPieceHeight )
```

4.18.2.6 collisionYPos()

```
int PecaZ::collisionYPos ( ) [virtual]
```

Implements [Peca](#).

4.18.2.7 decNumberTranslation()

```
void PecaZ::decNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.18.2.8 drawObject()

```
void PecaZ::drawObject ( ) [virtual]
```

Implements [Peca](#).

4.18.2.9 dropAccordingToLevel()

```
int PecaZ::dropAccordingToLevel (
    double x ) [virtual]
```

Modificar o valor de tempo de acordo com o nivel de jogo.

Implements [Peca](#).

4.18.2.10 getGameGrid()

```
int ** PecaZ::getGameGrid ( ) [virtual]
```

Implements [Peca](#).

4.18.2.11 getNumberDown()

```
int PecaZ::getNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.18.2.12 `getNumberRotate()`

```
int PecaZ::getNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.18.2.13 `getNumberTranslation()`

```
int PecaZ::getNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.18.2.14 `getXPosD()`

```
int PecaZ::getXPosD ( ) [virtual]
```

Implements [Peca](#).

4.18.2.15 `getXPosE()`

```
int PecaZ::getXPosE ( ) [virtual]
```

Implements [Peca](#).

4.18.2.16 `hasCollidedBottom()`

```
bool PecaZ::hasCollidedBottom ( ) [virtual]
```

Implements [Peca](#).

4.18.2.17 `hasCollidedLeft()`

```
bool PecaZ::hasCollidedLeft ( ) [virtual]
```

Implements [Peca](#).

4.18.2.18 hasCollidedRight()

```
bool PecaZ::hasCollidedRight ( ) [virtual]
```

Implements [Peca](#).

4.18.2.19 incNumberDown()

```
void PecaZ::incNumberDown ( ) [virtual]
```

Implements [Peca](#).

4.18.2.20 incNumberRotate()

```
void PecaZ::incNumberRotate ( ) [virtual]
```

Implements [Peca](#).

4.18.2.21 incNumberTranslation()

```
void PecaZ::incNumberTranslation ( ) [virtual]
```

Implements [Peca](#).

4.18.2.22 modificaQuadricula()

```
void PecaZ::modificaQuadricula (
    GLfloat x,
    GLfloat y ) [virtual]
```

Modificacao de um bloco/quadricula da peca, representado por 2 triangulos.

Implements [Peca](#).

4.18.2.23 preencheMatrizCaso0e2()

```
bool PecaZ::preencheMatrizCaso0e2 (
    int x,
    int y )
```

4.18.2.24 preencheMatrizCaso1e3()

```
bool PecaZ::preencheMatrizCaso1e3 (
    int x,
    int y )
```

4.18.2.25 preencheRealVertex()

```
void PecaZ::preencheRealVertex (
    GLfloat x,
    GLfloat y ) [virtual]
```

Preenchimento do vertexBuffer de acordo com rotacao da peca e local de colisao, para armazenamento do vertex↔
Buffer das pecas ja jogadas (em Projeto.cpp)

Implements [Peca](#).

4.18.2.26 realVertexBuffer()

```
void PecaZ::realVertexBuffer ( ) [virtual]
```

[Peca](#) quando desenhada esta na origem. A colisao de peca, promove a invocacao deste metodo que tratara de representar a peca, sob a forma de vertexBuffer, tendo em conta local onde esta colidiu e a rotacao da peca.

Implements [Peca](#).

4.18.2.27 rotacaoPeca()

```
void PecaZ::rotacaoPeca (
    glm::mat4 & rot ) [virtual]
```

glm::mat4& rot => alternativa a glm::mat4 *rot aqui, com chamada de funcao &rot, ao inves de rot

Implements [Peca](#).

4.18.2.28 rotationAllowed()

```
bool PecaZ::rotationAllowed ( ) [virtual]
```

Implements [Peca](#).

4.18.2.29 translacaoPeca()

```
void PecaZ::translacaoPeca (
    glm::mat4 & trans,
    bool bPause ) [virtual]
```

Implements [Peca](#).

4.18.2.30 translacaoPecaContorno()

```
void PecaZ::translacaoPecaContorno (
    glm::mat4 & trans ) [virtual]
```

Implements [Peca](#).

4.18.3 Member Data Documentation

4.18.3.1 g_real_vertex_buffer

```
std::vector< GLfloat > PecaZ::g_real_vertex_buffer = {} [static]
```

4.18.3.2 g_texture_buffer_data

```
std::vector< GLfloat > PecaZ::g_texture_buffer_data [static]
```

Textura da peca.

4.18.3.3 g_texture_buffer_dataPos

```
std::vector< GLfloat > PecaZ::g_texture_buffer_dataPos [static]
```

Textura da posicao de colisao da peca.

4.18.3.4 g_vertex_buffer_data

```
std::vector< GLfloat > PecaZ::g_vertex_buffer_data [static]
```

Desenho da peca.

4.18.3.5 g_vertex_buffer_dataPos

```
std::vector<GLfloat> PecaZ::g_vertex_buffer_dataPos [static]
```

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

- [headers/PecaZ.hpp](#)
- [PecaZ.cpp](#)

4.19 Score Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Score\(\)](#)

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.19.1 Constructor & Destructor Documentation

4.19.1.1 Score()

```
Score::Score ( )
```

4.19.2 Member Data Documentation

4.19.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Score::g_texture_buffer_data [static]
```

4.19.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Score::g_vertex_buffer_data [static]
```

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

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.20 Seven Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Seven](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.20.1 Constructor & Destructor Documentation

4.20.1.1 Seven()

```
Seven::Seven ( )
```

4.20.2 Member Data Documentation

4.20.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Seven::g_texture_buffer_data [static]
```

Initial value:

```
= {
    0.51f, 1.0f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 0.76f,

    0.51f, 1.0f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 1.0f,
    0.51f, 0.76f,
    0.74f, 0.76f,
}
```

4.20.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Seven::g_vertex_buffer_data [static]
```

Initial value:

```
= {
    0.0f, 1.4f, 0.0f,
    1.0f, 1.4f, 0.0f,
    0.0f, 1.6f, 0.0f,
    1.0f, 1.4f, 0.0f,
    0.0f, 1.6f, 0.0f,
    1.0f, 1.6f, 0.0f,

    0.8f, 0.0f, 0.0f,
    1.0f, 0.0f, 0.0f,
    0.8f, 1.6f, 0.0f,
    1.0f, 0.0f, 0.0f,
    0.8f, 1.6f, 0.0f,
    1.0f, 1.6f, 0.0f,
}
```

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

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.21 Six Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Six \(\)](#)

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.21.1 Constructor & Destructor Documentation

4.21.1.1 Six()

```
Six::Six ( )
```

4.21.2 Member Data Documentation

4.21.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Six::g_texture_buffer_data [static]
```

4.21.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Six::g_vertex_buffer_data [static]
```

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

- [headers/Font.hpp](#)
- [Font.cpp](#)

4.22 stbi_io_callbacks Struct Reference

```
#include <stb_image.h>
```

Public Attributes

- `int(* read)(void *user, char *data, int size)`
- `void(* skip)(void *user, int n)`
- `int(* eof)(void *user)`

4.22.1 Member Data Documentation

4.22.1.1 eof

```
int(* stbi_io_callbacks::eof) (void *user)
```

4.22.1.2 read

```
int(* stbi_io_callbacks::read) (void *user, char *data, int size)
```

4.22.1.3 skip

```
void(* stbi_io_callbacks::skip) (void *user, int n)
```

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

- [headers/stb_image.h](#)

4.23 Three Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Three](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.23.1 Constructor & Destructor Documentation

4.23.1.1 Three()

```
Three::Three ( )
```

4.23.2 Member Data Documentation

4.23.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Three::g_texture_buffer_data [static]
```


