

DGL\*\*

0.1

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# Chapter 1

## Namespace Index

### 1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

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<a href="#">DECS::GL</a> (Namespace of <a href="#">GL</a> section of Discrete Elements Calculation Suites(DECS)) . . . . .	9





## Chapter 2

# Class Index

### 2.1 Class Hierarchy

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

DECS::GL::DGLColor . . . . .	15
DECS::GL::DGLObject . . . . .	18
DECS::GL::DGLCircle . . . . .	13
DECS::GL::DGLLine . . . . .	16
DECS::GL::DGLSquare . . . . .	20
DECS::GL::DGLTriangle . . . . .	22
DECS::GL::DGLPosition . . . . .	19
DECS::GL::DGLWindow . . . . .	24
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## Chapter 3

# Class Index

### 3.1 Class List

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

<a href="#">DECS::GL::DGLCircle</a> . . . . .	13
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# Chapter 4

## File Index

### 4.1 File List

Here is a list of all files with brief descriptions:

<a href="#">include/GL/dgl.hpp</a> . . . . .	33
<a href="#">include/GL/dglbasicshape.hpp</a> . . . . .	33
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<a href="#">include/GL/dglwindow.hpp</a> . . . . .	35



## Chapter 5

# Namespace Documentation

### 5.1 DECS Namespace Reference

Namespace of Discrete Elements Calculation Suites(DECS)

#### Namespaces

- namespace [GL](#)

*Namespace of [GL](#) section of Discrete Elements Calculation Suites(DECS)*

#### 5.1.1 Detailed Description

Namespace of Discrete Elements Calculation Suites(DECS)

### 5.2 DECS::GL Namespace Reference

Namespace of [GL](#) section of Discrete Elements Calculation Suites(DECS)

#### Classes

- class [DGLLine](#)
- class [DGLTriangle](#)
- class [DGLSquare](#)
- class [DGLCircle](#)
- class [DGLObject](#)
- class [DGLColor](#)
- class [DGLPosition](#)
- struct [DGLWindowProperty](#)

Window property structure for *DECS::GL::DGLWindow* class.

- class [DGLWindow](#)

*Window class.*

## Typedefs

- typedef void(\* [RESIZE\\_FUNC](#) )(int, int)

*Type definition for the resize function.*

## Functions

- [RESIZE\\_FUNC](#) [getResizeFunc](#) (GLdouble canvasWidth, GLdouble canvasHeight)

*Helper function to generate resize function.*

## Variables

- static const [DGLColor](#) [DGL\\_WHITE](#) (1.0, 1.0, 1.0, 1.0)
- static const [DGLColor](#) [DGL\\_BLACK](#) (0.0, 0.0, 0.0, 1.0)
- static const [DGLColor](#) [DGL\\_RED](#) (1.0, 0.0, 0.0, 1.0)
- static const [DGLColor](#) [DGL\\_GREEN](#) (0.0, 1.0, 0.0, 1.0)
- static const [DGLColor](#) [DGL\\_BLUE](#) (0.0, 0.0, 1.0, 1.0)
- static const [DGLPosition](#) [DGL\\_ORIGIN](#) (0.0, 0.0, 0.0)
- static const int [X](#) = 0
- static const int [Y](#) = 1
- static const int [Z](#) = 2
- static const int [R](#) = 0
- static const int [G](#) = 1
- static const int [B](#) = 2
- static const int [A](#) = 3
- static [DGLWindowProperty](#) [DGL\\_DEFAULT\\_WPROP](#)

*Default window property.*

### 5.2.1 Detailed Description

Namespace of [GL](#) section of Discrete Elements Calculation Suites(DECS)



## 5.2.2 Typedef Documentation

### 5.2.2.1 typedef void(\* DECS::GL::RESIZE\_FUNC)(int, int)

Type definition for the resize function.

## 5.2.3 Function Documentation

### 5.2.3.1 RESIZE\_FUNC DECS::GL::getResizeFunc ( GLdouble *canvasWidth*, GLdouble *canvasHeight* )

Helper function to generate resize function.

This function returns the function pointer of resize function. That resize function provide a fix size draw (*canvasWidth* X *canvasHeight*) after the window resized.

#### Parameters

<i>canvasWidth</i>	Width of display area
<i>canvasHeight</i>	Height of display area

#### Returns

Pointer to resize function

## 5.2.4 Variable Documentation

### 5.2.4.1 const int DECS::GL::A = 3 [static]

### 5.2.4.2 const int DECS::GL::B = 2 [static]

### 5.2.4.3 const DGLColor DECS::GL::DGL\_BLACK(0.0, 0.0, 0.0, 1.0) [static]

### 5.2.4.4 const DGLColor DECS::GL::DGL\_BLUE(0.0, 0.0, 1.0, 1.0) [static]

### 5.2.4.5 DGLWindowProperty DECS::GL::DGL\_DEFAULT\_WPROP [static]

#### Initial value:

```
{
    "DGL** Window",
    GL_RGBA,
    DGL_WHITE,
    300,
    300,
    100,
    100}
```

Default window property.

