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Documentation of SFML 2.5.1

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sf::RenderWindow Class Reference
Graphics module

Window that can serve as a target for 2D drawing. More...

#include <RenderWindow.hpp>

Inheritance diagram for sf::RenderWindow:

Public Member Functions

RenderWindow ()
Default constructor. More...
RenderWindow (VideoMode mode, const String &title, Uint32 style=Style::Default, const ContextSettings &settings=ContextSettings())
Construct a new window. More...
RenderWindow (WindowHandle handle, const ContextSettings &settings=ContextSettings()) Construct the window from an existing control. More...
virtual ~RenderWindow ()
Destructor. More...

virtual Vector2u getSize () const
Get the size of the rendering region of the window. More...
bool setActive (bool active=true)
Activate or deactivate the window as the current target for OpenGL rendering. More...
Image capture () const
Copy the current contents of the window to an image. More...
void create (VideoMode mode, const String &title, Uint32 style=Style::Default, const ContextSettings &settings=ContextSettings())
Create (or recreate) the window. More...
void create (WindowHandle handle, const ContextSettings &settings=ContextSettings())
Create (or recreate) the window from an existing control. More...
void close ()
Close the window and destroy all the attached resources. More...
bool isOpen () const
Tell whether or not the window is open. More...
const ContextSettings & getSettings () const Get the settings of the OpenGL context of the window. More...
bool pollEvent (Event &event)
Pop the event on top of the event queue, if any, and return it. More... bool waitEvent (Event &event)
Wait for an event and return it. More...
Vector2i getPosition () const
Get the position of the window. More...
void setPosition (const Vector2i &position)
Change the position of the window on screen. More...
void setSize (const Vector2u &size)
Change the size of the rendering region of the window. More...
void setTitle (const String &title)
Change the title of the window. More...
void setIcon (unsigned int width, unsigned int height, const Uint8 *pixels) Change the window's icon. More...
void setVisible (bool visible)
Show or hide the window. More...
void setVerticalSyncEnabled (bool enabled)
Enable or disable vertical synchronization. More...
void setMouseCursorVisible (bool visible)
Show or hide the mouse cursor. More...
void setMouseCursorGrabbed (bool grabbed)
Grab or release the mouse cursor. More...
void setMouseCursor (const Cursor &cursor)
Set the displayed cursor to a native system cursor. More...
void setKeyRepeatEnabled (bool enabled)
Enable or disable automatic key-repeat. More...
void setFramerateLimit (unsigned int limit)
Limit the framerate to a maximum �xed frequency. More...
void setJoystickThreshold (�oat threshold)
Change the joystick threshold. More...
bool setActive (bool active=true) const
Activate or deactivate the window as the current target for OpenGL rendering. More... void requestFocus ()
Request the current window to be made the active foreground window. More...
bool hasFocus () const
Check whether the window has the input focus. More...
void display ()
Display on screen what has been rendered to the window so far. More... WindowHandle getSystemHandle () const Get the OS-speci�c handle of the window. More...
void clear (const Color &color=Color(0, 0, 0, 255))
Clear the entire target with a single color. More...
void setView (const View &view)
Change the current active view. More...
const View & getView () const
Get the view currently in use in the render target. More...
const View & getDefaultView () const
Get the default view of the render target. More...
IntRect getViewport (const View &view) const
Get the viewport of a view, applied to this render target. More...
Vector2f mapPixelToCoords (const Vector2i &point) const
Convert a point from target coordinates to world coordinates, using the current view. More... Vector2f mapPixelToCoords (const Vector2i &point, const View &view) const
Convert a point from target coordinates to world coordinates. More...
Vector2i mapCoordsToPixel (const Vector2f &point) const
Convert a point from world coordinates to target coordinates, using the current view. More...
Vector2i mapCoordsToPixel (const Vector2f &point, const View &view) const
Convert a point from world coordinates to target coordinates. More...
void draw (const Drawable &drawable, const RenderStates &states=RenderStates::Default)
Draw a drawable object to the render target. More...
void draw (const Vertex *vertices, std::size_t vertexCount, PrimitiveType type, const RenderStates &states=RenderStates::Default)
Draw primitives de�ned by an array of vertices. More...
void draw (const VertexBu�er &vertexBu�er, const RenderStates &states=RenderStates::Default) Draw primitives de�ned by a vertex bu�er. More...
void draw (const VertexBu�er &vertexBu�er, std::size_t �rstVertex, std::size_t vertexCount, const RenderStates &states=RenderStates::Default)
Draw primitives de�ned by a vertex bu�er. More...
void pushGLStates ()
Save the current OpenGL render states and matrices. More...
void popGLStates ()
Restore the previously saved OpenGL render states and matrices. More...
void resetGLStates ()
Reset the internal OpenGL states so that the target is ready for drawing. More...

