Smart ID Engine Library Reference

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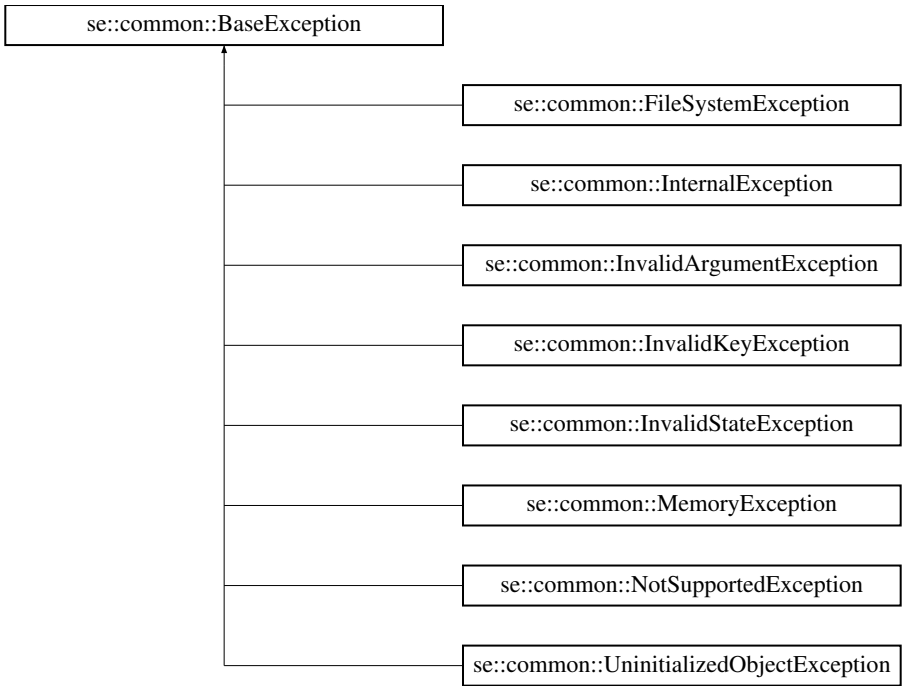
1 Class Documentation

1.1 se::common::BaseException Class Reference

BaseException class - base class for all SE exeptions. Cannot be created directly.

`#include <se_exception.h>`

Inheritance diagram for se::common::BaseException:



Public Member Functions

- virtual ~**BaseException** ()

  Non-trivial dtor.
- **BaseException** (const BaseException &copy)

  Copy ctor.
- virtual const char * ExceptionName () const

  Returns exception class name.
- virtual const char * **what** () const

  Returns exception message.

Protected Member Functions

- **BaseException** (const char *msg)

  Protected ctor.

Private Attributes

- char * msg_

  stored exception message

1.1.1 Detailed Description

BaseException class - base class for all SE exeptions. Cannot be created directly.

Definition at line 22 of file se_exception.h.

1.1.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::BaseException::ExceptionName () const  [virtual]
```

Returns exception class name.

Reimplemented in se::common::FileSystemException, se::common::InternalException, se::common::InvalidArgumentException, se::common::InvalidKeyException, se::common::InvalidStateException, se::common::MemoryException, se::common::NotSupportedE and se::common::UninitializedObjectException.

1.1.3 Member Data Documentation

msg_

```
char* se::common::BaseException::msg_  [private]
```

stored exception message

Definition at line 41 of file se_exception.h.

1.2 se::common::ByteString Class Reference

Class representing byte string.

```
#include <se_string.h>
```

Public Member Functions

- **ByteString** ()
  Default ctor, creates an empty string.
- ~**ByteString** ()
  Non-trivial dtor.
- **ByteString** (const unsigned char *bytes, size_t n)
  Ctor from a given sequence of bytes and length.
- **ByteString** (const ByteString &other)
  Copy ctor.
- ByteString & **operator=** (const ByteString &other)
  Assignment operator.
- void **swap** (ByteString &other) noexcept
  Swap.
- int **GetLength** () const noexcept
  Returns the number of bytes.
- int **GetRequiredBase64BufferLength** () const
  Returns length of base64 formated buffer.
- int **CopyBase64ToBuffer** (char *out_buffer, int buffer_length) const
  Format buffer to base64.
- MutableString **GetBase64String** () const
  Get base64 string from buffer.
- int **GetRequiredHexBufferLength** () const
  Returns length of hex formated buffer.
- int **CopyHexToBuffer** (char *out_buffer, int buffer_length) const
  Format buffer to hex.
- MutableString **GetHexString** () const
  Get hex string from buffer.

Private Attributes

- size_t len_
  length of the internal buffer in bytes
- uint8_t * buf_
  internal buffer

1.2.1 Detailed Description

Class representing byte string.

Definition at line 322 of file se_string.h.

1.2.2 Member Data Documentation

len_

```
size_t se::common::ByteString::len_  [private]
```

length of the internal buffer in bytes

Definition at line 364 of file se_string.h.

buf_

```
uint8_t* se::common::ByteString::buf_  [private]
```

internal buffer

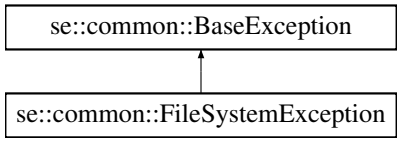
Definition at line 365 of file se_string.h.

1.3 se::common::FileSystemException Class Reference

FileSystemException: thrown if an attempt is made to read from a non-existent file, or other file-system related IO error.

```
#include <se_exception.h>
```

Inheritance diagram for se::common::FileSystemException:



Public Member Functions

- **FileSystemException** (const char *msg)
  Ctor with an exception message.
- **FileSystemException** (const FileSystemException &copy)
  Copy ctor.
- virtual ~**FileSystemException** () override=default
  Default dtor.
- virtual const char * ExceptionName () const override
  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ~**BaseException** ()
  Non-trivial dtor.
- **BaseException** (const BaseException &copy)
  Copy ctor.
- virtual const char * **what** () const
  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char *msg)
  Protected ctor.

1.3.1 Detailed Description

FileSystemException: thrown if an attempt is made to read from a non-existent file, or other file-system related IO error.

Definition at line 92 of file se_exception.h.

1.3.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::FileSystemException::ExceptionName () const  [override], [virtual]
```

Returns exception class name.

Reimplemented from se::common::BaseException.

1.4 se::common::Image Class Reference

Class representing bitmap image.

```
#include <se_image.h>
```

Public Member Functions

- virtual ~**Image** ()=default

  Default dtor.
- virtual int GetNumberOfLayers () const =0

  Gets the number of additional layers.
- virtual const Image & GetLayer (const char *name) const =0

  Gets the additional layer by the specified name.
- virtual const Image * GetLayerPtr (const char *name) const =0

  Gets the additional layer by the specified name.
- virtual ImagesMapIterator LayersBegin () const =0

  Gets the 'begin' map iterator to the internal layers collection.
- virtual ImagesMapIterator LayersEnd () const =0

  Gets the 'end' map iterator to the internal layers collection.
- virtual bool HasLayer (const char *name) const =0

  Checks whether the Image contains the layer with the specified name.
- virtual bool HasLayers () const =0

  Checks whether the Image contains the layers.
- virtual void RemoveLayer (const char *name)=0

  Removes the layer with the specified name.
- virtual void **RemoveLayers** ()=0

  Clears the internal layers collection.
- virtual void SetLayer (const char *name, const Image &image)=0

  Add the image with the specified name to the internal layers collection with copying of the pixels of the given image.
- virtual void SetLayerWithOwnership (const char *name, Image *image)=0

  Add the image with the specified name to the internal layers collection by transfering the given image to the internal layers collection. The caller has to release the ownership of the set image.
- virtual Image * CloneDeep () const =0

  Clones an image with copying of all pixels.
- virtual Image * CloneShallow () const =0

  Clones an image without copying the pixels. The cloned image will be a separate object without memory ownership, the operations with it will be invalid if the source is deallocated.
- virtual void **Clear** ()=0

  Clears the internal image structure.
- virtual int GetRequiredBufferLength () const =0

  Gets the required buffer length for copying the image pixels into an external pixels buffer.
- virtual int CopyToBuffer (unsigned char *buffer, int buffer_length) const =0

  Copies the image pixels.
- virtual void Save (const char *image_filename) const =0

  Saves the image to an external file (png, jpg, tif). Format is deduced from the filename extension.
- virtual int GetRequiredBase64BufferLength () const =0

  Returns required buffer size for Base64 JPEG representation of an image. WARNING: will perform one extra JPEG encoding of an image.
- virtual int CopyBase64ToBuffer (char *out_buffer, int buffer_length) const =0

  Copies the Base64 JPEG representation of an image to an external buffer.
- virtual MutableString GetBase64String () const =0

  Returns Base64 JPEG representation of an image.
- virtual double EstimateFocusScore (double quantile=0.95) const =0

  Estimates focus score of an image.
- virtual void Resize (const Size &new_size)=0

  Scale the image to a new size.
- virtual Image * CloneResized (const Size &new_size) const =0

Clones the image scaled to a new size.

- virtual void Crop (const Quadrangle &quad)=0

  Projectively crops a region of image, with approximate selection of the cropped image size.

- virtual Image * CloneCropped (const Quadrangle &quad) const =0

  Clones the image projectively cropped with approximate selection of the target image size.

- virtual void Crop (const Quadrangle &quad, const Size &size)=0

  Projectively crops a region of image, with a given target size.

- virtual Image * CloneCropped (const Quadrangle &quad, const Size &size) const =0

  Clones the image projectively cropped with a given target size.

- virtual void Crop (const Rectangle &rect)=0

  Crops an image to a rectangular image region.

- virtual Image * CloneCropped (const Rectangle &rect) const =0

  Clones the image cropped to a selected rectangular region (with copying of pixels)

- virtual Image * CloneCroppedShallow (const Rectangle &rect) const =0

  Clones the image cropped to a selected rectangular region, without copying of pixels. The cloned image will be a separate object without memory ownership, the operations with it will be invalid if the source is deallocated.

- virtual void Mask (const Rectangle &rect, int pixel_expand=0, double pixel_density=0)=0

  Masks image region specified by rectangle.

- virtual Image * CloneMasked (const Rectangle &rect, int pixel_expand=0) const =0

  Clone the image with masked region specified by rectangle.

- virtual void Mask (const Quadrangle &quad, int pixel_expand=0, double pixel_density=0)=0

  Mask image region specified by quadrangle.

- virtual Image * CloneMasked (const Quadrangle &quad, int pixel_expand=0) const =0

  Clone the image with masked region specified by quadrangle.

- virtual void Fill (const Rectangle &rect, int ch1, int ch2=0, int ch3=0, int ch4=0, int pixel_expand=0)=0

  Fills image region specified by rectangle and color. The method will use the first as many channel values as there are channels in the image.

- virtual Image * CloneFilled (const Rectangle &rect, int ch1, int ch2=0, int ch3=0, int ch4=0, int pixel_↩ expand=0) const =0

  Clone the image with filled region specified by rectangle and color. The method will use the first as many channel values as there are channels in the image.

- virtual void Fill (const Quadrangle &quad, int ch1, int ch2=0, int ch3=0, int ch4=0, int pixel_expand=0)=0

  Fill image region specified by quadrangle and color. The method will use the first as many channel values as there are channels in the image.

- virtual Image * CloneFilled (const Quadrangle &quad, int ch1, int ch2=0, int ch3=0, int ch4=0, int pixel_↩ expand=0) const =0

  Clone the image with filled region specified by quadrangle and color. The method will use the first as many channel values as there are channels in the image.

- virtual void **FlipVertical** ()=0

  Flips an image around the vertical axis.

- virtual Image * CloneFlippedVertical () const =0

  Clones the image flipped around the vertical axis.

- virtual void **FlipHorizontal** ()=0

  Flips an image around the horizontal axis.

- virtual Image * CloneFlippedHorizontal () const =0

  Clones the image flipped around the horizontal axis.

- virtual void Rotate90 (int times)=0

  Rotates the image clockwise by a multiple of 90 degrees.

- virtual Image * CloneRotated90 (int times) const =0

  Clones the image rotated clockwise by a multiple of 90 degrees.

- virtual void **AverageChannels** ()=0

  Makes a single-channel image with averaged intensity values.

- virtual Image * CloneAveragedChannels () const =0

  Clones the image with averaged channel intensity values.
- virtual void **Invert** ()=0

  Inverts the colors of the image.
- virtual Image * CloneInverted () const =0

  Clones the image with inverted colos.
- virtual int **GetWidth** () const =0

  Gets the image width in pixels.
- virtual int **GetHeight** () const =0

  Gets the image height in pixels.
- virtual Size **GetSize** () const =0

  Gets the image size in pixels.
- virtual int **GetStride** () const =0

  Gets the number of image row in bytes, including alignment.
- virtual int **GetChannels** () const =0

  Gets the number of channels per pixel.
- virtual void * **GetUnsafeBufferPtr** () const =0

  Gets the pointer to the pixels buffer.
- virtual bool **IsMemoryOwner** () const =0

  Returns whether this instance owns and will release pixel data.
- virtual void **ForceMemoryOwner** ()=0

  Forces memory ownership - allocates new image data and copies the pixels.
- virtual void **Serialize** (Serializer &serializer) const =0

  Serializes the image given the serializer object.

Static Public Member Functions

- static int GetNumberOfPages (const char *image_filename)

  Returns the number of pages in an image.
- static MutableString GetImagePageName (const char *image_filename, int page_number)

  Returns the name of the specified page.
- static Image * CreateEmpty ()

  Factory method for creating an empty image.
- static Image * FromFile (const char *image_filename, const int page_number=0, const Size &max_size=Size(25000, 25000))

  Factory method for loading an image from file. Will be treated as IPF_G or IPF_RGB.
- static Image * FromFileBuffer (unsigned char *data, int data_length, const int page_number=0, const Size &max_size=Size(25000, 25000))

  Factory method for loading an image from file pre-loaded in a buffer Will be treated as IPF_G or IPF_RGB.
- static Image * FromBuffer (unsigned char *raw_data, int raw_data_length, int width, int height, int stride, int channels)

  Factory method for loading an image from uncompressed pixels buffer, with UINT8 channel container. Copies the buffer internally. Buffers with types IPF_G, IPF_RGB, and IPF_BGRA are assumed.
- static Image * FromBufferExtended (unsigned char *raw_data, int raw_data_length, int width, int height, int stride, ImagePixelFormat pixel_format, int bytes_per_channel)

  Factory method for loading an image from an uncompressed pixel buffer with extended settings. Copies the buffer internally.
- static Image * FromYUVBuffer (unsigned char *yuv_data, int yuv_data_length, int width, int height)

  Factory method for loading an image from YUV NV21 buffer.
- static Image * FromYUV (unsigned char *y_plane, int y_plane_length, unsigned char *u_plane, int u_plane_length, unsigned char *v_plane, int v_plane_length, const YUVDimensions &dimensions)

Factory method for loading an image from a universal YUV buffer.

- static Image * FromBase64Buffer (const char *base64_buffer, const int page_number=0, const Size &max_size=Size(25000, 25000))

  Factory method for loading an image from file pre-loaded in a buffer encoded as a Base64 string. Will be treated as IPF_G or IPF_RGB.

1.4.1 Detailed Description

Class representing bitmap image.

Definition at line 79 of file se_image.h.

1.4.2 Member Function Documentation

GetNumberOfPages()

```
static int se::common::Image::GetNumberOfPages (
            const char * image_filename)  [static]
```

Returns the number of pages in an image.

Parameters

image_filename	path to an imag file

Returns

the number of pages in an image

GetImagePageName()

```
static MutableString se::common::Image::GetImagePageName (
            const char * image_filename,
            int page_number)  [static]
```

Returns the name of the specified page.

Parameters

image_filename	The filename of the image to process.
page_number	0-based page number.

Returns

Separate page filename.

CreateEmpty()

```
static Image * se::common::Image::CreateEmpty ()  [static]
```

Factory method for creating an empty image.

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

FromFile()

```
static Image * se::common::Image::FromFile (
            const char * image_filename,
            const int page_number = 0,
            const Size & max_size = Size(25000, 25000))  [static]
```

Factory method for loading an image from file. Will be treated as IPF_G or IPF_RGB.

Parameters

image_filename	path to an image file (png, jpg, tif)
page_number	page number (0 by default)
max_size	maximum image size in pixels (0 for unrestricted)

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

FromFileBuffer()

```
static Image * se::common::Image::FromFileBuffer (
            unsigned char * data,
            int data_length,
            const int page_number = 0,
            const Size & max_size = Size(25000, 25000))  [static]
```

Factory method for loading an image from file pre-loaded in a buffer Will be treated as IPF_G or IPF_RGB.

Parameters

data	pointer to a loaded file buffer
data_length	size of the loaded file buffer
page_number	page number (0 by default)
max_size	maximum image size in pixels (0 for unrestricted)

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

FromBuffer()

```
static Image * se::common::Image::FromBuffer (
            unsigned char * raw_data,
            int raw_data_length,
            int width,
            int height,
            int stride,
            int channels)  [static]
```

Factory method for loading an image from uncompressed pixels buffer, with UINT8 channel container. Copies the buffer internally. Buffers with types IPF_G, IPF_RGB, and IPF_BGRA are assumed.

Parameters

raw_data	- pointer to a pixels buffer
raw_data_length	size of the pixels buffer
width	width of the image in pixels
height	height of the image in pixels
stride	size of an image row in bytes (including alignment)
channels	number of channels per-pixel

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

FromBufferExtended()

```
static Image * se::common::Image::FromBufferExtended (
            unsigned char * raw_data,
            int raw_data_length,
            int width,
            int height,
            int stride,
            ImagePixelFormat pixel_format,
            int bytes_per_channel)  [static]
```

Factory method for loading an image from an uncompressed pixel buffer with extended settings. Copies the buffer internally.

Parameters

raw_data	pointer to a pixels buffer
raw_data_length	size of the pixels buffer
width	width of the image in pixels
height	height of the image in pixels
stride	size of an image row in bytes (including alignment)
pixel_format	pixel format
bytes_per_channel	size of a pixel component in bytes

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

FromYUVBuffer()

```
static Image * se::common::Image::FromYUVBuffer (
            unsigned char * yuv_data,
            int yuv_data_length,
            int width,
            int height)  [static]
```

Factory method for loading an image from YUV NV21 buffer.

Parameters

yuv_data	pointer to YUV NV21 buffer
yuv_data_length	size of the YUV NV21 buffer
width	width of the image in pixels
height	height of the image in pixels

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

FromYUV()

```
static Image * se::common::Image::FromYUV (
            unsigned char * y_plane,
            int y_plane_length,
            unsigned char * u_plane,
            int u_plane_length,
            unsigned char * v_plane,
            int v_plane_length,
            const YUVDimensions & dimensions)  [static]
```

Factory method for loading an image from a universal YUV buffer.

Parameters

y_plane	pointer to Y plane buffer
y_plane_length	Y plane buffer length
u_plane	pointer to U plane buffer
u_plane_length	U plane buffer length
v_plane	pointer to V plane buffer
v_plane_length	V plane buffer length
dimensions	YUV parameters and dimensions

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

FromBase64Buffer()

```
static Image * se::common::Image::FromBase64Buffer (
            const char * base64_buffer,
            const int page_number = 0,
            const Size & max_size = Size(25000, 25000))  [static]
```

Factory method for loading an image from file pre-loaded in a buffer encoded as a Base64 string. Will be treated as IPF_G or IPF_RGB.

Parameters

base64_buffer	pointer to a base64 file buffer
page_number	page number (0 by default)
max_size	maximum image size in pixels (0 for unrestricted)

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

GetNumberOfLayers()

```
virtual int se::common::Image::GetNumberOfLayers () const  [pure virtual]
```

Gets the number of additional layers.

Returns

The number of layers

GetLayer()

```
virtual const Image & se::common::Image::GetLayer (
            const char * name) const  [pure virtual]
```

Gets the additional layer by the specified name.

Parameters

name	the name of the required layer

Returns

The layer

GetLayerPtr()

```
virtual const Image * se::common::Image::GetLayerPtr (
            const char * name) const  [pure virtual]
```

Gets the additional layer by the specified name.

Parameters

name	the name of the required layer

Returns

The pointer to the layer

LayersBegin()

```
virtual ImagesMapIterator se::common::Image::LayersBegin () const  [pure virtual]
```

Gets the 'begin' map iterator to the internal layers collection.

Returns

The 'begin' map iterator to the internal layers collection

LayersEnd()

```
virtual ImagesMapIterator se::common::Image::LayersEnd () const  [pure virtual]
```

Gets the 'end' map iterator to the internal layers collection.

Returns

The 'end' map iterator to the internal layers collection

HasLayer()

```
virtual bool se::common::Image::HasLayer (
            const char * name) const  [pure virtual]
```

Checks whether the Image contains the layer with the specified name.

Parameters

name	the name of the required layer

Returns

whether the Image contains the layer with the specified name

HasLayers()

```
virtual bool se::common::Image::HasLayers () const  [pure virtual]
```

Checks whether the Image contains the layers.

Returns

whether the Image contains the layers

RemoveLayer()

```
virtual void se::common::Image::RemoveLayer (
            const char * name)  [pure virtual]
```

Removes the layer with the specified name.

Parameters

name	the name of the removable layer

SetLayer()

```
virtual void se::common::Image::SetLayer (
            const char * name,
            const Image & image)  [pure virtual]
```

Add the image with the specified name to the internal layers collection with copying of the pixels of the given image.

Parameters

name	the name of the new layer
image	the value of the new layer

SetLayerWithOwnership()

```
virtual void se::common::Image::SetLayerWithOwnership (
            const char * name,
            Image * image)  [pure virtual]
```

Add the image with the specified name to the internal layers collection by transfering the given image to the internal layers collection. The caller has to release the ownership of the set image.

Parameters

name	the name of the new layer
image	the pointer to the value of the new layer

CloneDeep()

```
virtual Image * se::common::Image::CloneDeep () const  [pure virtual]
```

Clones an image with copying of all pixels.

Returns

Pointer to a cloned image. New object is allocated, the caller is responsible for deleting it.

CloneShallow()

```
virtual Image * se::common::Image::CloneShallow () const  [pure virtual]
```

Clones an image without copying the pixels. The cloned image will be a separate object without memory ownership, the operations with it will be invalid if the source is deallocated.

Returns

Pointer to a cloned image. New object is allocated, the caller is responsible for deleting it.

GetRequiredBufferLength()

```
virtual int se::common::Image::GetRequiredBufferLength () const  [pure virtual]
```

Gets the required buffer length for copying the image pixels into an external pixels buffer.

Returns

Number of required bytes

CopyToBuffer()

```
virtual int se::common::Image::CopyToBuffer (
            unsigned char * buffer,
            int buffer_length) const  [pure virtual]
```

Copies the image pixels.

Parameters

buffer	pointer to an output pixels buffer
buffer_length	available buffer size. Must be at least the size returned by the GetRequiredBufferLength() method.

Returns

The number of written bytes

Save()

```
virtual void se::common::Image::Save (
            const char * image_filename) const  [pure virtual]
```

Saves the image to an external file (png, jpg, tif). Format is deduced from the filename extension.

Parameters

image_filename	filename to save the image

GetRequiredBase64BufferLength()

```
virtual int se::common::Image::GetRequiredBase64BufferLength () const  [pure virtual]
```

Returns required buffer size for Base64 JPEG representation of an image. WARNING: will perform one extra JPEG encoding of an image.

Returns

Buffer size in bytes.

CopyBase64ToBuffer()

```
virtual int se::common::Image::CopyBase64ToBuffer (
            char * out_buffer,
            int buffer_length) const  [pure virtual]
```

Copies the Base64 JPEG representation of an image to an external buffer.

Parameters

out_buffer	output buffer for Base64 JPEG representation
buffer_length	available buffer size. Must be at least the size return by the GetRequiredBase64BufferLength() method.

Returns

The number of written bytes.

GetBase64String()

```
virtual MutableString se::common::Image::GetBase64String () const  [pure virtual]
```

Returns Base64 JPEG representation of an image.

Returns

Base64 JPEG representation in a MutableString form

EstimateFocusScore()

```
virtual double se::common::Image::EstimateFocusScore (
            double quantile = 0.95) const  [pure virtual]
```

Estimates focus score of an image.

Parameters

quantile	the derivatives quantile used to estimate focus score

Returns

Focus score of an image

Resize()

```
virtual void se::common::Image::Resize (
            const Size & new_size)  [pure virtual]
```

Scale the image to a new size.