Following is the default values.

#### Parameters

<i>title_</i>	"DGL** Window"
<i>mode_</i>	GL_RGBA
<i>bgColor_</i>	DGL_WHITE
<i>wWidth_</i>	300px
<i>wHeight_</i>	300px
<i>wPositionX_</i>	100px
<i>wPositionY_</i>	100px

5.2.4.6 **const DGLColor DECS::GL::DGL\_GREEN(0.0, 1.0, 0.0, 1.0)** [static]

5.2.4.7 **const DGLPosition DECS::GL::DGL\_ORIGIN(0.0, 0.0, 0.0)** [static]

5.2.4.8 **const DGLColor DECS::GL::DGL\_RED(1.0, 0.0, 0.0, 1.0)** [static]

5.2.4.9 **const DGLColor DECS::GL::DGL\_WHITE(1.0, 1.0, 1.0, 1.0)** [static]

5.2.4.10 **const int DECS::GL::G = 1** [static]

5.2.4.11 **const int DECS::GL::R = 0** [static]

5.2.4.12 **const int DECS::GL::X = 0** [static]

5.2.4.13 **const int DECS::GL::Y = 1** [static]

5.2.4.14 **const int DECS::GL::Z = 2** [static]

## Chapter 6

# Class Documentation

### 6.1 DECS::GL::DGLCircle Class Reference

```
#include <dglbasicshape.hpp>
```

Inheritance diagram for DECS::GL::DGLCircle:



#### Public Member Functions

- [DGLCircle](#) (GLdouble radius)
- [DGLCircle](#) ([DGLPosition](#) center, GLdouble radius)
- [DGLCircle](#) (int mode, [DGLPosition](#) center, GLdouble radius)
- [DGLCircle](#) ([DGLPosition](#) center, GLdouble radius, [DGLColor](#) color)
- [DGLCircle](#) (int mode, [DGLPosition](#) center, GLdouble radius, [DGLColor](#) color)
- [DGLCircle](#) (int mode, [DGLPosition](#) center, GLdouble radius, int nPoint, [DGLColor](#) color)
- [~DGLCircle](#) ()
- void [setCenter](#) ([DGLPosition](#) center)
- void [setRadius](#) (GLdouble radius)
- void [setNumberOfPoints](#) (int nPoint)
- virtual void [setColor](#) ([DGLColor](#) color)
- virtual void [draw](#) ()

#### Private Member Functions

- [DGLCircle](#) ()

## Private Attributes

- [DGLPosition center\\_](#)
- [GLdouble radius\\_](#)
- [int nPoint\\_](#)

## 6.1.1 Constructor & Destructor Documentation

- 6.1.1.1 `DECS::GL::DGLCircle::DGLCircle ( )` [[inline](#), [private](#)]
- 6.1.1.2 `DECS::GL::DGLCircle::DGLCircle ( GLdouble radius )` [[inline](#)]
- 6.1.1.3 `DECS::GL::DGLCircle::DGLCircle ( DGLPosition center, GLdouble radius )`  
[[inline](#)]
- 6.1.1.4 `DECS::GL::DGLCircle::DGLCircle ( int mode, DGLPosition center, GLdouble radius )`  
[[inline](#)]
- 6.1.1.5 `DECS::GL::DGLCircle::DGLCircle ( DGLPosition center, GLdouble radius,  
DGLColor color )` [[inline](#)]
- 6.1.1.6 `DECS::GL::DGLCircle::DGLCircle ( int mode, DGLPosition center, GLdouble radius,  
DGLColor color )` [[inline](#)]
- 6.1.1.7 `DECS::GL::DGLCircle::DGLCircle ( int mode, DGLPosition center, GLdouble radius,  
int nPoint, DGLColor color )` [[inline](#)]
- 6.1.1.8 `DECS::GL::DGLCircle::~~DGLCircle ( )` [[inline](#)]

## 6.1.2 Member Function Documentation

- 6.1.2.1 `virtual void DECS::GL::DGLCircle::draw ( )` [[virtual](#)]

Implements [DECS::GL::DGLObject](#).

- 6.1.2.2 `void DECS::GL::DGLCircle::setCenter ( DGLPosition center )`

- 6.1.2.3 `virtual void DECS::GL::DGLCircle::setColor ( DGLColor color )` [[virtual](#)]

Implements [DECS::GL::DGLObject](#).

