

ODE Framework

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Namespace Index

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Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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age.gui.Handling	34
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KeyListener	
age.port.jogl.JOGLEventListener	37
age.log.Level	61
age.log.Log	62
MouseListener	
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age.port.Port	70
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Renderable	
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RuntimeException	
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age.event.Type	78
age.Util	80
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WindowListener	
age.port.jogl.JOGLEventListener	37

Chapter 3

Class Index

3.1 Class List

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age.clock.Alarm	12
age.event.Button	14
age.Client	15
age.clock.Clock	17
age.gui.Dock	18
age.event.Event	20
age.event.Events	25
age.gui.Flag	29
age.port.Graphics	30
age.event.Handler	33
age.gui.Handling	34
age.port.jogl.JOGLEventListener	37
age.port.jogl.JOGLGraphics	41
age.port.jogl.JOGLPort	45
age.port.jogl.JOGLRenderListener	49
age.event.Key	50
age.log.Level	61
age.log.Log	62
age.gui.Multiline	66
age.port.Port	70
age.port.Renderable	72
age.gui.Rendering	73
age.clock.Task	74
age.task.Task	75
age.task.Tasks	75
age.event.Type	78
age.Util	80
age.gui.VScroller	80
age.gui.Widget	83
age.gui.Widgets	90
age.gui.Window	91

Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

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D:/GIT/repos/ODE/age/age/event/ Button.java	96
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D:/GIT/repos/ODE/age/age/gui/ Dock.java	98
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D:/GIT/repos/ODE/age/age/gui/ Multiline.java	99
D:/GIT/repos/ODE/age/age/gui/ Rendering.java	99
D:/GIT/repos/ODE/age/age/gui/ VScroller.java	99
D:/GIT/repos/ODE/age/age/gui/ Widget.java	100
D:/GIT/repos/ODE/age/age/gui/ Widgets.java	100
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D:/GIT/repos/ODE/age/age/log/ Level.java	101
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D:/GIT/repos/ODE/age/age/task/ Task.java	96
D:/GIT/repos/ODE/age/age/task/ Tasks.java	103

Chapter 5

Namespace Documentation

5.1 Package age

Packages

- package [clock](#)
- package [event](#)
- package [gui](#)
- package [log](#)
- package [port](#)
- package [task](#)

Classes

- class [AGEException](#)
- class [Client](#)
- class [Util](#)

5.2 Package age.clock

Classes

- class [Alarm](#)
- class [Clock](#)
- interface [Task](#)

5.3 Package age.event

Classes

- enum [Button](#)
- class [Event](#)
- class [Events](#)
- interface [Handler](#)
- enum [Key](#)
- enum [Type](#)

5.4 Package age.gui

Classes

- class [Dock](#)
- enum [Flag](#)
- class [Handling](#)
- class [Multiline](#)
- class [Rendering](#)
- class [VScroller](#)
- class [Widget](#)
- class [Widgets](#)
- class [Window](#)

5.5 Package age.log

Classes

- enum [Level](#)
- class [Log](#)

5.6 Package age.port

Packages

- package [jogl](#)

Classes

- interface [Graphics](#)
- interface [Port](#)
- interface [Renderable](#)

5.7 Package age.port.jogl

Classes

- class [JOGLEventListener](#)
- class [JOGLGraphics](#)
- class [JOGLPort](#)
- class [JOGLRenderListener](#)

5.8 Package age.task

Classes

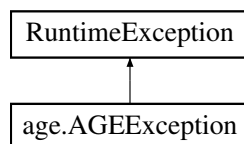
- interface [Task](#)
- class [Tasks](#)

Chapter 6

Class Documentation

6.1 age.AGEEException Class Reference

Inheritance diagram for age.AGEEException:



Public Member Functions

- [AGEEException](#) ()
- [AGEEException](#) (Throwable cause)
- [AGEEException](#) (String message)
- [AGEEException](#) (String message, Throwable cause)

Static Private Attributes

- static final long [serialVersionUID](#) = 1L

6.1.1 Constructor & Destructor Documentation

6.1.1.1 AGEEException() [1/4]

```
age.AGEEException.AGEEException ( )
```

6.1.1.2 AGEEException() [2/4]

```
age.AGEEException.AGEEException (
    Throwable cause )
```

6.1.1.3 AGEException() [3/4]

```
age.AGEException.AGEException (
    String message )
```

6.1.1.4 AGEException() [4/4]

```
age.AGEException.AGEException (
    String message,
    Throwable cause )
```

6.1.2 Member Data Documentation

6.1.2.1 serialVersionUID

```
final long age.AGEException.serialVersionUID = 1L [static], [private]
```

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

- D:/GIT/repos/ODE/age/age/[AGEException.java](#)

6.2 age.clock.Alarm Class Reference

Public Member Functions

- void [init](#) (long nanotime)
- void [update](#) (long nanotime)

Package Functions

- [Alarm](#) (long [nanoperiod](#), [Task](#) task)

Private Member Functions

- void [trigger](#) (int count, float dT)

Private Attributes

- long [nanoperiod](#)
- [Task](#) task
- long [mark](#)

6.2.1 Constructor & Destructor Documentation

6.2.1.1 Alarm()

```
age.clock.Alarm.Alarm (
    long nanoperiod,
    Task task ) [package]
```

6.2.2 Member Function Documentation

6.2.2.1 init()

```
void age.clock.Alarm.init (
    long nanotime )
```

6.2.2.2 trigger()

```
void age.clock.Alarm.trigger (
    int count,
    float dT ) [private]
```

6.2.2.3 update()

```
void age.clock.Alarm.update (
    long nanotime )
```

6.2.3 Member Data Documentation

6.2.3.1 mark

```
long age.clock.Alarm.mark [private]
```

6.2.3.2 nanoperiod

```
long age.clock.Alarm.nanoperiod [private]
```

6.2.3.3 task

```
Task age.clock.Alarm.task [private]
```

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

- [D:/GIT/repos/ODE/age/age/clock/Alarm.java](#)

6.3 age.event.Button Enum Reference

Public Attributes

- [NONE](#)
- [BTN1](#)
- [BTN2](#)
- [BTN3](#)
- [BTN4](#)
- [BTN5](#)
- [BTN6](#)
- [BTN7](#)
- [BTN8](#)

6.3.1 Member Data Documentation

6.3.1.1 BTN1

`age.event.Button.BTN1`

6.3.1.2 BTN2

`age.event.Button.BTN2`

6.3.1.3 BTN3

`age.event.Button.BTN3`

6.3.1.4 BTN4

`age.event.Button.BTN4`

6.3.1.5 BTN5

`age.event.Button.BTN5`

6.3.1.6 BTN6

`age.event.Button.BTN6`

6.3.1.7 BTN7

`age.event.Button.BTN7`

6.3.1.8 BTN8

```
age.event.Button.BTN8
```

6.3.1.9 NONE

```
age.event.Button.NONE
```

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

- [D:/GIT/repos/ODE/age/age/event/Button.java](#)

6.4 age.Client Class Reference

Public Member Functions

- void [run](#) ()
- void [shutdown](#) ()

Static Public Member Functions

- static void [main](#) (String[] args)

Private Member Functions

- void [setup](#) ()
- void [setupGUI](#) ()
- void [toggleSysmenu](#) ()
- void [loop](#) ()
- void [render](#) (int count, long nanoperiod, float dT)
- void [update](#) (int count, long nanoperiod, float dT)

Private Attributes

- Clock [clock](#) = new Clock()
- Events [events](#) = new Events()
- Widgets [widgets](#) = new Widgets()
- Tasks [tasks](#) = new Tasks()
- Port [port](#) = new JOGLPort()
- boolean [running](#) = false
- Widget [sysMenuFrame](#)

6.4.1 Member Function Documentation

6.4.1.1 loop()

```
void age.Client.loop ( ) [private]
```

6.4.1.2 main()

```
static void age.Client.main (
    String[] args ) [static]
```

6.4.1.3 render()

```
void age.Client.render (
    int count,
    long nanoperiod,
    float dT ) [private]
```

6.4.1.4 run()

```
void age.Client.run ( )
```

6.4.1.5 setup()

```
void age.Client.setup ( ) [private]
```

6.4.1.6 setupGUI()

```
void age.Client.setupGUI ( ) [private]
```

6.4.1.7 shutdown()

```
void age.Client.shutdown ( )
```

6.4.1.8 toggleSysmenu()

```
void age.Client.toggleSysmenu ( ) [private]
```

6.4.1.9 update()

```
void age.Client.update (
    int count,
    long nanoperiod,
    float dT ) [private]
```

6.4.2 Member Data Documentation

6.4.2.1 clock

```
Clock age.Client.clock = new Clock() [private]
```

6.4.2.2 events

```
Events age.Client.events = new Events() [private]
```

6.4.2.3 port

```
Port age.Client.port = new JOGLPort() [private]
```

6.4.2.4 running

```
boolean age.Client.running = false [private]
```

6.4.2.5 sysMenuFrame

```
Widget age.Client.sysMenuFrame [private]
```

6.4.2.6 tasks

```
Tasks age.Client.tasks = new Tasks() [private]
```

6.4.2.7 widgets

```
Widgets age.Client.widgets = new Widgets() [private]
```

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

- D:/GIT/repos/ODE/age/age/[Client.java](#)

6.5 age.clock.Clock Class Reference

Public Member Functions

- void [add](#) (long nanoperiod, [Task](#) task)
- void [addFPS](#) (int fps, [Task](#) task)
- void [init](#) ()
- void [update](#) ()

Private Attributes

- final List< [Alarm](#) > [alarms](#) = new ArrayList<>()

6.5.1 Member Function Documentation

6.5.1.1 add()

```
void age.clock.Clock.add (
    long nanoperiod,
    Task task )
```

6.5.1.2 addFPS()

```
void age.clock.Clock.addFPS (
    int fps,
    Task task )
```

6.5.1.3 init()

```
void age.clock.Clock.init ( )
```

6.5.1.4 update()

```
void age.clock.Clock.update ( )
```

6.5.2 Member Data Documentation

6.5.2.1 alarms

```
final List<Alarm> age.clock.Clock.alarms = new ArrayList<>() [private]
```

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

- D:/GIT/repos/ODE/age/age/clock/[Clock.java](#)

6.6 age.gui.Dock Class Reference

Public Member Functions

- float [top](#) ()
- float [bottom](#) ()
- float [left](#) ()
- float [right](#) ()
- void [set](#) ([Dock](#) dock)
- void [set](#) (float [left](#), float [right](#), float [top](#), float [bottom](#))

Private Attributes

- float `left` = 0
- float `right` = 0
- float `top` = 0
- float `bottom` = 0

6.6.1 Member Function Documentation

6.6.1.1 `bottom()`

```
float age.gui.Dock.bottom ( )
```

6.6.1.2 `left()`

```
float age.gui.Dock.left ( )
```

6.6.1.3 `right()`

```
float age.gui.Dock.right ( )
```

6.6.1.4 `set()` [1/2]

```
void age.gui.Dock.set (
    Dock dock )
```

6.6.1.5 `set()` [2/2]

```
void age.gui.Dock.set (
    float left,
    float right,
    float top,
    float bottom )
```

6.6.1.6 `top()`

```
float age.gui.Dock.top ( )
```

6.6.2 Member Data Documentation

6.6.2.1 `bottom`

```
float age.gui.Dock.bottom = 0 [private]
```

6.6.2.2 left

```
float age.gui.Dock.left = 0 [private]
```

6.6.2.3 right

```
float age.gui.Dock.right = 0 [private]
```

6.6.2.4 top

```
float age.gui.Dock.top = 0 [private]
```

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

- [D:/GIT/repos/ODE/age/age/gui/Dock.java](#)