Parameters

new_size	new size of the image

CloneResized()

```
virtual Image * se::common::Image::CloneResized (
            const Size & new_size) const  [pure virtual]
```

Clones the image scaled to a new size.

Parameters

new_size	new size of the image

Returns

Pointer to a scaled image. New object is allocated, the caller is responsible for deleting it.

Crop() [1/3]

```
virtual void se::common::Image::Crop (
            const Quadrangle & quad)  [pure virtual]
```

Projectively crops a region of image, with approximate selection of the cropped image size.

Parameters

quad	quadrangle in the image for cropping.

CloneCropped() [1/3]

```
virtual Image * se::common::Image::CloneCropped (
            const Quadrangle & quad) const  [pure virtual]
```

Clones the image projectively cropped with approximate selection of the target image size.

Parameters

quad	quadrangle in the image for cropping

Returns

Pointer to a cropped image. New object is allocated, the caller is responsible for deleting it.

Crop() [2/3]

```
virtual void se::common::Image::Crop (
            const Quadrangle & quad,
            const Size & size)  [pure virtual]
```

Projectively crops a region of image, with a given target size.

Parameters

quad	quadrangle in the image for cropping
size	target cropped image size

CloneCropped() [2/3]

```
virtual Image * se::common::Image::CloneCropped (
            const Quadrangle & quad,
            const Size & size) const  [pure virtual]
```

Clones the image projectively cropped with a given target size.

Parameters

quad	quadrangle in the image for cropping
size	target cropped image size

Returns

Pointer to a cropped image. New object is allocated, the caller is responsible for deleting it.

Crop() [3/3]

```
virtual void se::common::Image::Crop (
            const Rectangle & rect)  [pure virtual]
```

Crops an image to a rectangular image region.

Parameters

rect	rectangular region to crop

CloneCropped() [3/3]

```
virtual Image * se::common::Image::CloneCropped (
            const Rectangle & rect) const  [pure virtual]
```

Clones the image cropped to a selected rectangular region (with copying of pixels)

Parameters

rect	rectangular region to crop

Returns

Pointer to a cropped image. New object is allocated, the caller is responsible for deleting it.

CloneCroppedShallow()

```
virtual Image * se::common::Image::CloneCroppedShallow (
            const Rectangle & rect) const  [pure virtual]
```

Clones the image cropped to a selected rectangular region, without copying of pixels. The cloned image will be a separate object without memory ownership, the operations with it will be invalid if the source is deallocated.

Parameters

rect	rectangular region to crop

Returns

Pointer to a cropped image. New object is allocated, the caller is responsible for deleting it.

Mask() [1/2]

```
virtual void se::common::Image::Mask (
            const Rectangle & rect,
            int pixel_expand = 0,
            double pixel_density = 0)  [pure virtual]
```

Masks image region specified by rectangle.

Parameters

rect	rectangle region to mask
pixel_expand	expand offset in pixels for each point (0 by default)
pixel_density	reduce dencity of pixels (0 by default)

CloneMasked() [1/2]

```
virtual Image * se::common::Image::CloneMasked (
            const Rectangle & rect,
            int pixel_expand = 0) const  [pure virtual]
```

Clone the image with masked region specified by rectangle.

Parameters

rect	rectangle region to mask
pixel_expand	expand offset in pixels for each point (0 by default)

Returns

Pointer to a masked image. New object is allocated, the caller is responsible for deleting it.

Mask() [2/2]

```
virtual void se::common::Image::Mask (
            const Quadrangle & quad,
            int pixel_expand = 0,
            double pixel_density = 0)  [pure virtual]
```

Mask image region specified by quadrangle.

Parameters

quad	quadrangle region to mask
pixel_expand	expand offset in pixels for each point (0 by default)

CloneMasked() [2/2]

```
virtual Image * se::common::Image::CloneMasked (
            const Quadrangle & quad,
            int pixel_expand = 0) const  [pure virtual]
```

Clone the image with masked region specified by quadrangle.

Parameters

quad	quadrangle region to mask
pixel_expand	expand offset in pixels for each point (0 by default)
pixel_density	reduce dencity of pixels (0 by default)

Returns

Pointer to a masked image. New object is allocated, the caller is responsible for deleting it.

Fill() [1/2]

```
virtual void se::common::Image::Fill (
            const Rectangle & rect,
            int ch1,
            int ch2 = 0,
            int ch3 = 0,
            int ch4 = 0,
            int pixel_expand = 0)  [pure virtual]
```

Fills image region specified by rectangle and color. The method will use the first as many channel values as there are channels in the image.

Parameters

rect	rectangle region to fill
ch1	1-st channel value
ch2	2-nd channel value
ch3	3-rd channel value
ch4	4-th channel value
pixel_expand	expand offset in pixels for each point (0 by default)

CloneFilled() [1/2]

```
virtual Image * se::common::Image::CloneFilled (
            const Rectangle & rect,
            int ch1,
            int ch2 = 0,
            int ch3 = 0,
            int ch4 = 0,
            int pixel_expand = 0) const  [pure virtual]
```

Clone the image with filled region specified by rectangle and color. The method will use the first as many channel values as there are channels in the image.

Parameters

rect	rectangle region to fill
ch1	1-st channel value
ch2	2-nd channel value
ch3	3-rd channel value
ch4	4-th channel value
pixel_expand	expand offset in pixels for each point (0 by default)

Returns

Pointer to a filled image. New object is allocated, the caller is responsible for deleting it.

Fill() [2/2]

```
virtual void se::common::Image::Fill (
            const Quadrangle & quad,
            int ch1,
            int ch2 = 0,
            int ch3 = 0,
            int ch4 = 0,
            int pixel_expand = 0)  [pure virtual]
```

Fill image region specified by quadrangle and color. The method will use the first as many channel values as there are channels in the image.

Parameters

quad	quadrangle region to fill
ch1	1-st channel value
ch2	2-nd channel value
ch3	3-rd channel value
ch4	4-th channel value
pixel_expand	expand offset in pixels for each point (0 by default)

CloneFilled() [2/2]

```
virtual Image * se::common::Image::CloneFilled (
            const Quadrangle & quad,
            int ch1,
            int ch2 = 0,
            int ch3 = 0,
            int ch4 = 0,
            int pixel_expand = 0) const  [pure virtual]
```

Clone the image with filled region specified by quadrangle and color. The method will use the first as many channel values as there are channels in the image.

Parameters

quad	quadrangle region to fill
ch1	1-st channel value
ch2	2-nd channel value
ch3	3-rd channel value
ch4	4-th channel value
pixel_expand	expand offset in pixels for each point (0 by default)

Returns

Pointer to a filled image. New object is allocated, the caller is responsible for deleting it.

CloneFlippedVertical()

```
virtual Image * se::common::Image::CloneFlippedVertical () const  [pure virtual]
```

Clones the image flipped around the vertical axis.

Returns

Pointer to a flipped image. New object is allocated, the caller is responsible for deleting it.

CloneFlippedHorizontal()

```
virtual Image * se::common::Image::CloneFlippedHorizontal () const  [pure virtual]
```

Clones the image flipped around the horizontal axis.

Returns

Pointer to a flipped image. New object is allocated, the caller is responsible for deleting it.

Rotate90()

```
virtual void se::common::Image::Rotate90 (
            int times)  [pure virtual]
```

Rotates the image clockwise by a multiple of 90 degrees.

Parameters

times	the number of times to rotate

CloneRotated90()

```
virtual Image * se::common::Image::CloneRotated90 (
            int times) const  [pure virtual]
```

Clones the image rotated clockwise by a multiple of 90 degrees.

Parameters

times	the number of times to rotate

Returns

Pointer to a rotated image. New object is allocated, the caller is responsible for deleting it.

CloneAveragedChannels()

```
virtual Image * se::common::Image::CloneAveragedChannels () const  [pure virtual]
```

Clones the image with averaged channel intensity values.

Returns

Pointer to a created image. New object is allocated, the caller is responsible for deleting it.

CloneInverted()

```
virtual Image * se::common::Image::CloneInverted () const  [pure virtual]
```

Clones the image with inverted colos.

Returns

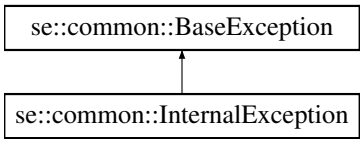
Pointer to a created image. New object is allocated, the caller is responsible for deleting it

1.5 se::common::InternalException Class Reference

InternalException: thrown if an unknown error occurs or if the error occurs within internal system components.

```
#include <se_exception.h>
```

Inheritance diagram for se::common::InternalException:



Public Member Functions

- **InternalException** (const char *msg)
  Ctor with an exception message.
- **InternalException** (const InternalException &copy)
  Copy ctor.
- virtual ~**InternalException** () override=default
  Default dtor.
- virtual const char * ExceptionName () const override
  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ~**BaseException** ()

  Non-trivial dtor.
- **BaseException** (const BaseException &copy)

  Copy ctor.
- virtual const char * **what** () const

  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char *msg)

  Protected ctor.

1.5.1 Detailed Description

InternalException: thrown if an unknown error occurs or if the error occurs within internal system components.

Definition at line 192 of file se_exception.h.

1.5.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::InternalException::ExceptionName () const  [override], [virtual]
```

Returns exception class name.

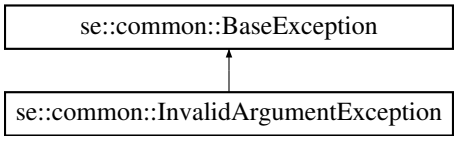
Reimplemented from se::common::BaseException.

1.6 se::common::InvalidArgumentException Class Reference

InvalidArgumentException: thrown if a method is called with invalid input parameters.

```
#include <se_exception.h>
```

Inheritance diagram for se::common::InvalidArgumentException:



Public Member Functions

- **InvalidArgumentException** (const char *msg)

  Ctor with an exception message.
- **InvalidArgumentException** (const InvalidArgumentException &copy)

  Copy ctor.
- virtual ~**InvalidArgumentException** () override=default

  Default dtor.
- virtual const char * ExceptionName () const override

  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ~**BaseException** ()

  Non-trivial dtor.
- **BaseException** (const BaseException &copy)

  Copy ctor.
- virtual const char * **what** () const

  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char *msg)

  Protected ctor.

1.6.1 Detailed Description

InvalidArgumentException: thrown if a method is called with invalid input parameters.

Definition at line 132 of file se_exception.h.

1.6.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::InvalidArgumentException::ExceptionName () const  [override],
[virtual]
```

Returns exception class name.

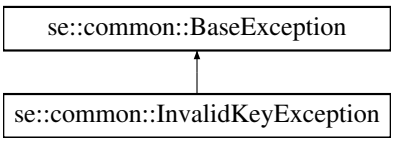
Reimplemented from se::common::BaseException.

1.7 se::common::InvalidKeyException Class Reference

InvalidKeyException: thrown if to an associative container the access is performed with an invalid or a non-existent key, or if the access to a list is performed with an invalid or out-of-range index.

`#include <se_exception.h>`

Inheritance diagram for se::common::InvalidKeyException:



Public Member Functions

- **InvalidKeyException** (const char ∗msg)

  Ctor with an exception message.
- **InvalidKeyException** (const InvalidKeyException &copy)

  Copy ctor.
- virtual ∼**InvalidKeyException** () override=default

  Default dtor.
- virtual const char ∗ ExceptionName () const override

  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ∼**BaseException** ()

  Non-trivial dtor.
- **BaseException** (const BaseException &copy)

  Copy ctor.
- virtual const char ∗ **what** () const

  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char ∗msg)

  Protected ctor.

1.7.1 Detailed Description

InvalidKeyException: thrown if to an associative container the access is performed with an invalid or a non-existent key, or if the access to a list is performed with an invalid or out-of-range index.

Definition at line 50 of file se_exception.h.

1.7.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::InvalidKeyException::ExceptionName () const  [override], [virtual]
```

Returns exception class name.

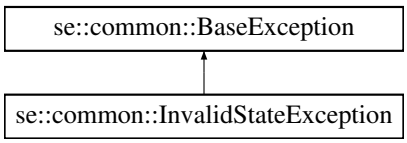
Reimplemented from se::common::BaseException.

1.8 se::common::InvalidStateException Class Reference

InvalidStateException: thrown if an error occurs within the system in relation to an incorrect internal state of the system objects.

```
#include <se_exception.h>
```

Inheritance diagram for se::common::InvalidStateException:



Public Member Functions

- **InvalidStateException** (const char *msg)
  Ctor with an exception message.
- **InvalidStateException** (const InvalidStateException &copy)
  Copy ctor.
- virtual ~**InvalidStateException** () override=default
  Default dtor.
- virtual const char * ExceptionName () const override
  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ~**BaseException** ()
  Non-trivial dtor.
- **BaseException** (const BaseException &copy)
  Copy ctor.
- virtual const char * **what** () const
  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char *msg)
  Protected ctor.

1.8.1 Detailed Description

InvalidStateException: thrown if an error occurs within the system in relation to an incorrect internal state of the system objects.

Definition at line 172 of file se_exception.h.

1.8.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::InvalidStateException::ExceptionName () const  [override],
[virtual]
```

Returns exception class name.

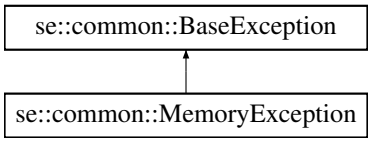
Reimplemented from se::common::BaseException.

1.9 se::common::MemoryException Class Reference

MemoryException: thrown if an allocation is attempted with insufficient RAM.

```
#include <se_exception.h>
```

Inheritance diagram for se::common::MemoryException:



Public Member Functions

- **MemoryException** (const char *msg)
  Ctor with an exception message.
- **MemoryException** (const MemoryException &copy)
  Copy ctor.
- virtual ~**MemoryException** () override=default
  Default dtor.
- virtual const char * ExceptionName () const override
  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ~**BaseException** ()
  Non-trivial dtor.
- **BaseException** (const BaseException &copy)
  Copy ctor.
- virtual const char * **what** () const
  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char ∗msg)

  Protected ctor.

1.9.1 Detailed Description

MemoryException: thrown if an allocation is attempted with insufficient RAM.

Definition at line 152 of file se_exception.h.

1.9.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::MemoryException::ExceptionName () const  [override], [virtual]
```

Returns exception class name.

Reimplemented from se::common::BaseException.

1.10 se::common::MutableString Class Reference

Class representing a mutable, memory-owner string.

```
#include <se_string.h>
```

Public Member Functions

- **MutableString** ()

  Default ctor, creates an empty string.
- **MutableString** (const char ∗c_str)

  Ctor from a C-string.
- **MutableString** (const MutableString &other)

  Copy ctor.
- MutableString & **operator=** (const MutableString &other)

  Assignment operator.
- ∼**MutableString** ()

  Non-trivial dtor.
- MutableString & **operator+=** (const MutableString &other)

  Appends a string to this instance.
- MutableString **operator+** (const MutableString &other) const

  Creates a concatenation of this instance and the other string.
- const char ∗ **GetCStr** () const

  Returns an internal C-string.
- int **GetLength** () const

  Returns the length of the string. WARNING: returns the number of bytes, not the number of UTF-8 characters.
- void **Serialize** (Serializer &serializer) const

  Serializes the string given a serializer object.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const

  Internal serialization implementation.

Private Attributes

- int len_

  length of the internal string in bytes
- char * buf_

  internal C-string

1.10.1 Detailed Description

Class representing a mutable, memory-owner string.

Definition at line 25 of file se_string.h.

1.10.2 Member Data Documentation

len_

```
int se::common::MutableString::len_  [private]
```

length of the internal string in bytes

Definition at line 62 of file se_string.h.

buf_

```
char* se::common::MutableString::buf_  [private]
```

internal C-string

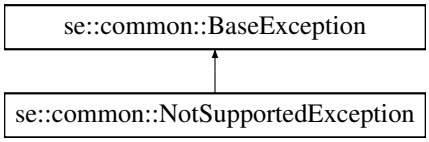
Definition at line 63 of file se_string.h.

1.11 se::common::NotSupportedException Class Reference

NotSupportedException: thrown when trying to access a method which given the current state or given the passed arguments is not supported in the current version of the library or is not supported at all by design.

```
#include <se_exception.h>
```

Inheritance diagram for se::common::NotSupportedException:



Public Member Functions

- **NotSupportedException** (const char ∗msg)

  Ctor with an exception message.
- **NotSupportedException** (const NotSupportedException &copy)

  Copy ctor.
- virtual ∼**NotSupportedException** () override=default

  Default dtor.
- virtual const char ∗ ExceptionName () const override

  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ∼**BaseException** ()

  Non-trivial dtor.
- **BaseException** (const BaseException &copy)

  Copy ctor.
- virtual const char ∗ **what** () const

  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char ∗msg)

  Protected ctor.

1.11.1 Detailed Description

NotSupportedException: thrown when trying to access a method which given the current state or given the passed arguments is not supported in the current version of the library or is not supported at all by design.

Definition at line 72 of file se_exception.h.

1.11.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::NotSupportedException::ExceptionName () const  [override],
[virtual]
```

Returns exception class name.

Reimplemented from se::common::BaseException.

1.12 se::common::OcrChar Class Reference

Class representing an OCR information for a given recognized character.

`#include <se_string.h>`

Public Member Functions

- **OcrChar** ()
  Default ctor, creates an empty recognized character.
- OcrChar (const OcrCharVariant *variants, int variants_count, bool is_highlighted, const Quadrangle &quad)
  Main ctor from an array of variants.
- **OcrChar** (const OcrChar &other)
  Copy ctor.
- OcrChar & **operator=** (const OcrChar &other)
  Assignment operator.
- ~**OcrChar** ()
  Non-trivial dtor.
- int **GetVariantsCount** () const
  Gets the number of variants.
- const OcrCharVariant * **GetVariants** () const
  Gets the pointer to the variants array.
- OcrCharVariant & **operator[ ]** (int index)
  Returns the variant by its index (mutable ref)
- const OcrCharVariant & **operator[ ]** (int index) const
  Returns the variant by its index (const ref)
- const OcrCharVariant & **GetVariant** (int index) const
  Returns the variant by its index (const ref)
- OcrCharVariant & **GetMutableVariant** (int index)
  Returns the variant by its index (mutable ref)
- void **SetVariant** (int index, const OcrCharVariant &v)
  Sets the variant to an array with a given index.
- void **Resize** (int size)
  Resizes the variants array to a given size.
- bool **GetIsHighlighted** () const
  Returns the value of the highlight flag.
- void **SetIsHighlighted** (bool is_highlighted)
  Sets the value of the highlight flag.
- const Quadrangle & **GetQuadrangle** () const
  Returns the quadrangle of the OcrChar (const ref)
- Quadrangle & **GetMutableQuadrangle** ()
  Returns the quadrangle of the OcrChar (mutable ref)
- void **SetQuadrangle** (const Quadrangle &quad)
  Sets the quadrangle of the OcrChar.
- void **SortVariants** ()
  Sorts the variants array in the descending order of confidence values.
- const OcrCharVariant & **GetFirstVariant** () const
  Gets the first variant of the array (const ref)
- void **Serialize** (Serializer &serializer) const
  Serializes the object given serializer.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const
  Internal serialization implementation.

Private Attributes

- int vars_cnt_
  number of variants
- OcrCharVariant * vars_
  variants array
- bool is_highlighted_
  highlight flag
- Quadrangle quad_
  OcrChar quadrangle.

1.12.1 Detailed Description

Class representing an OCR information for a given recognized character.

Definition at line 129 of file se_string.h.

1.12.2 Constructor & Destructor Documentation

OcrChar()

```
se::common::OcrChar::OcrChar (
            const OcrCharVariant * variants,
            int variants_count,
            bool is_highlighted,
            const Quadrangle & quad)
```

Main ctor from an array of variants.

Parameters

variants	pointer to an array of variants
variants_count	the number of variants in the array
is_highlighted	highlight flag for the OcrChar
quad	quadrangle of the OcrChar

1.12.3 Member Data Documentation

vars_cnt_

```
int se::common::OcrChar::vars_cnt_  [private]
```

number of variants

Definition at line 207 of file se_string.h.

vars_

```
OcrCharVariant* se::common::OcrChar::vars_  [private]
```

variants array

Definition at line 208 of file se_string.h.

is_highlighted_

```
bool se::common::OcrChar::is_highlighted_  [private]
```

highlight flag

Definition at line 209 of file se_string.h.

quad_

```
Quadrangle se::common::OcrChar::quad_  [private]
```

OcrChar quadrangle.

Definition at line 210 of file se_string.h.

1.13 se::common::OcrCharVariant Class Reference

Class representing a possible character recognition result.

```
#include <se_string.h>
```

Public Member Functions

- **OcrCharVariant** ()
  Default ctor, creates an empty variant with zero confidence.
- OcrCharVariant (const MutableString &utf8_char, float confidence)
  Ctor from utf8-char represented as a mutable string.
- OcrCharVariant (const char *utf8_char, float confidence)
  Ctor from utf8-char represented as a C-string.
- ~**OcrCharVariant** ()=default
  Default dtor.
- const char * **GetCharacter** () const
  Gets the character as a C-string.
- void **SetCharacter** (const MutableString &utf8_char)
  Sets a character given a MutableString.
- void **SetCharacter** (const char *utf8_char)
  Sets a character given a C-string.
- float **GetConfidence** () const
  Gets the confidence value.
- void **SetConfidence** (float confidence)
  Sets the confidence value (must be in range [0, 1])
- float **GetInternalScore** () const
  Returns the internal score of the OcrCharVariant.
- void **SetInternalScore** (float internal_score)
  Sets the internal score of the OcrCharVariant.
- void **Serialize** (Serializer &serializer) const
  Serializes the object given a serializer.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const
  Internal serialization implementation.

Private Attributes

- MutableString char_
  character recognition result representation
- float conf_
  confidence value
- float internal_score_
  internal score

1.13.1 Detailed Description

Class representing a possible character recognition result.

Definition at line 70 of file se_string.h.

1.13.2 Constructor & Destructor Documentation

OcrCharVariant() [1/2]

```
se::common::OcrCharVariant::OcrCharVariant (
            const MutableString & utf8_char,
            float confidence)
```

Ctor from utf8-char represented as a mutable string.

Parameters

utf8_char	utf8-character represented as a mutable string
confidence	float confidence in range [0, 1]

OcrCharVariant() [2/2]

```
se::common::OcrCharVariant::OcrCharVariant (
            const char * utf8_char,
            float confidence)
```

Ctor from utf8-char represented as a C-string.

Parameters

utf8_char	utf8-character represented as a C-string
confidence	float confidence in range [0, 1]

1.13.3 Member Data Documentation

char_

```
MutableString se::common::OcrCharVariant::char_  [private]
```

character recognition result representation

Definition at line 120 of file se_string.h.

conf_

```
float se::common::OcrCharVariant::conf_  [private]
```

confidence value

Definition at line 121 of file se_string.h.

internal_score_

```
float se::common::OcrCharVariant::internal_score_  [private]
```

internal score

Definition at line 122 of file se_string.h.

1.14 se::common::OcrString Class Reference

Class representing text string recognition result.

```
#include <se_string.h>
```

Public Member Functions

- **OcrString** ()
  Default ctor.
- OcrString (const char *utf8_str)
  Ctor from utf8 C-string. Splits the utf8-string into utf8-characters and creates an OcrChar for each one.
- OcrString (const OcrChar *chars, int chars_count)
  Ctor from an array of characters.
- **OcrString** (const OcrString &other)
  Copy ctor.
- OcrString & **operator=** (const OcrString &other)
  Assignment operator.
- ~**OcrString** ()
  Non-trivial destructor.
- const class OcrStringImpl * **GetOcrStringImplPtr** () const
  Gets the ptr to the OcrStringImpl class (const ptr)
- int **GetCharsCount** () const

Gets the number of characters.