Protected Member Functions

virtual void onCreate ()
Function called after the window has been created. More...
virtual void onResize ()
Function called after the window has been resized. More...
void initialize ()
Performs the common initialization step after creation. More...

Detailed Description

Window that can serve as a target for 2D drawing.

sf::RenderWindow is the main class of the Graphics module.

It de�nes an OS window that can be painted using the other classes of the graphics module.

sf::RenderWindow is derived from sf::Window, thus it inherits all its features: events, window management, OpenGL rendering, etc. See the documentation of sf::Window for a more complete description of all these features, as well as code examples.

On top of that, sf::RenderWindow adds more features related to 2D drawing with the graphics module (see its base class sf::RenderTarget for more details). Here is a typical rendering and event loop with a sf::RenderWindow:

// Declare and create a new render-window
sf::RenderWindow window(sf::VideoMode(800, 600), "SFML window");
// Limit the framerate to 60 frames per second (this step is optional)
window.setFramerateLimit(60);
// The main loop - ends as soon as the window is closed
while (window.isOpen())
{
// Event processing
sf::Event event;
while (window.pollEvent(event))
{
// Request for closing the window
if (event.type == sf::Event::Closed)
window.close();
}
// Clear the whole window before rendering a new frame window.clear();
// Draw some graphical entities
window.draw(sprite);
window.draw(circle);
window.draw(text);
// End the current frame and display its contents on screen
window.display();
}

Like sf::Window, sf::RenderWindow is still able to render direct OpenGL stu�. It is even possible to mix together OpenGL calls and regular SFML drawing commands.

// Create the render window
sf::RenderWindow window(sf::VideoMode(800, 600), "SFML OpenGL");
// Create a sprite and a text to display
sf::Sprite sprite;
sf::Text text;
. . .

// Perform OpenGL initializations
glMatrixMode(GL_PROJECTION);
. . .

// Start the rendering loop
while (window.isOpen())
{
// Process events

. . .

// Draw a background sprite
window.pushGLStates();
window.draw(sprite);
window.popGLStates();
// Draw a 3D object using OpenGL
glBegin(GL_QUADS);
glVertex3f(...);
. . .

glEnd();
// Draw text on top of the 3D object
window.pushGLStates();
window.draw(text);
window.popGLStates();
// Finally, display the rendered frame on screen window.display();
}

See also
sf::Window, sf::RenderTarget, sf::RenderTexture, sf::View

De�nition at line 44 of �le RenderWindow.hpp.

Constructor & Destructor Documentation

Default constructor.

This constructor doesn't actually create the window, use the other constructors or call create() to do so.

Construct a new window.

This constructor creates the window with the size and pixel depth de�ned in mode. An optional style can be passed to customize the look and behavior of the window (borders, title bar, resizable, closable,...).

The fourth parameter is an optional structure specifying advanced OpenGL context settings such as antialiasing, depth-bu�er bits, etc. You shouldn't care about these parameters for a regular usage of the graphics module.

Parameters

mode Video mode to use (de�nes the width, height and depth of the rendering area of the window)
title Title of the window
style Window style, a bitwise OR combination of sf::Style enumerators
settings Additional settings for the underlying OpenGL context

explicit

Construct the window from an existing control.

Use this constructor if you want to create an SFML rendering area into an already existing control.

The second parameter is an optional structure specifying advanced OpenGL context settings such as antialiasing, depth-bu�er bits, etc. You shouldn't care about these parameters for a regular usage of the graphics module.

Parameters

handle Platform-speci�c handle of the control (HWND on Windows, Window on Linux/FreeBSD, NSWindow on OS X)
settings Additional settings for the underlying OpenGL context

virtual

Destructor.

Closes the window and frees all the resources attached to it.

Member Function Documentation

Copy the current contents of the window to an image.

Deprecated:
Use a sf::Texture and its sf::Texture::update(const Window&) function and copy its contents into an sf::Image instead.

sf::Vector2u windowSize = window.getSize();
sf::Texture texture;
texture.create(windowSize.x, windowSize.y);
texture.update(window);
sf::Image screenshot = texture.copyToImage();

This is a slow operation, whose main purpose is to make screenshots of the application. If you want to update an image with the contents of the window and then use it for drawing, you should rather use a sf::Texture and its update(Window&) function. You can also draw things directly to a texture with the sf::RenderTexture class.