6.7 age.event.Event Class Reference

Public Member Functions

- void [clear](#) ()
- [Type](#) [type](#) ()
- [Key](#) [key](#) ()
- char [character](#) ()
- [Button](#) [button](#) ()
- int [count](#) ()
- float [x](#) ()
- float [y](#) ()
- [Vector2f](#) [position](#) ()
- float [width](#) ()
- float [height](#) ()
- [Vector2f](#) [dimension](#) ()
- String [command](#) ()
- void [keyPressed](#) ([Key](#) [key](#), char [character](#))
- void [keyReleased](#) ([Key](#) [key](#), char [character](#))
- void [keyTyped](#) ([Key](#) [key](#), char [character](#))
- void [pointerEntered](#) (float [x](#), float [y](#))
- void [pointerExited](#) (float [x](#), float [y](#))
- void [pointerMoved](#) (float [x](#), float [y](#))
- void [pointerPressed](#) ([Button](#) [button](#), int [count](#), float [x](#), float [y](#))
- void [pointerClicked](#) ([Button](#) [button](#), int [count](#), float [x](#), float [y](#))
- void [pointerReleased](#) ([Button](#) [button](#), int [count](#), float [x](#), float [y](#))
- void [surfaceResized](#) (float w, float h)
- void [surfaceCloseRequest](#) ()
- void [taskCommand](#) (String [command](#))

Package Functions

- [Event](#) ()

Private Member Functions

- void `keyEvent` (`Type` type, `Key` key, char character)
- void `pointerEvent` (`Type` type, `Button` button, int count, float x, float y)

Private Attributes

- `Type` type = `Type.NONE`
- `Key` key = `Key.NONE`
- char character = `'\0'`
- `Button` button = `Button.NONE`
- int count = -1
- `Vector2f` position = new `Vector2f()`
- `Vector2f` dimension = new `Vector2f()`
- String command = null

6.7.1 Constructor & Destructor Documentation

6.7.1.1 Event()

```
age.event.Event.Event ( ) [package]
```

6.7.2 Member Function Documentation

6.7.2.1 button()

```
Button age.event.Event.button ( )
```

6.7.2.2 character()

```
char age.event.Event.character ( )
```

6.7.2.3 clear()

```
void age.event.Event.clear ( )
```

6.7.2.4 command()

```
String age.event.Event.command ( )
```

6.7.2.5 count()

```
int age.event.Event.count ( )
```

6.7.2.6 dimension()

```
Vector2f age.event.Event.dimension ( )
```

6.7.2.7 height()

```
float age.event.Event.height ( )
```

6.7.2.8 key()

```
Key age.event.Event.key ( )
```

6.7.2.9 keyEvent()

```
void age.event.Event.keyEvent (
    Type type,
    Key key,
    char character ) [private]
```

6.7.2.10 keyPressed()

```
void age.event.Event.keyPressed (
    Key key,
    char character )
```

6.7.2.11 keyReleased()

```
void age.event.Event.keyReleased (
    Key key,
    char character )
```

6.7.2.12 keyTyped()

```
void age.event.Event.keyTyped (
    Key key,
    char character )
```

6.7.2.13 pointerClicked()

```
void age.event.Event.pointerClicked (
    Button button,
    int count,
    float x,
    float y )
```


6.7.2.14 pointerEntered()

```
void age.event.Event.pointerEntered (
    float x,
    float y )
```

6.7.2.15 pointerEvent()

```
void age.event.Event.pointerEvent (
    Type type,
    Button button,
    int count,
    float x,
    float y ) [private]
```

6.7.2.16 pointerExited()

```
void age.event.Event.pointerExited (
    float x,
    float y )
```

6.7.2.17 pointerMoved()

```
void age.event.Event.pointerMoved (
    float x,
    float y )
```

6.7.2.18 pointerPressed()

```
void age.event.Event.pointerPressed (
    Button button,
    int count,
    float x,
    float y )
```

6.7.2.19 pointerReleased()

```
void age.event.Event.pointerReleased (
    Button button,
    int count,
    float x,
    float y )
```

6.7.2.20 position()

```
Vector2f age.event.Event.position ( )
```

6.7.2.21 surfaceCloseRequest()

```
void age.event.Event.surfaceCloseRequest ( )
```

6.7.2.22 surfaceResized()

```
void age.event.Event.surfaceResized (
    float w,
    float h )
```

6.7.2.23 taskCommand()

```
void age.event.Event.taskCommand (
    String command )
```

6.7.2.24 type()

```
Type age.event.Event.type ( )
```

6.7.2.25 width()

```
float age.event.Event.width ( )
```

6.7.2.26 x()

```
float age.event.Event.x ( )
```

6.7.2.27 y()

```
float age.event.Event.y ( )
```

6.7.3 Member Data Documentation

6.7.3.1 button

```
Button age.event.Event.button = Button.NONE [private]
```

6.7.3.2 character

```
char age.event.Event.character = '\0' [private]
```

6.7.3.3 command

```
String age.event.Event.command = null [private]
```

6.7.3.4 count

```
int age.event.Event.count = -1 [private]
```

6.7.3.5 dimension

```
Vector2f age.event.Event.dimension = new Vector2f() [private]
```

6.7.3.6 key

```
Key age.event.Event.key = Key.NONE [private]
```

6.7.3.7 position

```
Vector2f age.event.Event.position = new Vector2f() [private]
```

6.7.3.8 type

```
Type age.event.Event.type = Type.NONE [private]
```

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

- [D:/GIT/repos/ODE/age/age/event/Event.java](#)

6.8 age.event.Events Class Reference

Public Member Functions

- void [assign](#) (Type type, Handler handler)
- void [postKeyPressed](#) (Key key, char character)
- void [postKeyReleased](#) (Key key, char character)
- void [postKeyTyped](#) (Key key, char character)
- void [postPointerEntered](#) (float x, float y)
- void [postPointerExited](#) (float x, float y)
- void [postPointerMoved](#) (float x, float y)
- void [postPointerPressed](#) (Button button, int count, float x, float y)
- void [postPointerReleased](#) (Button button, int count, float x, float y)
- void [postPointerClicked](#) (Button button, int count, float x, float y)
- void [postSurfaceResized](#) (float w, float h)
- void [postSurfaceCloseRequest](#) ()
- void [postTaskCommand](#) (String command)
- void [update](#) ()

Private Member Functions

- void `handle` (`Event` event)
- void `post` (`Event` event)
- `Event alloc` ()
- void `free` (`Event` event)

Private Attributes

- final Queue< `Event` > `cache` = new LinkedList<>()
- final List< `Event` > `inbox` = new ArrayList<>()
- final List< `Event` > `outbox` = new ArrayList<>()
- final Map< `Type`, List< `Handler` > > `handlers` = new EnumMap<>(Type.class)

6.8.1 Member Function Documentation

6.8.1.1 alloc()

```
Event age.event.Events.alloc ( ) [private]
```

6.8.1.2 assign()

```
void age.event.Events.assign (
    Type type,
    Handler handler )
```

6.8.1.3 free()

```
void age.event.Events.free (
    Event event ) [private]
```

6.8.1.4 handle()

```
void age.event.Events.handle (
    Event event ) [private]
```

6.8.1.5 post()

```
void age.event.Events.post (
    Event event ) [private]
```

6.8.1.6 postKeyPressed()

```
void age.event.Events.postKeyPressed (
    Key key,
    char character )
```

6.8.1.7 postKeyReleased()

```
void age.event.Events.postKeyReleased (
    Key key,
    char character )
```

6.8.1.8 postKeyTyped()

```
void age.event.Events.postKeyTyped (
    Key key,
    char character )
```

6.8.1.9 postPointerClicked()

```
void age.event.Events.postPointerClicked (
    Button button,
    int count,
    float x,
    float y )
```

6.8.1.10 postPointerEntered()

```
void age.event.Events.postPointerEntered (
    float x,
    float y )
```

6.8.1.11 postPointerExited()

```
void age.event.Events.postPointerExited (
    float x,
    float y )
```

6.8.1.12 postPointerMoved()

```
void age.event.Events.postPointerMoved (
    float x,
    float y )
```

6.8.1.13 postPointerPressed()

```
void age.event.Events.postPointerPressed (
    Button button,
    int count,
    float x,
    float y )
```

6.8.1.14 postPointerReleased()

```
void age.event.Events.postPointerReleased (
    Button button,
    int count,
    float x,
    float y )
```

6.8.1.15 postSurfaceCloseRequest()

```
void age.event.Events.postSurfaceCloseRequest ( )
```

6.8.1.16 postSurfaceResized()

```
void age.event.Events.postSurfaceResized (
    float w,
    float h )
```

6.8.1.17 postTaskCommand()

```
void age.event.Events.postTaskCommand (
    String command )
```

6.8.1.18 update()

```
void age.event.Events.update ( )
```

6.8.2 Member Data Documentation

6.8.2.1 cache

```
final Queue<Event> age.event.Events.cache = new LinkedList<>() [private]
```

6.8.2.2 handlers

```
final Map<Type, List<Handler> > age.event.Events.handlers = new EnumMap<>(Type.class) [private]
```

6.8.2.3 inbox

```
final List<Event> age.event.Events.inbox = new ArrayList<>() [private]
```

6.8.2.4 outbox

```
final List<Event> age.event.Events.outbox = new ArrayList<>() [private]
```

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

- [D:/GIT/repos/ODE/age/age/event/Events.java](#)

6.9 age.gui.Flag Enum Reference

Public Attributes

- [BOX](#)
- [FRAME](#)
- [BUTTON](#)
- [CANVAS](#)
- [TITLE](#)
- [MULTILINE](#)
- [HANDLE](#)
- [HOVERED](#)
- [HIDDEN](#)

6.9.1 Member Data Documentation

6.9.1.1 BOX

```
age.gui.Flag.BOX
```

6.9.1.2 BUTTON

```
age.gui.Flag.BUTTON
```

6.9.1.3 CANVAS

```
age.gui.Flag.CANVAS
```

6.9.1.4 FRAME

```
age.gui.Flag.FRAME
```

6.9.1.5 HANDLE

```
age.gui.Flag.HANDLE
```

6.9.1.6 HIDDEN

```
age.gui.Flag.HIDDEN
```

6.9.1.7 HOVERED

```
age.gui.Flag.HOVERED
```

6.9.1.8 MULTILINE

```
age.gui.Flag.MULTILINE
```

6.9.1.9 TITLE

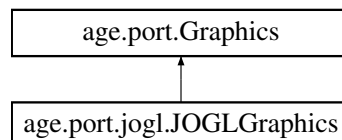
```
age.gui.Flag.TITLE
```

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

- [D:/GIT/repos/ODE/age/age/gui/Flag.java](#)

6.10 age.port.Graphics Interface Reference

Inheritance diagram for age.port.Graphics:



Public Member Functions

- void [mode2D](#) ()
- void [pushTransformation](#) ()
- void [popTransformation](#) ()
- void [color](#) (Color4f c)
- void [color](#) (float r, float g, float b)
- void [color](#) (float r, float g, float b, float a)
- void [translate](#) (Vector2f pos)
- void [translate](#) (float x, float y)
- void [rectangle](#) (Vector2f dim, boolean hollow)
- void [rectangle](#) (Vector2f pos, Vector2f dim, boolean hollow)
- void [rectangle](#) (float x, float y, float w, float h, boolean hollow)
- void [text](#) (float x, float y, CharSequence text, String font)
- void [texture](#) (float x, float y, float w, float h, String texture)
- void [calcMultitext](#) (String [text](#), Vector2f dimension, String font, int[] buffer)
- void [calcMultitext](#) (String [text](#), float width, float height, String font, int[] buffer)

6.10.1 Member Function Documentation

6.10.1.1 calcMultitext() [1/2]

```
void age.port.Graphics.calcMultitext (
    String text,
    float width,
    float height,
    String font,
    int[] buffer )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.2 calcMultitext() [2/2]

```
void age.port.Graphics.calcMultitext (
    String text,
    Vector2f dimension,
    String font,
    int[] buffer )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.3 color() [1/3]

```
void age.port.Graphics.color (
    Color4f c )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.4 color() [2/3]

```
void age.port.Graphics.color (
    float r,
    float g,
    float b )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.5 color() [3/3]

```
void age.port.Graphics.color (
    float r,
    float g,
    float b,
    float a )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.6 mode2D()

```
void age.port.Graphics.mode2D ( )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.7 popTransformation()

```
void age.port.Graphics.popTransformation ( )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.8 pushTransformation()

```
void age.port.Graphics.pushTransformation ( )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.9 rectangle() [1/3]

```
void age.port.Graphics.rectangle (
    float x,
    float y,
    float w,
    float h,
    boolean hollow )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.10 rectangle() [2/3]

```
void age.port.Graphics.rectangle (
    Vector2f dim,
    boolean hollow )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.11 rectangle() [3/3]

```
void age.port.Graphics.rectangle (
    Vector2f pos,
    Vector2f dim,
    boolean hollow )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.12 text()

```
void age.port.Graphics.text (
    float x,
    float y,
    CharSequence text,
    String font )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.13 texture()

```
void age.port.Graphics.texture (
    float x,
    float y,
    float w,
    float h,
    String texture )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.14 translate() [1/2]

```
void age.port.Graphics.translate (
    float x,
    float y )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

6.10.1.15 translate() [2/2]

```
void age.port.Graphics.translate (
    Vector2f pos )
```

Implemented in [age.port.jogl.JOGLGraphics](#).