- const OcrChar * **GetChars** () const

  Gets the pointer to the characters array.
- OcrChar & **operator[ ]** (int index)

  Gets a character by index (mutable ref)
- const OcrChar & **operator[ ]** (int index) const

  Gets a character by index (const ref)
- const OcrChar & **GetChar** (int index) const

  Gets a character by index (const ref)
- OcrChar & **GetMutableChar** (int index)

  Gets a character by index (mutable ref)
- void **SetChar** (int index, const OcrChar &chr)

  Sets a character by index.
- void **AppendChar** (const OcrChar &chr)

  Appends a character.
- void **AppendString** (const OcrString &str)

  Appends a string.
- void **Resize** (int size)

  Resizes the internal array of characters.
- const Quadrangle **GetQuadrangleByIndex** (int idx) const

  Returns the quadrangle of the OcrChar.
- float **GetBestVariantConfidenceByIndex** (int idx) const

  Returns the confidence of the best OcrCharVariant.
- void **SortVariants** ()

  Sorts the variants in each character by the descending order of confidence.
- MutableString **GetFirstString** () const

  Returns a string composed of the best variants from each OcrChar.
- void **UnpackChars** ()

  Unpack se::common::OcrChars from se::common::OcrString.
- void **RepackChars** ()

  Repack se::common::OcrChars to se::common::OcrString.
- void **Serialize** (Serializer &serializer) const

  Serializes the object given serializer.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const

  Internal serialization implementation.

Static Public Member Functions

- static OcrString ConstructFromImpl (const class OcrStringImpl &ocr_string_impl)

  Ctor from a ptr to OcrStringImpl class.

Private Member Functions

- **OcrString** (const OcrStringImpl &ocr_string_impl)

  Private ctor from an internal implementation structure.

Private Attributes

- OcrStringImpl * ocr_string_impl_

1.14.1 Detailed Description

Class representing text string recognition result.

Definition at line 220 of file se_string.h.

1.14.2 Constructor & Destructor Documentation

OcrString() [1/2]

```
se::common::OcrString::OcrString (
            const char * utf8_str)
```

Ctor from utf8 C-string. Splits the utf8-string into utf8-characters and creates an OcrChar for each one.

Parameters

utf8_str	input utf8 C-string

OcrString() [2/2]

```
se::common::OcrString::OcrString (
            const OcrChar * chars,
            int chars_count)
```

Ctor from an array of characters.

Parameters

chars	array of OcrChars
chars_count	the number of characters

1.14.3 Member Function Documentation

ConstructFromImpl()

```
static OcrString se::common::OcrString::ConstructFromImpl (
            const class OcrStringImpl & ocr_string_impl)  [static]
```

Ctor from a ptr to OcrStringImpl class.

Parameters

ocr_string_impl	ptr to OcrStringImpl class

1.14.4 Member Data Documentation

ocr_string_impl_

```
OcrStringImpl* se::common::OcrString::ocr_string_impl_  [private]
```

Definition at line 316 of file se_string.h.

1.15 se::common::Point Class Reference

Class representing a point in an image.

```
#include <se_geometry.h>
```

Public Member Functions

- **Point** ()
  Default ctor - initializes a point with zero-valued coordinates.
- **Point** (double x, double y)
  Main ctor - initializes both coordinates.
- void **Serialize** (Serializer &serializer) const
  Serialize point given serializer object.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const
  Internal serialization implementation.

Public Attributes

- double x
  X-coordinate of the point (in pixels)
- double y
  Y-coordinate of the point (in pixels)

1.15.1 Detailed Description

Class representing a point in an image.

Definition at line 47 of file se_geometry.h.

1.15.2 Member Data Documentation

x

```
double se::common::Point::x
```

X-coordinate of the point (in pixels)

Definition at line 62 of file se_geometry.h.

y

```
double se::common::Point::y
```

Y-coordinate of the point (in pixels)

Definition at line 63 of file se_geometry.h.

1.16 se::common::Polygon Class Reference

Class representing a polygon in an image.

```
#include <se_geometry.h>
```

Public Member Functions

- **Polygon** ()
  Default ctor - initializes a polygon with no points.
- **Polygon** (const Point *points, int points_count)
  Main ctor - initializes a polygon with points array (points are copied)
- **Polygon** (const Polygon &other)
  Copy ctor - copies all points of the other polygon.
- Polygon & **operator=** (const Polygon &other)
  Assignment operator - copies all points of the other polygon.
- ~**Polygon** ()
  Dtor (non-trivial)
- int **GetPointsCount** () const
  Returns the number of points in the polygon.
- const Point * **GetPoints** () const
  Returns a pointer to the first point in the polygon.
- Point & **operator[ ]** (int index)
  Mutable subscript getter for a point by an index.
- const Point & **operator[ ]** (int index) const
  Subscript getter for a point by an index.
- const Point & **GetPoint** (int index) const
  Getter for a point by an index.
- Point & **GetMutablePoint** (int index)
  Mutable getter for a point by an index.
- void **SetPoint** (int index, const Point &p)
  Setter for a point by an index.
- void **Resize** (int size)
  Resizes in internal array of points. If size is different from the current size, the new array is allocated. Old points are copied, new points are initialized with zero coordinates (if upsized)
- Rectangle **GetBoundingRectangle** () const
  Calculates, creates, and returns a bounding rectangle for the polygon.
- void **Serialize** (Serializer &serializer) const
  Serialize quadrangle given serializer object.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const
  Internal serialization implementation.

Private Attributes

- int pts_cnt_
  Number of points.
- Point * pts_
  Points array.

1.16.1 Detailed Description

Class representing a polygon in an image.

Definition at line 225 of file se_geometry.h.

1.16.2 Member Data Documentation

pts_cnt_

```
int se::common::Polygon::pts_cnt_  [private]
```

Number of points.

Definition at line 278 of file se_geometry.h.

pts_

```
Point* se::common::Polygon::pts_  [private]
```

Points array.

Definition at line 279 of file se_geometry.h.

1.17 se::common::ProjectiveTransform Class Reference

Class representing projective transformation of a plane.

```
#include <se_geometry.h>
```

Public Types

- using Raw2dArrayType = double[3][3]
  type declaration for internal matrix

Public Member Functions

- virtual ~**ProjectiveTransform** ()=default

  Default dtor.
- virtual ProjectiveTransform * **Clone** () const =0

  Copies transform object.
- virtual Point **TransformPoint** (const Point &p) const =0

  Transforms an input point.
- virtual Quadrangle **TransformQuad** (const Quadrangle &q) const =0

  Transforms an input quadrangle.
- virtual Polygon **TransformPolygon** (const Polygon &poly) const =0

  Transforms an input polygon.
- virtual bool **IsInvertable** () const =0

  Returns true iff the transformation is invertable.
- virtual void **Invert** ()=0

  Inverts the projective transformation.
- virtual ProjectiveTransform * **CloneInverted** () const =0

  Creates a new object with an inverted transformation.
- virtual const Raw2dArrayType & **GetRawCoeffs** () const =0

  Returns internal transformation matrix (constant)
- virtual Raw2dArrayType & **GetMutableRawCoeffs** ()=0

  Returns internal transformation matrix (mutable)
- virtual void **Serialize** (Serializer &serializer) const =0

  Serializes the projective transformation given serializer object.

Static Public Member Functions

- static bool CanCreate (const Quadrangle &src_quad, const Quadrangle &dst_quad)

  Returns true, iff the projective transform can be defined which transforms the quad 'src_quad' to the quad 'dst_quad'.
- static bool CanCreate (const Quadrangle &src_quad, const Size &dst_size)

  Returns true, iff the projective transform can be defined which transforms the quad 'src_quad' to an orthotropic rectangle with size 'dst_size'.
- static ProjectiveTransform * Create ()

  Creates a unit transformation.
- static ProjectiveTransform * Create (const Quadrangle &src_quad, const Quadrangle &dst_quad)

  Creates a transformation which transforms the quad 'src_quad' to the quad 'dst_quad'.
- static ProjectiveTransform * Create (const Quadrangle &src_quad, const Size &dst_size)

  Create a transformation which transforms the quad 'src_quad' to an orthotropic rectangle with size 'dst_size'.
- static ProjectiveTransform * Create (const Raw2dArrayType &coeffs)

  Creates a transformation given raw matrix.

1.17.1 Detailed Description

Class representing projective transformation of a plane.

Definition at line 286 of file se_geometry.h.

1.17.2 Member Typedef Documentation

Raw2dArrayType

```
using se::common::ProjectiveTransform::Raw2dArrayType = double[3][3]
```

type declaration for internal matrix

Definition at line 288 of file se_geometry.h.

1.17.3 Member Function Documentation

CanCreate() [1/2]

```
static bool se::common::ProjectiveTransform::CanCreate (
            const Quadrangle & src_quad,
            const Quadrangle & dst_quad)  [static]
```

Returns true, iff the projective transform can be defined which transforms the quad 'src_quad' to the quad 'dst_quad'.

Parameters

src_quad	transformation source
dst_quad	transformation destination

Returns

true iff such transform can be defined and constructed

CanCreate() [2/2]

```
static bool se::common::ProjectiveTransform::CanCreate (
            const Quadrangle & src_quad,
            const Size & dst_size)  [static]
```

Returns true, iff the projective transform can be defined which transforms the quad 'src_quad' to an orthotropic rectangle with size 'dst_size'.

Parameters

src_quad	transformation source
dst_size	linear sizes of the transformation destionation

Returns

true iff such transform can be defined and constructed

Create() [1/4]

```
static ProjectiveTransform * se::common::ProjectiveTransform::Create ()  [static]
```

Creates a unit transformation.

Returns

Unit transformation object

Create() [2/4]

```
static ProjectiveTransform * se::common::ProjectiveTransform::Create (
            const Quadrangle & src_quad,
            const Quadrangle & dst_quad)  [static]
```

Creates a transformation which transforms the quad 'src_quad' to the quad 'dst_quad'.

Parameters

src_quad	transformation source
dst_quad	transformation destination

Returns

Created transform

Create() [3/4]

```
static ProjectiveTransform * se::common::ProjectiveTransform::Create (
            const Quadrangle & src_quad,
            const Size & dst_size)  [static]
```

Create a transformation which transforms the quad 'src_quad' to an orthotropic rectangle with size 'dst_size'.

Parameters

src_quad	transformation source
dst_size	linear sizes of the transformation destination

Returns

Created transform

Create() [4/4]

```
static ProjectiveTransform * se::common::ProjectiveTransform::Create (
            const Raw2dArrayType & coeffs)  [static]
```

Creates a transformation given raw matrix.

Parameters

coeffs	transformation matrix

Returns

Created transform

1.18 se::common::Quadrangle Class Reference

Class representing a quadrangle in an image.

`#include <se_geometry.h>`

Public Member Functions

- **Quadrangle** ()
  Default ctor - initializes quadrangle with all points pointing to zero.
- **Quadrangle** (const Point &a, const Point &b, const Point &c, const Point &d)
  Main ctor - initializes all four points of the quadrangle.
- Point & **operator[ ]** (int index)
  Mutable subscript getter for a point (indices from 0 to 3)
- const Point & **operator[ ]** (int index) const
  Subscript getter for a point (indices from 0 to 3)
- const Point & **GetPoint** (int index) const
  Getter for a point (indices from 0 to 3)
- Point & **GetMutablePoint** (int index)
  Mutable getter for a point (indices from 0 to 3)
- void **SetPoint** (int index, const Point &p)
  Setter for a point (indices from 0 to 3)
- Rectangle **GetBoundingRectangle** () const
  Calculates, creates, and returns a bounding rectangle for the quadrangle.
- void **Serialize** (Serializer &serializer) const
  Serialize rectangle given serializer object.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const
  Internal serialization implementation.

Private Attributes

- Point pts_ [4]
  Constituent points.

1.18.1 Detailed Description

Class representing a quadrangle in an image.

Definition at line 93 of file se_geometry.h.

1.18.2 Member Data Documentation

pts_

```
Point se::common::Quadrangle::pts_[4]  [private]
```

Constituent points.

Definition at line 126 of file se_geometry.h.

1.19 se::common::QuadranglesMapIterator Class Reference

QuadranglesMapIterator: iterator object for maps of named quadrangles.

```
#include <se_geometry.h>
```

Public Member Functions

- **QuadranglesMapIterator** (const QuadranglesMapIterator &other)
  Copy ctor.
- QuadranglesMapIterator & **operator=** (const QuadranglesMapIterator &other)
  Assignment operator.
- ∼**QuadranglesMapIterator** ()
  Non-trivial dtor.
- const char * **GetKey** () const
  Returns the name of the quadrangle.
- const Quadrangle & **GetValue** () const
  Returns the target quadrangle.
- bool **Equals** (const QuadranglesMapIterator &rvalue) const
  Returns true iff the rvalue iterator points to the same object.
- bool **operator==** (const QuadranglesMapIterator &rvalue) const
  Returns true iff the rvalue iterator points to the same object.
- bool **operator!=** (const QuadranglesMapIterator &rvalue) const
  Returns true iff the rvalue iterator points to a different object.
- void **Advance** ()
  Points an iterator to the next object a the collection.
- void **operator++** ()
  Points an iterator to the next object a the collection.

Static Public Member Functions

- static QuadranglesMapIterator **ConstructFromImpl** (const QuadranglesMapIteratorImpl &pimpl)
  Construction of the iterator object from internal implementation.

Private Member Functions

- **QuadranglesMapIterator** (const QuadranglesMapIteratorImpl &pimpl)
  Private ctor from internal implementation.

Private Attributes

- class QuadranglesMapIteratorImpl * pimpl_

  Internal implementation.

1.19.1 Detailed Description

QuadranglesMapIterator: iterator object for maps of named quadrangles.

Definition at line 135 of file se_geometry.h.

1.19.2 Member Data Documentation

pimpl_

```
class QuadranglesMapIteratorImpl* se::common::QuadranglesMapIterator::pimpl_  [private]
```

Internal implementation.

Definition at line 176 of file se_geometry.h.

1.20 se::common::Rectangle Class Reference

Class representing a rectangle in an image.

```
#include <se_geometry.h>
```

Public Member Functions

- **Rectangle** ()

  Default ctor - initializes rectangle with zero-valued fields.
- **Rectangle** (int x, int y, int width, int height)

  Main ctor - initializes all fields of a rectangle.
- void **Serialize** (Serializer &serializer) const

  Serialize rectangle given serializer object.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const

  Internal serialization implementation.

Public Attributes

- int x

  X-coordinate of the top-left corner (in pixels)
- int y

  Y-coordinate of the top-left corner (in pixels)
- int width

  Width of the rectangle (in pixels)
- int height

  Height of the rectangle (in pixels)

1.20.1 Detailed Description

Class representing a rectangle in an image.

Definition at line 22 of file se_geometry.h.

1.20.2 Member Data Documentation

x

```
int se::common::Rectangle::x
```

X-coordinate of the top-left corner (in pixels)

Definition at line 37 of file se_geometry.h.

y

```
int se::common::Rectangle::y
```

Y-coordinate of the top-left corner (in pixels)

Definition at line 38 of file se_geometry.h.

width

```
int se::common::Rectangle::width
```

Width of the rectangle (in pixels)

Definition at line 39 of file se_geometry.h.

height

```
int se::common::Rectangle::height
```

Height of the rectangle (in pixels)

Definition at line 40 of file se_geometry.h.

1.21 se::common::RectanglesVectorIterator Class Reference

Public Member Functions

- **RectanglesVectorIterator** (const RectanglesVectorIterator &other)

  Copy ctor.
- RectanglesVectorIterator & **operator=** (const RectanglesVectorIterator &other)

  Assignment operator.
- ~**RectanglesVectorIterator** ()

  Non-trivial dtor.
- const Rectangle & **GetValue** () const

  Returns the target quadrangle.
- bool **Equals** (const RectanglesVectorIterator &rvalue) const

  Returns true iff the rvalue iterator points to the same object.
- bool **operator==** (const RectanglesVectorIterator &rvalue) const

  Returns true iff the rvalue iterator points to the same object.
- bool **operator!=** (const RectanglesVectorIterator &rvalue) const

  Returns true iff the rvalue iterator points to a different object.
- void **Advance** ()

  Points an iterator to the next object a the collection.
- void **operator++** ()

  Points an iterator to the next object a the collection.

Static Public Member Functions

- static RectanglesVectorIterator **ConstructFromImpl** (const RectanglesVectorIteratorImpl &pimpl)

  Construction of the iterator object from internal implementation.

Private Member Functions

- **RectanglesVectorIterator** (const RectanglesVectorIteratorImpl &pimpl)

  Private ctor from internal implementation.

Private Attributes

- class RectanglesVectorIteratorImpl * pimpl_

  Internal implementation.

1.21.1 Detailed Description

Definition at line 181 of file se_geometry.h.

1.21.2 Member Data Documentation

pimpl_

```
class RectanglesVectorIteratorImpl* se::common::RectanglesVectorIterator::pimpl_  [private]
```

Internal implementation.

Definition at line 219 of file se_geometry.h.

1.22 se::common::SerializationParameters Class Reference

Class representing serialization parameters.

`#include <se_serialization.h>`

Public Member Functions

- **SerializationParameters** ()
  Default ctor.
- ~**SerializationParameters** ()
  Default dtor.
- **SerializationParameters** (const SerializationParameters &copy)
  Copy ctor.
- SerializationParameters & **operator=** (const SerializationParameters &other)
  Assignment operator.
- bool HasIgnoredObjectType (const char *object_type) const
  Checks whether the serialization parameters have an ignored object type.
- void AddIgnoredObjectType (const char *object_type)
  Adds an object type to the set of ignored.
- void RemoveIgnoredObjectType (const char *object_type)
  Removes an object type from the set of ignored.
- se::common::StringsSetIterator **IgnoredObjectTypesBegin** () const
  Returns a begin iterator to the set of ignored object types.
- se::common::StringsSetIterator **IgnoredObjectTypesEnd** () const
  Returns an end iterator to the set of ignored object types.
- bool HasIgnoredKey (const char *key) const
  Checks whether the serialization parameters have an ignored key.
- void AddIgnoredKey (const char *key)
  Adds a key to the set of ignored keys.
- void RemoveIgnoredKey (const char *key)
  Removes a key from the set of ignored keys.
- se::common::StringsSetIterator **IgnoredKeysBegin** () const
  Returns a begin iterator to the set of ignored keys.
- se::common::StringsSetIterator **IgnoredKeysEnd** () const
  Returns an end iterator to the set of ignored keys.
- const SerializationParametersImpl & **GetImpl** () const
  Returns an internal implementation structure.

Private Attributes

- SerializationParametersImpl * pimpl_
  pointer to internal implementation

1.22.1 Detailed Description

Class representing serialization parameters.

Definition at line 25 of file se_serialization.h.

1.22.2 Member Function Documentation

HasIgnoredObjectType()

```
bool se::common::SerializationParameters::HasIgnoredObjectType (
            const char * object_type) const
```

Checks whether the serialization parameters have an ignored object type.

Parameters

object_type	the name of the object type to check

Returns

true iff the object type 'object_type' is ignored

AddIgnoredObjectType()

```
void se::common::SerializationParameters::AddIgnoredObjectType (
            const char * object_type)
```

Adds an object type to the set of ignored.

Parameters

object_type	the name of the object type to add

RemoveIgnoredObjectType()

```
void se::common::SerializationParameters::RemoveIgnoredObjectType (
            const char * object_type)
```

Removes an object type from the set of ignored.

Parameters

object_type	the name of the object type to remove

HasIgnoredKey()

```
bool se::common::SerializationParameters::HasIgnoredKey (
            const char * key) const
```

Checks whether the serialization parameters have an ignored key.

Parameters

key	the name of the key to check

Returns

true iff the key 'key' is ignored

AddIgnoredKey()

```
void se::common::SerializationParameters::AddIgnoredKey (
            const char * key)
```

Adds a key to the set of ignored keys.

Parameters

key	the name of the key to add

RemoveIgnoredKey()

```
void se::common::SerializationParameters::RemoveIgnoredKey (
            const char * key)
```

Removes a key from the set of ignored keys.

Parameters

key	the name of the key to remove

1.22.3 Member Data Documentation

pimpl_

```
SerializationParametersImpl* se::common::SerializationParameters::pimpl_  [private]
```

pointer to internal implementation

Definition at line 94 of file se_serialization.h.

1.23 se::common::Serializer Class Reference

Class representing the serializer object.

```
#include <se_serialization.h>
```

Public Member Functions

- virtual ~**Serializer** ()=default

  Default dtor.
- virtual void **Reset** ()=0

  Resets the serializer state.
- virtual const char * **GetCStr** () const =0

  Returns the serialized string.
- virtual const char * **SerializerType** () const =0

  Returns the name of the serializer type.

Static Public Member Functions

- static Serializer * CreateJSONSerializer (const SerializationParameters &params)

  Factory method for creating a JSON serializer object.

1.23.1 Detailed Description

Class representing the serializer object.

Definition at line 104 of file se_serialization.h.

1.23.2 Member Function Documentation

CreateJSONSerializer()

```
static Serializer * se::common::Serializer::CreateJSONSerializer (
            const SerializationParameters & params)  [static]
```

Factory method for creating a JSON serializer object.

Parameters

params	serialization parameters

Returns

Pointer to a constructed serializer object. New object is created, the caller is responsible for deleting it.

1.24 se::common::Size Class Reference

Class representing a size of the (rectangular) object.

```
#include <se_geometry.h>
```

Public Member Functions

- **Size** ()

  Default ctor - initializes size with zero-valued fields.
- **Size** (int width, int height)

  Main ctor - initializes all fields.
- void **Serialize** (Serializer &serializer) const

  Serialize size given serializer object.
- void **SerializeImpl** (SerializerImplBase &serializer_impl) const

  Internal serialization implementation.

Public Attributes

- int width

  Width.
- int height

  Height.

1.24.1 Detailed Description

Class representing a size of the (rectangular) object.

Definition at line 70 of file se_geometry.h.

1.24.2 Member Data Documentation

width

```
int se::common::Size::width
```

Width.

Definition at line 85 of file se_geometry.h.

height

```
int se::common::Size::height
```

Height.

Definition at line 86 of file se_geometry.h.

1.25 se::common::StringsMapIterator Class Reference

Iterator to a map from strings to strings.

```
#include <se_strings_iterator.h>
```

Public Member Functions

- **StringsMapIterator** (const StringsMapIterator &other)
  Copy ctor.
- StringsMapIterator & **operator=** (const StringsMapIterator &other)
  Assignment operator.
- ~**StringsMapIterator** ()
  Non-trivial dtor.
- const char * **GetKey** () const
  Gets the string key.
- const char * **GetValue** () const
  Gets the string value.
- bool **Equals** (const StringsMapIterator &rvalue) const
  Returns true iff this instance and rvalue point to the same object.
- bool **operator==** (const StringsMapIterator &rvalue) const
  Returns true iff this instance and rvalue point to the same object.
- bool **operator!=** (const StringsMapIterator &rvalue) const
  Returns true iff this instance and rvalue point to the different objects.
- void **Advance** ()
  Shifts the iterator to the next object.
- void **operator++** ()
  Shifts the iterator to the next object.

Static Public Member Functions

- static StringsMapIterator **ConstructFromImpl** (const StringsMapIteratorImpl &pimpl)
  Constructs the iterator from an internal implementation structure.

Private Member Functions

- **StringsMapIterator** (const StringsMapIteratorImpl &pimpl)
  Private ctor from an internal implementation structure.

Private Attributes

- class StringsMapIteratorImpl * pimpl_
  internal implementation

1.25.1 Detailed Description

Iterator to a map from strings to strings.

Definition at line 124 of file se_strings_iterator.h.

1.25.2 Member Data Documentation

pimpl_

```
class StringsMapIteratorImpl* se::common::StringsMapIterator::pimpl_  [private]
```

internal implementation

Definition at line 165 of file se_strings_iterator.h.

1.26 se::common::StringsSetIterator Class Reference

Iterator to a set-like collection of strings.

```
#include <se_strings_iterator.h>
```

Public Member Functions

- **StringsSetIterator** (const StringsSetIterator &other)
  Copy ctor.
- StringsSetIterator & **operator=** (const StringsSetIterator &other)
  Assignment operator.
- ~**StringsSetIterator** ()
  Non-trivial dtor.
- const char * **GetValue** () const
  Gets the string value.
- bool **Equals** (const StringsSetIterator &rvalue) const
  Returns true iff this instance and rvalue point to the same object.
- bool **operator==** (const StringsSetIterator &rvalue) const
  Returns true iff this instance and rvalue point to the same object.
- bool **operator!=** (const StringsSetIterator &rvalue) const
  Returns true iff this instance and rvalue point to the different objects.
- void **Advance** ()
  Shifts the iterator to the next object.
- void **operator++** ()
  Shifts the iterator to the next object.

Static Public Member Functions

- static StringsSetIterator **ConstructFromImpl** (const StringsSetIteratorImpl &pimpl)
  Constructs the iterator from an internal implementation structure.