4.23.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Three::g_vertex_buffer_data [static]
```

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

- headers/[Font.hpp](#)
- [Font.cpp](#)

4.24 Two Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Two](#) ()

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.24.1 Constructor & Destructor Documentation

4.24.1.1 Two()

```
Two::Two ( )
```

4.24.2 Member Data Documentation

4.24.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Two::g_texture_buffer_data [static]
```

4.24.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Two::g_vertex_buffer_data [static]
```

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

- [headers/Font.hpp](#)
- [Font.cpp](#)

4.25 Zero Class Reference

```
#include <Font.hpp>
```

Public Member Functions

- [Zero \(\)](#)

Static Public Attributes

- static std::vector< GLfloat > [g_vertex_buffer_data](#)
- static std::vector< GLfloat > [g_texture_buffer_data](#)

4.25.1 Constructor & Destructor Documentation

4.25.1.1 Zero()

```
Zero::Zero ( )
```

4.25.2 Member Data Documentation

4.25.2.1 g_texture_buffer_data

```
std::vector< GLfloat > Zero::g_texture_buffer_data [static]
```

4.25.2.2 g_vertex_buffer_data

```
std::vector< GLfloat > Zero::g_vertex_buffer_data [static]
```

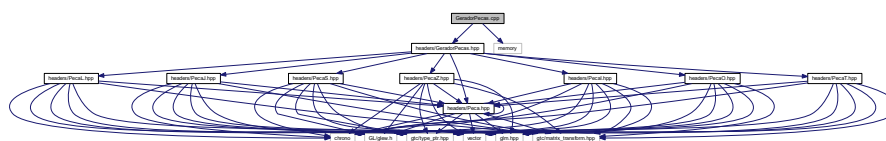
The documentation for this class was generated from the following files:

- [headers/Font.hpp](#)
- [Font.cpp](#)

File Documentation

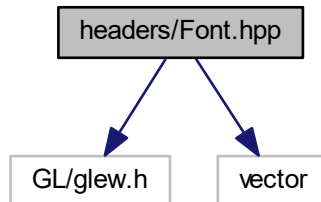
```
#include "headers/Font.hpp"
```

Include dependency graph for Font.cpp:

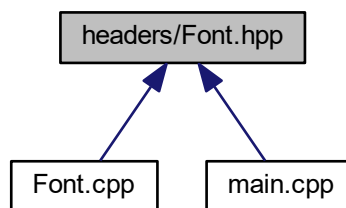


5.3 headers/Font.hpp File Reference

```
#include <GL/glew.h>
#include <vector>
Include dependency graph for Font.hpp:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [Zero](#)
- class [One](#)
- class [Two](#)
- class [Three](#)
- class [Four](#)
- class [Five](#)
- class [Six](#)
- class [Seven](#)
- class [Eight](#)
- class [Nine](#)
- class [Score](#)
- class [Level](#)
- class [Lines](#)
- class [Next](#)
- class [Hold](#)

Macros

- `#define` [GLEW_STATIC](#)

5.3.1 Macro Definition Documentation

5.3.1.1 GLEW_STATIC

```
#define GLEW_STATIC
```

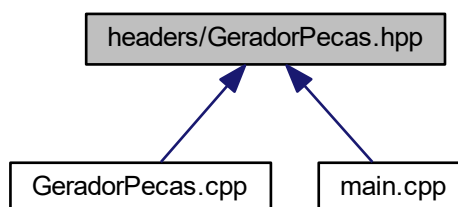
5.4 headers/GeradorPecas.hpp File Reference

```
#include "headers/PecaL.hpp"
#include "headers/PecaJ.hpp"
#include "headers/PecaS.hpp"
#include "headers/PecaI.hpp"
#include "headers/PecaZ.hpp"
#include "headers/PecaO.hpp"
#include "headers/PecaT.hpp"
#include "headers/Peca.hpp"
```

Include dependency graph for GeradorPecas.hpp:



This graph shows which files directly or indirectly include this file:

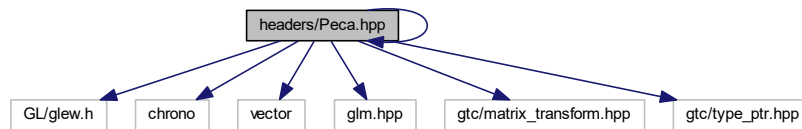


Classes

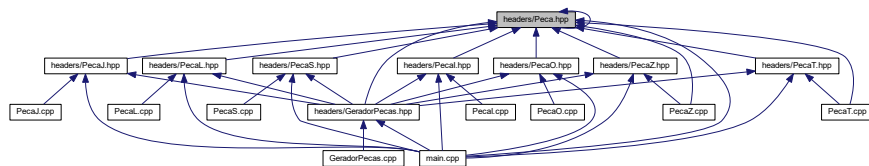
- class [GeradorPecas](#)

5.5 headers/Peca.hpp File Reference

```
#include "headers/Peca.hpp"
#include <GL/glew.h>
#include <chrono>
#include <vector>
#include <glm.hpp>
#include <gtc/matrix_transform.hpp>
#include <gtc/type_ptr.hpp>
Include dependency graph for Peca.hpp:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [Peca](#)

Macros

- `#define` [GLEW_STATIC](#)

5.5.1 Macro Definition Documentation

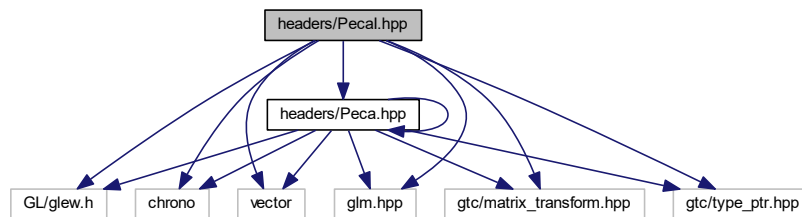
5.5.1.1 GLEW_STATIC

```
#define GLEW_STATIC
```

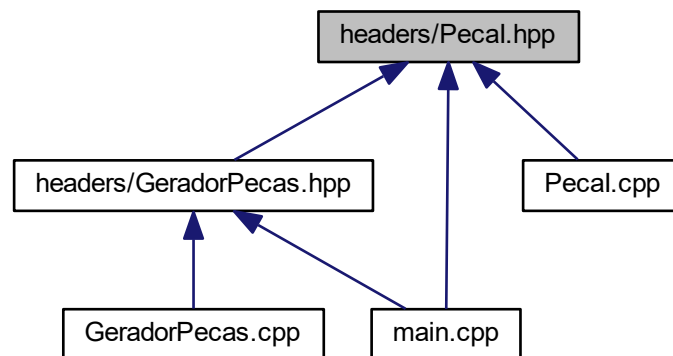
5.6 headers/Pecal.hpp File Reference

```
#include "headers/Peca.hpp"
#include <GL/glew.h>
#include <chrono>
#include <vector>
#include <glm.hpp>
#include <gtc/matrix_transform.hpp>
#include <gtc/type_ptr.hpp>
```

Include dependency graph for Pecal.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class [Pecal](#)

Macros

- #define [GLEW_STATIC](#)

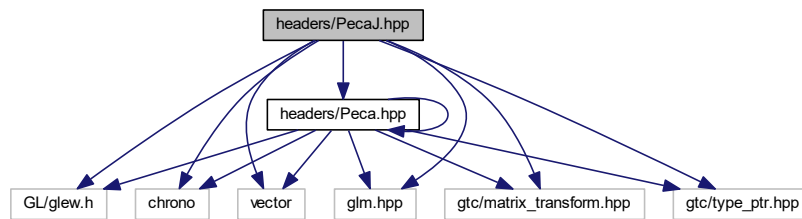
5.6.1 Macro Definition Documentation

5.6.1.1 GLEW_STATIC

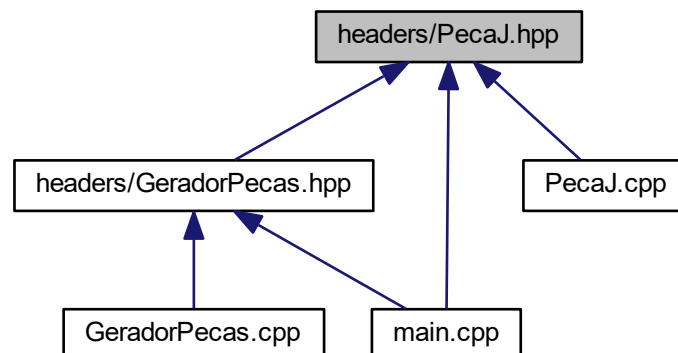
```
#define GLEW_STATIC
```

5.7 headers/PecaJ.hpp File Reference