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

- [D:/GIT/repos/ODE/age/age/port/Graphics.java](#)

6.11 age.event.Handler Interface Reference

Public Member Functions

- void [handle](#) ([Event](#) event)

6.11.1 Member Function Documentation

6.11.1.1 handle()

```
void age.event.Handler.handle (
    Event event )
```

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

- [D:/GIT/repos/ODE/age/age/event/Handler.java](#)

6.12 age.gui.Handling Class Reference

Public Member Functions

- [Handling](#) ([Widgets](#) widgets)
- void [assign](#) ([Events](#) events)
- void [handleKeyboard](#) ([Event](#) e)
- void [handlePointer](#) ([Event](#) e)
- void [handleSurface](#) ([Event](#) e)

Private Member Functions

- void [pressedFrameToFront](#) ([Event](#) e)
- void [buttonClickAction](#) ([Event](#) e)
- void [startFrameSizeAction](#) ([Event](#) e)
- void [startFrameDragAction](#) ([Event](#) e)
- void [startScrollHandleAction](#) ([Event](#) e)
- void [updateActionState](#) ([Event](#) e, [String](#) action)
- void [updateDragAction](#) ([Event](#) e)
- void [stopDragAction](#) ([Event](#) e)
- [Widget](#) [hovered](#) ([Vector2f](#) pos, [Widget](#) widget)

Private Attributes

- [Events](#) events
- final [Widgets](#) widgets
- [Widget](#) [hovered](#) = null
- [Widget](#) [dragged](#) = null
- [String](#) action = null
- final [Vector2f](#) ref = new [Vector2f](#)()
- final [Vector2f](#) tmp = new [Vector2f](#)()

6.12.1 Constructor & Destructor Documentation

6.12.1.1 Handling()

```
age.gui.Handling.Handling (
    Widgets widgets )
```

6.12.2 Member Function Documentation

6.12.2.1 assign()

```
void age.gui.Handling.assign (
    Events events )
```

6.12.2.2 buttonClickAction()

```
void age.gui.Handling.buttonClickAction (
    Event e ) [private]
```

6.12.2.3 handleKeyboard()

```
void age.gui.Handling.handleKeyboard (
    Event e )
```

6.12.2.4 handlePointer()

```
void age.gui.Handling.handlePointer (
    Event e )
```

6.12.2.5 handleSurface()

```
void age.gui.Handling.handleSurface (
    Event e )
```

6.12.2.6 hovered()

```
Widget age.gui.Handling.hovered (
    Vector2f pos,
    Widget widget ) [private]
```

6.12.2.7 pressedFrameToFront()

```
void age.gui.Handling.pressedFrameToFront (
    Event e ) [private]
```

6.12.2.8 startFrameDragAction()

```
void age.gui.Handling.startFrameDragAction (
    Event e ) [private]
```

6.12.2.9 startFrameSizeAction()

```
void age.gui.Handling.startFrameSizeAction (
    Event e ) [private]
```

6.12.2.10 startScrollHandleAction()

```
void age.gui.Handling.startScrollHandleAction (
    Event e ) [private]
```

6.12.2.11 stopDragAction()

```
void age.gui.Handling.stopDragAction (
    Event e ) [private]
```

6.12.2.12 updateActionState()

```
void age.gui.Handling.updateActionState (
    Event e,
    String action ) [private]
```

6.12.2.13 updateDragAction()

```
void age.gui.Handling.updateDragAction (
    Event e ) [private]
```

6.12.3 Member Data Documentation

6.12.3.1 action

```
String age.gui.Handling.action = null [private]
```

6.12.3.2 dragged

```
Widget age.gui.Handling.dragged = null [private]
```

6.12.3.3 events

```
Events age.gui.Handling.events [private]
```

6.12.3.4 hovered

```
Widget age.gui.Handling.hovered = null [private]
```

6.12.3.5 ref

```
final Vector2f age.gui.Handling.ref = new Vector2f() [private]
```

6.12.3.6 tmp

```
final Vector2f age.gui.Handling.tmp = new Vector2f() [private]
```

6.12.3.7 widgets

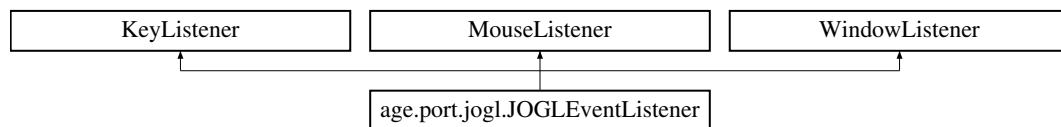
```
final Widgets age.gui.Handling.widgets [private]
```

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

- <D:/GIT/repos/ODE/age/age/gui/Handling.java>

6.13 age.port.jogl.JOGLEventListener Class Reference

Inheritance diagram for age.port.jogl.JOGLEventListener:



Public Member Functions

- void [assign](#) (Events [events](#))
- void [mouseClicked](#) (MouseEvent [e](#))
- void [mouseEntered](#) (MouseEvent [e](#))
- void [mouseExited](#) (MouseEvent [e](#))
- void [mousePressed](#) (MouseEvent [e](#))
- void [mouseReleased](#) (MouseEvent [e](#))
- void [mouseMoved](#) (MouseEvent [e](#))
- void [mouseDragged](#) (MouseEvent [e](#))
- void [mouseWheelMoved](#) (MouseEvent [e](#))
- void [keyPressed](#) (KeyEvent [e](#))
- void [keyReleased](#) (KeyEvent [e](#))
- void [windowResized](#) (WindowEvent [e](#))
- void [windowMoved](#) (WindowEvent [e](#))
- void [windowDestroyNotify](#) (WindowEvent [e](#))
- void [windowDestroyed](#) (WindowEvent [e](#))
- void [windowGainedFocus](#) (WindowEvent [e](#))
- void [windowLostFocus](#) (WindowEvent [e](#))
- void [windowRepaint](#) (WindowUpdateEvent [e](#))

Private Member Functions

- void [handleSurfaceCloseRequest](#) (Event e)
- Button [translateButton](#) (short button)
- Key [translateKey](#) (short key)

Private Attributes

- Events [events](#) = null

6.13.1 Member Function Documentation

6.13.1.1 `assign()`

```
void age.port.jogl.JOGLEventListener.assign (
    Events events )
```

6.13.1.2 `handleSurfaceCloseRequest()`

```
void age.port.jogl.JOGLEventListener.handleSurfaceCloseRequest (
    Event e ) [private]
```

6.13.1.3 `keyPressed()`

```
void age.port.jogl.JOGLEventListener.keyPressed (
    KeyEvent e )
```

6.13.1.4 `keyReleased()`

```
void age.port.jogl.JOGLEventListener.keyReleased (
    KeyEvent e )
```

6.13.1.5 `mouseClicked()`

```
void age.port.jogl.JOGLEventListener.mouseClicked (
    MouseEvent e )
```

6.13.1.6 `mouseDragged()`

```
void age.port.jogl.JOGLEventListener.mouseDragged (
    MouseEvent e )
```


6.13.1.7 mouseEntered()

```
void age.port.jogl.JOGLEventListener.mouseEntered (
    MouseEvent e )
```

6.13.1.8 mouseExited()

```
void age.port.jogl.JOGLEventListener.mouseExited (
    MouseEvent e )
```

6.13.1.9 mouseMoved()

```
void age.port.jogl.JOGLEventListener.mouseMoved (
    MouseEvent e )
```

6.13.1.10 mousePressed()

```
void age.port.jogl.JOGLEventListener.mousePressed (
    MouseEvent e )
```

6.13.1.11 mouseReleased()

```
void age.port.jogl.JOGLEventListener.mouseReleased (
    MouseEvent e )
```

6.13.1.12 mouseWheelMoved()

```
void age.port.jogl.JOGLEventListener.mouseWheelMoved (
    MouseEvent e )
```

6.13.1.13 translateButton()

```
Button age.port.jogl.JOGLEventListener.translateButton (
    short button ) [private]
```

6.13.1.14 translateKey()

```
Key age.port.jogl.JOGLEventListener.translateKey (
    short key ) [private]
```

6.13.1.15 windowDestroyed()

```
void age.port.jogl.JOGLEventListener.windowDestroyed (
    WindowEvent e )
```

6.13.1.16 windowDestroyNotify()

```
void age.port.jogl.JOGLEventListener.windowDestroyNotify (
    WindowEvent e )
```

6.13.1.17 windowGainedFocus()

```
void age.port.jogl.JOGLEventListener.windowGainedFocus (
    WindowEvent e )
```

6.13.1.18 windowLostFocus()

```
void age.port.jogl.JOGLEventListener.windowLostFocus (
    WindowEvent e )
```

6.13.1.19 windowMoved()

```
void age.port.jogl.JOGLEventListener.windowMoved (
    WindowEvent e )
```

6.13.1.20 windowRepaint()

```
void age.port.jogl.JOGLEventListener.windowRepaint (
    WindowUpdateEvent e )
```

6.13.1.21 windowResized()

```
void age.port.jogl.JOGLEventListener.windowResized (
    WindowEvent e )
```

6.13.2 Member Data Documentation

6.13.2.1 events

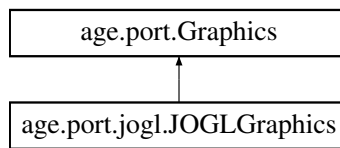
```
Events age.port.jogl.JOGLEventListener.events = null [private]
```

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

- D:/GIT/repos/ODE/age/age/port/jogl/[JOGLEventListener.java](#)

6.14 age.port.jogl.JOGLGraphics Class Reference

Inheritance diagram for age.port.jogl.JOGLGraphics:



Public Member Functions

- void [assign](#) (GLAutoDrawable [drawable](#))
- void [init](#) ()
- void [clear](#) ()
- void [mode2D](#) ()
- void [mode3D](#) (float fovy, float near, float far)
- void [pushTransformation](#) ()
- void [popTransformation](#) ()
- void [translate](#) (Vector2f t)
- void [translate](#) (float x, float y)
- void [color](#) (Color4f c)
- void [color](#) (float r, float g, float b)
- void [color](#) (float r, float g, float b, float a)
- void [rectangle](#) (Vector2f dim, boolean hollow)
- void [rectangle](#) (Vector2f pos, Vector2f dim, boolean hollow)
- void [rectangle](#) (float x, float y, float w, float h, boolean hollow)
- void [text](#) (float x, float y, CharSequence text, String font)
- void [texture](#) (float x, float y, float w, float h, String texture)
- void [calcMultitext](#) (String [text](#), Vector2f dimension, String font, int[] buffer)
- void [calcMultitext](#) (String [text](#), float width, float height, String font, int[] buffer)

Private Attributes

- GLAutoDrawable [drawable](#) = null
- GL2 [gl](#) = null
- GLU [glu](#) = null
- Map< String, Texture > [textures](#) = new HashMap<>()
- Map< String, TextRenderer > [fonts](#) = new HashMap<>()

6.14.1 Member Function Documentation

6.14.1.1 assign()

```
void age.port.jogl.JOGLGraphics.assign (
    GLAutoDrawable drawable )
```

6.14.1.2 calcMultitext() [1/2]

```
void age.port.jogl.JOGLGraphics.calcMultitext (
    String text,
    float width,
    float height,
    String font,
    int[] buffer )
```

Implements [age.port.Graphics](#).