6.1.2.4 void DECS::GL::DGLCircle::setNumberOfPoints ( int *nPoint* )

6.1.2.5 void DECS::GL::DGLCircle::setRadius ( GLdouble *radius* )

### 6.1.3 Member Data Documentation

6.1.3.1 DGLPosition DECS::GL::DGLCircle::center\_ [private]

6.1.3.2 int DECS::GL::DGLCircle::nPoint\_ [private]

6.1.3.3 GLdouble DECS::GL::DGLCircle::radius\_ [private]

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

- [include/GL/dglbasicshape.hpp](#)

## 6.2 DECS::GL::DGLColor Class Reference

```
#include <dglutil.hpp>
```

### Public Member Functions

- [DGLColor](#) ()
- [DGLColor](#) (GLdouble r, GLdouble g, GLdouble b)
- [DGLColor](#) (GLdouble r, GLdouble g, GLdouble b, GLdouble a)
- [~DGLColor](#) ()
- GLdouble [r](#) ()
- GLdouble [g](#) ()
- GLdouble [b](#) ()
- GLdouble [a](#) ()

### Private Attributes

- GLdouble [color\\_](#) [4]

## 6.2.1 Constructor & Destructor Documentation

6.2.1.1 DECS::GL::DGLColor::DGLColor ( )

6.2.1.2 DECS::GL::DGLColor::DGLColor ( GLdouble *r*, GLdouble *g*, GLdouble *b* )

6.2.1.3 DECS::GL::DGLColor::DGLColor ( GLdouble *r*, GLdouble *g*, GLdouble *b*, GLdouble *a* )

6.2.1.4 DECS::GL::DGLColor::~~DGLColor ( )

## 6.2.2 Member Function Documentation

6.2.2.1 GLdouble DECS::GL::DGLColor::a ( )

6.2.2.2 GLdouble DECS::GL::DGLColor::b ( )

6.2.2.3 GLdouble DECS::GL::DGLColor::g ( )

6.2.2.4 GLdouble DECS::GL::DGLColor::r ( )

## 6.2.3 Member Data Documentation

6.2.3.1 GLdouble DECS::GL::DGLColor::color\_[4] [private]

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

- [include/GL/dglutil.hpp](#)

## 6.3 DECS::GL::DGLLine Class Reference

```
#include <dglbasicshape.hpp>
```

Inheritance diagram for DECS::GL::DGLLine:



### Public Member Functions

- [DGLLine](#) ([DGLPosition](#) beginPoint, [DGLPosition](#) endPoint)
- [DGLLine](#) ([DGLPosition](#) beginPoint, [DGLPosition](#) endPoint, [DGLColor](#) color)
- [DGLLine](#) (int mode, [DGLPosition](#) beginPoint, [DGLPosition](#) endPoint, [DGLColor](#) color)

- [~DGLLine \(\)](#)
- void [setPoint](#) ([DGLPosition](#) beginPoint, [DGLPosition](#) endPoint)
- virtual void [setColor](#) ([DGLColor](#) color)
- virtual void [draw](#) ()

### Private Member Functions

- [DGLLine \(\)](#)

### Private Attributes

- [DGLPosition](#) [beginPoint\\_](#)
- [DGLPosition](#) [endPoint\\_](#)

## 6.3.1 Constructor & Destructor Documentation

6.3.1.1 [DECS::GL::DGLLine::DGLLine \( \)](#) [[inline](#), [private](#)]

6.3.1.2 [DECS::GL::DGLLine::DGLLine \( \[DGLPosition\]\(#\) \*beginPoint\*, \[DGLPosition\]\(#\) \*endPoint\* \)](#) [[inline](#)]

6.3.1.3 [DECS::GL::DGLLine::DGLLine \( \[DGLPosition\]\(#\) \*beginPoint\*, \[DGLPosition\]\(#\) \*endPoint\*, \[DGLColor\]\(#\) \*color\* \)](#) [[inline](#)]

6.3.1.4 [DECS::GL::DGLLine::DGLLine \( int \*mode\*, \[DGLPosition\]\(#\) \*beginPoint\*, \[DGLPosition\]\(#\) \*endPoint\*, \[DGLColor\]\(#\) \*color\* \)](#) [[inline](#)]

6.3.1.5 [DECS::GL::DGLLine::~~DGLLine \( \)](#) [[inline](#)]

## 6.3.2 Member Function Documentation

6.3.2.1 [virtual void DECS::GL::DGLLine::draw \( \)](#) [[virtual](#)]

Implements [DECS::GL::DGLObject](#).

6.3.2.2 [virtual void DECS::GL::DGLLine::setColor \( \[DGLColor\]\(#\) \*color\* \)](#) [[virtual](#)]

Implements [DECS::GL::DGLObject](#).