```
#include "headers/Peca.hpp"
#include <GL/glew.h>
#include <chrono>
#include <vector>
#include <glm.hpp>
#include <gtc/matrix_transform.hpp>
#include <gtc/type_ptr.hpp>
Include dependency graph for PecaJ.hpp:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [PecaJ](#)

Macros

- `#define` [GLEW_STATIC](#)

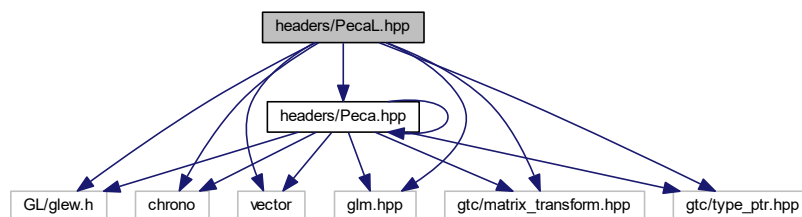
5.7.1 Macro Definition Documentation

5.7.1.1 GLEW_STATIC

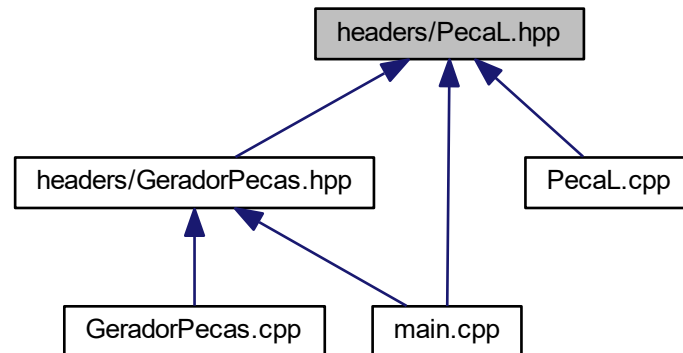
```
#define GLEW_STATIC
```

5.8 headers/PecaL.hpp File Reference

```
#include "headers/Peca.hpp"  
#include <GL/glew.h>  
#include <chrono>  
#include <vector>  
#include <glm.hpp>  
#include <gtc/matrix_transform.hpp>  
#include <gtc/type_ptr.hpp>  
Include dependency graph for PecaL.hpp:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [PecaL](#)

Macros

- #define [GLEW_STATIC](#)

5.8.1 Macro Definition Documentation

5.8.1.1 GLEW_STATIC

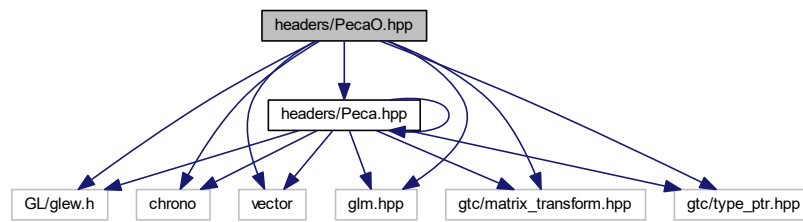
```
#define GLEW_STATIC
```

5.9 headers/PecaO.hpp File Reference

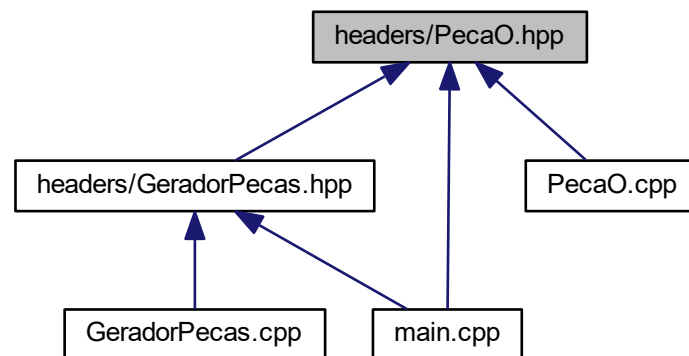
```
#include "headers/Peca.hpp"
#include <GL/glew.h>
#include <chrono>
#include <vector>
#include <glm.hpp>
#include <gtc/matrix_transform.hpp>
```

```
#include <gtc/type_ptr.hpp>
```

Include dependency graph for PecaO.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class [PecaO](#)

Macros

- `#define` [GLEW_STATIC](#)

5.9.1 Macro Definition Documentation

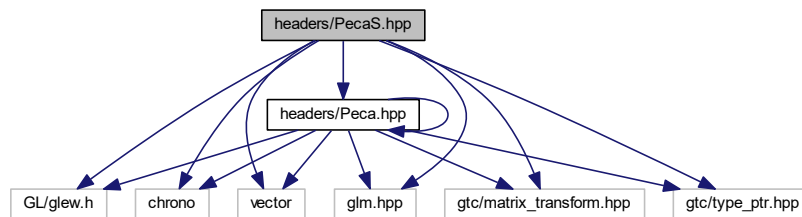
5.9.1.1 GLEW_STATIC

```
#define GLEW_STATIC
```

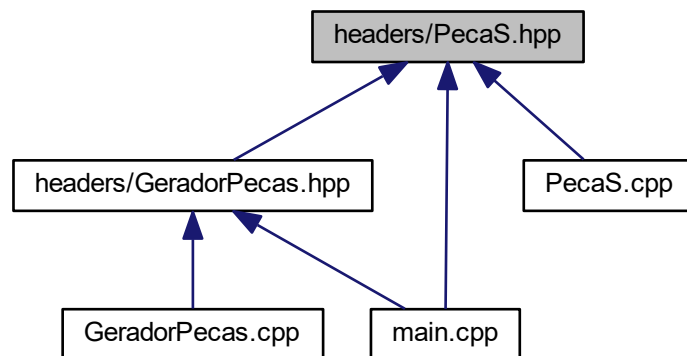
5.10 headers/PecaS.hpp File Reference

```
#include "headers/Peca.hpp"
#include <GL/glew.h>
#include <chrono>
#include <vector>
#include <glm.hpp>
#include <gtc/matrix_transform.hpp>
#include <gtc/type_ptr.hpp>
```

Include dependency graph for PecaS.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class [PecaS](#)

Macros

- #define [GLEW_STATIC](#)

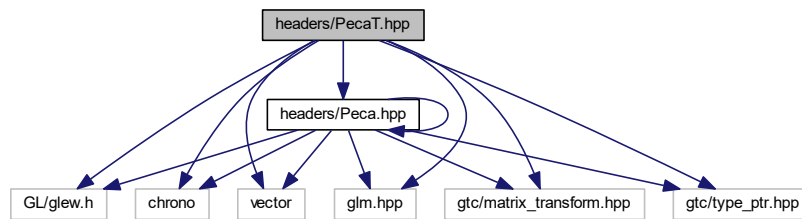
5.10.1 Macro Definition Documentation

5.10.1.1 GLEW_STATIC

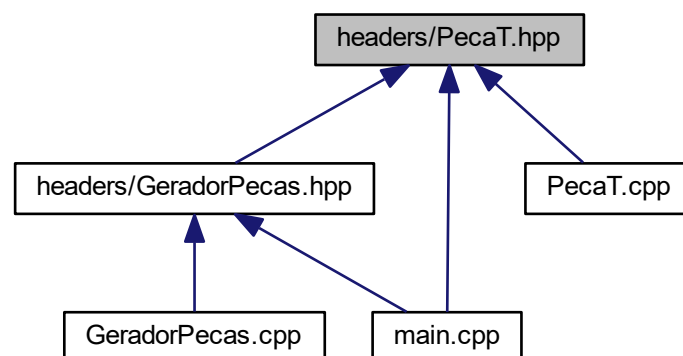
```
#define GLEW_STATIC
```

5.11 headers/PecaT.hpp File Reference