6.14.1.3 calcMultitext() [2/2]

```
void age.port.jogl.JOGLGraphics.calcMultitext (
    String text,
    Vector2f dimension,
    String font,
    int[] buffer )
```

Implements [age.port.Graphics](#).

6.14.1.4 clear()

```
void age.port.jogl.JOGLGraphics.clear ( )
```

6.14.1.5 color() [1/3]

```
void age.port.jogl.JOGLGraphics.color (
    Color4f c )
```

Implements [age.port.Graphics](#).

6.14.1.6 color() [2/3]

```
void age.port.jogl.JOGLGraphics.color (
    float r,
    float g,
    float b )
```

Implements [age.port.Graphics](#).

6.14.1.7 color() [3/3]

```
void age.port.jogl.JOGLGraphics.color (
    float r,
    float g,
    float b,
    float a )
```

Implements [age.port.Graphics](#).

6.14.1.8 init()

```
void age.port.jogl.JOGLGraphics.init ( )
```

6.14.1.9 mode2D()

```
void age.port.jogl.JOGLGraphics.mode2D ( )
```

Implements [age.port.Graphics](#).

6.14.1.10 mode3D()

```
void age.port.jogl.JOGLGraphics.mode3D (
    float fovy,
    float near,
    float far )
```

6.14.1.11 popTransformation()

```
void age.port.jogl.JOGLGraphics.popTransformation ( )
```

Implements [age.port.Graphics](#).

6.14.1.12 pushTransformation()

```
void age.port.jogl.JOGLGraphics.pushTransformation ( )
```

Implements [age.port.Graphics](#).

6.14.1.13 rectangle() [1/3]

```
void age.port.jogl.JOGLGraphics.rectangle (
    float x,
    float y,
    float w,
    float h,
    boolean hollow )
```

Implements [age.port.Graphics](#).

6.14.1.14 rectangle() [2/3]

```
void age.port.jogl.JOGLGraphics.rectangle (
    Vector2f dim,
    boolean hollow )
```

Implements [age.port.Graphics](#).

6.14.1.15 rectangle() [3/3]

```
void age.port.jogl.JOGLGraphics.rectangle (
    Vector2f pos,
    Vector2f dim,
    boolean hollow )
```

Implements [age.port.Graphics](#).

6.14.1.16 text()

```
void age.port.jogl.JOGLGraphics.text (
    float x,
    float y,
    CharSequence text,
    String font )
```

Implements [age.port.Graphics](#).

6.14.1.17 texture()

```
void age.port.jogl.JOGLGraphics.texture (
    float x,
    float y,
    float w,
    float h,
    String texture )
```

Implements [age.port.Graphics](#).

6.14.1.18 translate() [1/2]

```
void age.port.jogl.JOGLGraphics.translate (
    float x,
    float y )
```

Implements [age.port.Graphics](#).

6.14.1.19 translate() [2/2]

```
void age.port.jogl.JOGLGraphics.translate (
    Vector2f t )
```

Implements [age.port.Graphics](#).

6.14.2 Member Data Documentation

6.14.2.1 drawable

```
GLAutoDrawable age.port.jogl.JOGLGraphics.drawable = null [private]
```

6.14.2.2 fonts

```
Map<String, TextRenderer> age.port.jogl.JOGLGraphics.fonts = new HashMap<>() [private]
```

6.14.2.3 gl

```
GL2 age.port.jogl.JOGLGraphics.gl = null [private]
```

6.14.2.4 glu

```
GLU age.port.jogl.JOGLGraphics.glu = null [private]
```

6.14.2.5 textures

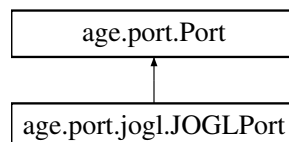
```
Map<String, Texture> age.port.jogl.JOGLGraphics.textures = new HashMap<>() [private]
```

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

- D:/GIT/repos/ODE/age/age/port/jogl/[JOGLGraphics.java](#)

6.15 age.port.jogl.JOGLPort Class Reference

Inheritance diagram for age.port.jogl.JOGLPort:



Public Member Functions

- void [assign](#) (Events events)
- String [title](#) ()
- void [title](#) (String title)
- boolean [maximized](#) ()
- void [maximized](#) (boolean maximized)
- boolean [fullscreen](#) ()
- void [fullscreen](#) (boolean fullscreen)
- boolean [visible](#) ()
- void [visible](#) (boolean visible)
- float [width](#) ()
- float [height](#) ()
- void [size](#) (float [width](#), float [height](#))
- void [add](#) (Renderable renderable)
- List< [Renderable](#) > [get](#) ()
- void [create](#) ()
- void [render](#) ()

Private Attributes

- GLWindow [window](#) = null
- JOGLEventListener [eventListener](#) = null
- JOGLRenderListener [renderListener](#) = null
- final List< [Renderable](#) > [renderables](#) = new ArrayList<>()
- final List< [Renderable](#) > [renderables_ro](#) = Collections.unmodifiableList([renderables](#))

6.15.1 Member Function Documentation

6.15.1.1 add()

```
void age.port.jogl.JOGLPort.add (
    Renderable renderable )
```

Implements [age.port.Port](#).

6.15.1.2 assign()

```
void age.port.jogl.JOGLPort.assign (
    Events events )
```

Implements [age.port.Port](#).

6.15.1.3 create()

```
void age.port.jogl.JOGLPort.create ( )
```

Implements [age.port.Port](#).

6.15.1.4 fullscreen() [1/2]

```
boolean age.port.jogl.JOGLPort.fullscreen ( )
```

Implements [age.port.Port](#).

6.15.1.5 fullscreen() [2/2]

```
void age.port.jogl.JOGLPort.fullscreen (
    boolean fullscreen )
```

Implements [age.port.Port](#).

6.15.1.6 get()

```
List< Renderable > age.port.jogl.JOGLPort.get ( )
```


6.15.1.7 height()

```
float age.port.jogl.JOGLPort.height ( )
```

Implements [age.port.Port](#).

6.15.1.8 maximized() [1/2]

```
boolean age.port.jogl.JOGLPort.maximized ( )
```

Implements [age.port.Port](#).

6.15.1.9 maximized() [2/2]

```
void age.port.jogl.JOGLPort.maximized (
    boolean maximized )
```

Implements [age.port.Port](#).

6.15.1.10 render()

```
void age.port.jogl.JOGLPort.render ( )
```

Implements [age.port.Port](#).

6.15.1.11 size()

```
void age.port.jogl.JOGLPort.size (
    float width,
    float height )
```

Implements [age.port.Port](#).

6.15.1.12 title() [1/2]

```
String age.port.jogl.JOGLPort.title ( )
```

Implements [age.port.Port](#).

6.15.1.13 title() [2/2]

```
void age.port.jogl.JOGLPort.title (
    String title )
```

Implements [age.port.Port](#).

6.15.1.14 visible() [1/2]

```
boolean age.port.jogl.JOGLPort.visible ( )
```

Implements [age.port.Port](#).

6.15.1.15 visible() [2/2]

```
void age.port.jogl.JOGLPort.visible (
    boolean visible )
```

Implements [age.port.Port](#).

6.15.1.16 width()

```
float age.port.jogl.JOGLPort.width ( )
```

Implements [age.port.Port](#).

6.15.2 Member Data Documentation

6.15.2.1 eventListener

```
JOGLEventListener age.port.jogl.JOGLPort.eventListener = null [private]
```

6.15.2.2 renderables

```
final List<Renderable> age.port.jogl.JOGLPort.renderables = new ArrayList<>() [private]
```

6.15.2.3 renderables_ro

```
final List<Renderable> age.port.jogl.JOGLPort.renderables_ro = Collections.unmodifiable←
List(renderables) [private]
```

6.15.2.4 renderListener

```
JOGLRenderListener age.port.jogl.JOGLPort.renderListener = null [private]
```

6.15.2.5 window

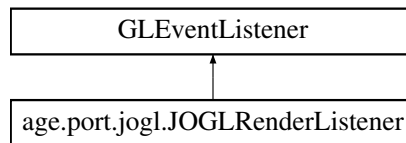
```
GLWindow age.port.jogl.JOGLPort.window = null [private]
```

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

- D:/GIT/repos/ODE/age/age/port/jogl/[JOGLPort.java](#)

6.16 age.port.jogl.JOGLRenderListener Class Reference

Inheritance diagram for age.port.jogl.JOGLRenderListener:



Public Member Functions

- [JOGLRenderListener](#) ([JOGLPort](#) port)
- void [init](#) (GLAutoDrawable drawable)
- void [reshape](#) (GLAutoDrawable drawable, int x, int y, int width, int height)
- void [display](#) (GLAutoDrawable drawable)
- void [dispose](#) (GLAutoDrawable drawable)

Private Attributes

- final [JOGLPort](#) port
- final [JOGLGraphics](#) graphics

6.16.1 Constructor & Destructor Documentation

6.16.1.1 JOGLRenderListener()

```
age.port.jogl.JOGLRenderListener.JOGLRenderListener (
    JOGLPort port )
```

6.16.2 Member Function Documentation

6.16.2.1 display()

```
void age.port.jogl.JOGLRenderListener.display (
    GLAutoDrawable drawable )
```

6.16.2.2 dispose()

```
void age.port.jogl.JOGLRenderListener.dispose (
    GLAutoDrawable drawable )
```

6.16.2.3 init()

```
void age.port.jogl.JOGLRenderListener.init (
    GLAutoDrawable drawable )
```

6.16.2.4 reshape()

```
void age.port.jogl.JOGLRenderListener.reshape (
    GLAutoDrawable drawable,
    int x,
    int y,
    int width,
    int height )
```

6.16.3 Member Data Documentation

6.16.3.1 graphics

```
final JOGLGraphics age.port.jogl.JOGLRenderListener.graphics [private]
```

6.16.3.2 port

```
final JOGLPort age.port.jogl.JOGLRenderListener.port [private]
```

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

- [D:/GIT/repos/ODE/age/age/port/jogl/JOGLRenderListener.java](#)

6.17 age.event.Key Enum Reference

Public Attributes

- [NONE](#)
- [ESCAPE](#)
- [F1](#)
- [F2](#)
- [F3](#)
- [F4](#)
- [F5](#)
- [F6](#)
- [F7](#)
- [F8](#)
- [F9](#)
- [F10](#)
- [F11](#)
- [F12](#)
- [PRINT_SCREEN](#)
- [SCROLL_LOCK](#)
- [PAUSE](#)
- [_1](#)
- [_2](#)
- [_3](#)
- [_4](#)
- [_5](#)

- [_6](#)
- [_7](#)
- [_8](#)
- [_9](#)
- [_0](#)
- [BACK_SPACE](#)
- [TAB](#)
- [ENTER](#)
- [SPACE](#)
- [Q](#)
- [W](#)
- [E](#)
- [R](#)
- [T](#)
- [Z](#)
- [U](#)
- [I](#)
- [O](#)
- [P](#)
- [A](#)
- [S](#)
- [D](#)
- [F](#)
- [G](#)
- [H](#)
- [J](#)
- [K](#)
- [L](#)
- [Y](#)
- [X](#)
- [C](#)
- [V](#)
- [B](#)
- [N](#)
- [M](#)
- [PLUS](#)
- [MINUS](#)
- [CAPS_LOCK](#)
- [SHIFT](#)
- [CONTROL](#)
- [SYSTEM](#)
- [ALT](#)
- [MENU](#)
- [INSERT](#)
- [DELETE](#)
- [POS1](#)
- [END](#)
- [PAGE_UP](#)
- [PAGE_DOWN](#)
- [UP](#)
- [DOWN](#)
- [LEFT](#)
- [RIGHT](#)
- [NUM_LOCK](#)
- [DIVIDE](#)