Private Member Functions

- **StringsSetIterator** (const StringsSetIteratorImpl &pimpl)
  Private ctor from an internal implementation structure.

Private Attributes

- class StringsSetIteratorImpl * pimpl_
  internal implementation

1.26.1 Detailed Description

Iterator to a set-like collection of strings.

Definition at line 75 of file se_strings_iterator.h.

1.26.2 Member Data Documentation

pimpl_

```
class StringsSetIteratorImpl* se::common::StringsSetIterator::pimpl_  [private]
```

internal implementation

Definition at line 113 of file se_strings_iterator.h.

1.27 se::common::StringsVectorIterator Class Reference

Iterator to a vector-like collection of strings.

```
#include <se_strings_iterator.h>
```

Public Member Functions

- **StringsVectorIterator** (const StringsVectorIterator &other)
  Copy ctor.
- StringsVectorIterator & **operator=** (const StringsVectorIterator &other)
  Assignment operator.
- ~**StringsVectorIterator** ()
  Non-trivial dtor.
- const char * **GetValue** () const
  Gets the string value.
- bool **Equals** (const StringsVectorIterator &rvalue) const
  Returns true iff this instance and rvalue point to the same object.
- bool **operator==** (const StringsVectorIterator &rvalue) const
  Returns true iff this instance and rvalue point to the same object.
- bool **operator!=** (const StringsVectorIterator &rvalue) const
  Returns true iff this instance and rvalue point to the different objects.
- void **Advance** ()
  Shifts the iterator to the next object.
- void **operator++** ()
  Shifts the iterator to the next object.

Static Public Member Functions

- static StringsVectorIterator **ConstructFromImpl** (const StringsVectorIteratorImpl &pimpl)
  Constructs the iterator from an internal implementation structure.

Private Member Functions

- **StringsVectorIterator** (const StringsVectorIteratorImpl &pimpl)
  Private ctor from an internal implementation structure.

Private Attributes

- class StringsVectorIteratorImpl * pimpl_
  internal implementation

1.27.1 Detailed Description

Iterator to a vector-like collection of strings.

Definition at line 26 of file se_strings_iterator.h.

1.27.2 Member Data Documentation

pimpl_

```
class StringsVectorIteratorImpl* se::common::StringsVectorIterator::pimpl_  [private]
```

internal implementation

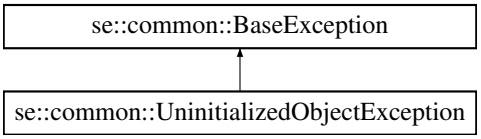
Definition at line 64 of file se_strings_iterator.h.

1.28 se::common::UninitializedObjectException Class Reference

UninitializedObjectException: thrown if an attempt is made to access a non-existent or non-initialized object.

```
#include <se_exception.h>
```

Inheritance diagram for se::common::UninitializedObjectException:



Public Member Functions

- **UninitializedObjectException** (const char ∗msg)

  Ctor with an exception message.
- **UninitializedObjectException** (const UninitializedObjectException &copy)

  Copy ctor.
- virtual ∼**UninitializedObjectException** () override=default

  Default dtor.
- virtual const char ∗ ExceptionName () const override

  Returns exception class name.

Public Member Functions inherited from se::common::BaseException

- virtual ∼**BaseException** ()

  Non-trivial dtor.
- **BaseException** (const BaseException &copy)

  Copy ctor.
- virtual const char ∗ **what** () const

  Returns exception message.

Additional Inherited Members

Protected Member Functions inherited from se::common::BaseException

- **BaseException** (const char ∗msg)

  Protected ctor.

1.28.1 Detailed Description

UninitializedObjectException: thrown if an attempt is made to access a non-existent or non-initialized object.

Definition at line 112 of file se_exception.h.

1.28.2 Member Function Documentation

ExceptionName()

```
virtual const char * se::common::UninitializedObjectException::ExceptionName () const  [override],
[virtual]
```

Returns exception class name.

Reimplemented from se::common::BaseException.

1.29 se::common::YUVDimensions Class Reference

The YUVDimensions struct - extended YUV parameters.

```
#include <se_image.h>
```

Public Member Functions

- **YUVDimensions** ()

  Default ctor.
- **YUVDimensions** (int y_pixel_stride, int y_row_stride, int u_pixel_stride, int u_row_stride, int v_pixel_stride, int v_row_stride, int width, int height, YUVType type)

  Main ctor.

Public Attributes

- int y_plane_pixel_stride

  Y plane pixel stride.
- int y_plane_row_stride

  Y plane row stride.
- int u_plane_pixel_stride

  U plane pixel stride.
- int u_plane_row_stride

  U plane row stride.
- int v_plane_pixel_stride

  V plane pixel stride.
- int v_plane_row_stride

  V plane row stride.
- int width

  image width in pixels
- int height

  image height in pixels
- YUVType type

  YUV format type.

1.29.1 Detailed Description

The YUVDimensions struct - extended YUV parameters.

Definition at line 49 of file se_image.h.

1.29.2 Member Data Documentation

y_plane_pixel_stride

```
int se::common::YUVDimensions::y_plane_pixel_stride
```

Y plane pixel stride.

Definition at line 65 of file se_image.h.

y_plane_row_stride

```
int se::common::YUVDimensions::y_plane_row_stride
```

Y plane row stride.

Definition at line 66 of file se_image.h.

u_plane_pixel_stride

```
int se::common::YUVDimensions::u_plane_pixel_stride
```

U plane pixel stride.

Definition at line 67 of file se_image.h.

u_plane_row_stride

```
int se::common::YUVDimensions::u_plane_row_stride
```

U plane row stride.

Definition at line 68 of file se_image.h.

v_plane_pixel_stride

```
int se::common::YUVDimensions::v_plane_pixel_stride
```

V plane pixel stride.

Definition at line 69 of file se_image.h.

v_plane_row_stride

```
int se::common::YUVDimensions::v_plane_row_stride
```

V plane row stride.

Definition at line 70 of file se_image.h.

width

```
int se::common::YUVDimensions::width
```

image width in pixels

Definition at line 71 of file se_image.h.

height

```
int se::common::YUVDimensions::height
```

image height in pixels

Definition at line 72 of file se_image.h.

type

```
YUVType se::common::YUVDimensions::type
```

YUV format type.

Definition at line 73 of file se_image.h.

1.30 se::id::IdAnimatedField Class Reference

The class representing an animated field.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdAnimatedField** ()
  Non-trivial dtor.
- **IdAnimatedField** ()
  Default ctor - creates an empty animated field.
- IdAnimatedField (const char *name, bool is_accepted=false, double confidence=0.0)
  Main ctor for the animated field.
- **IdAnimatedField** (const IdAnimatedField &copy)
  Copy ctor.
- IdAnimatedField & **operator=** (const IdAnimatedField &other)
  Assignment operator.
- const char * **GetName** () const
  Returns the field's name.
- void **SetName** (const char *name)
  Sets the field's name.
- int **GetFramesCount** () const
  Returns the number of frames in the animated field.
- const se::common::Image & **GetFrame** (int frame_id) const
  Returns the frame of the animated field by index.
- void **AppendFrame** (const se::common::Image &frame)
  Appens the frame to the animated field.
- void **ClearFrames** ()
  Removes all frames of the animated field.
- const IdBaseFieldInfo & **GetBaseFieldInfo** () const
  Returns the general field information (const ref)
- IdBaseFieldInfo & **GetMutableBaseFieldInfo** ()
  Returns the general field information (mutable ref)

Private Attributes

- class IdAnimatedFieldImpl * pimpl_
  internal implementation

1.30.1 Detailed Description

The class representing an animated field.

Definition at line 337 of file id_fields.h.

1.30.2 Constructor & Destructor Documentation

IdAnimatedField()

```
se::id::IdAnimatedField::IdAnimatedField (
            const char * name,
            bool is_accepted = false,
            double confidence = 0.0)
```

Main ctor for the animated field.

Parameters

name	- name of the field
is_accepted	- field's accept flag
confidence	- field's confidence value (double in range [0.0, 1.0])

1.30.3 Member Data Documentation

pimpl_

```
class IdAnimatedFieldImpl* se::id::IdAnimatedField::pimpl_  [private]
```

internal implementation

Definition at line 391 of file id_fields.h.

1.31 se::id::IdAnimatedFieldsMapIterator Class Reference

The class representing the iterator to named animated fields container.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdAnimatedFieldsMapIterator** ()

  Non-trivial dtor.
- **IdAnimatedFieldsMapIterator** (const IdAnimatedFieldsMapIterator &other)

  Copy ctor.
- IdAnimatedFieldsMapIterator & **operator=** (const IdAnimatedFieldsMapIterator &other)

  Assignment operator.
- const char * **GetKey** () const

  Returns the key.
- const IdAnimatedField & **GetValue** () const

  Returns the value (the animated field object)
- bool **Equals** (const IdAnimatedFieldsMapIterator &rvalue) const

  Returns true iff the current instance and rvalue point to the same object.
- bool **operator==** (const IdAnimatedFieldsMapIterator &rvalue) const

  Returns true iff the current instance and rvalue point to the same object.
- bool **operator!=** (const IdAnimatedFieldsMapIterator &rvalue) const

  Returns true iff the instance and rvalue point to different objects.
- void **Advance** ()

  Advances the iterator to the next object in the collection.
- void **operator++** ()

  Advances the iterator to the next object in the collection.

Static Public Member Functions

- static IdAnimatedFieldsMapIterator **ConstructFromImpl** (const IdAnimatedFieldsMapIteratorImpl &pimpl)

  Factory method for creating the iterator from the internal implementation.

Private Member Functions

- **IdAnimatedFieldsMapIterator** (const IdAnimatedFieldsMapIteratorImpl &pimpl)

  Private ctor from the internal implementation.

Private Attributes

- class IdAnimatedFieldsMapIteratorImpl * pimpl_

  internal implementation

1.31.1 Detailed Description

The class representing the iterator to named animated fields container.

Definition at line 401 of file id_fields.h.

1.31.2 Member Data Documentation

pimpl_

```
class IdAnimatedFieldsMapIteratorImpl* se::id::IdAnimatedFieldsMapIterator::pimpl_  [private]
```

internal implementation

Definition at line 447 of file id_fields.h.

1.32 se::id::IdBaseFieldInfo Class Reference

The class representing the basic field information, which is present in any field object.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdBaseFieldInfo** ()
  Non-trivial dtor.
- IdBaseFieldInfo (bool is_accepted=false, double confidence=0.0)
  Main ctor of the basic field information.
- **IdBaseFieldInfo** (const IdBaseFieldInfo &copy)
  Copy ctor.
- IdBaseFieldInfo & **operator=** (const IdBaseFieldInfo &other)
  Assignment operator.
- bool **GetIsAccepted** () const
  Returns the field's accept flag.
- void **SetIsAccepted** (bool is_accepted)
  Sets the field's accept flag.
- double **GetConfidence** () const
  Returns the field's confidence value (double in range [0.0, 1.0])
- void **SetConfidence** (double confidence)
  Sets the field's confidence value (must be in range [0.0, 1.0])
- int **GetAttributesCount** () const
  Gets the number of field's attributes.
- const char * **GetAttribute** (const char *attr_name) const
  Returns the field attribute by its name.
- bool **HasAttribute** (const char *attr_name) const
  Returns true iff the field has the attribute with a given name.
- void **SetAttribute** (const char *attr_name, const char *attr_value)
  Sets the field's attribute by name.
- void **RemoveAttribute** (const char *attr_name)
  Removes the field's attribute with a given name.
- se::common::StringsMapIterator **AttributesBegin** () const
  Returns the 'begin' iterator to the collection of the field attributes.
- se::common::StringsMapIterator **AttributesEnd** () const
  Returns the 'end' iterator to the collection of the field attributes.

Private Attributes

- class IdBaseFieldInfoImpl * pimpl_
  internal implementation

1.32.1 Detailed Description

The class representing the basic field information, which is present in any field object.

Definition at line 34 of file id_fields.h.

1.32.2 Constructor & Destructor Documentation

IdBaseFieldInfo()

```
se::id::IdBaseFieldInfo::IdBaseFieldInfo (
            bool is_accepted = false,
            double confidence = 0.0)
```

Main ctor of the basic field information.

Parameters

is_accepted	- the accept flag (whether the field is accepted by the system)
confidence	- the field's confidence (double in range [0.0, 1.0])

1.32.3 Member Data Documentation

pimpl_

```
class IdBaseFieldInfoImpl* se::id::IdBaseFieldInfo::pimpl_  [private]
```

internal implementation

Definition at line 91 of file id_fields.h.

1.33 se::id::IdCheckField Class Reference

The class representing the check field.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdCheckField** ()

  Non-trivial dtor.
- **IdCheckField** ()

  Default ctor - creates and empty check field.
- IdCheckField (const char *name, IdCheckStatus value, bool is_accepted=false, double confidence=0.0)

  Main ctor of the check field.
- **IdCheckField** (const IdCheckField &copy)

  Copy ctor.
- IdCheckField & **operator=** (const IdCheckField &other)

  Assignment operator.
- const char * **GetName** () const

  Returns the name of the field.
- void **SetName** (const char *name)

  Sets the name of the field.
- IdCheckStatus **GetValue** () const

  Returns the field's value.
- void **SetValue** (IdCheckStatus value)

  Sets the field's value.
- const IdBaseFieldInfo & **GetBaseFieldInfo** () const

  Returns the general field information (const ref)
- IdBaseFieldInfo & **GetMutableBaseFieldInfo** ()

  Returns the general field information (mutable ref)

Private Attributes

- class IdCheckFieldImpl * pimpl_

  internal implementation

1.33.1 Detailed Description

The class representing the check field.

Definition at line 464 of file id_fields.h.

1.33.2 Constructor & Destructor Documentation

IdCheckField()

```
se::id::IdCheckField::IdCheckField (
            const char * name,
            IdCheckStatus value,
            bool is_accepted = false,
            double confidence = 0.0)
```

Main ctor of the check field.

Parameters

name	- field's name
value	- field's value (from the IdCheckStatus enumeration)
is_accepted	- field's accept flag
confidence	- field's confidence value (double in range [0.0, 1.0])

1.33.3 Member Data Documentation

pimpl_

```
class IdCheckFieldImpl* se::id::IdCheckField::pimpl_  [private]
```

internal implementation

Definition at line 514 of file id_fields.h.

1.34 se::id::IdCheckFieldsMapIterator Class Reference

The class representing the iterator to a named check fields collection.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdCheckFieldsMapIterator** ()

  Non-trivial dtor.
- **IdCheckFieldsMapIterator** (const IdCheckFieldsMapIterator &other)

  Copy ctor.
- IdCheckFieldsMapIterator & **operator=** (const IdCheckFieldsMapIterator &other)

  Assignment operator.
- const char * **GetKey** () const

  Returns the key.
- const IdCheckField & **GetValue** () const

  Returns the value (the check field object)
- bool **Equals** (const IdCheckFieldsMapIterator &rvalue) const

  Returns true iff the current instance and rvalue point to the same object.
- bool **operator==** (const IdCheckFieldsMapIterator &rvalue) const

  Returns true iff the current instance and rvalue point to the same object.
- bool **operator!=** (const IdCheckFieldsMapIterator &rvalue) const

  Returns true iff the instance and rvalue point to different objects.
- void **Advance** ()

  Advances the iterator to the next object in the collection.
- void **operator++** ()

  Advances the iterator to the next object in the collection.

Static Public Member Functions

- static IdCheckFieldsMapIterator **ConstructFromImpl** (const IdCheckFieldsMapIteratorImpl &pimpl)
  Factory method for creating the iterator from the internal implementation.

Private Member Functions

- **IdCheckFieldsMapIterator** (const IdCheckFieldsMapIteratorImpl &pimpl)
  Private ctor from the internal implementation.

Private Attributes

- class IdCheckFieldsMapIteratorImpl * pimpl_
  internal implementation

1.34.1 Detailed Description

The class representing the iterator to a named check fields collection.

Definition at line 524 of file id_fields.h.

1.34.2 Member Data Documentation

pimpl_

```
class IdCheckFieldsMapIteratorImpl* se::id::IdCheckFieldsMapIterator::pimpl_  [private]
```

internal implementation

Definition at line 571 of file id_fields.h.

1.35 se::id::IdDocumentInfo Class Reference

Reference information about document type.

`#include <id_document_info.h>`

Public Member Functions

- virtual ~**IdDocumentInfo** ()=default
  Default dtor.
- virtual const char * **GetDocumentName** () const =0
  Returns human-readable name of the document.
- virtual const char * **GetDocumentDescription** () const =0
  Returns human-readable description of the document.
- virtual int **HasRFID** () const =0
  Returns RFID chip presence info (1 - presented/0 - not presented/-1 - no info)
- virtual const se::common::StringsSet & **GetPradoLinks** () const =0
  Returns read-only collection of PRADO links for the document.
- virtual const se::common::StringsSet & **GetDocumentTemplates** () const =0
  Returns read-only collection of template names for the document.
- virtual float **GetDocumentFieldsRejectionThreshold** (const char *field_name) const =0
  Returns field's rejection threshold.

1.35.1 Detailed Description

Reference information about document type.

Definition at line 23 of file id_document_info.h.

1.36 se::id::IdEngine Class Reference

The main IdEngine class containing all configuration and resources of the Smart ID Engine product.

`#include <id_engine.h>`

Public Member Functions

- virtual ~**IdEngine** ()=default

  Default dtor.
- virtual IdSessionSettings * CreateSessionSettings () const =0

  Creates a Session Settings object with default recognition settings, specified in the configuration bundle.
- virtual IdSession * SpawnSession (const IdSessionSettings &settings, const char *signature, IdFeedback *feedback_reporter=nullptr) const =0

  Spawns a new documents recognition session.
- virtual IdFileAnalysisSessionSettings * CreateFileAnalysisSessionSettings () const =0

  Creates a File Analysis Session Settings object with default settings, specified in the configuration bundle.
- virtual IdFileAnalysisSession * SpawnFileAnalysisSession (const IdFileAnalysisSessionSettings &settings, const char *signature) const =0

  Spawns a new file analysis session.
- virtual IdFaceSessionSettings * CreateFaceSessionSettings () const =0

  Creates a Face Session Settings object with default face matching and processing settings, specified in the configuration bundle.
- virtual IdFaceSession * SpawnFaceSession (const IdFaceSessionSettings &settings, const char *signature, IdFaceFeedback *feedback_reporter=nullptr) const =0

  Spawns a new face matching and processing session.
- virtual IdFieldProcessingSessionSettings * CreateFieldProcessingSessionSettings () const =0

  Create a Field Processing Session Settings object with default field processing settings, specified in the configuration bundle.
- virtual IdFieldProcessingSession * SpawnFieldProcessingSession (const IdFieldProcessingSessionSettings &settings, const char *signature) const =0

  Spawns a new field processing session.
- virtual IdVideoAuthenticationSessionSettings * CreateVideoAuthenticationSessionSettings () const =0

  Create a Video Authentication Session Settings object with default parameters, specified in the configuration bundle.
- virtual IdVideoAuthenticationSession * SpawnVideoAuthenticationSession (const IdVideoAuthentication↩ SessionSettings &settings, const char *signature, IdVideoAuthenticationCallbacks *video_authentication_↩ callbacks=nullptr, IdFeedback *feedback_reporter=nullptr, IdFaceFeedback *face_feedback_reporter=nullptr) const =0

  Spawns a new video identification & authentication session.

Static Public Member Functions

- static IdEngine * Create (const char *config_path, bool lazy_configuration=true, int init_concurrency=0, bool delayed_initialization=false)

  The factory method for creating the IdEngine object with a configuration bundle file.
- static IdEngine * Create (unsigned char *config_data, int config_data_length, bool lazy_configuration=true, int init_concurrency=0, bool delayed_initialization=false)

  The factory method for creating the IdEngine object with a configuration bundle buffer.
- static IdEngine * CreateFromEmbeddedBundle (bool lazy_configuration=true, int init_concurrency=0, bool delayed_initialization=false)

  The factory method for creating the IdEngine object with a configuration bundle buffer embedded within the library.
- static const char * GetVersion ()

  Returns the Smart ID Engine version number.

1.36.1 Detailed Description

The main IdEngine class containing all configuration and resources of the Smart ID Engine product.

Definition at line 42 of file id_engine.h.

1.36.2 Member Function Documentation

CreateSessionSettings()

```
virtual IdSessionSettings * se::id::IdEngine::CreateSessionSettings () const  [pure virtual]
```

Creates a Session Settings object with default recognition settings, specified in the configuration bundle.

Returns

A newly created IdSessionSettings object. The object is allocated, the caller is responsible for deleting it.

SpawnSession()

```
virtual IdSession * se::id::IdEngine::SpawnSession (
            const IdSessionSettings & settings,
            const char * signature,
            IdFeedback * feedback_reporter = nullptr) const  [pure virtual]
```

Spawns a new documents recognition session.

Parameters

settings	- a settings object which are used to spawn a session
signature	- a unique caller signature to unlock the internal library calls (provided with your SDK package)
feedback_reporter	- an optional pointer to the implementation of feedback callbacks class

Returns

A newly created session (IdSession object). The object is allocated, the caller is responsible for deleting it.

CreateFileAnalysisSessionSettings()

```
virtual IdFileAnalysisSessionSettings * se::id::IdEngine::CreateFileAnalysisSessionSettings ()
const  [pure virtual]
```

Creates a File Analysis Session Settings object with default settings, specified in the configuration bundle.

Returns

A newly created IdSessionSettings object. The object is allocated, the caller is responsible for deleting it.

SpawnFileAnalysisSession()

```
virtual IdFileAnalysisSession * se::id::IdEngine::SpawnFileAnalysisSession (
            const IdFileAnalysisSessionSettings & settings,
            const char * signature) const  [pure virtual]
```

Spawns a new file analysis session.

Parameters

settings	- a settings object which are used to spawn a session
signature	- a unique caller signature to unlock the internal library calls (provided with your SDK package)
feedback_reporter	- an optional pointer to the implementation of feedback callbacks class

Returns

A newly created session (IdSession object). The object is allocated, the caller is responsible for deleting it.

CreateFaceSessionSettings()

```
virtual IdFaceSessionSettings * se::id::IdEngine::CreateFaceSessionSettings () const  [pure
virtual]
```

Creates a Face Session Settings object with default face matching and processing settings, specified in the configuration bundle.

Returns

A newly created IdFaceSessionSettings object. The object is allocated, the caller is responsible for deleting it.

SpawnFaceSession()

```
virtual IdFaceSession * se::id::IdEngine::SpawnFaceSession (
            const IdFaceSessionSettings & settings,
            const char * signature,
            IdFaceFeedback * feedback_reporter = nullptr) const  [pure virtual]
```

Spawns a new face matching and processing session.

Parameters

settings	- face matching session settings which are used to spawn a new session
signature	- a unique caller signature to unlock the internal library calls (provided with your SDK package)
feedback_reporter	- an optional pointer to the implementation of face session feedback callbacks class

Returns

A newly crated session (IdFaceSession object). The object is allocated, the caller is responsible for deleting it.

CreateFieldProcessingSessionSettings()

```
virtual IdFieldProcessingSessionSettings * se::id::IdEngine::CreateFieldProcessingSession↩
Settings () const  [pure virtual]
```

Create a Field Processing Session Settings object with default field processing settings, specified in the configuration bundle.

Returns

A newly created IdFieldProcessingSessionSettings object. The object is allocated, the caller is responsible for deleting it.

SpawnFieldProcessingSession()

```
virtual IdFieldProcessingSession * se::id::IdEngine::SpawnFieldProcessingSession (
            const IdFieldProcessingSessionSettings & settings,
            const char * signature) const  [pure virtual]
```

Spawns a new field processing session.

Parameters

settings	- field processing session settings which are used to spawn a new session
signature	- a unique caller signature to unlock the internal library calls (provided with your SDK package)

Returns

A newly created IdFieldProcessingSession object. The object is allocated, the caller is responsible for deleting it.

CreateVideoAuthenticationSessionSettings()

```
virtual IdVideoAuthenticationSessionSettings * se::id::IdEngine::CreateVideoAuthentication↩
SessionSettings () const  [pure virtual]
```

Create a Video Authentication Session Settings object with default parameters, specified in the configuration bundle.