```
#include "headers/Peca.hpp"
#include <GL/glew.h>
#include <chrono>
#include <vector>
#include <glm.hpp>
#include <gtc/matrix_transform.hpp>
#include <gtc/type_ptr.hpp>
Include dependency graph for PecaT.hpp:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [PecaT](#)

Macros

- `#define` [GLEW_STATIC](#)

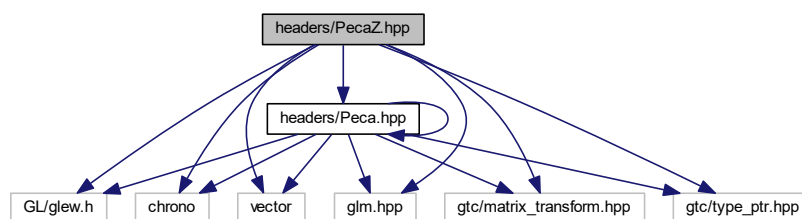
5.11.1 Macro Definition Documentation

5.11.1.1 GLEW_STATIC

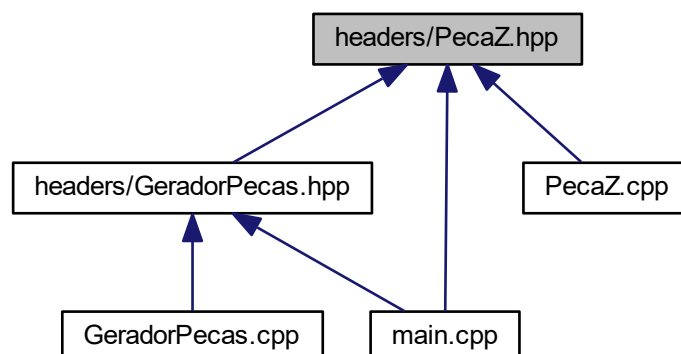
```
#define GLEW_STATIC
```

5.12 headers/PecaZ.hpp File Reference

```
#include "headers/Peca.hpp"  
#include <GL/glew.h>  
#include <chrono>  
#include <vector>  
#include <glm.hpp>  
#include <gtc/matrix_transform.hpp>  
#include <gtc/type_ptr.hpp>  
Include dependency graph for PecaZ.hpp:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [PecaZ](#)

Macros

- `#define` [GLEW_STATIC](#)

5.12.1 Macro Definition Documentation

5.12.1.1 GLEW_STATIC

```
#define GLEW_STATIC
```

5.13 main.cpp File Reference

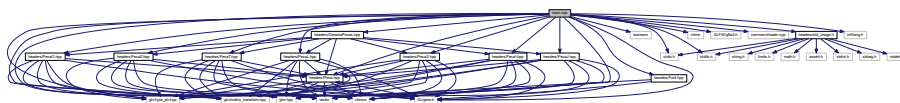
```
#include "headers/PecaL.hpp"
#include "headers/PecaJ.hpp"
#include "headers/PecaS.hpp"
#include "headers/PecaI.hpp"
#include "headers/PecaZ.hpp"
#include "headers/PecaO.hpp"
#include "headers/PecaT.hpp"
#include "headers/Peca.hpp"
#include "headers/GeradorPecas.hpp"
```