Returns

Image containing the captured contents

inherited

Clear the entire target with a single color.

This function is usually called once every frame, to clear the previous contents of the target.

Parameters

color Fill color to use to clear the render target

inherited

Close the window and destroy all the attached resources.

After calling this function, the sf::Window instance remains valid and you can call create() to recreate the window. All other functions such as pollEvent() or display() will still work (i.e. you don't have to test isOpen() every time), and will have no e�ect on closed windows.

inherited

Create (or recreate) the window.

If the window was already created, it closes it �rst. If style contains Style::Fullscreen, then mode must be a valid video mode.

The fourth parameter is an optional structure specifying advanced OpenGL context settings such as antialiasing, depth-bu�er bits, etc.

Parameters

mode Video mode to use (de�nes the width, height and depth of the rendering area of the window)
title Title of the window
style Window style, a bitwise OR combination of sf::Style enumerators
settings Additional settings for the underlying OpenGL context

inherited

Create (or recreate) the window from an existing control.

Use this function if you want to create an OpenGL rendering area into an already existing control. If the window was already created, it closes it �rst.

The second parameter is an optional structure specifying advanced OpenGL context settings such as antialiasing, depth-bu�er bits, etc.

Parameters

handle Platform-speci�c handle of the control
settings Additional settings for the underlying OpenGL context

inherited

Display on screen what has been rendered to the window so far.

This function is typically called after all OpenGL rendering has been done for the current frame, in order to show it on screen.

inherited

Draw a drawable object to the render target.

Parameters

drawable Object to draw
states Render states to use for drawing

inherited

Draw primitives de�ned by an array of vertices.

Parameters
vertices Pointer to the vertices
vertexCount Number of vertices in the array
type Type of primitives to draw
states Render states to use for drawing

inherited

Draw primitives de�ned by a vertex bu�er.

Parameters
vertexBu�er Vertex bu�er
states Render states to use for drawing

inherited

Draw primitives de�ned by a vertex bu�er.

Parameters
vertexBu�er Vertex bu�er
�rstVertex Index of the �rst vertex to render
vertexCount Number of vertices to render
states Render states to use for drawing

inherited

Get the default view of the render target.

The default view has the initial size of the render target, and never changes after the target has been created.

Returns

The default view of the render target

See also
setView, getView

inherited

Get the position of the window.

Returns

Position of the window, in pixels

See also
setPosition

inherited

Get the settings of the OpenGL context of the window.

Note that these settings may be di�erent from what was passed to the constructor or the create() function, if one or more settings were not supported. In this case, SFML chose the closest match.

Returns

Structure containing the OpenGL context settings

virtual

Get the size of the rendering region of the window.

The size doesn't include the titlebar and borders of the window.

Returns

Size in pixels

Implements sf::RenderTarget.

inherited

Get the OS-speci�c handle of the window.

The type of the returned handle is sf::WindowHandle, which is a typedef to the handle type de�ned by the OS. You shouldn't need to use this function, unless you have very speci�c stu� to implement that SFML doesn't support, or implement a temporary workaround until a bug is �xed.

Returns

System handle of the window

inherited

Get the view currently in use in the render target.

Returns

The view object that is currently used

See also
setView, getDefaultView

inherited

Get the viewport of a view, applied to this render target.

The viewport is de�ned in the view as a ratio, this function simply applies this ratio to the current dimensions of the render target to calculate the pixels rectangle that the viewport actually covers in the target.

Parameters

view The view for which we want to compute the viewport

Returns

Viewport rectangle, expressed in pixels

inherited

Check whether the window has the input focus.

At any given time, only one window may have the input focus to receive input events such as keystrokes or most mouse events.

Returns

True if window has focus, false otherwise

See also
requestFocus

protected inherited

Performs the common initialization step after creation.

The derived classes must call this function after the target is created and ready for drawing.

inherited

Tell whether or not the window is open.

This function returns whether or not the window exists. Note that a hidden window (setVisible(false)) is open (therefore this function would return true).

Returns

True if the window is open, false if it has been closed

inherited

Convert a point from world coordinates to target coordinates, using the current view.