Returns

A newly created IdVideoAuthenticationSessionSettings object. The object is allocated, the caller is responsible for deleting it

SpawnVideoAuthenticationSession()

```
virtual IdVideoAuthenticationSession * se::id::IdEngine::SpawnVideoAuthenticationSession (
            const IdVideoAuthenticationSessionSettings & settings,
            const char * signature,
            IdVideoAuthenticationCallbacks * video_authentication_callbacks = nullptr,
            IdFeedback * feedback_reporter = nullptr,
            IdFaceFeedback * face_feedback_reporter = nullptr) const  [pure virtual]
```

Spawns a new video identification & authentication session.

Parameters

settings	- a settings object which are used to spawn a session
signature	- a unique caller signature to unlock the internal library calls (provided with your SDK package)
video_authentication_callbacks	- an optional pointer to the implementation of video authentication callbacks class
feedback_reporter	- an optional pointer to the implementation of feedback callbacks class

Returns

A newly created session (IdVideoAuthenticationSession object). The object is allocated, the caller is responsible for deleting it.

Create() [1/2]

```
static IdEngine * se::id::IdEngine::Create (
            const char * config_path,
            bool lazy_configuration = true,
            int init_concurrency = 0,
            bool delayed_initialization = false)  [static]
```

The factory method for creating the IdEngine object with a configuration bundle file.

Parameters

config_path	- filesystem path to a engine configuration bundle
lazy_configuration	- if true, some components of the internal engine structure will be initialized only when first needed. If false, all engine structure will be loaded and initialized immediately. Lazy configuration is enabled by default.
init_concurrency	- allowed concurrent threads while configuring the engine. 0 means unlimited.
delayed_initialization	- performs a blank configuration, delaying the internal engines initialization until the corresponding SpawnSession method is called

Returns

A newly created IdEngine object. The object is allocated, the caller is responsible for deleting it.

Create() [2/2]

```
static IdEngine * se::id::IdEngine::Create (
            unsigned char * config_data,
            int config_data_length,
            bool lazy_configuration = true,
            int init_concurrency = 0,
            bool delayed_initialization = false)  [static]
```

The factory method for creating the IdEngine object with a configuration bundle buffer.

Parameters

config_data	- pointer to the configuration bundle file buffer.
config_data_length	- size of the configuration buffer in bytes.
lazy_configuration	- if true, some components of the internal engine structure will be initialized only when first needed. If false, all engine structure will be loaded and initialized immediately. Lazy configuration is enabled by default.
init_concurrency	- allowed concurrent threads while configuring the engine. 0 means unlimited.
delayed_initialization	- performs a blank configuration, delaying the internal engines initialization until the corresponding SpawnSession method is called

Returns

A newly created IdEngine object. The object is allocated, the caller is responsible for deleting it.

CreateFromEmbeddedBundle()

```
static IdEngine * se::id::IdEngine::CreateFromEmbeddedBundle (
            bool lazy_configuration = true,
            int init_concurrency = 0,
            bool delayed_initialization = false)  [static]
```

The factory method for creating the IdEngine object with a configuration bundle buffer embedded within the library.

Parameters

lazy_configuration	- if true, some components of the internal engine structure will be initialized only when first needed. If false, all engine structure will be loaded and initialized immediately. Lazy configuration is enabled by default.
init_concurrency	- allowed concurrent threads while configuring the engine. 0 means unlimited.
delayed_initialization	- performs a blank configuration, delaying the internal engines initialization until the corresponding SpawnSession method is called

Returns

A newly created IdEngine object. The object is allocated, the caller is responsible for deleting it.

GetVersion()

```
static const char * se::id::IdEngine::GetVersion ()  [static]
```

Returns the Smart ID Engine version number.

Returns

Smart ID Engine version number string

1.37 se::id::IdFaceFeedback Class Reference

Abstract interface for receiving Smart ID Engine face session callbacks. All callbacks must be implemented.

```
#include <id_face_feedback.h>
```

Public Member Functions

- virtual ~**IdFaceFeedback** ()
  Virtual dtor.
- virtual void MessageReceived (const char *message)=0
  Callback for receiving face session messages.

1.37.1 Detailed Description

Abstract interface for receiving Smart ID Engine face session callbacks. All callbacks must be implemented.

Definition at line 22 of file id_face_feedback.h.

1.37.2 Member Function Documentation

MessageReceived()

```
virtual void se::id::IdFaceFeedback::MessageReceived (
            const char * message)  [pure virtual]
```

Callback for receiving face session messages.

Parameters

message	- message from face matching session

1.38 se::id::IdFaceLivenessResult Class Reference

The class which represents the face liveness result.

```
#include <id_face_result.h>
```

Public Member Functions

- ~**IdFaceLivenessResult** ()
  Non-trivial dtor.
- **IdFaceLivenessResult** (double liveness_estimation=0.0)
  Main ctor - stores the liveness estimation value.
- **IdFaceLivenessResult** (const IdFaceLivenessResult &copy)
  Copy ctor.
- IdFaceLivenessResult & **operator=** (const IdFaceLivenessResult &other)
  Assignment operator.
- double **GetLivenessEstimation** () const
  Returns the liveness estimation value (double in range [0.0, 1.0])
- void **SetLivenessEstimation** (double liveness_estimation)
  Sets the liveness estimation value.
- const char * **GetLivenessInstruction** () const
  Returns pointer to the start of the instruction char.*
- void **SetLivenessInstruction** (const char *instruction)
  Sets instruction to check liveness.

Private Attributes

- IdFaceLivenessResultImpl * pimpl_
  internal implementation

1.38.1 Detailed Description

The class which represents the face liveness result.

Definition at line 34 of file id_face_result.h.

1.38.2 Member Data Documentation

pimpl_

```
IdFaceLivenessResultImpl* se::id::IdFaceLivenessResult::pimpl_  [private]
```

internal implementation

Definition at line 62 of file id_face_result.h.

1.39 se::id::IdFaceRectsResult Class Reference

The class representing the face rectangle find result.

```
#include <id_face_result.h>
```

Public Member Functions

- ~**IdFaceRectsResult** ()

  Non-trivial dtor.
- **IdFaceRectsResult** ()

  Main ctor - stores the rects estimation value.
- **IdFaceRectsResult** (const IdFaceRectsResult &copy)

  Copy ctor.
- IdFaceRectsResult & **operator=** (const IdFaceRectsResult &other)

  Assignment operator.
- void **AddFaceRect** (const se::common::Rectangle &inp_rect)

  Add face rect to pimpl.
- void **Clear** ()

  Clear all rects from class.
- se::common::RectanglesVectorIterator **RectanglesBegin** () const

  Return const begin iterator for added rectangles.
- se::common::RectanglesVectorIterator **RectanglesEnd** () const

  Return const end iterator for added rectangles.

Private Attributes

- IdFaceRectsResultImpl * pimpl_

  internal implementation

1.39.1 Detailed Description

The class representing the face rectangle find result.

Definition at line 108 of file id_face_result.h.

1.39.2 Member Data Documentation

pimpl_

```
IdFaceRectsResultImpl* se::id::IdFaceRectsResult::pimpl_  [private]
```

internal implementation

Definition at line 136 of file id_face_result.h.

1.40 se::id::IdFaceSession Class Reference

The main processing class for the face matching and analysis functionality of Smart ID Engine.

```
#include <id_face_session.h>
```

Public Member Functions

- virtual ~**IdFaceSession** ()=default

  Default dtor.
- virtual const char * **GetActivationRequest** ()=0
- virtual void **Activate** (const char *activation_response)=0
- virtual bool **IsActivated** () const =0
- virtual IdFaceSimilarityResult GetSimilarity (const se::common::Image &face_image_a, const se::common::Image &face_image_b) const =0

  Returns the similarity result for the two provided face images (independent from session state)
- virtual void AddFaceImage (const se::common::Image &face_image)=0

  Adds a new face image to the current session object.
- virtual IdFaceRectsResult GetRects (const se::common::Image &image) const =0

  Get vector of FaceRectangle from image.
- virtual bool HasAccumulatedImage () const =0

  Checks whether the session has an accumulated face description.
- virtual IdFaceSimilarityResult GetSimilarityWith (const se::common::Image &compare_image) const =0

  Returns the similarity result for the stream of images stored in the session state (lvalue) with an passed rvalue image.
- virtual IdFaceLivenessResult GetLivenessResult () const =0

  Returns the liveness estimation result for the stream of images passed through the session.
- virtual void **Reset** ()=0

  Resets the session state.

1.40.1 Detailed Description

The main processing class for the face matching and analysis functionality of Smart ID Engine.

Definition at line 23 of file id_face_session.h.

1.40.2 Member Function Documentation

GetSimilarity()

```
virtual IdFaceSimilarityResult se::id::IdFaceSession::GetSimilarity (
            const se::common::Image & face_image_a,
            const se::common::Image & face_image_b) const  [pure virtual]
```

Returns the similarity result for the two provided face images (independent from session state)

Parameters

face_image_a	- lvalue image for comparison
face_image_b	- rvalue image for comparison

Returns

A similarity comparison result object

AddFaceImage()

```
virtual void se::id::IdFaceSession::AddFaceImage (
            const se::common::Image & face_image)  [pure virtual]
```

Adds a new face image to the current session object.

Parameters

face_image	- the image of a face to be added

GetRects()

```
virtual IdFaceRectsResult se::id::IdFaceSession::GetRects (
            const se::common::Image & image) const  [pure virtual]
```

Get vector of FaceRectangle from image.

Parameters

face_image	- the image of a face to be added

Returns

order in quad: left up, right up, right down, left down

HasAccumulatedImage()

```
virtual bool se::id::IdFaceSession::HasAccumulatedImage () const  [pure virtual]
```

Checks whether the session has an accumulated face description.

Returns

Returns true iff the session has an accumulated face description

GetSimilarityWith()

```
virtual IdFaceSimilarityResult se::id::IdFaceSession::GetSimilarityWith (
            const se::common::Image & compare_image) const  [pure virtual]
```

Returns the similarity result for the stream of images stored in the session state (lvalue) with an passed rvalue image.

Parameters

compare_image	- the rvalue image to compare the state with

Returns

A similarity comparison result object

GetLivenessResult()

```
virtual IdFaceLivenessResult se::id::IdFaceSession::GetLivenessResult () const  [pure virtual]
```

Returns the liveness estimation result for the stream of images passed through the session.

Returns

A liveness estimation result object

1.41 se::id::IdFaceSessionSettings Class Reference

The class representing the settings of the face matching session.

```
#include <id_face_session_settings.h>
```

Public Member Functions

- virtual ~**IdFaceSessionSettings** ()=default
  Default dtor.
- virtual IdFaceSessionSettings * Clone () const =0
  Clones the settings object.
- virtual int **GetOptionsCount** () const =0
  Returns the number of key:value session option pairs.
- virtual const char * **GetOption** (const char *option_name) const =0
  Returns the value of an option by name.
- virtual bool **HasOption** (const char *option_name) const =0
  Return true if there is an option with the given name.
- virtual void **SetOption** (const char *option_name, const char *option_value)=0
  Sets the key:value session option pair.
- virtual void **RemoveOption** (const char *option_name)=0
  Removes the session option with a given name.
- virtual se::common::StringsMapIterator **OptionsBegin** () const =0
  Returns the 'begin' map iterator to the session options collection.
- virtual se::common::StringsMapIterator **OptionsEnd** () const =0
  Returns the 'end' map iterator to the session options collection.
- virtual int **GetSupportedLivenessInstructionsCount** () const =0
  Return the number of key:value liveness instruction pairs.
- virtual bool **HasSupportedLivenessInstruction** (const char *instruction) const =0
  Return true if there is an liveness instruction with the given name.
- virtual const char * **GetLivenessInstructionDescription** (const char *instruction) const =0
  Return the description of an liveness instruction by the given name.
- virtual se::common::StringsMapIterator **SupportedLivenessInstructionsBegin** () const =0
  Returns the 'begin' map iterator to the liveness instruction collection.
- virtual se::common::StringsMapIterator **SupportedLivenessInstructionsEnd** () const =0
  Returns the 'end' map iterator to the liveness instruction collection.

1.41.1 Detailed Description

The class representing the settings of the face matching session.

Definition at line 22 of file id_face_session_settings.h.

1.41.2 Member Function Documentation

Clone()

```
virtual IdFaceSessionSettings * se::id::IdFaceSessionSettings::Clone () const  [pure virtual]
```

Clones the settings object.

Returns

A newly created object with the same contents as the current instance. The object is allocated, the caller is responsible for deleting it.

1.42 se::id::IdFaceSimilarityResult Class Reference

The class representing the face similarity comparison result.

```
#include <id_face_result.h>
```

Public Member Functions

- ~**IdFaceSimilarityResult** ()
  Non-trivial dtor.
- **IdFaceSimilarityResult** (double similarity_estimation=0.0, IdFaceStatus status=IdFaceStatus_NotUsed)
  Main ctor - stores the similarity estimation value.
- **IdFaceSimilarityResult** (const IdFaceSimilarityResult &copy)
  Copy ctor.
- IdFaceSimilarityResult & **operator=** (const IdFaceSimilarityResult &other)
  Assignment operator.
- double **GetSimilarityEstimation** () const
  Gets the faces similarity estimation value (dobule in range [0.0, 1.0])
- void **SetSimilarityEstimation** (double similarity_estimation)
  Sets the faces similarity estimation value.
- IdFaceStatus **GetStatus** () const
  Get the process status.
- void **SetStatus** (const IdFaceStatus &status)
  Set the process status.

Private Attributes

- IdFaceSimilarityResultImpl * pimpl_
  internal implementation

1.42.1 Detailed Description

The class representing the face similarity comparison result.

Definition at line 71 of file id_face_result.h.

1.42.2 Member Data Documentation

pimpl_

```
IdFaceSimilarityResultImpl* se::id::IdFaceSimilarityResult::pimpl_  [private]
```

internal implementation

Definition at line 99 of file id_face_result.h.

1.43 se::id::IdFeedback Class Reference

Abstract interface for receiving Smart ID Engine callbacks. All callbacks must be implemented.

```
#include <id_feedback.h>
```

Public Member Functions

- virtual ~**IdFeedback** ()
  Virtual dtor.
- virtual void FeedbackReceived (const IdFeedbackContainer &feedback_container)=0
  Callback for receiving visualization container.
- virtual void TemplateDetectionResultReceived (const IdTemplateDetectionResult &detection_result)=0
  Callback for receiving a document page (template) detection result.
- virtual void TemplateSegmentationResultReceived (const IdTemplateSegmentationResult &segmentation_↩ result)=0
  Callback for receiving a page (template) segmentation result.
- virtual void ResultReceived (const IdResult &result_received)=0
  Callback for receiving a full document recognition result.
- virtual void **SessionEnded** ()=0
  Callback which is called when the video stream recognition session ends (the result becomes terminal).

1.43.1 Detailed Description

Abstract interface for receiving Smart ID Engine callbacks. All callbacks must be implemented.

Definition at line 69 of file id_feedback.h.

1.43.2 Member Function Documentation

FeedbackReceived()

```
virtual void se::id::IdFeedback::FeedbackReceived (
            const IdFeedbackContainer & feedback_container)  [pure virtual]
```

Callback for receiving visualization container.

Parameters

feedback_container	- the received visualization container (a collection of named quadrangles)

TemplateDetectionResultReceived()

```
virtual void se::id::IdFeedback::TemplateDetectionResultReceived (
            const IdTemplateDetectionResult & detection_result)  [pure virtual]
```

Callback for receiving a document page (template) detection result.

Parameters

detection_result	- the received document page (template) detection result

TemplateSegmentationResultReceived()

```
virtual void se::id::IdFeedback::TemplateSegmentationResultReceived (
            const IdTemplateSegmentationResult & segmentation_result)  [pure virtual]
```

Callback for receiving a page (template) segmentation result.

Parameters

segmentation_result	- the received document page (template) segmentation result

ResultReceived()

```
virtual void se::id::IdFeedback::ResultReceived (
            const IdResult & result_received)  [pure virtual]
```

Callback for receiving a full document recognition result.

Parameters

result_received	- the received document recognition result

1.44 se::id::IdFeedbackContainer Class Reference

The class representing the visual feedback container - a collection of named quadrangles in an image.

```
#include <id_feedback.h>
```

Public Member Functions

- ~**IdFeedbackContainer** ()

  Non-trivial dtor.
- **IdFeedbackContainer** ()

  Default ctor - creates an empty container.
- **IdFeedbackContainer** (const IdFeedbackContainer &copy)

  Copy ctor.
- IdFeedbackContainer & **operator=** (const IdFeedbackContainer &other)

  Assignment operator.
- int **GetQuadranglesCount** () const

  Returns the number of quadrangles in the container.
- bool **HasQuadrangle** (const char *quad_name) const

  Returns true iff there exists a quadrangle with a given name.
- const se::common::Quadrangle & **GetQuadrangle** (const char *quad_name) const

  Returns the quadrangle with a given name.
- void **SetQuadrangle** (const char *quad_name, const se::common::Quadrangle &quad)

  Sets the quadrangle for a given name.
- void **RemoveQuadrangle** (const char *quad_name)

  Removes the quadrangle with a given name from the collection.
- se::common::QuadranglesMapIterator **QuadranglesBegin** () const

  Returns the 'begin' map iterator to the quadrangles collection.
- se::common::QuadranglesMapIterator **QuadranglesEnd** () const

  Returns the 'end' map iterator to the quadrangles collection.

Private Attributes

- class IdFeedbackContainerImpl * pimpl_

  internal implementation

1.44.1 Detailed Description

The class representing the visual feedback container - a collection of named quadrangles in an image.

Definition at line 23 of file id_feedback.h.

1.44.2 Member Data Documentation

pimpl_

```
class IdFeedbackContainerImpl* se::id::IdFeedbackContainer::pimpl_  [private]
```

internal implementation

Definition at line 61 of file id_feedback.h.

1.45 se::id::IdFieldProcessingSession Class Reference

The main processing class for Smart ID Engine field processing functionality.

`#include <id_field_processing_session.h>`

Public Member Functions

- virtual ~**IdFieldProcessingSession** ()=default

  Default dtor.
- virtual const char * **GetActivationRequest** ()=0
- virtual void **Activate** (const char *activation_response)=0
- virtual bool **IsActivated** () const =0
- virtual void **Process** ()=0

  Performs fields processing for a collection of fields stored in the session instance.
- virtual int **GetTextFieldsCount** () const =0

  Gets the number of text fields stored in the session.
- virtual bool **HasTextField** (const char *field_name) const =0

  Returns true iff there is a stored text field with a given name.
- virtual const IdTextField & **GetTextField** (const char *field_name) const =0

  Returns the stored text field with a given name (const ref)
- virtual void **SetTextField** (const char *field_name, const IdTextField &field)=0

  Stores the text field with a given name.
- virtual void **RemoveTextField** (const char *field_name)=0

  Removes the stored text field with a given name.
- virtual IdTextFieldsMapIterator **TextFieldsBegin** () const =0

  Returns the 'begin' iterator to the stored text fields collection.
- virtual IdTextFieldsMapIterator **TextFieldsEnd** () const =0

  Returns the 'end' iterator to the stored text fields collectoin.
- virtual int **GetImageFieldsCount** () const =0

  Gets the number of image fields stored in the session.
- virtual bool **HasImageField** (const char *field_name) const =0

  Returns true iff there is a stored image field with a given name.
- virtual const IdImageField & **GetImageField** (const char *field_name) const =0

  Returns the stored image field with a given name (const ref)
- virtual void **SetImageField** (const char *field_name, const IdImageField &field)=0

  Stores the image field with a given name.
- virtual void **RemoveImageField** (const char *field_name)=0

  Removes the stored image field with a given name.
- virtual IdImageFieldsMapIterator **ImageFieldsBegin** () const =0

  Returns the 'begin' iterator to the stored image fields collection.
- virtual IdImageFieldsMapIterator **ImageFieldsEnd** () const =0

  Returns the 'end' iterator to the stored image fields collection.
- virtual int **GetAnimatedFieldsCount** () const =0

  Gets the number of animated fields stored in the session.
- virtual bool **HasAnimatedField** (const char *field_name) const =0

  Returns true iff there is a stored animated field with a given name.
- virtual const IdAnimatedField & **GetAnimatedField** (const char *field_name) const =0

  Returns the stored animated field with a given name (const ref)
- virtual void **SetAnimatedField** (const char *field_name, const IdAnimatedField &field)=0

Stores the animated field with a given name.

- virtual void **RemoveAnimatedField** (const char ∗field_name)=0

  Removes the stored animated field with a given name.
- virtual IdAnimatedFieldsMapIterator **AnimatedFieldsBegin** () const =0

  Returns the 'begin' iterator to the stored animated fields collection.
- virtual IdAnimatedFieldsMapIterator **AnimatedFieldsEnd** () const =0

  Returns the 'end' iterator to the stored animated fields collection.
- virtual int **GetCheckFieldsCount** () const =0

  Gets the number of check fields stored in the session.
- virtual bool **HasCheckField** (const char ∗field_name) const =0

  Returns true iff there is a stored check field with a given name.
- virtual const IdCheckField & **GetCheckField** (const char ∗field_name) const =0

  Returns the stored check field with a given name (const ref)
- virtual void **SetCheckField** (const char ∗field_name, const IdCheckField &field)=0

  Stores the check field with a given name.
- virtual void **RemoveCheckField** (const char ∗field_name)=0

  Removes the stored check field with a given name.
- virtual IdCheckFieldsMapIterator **CheckFieldsBegin** () const =0

  Returns the 'begin' iterator to the stored check fields collection.
- virtual IdCheckFieldsMapIterator **CheckFieldsEnd** () const =0

  Returns the 'end' iterator to the stored check fields collection.
- virtual void **Reset** ()=0

  Resets the internal session state, clears all stored fields.

1.45.1 Detailed Description

The main processing class for Smart ID Engine field processing functionality.

Definition at line 23 of file id_field_processing_session.h.

1.46 se::id::IdFieldProcessingSessionSettings Class Reference

The class representing the settings of the field processing session.

`#include <id_field_processing_session_settings.h>`

Public Member Functions

- virtual ∼**IdFieldProcessingSessionSettings** ()=default

  Default dtor.
- virtual IdFieldProcessingSessionSettings ∗ Clone () const =0

  Clones the settings object.
- virtual int **GetSupportedFieldProcessorsCount** () const =0

  Returns the number of available field processors.
- virtual bool **HasSupportedFieldProcessor** (const char ∗field_processor_name) const =0

  Returns true iff there is an available field processor with a given name.
- virtual se::common::StringsSetIterator **SupportedFieldProcessorsBegin** () const =0

  Returns the 'begin' set-like iterator to the collection of available field processor names.
- virtual se::common::StringsSetIterator **SupportedFieldProcessorsEnd** () const =0

Returns the 'end' set-like iterator to the collection of available field processor names.

- virtual const char * **GetCurrentFieldProcessor** () const =0

  Returns the name of the active field processor.
- virtual void **SetCurrentFieldProcessor** (const char *field_processor_name)=0

  Sets the name of the active field processor.
- virtual int **GetOptionsCount** () const =0

  Returns the number of key:value session option pairs.
- virtual const char * **GetOption** (const char *option_name) const =0

  Returns the value of an option by name.
- virtual bool **HasOption** (const char *option_name) const =0

  Return true iff there is an option with the given name.
- virtual void **SetOption** (const char *option_name, const char *option_value)=0

  Sets the key:value session option pair.
- virtual void **RemoveOption** (const char *option_name)=0

  Removes the session option with a given name.
- virtual se::common::StringsMapIterator **OptionsBegin** () const =0

  Returns the 'begin' map iterator to the session options collection.
- virtual se::common::StringsMapIterator **OptionsEnd** () const =0

  Returns the 'end' map iterator to the session options collection.

1.46.1 Detailed Description

The class representing the settings of the field processing session.

Definition at line 22 of file id_field_processing_session_settings.h.

1.46.2 Member Function Documentation

Clone()

```
virtual IdFieldProcessingSessionSettings * se::id::IdFieldProcessingSessionSettings::Clone ()
const  [pure virtual]
```

Clones the settings object.