- [MULTIPLY](#)
- [SUBTRACT](#)
- [ADD](#)
- [DECIMAL](#)
- [NP_7](#)
- [NP_8](#)
- [NP_9](#)
- [NP_4](#)
- [NP_5](#)
- [NP_6](#)
- [NP_1](#)
- [NP_2](#)
- [NP_3](#)
- [NP_0](#)

6.17.1 Member Data Documentation

6.17.1.1 `_0`

`age.event.Key._0`

6.17.1.2 `_1`

`age.event.Key._1`

6.17.1.3 `_2`

`age.event.Key._2`

6.17.1.4 `_3`

`age.event.Key._3`

6.17.1.5 `_4`

`age.event.Key._4`

6.17.1.6 `_5`

`age.event.Key._5`

6.17.1.7 `_6`

`age.event.Key._6`

6.17.1.8 _7

`age.event.Key._7`

6.17.1.9 _8

`age.event.Key._8`

6.17.1.10 _9

`age.event.Key._9`

6.17.1.11 A

`age.event.Key.A`

6.17.1.12 ADD

`age.event.Key.ADD`

6.17.1.13 ALT

`age.event.Key.ALT`

6.17.1.14 B

`age.event.Key.B`

6.17.1.15 BACK_SPACE

`age.event.Key.BACK_SPACE`

6.17.1.16 C

`age.event.Key.C`

6.17.1.17 CAPS_LOCK

`age.event.Key.CAPS_LOCK`

6.17.1.18 CONTROL

```
age.event.Key.CONTROL
```

6.17.1.19 D

```
age.event.Key.D
```

6.17.1.20 DECIMAL

```
age.event.Key.DECIMAL
```

6.17.1.21 DELETE

```
age.event.Key.DELETE
```

6.17.1.22 DIVIDE

```
age.event.Key.DIVIDE
```

6.17.1.23 DOWN

```
age.event.Key.DOWN
```

6.17.1.24 E

```
age.event.Key.E
```

6.17.1.25 END

```
age.event.Key.END
```

6.17.1.26 ENTER

```
age.event.Key.ENTER
```

6.17.1.27 ESCAPE

```
age.event.Key.ESCAPE
```


6.17.1.28 F

```
age.event.Key.F
```

6.17.1.29 F1

```
age.event.Key.F1
```

6.17.1.30 F10

```
age.event.Key.F10
```

6.17.1.31 F11

```
age.event.Key.F11
```

6.17.1.32 F12

```
age.event.Key.F12
```

6.17.1.33 F2

```
age.event.Key.F2
```

6.17.1.34 F3

```
age.event.Key.F3
```

6.17.1.35 F4

```
age.event.Key.F4
```

6.17.1.36 F5

```
age.event.Key.F5
```

6.17.1.37 F6

```
age.event.Key.F6
```

6.17.1.38 F7

```
age.event.Key.F7
```

6.17.1.39 F8

```
age.event.Key.F8
```

6.17.1.40 F9

```
age.event.Key.F9
```

6.17.1.41 G

```
age.event.Key.G
```

6.17.1.42 H

```
age.event.Key.H
```

6.17.1.43 I

```
age.event.Key.I
```

6.17.1.44 INSERT

```
age.event.Key.INSERT
```

6.17.1.45 J

```
age.event.Key.J
```

6.17.1.46 K

```
age.event.Key.K
```

6.17.1.47 L

```
age.event.Key.L
```

6.17.1.48 LEFT

```
age.event.Key.LEFT
```

6.17.1.49 M

```
age.event.Key.M
```

6.17.1.50 MENU

```
age.event.Key.MENU
```

6.17.1.51 MINUS

```
age.event.Key.MINUS
```

6.17.1.52 MULTIPLY

```
age.event.Key.MULTIPLY
```

6.17.1.53 N

```
age.event.Key.N
```

6.17.1.54 NONE

```
age.event.Key.NONE
```

6.17.1.55 NP_0

```
age.event.Key.NP_0
```

6.17.1.56 NP_1

```
age.event.Key.NP_1
```

6.17.1.57 NP_2

```
age.event.Key.NP_2
```

6.17.1.58 NP_3

`age.event.Key.NP_3`

6.17.1.59 NP_4

`age.event.Key.NP_4`

6.17.1.60 NP_5

`age.event.Key.NP_5`

6.17.1.61 NP_6

`age.event.Key.NP_6`

6.17.1.62 NP_7

`age.event.Key.NP_7`

6.17.1.63 NP_8

`age.event.Key.NP_8`

6.17.1.64 NP_9

`age.event.Key.NP_9`

6.17.1.65 NUM_LOCK

`age.event.Key.NUM_LOCK`

6.17.1.66 O

`age.event.Key.O`

6.17.1.67 P

`age.event.Key.P`

6.17.1.68 PAGE_DOWN

```
age.event.Key.PAGE_DOWN
```

6.17.1.69 PAGE_UP

```
age.event.Key.PAGE_UP
```

6.17.1.70 PAUSE

```
age.event.Key.PAUSE
```

6.17.1.71 PLUS

```
age.event.Key.PLUS
```

6.17.1.72 POS1

```
age.event.Key.POS1
```

6.17.1.73 PRINT_SCREEN

```
age.event.Key.PRINT_SCREEN
```

6.17.1.74 Q

```
age.event.Key.Q
```

6.17.1.75 R

```
age.event.Key.R
```

6.17.1.76 RIGHT

```
age.event.Key.RIGHT
```

6.17.1.77 S

```
age.event.Key.S
```

6.17.1.78 SCROLL_LOCK

```
age.event.Key.SCROLL_LOCK
```

6.17.1.79 SHIFT

```
age.event.Key.SHIFT
```

6.17.1.80 SPACE

```
age.event.Key.SPACE
```

6.17.1.81 SUBTRACT

```
age.event.Key.SUBTRACT
```

6.17.1.82 SYSTEM

```
age.event.Key.SYSTEM
```

6.17.1.83 T

```
age.event.Key.T
```

6.17.1.84 TAB

```
age.event.Key.TAB
```

6.17.1.85 U

```
age.event.Key.U
```

6.17.1.86 UP

```
age.event.Key.UP
```

6.17.1.87 V

```
age.event.Key.V
```

6.17.1.88 W

```
age.event.Key.W
```

6.17.1.89 X

```
age.event.Key.X
```

6.17.1.90 Y

```
age.event.Key.Y
```

6.17.1.91 Z

```
age.event.Key.Z
```

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

- [D:/GIT/repos/ODE/age/age/event/Key.java](#)

6.18 age.log.Level Enum Reference

Public Attributes

- [ERROR](#)
- [WARNING](#)
- [INFO](#)
- [DEBUG](#)

6.18.1 Member Data Documentation

6.18.1.1 DEBUG

```
age.log.Level.DEBUG
```

6.18.1.2 ERROR

```
age.log.Level.ERROR
```

6.18.1.3 INFO

```
age.log.Level.INFO
```

6.18.1.4 WARNING

`age.log.Level.WARNING`

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

- [D:/GIT/repos/ODE/age/age/log/Level.java](#)

6.19 age.log.Log Class Reference

Public Member Functions

- void [clear](#) ()
- void [enable](#) ([Level](#) ... [levels](#))
- void [disable](#) ([Level](#) ... [levels](#))
- boolean [trace](#) ()
- void [trace](#) (boolean trace)
- String [format](#) ()
- void [format](#) (String format)

Static Public Member Functions

- static void [configure](#) (String path)
- static [Log](#) [get](#) (String instance)
- static void [log](#) ([Level](#) level, String message, Object ... params)
- static void [info](#) (String message, Object ... params)
- static void [warn](#) (String message, Object ... params)
- static void [error](#) (String message, Object ... params)
- static void [debug](#) (String message, Object ... params)
- static void [log](#) (String instance, [Level](#) level, String message, Object ... params)
- static void [info](#) (String instance, String message, Object ... params)
- static void [warn](#) (String instance, String message, Object ... params)
- static void [error](#) (String instance, String message, Object ... params)
- static void [debug](#) (String instance, String message, Object ... params)

Private Member Functions

- [Log](#) ()
- [Log](#) ([Log](#) parent)
- void [write](#) ([Level](#) level, String message, Object ... params)

Private Attributes

- boolean [trace](#) = false
- Set< [Level](#) > [levels](#) = null
- String [format](#) = null

Static Private Attributes

- static final Map< String, [Log](#) > [map](#) = new HashMap<>()

6.19.1 Constructor & Destructor Documentation

6.19.1.1 Log() [1/2]

```
age.log.Log.Log ( ) [private]
```

6.19.1.2 Log() [2/2]

```
age.log.Log.Log (
    Log parent ) [private]
```

6.19.2 Member Function Documentation

6.19.2.1 clear()

```
void age.log.Log.clear ( )
```

6.19.2.2 configure()

```
static void age.log.Log.configure (
    String path ) [static]
```

6.19.2.3 debug() [1/2]

```
static void age.log.Log.debug (
    String instance,
    String message,
    Object ... params ) [static]
```

6.19.2.4 debug() [2/2]

```
static void age.log.Log.debug (
    String message,
    Object ... params ) [static]
```

6.19.2.5 disable()

```
void age.log.Log.disable (
    Level ... levels )
```

6.19.2.6 enable()

```
void age.log.Log.enable (
    Level ... levels )
```

6.19.2.7 error() [1/2]

```
static void age.log.Log.error (
    String instance,
    String message,
    Object ... params ) [static]
```

6.19.2.8 error() [2/2]

```
static void age.log.Log.error (
    String message,
    Object ... params ) [static]
```

6.19.2.9 format() [1/2]

```
String age.log.Log.format ( )
```

6.19.2.10 format() [2/2]

```
void age.log.Log.format (
    String format )
```

6.19.2.11 get()

```
static Log age.log.Log.get (
    String instance ) [static]
```

6.19.2.12 info() [1/2]

```
static void age.log.Log.info (
    String instance,
    String message,
    Object ... params ) [static]
```

6.19.2.13 info() [2/2]

```
static void age.log.Log.info (
    String message,
    Object ... params ) [static]
```

6.19.2.14 log() [1/2]

```
static void age.log.Log.log (
    Level level,
    String message,
    Object ... params ) [static]
```

6.19.2.15 log() [2/2]

```
static void age.log.Log.log (
    String instance,
    Level level,
    String message,
    Object ... params ) [static]
```

6.19.2.16 trace() [1/2]

```
boolean age.log.Log.trace ( )
```

6.19.2.17 trace() [2/2]

```
void age.log.Log.trace (
    boolean trace )
```

6.19.2.18 warn() [1/2]

```
static void age.log.Log.warn (
    String instance,
    String message,
    Object ... params ) [static]
```

6.19.2.19 warn() [2/2]

```
static void age.log.Log.warn (
    String message,
    Object ... params ) [static]
```

6.19.2.20 write()

```
void age.log.Log.write (
    Level level,
    String message,
    Object ... params ) [private]
```

6.19.3 Member Data Documentation

6.19.3.1 format

```
String age.log.Log.format = null [private]
```

6.19.3.2 levels

```
Set<Level> age.log.Log.levels = null [private]
```

6.19.3.3 map

```
final Map<String, Log> age.log.Log.map = new HashMap<>() [static], [private]
```

6.19.3.4 trace

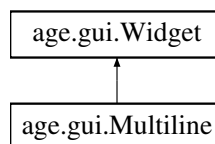
```
boolean age.log.Log.trace = false [private]
```