6.3.2.3 void DECS::GL::DGLLine::setPoint ( DGLPosition *beginPoint*, DGLPosition *endPosition* )

### 6.3.3 Member Data Documentation

6.3.3.1 DGLPosition DECS::GL::DGLLine::beginPoint\_ [private]

6.3.3.2 DGLPosition DECS::GL::DGLLine::endPoint\_ [private]

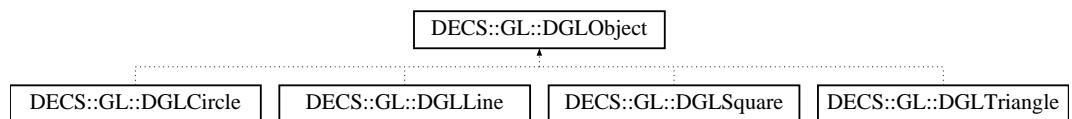
The documentation for this class was generated from the following file:

- [include/GL/dglbasicshape.hpp](#)

## 6.4 DECS::GL::DGLObject Class Reference

```
#include <dglcommon.hpp>
```

Inheritance diagram for DECS::GL::DGLObject:



### Public Member Functions

- [DGLObject](#) ()
- [DGLObject](#) (int mode)
- [DGLObject](#) (int mode, [DGLColor](#) color)
- virtual void [setColor](#) ([DGLColor](#) color)=0
- virtual void [draw](#) ()=0

### Protected Attributes

- int [mode\\_](#)
- [DGLColor](#) [color\\_](#)



### 6.4.1 Constructor & Destructor Documentation

6.4.1.1 `DECS::GL::DGLObject::DGLObject ( )` [inline]

6.4.1.2 `DECS::GL::DGLObject::DGLObject ( int mode )` [inline]

6.4.1.3 `DECS::GL::DGLObject::DGLObject ( int mode, DGLColor color )` [inline]

### 6.4.2 Member Function Documentation

6.4.2.1 `virtual void DECS::GL::DGLObject::draw ( )` [pure virtual]

Implemented in [DECS::GL::DGLLine](#), [DECS::GL::DGLTriangle](#), [DECS::GL::DGLSquare](#), and [DECS::GL::DGLCircle](#).

6.4.2.2 `virtual void DECS::GL::DGLObject::setColor ( DGLColor color )` [pure virtual]

Implemented in [DECS::GL::DGLLine](#), [DECS::GL::DGLTriangle](#), [DECS::GL::DGLSquare](#), and [DECS::GL::DGLCircle](#).

### 6.4.3 Member Data Documentation

6.4.3.1 `DGLColor DECS::GL::DGLObject::color_` [protected]

6.4.3.2 `int DECS::GL::DGLObject::mode_` [protected]

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

- [include/GL/dglcommon.hpp](#)

## 6.5 DECS::GL::DGLPosition Class Reference

```
#include <dglutil.hpp>
```

### Public Member Functions

- [DGLPosition \(\)](#)
- [DGLPosition \(GLdouble x, GLdouble y, GLdouble z\)](#)
- [~DGLPosition \(\)](#)
- [GLdouble & x \(\)](#)
- [GLdouble & y \(\)](#)
- [GLdouble & z \(\)](#)

## Private Attributes

- GLdouble [position\\_](#) [3]

## 6.5.1 Constructor & Destructor Documentation

6.5.1.1 DECS::GL::DGLPosition::DGLPosition ( )

6.5.1.2 DECS::GL::DGLPosition::DGLPosition ( GLdouble x, GLdouble y, GLdouble z )

6.5.1.3 DECS::GL::DGLPosition::~~DGLPosition ( )

## 6.5.2 Member Function Documentation

6.5.2.1 GLdouble& DECS::GL::DGLPosition::x ( )

6.5.2.2 GLdouble& DECS::GL::DGLPosition::y ( )

6.5.2.3 GLdouble& DECS::GL::DGLPosition::z ( )

## 6.5.3 Member Data Documentation

6.5.3.1 GLdouble DECS::GL::DGLPosition::position\_ [3] [private]

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

- [include/GL/dglutil.hpp](#)

## 6.6 DECS::GL::DGLSquare Class Reference

```
#include <dglbasicshape.hpp>
```

Inheritance diagram for DECS::GL::DGLSquare:



## Public Member Functions

- [DGLSquare](#) ([DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3, [DGLPosition](#) point4)
- [DGLSquare](#) ([DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3, [DGLPosition](#) point4, [DGLColor](#) color)

- [DGLSquare](#) (int mode, [DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3, [DGLPosition](#) point4)
- [DGLSquare](#) (int mode, [DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3, [DGLPosition](#) point4, [DGLColor](#) color)
- [~DGLSquare](#) ()
- void [setPoint](#) ([DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3, [DGLPosition](#) point4)
- virtual void [setColor](#) ([DGLColor](#) color)
- virtual void [draw](#) ()