```

#include "headers/Font.hpp"
#include <iostream>
#include <stdio.h>
#include <stdlib.h>
#include <chrono>
#include <ctime>
#include <GL/glew.h>
#include <GLFW/glfw3.h>
#include <glm.hpp>
#include <gtc/matrix_transform.hpp>
#include <gtc/type_ptr.hpp>
#include <common/shader.cpp>
#include "headers/stb_image.h"
#include <irrKlang.h>

```

Include dependency graph for main.cpp:



Macros

- `#define GLEW_STATIC`
- `#define STB_IMAGE_IMPLEMENTATION`

Functions

- void `inicializaMatrizZero ()`
Inicializar matriz a zeros.
- int `randNum ()`
Generates random number from 0 to 6 (7 pieces)
- int `pontosPorLinhasEliminadas (int iNumbLinhasEliminadas)`
- void `somPassagemNivel ()`
- void `atualizaNivelJogo ()`
- `Peca * returnPeca (GeradorPecas &geraPecas, int switchValue)`
- `std::vector< GLfloat > vertexBufferPiece (Peca &pPeca, int switchValue)`
- `std::vector< GLfloat > textureBufferPiece (Peca &pPeca, int switchValue)`
- `std::vector< GLfloat > * realVertexBufferPiece (Peca &pPeca)`
- `std::vector< GLfloat > textureBufferPosPiece (Peca &pPeca, int switchValue)`
- `std::vector< GLfloat > vertexBufferNumber (int switchValue)`
- `std::vector< GLfloat > textureBufferNumber (int switchValue)`
- void `transferDataToGPUMemory (Peca &pPeca, Peca &pNextPeca, Peca &pSavedPeca)`
- void `cleanupDataFromGPU ()`
- void `drawScore (int iScore)`
- void `drawLevel (int iLevel)`
- void `drawLines (int iLines)`
- void `desenhaAmbiente ()`
Função para desenhar todo o ambiente, sem instanciar peças (usado aquando da eliminação de linhas)
- void `eliminaLinha (int iLinha)`
- void `atualizaCampoJogo (int iLinha)`
- `std::vector< int > avaliaEliminacaoLinhas (int **gameGrid)`

Verifica, na matriz de inteiros, linhas que apenas contenham 1's, ou seja, linhas que terão de ser eliminadas.

- bool [evaluatePieceCollision](#) ([Peca](#) &[pPeca](#))
- bool [drawCurrentObject](#) ([Peca](#) &[pPeca](#))
- void [drawObjects](#) (int [ilidentificador](#))
- void [setMVP_And_UniqueLoads](#) ()
- void [registerUserInputs](#) ([Peca](#) &[pPeca](#))

Retains information of user inputs, regarding piece movement.

- int [main](#) (void)

Variables

- GLFWwindow * [window](#)

- GLuint [VertexArrayID](#)

Vertex array object (VAO)

- GLuint [TextureID](#) [4]

Texture array object (TAO)

- GLuint [vertexbuffer](#)

Vertex buffer object (VBO)

- GLuint [vertexbufferTot](#)
- GLuint [vertexbufferNextPiece](#)
- GLuint [vertexbufferSavedPiece](#)
- GLuint [vertexbufferBackground](#)
- GLuint [vertexbufferPosPiece](#)
- GLuint [vertexbufferGrid](#)
- GLuint [vertexbufferScore](#)
- GLuint [vertexbufferScoreNum](#)
- GLuint [vertexbufferLevel](#)
- GLuint [vertexbufferLevelNum](#)
- GLuint [vertexbufferLines](#)
- GLuint [vertexbufferLinesNum](#)
- GLuint [vertexbufferNext](#)
- GLuint [vertexbufferHold](#)
- GLuint [vertexbufferPause](#)
- GLuint [vertexbufferGameOver](#)
- GLuint [vertexbufferControls](#)
- GLuint [texturebuffer](#)

Texture buffer object (TBO)

- GLuint [texturebufferTot](#)
- GLuint [texturebufferNextPiece](#)
- GLuint [texturebufferSavedPiece](#)
- GLuint [texturebufferBackground](#)
- GLuint [texturebufferPosPiece](#)
- GLuint [texturebufferGrid](#)
- GLuint [texturebufferScore](#)
- GLuint [texturebufferScoreNum](#)
- GLuint [texturebufferLevel](#)
- GLuint [texturebufferLevelNum](#)
- GLuint [texturebufferLines](#)
- GLuint [texturebufferLinesNum](#)
- GLuint [texturebufferNext](#)
- GLuint [texturebufferHold](#)
- GLuint [texturebufferPause](#)
- GLuint [texturebufferGameOver](#)

- GLuint [texturebufferControls](#)
- GLuint [programID](#)
- GLSL program from the shaders.*
- int const [iWidth](#) = 10
- int const [iHeight](#) = 20
- GLfloat [WIDTH_PosXInicial](#) = 10.f
- GLfloat [HEIGHT_PosYInicial](#) = 18.f
- GLfloat [WIDTH](#) = 14.f
- GLfloat [HEIGHT](#) = 20.f
- GLint [WindowHeight](#) = 600
- GLint [WindowWidth](#) = [WIDTH](#) / [HEIGHT](#) * [WindowHeight](#)
- char [vertexShader](#) [] = "shaders/vertexShader.vertexshader"
- char [fragmentShader](#) [] = "shaders/fragmentShader.fragmentshader"
- char [WindowTitle](#) [] = "Tetris"
- const char * [caTiles](#) = "resources/images/tiles_large.tga"
- const char * [caBackground](#) = "resources/images/wallpaper.tga"
- const char * [caGamegrid](#) = "resources/images/gamegrid.tga"
- const char * [caPause](#) = "resources/images/pause.tga"
- const char * [caGameOver](#) = "resources/images/gameOver.tga"
- const char * [caControls](#) = "resources/images/controls.tga"
- std::chrono::time_point< std::chrono::steady_clock > [t_start](#)
- std::chrono::time_point< std::chrono::steady_clock > [t_collision](#)
- int [timerCollision](#)
- bool [bCollisionPiece](#) = false
- int ** [gameGrid](#)
- int [xPosInicial](#) = (int)[WIDTH_PosXInicial](#) / 2 - 1
- int [yPosInicial](#) = [HEIGHT_PosYInicial](#)
- [Peca](#) * [pPeca](#)
- [Peca](#) * [pNextpPeca](#)
- [Peca](#) * [pSavedpPeca](#)
- [GeradorPecas](#) [geraPecas](#)
- int [iGamePiece](#)
- int [iGameNextPiece](#)
- int [iSavedPiece](#) = 0
- bool [bAlteraPecaEmJogo](#) = false
- bool [bDropPeca](#) = false
- bool [bPause](#) = false
- bool [bGameOver](#) = false
- bool [bControls](#) = true
- bool [bMouse](#) = false
- bool [bRotateMouse](#) = false
- double [dXPosAnt](#) = 135
- bool [bFirstTime](#) = false
- int [newSizeVertex](#)
- int [newSizeTexture](#)
- int [iTexWidth](#)
- int [iTexHeight](#)
- int [iTexNumChannels](#)
- unsigned char * [ucaTexData](#)
- int [iPontuacao](#) = 0
- int [iNivelJogo](#) = 0
- int [iTotalLinhasEliminadasEmNivel](#) = 0
- unsigned int [globalBack](#)
- ISoundEngine * [SoundEngine](#) = createIrrKlangDevice()

- `ISound * sound`
- `bool bPassagemNivel = false`
Variável de som para impedir que a limpeza de linhas toque quando se passa de nível.
- `std::vector< GLfloat > g_vertex_buffer_data = {}`
Vértices da peça atual.
- `std::vector< GLfloat > g_texture_buffer_data = {}`
Textura da peça atual.
- `std::vector< GLfloat > g_vertex_buffer_dataTot = {}`
Vértices de todas as peças.
- `std::vector< GLfloat > g_texture_buffer_dataTot = {}`
Texturas de todas as peças.
- `std::vector< GLfloat > g_vertex_buffer_dataBack`
Vértices de background.
- `std::vector< GLfloat > g_vertex_buffer_dataPause`
Vértices de Pause.
- `std::vector< GLfloat > g_vertex_buffer_dataGameOver`
Vértices de Game Over.
- `std::vector< GLfloat > g_vertex_buffer_dataControls`
Vértices de Controls.
- `std::vector< GLfloat > g_texture_buffer_dataControls`
Textura de Controls.
- `std::vector< GLfloat > g_texture_buffer_dataGameOver`
Textura de Game Over.
- `std::vector< GLfloat > g_texture_buffer_dataBack`
Textura de background.
- `std::vector< GLfloat > g_texture_buffer_dataPause`
Textura de Pause.
- `std::vector< GLfloat > g_vertex_buffer_dataGrid`
Vértices da grelha de jogo.
- `std::vector< GLfloat > g_texture_buffer_dataGrid`
Textura da grelha de jogo.
- `std::vector< GLfloat > g_vertex_buffer_dataScoreNum = {}`
Vértices de todos os algarismos da pontuação.
- `std::vector< GLfloat > g_texture_buffer_dataScoreNum = {}`
Texturas de todos os algarismos da pontuação.
- `std::vector< GLfloat > g_vertex_buffer_dataLevelNum = {}`
Vértices de todos os algarismos do nível.
- `std::vector< GLfloat > g_texture_buffer_dataLevelNum = {}`
Texturas de todos os algarismos do nível.
- `std::vector< GLfloat > g_vertex_buffer_dataLinesNum = {}`
Vértices de todos os algarismos do nível.
- `std::vector< GLfloat > g_texture_buffer_dataLinesNum = {}`
Texturas de todos os algarismos do nível.
- `GLuint MVP`
Identificador de matriz MVP nos shaders.
- `glm::mat4 Projection = glm::mat4(1.0f)`
- `glm::mat4 View = glm::mat4(1.0f)`

5.13.1 Macro Definition Documentation

5.13.1.1 GLEW_STATIC

```
#define GLEW_STATIC
```

5.13.1.2 STB_IMAGE_IMPLEMENTATION

```
#define STB_IMAGE_IMPLEMENTATION
```

5.13.2 Function Documentation

5.13.2.1 atualizaCampoJogo()

```
void atualizaCampoJogo (
    int iLinha )
```

Atualiza matriz de inteiros, visando concordância com o observado no campo de jogo. Nesta função todas as linhas acima de iLinha, a linha a eliminar, serão substituídas pelas seguintes destas

5.13.2.2 atualizaNivelJogo()

```
void atualizaNivelJogo ( )
```

5.13.2.3 avaliaEliminacaoLinhas()

```
std::vector<int> avaliaEliminacaoLinhas (
    int ** gameGrid )
```

Verifica, na matriz de inteiros, linhas que apenas contenham 1's, ou seja, linhas que terão de ser eliminadas.

5.13.2.4 cleanupDataFromGPU()

```
void cleanupDataFromGPU ( )
```

5.13.2.5 `desenhaAmbiente()`

```
void desenhaAmbiente ( )
```

Função para desenhar todo o ambiente, sem instanciar peças (usado aquando da eliminação de linhas)

5.13.2.6 `drawCurrentObject()`