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

- [D:/GIT/repos/ODE/age/age/log/Log.java](#)

6.20 age.gui.Multiline Class Reference

Inheritance diagram for age.gui.Multiline:



Public Member Functions

- [Multiline](#) ()
- void [assign](#) (Tasks tasks)
- void [text](#) (String text)
- int [offset](#) ()
- void [up](#) ()
- void [down](#) ()
- void [offset](#) (int offset)
- int [count](#) ()
- int [page](#) ()
- int [lineHeight](#) ()
- CharSequence [line](#) (int idx)
- int[] [buffer](#) ()
- void [rescale](#) (float dy)
- void [update](#) ()

Public Member Functions inherited from [age.gui.Widget](#)

- [Widget](#) ([Flag](#) ... [flags](#))
- float [x](#) ()
- float [y](#) ()
- float [width](#) ()
- float [height](#) ()
- [Vector2f](#) [position](#) ()
- [Vector2f](#) [dimension](#) ()
- [Dock](#) [dock](#) ()
- void [dock](#) ([Dock](#) dock)
- void [dock](#) (float top, float bottom, float left, float right)
- void [position](#) ([Vector2f](#) position)
- void [position](#) (float [x](#), float [y](#))
- void [positionAdd](#) ([Vector2f](#) [position](#))
- void [positionAdd](#) (float [x](#), float [y](#))
- void [dimension](#) ([Vector2f](#) dimension)
- void [dimension](#) (float [width](#), float [height](#))
- void [dimensionAdd](#) ([Vector2f](#) [dimension](#))
- void [dimensionAdd](#) (float [width](#), float [height](#))
- [Set](#)< [Flag](#) > [flags](#) ()
- void [flag](#) ([Flag](#) ... [flags](#))
- void [clear](#) ([Flag](#) ... [flags](#))
- boolean [match](#) ([Flag](#) ... [flags](#))
- [Widget](#) [parent](#) ()
- [List](#)< [Widget](#) > [children](#) ()
- void [add](#) ([Widget](#) child)
- void [add](#) (int idx, [Widget](#) child)
- void [remove](#) ()
- void [toFront](#) ()
- [String](#) [text](#) ()
- [String](#) [image](#) ()
- void [image](#) ([String](#) image)
- [String](#) [command](#) ()
- void [command](#) ([String](#) command)

Private Member Functions

- void [create](#) ()

Private Attributes

- int [offset](#)
- int[] [buffer](#) = new int[1024]
- [VScroller](#) [scroller](#)

6.20.1 Constructor & Destructor Documentation

6.20.1.1 Multiline()

```
age.gui.Multiline.Multiline ( )
```

6.20.2 Member Function Documentation

6.20.2.1 assign()

```
void age.gui.Multiline.assign (
    Tasks tasks )
```

6.20.2.2 buffer()

```
int[] age.gui.Multiline.buffer ( )
```

6.20.2.3 count()

```
int age.gui.Multiline.count ( )
```

6.20.2.4 create()

```
void age.gui.Multiline.create ( ) [private]
```

6.20.2.5 down()

```
void age.gui.Multiline.down ( )
```

6.20.2.6 line()

```
CharSequence age.gui.Multiline.line (
    int idx )
```

6.20.2.7 lineHeight()

```
int age.gui.Multiline.lineHeight ( )
```

6.20.2.8 offset() [1/2]

```
int age.gui.Multiline.offset ( )
```

6.20.2.9 offset() [2/2]

```
void age.gui.Multiline.offset (
    int offset )
```

6.20.2.10 page()

```
int age.gui.Multiline.page ( )
```

6.20.2.11 rescale()

```
void age.gui.Multiline.rescale (
    float dy )
```

6.20.2.12 text()

```
void age.gui.Multiline.text (
    String text )
```

Reimplemented from [age.gui.Widget](#).

6.20.2.13 up()

```
void age.gui.Multiline.up ( )
```

6.20.2.14 update()

```
void age.gui.Multiline.update ( )
```

6.20.3 Member Data Documentation

6.20.3.1 buffer

```
int [ ] age.gui.Multiline.buffer = new int[1024] [private]
```

6.20.3.2 offset

```
int age.gui.Multiline.offset [private]
```

6.20.3.3 scroller

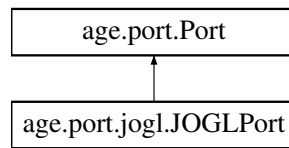
```
VScroller age.gui.Multiline.scroller [private]
```

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

- [D:/GIT/repos/ODE/age/age/gui/Multiline.java](#)

6.21 age.port.Port Interface Reference

Inheritance diagram for age.port.Port:



Public Member Functions

- void [assign](#) (Events events)
- String [title](#) ()
- void [title](#) (String title)
- boolean [maximized](#) ()
- void [maximized](#) (boolean maximized)
- boolean [fullscreen](#) ()
- void [fullscreen](#) (boolean fullscreen)
- boolean [visible](#) ()
- void [visible](#) (boolean visible)
- float [width](#) ()
- float [height](#) ()
- void [size](#) (float [width](#), float [height](#))
- void [add](#) ([Renderable](#) renderable)
- void [create](#) ()
- void [render](#) ()

6.21.1 Member Function Documentation

6.21.1.1 add()

```
void age.port.Port.add (  
    Renderable renderable )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.2 assign()

```
void age.port.Port.assign (  
    Events events )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.3 create()

```
void age.port.Port.create ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.4 fullscreen() [1/2]

```
boolean age.port.Port.fullscreen ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.5 fullscreen() [2/2]

```
void age.port.Port.fullscreen (
    boolean fullscreen )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.6 height()

```
float age.port.Port.height ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.7 maximized() [1/2]

```
boolean age.port.Port.maximized ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.8 maximized() [2/2]

```
void age.port.Port.maximized (
    boolean maximized )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.9 render()

```
void age.port.Port.render ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.10 size()

```
void age.port.Port.size (
    float width,
    float height )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.11 title() [1/2]

```
String age.port.Port.title ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.12 title() [2/2]

```
void age.port.Port.title (
    String title )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.13 visible() [1/2]

```
boolean age.port.Port.visible ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.14 visible() [2/2]

```
void age.port.Port.visible (
    boolean visible )
```

Implemented in [age.port.jogl.JOGLPort](#).

6.21.1.15 width()

```
float age.port.Port.width ( )
```

Implemented in [age.port.jogl.JOGLPort](#).

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

- D:/GIT/repos/ODE/age/age/port/[Port.java](#)

6.22 age.port.Renderable Interface Reference

Public Member Functions

- void [render](#) ([Graphics](#) g)

6.22.1 Member Function Documentation

6.22.1.1 render()

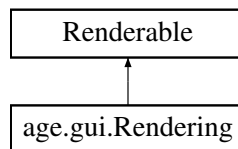
```
void age.port.Renderable.render (
    Graphics g )
```

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

- [D:/GIT/repos/ODE/age/age/port/Renderable.java](#)

6.23 age.gui.Rendering Class Reference

Inheritance diagram for age.gui.Rendering:



Public Member Functions

- [Rendering](#) ([Widgets](#) widgets)
- void [render](#) ([Graphics](#) g)

Private Member Functions

- void [render](#) ([Graphics](#) g, [Widget](#) widget)
- void [renderWidget](#) ([Graphics](#) g, [Widget](#) widget)
- void [renderChildren](#) ([Graphics](#) g, [List](#)< [Widget](#) > children)

Private Attributes

- final [Widgets](#) widgets

6.23.1 Constructor & Destructor Documentation

6.23.1.1 Rendering()

```
age.gui.Rendering.Rendering (
    Widgets widgets )
```

6.23.2 Member Function Documentation

6.23.2.1 render() [1/2]

```
void age.gui.Rendering.render (
    Graphics g )
```

6.23.2.2 render() [2/2]

```
void age.gui.Rendering.render (
    Graphics g,
    Widget widget ) [private]
```

6.23.2.3 renderChildren()

```
void age.gui.Rendering.renderChildren (
    Graphics g,
    List< Widget > children ) [private]
```

6.23.2.4 renderWidget()

```
void age.gui.Rendering.renderWidget (
    Graphics g,
    Widget widget ) [private]
```

6.23.3 Member Data Documentation

6.23.3.1 widgets

```
final Widgets age.gui.Rendering.widgets [private]
```

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

- D:/GIT/repos/ODE/age/age/gui/[Rendering.java](#)

6.24 age.clock.Task Interface Reference

Public Member Functions

- void [run](#) (int count, long nanoperiod, float dT)

6.24.1 Member Function Documentation

6.24.1.1 run()

```
void age.clock.Task.run (
    int count,
    long nanoperiod,
    float dT )
```

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

- D:/GIT/repos/ODE/age/age/clock/[Task.java](#)

6.25 age.task.Task Interface Reference

Public Member Functions

- void [perform](#) ()

6.25.1 Member Function Documentation

6.25.1.1 perform()

```
void age.task.Task.perform ( )
```

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

- D:/GIT/repos/ODE/age/age/task/[Task.java](#)

6.26 age.task.Tasks Class Reference

Public Member Functions

- void [assign](#) (Port [port](#))
- void [assign](#) (Client [client](#))
- void [assign](#) (Events events)
- [Tasks](#) ()
- void [put](#) (String command)
- void [assign](#) (String command, [Task](#) task)
- void [update](#) ()

Private Member Functions

- void [handleEvent](#) (Event e)
- void [construct](#) ()
- void [perform](#) (String command)
- void [toggleFullscreen](#) ()
- void [shutdown](#) ()

Private Attributes

- final List< String > [inbox](#) = new ArrayList<>()
- final List< String > [outbox](#) = new ArrayList<>()
- final Map< String, [Task](#) > [tasks](#) = new HashMap<>()
- Port [port](#)
- [Client](#) [client](#)

6.26.1 Constructor & Destructor Documentation

6.26.1.1 Tasks()

```
age.task.Tasks.Tasks ( )
```

6.26.2 Member Function Documentation

6.26.2.1 assign() [1/4]

```
void age.task.Tasks.assign (
    Client client )
```

6.26.2.2 assign() [2/4]

```
void age.task.Tasks.assign (
    Events events )
```

6.26.2.3 assign() [3/4]

```
void age.task.Tasks.assign (
    Port port )
```

6.26.2.4 assign() [4/4]

```
void age.task.Tasks.assign (
    String command,
    Task task )
```

6.26.2.5 construct()

```
void age.task.Tasks.construct ( ) [private]
```

6.26.2.6 handleEvent()

```
void age.task.Tasks.handleEvent (
    Event e ) [private]
```

6.26.2.7 perform()

```
void age.task.Tasks.perform (
    String command ) [private]
```

6.26.2.8 put()

```
void age.task.Tasks.put (
    String command )
```

6.26.2.9 shutdown()

```
void age.task.Tasks.shutdown ( ) [private]
```

6.26.2.10 toggleFullscreen()

```
void age.task.Tasks.toggleFullscreen ( ) [private]
```

6.26.2.11 update()

```
void age.task.Tasks.update ( )
```

6.26.3 Member Data Documentation

6.26.3.1 client

```
Client age.task.Tasks.client [private]
```

6.26.3.2 inbox

```
final List<String> age.task.Tasks.inbox = new ArrayList<>() [private]
```

6.26.3.3 outbox

```
final List<String> age.task.Tasks.outbox = new ArrayList<>() [private]
```

6.26.3.4 port

```
Port age.task.Tasks.port [private]
```

6.26.3.5 tasks

```
final Map<String, Task> age.task.Tasks.tasks = new HashMap<>() [private]
```

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

- [D:/GIT/repos/ODE/age/age/task/Tasks.java](#)

6.27 age.event.Type Enum Reference

Public Attributes

- [NONE](#)
- [KEY_PRESSED](#)
- [KEY_RELEASED](#)
- [KEY_TYPED](#)
- [POINTER_ENTERED](#)
- [POINTER_EXITED](#)
- [POINTER_PRESSED](#)
- [POINTER_RELEASED](#)
- [POINTER_CLICKED](#)
- [POINTER_MOVED](#)
- [SURFACE_RESIZED](#)
- [SURFACE_CLOSE_REQUEST](#)
- [TASK_COMMAND](#)

6.27.1 Member Data Documentation

6.27.1.1 KEY_PRESSED