### Private Member Functions

- [DGLSquare](#) ()

### Private Attributes

- [DGLPosition](#) point1\_
- [DGLPosition](#) point2\_
- [DGLPosition](#) point3\_
- [DGLPosition](#) point4\_

## 6.6.1 Constructor & Destructor Documentation

6.6.1.1 [DECS::GL::DGLSquare::DGLSquare \( \)](#) [[inline](#), [private](#)]

6.6.1.2 [DECS::GL::DGLSquare::DGLSquare \( \[DGLPosition\]\(#\) point1, \[DGLPosition\]\(#\) point2, \[DGLPosition\]\(#\) point3, \[DGLPosition\]\(#\) point4 \)](#) [[inline](#)]

6.6.1.3 [DECS::GL::DGLSquare::DGLSquare \( \[DGLPosition\]\(#\) point1, \[DGLPosition\]\(#\) point2, \[DGLPosition\]\(#\) point3, \[DGLPosition\]\(#\) point4, \[DGLColor\]\(#\) color \)](#) [[inline](#)]

6.6.1.4 [DECS::GL::DGLSquare::DGLSquare \( int mode, \[DGLPosition\]\(#\) point1, \[DGLPosition\]\(#\) point2, \[DGLPosition\]\(#\) point3, \[DGLPosition\]\(#\) point4 \)](#) [[inline](#)]

6.6.1.5 [DECS::GL::DGLSquare::DGLSquare \( int mode, \[DGLPosition\]\(#\) point1, \[DGLPosition\]\(#\) point2, \[DGLPosition\]\(#\) point3, \[DGLPosition\]\(#\) point4, \[DGLColor\]\(#\) color \)](#) [[inline](#)]

6.6.1.6 [DECS::GL::DGLSquare::~~DGLSquare \( \)](#) [[inline](#)]

## 6.6.2 Member Function Documentation

6.6.2.1 virtual void [DECS::GL::DGLSquare::draw \( \)](#) [[virtual](#)]

Implements [DECS::GL::DGLObject](#).

6.6.2.2 `virtual void DECS::GL::DGLSquare::setColor ( DGLColor color )` [virtual]

Implements [DECS::GL::DGLObject](#).

6.6.2.3 `void DECS::GL::DGLSquare::setPoint ( DGLPosition point1, DGLPosition point2, DGLPosition point3, DGLPosition point4 )`

### 6.6.3 Member Data Documentation

6.6.3.1 `DGLPosition DECS::GL::DGLSquare::point1_` [private]

6.6.3.2 `DGLPosition DECS::GL::DGLSquare::point2_` [private]

6.6.3.3 `DGLPosition DECS::GL::DGLSquare::point3_` [private]

6.6.3.4 `DGLPosition DECS::GL::DGLSquare::point4_` [private]

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

- [include/GL/dglbasicshape.hpp](#)

## 6.7 DECS::GL::DGLTriangle Class Reference

```
#include <dglbasicshape.hpp>
```

Inheritance diagram for DECS::GL::DGLTriangle:



### Public Member Functions

- [DGLTriangle](#) ([DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3)
- [DGLTriangle](#) ([DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3, [DGLColor](#) color)
- [DGLTriangle](#) (int mode, [DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3)
- [DGLTriangle](#) (int mode, [DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3, [DGLColor](#) color)
- [~DGLTriangle](#) ()
- void [setPoint](#) ([DGLPosition](#) point1, [DGLPosition](#) point2, [DGLPosition](#) point3)
- virtual void [setColor](#) ([DGLColor](#) color)
- virtual void [draw](#) ()

### Private Member Functions

- [DGLTriangle\(\)](#)

### Private Attributes

- [DGLPosition point1\\_](#)
- [DGLPosition point2\\_](#)
- [DGLPosition point3\\_](#)

### 6.7.1 Constructor & Destructor Documentation

6.7.1.1 `DECS::GL::DGLTriangle::DGLTriangle( )` [`inline`, `private`]

6.7.1.2 `DECS::GL::DGLTriangle::DGLTriangle( DGLPosition point1, DGLPosition point2, DGLPosition point3 )` [`inline`]

6.7.1.3 `DECS::GL::DGLTriangle::DGLTriangle( DGLPosition point1, DGLPosition point2, DGLPosition point3, DGLColor color )` [`inline`]

6.7.1.4 `DECS::GL::DGLTriangle::DGLTriangle( int mode, DGLPosition point1, DGLPosition point2, DGLPosition point3 )` [`inline`]

6.7.1.5 `DECS::GL::DGLTriangle::DGLTriangle( int mode, DGLPosition point1, DGLPosition point2, DGLPosition point3, DGLColor color )` [`inline`]

6.7.1.6 `DECS::GL::DGLTriangle::~DGLTriangle( )` [`inline`]

### 6.7.2 Member Function Documentation

6.7.2.1 `virtual void DECS::GL::DGLTriangle::draw( )` [`virtual`]

Implements [DECS::GL::DGLObject](#).