```
bool drawCurrentObject (
    Peca & pPeca )
```

5.13.2.7 `drawLevel()`

```
void drawLevel (
    int iLevel )
```

5.13.2.8 `drawLines()`

```
void drawLines (
    int iLines )
```

5.13.2.9 `drawObjects()`

```
void drawObjects (
    int iIdentificador )
```

Usar função comum para desenhar peças anteriormente jogadas, próxima peça e peça guardada. Estas são diferenciadas pelo identificador (argumento da função) Distingue entre o que desenhar na peça drawObjects:

- iIdentificador = 1 => desenhar todas as peças anteriormente jogadas
- iIdentificador = 2 => desenhar próxima peça a jogar
- iIdentificador = 3 => desenhar peça guardada pelo utilizador
- iIdentificador = 4 => desenhar a palavra "SCORE"
- iIdentificador = 5 => desenhar números da pontuação
- iIdentificador = 6 => desenhar a palavra "LEVEL"
- iIdentificador = 7 => desenhar números do nível
- iIdentificador = 8 => desenhar a palavra "LINES"
- iIdentificador = 9 => desenhar números das linhas eliminadas
- iIdentificador = 10 => desenhar a palavra "NEXT"
- iIdentificador = 11 => desenhar a palavra "HOLD"
- iIdentificador = 12 => desenhar background
- iIdentificador = 13 => desenhar grelha de jogo
- iIdentificador = 14 => desenhar ecrã de pausa
- iIdentificador = 15 => desenhar ecrã de fim de jogo
- iIdentificador = 16 => desenhar ecrã de controlos

5.13.2.10 drawScore()

```
void drawScore (
    int iScore )
```

5.13.2.11 eliminaLinha()

```
void eliminaLinha (
    int iLinha )
```

Caso haja uma linha completa, esta será eliminada na matriz de inteiros. Esta função garante que o observado no campo de jogo é concordante com o ocorrido na matriz de inteiros

5.13.2.12 evaluatePieceCollision()

```
bool evaluatePieceCollision (
    Peca & pPeca )
```

5.13.2.13 incializaMatrizZero()

```
void incializaMatrizZero ( )
```

Inicializar matriz a zeros.

5.13.2.14 main()

```
int main (
    void )
```

5.13.2.15 pontosPorLinhasEliminadas()

```
int pontosPorLinhasEliminadas (
    int iNumbLinhasEliminadas )
```

5.13.2.16 randNum()

```
int randNum ( )
```

Generates random number from 0 to 6 (7 pieces)

5.13.2.17 realVertexBufferPiece()

```
std::vector<GLfloat>* realVertexBufferPiece (
    Peca & pPeca )
```

5.13.2.18 registerUserInputs()

```
void registerUserInputs (
    Peca & pPeca )
```

Retains information of user inputs, regarding piece movement.

5.13.2.19 returnPeca()

```
Peca* returnPeca (
    GeradorPecas & geraPecas,
    int switchValue )
```

5.13.2.20 setMVP_And_UniqueLoads()

```
void setMVP_And_UniqueLoads ( )
```

5.13.2.21 somPassagemNivel()

```
void somPassagemNivel ( )
```

5.13.2.22 textureBufferNumber()

```
std::vector<GLfloat> textureBufferNumber (
    int switchValue )
```

5.13.2.23 textureBufferPiece()

```
std::vector<GLfloat> textureBufferPiece (
    Peca & pPeca,
    int switchValue )
```

5.13.2.24 textureBufferPosPiece()

```
std::vector<GLfloat> textureBufferPosPiece (
    Peca & pPeca,
    int switchValue )
```

5.13.2.25 transferDataToGPUmemory()

```
void transferDataToGPUmemory (
    Peca & pPeca,
    Peca & pNextPeca,
    Peca & pSavedPeca )
```

5.13.2.26 vertexBufferNumber()

```
std::vector<GLfloat> vertexBufferNumber (
    int switchValue )
```

5.13.2.27 vertexBufferPiece()

```
std::vector<GLfloat> vertexBufferPiece (
    Peca & pPeca,
    int switchValue )
```

5.13.3 Variable Documentation

5.13.3.1 bAlterPecaEmJogo

```
bool bAlterPecaEmJogo = false
```


5.13.3.2 bCollisionPiece

```
bool bCollisionPiece = false
```

5.13.3.3 bControls

```
bool bControls = true
```

5.13.3.4 bDropPeca

```
bool bDropPeca = false
```

5.13.3.5 bFirstTime

```
bool bFirstTime = false
```

5.13.3.6 bGameOver

```
bool bGameOver = false
```

5.13.3.7 bMouse

```
bool bMouse = false
```

5.13.3.8 bPassagemNivel

```
bool bPassagemNivel = false
```

Variável de som para impedir que a limpeza de linhas toque quando se passa de nível.

5.13.3.9 bPause

```
bool bPause = false
```

5.13.3.10 bRotateMouse

```
bool bRotateMouse = false
```

5.13.3.11 caBackground

```
const char* caBackground = "resources/images/wallpaper.tga"
```

5.13.3.12 caControls

```
const char* caControls = "resources/images/controls.tga"
```

5.13.3.13 caGamegrid

```
const char* caGamegrid = "resources/images/gamegrid.tga"
```

5.13.3.14 caGameOver

```
const char* caGameOver = "resources/images/gameOver.tga"
```

5.13.3.15 caPause

```
const char* caPause = "resources/images/pause.tga"
```

5.13.3.16 caTiles

```
const char* caTiles = "resources/images/tiles_large.tga"
```

5.13.3.17 dXPosAnt

```
double dXPosAnt = 135
```

5.13.3.18 fragmentShader

```
char fragmentShader[] = "shaders/fragmentShader.fragmentshader"
```

5.13.3.19 g_texture_buffer_data

```
std::vector<GLfloat> g_texture_buffer_data = {}
```

Textura da peça atual.

5.13.3.20 g_texture_buffer_dataBack

```
std::vector<GLfloat> g_texture_buffer_dataBack
```

Initial value:

```
= {  
    0.0f,  1.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  0.0f,  
}
```

Textura de background.

5.13.3.21 g_texture_buffer_dataControls

```
std::vector<GLfloat> g_texture_buffer_dataControls
```

Initial value:

```
= {  
    0.0f,  1.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  0.0f,  
}
```

Textura de Controls.

5.13.3.22 g_texture_buffer_dataGameOver

```
std::vector<GLfloat> g_texture_buffer_dataGameOver
```

Initial value:

```
= {  
    0.0f,  1.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  0.0f,  
}
```

Textura de Game Over.

5.13.3.23 g_texture_buffer_dataGrid

```
std::vector<GLfloat> g_texture_buffer_dataGrid
```

Initial value:

```
= {  
    0.0f,  1.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  0.0f,  
}
```

Textura da grelha de jogo.

5.13.3.24 g_texture_buffer_dataLevelNum

```
std::vector<GLfloat> g_texture_buffer_dataLevelNum = {}
```

Texturas de todos os algoritmos do nível.

5.13.3.25 g_texture_buffer_dataLinesNum

```
std::vector<GLfloat> g_texture_buffer_dataLinesNum = {}
```

Texturas de todos os algoritmos do nível.

5.13.3.26 g_texture_buffer_dataPause

```
std::vector<GLfloat> g_texture_buffer_dataPause
```

Initial value:

```
= {  
    0.0f,  1.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  1.0f,  
    0.0f,  0.0f,  
    1.0f,  0.0f,  
}
```

Textura de Pause.

5.13.3.27 g_texture_buffer_dataScoreNum

```
std::vector<GLfloat> g_texture_buffer_dataScoreNum = {}
```

Texturas de todos os algoritmos da pontuação.

5.13.3.28 g_texture_buffer_dataTot

```
std::vector<GLfloat> g_texture_buffer_dataTot = {}
```

Texturas de todas as peças.

5.13.3.29 g_vertex_buffer_data

```
std::vector<GLfloat> g_vertex_buffer_data = {}
```

Vértices da peça atual.

5.13.3.30 g_vertex_buffer_dataBack

```
std::vector<GLfloat> g_vertex_buffer_dataBack
```

Initial value:

```
= {  
    0.0f,  0.0f,  0.1f,  
    14.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    14.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    14.0f, 20.0f, 0.1f,  
}
```

Vértices de background.

5.13.3.31 g_vertex_buffer_dataControls

```
std::vector<GLfloat> g_vertex_buffer_dataControls
```

Initial value:

```
= {  
    0.0f,  0.0f,  0.1f,  
    14.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    14.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    14.0f, 20.0f, 0.1f,  
}
```

Vértices de Controls.

5.13.3.32 g_vertex_buffer_dataGameOver

```
std::vector<GLfloat> g_vertex_buffer_dataGameOver
```

Initial value:

```
= {  
    0.0f,  0.0f,  0.1f,  
    14.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    14.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    14.0f, 20.0f, 0.1f,  
}
```

Vértices de Game Over.

5.13.3.33 g_vertex_buffer_dataGrid

```
std::vector<GLfloat> g_vertex_buffer_dataGrid
```

Initial value:

```
= {  
    0.0f,  0.0f,  0.1f,  
    10.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    10.0f, 0.0f,  0.1f,  
    0.0f,  20.0f, 0.1f,  
    10.0f, 20.0f, 0.1f,  
}
```

Vértices da grelha de jogo.

5.13.3.34 g_vertex_buffer_dataLevelNum

```
std::vector<GLfloat> g_vertex_buffer_dataLevelNum = {}
```

Vértices de todos os algoritmos do nível.

5.13.3.35 g_vertex_buffer_dataLinesNum

```
std::vector<GLfloat> g_vertex_buffer_dataLinesNum = {}
```

Vértices de todos os algoritmos do nível.

5.13.3.36 g_vertex_buffer_dataPause

```
std::vector<GLfloat> g_vertex_buffer_dataPause
```

Initial value:

```
= {  
    0.0f, 0.0f, 0.1f,  
    14.0f, 0.0f, 0.1f,  
    0.0f, 20.0f, 0.1f,  
    14.0f, 0.0f, 0.1f,  
    0.0f, 20.0f, 0.1f,  
    14.0f, 20.0f, 0.1f,  
}
```

Vértices de Pause.

5.13.3.37 g_vertex_buffer_dataScoreNum

```
std::vector<GLfloat> g_vertex_buffer_dataScoreNum = {}
```

Vértices de todos os algoritmos da pontuação.

5.13.3.38 g_vertex_buffer_dataTot

```
std::vector<GLfloat> g_vertex_buffer_dataTot = {}
```

Vértices de todas as peças.

5.13.3.39 gameGrid

```
int** gameGrid
```

5.13.3.40 geraPecas

```
GeradorPecas geraPecas
```

5.13.3.41 globalBack

```
unsigned int globalBack
```

5.13.3.42 HEIGHT

```
GLfloat HEIGHT = 20.f
```

5.13.3.43 HEIGHT_PosYInicial

```
GLfloat HEIGHT_PosYInicial = 18.f
```

5.13.3.44 iGameNextPiece

```
int iGameNextPiece
```

5.13.3.45 iGamePiece

```
int iGamePiece
```

5.13.3.46 iHeight

```
int const iHeight = 20
```

5.13.3.47 iNivelJogo

```
int iNivelJogo = 0
```

5.13.3.48 iPontuacao

```
int iPontuacao = 0
```


5.13.3.49 iSavedPiece

```
int iSavedPiece = 0
```

5.13.3.50 iTexHeight

```
int iTexHeight
```

5.13.3.51 iTexNumChannels

```
int iTexNumChannels
```

5.13.3.52 iTexWidth

```
int iTexWidth
```

5.13.3.53 iTotalLinhasEliminadasEmNível

```
int iTotalLinhasEliminadasEmNível = 0
```

5.13.3.54 iWidth

```
int const iWidth = 10
```

5.13.3.55 MVP

```
GLuint MVP
```

Identificador de matriz MVP nos shaders.

5.13.3.56 newSizeTexture

```
int newSizeTexture
```

5.13.3.57 newSizeVertex

```
int newSizeVertex
```

5.13.3.58 pNextpPeca

```
Peca* pNextpPeca
```

5.13.3.59 pPeca

```
Peca* pPeca
```

5.13.3.60 programID

```
GLuint programID
```

GLSL program from the shaders.

5.13.3.61 Projection

```
glm::mat4 Projection = glm::mat4(1.0f)
```

5.13.3.62 pSavedpPeca

```
Peca* pSavedpPeca
```

5.13.3.63 sound

ISound* sound

5.13.3.64 SoundEngine

ISoundEngine* SoundEngine = createIrrKlangDevice()

5.13.3.65 t_collision

std::chrono::time_point<std::chrono::steady_clock> t_collision

5.13.3.66 t_start

std::chrono::time_point<std::chrono::steady_clock> t_start

5.13.3.67 texturebuffer

GLuint texturebuffer

Texture buffer object (TBO)

5.13.3.68 texturebufferBackground

GLuint texturebufferBackground

5.13.3.69 texturebufferControls

GLuint texturebufferControls

5.13.3.70 texturebufferGameOver

GLuint texturebufferGameOver

5.13.3.71 texturebufferGrid

GLuint texturebufferGrid

5.13.3.72 texturebufferHold

GLuint texturebufferHold

5.13.3.73 texturebufferLevel

GLuint texturebufferLevel

5.13.3.74 texturebufferLevelNum

GLuint texturebufferLevelNum

5.13.3.75 texturebufferLines

GLuint texturebufferLines

5.13.3.76 texturebufferLinesNum

GLuint texturebufferLinesNum

5.13.3.77 texturebufferNext

GLuint texturebufferNext

5.13.3.78 texturebufferNextPiece

GLuint texturebufferNextPiece

5.13.3.79 texturebufferPause

GLuint texturebufferPause

5.13.3.80 texturebufferPosPiece

GLuint texturebufferPosPiece

5.13.3.81 texturebufferSavedPiece

GLuint texturebufferSavedPiece

5.13.3.82 texturebufferScore

GLuint texturebufferScore

5.13.3.83 texturebufferScoreNum

GLuint texturebufferScoreNum

5.13.3.84 texturebufferTot

GLuint texturebufferTot

5.13.3.85 TextureID

```
GLuint TextureID[4]
```

Texture array object (TAO)

5.13.3.86 timerCollision

```
int timerCollision
```

5.13.3.87 ucaTexData

```
unsigned char* ucaTexData
```

5.13.3.88 VertexArrayID

```
GLuint VertexArrayID
```

Vertex array object (VAO)

5.13.3.89 vertexbuffer

```
GLuint vertexbuffer
```

Vertex buffer object (VBO)

5.13.3.90 vertexbufferBackground

```
GLuint vertexbufferBackground
```

5.13.3.91 vertexbufferControls

```
GLuint vertexbufferControls
```

5.13.3.92 vertexbufferGameOver

GLuint vertexbufferGameOver

5.13.3.93 vertexbufferGrid

GLuint vertexbufferGrid

5.13.3.94 vertexbufferHold

GLuint vertexbufferHold

5.13.3.95 vertexbufferLevel

GLuint vertexbufferLevel

5.13.3.96 vertexbufferLevelNum

GLuint vertexbufferLevelNum

5.13.3.97 vertexbufferLines

GLuint vertexbufferLines

5.13.3.98 vertexbufferLinesNum

GLuint vertexbufferLinesNum

5.13.3.99 vertexbufferNext

GLuint vertexbufferNext

5.13.3.100 vertexbufferNextPiece

```
GLuint vertexbufferNextPiece
```

5.13.3.101 vertexbufferPause

```
GLuint vertexbufferPause
```

5.13.3.102 vertexbufferPosPiece

```
GLuint vertexbufferPosPiece
```

5.13.3.103 vertexbufferSavedPiece

```
GLuint vertexbufferSavedPiece
```

5.13.3.104 vertexbufferScore

```
GLuint vertexbufferScore
```

5.13.3.105 vertexbufferScoreNum

```
GLuint vertexbufferScoreNum
```

5.13.3.106 vertexbufferTot

```
GLuint vertexbufferTot
```

5.13.3.107 vertexShader

```
char vertexShader[] = "shaders/vertexShader.vertexshader"
```


5.13.3.108 View