Returns

A new object with the same state as the current instance. The newly created object is allocated, the caller is responsible for deleting it

1.47 se::id::IdImageField Class Reference

The class representing an image field.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdImageField** ()

  Non-trivial dtor.
- **IdImageField** ()

  Default ctor - creates an empty image field.
- IdImageField (const char *name, const se::common::Image &value, bool is_accepted=false, double confidence=0.0)

  Main ctor of an image field.
- **IdImageField** (const IdImageField &copy)

  Copy ctor.
- IdImageField & **operator=** (const IdImageField &other)

  Assignment operator.
- const char * **GetName** () const

  Returns the field's name.
- void **SetName** (const char *name)

  Sets the field's name.
- const se::common::Image & **GetValue** () const

  Returns the value of the image field (image content)
- void **SetValue** (const se::common::Image &value)

  Sets the value of the image field to a new image.
- const IdBaseFieldInfo & **GetBaseFieldInfo** () const

  Returns the general field information (const ref)
- IdBaseFieldInfo & **GetMutableBaseFieldInfo** ()

  Returns the general field information (mutable ref)

Private Attributes

- class IdImageFieldImpl * pimpl_

  internal implementation

1.47.1 Detailed Description

The class representing an image field.

Definition at line 224 of file id_fields.h.

1.47.2 Constructor & Destructor Documentation

IdImageField()

```
se::id::IdImageField::IdImageField (
            const char * name,
            const se::common::Image & value,
            bool is_accepted = false,
            double confidence = 0.0)
```

Main ctor of an image field.

Parameters

name	- name of the field
value	- value of the field (image content)
is_accepted	- the field's accept flag
confidence	- the field's confidence (double in range [0.0, 1.0])

1.47.3 Member Data Documentation

pimpl_

```
class IdImageFieldImpl* se::id::IdImageField::pimpl_  [private]
```

internal implementation

Definition at line 274 of file id_fields.h.

1.48 se::id::IdImageFieldsMapIterator Class Reference

The class representing the iterator to named image fields container.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdImageFieldsMapIterator** ()

  Non-trivial dtor.
- **IdImageFieldsMapIterator** (const IdImageFieldsMapIterator &other)

  Copy ctor.
- IdImageFieldsMapIterator & **operator=** (const IdImageFieldsMapIterator &other)

  Assignment operator.
- const char * **GetKey** () const

  Returns the key.
- const IdImageField & **GetValue** () const

  Returns the value (the image field object)
- bool **Equals** (const IdImageFieldsMapIterator &rvalue) const

  Returns true iff the current instance and rvalue point to the same object.
- bool **operator==** (const IdImageFieldsMapIterator &rvalue) const

  Returns true iff the current instance and rvalue point to the same object.
- bool **operator!=** (const IdImageFieldsMapIterator &rvalue) const

  Returns true iff the instance and rvalue point to different objects.
- void **Advance** ()

  Advances the iterator to the next object in the collection.
- void **operator++** ()

  Advances the iterator to the next object in the collection.

Static Public Member Functions

- static IdImageFieldsMapIterator **ConstructFromImpl** (const IdImageFieldsMapIteratorImpl &pimpl)
  Factory method for creating the iterator from the internal implementation.

Private Member Functions

- **IdImageFieldsMapIterator** (const IdImageFieldsMapIteratorImpl &pimpl)
  Private ctor from the internal implementation.

Private Attributes

- class IdImageFieldsMapIteratorImpl * pimpl_
  internal implementation

1.48.1 Detailed Description

The class representing the iterator to named image fields container.

Definition at line 284 of file id_fields.h.

1.48.2 Member Data Documentation

pimpl_

```
class IdImageFieldsMapIteratorImpl* se::id::IdImageFieldsMapIterator::pimpl_  [private]
```

internal implementation

Definition at line 330 of file id_fields.h.

1.49 se::id::IdResult Class Reference

The class representing the document recognition result.

```
#include <id_result.h>
```

Public Member Functions

- ~**IdResult** ()

  Non-trivial dtor.
- **IdResult** (bool is_terminal=false)

  Default ctor.
- **IdResult** (const IdResult &copy)

  Copy ctor.
- IdResult & **operator=** (const IdResult &other)

  Assignment operator.
- const char * **GetDocumentType** () const

  Returns the type of the recognized document.
- void **SetDocumentType** (const char *document_type)

  Sets the document type.
- int **GetTemplateDetectionResultsCount** () const

  Returns the number of detected document pages (templates)
- const IdTemplateDetectionResult & **GetTemplateDetectionResult** (int result_id) const

  Returns the document page (template) detection result by index.
- void **AppendTemplateDetectionResult** (const IdTemplateDetectionResult &result)

  Appens the document page (template) detection result.
- void **ClearTemplateDetectionResults** ()

  Removes all document page (template) detection results.
- int **GetTemplateSegmentationResultsCount** () const

  Returns the number of document page (templates) segmentation results.
- const IdTemplateSegmentationResult & **GetTemplateSegmentationResult** (int result_id) const

  Returns the document page (template) segmentation result by index.
- void **AppendTemplateSegmentationResult** (const IdTemplateSegmentationResult &result)

  Appends the document page (template) segmentation result.
- void **ClearTemplateSegmentationResults** ()

  Removes all document page (template) segmentation results.
- bool **GetIsTerminal** () const

  Return true iff the result can be considered terminal.
- void **SetIsTerminal** (bool is_terminal)

  Sets the result's terminality flag.
- const se::common::StringsSet & **GetSeenTemplates** () const

  Returns a const ref to set of seen document pages (templates)
- const se::common::StringsSet & **GetTerminalTemplates** () const

  Returns a const ref to set of document pages (templates) with terminality flags.
- int **GetTextFieldsCount** () const

  Returns the number of text fields.
- bool **HasTextField** (const char *field_name) const

  Returns true iff there is a text field with a given name.
- const IdTextField & **GetTextField** (const char *field_name) const

  Returns the text field (const ref) with a given name.
- void **SetTextField** (const char *field_name, const IdTextField &field)

  Sets the text field with a given name.
- void **RemoveTextField** (const char *field_name)

  Removes the text field with a given name.
- IdTextFieldsMapIterator **TextFieldsBegin** () const

  Returns the 'begin' iterator to the collection of text fields.
- IdTextFieldsMapIterator **TextFieldsEnd** () const

Returns the 'end' iterator to the collection of text fields.

- int **GetImageFieldsCount** () const

  Returns the number of image fields.

- bool **HasImageField** (const char *field_name) const

  Returns true iff there is an image field with a given name.

- const IdImageField & **GetImageField** (const char *field_name) const

  Returns the image field (const ref) with a given name.

- void **SetImageField** (const char *field_name, const IdImageField &field)

  Sets the image field with a given name.

- void **RemoveImageField** (const char *field_name)

  Removes the image field with a given name.

- IdImageFieldsMapIterator **ImageFieldsBegin** () const

  Returns the 'begin' iterator to the collection of image fields.

- IdImageFieldsMapIterator **ImageFieldsEnd** () const

  Returns the 'end' iterator to the collection of image fields.

- int **GetAnimatedFieldsCount** () const

  Returns the number of animated fields.

- bool **HasAnimatedField** (const char *field_name) const

  Returns true iff there is an animated field with a given name.

- const IdAnimatedField & **GetAnimatedField** (const char *field_name) const

  Returns the animated field (const ref) with a given name.

- void **SetAnimatedField** (const char *field_name, const IdAnimatedField &field)

  Sets the animated field with a given name.

- void **RemoveAnimatedField** (const char *field_name)

  Removes the animated field with a given name.

- IdAnimatedFieldsMapIterator **AnimatedFieldsBegin** () const

  Returns the 'begin' iterator to the collection of animated fields.

- IdAnimatedFieldsMapIterator **AnimatedFieldsEnd** () const

  Returns the 'end' iterator to the collection of animated fields.

- int **GetCheckFieldsCount** () const

  Returns the number of check fields.

- bool **HasCheckField** (const char *field_name) const

  Returns true iff there is a check field with a given name.

- const IdCheckField & **GetCheckField** (const char *field_name) const

  Returns the check field (const ref) with a given name.

- void **SetCheckField** (const char *field_name, const IdCheckField &field)

  Sets the check field with a given name.

- void **RemoveCheckField** (const char *field_name)

  Removes the check field with a given name.

- IdCheckFieldsMapIterator **CheckFieldsBegin** () const

  Returns the 'begin' iterator to the collection of check fields.

- IdCheckFieldsMapIterator **CheckFieldsEnd** () const

  Returns the 'end' iterator to the collection of check fields.

- int **GetForensicTextFieldsCount** () const

  Returns the number of forensic text fields.

- bool **HasForensicTextField** (const char *field_name) const

  Returns true iff there is a forensic text field with a given name.

- const IdTextField & **GetForensicTextField** (const char *field_name) const

  Returns the forensic text field (const ref) with a given name.

- void **SetForensicTextField** (const char *field_name, const IdTextField &field)

  Sets the forensic text field with a given name.

- void **RemoveForensicTextField** (const char *field_name)

  Removes the forensic text field with a given name.
- IdTextFieldsMapIterator **ForensicTextFieldsBegin** () const

  Returns the 'begin' iterator to the collection of forensic text fields.
- IdTextFieldsMapIterator **ForensicTextFieldsEnd** () const

  Returns the 'end' iterator to the collection of forensic text fields.
- int **GetForensicImageFieldsCount** () const

  Returns the number of forensic image fields.
- bool **HasForensicImageField** (const char *field_name) const

  Returns true iff there is a forensic image field with a given name.
- const IdImageField & **GetForensicImageField** (const char *field_name) const

  Returns the forensic image field (const ref) with a given name.
- void **SetForensicImageField** (const char *field_name, const IdImageField &field)

  Sets the forensic image field with a given name.
- void **RemoveForensicImageField** (const char *field_name)

  Removes the forensic image field with a given name.
- IdImageFieldsMapIterator **ForensicImageFieldsBegin** () const

  Returns the 'begin' iterator to the collection of forensic image fields.
- IdImageFieldsMapIterator **ForensicImageFieldsEnd** () const

  Returns the 'end' iterator to the collection of forensic image fields.
- int **GetForensicAnimatedFieldsCount** () const

  Returns the number of forensic animated fields.
- bool **HasForensicAnimatedField** (const char *field_name) const

  Returns true iff there is a forensic animated field with a given name.
- const IdAnimatedField & **GetForensicAnimatedField** (const char *field_name) const

  Returns the forensic animated field (const ref) with a given name.
- void **SetForensicAnimatedField** (const char *field_name, const IdAnimatedField &field)

  Sets the forensic animated field with a given name.
- void **RemoveForensicAnimatedField** (const char *field_name)

  Removes the forensic animated field with a given name.
- IdAnimatedFieldsMapIterator **ForensicAnimatedFieldsBegin** () const

  Returns the 'begin' iterator to the collection of forensic animated fields.
- IdAnimatedFieldsMapIterator **ForensicAnimatedFieldsEnd** () const

  Returns the 'end' iterator to the collection of forensic animated fields.
- int **GetForensicCheckFieldsCount** () const

  Returns the number of forensic check fields.
- bool **HasForensicCheckField** (const char *field_name) const

  Returns true iff there is a forensic check field with a given name.
- const IdCheckField & **GetForensicCheckField** (const char *field_name) const

  Returns the forensic check field (const ref) with a given name.
- void **SetForensicCheckField** (const char *field_name, const IdCheckField &field)

  Sets the forensic check field with a given name.
- void **RemoveForensicCheckField** (const char *field_name)

  Removes the forensic check field with a given name.
- IdCheckFieldsMapIterator **ForensicCheckFieldsBegin** () const

  Returns the 'begin' iterator to the collection of forensic check fields.
- IdCheckFieldsMapIterator **ForensicCheckFieldsEnd** () const

  Returns the 'end' iterator to the collection of forensic check fields.
- int **GetRawTextFieldsCount** () const

  Returns the number of raw text fields.
- bool **HasRawTextField** (const char *field_name) const

Returns true iff there is a raw text field with a given name.

- const IdTextField & **GetRawTextField** (const char *field_name) const

  Returns the raw text field (const ref) with a given name.
- void **SetRawTextField** (const char *field_name, const IdTextField &field)

  Sets the raw text field with a given name.
- void **RemoveRawTextField** (const char *field_name)

  Removes the raw text field with a given name.
- IdTextFieldsMapIterator **RawTextFieldsBegin** () const

  Returns the 'begin' iterator to the collection of raw text fields.
- IdTextFieldsMapIterator **RawTextFieldsEnd** () const

  Returns the 'end' iterator to the collection of raw text fields.
- int **GetRawImageFieldsCount** () const

  Returns the number of raw image fields.
- bool **HasRawImageField** (const char *field_name) const

  Returns true iff there is a raw image field with a given name.
- const IdImageField & **GetRawImageField** (const char *field_name) const

  Returns the raw image field (const ref) with a given name.
- void **SetRawImageField** (const char *field_name, const IdImageField &field)

  Sets the raw image field with a given name.
- void **RemoveRawImageField** (const char *field_name)

  Removes the raw image field with a given name.
- IdImageFieldsMapIterator **RawImageFieldsBegin** () const

  Returns the 'begin' iterator to the collection of raw image fields.
- IdImageFieldsMapIterator **RawImageFieldsEnd** () const

  Returns the 'end' iterator to the collection of raw image fields.
- int **GetCorrespondingRawFieldsCount** (const char *field_name) const

  Returns the number of raw fields corresponding to a given field name.
- bool **HasCorrespondingRawField** (const char *field_name, const char *raw_field_name) const

  Returns true if there is a raw field 'raw_field_name' corresponding to a field 'field_name'.
- se::common::StringsSetIterator **CorrespondingRawFieldNamesBegin** (const char *field_name) const

  Returns the 'begin' iterator to the set of raw field names corresponding to a field 'field_name'.
- se::common::StringsSetIterator **CorrespondingRawFieldNamesEnd** (const char *field_name) const

  Returns the 'end' iterator to the set of raw field names corresponding to a field 'field_name'.
- int **GetCorrespondingFieldsCount** (const char *raw_field_name) const

  Returns the number of fields corresponding to a raw field 'raw_field_name'.
- bool **HasCorrespondingField** (const char *raw_field_name, const char *field_name) const

  Returns true iff there is a field 'field_name' corresponding to a raw field 'raw_field_name'.
- se::common::StringsSetIterator **CorrespondingFieldNamesBegin** (const char *raw_field_name) const

  Returns the 'begin' iterator to the set of field names corresponding to a raw field 'raw_field_name'.
- se::common::StringsSetIterator **CorrespondingFieldNamesEnd** (const char *raw_field_name) const

  Returns the 'end' iterator to the set of field names corresponding to a raw field 'raw_field_name'.
- const IdResultImpl & **GetImpl** () const

  Returns the internal implementation (const ref)
- IdResultImpl & **GetMutableImpl** ()

  Returns the internal implementation (mutable ref)

Private Attributes

- IdResultImpl * pimpl_

  internal implementation

1.49.1 Detailed Description

The class representing the document recognition result.

Definition at line 206 of file id_result.h.

1.49.2 Member Data Documentation

pimpl_

```
IdResultImpl* se::id::IdResult::pimpl_  [private]
```

internal implementation

Definition at line 539 of file id_result.h.

1.50 se::id::IdSession Class Reference

The main processing class for the Smart ID Engine documen recognition functionality.

```
#include <id_session.h>
```

Public Member Functions

- virtual ~**IdSession** ()=default
  Default dtor.
- virtual const char * GetActivationRequest ()=0
  Get an activation request for this session (valid for SDK built with dynamic activation feature)
- virtual void Activate (const char *activation_response)=0
  Activate current session (valid for SDK built with dynamic activation feature)
- virtual bool IsActivated () const =0
  Check if current session was activated (valid for SDK built with dynamic activation feature)
- virtual const IdResult & Process (const se::common::Image &image)=0
  Processes the input image (or frame)
- virtual const IdResult & Process (const se::common::ByteString &data)=0
  Processes the input byte string.
- virtual const IdResult & **GetCurrentResult** () const =0
  Returns the current document recognition result (const ref)
- virtual bool **IsResultTerminal** () const =0
  Returns true iff the current document recognition result is terminal.
- virtual void **Reset** ()=0
  Resets the session state.

1.50.1 Detailed Description

The main processing class for the Smart ID Engine documen recognition functionality.

Definition at line 24 of file id_session.h.

1.50.2 Member Function Documentation

GetActivationRequest()

```
virtual const char * se::id::IdSession::GetActivationRequest ()  [pure virtual]
```

Get an activation request for this session (valid for SDK built with dynamic activation feature)

Returns

A string with activation request

Activate()

```
virtual void se::id::IdSession::Activate (
            const char * activation_response)  [pure virtual]
```

Activate current session (valid for SDK built with dynamic activation feature)

Parameters

activation_response	- the response from activation server

IsActivated()

```
virtual bool se::id::IdSession::IsActivated () const  [pure virtual]
```

Check if current session was activated (valid for SDK built with dynamic activation feature)

Returns

Boolen check (true/false)

Process() [1/2]

```
virtual const IdResult & se::id::IdSession::Process (
            const se::common::Image & image)  [pure virtual]
```

Processes the input image (or frame)

Parameters

image	- the input image (or a frame of a video sequence)

Returns

The updated document recognition result (const ref)

Process() [2/2]

```
virtual const IdResult & se::id::IdSession::Process (
            const se::common::ByteString & data)  [pure virtual]
```

Processes the input byte string.

Parameters

data	- the input json containing a description of templates and fields

Returns

The updated document recognition result (const ref)

1.51 se::id::IdSessionSettings Class Reference

The class representing the session settings for the Smart ID Engine document recognition functionality.

`#include <id_session_settings.h>`

Public Member Functions

- virtual ~**IdSessionSettings** ()=default
  Default dtor.
- virtual IdSessionSettings * Clone () const =0
  Clones the session settings object.
- virtual int **GetOptionsCount** () const =0
  Returns the number of key:value session option pairs.
- virtual const char * **GetOption** (const char *option_name) const =0
  Returns the value of an option by name.
- virtual bool **HasOption** (const char *option_name) const =0
  Return true iff there is an option with the given name.
- virtual void **SetOption** (const char *option_name, const char *option_value)=0
  Sets the key:value session option pair.
- virtual void **RemoveOption** (const char *option_name)=0
  Removes the session option with a given name.
- virtual se::common::StringsMapIterator **OptionsBegin** () const =0
  Returns the 'begin' map iterator to the session options collection.
- virtual se::common::StringsMapIterator **OptionsEnd** () const =0
  Returns the 'end' map iterator to the session options collection.
- virtual int **GetSupportedModesCount** () const =0
  Gets the number of supported modes.
- virtual bool **HasSupportedMode** (const char *mode_name) const =0
  Returns true iff there is a supported mode with a given name.
- virtual se::common::StringsSetIterator **SupportedModesBegin** () const =0
  Returns a 'begin' iterator to the set of supported mode names.
- virtual se::common::StringsSetIterator **SupportedModesEnd** () const =0
  Returns an 'end' iterator to the set of supported mode names.
- virtual const char * **GetCurrentMode** () const =0
  Gets the name of the currently active mode.
- virtual void **SetCurrentMode** (const char *mode_name)=0
  Sets the active mode.
- virtual int **GetInternalEnginesCount** () const =0
  Gets the number of internal engines within the current mode.
- virtual bool **HasInternalEngine** (const char *engine_name) const =0

Returns true iff there is an internla engine with a given name within the current mode.

- virtual se::common::StringsSetIterator **InternalEngineNamesBegin** () const =0

  Returns a 'begin' iterator to the set of internal engine names for the current mode.
- virtual se::common::StringsSetIterator **InternalEngineNamesEnd** () const =0

  Returns an 'end' iterator to the set of internal engine names for the current mode.
- virtual int **GetSupportedDocumentTypesCount** (const char *engine_name) const =0

  Returns the number of supported document types for the internal engine with the given name.
- virtual bool **HasSupportedDocumentType** (const char *engine_name, const char *doc_name) const =0

  Returns true iff there is a supported document type 'doc_name' in the internal engine with name 'engine_name'.
- virtual se::common::StringsSetIterator **SupportedDocumentTypesBegin** (const char *engine_name) const =0

  Returns a 'begin' iterator to the set of supported document types for the engine with name 'engine_name'.
- virtual se::common::StringsSetIterator **SupportedDocumentTypesEnd** (const char *engine_name) const =0

  Returns an 'end' iterator to the set of supported document types for the engine with name 'engine_name'.
- virtual int **GetEnabledDocumentTypesCount** () const =0

  Gets the number of enabled document types for a currently active mode.
- virtual bool **HasEnabledDocumentType** (const char *doc_name) const =0

  Returns true iff the document type 'doc_name' is enabled in a current mode.
- virtual se::common::StringsSetIterator **EnabledDocumentTypesBegin** () const =0

  Returns a 'begin' iterator to the set of enabled document types within a currently active mode.
- virtual se::common::StringsSetIterator **EnabledDocumentTypesEnd** () const =0

  Returns an 'end' iterator to the set of enabled document types within a currently active mode.
- virtual void AddEnabledDocumentTypes (const char *doc_type_mask)=0

  Adds enabled document types to the session settings, within the currently active mode.
- virtual void RemoveEnabledDocumentTypes (const char *doc_type_mask)=0

  Removes the document types from the set of enabled ones.
- virtual const IdDocumentInfo & **GetDocumentInfo** (const char *doc_name) const =0

  Gets reference information about document type.
- virtual int **GetSupportedFieldsCount** (const char *doc_name) const =0

  Gets the number of supported fields for a document type 'doc_name' within a currently active mode.
- virtual bool **HasSupportedField** (const char *doc_name, const char *field_name) const =0

  Returns true iff the field 'field_name' is supported for document type 'doc_name' within a curently active mode.
- virtual se::common::StringsSetIterator **SupportedFieldsBegin** (const char *doc_name) const =0

  Returns a 'begin' iterator to the set of fields supported for a document type 'doc_name' within a currently active mode.
- virtual se::common::StringsSetIterator **SupportedFieldsEnd** (const char *doc_name) const =0

  Returns an 'end' iterator to the set of fields supported for a document type 'doc_name' within a currently active mode.
- virtual IdFieldType **GetFieldType** (const char *doc_name, const char *field_name) const =0

  Returns the field type of the field 'field_name' within a document 'doc_name' within a currently active mode.
- virtual int **GetEnabledFieldsCount** (const char *doc_name) const =0

  Returns the number of enabled fields for document 'doc_name' within a currently active mode.
- virtual bool **HasEnabledField** (const char *doc_name, const char *field_name) const =0

  Returns true iff the field 'field_name' is enabled for document type 'doc_name' within a currently active mode.
- virtual se::common::StringsSetIterator **EnabledFieldsBegin** (const char *doc_name) const =0

  Returns a 'begin' iterator to the set of enabled field names for the document 'doc_name' within a currently active mode.
- virtual se::common::StringsSetIterator **EnabledFieldsEnd** (const char *doc_name) const =0

  Returns an 'end' iterator to the set of enabled field names for the document 'doc_name' within a currently active mode.
- virtual void **EnableField** (const char *doc_name, const char *field_name)=0

  Enables field 'field_name' for the document 'doc_name' within current mode.
- virtual void **DisableField** (const char *doc_name, const char *field_name)=0

  Disables field 'field_name' for document 'doc_name' within current mode.