This function is an overload of the mapCoordsToPixel function that implicitly uses the current view. It is equivalent to:

target.mapCoordsToPixel(point, target.getView());

Parameters

point Point to convert

Returns

The converted point, in target coordinates (pixels)

See also
mapPixelToCoords

inherited

Convert a point from world coordinates to target coordinates.

This function �nds the pixel of the render target that matches the given 2D point. In other words, it goes through the same process as the graphics card, to compute the �nal position of a rendered point.

Initially, both coordinate systems (world units and target pixels) match perfectly. But if you de�ne a custom view or resize your render target, this assertion is not true anymore, i.e. a point located at (150, 75) in your 2D world may map to the pixel (10, 50) of your render target – if the view is translated by (140, 25).

This version uses a custom view for calculations, see the other overload of the function if you want to use the current view of the render target.

Parameters

point Point to convert
view The view to use for converting the point

Returns

The converted point, in target coordinates (pixels)

See also
mapPixelToCoords

inherited

Convert a point from target coordinates to world coordinates, using the current view.

This function is an overload of the mapPixelToCoords function that implicitly uses the current view. It is equivalent to:

target.mapPixelToCoords(point, target.getView());

Parameters

point Pixel to convert

Returns

The converted point, in "world" coordinates

See also
mapCoordsToPixel

inherited

Convert a point from target coordinates to world coordinates.

This function �nds the 2D position that matches the given pixel of the render target. In other words, it does the inverse of what the graphics card does, to �nd the initial position of a rendered pixel.

Initially, both coordinate systems (world units and target pixels) match perfectly. But if you de�ne a custom view or resize your render target, this assertion is not true anymore, i.e. a point located at (10, 50) in your render target may map to the point (150,
75) in your 2D world – if the view is translated by (140, 25).

For render-windows, this function is typically used to �nd which point (or object) is located below the mouse cursor.

This version uses a custom view for calculations, see the other overload of the function if you want to use the current view of the render target.

Parameters

point Pixel to convert
view The view to use for converting the point

Returns

The converted point, in "world" units

See also
mapCoordsToPixel

protected virtual

Function called after the window has been created.

This function is called so that derived classes can perform their own speci�c initialization as soon as the window is created.

Reimplemented from sf::Window.

protected virtual

Function called after the window has been resized.

This function is called so that derived classes can perform custom actions when the size of the window changes.

Reimplemented from sf::Window.

inherited

Pop the event on top of the event queue, if any, and return it.

This function is not blocking: if there's no pending event then it will return false and leave event unmodi�ed. Note that more than one event may be present in the event queue, thus you should always call this function in a loop to make sure that you process every pending event.

sf::Event event;
while (window.pollEvent(event))
{
// process event...
}

Parameters
event Event to be returned

Returns

True if an event was returned, or false if the event queue was empty

See also
waitEvent

inherited

Restore the previously saved OpenGL render states and matrices.

See the description of pushGLStates to get a detailed description of these functions.

See also
pushGLStates

inherited

Save the current OpenGL render states and matrices.

This function can be used when you mix SFML drawing and direct OpenGL rendering. Combined with popGLStates, it ensures that:

SFML's internal states are not messed up by your OpenGL code
your OpenGL states are not modi�ed by a call to a SFML function

More speci�cally, it must be used around code that calls Draw functions. Example:

// OpenGL code here...
window.pushGLStates();
window.draw(...);
window.draw(...);
window.popGLStates();
// OpenGL code here...

Note that this function is quite expensive: it saves all the possible OpenGL states and matrices, even the ones you don't care about. Therefore it should be used wisely. It is provided for convenience, but the best results will be achieved if you handle OpenGL states yourself (because you know which states have really changed, and need to be saved and restored). Take a look at the resetGLStates function if you do so.

See also
popGLStates

inherited

Request the current window to be made the active foreground window.

At any given time, only one window may have the input focus to receive input events such as keystrokes or mouse events. If a window requests focus, it only hints to the operating system, that it would like to be focused. The operating system is free to deny the request. This is not to be confused with setActive().

See also
hasFocus

inherited

Reset the internal OpenGL states so that the target is ready for drawing.

This function can be used when you mix SFML drawing and direct OpenGL rendering, if you choose not to use pushGLStates/popGLStates. It makes sure that all OpenGL states needed by SFML are set, so that subsequent draw() calls will work as expected.

Example:

// OpenGL code here...
glPushAttrib(...);
window.resetGLStates();
window.draw(...);
window.draw(...);
glPopAttrib(...);
// OpenGL code here...

virtual

Activate or deactivate the window as the current target for OpenGL rendering.