6.7.2.2 `virtual void DECS::GL::DGLTriangle::setColor( DGLColor color )` [`virtual`]

Implements [DECS::GL::DGLObject](#).

6.7.2.3 void DECS::GL::DGLTriangle::setPoint ( DGLPosition *point1*, DGLPosition *point2*, DGLPosition *point3* )

### 6.7.3 Member Data Documentation

6.7.3.1 DGLPosition DECS::GL::DGLTriangle::point1\_ [private]

6.7.3.2 DGLPosition DECS::GL::DGLTriangle::point2\_ [private]

6.7.3.3 DGLPosition DECS::GL::DGLTriangle::point3\_ [private]

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

- [include/GL/dglbasicshape.hpp](#)

## 6.8 DECS::GL::DGLWindow Class Reference

Window class.

```
#include <dglwindow.hpp>
```

### Public Member Functions

- [DGLWindow](#) (int argc, char \*argv[])  
*Constructor for the default window.*
- [DGLWindow](#) (int argc, char \*argv[], void(\*displayFunc)(), void(\*resizeFunc)(int width, int height))  
*Constructor for the default window with display and resize function.*
- [DGLWindow](#) (int argc, char \*argv[], [DGLWindowProperty](#) \*wProp)  
*Constructor for the window with user-defined properties.*
- [DGLWindow](#) (int argc, char \*argv[], [DGLWindowProperty](#) \*wProp, void(\*displayFunc)(), void(\*resizeFunc)(int width, int height))  
*Constructor for the window with user-defined properties with display and resize functions.*
- [~DGLWindow](#) ()  
*Default destructor.*
- void [setBGColor](#) ([DGLColor](#) bgColor)  
*Function for setting background color.*
- void [setDisplayFunc](#) (void(\*displayFunc)())  
*Function for setting a display function.*

- void [setResizeFunc](#) (void(\*resizeFunc)(int width, int height))  
*Function for setting a resize function.*
- void [setMouseFunc](#) (void(\*mouseFunc)(int button, int state, int x, int y))  
*Function for setting a mouse event handler.*
- void [create](#) ()  
*Function for window creation.*

### Private Member Functions

- void [init](#) ()  
*Initialize function for internal use.*

### Private Attributes

- [DGLWindowProperty](#) \* [wProp\\_](#)  
*Pointer to window property.*
- void(\* [displayFunc\\_](#) )()  
*Function pointer of a display function.*
- void(\* [resizeFunc\\_](#) )(int width, int height)  
*Function pointer of a resize function.*
- void(\* [mouseFunc\\_](#) )(int button, int state, int x, int y)  
*Function pointer of the mouse event handler.*

### 6.8.1 Detailed Description

Window class. This class provide window with a draw area. This window is created through GLUT. In short, this class wrap the systme which GLUT deal with a window and provide this as C++ class.

### 6.8.2 Constructor & Destructor Documentation

#### 6.8.2.1 DECS::GL::DGLWindow::DGLWindow ( int argc, char \* argv[] ) [inline]

Constructor for the default window.

This constructor create the instance using the default window property ( [DECS::GL::DGL\\_DEFAULT\\_WPROP](#) ).

**Warning**

This constructor is **NOT** setting display and resize functions. So that functions have to be set using [DGLWindow::setDisplayFunc\(\)](#) and [DGLWindow::setResizeFunc\(\)](#) before using [DGLWindow::create\(\)](#) .

**Parameters**

<i>argc</i>	Same as command line argument "argc"
<i>argv</i>	Same as command line argument "argv"

**6.8.2.2** `DECS::GL::DGLWindow::DGLWindow ( int argc, char * argv[], void(*)() displayFunc, void(*) (int width, int height) resizeFunc ) [inline]`

Constructor for the default window with display and resize function.

This constructor create the instance using the default window property ( [DECS::GL::DGL\\_DEFAULT\\_WPROP](#) ) with display and resize functions.

**Parameters**

<i>argc</i>	Same as command line argument "argc"
<i>argv</i>	Same as command line argument "argv"
<i>displayFunc</i>	Pointer to Display function
<i>resizeFunc</i>	Pointer to resize function

**6.8.2.3** `DECS::GL::DGLWindow::DGLWindow ( int argc, char * argv[], DGLWindowProperty * wProp ) [inline]`

Constructor for the window with user-defined properties.

This constructor create the instance using the user-defined window properties.

**Warning**

This constructor is **NOT** setting display and resize functions. So that functions have to be set using [DGLWindow::setDisplayFunc\(\)](#) and [DGLWindow::setResizeFunc\(\)](#) before using [DGLWindow::create\(\)](#) .