- virtual bool **IsForensicsEnabled** () const =0

  Returns true iff the document forensics functionality is enabled.
- virtual void **EnableForensics** ()=0

  Enables the document forensics functionality.
- virtual void **DisableForensics** ()=0

  Disables the document forensics functionality.
- virtual int **GetSupportedForensicFieldsCount** (const char ∗doc_name) const =0

  Gets the number of supported forensic fields for a document type 'doc_name' within a currently active mode UPD: this method is deprecated.
- virtual bool **HasSupportedForensicField** (const char ∗doc_name, const char ∗field_name) const =0

  Returns true iff the forensic field 'field_name' is supported for document type 'doc_name' within a curently active mode UPD: this method is deprecated.
- virtual se::common::StringsSetIterator **SupportedForensicFieldsBegin** (const char ∗doc_name) const =0

  Returns a 'begin' iterator to the set of forensic fields supported for a document type 'doc_name' within a currently active mode UPD: this method is deprecated.
- virtual se::common::StringsSetIterator **SupportedForensicFieldsEnd** (const char ∗doc_name) const =0

  Returns an 'end' iterator to the set of forensic fields supported for a document type 'doc_name' within a currently active mode UPD: this method is deprecated.
- virtual IdFieldType **GetForensicFieldType** (const char ∗doc_name, const char ∗field_name) const =0

  Returns the field type of the forebsuc field 'field_name' within a document 'doc_name' within a currently active mode.
- virtual int **GetEnabledForensicFieldsCount** (const char ∗doc_name) const =0

  Returns the number of enabled forensic fields for document 'doc_name' within a currently active mode UPD: this method is deprecated.
- virtual bool **HasEnabledForensicField** (const char ∗doc_name, const char ∗field_name) const =0

  Returns true iff the forensic field 'field_name' is enabled for document type 'doc_name' within a currently active mode UPD: this method is deprecated.
- virtual se::common::StringsSetIterator **EnabledForensicFieldsBegin** (const char ∗doc_name) const =0

  Returns a 'begin' iterator to the set of enabled forensic field names for the document 'doc_name' within a currently active mode UPD: this method is deprecated.
- virtual se::common::StringsSetIterator **EnabledForensicFieldsEnd** (const char ∗doc_name) const =0

  Returns an 'end' iterator to the set of enabled forensic field names for the document 'doc_name' within a currently active mode UPD: this method is deprecated.
- virtual void **EnableForensicField** (const char ∗doc_name, const char ∗field_name)=0

  Enables forensic field 'field_name' for the document 'doc_name' within the currently active current mode UPD: this method is deprecated.
- virtual void **DisableForensicField** (const char ∗doc_name, const char ∗field_name)=0

  Disables forensic field 'field_name' for document 'doc_name' within the currently active mode UPD: this method is deprecated.
- virtual se::common::StringsSetIterator **PermissiblePrefixDocMasksBegin** ()=0

  Returns a 'begin' iterator to the set of permissible prefix document masks for the current mode.
- virtual se::common::StringsSetIterator **PermissiblePrefixDocMasksEnd** ()=0

  Returns an 'end' iterator to the set of permissible prefix document masks for the current mode.

1.51.1 Detailed Description

The class representing the session settings for the Smart ID Engine document recognition functionality.

Definition at line 25 of file id_session_settings.h.

1.51.2 Member Function Documentation

Clone()

```
virtual IdSessionSettings * se::id::IdSessionSettings::Clone () const  [pure virtual]
```

Clones the session settings object.

Returns

A new object of session settings with an identical state. A newly created object is allocated, the caller is responsible for deleting it

AddEnabledDocumentTypes()

```
virtual void se::id::IdSessionSettings::AddEnabledDocumentTypes (
            const char * doc_type_mask)  [pure virtual]
```

Adds enabled document types to the session settings, within the currently active mode.

Parameters

doc_type_mask	- a document type, or a mask with wildcards ('*'). The wildcard symbol will match any sequence of characters, and the lookup dictionary for matched document types are taken from the set of supported document types within the currently active mode.

NB: the set of matched document types must belong to a single internal engine.

RemoveEnabledDocumentTypes()

```
virtual void se::id::IdSessionSettings::RemoveEnabledDocumentTypes (
            const char * doc_type_mask)  [pure virtual]
```

Removes the document types from the set of enabled ones.

Parameters

doc_type_mask	- a document type, or a mask with wildcards ('*'). The wildcard symbol will match any sequence of characters, and the lookup dictionary for matched document types are taken from the set of supported document types within the currently active mode.

1.52 se::id::IdTemplateDetectionResult Class Reference

The class representing the result of page (template) detection.

```
#include <id_result.h>
```

Public Member Functions

- ~**IdTemplateDetectionResult** ()

  Non-trivial dtor.
- IdTemplateDetectionResult (const char *tpl_name, const se::common::Quadrangle &quadrangle, bool is_accepted=false, double confidence=0.0, const se::common::Size &standard_size={})

  Main ctor of the template detection result.
- **IdTemplateDetectionResult** (const IdTemplateDetectionResult &copy)

  Copy ctor.
- IdTemplateDetectionResult & **operator=** (const IdTemplateDetectionResult &other)

  Assignment operator.
- const char * **GetTemplateName** () const

  Returns the template name.
- void **SetTemplateName** (const char *name)

  Sets the template name.
- const se::common::Quadrangle & **GetQuadrangle** () const

  Returns the template quadrangle.
- void **SetQuadrangle** (const se::common::Quadrangle &quadrangle)

  Sets the template quadrangle.
- bool **GetIsAccepted** () const

  Returns the template's accept flag.
- void **SetIsAccepted** (bool is_accepted)

  Sets the template's accept flag.
- double **GetConfidence** () const

  Returns the template confidence (double in range [0.0, 1.0])
- void **SetConfidence** (double confidence)

  Sets the template confidence (must be in range [0.0, 1.0])
- const se::common::Size & **GetStandardSize** () const

  Returns the template's standard size in pixels.
- void **SetStandardSize** (const se::common::Size &standard_size)

  Sets the template's standard size in pixels.
- int **GetAttributesCount** () const

  Gets the number of field's attributes.
- const char * **GetAttribute** (const char *attr_name) const

  Returns the field attribute by its name.
- bool **HasAttribute** (const char *attr_name) const

  Returns true iff the field has the attribute with a given name.
- void **SetAttribute** (const char *attr_name, const char *attr_value)

  Sets the field's attribute by name.
- void **RemoveAttribute** (const char *attr_name)

  Removes the field's attribute with a given name.
- se::common::StringsMapIterator **AttributesBegin** () const

  Returns the 'begin' iterator to the collection of the field attributes.
- se::common::StringsMapIterator **AttributesEnd** () const

  Returns the 'end' iterator to the collection of the field attributes.

Private Attributes

- class IdTemplateDetectionResultImpl * pimpl_

  internal implementation

1.52.1 Detailed Description

The class representing the result of page (template) detection.

Definition at line 24 of file id_result.h.

1.52.2 Constructor & Destructor Documentation

IdTemplateDetectionResult()

```
se::id::IdTemplateDetectionResult::IdTemplateDetectionResult (
            const char * tpl_name,
            const se::common::Quadrangle & quadrangle,
            bool is_accepted = false,
            double confidence = 0.0,
            const se::common::Size & standard_size = {})
```

Main ctor of the template detection result.

Parameters

tpl_name	- name of the detected document page (template)
quadrangle	- quadrangle of the detected template in an image
is_accepted	- detected template's accept flag
confidence	- detected template's confidence (double in [0.0, 1.0])
standard_size	- the standard size of the template in pixels

1.52.3 Member Data Documentation

pimpl_

```
class IdTemplateDetectionResultImpl* se::id::IdTemplateDetectionResult::pimpl_  [private]
```

internal implementation

Definition at line 110 of file id_result.h.

1.53 se::id::IdTemplateSegmentationResult Class Reference

The class representing the page (template) segmentation result.

```
#include <id_result.h>
```

Public Member Functions

- ~**IdTemplateSegmentationResult** ()

  Non-trivial dtor.
- IdTemplateSegmentationResult (bool is_accepted=false, double confidence=0.0)

  Main ctor of the template segmentation result.
- **IdTemplateSegmentationResult** (const IdTemplateSegmentationResult &copy)

  Copy ctor.
- IdTemplateSegmentationResult & **operator=** (const IdTemplateSegmentationResult &other)

  Assignment operator.
- bool **GetIsAccepted** () const

  Returns the segmentation result's accept flag.
- void **SetIsAccepted** (bool is_accepted)

  Sets the segmentation result's accept flag.
- double **GetConfidence** () const

  Returns the segmentation result's confidence (double in [0.0, 1.0])
- void **SetConfidence** (double confidence)

  Sets the segmentation result's confidence (must be in range [0.0, 1.0])
- int **GetRawFieldsCount** () const

  Returns the number of raw fields in the segmentation result.
- bool **HasRawField** (const char ∗raw_field_name) const

  Returns true iff there is a raw field with a given name.
- const se::common::Quadrangle & **GetRawFieldQuadrangle** (const char ∗raw_field_name) const

  Returns the source image quadrangle of the raw field by name.
- const se::common::Quadrangle & **GetRawFieldTemplateQuadrangle** (const char ∗raw_field_name) const

  Returns the template image quadrangle of the raw field by name.
- void **SetRawFieldQuadrangles** (const char ∗raw_field_name, const se::common::Quadrangle &quadrangle, const se::common::Quadrangle &template_quadrangle)

  Sets the quadrangle pair of the raw field in the segmentation result.
- void **RemoveRawField** (const char ∗raw_field_name)

  Removes the raw field with a given name.
- se::common::QuadranglesMapIterator **RawFieldQuadranglesBegin** () const

  Returns a 'begin' iterator to the collection of raw field source image quadrangles.
- se::common::QuadranglesMapIterator **RawFieldQuadranglesEnd** () const

  Returns an 'end' iterator to the collection of raw field source image quadrangles.
- se::common::QuadranglesMapIterator **RawFieldTemplateQuadranglesBegin** () const

  Returns a 'begin' iterator to the collection of raw field template image quadrangles.
- se::common::QuadranglesMapIterator **RawFieldTemplateQuadranglesEnd** () const

  Returns an 'end' iterator to the collection of raw field template image quadrangles.

Private Attributes

- class IdTemplateSegmentationResultImpl ∗ pimpl_

  internal implementation

1.53.1 Detailed Description

The class representing the page (template) segmentation result.

Definition at line 117 of file id_result.h.

1.53.2 Constructor & Destructor Documentation

IdTemplateSegmentationResult()

```
se::id::IdTemplateSegmentationResult::IdTemplateSegmentationResult (
            bool is_accepted = false,
            double confidence = 0.0)
```

Main ctor of the template segmentation result.

Parameters

is_accepted	- the segmentation result's accept flag
confidence	- the segmentation result's confidence (in [0.0, 1.0])

1.53.3 Member Data Documentation

pimpl_

```
class IdTemplateSegmentationResultImpl* se::id::IdTemplateSegmentationResult::pimpl_  [private]
```

internal implementation

Definition at line 195 of file id_result.h.

1.54 se::id::IdTextField Class Reference

The class representing the recognition result of a text field.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdTextField** ()

  Non-trivial dtor.
- **IdTextField** ()

  Default ctor - creates an empty field.
- IdTextField (const char *name, const se::common::OcrString &value, bool is_accepted=false, double confidence=0.0)

  Main ctor of the text field.
- IdTextField (const char *name, const char *value, bool is_accepted=false, double confidence=0.0)

  Text field ctor with a simple C-string value.
- **IdTextField** (const IdTextField &copy)

  Copy ctor.
- IdTextField & **operator=** (const IdTextField &other)

  Assignment operator.
- const char * **GetName** () const

  Returns the name of the text field.

- void **SetName** (const char *name)
  Sets the name of the text field.
- const se::common::OcrString & **GetValue** () const
  Returns the stored value of the text field.
- void **SetValue** (const se::common::OcrString &value)
  Sets the value of the text field as an OcrString object.
- void **SetValue** (const char *value)
  Sets the value of the text field as a C-string.
- const IdBaseFieldInfo & **GetBaseFieldInfo** () const
  Returns the general field information (const ref)
- IdBaseFieldInfo & **GetMutableBaseFieldInfo** ()
  Returns the general field information (mutable ref)

Private Attributes

- class IdTextFieldImpl * pimpl_
  internal implementation

1.54.1 Detailed Description

The class representing the recognition result of a text field.

Definition at line 98 of file id_fields.h.

1.54.2 Constructor & Destructor Documentation

IdTextField() [1/2]

```
se::id::IdTextField::IdTextField (
            const char * name,
            const se::common::OcrString & value,
            bool is_accepted = false,
            double confidence = 0.0)
```

Main ctor of the text field.

Parameters

name	- name of the text field
value	- the value of the text field as an OcrString object
is_accepted	- the field's accept flag
confidence	- the field's confidence (double in range [0.0, 1.0])

IdTextField() [2/2]

```
se::id::IdTextField::IdTextField (
            const char * name,
            const char * value,
            bool is_accepted = false,
            double confidence = 0.0)
```

Text field ctor with a simple C-string value.

Parameters

name	- name of the field
value	- the value of the text field as a C-string
is_accepted	- the field's accept flag
confidence	- the field's confidence (double in range [0.0, 1.0])

1.54.3 Member Data Documentation

pimpl_

```
class IdTextFieldImpl* se::id::IdTextField::pimpl_  [private]
```

internal implementation

Definition at line 162 of file id_fields.h.

1.55 se::id::IdTextFieldsMapIterator Class Reference

A class representing the iterator for string->text field maps.

```
#include <id_fields.h>
```

Public Member Functions

- ~**IdTextFieldsMapIterator** ()
  Non-trivial dtor.
- **IdTextFieldsMapIterator** (const IdTextFieldsMapIterator &other)
  Copy ctor.
- IdTextFieldsMapIterator & **operator=** (const IdTextFieldsMapIterator &other)
  Assignment operator.
- const char * **GetKey** () const
  Returns the key.
- const IdTextField & **GetValue** () const
  Returns the value (the text field object)
- bool **Equals** (const IdTextFieldsMapIterator &rvalue) const
  Returns true iff the current instance and rvalue point to the same object.
- bool **operator==** (const IdTextFieldsMapIterator &rvalue) const
  Returns true iff the current instance and rvalue point to the same object.
- bool **operator!=** (const IdTextFieldsMapIterator &rvalue) const
  Returns true iff the instance and rvalue point to different objects.
- void **Advance** ()
  Advances the iterator to the next object in the collection.
- void **operator++** ()
  Advances the iterator to the next object in the collection.

Static Public Member Functions

- static IdTextFieldsMapIterator **ConstructFromImpl** (const IdTextFieldsMapIteratorImpl &pimpl)
  Factory method for creating the iterator from the internal implementation.

Private Member Functions

- **IdTextFieldsMapIterator** (const IdTextFieldsMapIteratorImpl &pimpl)
  Private ctor from the internal implementation.

Private Attributes

- IdTextFieldsMapIteratorImpl * pimpl_
  internal implementation

1.55.1 Detailed Description

A class representing the iterator for string->text field maps.

Definition at line 172 of file id_fields.h.

1.55.2 Member Data Documentation

pimpl_

```
IdTextFieldsMapIteratorImpl* se::id::IdTextFieldsMapIterator::pimpl_  [private]
```

internal implementation

Definition at line 217 of file id_fields.h.

2 File Documentation

2.1 id_document_info.h

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_DOC_INFO_H_INCLUDED
00012 #define IDENGINE_ID_DOC_INFO_H_INCLUDED
00013
00014 #include <secommon/se_export_defs.h>
00015 #include <secommon/se_strings_set.h>
00016
00017 namespace se { namespace id {
00018
00019
00023 class SE_DLL_EXPORT IdDocumentInfo {
00024 public:
00026   virtual ~IdDocumentInfo() = default;
00027
00029   virtual const char* GetDocumentName() const = 0;
00030
00032   virtual const char* GetDocumentDescription() const = 0;
00033
00035   virtual int HasRFID() const = 0;
00036
00038   virtual const se::common::StringsSet& GetPradoLinks() const = 0;
00039
00041   virtual const se::common::StringsSet& GetDocumentTemplates() const = 0;
00042
00044   virtual float GetDocumentFieldsRejectionThreshold(const char* field_name) const = 0;
00045 };
00046
00047
00048 } } // namespace se::id
00049
00050 #endif // IDENGINE_ID_DOC_INFO_H_INCLUDED
```

2.2 id_engine.h File Reference

id.engine main engine class declaration

Classes

- class se::id::IdEngine

  The main IdEngine class containing all configuration and resources of the Smart ID Engine product.

2.2.1 Detailed Description

id.engine main engine class declaration

Definition in file id_engine.h.

2.3 id_engine.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_ENGINE_H_INCLUDED
00012 #define IDENGINE_ID_ENGINE_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015
00016 #include <idengine/id_session_settings.h>
00017 #include <idengine/id_session.h>
00018
00019 #include <idengine/id_file_analysis_session_settings.h>
00020 #include <idengine/id_file_analysis_session.h>
00021
00022 #include <idengine/id_face_session_settings.h>
00023 #include <idengine/id_face_session.h>
00024
00025 #include <idengine/id_field_processing_session_settings.h>
00026 #include <idengine/id_field_processing_session.h>
00027
00028 #include <idengine/id_video_authentication_callbacks.h>
00029 #include <idengine/id_video_authentication_session_settings.h>
00030 #include <idengine/id_video_authentication_session.h>
00031
00032 #include <idengine/id_feedback.h>
00033 #include <idengine/id_face_feedback.h>
00034
00035 namespace se { namespace id {
00036
00037
00042 class SE_DLL_EXPORT IdEngine {
00043 public:
00045   virtual ~IdEngine() = default;
00046
00053   virtual IdSessionSettings* CreateSessionSettings() const = 0;
00054
00065   virtual IdSession* SpawnSession(
00066       const IdSessionSettings& settings,
00067       const char*              signature,
00068       IdFeedback*              feedback_reporter = nullptr) const = 0;
00069
00076   virtual IdFileAnalysisSessionSettings* CreateFileAnalysisSessionSettings() const = 0;
00077
00088   virtual IdFileAnalysisSession* SpawnFileAnalysisSession(
00089       const IdFileAnalysisSessionSettings& settings,
00090       const char*              signature) const = 0;
00091
00098   virtual IdFaceSessionSettings* CreateFaceSessionSettings() const = 0;
00099
00111   virtual IdFaceSession* SpawnFaceSession(
```

```
00112       const IdFaceSessionSettings& settings,
00113       const char*                  signature,
00114       IdFaceFeedback*              feedback_reporter = nullptr) const = 0;
00115
00122   virtual IdFieldProcessingSessionSettings* CreateFieldProcessingSessionSettings() const = 0;
00123
00133   virtual IdFieldProcessingSession* SpawnFieldProcessingSession(
00134       const IdFieldProcessingSessionSettings& settings,
00135       const char*                             signature) const = 0;
00136
00143   virtual IdVideoAuthenticationSessionSettings*
00144   CreateVideoAuthenticationSessionSettings() const = 0;
00145
00158   virtual IdVideoAuthenticationSession* SpawnVideoAuthenticationSession(
00159       const IdVideoAuthenticationSessionSettings& settings,
00160       const char*                                 signature,
00161       IdVideoAuthenticationCallbacks*             video_authentication_callbacks = nullptr,
00162       IdFeedback*                                 feedback_reporter = nullptr,
00163       IdFaceFeedback*                             face_feedback_reporter = nullptr) const = 0;
00164
00165 public:
00182   static IdEngine* Create(const char* config_path,
00183                           bool        lazy_configuration = true,
00184                           int         init_concurrency = 0,
00185                           bool        delayed_initialization = false);
00186
00204   static IdEngine* Create(unsigned char* config_data,
00205                           int            config_data_length,
00206                           bool           lazy_configuration = true,
00207                           int            init_concurrency = 0,
00208                           bool           delayed_initialization = false);
00209
00225   static IdEngine* CreateFromEmbeddedBundle(
00226       bool           lazy_configuration = true,
00227       int            init_concurrency = 0,
00228       bool           delayed_initialization = false);
00229
00234   static const char* GetVersion();
00235 };
00236
00237
00238 } } // namespace se::id
00239
00240 #endif // IDENGINE_ID_ENGINE_H_INCLUDED
```

2.4 id_face_feedback.h File Reference

id.engine face matching session feedback classes declaration

Classes

- class se::id::IdFaceFeedback

  Abstract interface for receiving Smart ID Engine face session callbacks. All callbacks must be implemented.

2.4.1 Detailed Description

id.engine face matching session feedback classes declaration

Definition in file id_face_feedback.h.

2.5 id_face_feedback.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FACE_FEEDBACK_H_INCLUDED
00012 #define IDENGINE_ID_FACE_FEEDBACK_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015
00016 namespace se { namespace id {
00017
00022 class SE_DLL_EXPORT IdFaceFeedback {
00023 public:
00025   virtual ~IdFaceFeedback();
00026
00031   virtual void MessageReceived(const char* message) = 0;
00032 };
00033
00034 } } // namespace se::id
00035
00036 #endif // IDENGINE_ID_FACE_FEEDBACK_H_INCLUDED
```

2.6 id_face_result.h File Reference

id.engine face results declaration

Classes

- class se::id::IdFaceLivenessResult

  The class which represents the face liveness result.
- class se::id::IdFaceSimilarityResult

  The class representing the face similarity comparison result.
- class se::id::IdFaceRectsResult

  The class representing the face rectangle find result.

Variables

- IdFaceStatus_NotUsed

  Was created but not used.
- IdFaceStatus_Success

  Everything alright.
- IdFaceStatus_A_FaceNotFound

  Face was not found for image A.
- IdFaceStatus_B_FaceNotFound

  Face was not found for image B.
- IdFaceStatus_FaceNotFound

  There is no face found.

2.6.1 Detailed Description

id.engine face results declaration

Definition in file id_face_result.h.

2.6.2 Variable Documentation

IdFaceStatus_NotUsed

`IdFaceStatus_NotUsed`

Was created but not used.

Definition at line 19 of file id_face_result.h.

IdFaceStatus_Success

`IdFaceStatus_Success`

Everything alright.

Definition at line 20 of file id_face_result.h.

IdFaceStatus_A_FaceNotFound

`IdFaceStatus_A_FaceNotFound`

Face was not found for image A.

Definition at line 21 of file id_face_result.h.

IdFaceStatus_B_FaceNotFound

`IdFaceStatus_B_FaceNotFound`

Face was not found for image B.

Definition at line 22 of file id_face_result.h.

IdFaceStatus_FaceNotFound

`IdFaceStatus_FaceNotFound`

There is no face found.

Definition at line 23 of file id_face_result.h.

2.7 id_face_result.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FACE_RESULT_H_INCLUDED
00012 #define IDENGINE_ID_FACE_RESULT_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015
00016 namespace se { namespace id {
00017
00018 enum SE_DLL_EXPORT IdFaceStatus {
00019   IdFaceStatus_NotUsed,
00020   IdFaceStatus_Success,
00021   IdFaceStatus_A_FaceNotFound,
00022   IdFaceStatus_B_FaceNotFound,
00023   IdFaceStatus_FaceNotFound,
00024   IdFaceStatus_NoAccumulatedResult
00025 };
00026
00027
00029 class IdFaceLivenessResultImpl;
00030
00034 class SE_DLL_EXPORT IdFaceLivenessResult {
00035 public:
00037     ~IdFaceLivenessResult();
00038
00040     IdFaceLivenessResult(double liveness_estimation = 0.0);
00041
00043     IdFaceLivenessResult(const IdFaceLivenessResult& copy);
00044
00046     IdFaceLivenessResult& operator =(const IdFaceLivenessResult& other);
00047
00048 public:
00050     double GetLivenessEstimation() const;
00051
00053     void SetLivenessEstimation(double liveness_estimation);
00054
00056     const char* GetLivenessInstruction() const;
00057
00059     void SetLivenessInstruction(const char* instruction);
00060
00061 private:
00062     IdFaceLivenessResultImpl* pimpl_;
00063 };
00064
00066 class IdFaceSimilarityResultImpl;
00067
00071 class SE_DLL_EXPORT IdFaceSimilarityResult {
00072 public:
00074   ~IdFaceSimilarityResult();
00075
00077   IdFaceSimilarityResult(double similarity_estimation = 0.0, IdFaceStatus status =
      IdFaceStatus_NotUsed);
00078
00080   IdFaceSimilarityResult(const IdFaceSimilarityResult& copy);
00081
00083   IdFaceSimilarityResult& operator = (const IdFaceSimilarityResult& other);
00084
00085 public:
00087   double GetSimilarityEstimation() const;
00088
00090   void SetSimilarityEstimation(double similarity_estimation);
00091
00093   IdFaceStatus GetStatus() const;
00094
00096   void SetStatus(const IdFaceStatus& status);
00097
00098 private:
00099   IdFaceSimilarityResultImpl* pimpl_;
00100 };
00101
00103 class IdFaceRectsResultImpl;
00104
00108 class SE_DLL_EXPORT IdFaceRectsResult {
00109 public:
00111   ~IdFaceRectsResult();
00112
00114   IdFaceRectsResult();
00115
00117   IdFaceRectsResult(const IdFaceRectsResult& copy);
00118
```

```
00120   IdFaceRectsResult& operator = (const IdFaceRectsResult& other);
00121
00122 public:
00124   void AddFaceRect(const se::common::Rectangle& inp_rect);
00125
00127   void Clear();
00128
00130   se::common::RectanglesVectorIterator RectanglesBegin() const;
00131
00133   se::common::RectanglesVectorIterator RectanglesEnd() const;
00134
00135 private:
00136   IdFaceRectsResultImpl* pimpl_;
00137 };
00138
00139
00140 } } // namespace se::id
00141
00142 #endif // IDENGINE_ID_FACE_RESULT_H_INCLUDED
```

2.8 id_face_session.h File Reference

id.engine face session declaration

Classes

- class se::id::IdFaceSession

  The main processing class for the face matching and analysis functionality of Smart ID Engine.