```
glm::mat4 View = glm::mat4(1.0f)
```

5.13.3.109 WIDTH

```
GLfloat WIDTH = 14.f
```

5.13.3.110 WIDTH_PosXInicial

```
GLfloat WIDTH_PosXInicial = 10.f
```

5.13.3.111 window

```
GLFWwindow* window
```

5.13.3.112 WindowHeight

```
GLint WindowHeight = 600
```

5.13.3.113 WindowTitle

```
char WindowTitle[] = "Tetris"
```

5.13.3.114 WindowWidth

```
GLint WindowWidth = WIDTH / HEIGHT * WindowHeight
```

5.13.3.115 xPosInicial

```
int xPosInicial = (int)WIDTH_PosXInicial / 2 - 1
```

5.13.3.116 yPosInicial

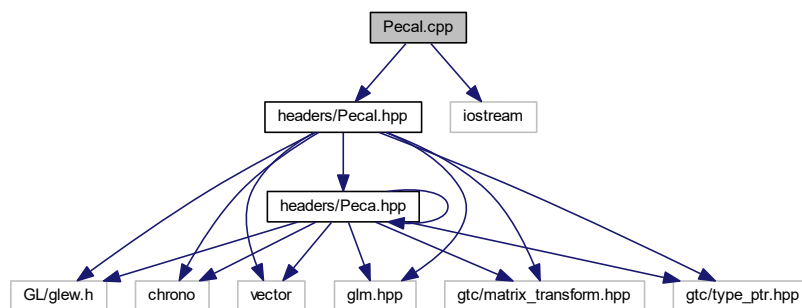
```
int yPosInicial = HEIGHT_PosYInicial
```

5.14 Pecal.cpp File Reference

```
#include "headers/PecaI.hpp"
```

```
#include <iostream>
```

Include dependency graph for Pecal.cpp:

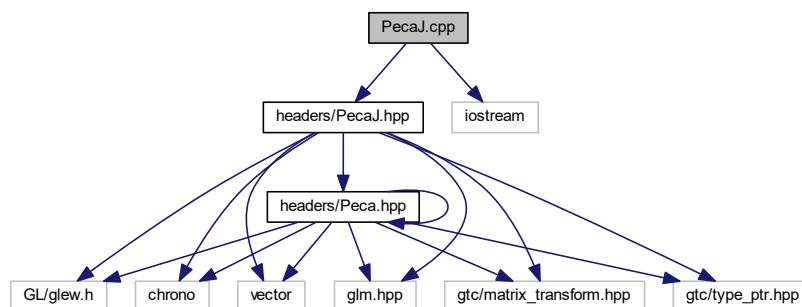


5.15 PecaJ.cpp File Reference

```
#include "headers/PecaJ.hpp"
```

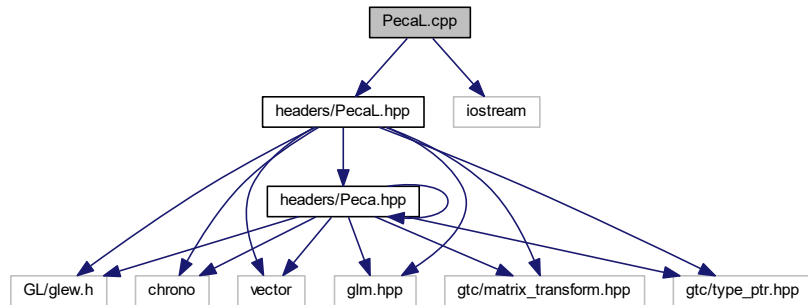
```
#include <iostream>
```

Include dependency graph for PecaJ.cpp:



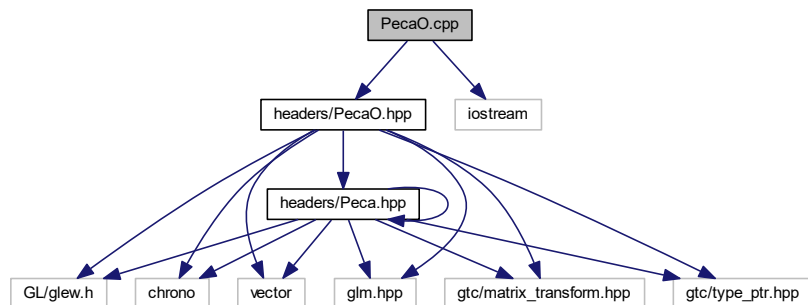
5.16 PecaL.cpp File Reference

```
#include "headers/PecaL.hpp"
#include <iostream>
Include dependency graph for PecaL.cpp:
```



5.17 PecaO.cpp File Reference

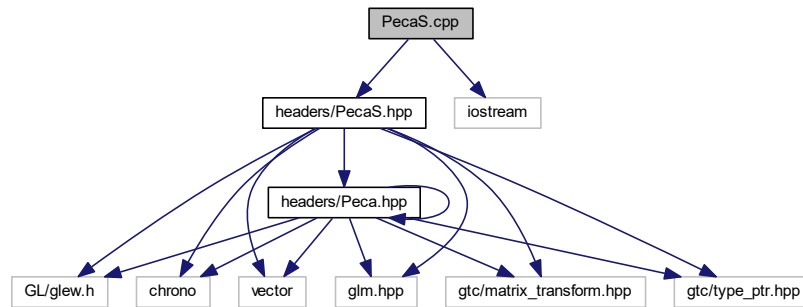
```
#include "headers/PecaO.hpp"
#include <iostream>
Include dependency graph for PecaO.cpp:
```



5.18 PecaS.cpp File Reference

```
#include "headers/PecaS.hpp"
#include <iostream>
```

Include dependency graph for PecaS.cpp:



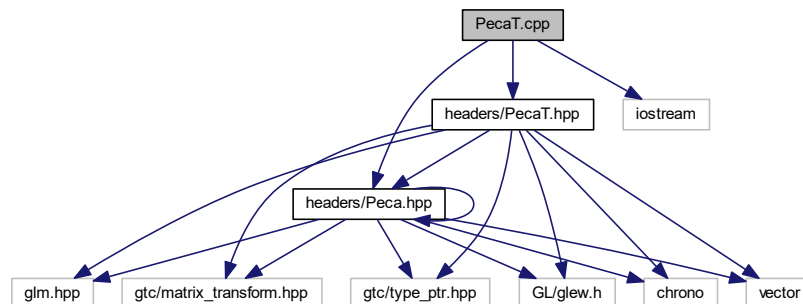
5.19 PecaT.cpp File Reference

```

#include "headers/PecaT.hpp"
#include "headers/Peca.hpp"
#include <iostream>

```

Include dependency graph for PecaT.cpp:



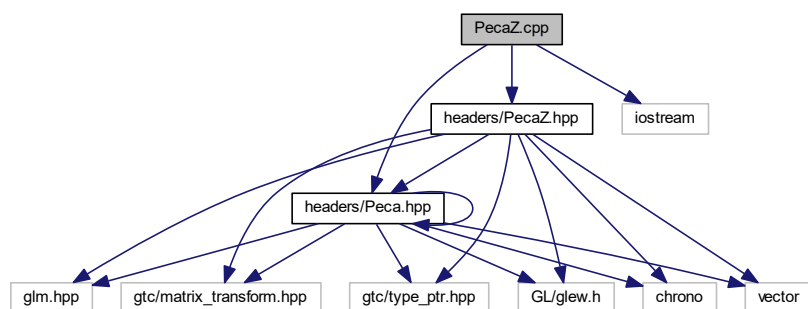
5.20 PecaZ.cpp File Reference

```

#include "headers/PecaZ.hpp"
#include "headers/Peca.hpp"
#include <iostream>

```

Include dependency graph for PecaZ.cpp:



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