**Parameters**

<i>argc</i>	Same as command line argument "argc"
<i>argv</i>	Same as command line argument "argv"
<i>wProp</i>	A pointer to the user-defined window properties



**6.8.2.4 DECS::GL::DGLWindow::DGLWindow ( int *argc*, char \* *argv*[], DGLWindowProperty \* *wProp*, void(\*)() *displayFunc*, void(\*) (int width, int height) *resizeFunc* ) [inline]**

Constructor for the window with user-defined properties with display and resize functions.

This constructor create the instance using the user-defined window properties with display and resize functions.

#### Parameters

<i>argc</i>	Same as command line argument "argc"
<i>argv</i>	Same as command line argument "argv"
<i>wProp</i>	A pointer to the user-defined window properties
<i>A</i>	displayFunc Pointer to Display function
<i>A</i>	resizeFunc Pointer to resize function

**6.8.2.5 DECS::GL::DGLWindow::~~DGLWindow ( ) [inline]**

Default destructor.

### 6.8.3 Member Function Documentation

**6.8.3.1 void DECS::GL::DGLWindow::create ( )**

Function for window creation.

This function create the window using setting of its instance.

**6.8.3.2 void DECS::GL::DGLWindow::init ( ) [private]**

Initialize function for internal use.

**6.8.3.3 void DECS::GL::DGLWindow::setBGColor ( DGLColor *bgColor* )**

Function for setting background color.

This Function set the argument "bgColor" in the member variable "bgColor\_". This setting is not a call by reference but by value.

#### Parameters

<i>bgColor</i>	Background color for draw area
----------------	--------------------------------

**6.8.3.4 void DECS::GL::DGLWindow::setDisplayFunc ( void(\*)() *displayFunc* )**

Function for setting a display function.

This Function set the argument "displayFunc" in the member variable "displayFunc\_".

**Warning**

1. The Default display function is **NOT** existance. So a display function have to be defined by yourself.
2. If the instance of this class createe by the constructor without the display and resize functions, the display function have to be set by this function.

**Parameters**

<i>displayFunc</i>	Pointer to the display function
--------------------	---------------------------------

**6.8.3.5 void DECS::GL::DGLWindow::setMouseFunc ( void(\*) (int button, int state, int x, int y) *mouseFunc* )**

Function for setting a mouse event handler.

This Function set the argument "mouseFunc" in the member variable "mouseFunc\_".

**Parameters**

<i>mouseFunc</i>	Pointer to the mouse event handler function
------------------	---

**6.8.3.6 void DECS::GL::DGLWindow::setResizeFunc ( void(\*) (int width, int height) *resizeFunc* )**

Function for setting a resize function.

This Function set the argument "resizeFunc" in the member variable "resizeFunc\_".

**Warning**

1. The Default resize function is **NOT** existance. So a resize function have to be defined by yourself.
2. If the instance of this class createe by the constructor without the display and resize functions, the resize function have to be set by this function.

**Parameters**

<i>resizeFunc</i>	Pointer to the resize function
-------------------	--------------------------------

## 6.8.4 Member Data Documentation

6.8.4.1 `void(* DECS::GL::DGLWindow::displayFunc_())` [private]

Function pointer of a display function.

6.8.4.2 `void(* DECS::GL::DGLWindow::mouseFunc_)(int button, int state, int x, int y)`  
[private]

Function pointer of the mouse event handler.

6.8.4.3 `void(* DECS::GL::DGLWindow::resizeFunc_)(int width, int height)`  
[private]

Function pointer of a resize function.

6.8.4.4 `DGLWindowProperty* DECS::GL::DGLWindow::wProp_`  
[private]

Pointer to window property.

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

- [include/GL/dglwindow.hpp](#)

## 6.9 DECS::GL::DGLWindowProperty Struct Reference

Window property structure for [DECS::GL::DGLWindow](#) class.

```
#include <dglwindow.hpp>
```

### Public Attributes

- string [title\\_](#)  
*Window title.*
- unsigned int [mode\\_](#)
- [DGLColor](#) [bgColor\\_](#)  
*Background color of the window.*
- int [wWidth\\_](#)  
*Window width.*
- int [wHeight\\_](#)  
*Window height.*

- int [wPositionX\\_](#)  
*X-coordinate of window position.*
- int [wPositionY\\_](#)  
*Y-coordinate of window position.*

### 6.9.1 Detailed Description

Window property structure for [DECS::GL::DGLWindow](#) class. This structure is a set of window property, for example window title, background color, window size and etc.

### 6.9.2 Member Data Documentation

#### 6.9.2.1 DGLColor [DECS::GL::DGLWindowProperty::bgColor\\_](#)

Background color of the window.