A window is active only on the current thread, if you want to make it active on another thread you have to deactivate it on the previous thread �rst if it was active. Only one window can be active on a thread at a time, thus the window previously active (if any) automatically gets deactivated. This is not to be confused with requestFocus().

Parameters

active True to activate, false to deactivate

Returns

True if operation was successful, false otherwise

Reimplemented from sf::RenderTarget.

inherited

Activate or deactivate the window as the current target for OpenGL rendering.

A window is active only on the current thread, if you want to make it active on another thread you have to deactivate it on the previous thread �rst if it was active. Only one window can be active on a thread at a time, thus the window previously active (if any) automatically gets deactivated. This is not to be confused with requestFocus().

Parameters

active True to activate, false to deactivate

Returns

True if operation was successful, false otherwise

inherited

Limit the framerate to a maximum �xed frequency.

If a limit is set, the window will use a small delay after each call to display() to ensure that the current frame lasted long enough to match the framerate limit. SFML will try to match the given limit as much as it can, but since it internally uses sf::sleep, whose precision depends on the underlying OS, the results may be a little unprecise as well (for example, you can get 65 FPS when requesting 60).

Parameters

limit Framerate limit, in frames per seconds (use 0 to disable limit)

inherited

Change the window's icon.

pixels must be an array of width x height pixels in 32-bits RGBA format.

The OS default icon is used by default.

Parameters

width Icon's width, in pixels
height Icon's height, in pixels
pixels Pointer to the array of pixels in memory. The pixels are copied, so you need not keep the source alive after calling
this function.

See also
setTitle

inherited

Change the joystick threshold.

The joystick threshold is the value below which no JoystickMoved event will be generated.

The threshold value is 0.1 by default.

Parameters

threshold New threshold, in the range [0, 100]

inherited

Enable or disable automatic key-repeat.

If key repeat is enabled, you will receive repeated KeyPressed events while keeping a key pressed. If it is disabled, you will only get a single event when the key is pressed.

Key repeat is enabled by default.

Parameters

enabled True to enable, false to disable

inherited

Set the displayed cursor to a native system cursor.

Upon window creation, the arrow cursor is used by default.

Warning
The cursor must not be destroyed while in use by the window. Features related to Cursor are not supported on iOS and Android.

Parameters

cursor Native system cursor type to display

See also
sf::Cursor::loadFromSystem
sf::Cursor::loadFromPixels

inherited

Grab or release the mouse cursor.

If set, grabs the mouse cursor inside this window's client area so it may no longer be moved outside its bounds. Note that grabbing is only active while the window has focus.

Parameters

grabbed True to enable, false to disable

inherited

Show or hide the mouse cursor.

The mouse cursor is visible by default.

Parameters

visible True to show the mouse cursor, false to hide it

inherited

Change the position of the window on screen.

This function only works for top-level windows (i.e. it will be ignored for windows created from the handle of a child window/control).

Parameters

position New position, in pixels

See also
getPosition

inherited

Change the size of the rendering region of the window.

Parameters

size New size, in pixels

See also
getSize

inherited

Change the title of the window.

Parameters
title New title

See also
setIcon

inherited

Enable or disable vertical synchronization.

Activating vertical synchronization will limit the number of frames displayed to the refresh rate of the monitor. This can avoid some visual artifacts, and limit the framerate to a good value (but not constant across di�erent computers).

Vertical synchronization is disabled by default.

Parameters

enabled True to enable v-sync, false to deactivate it

inherited

Change the current active view.

The view is like a 2D camera, it controls which part of the 2D scene is visible, and how it is viewed in the render target. The new view will a�ect everything that is drawn, until another view is set. The render target keeps its own copy of the view object, so it is not necessary to keep the original one alive after calling this function. To restore the original view of the target, you can pass the result of getDefaultView() to this function.

Parameters
view New view to use

See also
getView, getDefaultView

inherited

Show or hide the window.

The window is shown by default.

Parameters

visible True to show the window, false to hide it

inherited

Wait for an event and return it.

This function is blocking: if there's no pending event then it will wait until an event is received. After this function returns (and no error occurred), the event object is always valid and �lled properly. This function is typically used when you have a thread that is dedicated to events handling: you want to make this thread sleep as long as no new event is received.

sf::Event event;
if (window.waitEvent(event))
{
// process event...
}

Parameters
event Event to be returned

Returns

False if any error occurred

See also
pollEvent

The documentation for this class was generated from the following �le: RenderWindow.hpp

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