```
age.event.Type.KEY_PRESSED
```

6.27.1.2 KEY_RELEASED

```
age.event.Type.KEY_RELEASED
```

6.27.1.3 KEY_TYPED

```
age.event.Type.KEY_TYPED
```

6.27.1.4 NONE

```
age.event.Type.NONE
```


6.27.1.5 POINTER_CLICKED

```
age.event.Type.POINTER_CLICKED
```

6.27.1.6 POINTER_ENTERED

```
age.event.Type.POINTER_ENTERED
```

6.27.1.7 POINTER_EXITED

```
age.event.Type.POINTER_EXITED
```

6.27.1.8 POINTER_MOVED

```
age.event.Type.POINTER_MOVED
```

6.27.1.9 POINTER_PRESSED

```
age.event.Type.POINTER_PRESSED
```

6.27.1.10 POINTER_RELEASED

```
age.event.Type.POINTER_RELEASED
```

6.27.1.11 SURFACE_CLOSE_REQUEST

```
age.event.Type.SURFACE_CLOSE_REQUEST
```

6.27.1.12 SURFACE_RESIZED

```
age.event.Type.SURFACE_RESIZED
```

6.27.1.13 TASK_COMMAND

```
age.event.Type.TASK_COMMAND
```

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

- [D:/GIT/repos/ODE/age/age/event/Type.java](#)

6.28 age.Util Class Reference

Static Public Member Functions

- static final String [readFile](#) (String path)

6.28.1 Member Function Documentation

6.28.1.1 [readFile\(\)](#)

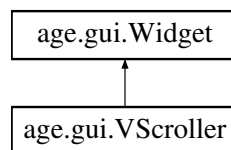
```
static final String age.Util.readFile (
    String path ) [static]
```

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

- D:/GIT/repos/ODE/age/age/[Util.java](#)

6.29 age.gui.VScroller Class Reference

Inheritance diagram for age.gui.VScroller:



Public Member Functions

- [VScroller](#) ()
- void [assign](#) (Tasks tasks, Task taskUp, Task taskDn)
- void [set](#) (int [size](#), int [page](#), int [mark](#))
- void [value](#) (int [mark](#))
- [Widget](#) [handle](#) ()

Public Member Functions inherited from [age.gui.Widget](#)

- [Widget](#) (Flag ... [flags](#))
- float [x](#) ()
- float [y](#) ()
- float [width](#) ()
- float [height](#) ()
- Vector2f [position](#) ()
- Vector2f [dimension](#) ()
- [Dock](#) [dock](#) ()
- void [dock](#) ([Dock](#) dock)
- void [dock](#) (float top, float bottom, float left, float right)
- void [position](#) (Vector2f position)

- void [position](#) (float [x](#), float [y](#))
- void [positionAdd](#) (Vector2f [position](#))
- void [positionAdd](#) (float [x](#), float [y](#))
- void [dimension](#) (Vector2f [dimension](#))
- void [dimension](#) (float [width](#), float [height](#))
- void [dimensionAdd](#) (Vector2f [dimension](#))
- void [dimensionAdd](#) (float [width](#), float [height](#))
- Set< [Flag](#) > [flags](#) ()
- void [flag](#) ([Flag](#) ... [flags](#))
- void [clear](#) ([Flag](#) ... [flags](#))
- boolean [match](#) ([Flag](#) ... [flags](#))
- [Widget](#) [parent](#) ()
- List< [Widget](#) > [children](#) ()
- void [add](#) ([Widget](#) child)
- void [add](#) (int idx, [Widget](#) child)
- void [remove](#) ()
- void [toFront](#) ()
- String [text](#) ()
- void [text](#) (String text)
- String [image](#) ()
- void [image](#) (String image)
- String [command](#) ()
- void [command](#) (String command)

Private Member Functions

- void [create](#) ()

Private Attributes

- [Widget](#) [btnUp](#)
- [Widget](#) [bar](#)
- [Widget](#) [handle](#)
- [Widget](#) [btnDn](#)
- UUID [uuid](#) = UUID.randomUUID()
- int [size](#)
- int [page](#)
- int [mark](#)

6.29.1 Constructor & Destructor Documentation

6.29.1.1 VScroller()

```
age.gui.VScroller.VScroller ( )
```

6.29.2 Member Function Documentation

6.29.2.1 assign()

```
void age.gui.VScroller.assign (
    Tasks tasks,
    Task taskUp,
    Task taskDn )
```

6.29.2.2 create()

```
void age.gui.VScroller.create ( ) [private]
```

6.29.2.3 handle()

```
Widget age.gui.VScroller.handle ( )
```

6.29.2.4 set()

```
void age.gui.VScroller.set (
    int size,
    int page,
    int mark )
```

6.29.2.5 value()

```
void age.gui.VScroller.value (
    int mark )
```

6.29.3 Member Data Documentation

6.29.3.1 bar

```
Widget age.gui.VScroller.bar [private]
```

6.29.3.2 btnDn

```
Widget age.gui.VScroller.btnDn [private]
```

6.29.3.3 btnUp

```
Widget age.gui.VScroller.btnUp [private]
```

6.29.3.4 handle

```
Widget age.gui.VScroller.handle [private]
```

6.29.3.5 mark

```
int age.gui.VScroller.mark [private]
```

6.29.3.6 page

```
int age.gui.VScroller.page [private]
```

6.29.3.7 size

```
int age.gui.VScroller.size [private]
```

6.29.3.8 uuid

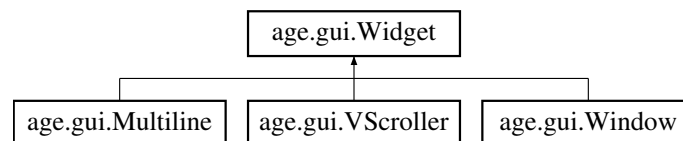
```
UUID age.gui.VScroller.uuid = UUID.randomUUID() [private]
```

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

- [D:/GIT/repos/ODE/age/age/gui/VScroller.java](#)

6.30 age.gui.Widget Class Reference

Inheritance diagram for age.gui.Widget:



Public Member Functions

- [Widget \(Flag ... flags\)](#)
- float [x](#) ()
- float [y](#) ()
- float [width](#) ()
- float [height](#) ()
- Vector2f [position](#) ()
- Vector2f [dimension](#) ()
- [Dock dock](#) ()
- void [dock](#) ([Dock dock](#))
- void [dock](#) (float top, float bottom, float left, float right)
- void [position](#) (Vector2f position)
- void [position](#) (float [x](#), float [y](#))
- void [positionAdd](#) (Vector2f [position](#))
- void [positionAdd](#) (float [x](#), float [y](#))
- void [dimension](#) (Vector2f dimension)
- void [dimension](#) (float [width](#), float [height](#))
- void [dimensionAdd](#) (Vector2f [dimension](#))
- void [dimensionAdd](#) (float [width](#), float [height](#))
- Set< [Flag](#) > [flags](#) ()
- void [flag](#) (Flag ... flags)

- void `clear` (`Flag ... flags`)
- boolean `match` (`Flag ... flags`)
- `Widget` `parent` ()
- List< `Widget` > `children` ()
- void `add` (`Widget` child)
- void `add` (int idx, `Widget` child)
- void `remove` ()
- void `toFront` ()
- String `text` ()
- void `text` (String text)
- String `image` ()
- void `image` (String image)
- String `command` ()
- void `command` (String command)

Private Member Functions

- void `resized` (float dx, float dy)
- void `parentResized` (float dx, float dy)

Private Attributes

- final Set< `Flag` > `flags` = EnumSet.noneOf(`Flag.class`)
- final Set< `Flag` > `flags_ro` = Collections.unmodifiableSet(`flags`)
- final Vector2f `position` = new Vector2f()
- final Vector2f `dimension` = new Vector2f()
- final `Dock` `dock` = new `Dock`()
- `Widget` `parent` = null
- final List< `Widget` > `children` = new ArrayList<>(10)
- final List< `Widget` > `children_ro` = Collections.unmodifiableList(`children`)
- String `text` = null
- String `image` = null
- String `command` = null

6.30.1 Constructor & Destructor Documentation

6.30.1.1 `Widget()`

```
age.gui.Widget.Widget (
    Flag ... flags )
```

6.30.2 Member Function Documentation

6.30.2.1 `add()` [1/2]

```
void age.gui.Widget.add (
    int idx,
    Widget child )
```

6.30.2.2 add() [2/2]

```
void age.gui.Widget.add (
    Widget child )
```

6.30.2.3 children()

```
List< Widget > age.gui.Widget.children ( )
```

6.30.2.4 clear()

```
void age.gui.Widget.clear (
    Flag ... flags )
```

6.30.2.5 command() [1/2]

```
String age.gui.Widget.command ( )
```

6.30.2.6 command() [2/2]

```
void age.gui.Widget.command (
    String command )
```

6.30.2.7 dimension() [1/3]

```
Vector2f age.gui.Widget.dimension ( )
```

6.30.2.8 dimension() [2/3]

```
void age.gui.Widget.dimension (
    float width,
    float height )
```

6.30.2.9 dimension() [3/3]

```
void age.gui.Widget.dimension (
    Vector2f dimension )
```

6.30.2.10 dimensionAdd() [1/2]

```
void age.gui.Widget.dimensionAdd (
    float width,
    float height )
```

6.30.2.11 dimensionAdd() [2/2]

```
void age.gui.Widget.dimensionAdd (
    Vector2f dimension )
```

6.30.2.12 dock() [1/3]

```
Dock age.gui.Widget.dock ( )
```

6.30.2.13 dock() [2/3]

```
void age.gui.Widget.dock (
    Dock dock )
```

6.30.2.14 dock() [3/3]

```
void age.gui.Widget.dock (
    float top,
    float bottom,
    float left,
    float right )
```

6.30.2.15 flag()

```
void age.gui.Widget.flag (
    Flag ... flags )
```

6.30.2.16 flags()

```
Set< Flag > age.gui.Widget.flags ( )
```

6.30.2.17 height()

```
float age.gui.Widget.height ( )
```

6.30.2.18 image() [1/2]

```
String age.gui.Widget.image ( )
```

6.30.2.19 image() [2/2]

```
void age.gui.Widget.image (
    String image )
```


6.30.2.20 match()

```
boolean age.gui.Widget.match (
    Flag ... flags )
```

6.30.2.21 parent()

```
Widget age.gui.Widget.parent ( )
```

6.30.2.22 parentResized()

```
void age.gui.Widget.parentResized (
    float dx,
    float dy ) [private]
```

6.30.2.23 position() [1/3]

```
Vector2f age.gui.Widget.position ( )
```

6.30.2.24 position() [2/3]

```
void age.gui.Widget.position (
    float x,
    float y )
```

6.30.2.25 position() [3/3]

```
void age.gui.Widget.position (
    Vector2f position )
```

6.30.2.26 positionAdd() [1/2]

```
void age.gui.Widget.positionAdd (
    float x,
    float y )
```

6.30.2.27 positionAdd() [2/2]

```
void age.gui.Widget.positionAdd (
    Vector2f position )
```

6.30.2.28 remove()

```
void age.gui.Widget.remove ( )
```

6.30.2.29 resized()

```
void age.gui.Widget.resized (
    float dx,
    float dy ) [private]
```

6.30.2.30 text() [1/2]

```
String age.gui.Widget.text ( )
```

6.30.2.31 text() [2/2]

```
void age.gui.Widget.text (
    String text )
```

Reimplemented in [age.gui.Multiline](#).

6.30.2.32 toFront()

```
void age.gui.Widget.toFront ( )
```

6.30.2.33 width()