#### 6.9.2.2 unsigned int [DECS::GL::DGLWindowProperty::mode\\_](#)

OpenGL color mode

#### 6.9.2.3 string [DECS::GL::DGLWindowProperty::title\\_](#)

Window title.

#### 6.9.2.4 int [DECS::GL::DGLWindowProperty::wHeight\\_](#)

Window height.

#### 6.9.2.5 int [DECS::GL::DGLWindowProperty::wPositionX\\_](#)

X-coordinate of window position.

#### 6.9.2.6 int [DECS::GL::DGLWindowProperty::wPositionY\\_](#)

Y-coordinate of window position.

#### 6.9.2.7 int [DECS::GL::DGLWindowProperty::wWidth\\_](#)

Window width.

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

- [include/GL/dglwindow.hpp](#)



# Chapter 7

## File Documentation

### 7.1 include/GL/dgl.hpp File Reference

```
#include <GL/dglcommon.hpp>
#include <GL/dglutil.hpp>
#include <GL/dglbasicshape.hpp>
#include <GL/dglwindow.hpp>
```

### 7.2 include/GL/dglbasicshape.hpp File Reference

```
#include <GL/dglcommon.hpp>
```

#### Classes

- class [DECS::GL::DGLLine](#)
- class [DECS::GL::DGLTriangle](#)
- class [DECS::GL::DGLSquare](#)
- class [DECS::GL::DGLCircle](#)

#### Namespaces

- namespace [DECS](#)  
*Namespace of Discrete Elements Calculation Suites(DECS)*
- namespace [DECS::GL](#)  
*Namespace of GL section of Discrete Elements Calculation Suites(DECS)*

### 7.3 include/GL/dglcommon.hpp File Reference

```
#include <GL/dglutil.hpp>
```

#### Classes

- class [DECS::GL::DGLObject](#)

#### Namespaces

- namespace [DECS](#)  
*Namespace of Discrete Elements Calculation Suites(DECS)*
- namespace [DECS::GL](#)  
*Namespace of GL section of Discrete Elements Calculation Suites(DECS)*

#### Variables

- static const DGLColor [DECS::GL::DGL\\_WHITE](#) (1.0, 1.0, 1.0, 1.0)
- static const DGLColor [DECS::GL::DGL\\_BLACK](#) (0.0, 0.0, 0.0, 1.0)
- static const DGLColor [DECS::GL::DGL\\_RED](#) (1.0, 0.0, 0.0, 1.0)
- static const DGLColor [DECS::GL::DGL\\_GREEN](#) (0.0, 1.0, 0.0, 1.0)
- static const DGLColor [DECS::GL::DGL\\_BLUE](#) (0.0, 0.0, 1.0, 1.0)
- static const DGLPosition [DECS::GL::DGL\\_ORIGIN](#) (0.0, 0.0, 0.0)

### 7.4 include/GL/dglutil.hpp File Reference

```
#include <GLUT/glut.h>
```

#### Classes

- class [DECS::GL::DGLColor](#)
- class [DECS::GL::DGLPosition](#)

#### Namespaces

- namespace [DECS](#)  
*Namespace of Discrete Elements Calculation Suites(DECS)*
- namespace [DECS::GL](#)  
*Namespace of GL section of Discrete Elements Calculation Suites(DECS)*



## Variables

- static const int [DECS::GL::X](#) = 0
- static const int [DECS::GL::Y](#) = 1
- static const int [DECS::GL::Z](#) = 2
- static const int [DECS::GL::R](#) = 0
- static const int [DECS::GL::G](#) = 1
- static const int [DECS::GL::B](#) = 2
- static const int [DECS::GL::A](#) = 3

## 7.5 include/GL/dglwindow.hpp File Reference

```
#include <string>
#include <GL/dgl.hpp>
```

## Classes

- struct [DECS::GL::DGLWindowProperty](#)  
*Window property structure for [DECS::GL::DGLWindow](#) class.*
- class [DECS::GL::DGLWindow](#)  
*Window class.*

## Namespaces

- namespace [DECS](#)  
*Namespace of Discrete Elements Calculation Suites(DECS)*
- namespace [DECS::GL](#)  
*Namespace of [GL](#) section of Discrete Elements Calculation Suites(DECS)*

## Typedefs

- typedef void(\* [DECS::GL::RESIZE\\_FUNC](#) )(int, int)  
*Type definition for the resize function.*

## Functions

- [RESIZE\\_FUNC](#) [DECS::GL::getResizeFunc](#) (GLdouble canvasWidth, GLdouble canvasHeight)  
*Helper function to generate resize function.*

**Variables**

- static DGLWindowProperty [DECS::GL::DGL\\_DEFAULT\\_WPROP](#)  
*Default window property.*

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