```
float age.gui.Widget.width ( )
```

6.30.2.34 x()

```
float age.gui.Widget.x ( )
```

6.30.2.35 y()

```
float age.gui.Widget.y ( )
```

6.30.3 Member Data Documentation

6.30.3.1 children

```
final List<Widget> age.gui.Widget.children = new ArrayList<>(10) [private]
```

6.30.3.2 children_ro

```
final List<Widget> age.gui.Widget.children_ro = Collections.unmodifiableList(children) [private]
```

6.30.3.3 command

```
String age.gui.Widget.command = null [private]
```

6.30.3.4 dimension

```
final Vector2f age.gui.Widget.dimension = new Vector2f() [private]
```

6.30.3.5 dock

```
final Dock age.gui.Widget.dock = new Dock() [private]
```

6.30.3.6 flags

```
final Set<Flag> age.gui.Widget.flags = EnumSet.noneOf(Flag.class) [private]
```

6.30.3.7 flags_ro

```
final Set<Flag> age.gui.Widget.flags_ro = Collections.unmodifiableSet(flags) [private]
```

6.30.3.8 image

```
String age.gui.Widget.image = null [private]
```

6.30.3.9 parent

```
Widget age.gui.Widget.parent = null [private]
```

6.30.3.10 position

```
final Vector2f age.gui.Widget.position = new Vector2f() [private]
```

6.30.3.11 text

```
String age.gui.Widget.text = null [private]
```

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

- [D:/GIT/repos/ODE/age/age/gui/Widget.java](#)

6.31 age.gui.Widgets Class Reference

Public Member Functions

- [Widgets](#) ()
- void [assign](#) (Port port)
- void [assign](#) (Events events)
- [Widget root](#) ()

Private Attributes

- [Widget root](#) = new [Widget](#)()
- [Handling handling](#) = new [Handling](#)(this)
- [Rendering rendering](#) = new [Rendering](#)(this)

6.31.1 Constructor & Destructor Documentation

6.31.1.1 Widgets()

```
age.gui.Widgets.Widgets ( )
```

6.31.2 Member Function Documentation

6.31.2.1 assign() [1/2]

```
void age.gui.Widgets.assign (
    Events events )
```

6.31.2.2 assign() [2/2]

```
void age.gui.Widgets.assign (
    Port port )
```

6.31.2.3 root()

```
Widget age.gui.Widgets.root ( )
```

6.31.3 Member Data Documentation

6.31.3.1 handling

```
Handling age.gui.Widgets.handling = new Handling(this) [private]
```

6.31.3.2 rendering

```
Rendering age.gui.Widgets.rendering = new Rendering(this) [private]
```

6.31.3.3 root

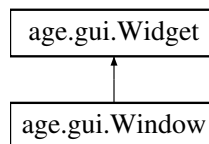
```
Widget age.gui.Widgets.root = new Widget() [private]
```

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

- [D:/GIT/repos/ODE/age/age/gui/Widgets.java](#)

6.32 age.gui.Window Class Reference

Inheritance diagram for age.gui.Window:



Public Member Functions

- [Window](#) (Flag ... flags)
- String [title](#) ()
- void [title](#) (String title)
- [Widget](#) [getPage](#) ()

Public Member Functions inherited from [age.gui.Widget](#)

- [Widget](#) (Flag ... flags)
- float [x](#) ()
- float [y](#) ()
- float [width](#) ()
- float [height](#) ()
- Vector2f [position](#) ()
- Vector2f [dimension](#) ()
- [Dock](#) [dock](#) ()
- void [dock](#) ([Dock](#) dock)
- void [dock](#) (float top, float bottom, float left, float right)
- void [position](#) (Vector2f position)
- void [position](#) (float x, float y)
- void [positionAdd](#) (Vector2f position)
- void [positionAdd](#) (float x, float y)
- void [dimension](#) (Vector2f dimension)
- void [dimension](#) (float width, float height)
- void [dimensionAdd](#) (Vector2f dimension)

- void `dimensionAdd` (float `width`, float `height`)
- Set< `Flag` > `flags` ()
- void `flag` (`Flag` ... `flags`)
- void `clear` (`Flag` ... `flags`)
- boolean `match` (`Flag` ... `flags`)
- `Widget` `parent` ()
- List< `Widget` > `children` ()
- void `add` (`Widget` child)
- void `add` (int idx, `Widget` child)
- void `remove` ()
- void `toFront` ()
- String `text` ()
- void `text` (String text)
- String `image` ()
- void `image` (String image)
- String `command` ()
- void `command` (String command)

Private Member Functions

- void `construct` ()

Private Attributes

- `Widget` `title` = new `Widget`()
- `Widget` `size` = new `Widget`()
- `Widget` `close` = new `Widget`()
- `Widget` `page` = new `Widget`()

6.32.1 Constructor & Destructor Documentation

6.32.1.1 Window()

```
age.gui.Window.Window (
    Flag ... flags )
```

6.32.2 Member Function Documentation

6.32.2.1 construct()

```
void age.gui.Window.construct ( ) [private]
```

6.32.2.2 getPage()

```
Widget age.gui.Window.getPage ( )
```

6.32.2.3 title() [1/2]

```
String age.gui.Window.title ( )
```

6.32.2.4 title() [2/2]

```
void age.gui.Window.title (
    String title )
```

6.32.3 Member Data Documentation

6.32.3.1 close

```
Widget age.gui.Window.close = new Widget() [private]
```

6.32.3.2 page

```
Widget age.gui.Window.page = new Widget() [private]
```

6.32.3.3 size

```
Widget age.gui.Window.size = new Widget() [private]
```

6.32.3.4 title

```
Widget age.gui.Window.title = new Widget() [private]
```

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

- [D:/GIT/repos/ODE/age/age/gui/Window.java](#)

Chapter 7

File Documentation

7.1 D:/GIT/repos/ODE/age/age/AGEException.java File Reference

Classes

- class [age.AGEException](#)

Packages

- package [age](#)

7.2 D:/GIT/repos/ODE/age/age/Client.java File Reference

```
import age.port.Port;
```

Classes

- class [age.Client](#)

Packages

- package [age](#)

7.3 D:/GIT/repos/ODE/age/age/clock/Alarm.java File Reference

Classes

- class [age.clock.Alarm](#)

Packages

- package [age.clock](#)

7.4 D:/GIT/repos/ODE/age/age/clock/Clock.java File Reference

```
import java.util.ArrayList;
```

Classes

- class [age.clock.Clock](#)

Packages

- package [age.clock](#)

7.5 D:/GIT/repos/ODE/age/age/clock/Task.java File Reference

Classes

- interface [age.clock.Task](#)

Packages

- package [age.clock](#)

7.6 D:/GIT/repos/ODE/age/age/task/Task.java File Reference

Classes

- interface [age.task.Task](#)

Packages

- package [age.task](#)

7.7 D:/GIT/repos/ODE/age/age/event/Button.java File Reference

Classes

- enum [age.event.Button](#)

Packages

- package [age.event](#)

7.8 D:/GIT/repos/ODE/age/age/event/Event.java File Reference

```
import javax.vecmath.Vector2f;
```

Classes

- class [age.event.Event](#)

Packages

- package [age.event](#)

7.9 D:/GIT/repos/ODE/age/age/event/Events.java File Reference

```
import java.util.ArrayList;
```

Classes

- class [age.event.Events](#)

Packages

- package [age.event](#)

7.10 D:/GIT/repos/ODE/age/age/event/Handler.java File Reference

Classes

- interface [age.event.Handler](#)

Packages

- package [age.event](#)

7.11 D:/GIT/repos/ODE/age/age/event/Key.java File Reference

Classes

- enum [age.event.Key](#)

Packages

- package [age.event](#)

7.12 D:/GIT/repos/ODE/age/age/event/Type.java File Reference

Classes

- enum [age.event.Type](#)

Packages

- package [age.event](#)

7.13 D:/GIT/repos/ODE/age/age/gui/Dock.java File Reference

Classes

- class [age.gui.Dock](#)

Packages

- package [age.gui](#)

7.14 D:/GIT/repos/ODE/age/age/gui/Flag.java File Reference

Classes

- enum [age.gui.Flag](#)

Packages

- package [age.gui](#)

7.15 D:/GIT/repos/ODE/age/age/gui/Handling.java File Reference

```
import java.util.ArrayList;
```

Classes

- class [age.gui.Handling](#)

Packages

- package [age.gui](#)

7.16 D:/GIT/repos/ODE/age/age/gui/Multiline.java File Reference

```
import age.task.Tasks;
```

Classes

- class [age.gui.Multiline](#)

Packages

- package [age.gui](#)

7.17 D:/GIT/repos/ODE/age/age/gui/Rendering.java File Reference

```
import java.util.List;
```

Classes

- class [age.gui.Rendering](#)

Packages

- package [age.gui](#)

7.18 D:/GIT/repos/ODE/age/age/gui/VScroller.java File Reference

```
import java.util.UUID;
```

Classes

- class [age.gui.VScroller](#)

Packages

- package [age.gui](#)

7.19 D:/GIT/repos/ODE/age/age/gui/Widget.java File Reference

```
import java.util.ArrayList;
```

Classes

- class [age.gui.Widget](#)

Packages

- package [age.gui](#)

7.20 D:/GIT/repos/ODE/age/age/gui/Widgets.java File Reference

```
import age.event.Events;
```

Classes

- class [age.gui.Widgets](#)

Packages

- package [age.gui](#)

7.21 D:/GIT/repos/ODE/age/age/gui/Window.java File Reference

Classes

- class [age.gui.Window](#)

Packages

- package [age.gui](#)

7.22 D:/GIT/repos/ODE/age/age/log/Level.java File Reference

Classes

- enum [age.log.Level](#)

Packages

- package [age.log](#)

7.23 D:/GIT/repos/ODE/age/age/log/Log.java File Reference

```
import java.io.File;
```

Classes

- class [age.log.Log](#)

Packages

- package [age.log](#)

7.24 D:/GIT/repos/ODE/age/age/port/Graphics.java File Reference

```
import javax.vecmath.Color4f;
```

Classes

- interface [age.port.Graphics](#)

Packages

- package [age.port](#)

7.25 D:/GIT/repos/ODE/age/age/port/jogl/JOGLEventListener.java File Reference

```
import com.jogamp.newt.Window;
```

Classes

- class [age.port.jogl.JOGLEventListener](#)

Packages

- package [age.port.jogl](#)

7.26 D:/GIT/repos/ODE/age/age/port/jogl/JOGLGraphics.java File Reference

```
import com.jogamp.opengl.GL2;
```

Classes

- class [age.port.jogl.JOGLGraphics](#)

Packages

- package [age.port.jogl](#)

7.27 D:/GIT/repos/ODE/age/age/port/jogl/JOGLPort.java File Reference

```
import java.util.ArrayList;
```

Classes

- class [age.port.jogl.JOGLPort](#)

Packages

- package [age.port.jogl](#)

7.28 D:/GIT/repos/ODE/age/age/port/jogl/JOGLRenderListener.java File Reference

```
import com.jogamp.opengl.GLAutoDrawable;
```


Classes

- class [age.port.jogl.JOGLRenderListener](#)

Packages

- package [age.port.jogl](#)

7.29 D:/GIT/repos/ODE/age/age/port/Port.java File Reference

```
import age.event.Events;
```

Classes

- interface [age.port.Port](#)

Packages

- package [age.port](#)

7.30 D:/GIT/repos/ODE/age/age/port/Renderable.java File Reference

Classes

- interface [age.port.Renderable](#)

Packages

- package [age.port](#)

7.31 D:/GIT/repos/ODE/age/age/task/Tasks.java File Reference

```
import java.util.ArrayList;
```

Classes

- class [age.task.Tasks](#)

Packages

- package [age.task](#)

7.32 D:/GIT/repos/ODE/age/age/Util.java File Reference

```
import java.io.BufferedReader;
```

Classes

- class [age.Util](#)

Packages

- package [age](#)

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