2.8.1 Detailed Description

id.engine face session declaration

Definition in file id_face_session.h.

2.9 id_face_session.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FACE_SESSION_H_INCLUDED
00012 #define IDENGINE_ID_FACE_SESSION_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015 #include <idengine/id_face_result.h>
00016
00017 namespace se { namespace id {
00018
00023 class SE_DLL_EXPORT IdFaceSession {
00024 public:
00026   virtual ~IdFaceSession() = default;
00027
00028   virtual const char* GetActivationRequest() = 0;
00029
00030   virtual void Activate(const char* activation_response) = 0;
00031
00032   virtual bool IsActivated() const = 0;
00033
00041   virtual IdFaceSimilarityResult GetSimilarity(
00042       const se::common::Image& face_image_a,
00043       const se::common::Image& face_image_b) const = 0;
00044
00049   virtual void AddFaceImage(const se::common::Image& face_image) = 0;
00050
```

```
00056   virtual IdFaceRectsResult GetRects(const se::common::Image& image) const = 0;
00057
00062   virtual bool HasAccumulatedImage() const = 0;
00063
00070   virtual IdFaceSimilarityResult GetSimilarityWith(
00071       const se::common::Image& compare_image) const = 0;
00072
00078   virtual IdFaceLivenessResult GetLivenessResult() const = 0;
00079
00083   virtual void Reset() = 0;
00084 };
00085
00086
00087 } } // namespace se::id
00088
00089 #endif // IDENGINE_ID_FACE_SESSION_H_INCLUDED
```

2.10 id_face_session_settings.h File Reference

id.engine face session settings class declaration

Classes

- class se::id::IdFaceSessionSettings

  The class representing the settings of the face matching session.

2.10.1 Detailed Description

id.engine face session settings class declaration

Definition in file id_face_session_settings.h.

2.11 id_face_session_settings.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FACE_SESSION_SETTINGS_H_INCLUDED
00012 #define IDENGINE_ID_FACE_SESSION_SETTINGS_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015
00016 namespace se { namespace id {
00017
00018
00022 class SE_DLL_EXPORT IdFaceSessionSettings {
00023 public:
00025   virtual ~IdFaceSessionSettings() = default;
00026
00033   virtual IdFaceSessionSettings* Clone() const = 0;
00034
00035
00037   virtual int GetOptionsCount() const = 0;
00038
00040   virtual const char* GetOption(const char* option_name) const = 0;
00041
00043   virtual bool HasOption(const char* option_name) const = 0;
00044
00046   virtual void SetOption(const char* option_name, const char* option_value) = 0;
00047
00049   virtual void RemoveOption(const char* option_name) = 0;
00050
00052   virtual se::common::StringsMapIterator OptionsBegin() const = 0;
00053
```

```
00055   virtual se::common::StringsMapIterator OptionsEnd() const = 0;
00056
00058   virtual int GetSupportedLivenessInstructionsCount() const = 0;
00059
00061   virtual bool HasSupportedLivenessInstruction(const char* instruction) const = 0;
00062
00064   virtual const char* GetLivenessInstructionDescription(const char* instruction) const = 0;
00065
00067   virtual se::common::StringsMapIterator SupportedLivenessInstructionsBegin() const = 0;
00068
00070   virtual se::common::StringsMapIterator SupportedLivenessInstructionsEnd() const = 0;
00071 };
00072
00073
00074 } } // namespace se::id
00075
00076 #endif // IDENGINE_ID_FACE_SESSION_SETTINGS_H_INCLUDED
```

2.12 id_feedback.h File Reference

id.engine session feedback classes declaration

Classes

- class se::id::IdFeedbackContainer

  The class representing the visual feedback container - a collection of named quadrangles in an image.
- class se::id::IdFeedback

  Abstract interface for receiving Smart ID Engine callbacks. All callbacks must be implemented.

2.12.1 Detailed Description

id.engine session feedback classes declaration

Definition in file id_feedback.h.

2.13 id_feedback.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FEEDBACK_H_INCLUDED
00012 #define IDENGINE_ID_FEEDBACK_H_INCLUDED
00013
00014 #include <idengine/id_result.h>
00015 #include <secommon/se_geometry.h>
00016
00017 namespace se { namespace id {
00018
00023 class SE_DLL_EXPORT IdFeedbackContainer {
00024 public:
00026   ~IdFeedbackContainer();
00027
00029   IdFeedbackContainer();
00030
00032   IdFeedbackContainer(const IdFeedbackContainer& copy);
00033
00035   IdFeedbackContainer& operator =(const IdFeedbackContainer& other);
00036
00037 public:
00038
00040   int GetQuadranglesCount() const;
00041
00043   bool HasQuadrangle(const char* quad_name) const;
```

```
00044
00046   const se::common::Quadrangle& GetQuadrangle(const char* quad_name) const;
00047
00049   void SetQuadrangle(const char* quad_name, const se::common::Quadrangle& quad);
00050
00052   void RemoveQuadrangle(const char* quad_name);
00053
00055   se::common::QuadranglesMapIterator QuadranglesBegin() const;
00056
00058   se::common::QuadranglesMapIterator QuadranglesEnd() const;
00059
00060 private:
00061   class IdFeedbackContainerImpl* pimpl_;
00062 };
00063
00064
00069 class SE_DLL_EXPORT IdFeedback {
00070 public:
00072   virtual ~IdFeedback();
00073
00079   virtual void FeedbackReceived(
00080       const IdFeedbackContainer& feedback_container) = 0;
00081
00086   virtual void TemplateDetectionResultReceived(
00087       const IdTemplateDetectionResult& detection_result) = 0;
00088
00093   virtual void TemplateSegmentationResultReceived(
00094       const IdTemplateSegmentationResult& segmentation_result) = 0;
00095
00100   virtual void ResultReceived(const IdResult& result_received) = 0;
00101
00106   virtual void SessionEnded() = 0;
00107 };
00108
00109 } } // namespace se::id
00110
00111 #endif // IDENGINE_ID_FEEDBACK_H_INCLUDED
```

2.14 id_field_processing_session.h File Reference

id.engine field processing session declaration

Classes

- class se::id::IdFieldProcessingSession

  The main processing class for Smart ID Engine field processing functionality.

2.14.1 Detailed Description

id.engine field processing session declaration

Definition in file id_field_processing_session.h.

2.15 id_field_processing_session.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FIELD_PROCESSING_SESSION_H_INCLUDED
00012 #define IDENGINE_ID_FIELD_PROCESSING_SESSION_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015 #include <idengine/id_fields.h>
00016
```

```
00017 namespace se { namespace id {
00018
00023 class SE_DLL_EXPORT IdFieldProcessingSession {
00024 public:
00026   virtual ~IdFieldProcessingSession() = default;
00027
00028   virtual const char* GetActivationRequest() = 0;
00029
00030   virtual void Activate(const char* activation_response) = 0;
00031
00032   virtual bool IsActivated() const = 0;
00033
00038   virtual void Process() = 0;
00039
00040
00042   virtual int GetTextFieldsCount() const = 0;
00043
00045   virtual bool HasTextField(const char* field_name) const = 0;
00046
00048   virtual const IdTextField& GetTextField(const char* field_name) const = 0;
00049
00051   virtual void SetTextField(
00052       const char* field_name, const IdTextField& field) = 0;
00053
00055   virtual void RemoveTextField(const char* field_name) = 0;
00056
00058   virtual IdTextFieldsMapIterator TextFieldsBegin() const = 0;
00059
00061   virtual IdTextFieldsMapIterator TextFieldsEnd() const = 0;
00062
00063
00065   virtual int GetImageFieldsCount() const = 0;
00066
00068   virtual bool HasImageField(const char* field_name) const = 0;
00069
00071   virtual const IdImageField& GetImageField(const char* field_name) const = 0;
00072
00074   virtual void SetImageField(
00075       const char* field_name, const IdImageField& field) = 0;
00076
00078   virtual void RemoveImageField(const char* field_name) = 0;
00079
00081   virtual IdImageFieldsMapIterator ImageFieldsBegin() const = 0;
00082
00084   virtual IdImageFieldsMapIterator ImageFieldsEnd() const = 0;
00085
00086
00088   virtual int GetAnimatedFieldsCount() const = 0;
00089
00091   virtual bool HasAnimatedField(const char* field_name) const = 0;
00092
00094   virtual const IdAnimatedField& GetAnimatedField(const char* field_name) const = 0;
00095
00097   virtual void SetAnimatedField(
00098       const char* field_name, const IdAnimatedField& field) = 0;
00099
00101   virtual void RemoveAnimatedField(const char* field_name) = 0;
00102
00104   virtual IdAnimatedFieldsMapIterator AnimatedFieldsBegin() const = 0;
00105
00107   virtual IdAnimatedFieldsMapIterator AnimatedFieldsEnd() const = 0;
00108
00109
00111   virtual int GetCheckFieldsCount() const = 0;
00112
00114   virtual bool HasCheckField(const char* field_name) const = 0;
00115
00117   virtual const IdCheckField& GetCheckField(const char* field_name) const = 0;
00118
00120   virtual void SetCheckField(
00121       const char* field_name, const IdCheckField& field) = 0;
00122
00124   virtual void RemoveCheckField(const char* field_name) = 0;
00125
00127   virtual IdCheckFieldsMapIterator CheckFieldsBegin() const = 0;
00128
00130   virtual IdCheckFieldsMapIterator CheckFieldsEnd() const = 0;
00131
00132
00136   virtual void Reset() = 0;
00137 };
00138
00139
00140 } } // namespace se::id
00141
00142 #endif // IDENGINE_ID_FIELD_PROCESSING_SESSION_H_INCLUDED
```

2.16 id_field_processing_session_settings.h File Reference

id.engine field processing session settings class declaration

Classes

- class se::id::IdFieldProcessingSessionSettings

  The class representing the settings of the field processing session.

2.16.1 Detailed Description

id.engine field processing session settings class declaration

Definition in file id_field_processing_session_settings.h.

2.17 id_field_processing_session_settings.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FIELD_PROCESSING_SESSION_SETTINGS_H_INCLUDED
00012 #define IDENGINE_ID_FIELD_PROCESSING_SESSION_SETTINGS_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015
00016 namespace se { namespace id {
00017
00018
00022 class SE_DLL_EXPORT IdFieldProcessingSessionSettings {
00023 public:
00025   virtual ~IdFieldProcessingSessionSettings() = default;
00026
00033   virtual IdFieldProcessingSessionSettings* Clone() const = 0;
00034
00035
00037   virtual int GetSupportedFieldProcessorsCount() const = 0;
00038
00040   virtual bool HasSupportedFieldProcessor(
00041       const char* field_processor_name) const = 0;
00042
00045   virtual se::common::StringsSetIterator SupportedFieldProcessorsBegin() const = 0;
00046
00049   virtual se::common::StringsSetIterator SupportedFieldProcessorsEnd() const = 0;
00050
00051
00053   virtual const char* GetCurrentFieldProcessor() const = 0;
00054
00056   virtual void SetCurrentFieldProcessor(const char* field_processor_name) = 0;
00057
00058
00060   virtual int GetOptionsCount() const = 0;
00061
00063   virtual const char* GetOption(const char* option_name) const = 0;
00064
00066   virtual bool HasOption(const char* option_name) const = 0;
00067
00069   virtual void SetOption(const char* option_name, const char* option_value) = 0;
00070
00072   virtual void RemoveOption(const char* option_name) = 0;
00073
00075   virtual se::common::StringsMapIterator OptionsBegin() const = 0;
00076
00078   virtual se::common::StringsMapIterator OptionsEnd() const = 0;
00079 };
00080
00081
00082 } } // namespace se::id
00083
00084 #endif // IDENGINE_ID_FIELD_PROCESSING_SESSION_SETTINGS_H_INCLUDED
```

2.18 id_fields.h File Reference

id.engine field types declaration

Classes

- class se::id::IdBaseFieldInfo

  The class representing the basic field information, which is present in any field object.
- class se::id::IdTextField

  The class representing the recognition result of a text field.
- class se::id::IdTextFieldsMapIterator

  A class representing the iterator for string->text field maps.
- class se::id::IdImageField

  The class representing an image field.
- class se::id::IdImageFieldsMapIterator

  The class representing the iterator to named image fields container.
- class se::id::IdAnimatedField

  The class representing an animated field.
- class se::id::IdAnimatedFieldsMapIterator

  The class representing the iterator to named animated fields container.
- class se::id::IdCheckField

  The class representing the check field.
- class se::id::IdCheckFieldsMapIterator

  The class representing the iterator to a named check fields collection.

Variables

- IdFieldType_Text

  Text field.
- IdFieldType_Image

  Image field.
- IdFieldType_Animated

  Animated field.
- IdCheckStatus_Undefined

  Undefined result.
- IdCheckStatus_Passed

  Check is passed.

2.18.1 Detailed Description

id.engine field types declaration

Definition in file id_fields.h.

2.18.2 Variable Documentation

IdFieldType_Text

```
IdFieldType_Text
```

Text field.

Definition at line 23 of file id_fields.h.

IdFieldType_Image

```
IdFieldType_Image
```

Image field.

Definition at line 24 of file id_fields.h.

IdFieldType_Animated

```
IdFieldType_Animated
```

Animated field.

Definition at line 25 of file id_fields.h.

IdCheckStatus_Undefined

```
IdCheckStatus_Undefined
```

Undefined result.

Definition at line 455 of file id_fields.h.

IdCheckStatus_Passed

```
IdCheckStatus_Passed
```

Check is passed.

Definition at line 456 of file id_fields.h.

2.19 id_fields.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_FIELDS_H_INCLUDED
00012 #define IDENGINE_ID_FIELDS_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015
00016 namespace se { namespace id {
00017
00018
00022 enum SE_DLL_EXPORT IdFieldType {
00023   IdFieldType_Text,
00024   IdFieldType_Image,
00025   IdFieldType_Animated,
00026   IdFieldType_Check
00027 };
00028
00029
00034 class SE_DLL_EXPORT IdBaseFieldInfo {
00035 public:
00037   ~IdBaseFieldInfo();
00038
00045   IdBaseFieldInfo(bool is_accepted = false,
00046                   double confidence = 0.0);
00047
00049   IdBaseFieldInfo(const IdBaseFieldInfo& copy);
00050
00052   IdBaseFieldInfo& operator =(const IdBaseFieldInfo& other);
00053
00054 public:
00055
00057   bool GetIsAccepted() const;
00058
00060   void SetIsAccepted(bool is_accepted);
00061
00063   double GetConfidence() const;
00064
00066   void SetConfidence(double confidence);
00067
00068
00070   int GetAttributesCount() const;
00071
00073   const char* GetAttribute(const char* attr_name) const;
00074
00076   bool HasAttribute(const char* attr_name) const;
00077
00079   void SetAttribute(const char* attr_name, const char* attr_value);
00080
00082   void RemoveAttribute(const char* attr_name);
00083
00085   se::common::StringsMapIterator AttributesBegin() const;
00086
00088   se::common::StringsMapIterator AttributesEnd() const;
00089
00090 private:
00091   class IdBaseFieldInfoImpl* pimpl_;
00092 };
00093
00094
00098 class SE_DLL_EXPORT IdTextField {
00099 public:
00101   ~IdTextField();
00102
00104   IdTextField();
00105
00113   IdTextField(const char* name,
00114               const se::common::OcrString& value,
00115               bool is_accepted = false,
00116               double confidence = 0.0);
00117
00125   IdTextField(const char* name,
00126               const char* value,
00127               bool is_accepted = false,
00128               double confidence = 0.0);
00129
00131   IdTextField(const IdTextField& copy);
00132
00134   IdTextField& operator =(const IdTextField& other);
00135
00136 public:
```

```
00137
00139   const char* GetName() const;
00140
00142   void SetName(const char* name);
00143
00144
00146   const se::common::OcrString& GetValue() const;
00147
00149   void SetValue(const se::common::OcrString& value);
00150
00152   void SetValue(const char* value);
00153
00154
00156   const IdBaseFieldInfo& GetBaseFieldInfo() const;
00157
00159   IdBaseFieldInfo& GetMutableBaseFieldInfo();
00160
00161 private:
00162   class IdTextFieldImpl* pimpl_;
00163 };
00164
00165
00167 class IdTextFieldsMapIteratorImpl;
00168
00172 class SE_DLL_EXPORT IdTextFieldsMapIterator {
00173 private:
00175   IdTextFieldsMapIterator(const IdTextFieldsMapIteratorImpl& pimpl);
00176
00177 public:
00178
00180   ~IdTextFieldsMapIterator();
00181
00183   IdTextFieldsMapIterator(const IdTextFieldsMapIterator& other);
00184
00186   IdTextFieldsMapIterator& operator =(const IdTextFieldsMapIterator& other);
00187
00189   static IdTextFieldsMapIterator ConstructFromImpl(
00190       const IdTextFieldsMapIteratorImpl& pimpl);
00191
00192
00194   const char* GetKey() const;
00195
00197   const IdTextField& GetValue() const;
00198
00199
00201   bool Equals(const IdTextFieldsMapIterator& rvalue) const;
00202
00204   bool operator ==(const IdTextFieldsMapIterator& rvalue) const;
00205
00207   bool operator !=(const IdTextFieldsMapIterator& rvalue) const;
00208
00209
00211   void Advance();
00212
00214   void operator ++();
00215
00216 private:
00217   IdTextFieldsMapIteratorImpl* pimpl_;
00218 };
00219
00220
00224 class SE_DLL_EXPORT IdImageField {
00225 public:
00226
00228   ~IdImageField();
00229
00231   IdImageField();
00232
00240   IdImageField(const char* name,
00241                const se::common::Image& value,
00242                bool is_accepted = false,
00243                double confidence = 0.0);
00244
00246   IdImageField(const IdImageField& copy);
00247
00249   IdImageField& operator =(const IdImageField& other);
00250
00251 public:
00252
00254   const char* GetName() const;
00255
00257   void SetName(const char* name);
00258
00259
00261   const se::common::Image& GetValue() const;
00262
00264   void SetValue(const se::common::Image& value);
```

```
00265
00266
00268   const IdBaseFieldInfo& GetBaseFieldInfo() const;
00269
00271   IdBaseFieldInfo& GetMutableBaseFieldInfo();
00272
00273 private:
00274   class IdImageFieldImpl* pimpl_;
00275 };
00276
00277
00279 class IdImageFieldsMapIteratorImpl;
00280
00284 class SE_DLL_EXPORT IdImageFieldsMapIterator {
00285 private:
00286
00288   IdImageFieldsMapIterator(const IdImageFieldsMapIteratorImpl& pimpl);
00289
00290 public:
00291
00293   ~IdImageFieldsMapIterator();
00294
00296   IdImageFieldsMapIterator(const IdImageFieldsMapIterator& other);
00297
00299   IdImageFieldsMapIterator& operator =(const IdImageFieldsMapIterator& other);
00300
00302   static IdImageFieldsMapIterator ConstructFromImpl(
00303       const IdImageFieldsMapIteratorImpl& pimpl);
00304
00305
00307   const char* GetKey() const;
00308
00310   const IdImageField& GetValue() const;
00311
00312
00314   bool Equals(const IdImageFieldsMapIterator& rvalue) const;
00315
00317   bool operator ==(const IdImageFieldsMapIterator& rvalue) const;
00318
00320   bool operator !=(const IdImageFieldsMapIterator& rvalue) const;
00321
00322
00324   void Advance();
00325
00327   void operator ++();
00328
00329 private:
00330   class IdImageFieldsMapIteratorImpl* pimpl_;
00331 };
00332
00333
00337 class SE_DLL_EXPORT IdAnimatedField {
00338 public:
00339
00341   ~IdAnimatedField();
00342
00344   IdAnimatedField();
00345
00352   IdAnimatedField(const char* name,
00353                   bool is_accepted = false,
00354                   double confidence = 0.0);
00355
00357   IdAnimatedField(const IdAnimatedField& copy);
00358
00360   IdAnimatedField& operator =(const IdAnimatedField& other);
00361
00362 public:
00363
00365   const char* GetName() const;
00366
00368   void SetName(const char* name);
00369
00370
00372   int GetFramesCount() const;
00373
00375   const se::common::Image& GetFrame(int frame_id) const;
00376
00378   void AppendFrame(const se::common::Image& frame);
00379
00381   void ClearFrames();
00382
00383
00385   const IdBaseFieldInfo& GetBaseFieldInfo() const;
00386
00388   IdBaseFieldInfo& GetMutableBaseFieldInfo();
00389
00390 private:
```

```
00391   class IdAnimatedFieldImpl* pimpl_;
00392 };
00393
00394
00396 class IdAnimatedFieldsMapIteratorImpl;
00397
00401 class SE_DLL_EXPORT IdAnimatedFieldsMapIterator {
00402 private:
00403
00405   IdAnimatedFieldsMapIterator(const IdAnimatedFieldsMapIteratorImpl& pimpl);
00406
00407 public:
00408
00410   ~IdAnimatedFieldsMapIterator();
00411
00413   IdAnimatedFieldsMapIterator(const IdAnimatedFieldsMapIterator& other);
00414
00416   IdAnimatedFieldsMapIterator& operator =(const IdAnimatedFieldsMapIterator& other);
00417
00419   static IdAnimatedFieldsMapIterator ConstructFromImpl(
00420       const IdAnimatedFieldsMapIteratorImpl& pimpl);
00421
00422
00424   const char* GetKey() const;
00425
00427   const IdAnimatedField& GetValue() const;
00428
00429
00431   bool Equals(const IdAnimatedFieldsMapIterator& rvalue) const;
00432
00434   bool operator ==(const IdAnimatedFieldsMapIterator& rvalue) const;
00435
00437   bool operator !=(const IdAnimatedFieldsMapIterator& rvalue) const;
00438
00439
00441   void Advance();
00442
00444   void operator ++();
00445
00446 private:
00447   class IdAnimatedFieldsMapIteratorImpl* pimpl_;
00448 };
00449
00450
00454 enum SE_DLL_EXPORT IdCheckStatus {
00455   IdCheckStatus_Undefined,
00456   IdCheckStatus_Passed,
00457   IdCheckStatus_Failed
00458 };
00459
00460
00464 class SE_DLL_EXPORT IdCheckField {
00465 public:
00466
00468   ~IdCheckField();
00469
00471   IdCheckField();
00472
00480   IdCheckField(const char* name,
00481                IdCheckStatus value,
00482                bool is_accepted = false,
00483                double confidence = 0.0);
00484
00486   IdCheckField(const IdCheckField& copy);
00487
00489   IdCheckField& operator =(const IdCheckField& other);
00490
00491 public:
00492
00494   const char* GetName() const;
00495
00497   void SetName(const char* name);
00498
00499
00501   IdCheckStatus GetValue() const;
00502
00504   void SetValue(IdCheckStatus value);
00505
00506
00508   const IdBaseFieldInfo& GetBaseFieldInfo() const;
00509
00511   IdBaseFieldInfo& GetMutableBaseFieldInfo();
00512
00513 private:
00514   class IdCheckFieldImpl* pimpl_;
00515 };
00516
```

```
00517
00519 class IdCheckFieldsMapIteratorImpl;
00520
00524 class SE_DLL_EXPORT IdCheckFieldsMapIterator {
00525 private:
00526
00528   IdCheckFieldsMapIterator(const IdCheckFieldsMapIteratorImpl& pimpl);
00529
00530 public:
00531
00533   ~IdCheckFieldsMapIterator();
00534
00536   IdCheckFieldsMapIterator(const IdCheckFieldsMapIterator& other);
00537
00539   IdCheckFieldsMapIterator& operator =(const IdCheckFieldsMapIterator& other);
00540
00541
00543   static IdCheckFieldsMapIterator ConstructFromImpl(
00544       const IdCheckFieldsMapIteratorImpl& pimpl);
00545
00546
00548   const char* GetKey() const;
00549
00551   const IdCheckField& GetValue() const;
00552
00553
00555   bool Equals(const IdCheckFieldsMapIterator& rvalue) const;
00556
00558   bool operator ==(const IdCheckFieldsMapIterator& rvalue) const;
00559
00561   bool operator !=(const IdCheckFieldsMapIterator& rvalue) const;
00562
00563
00565   void Advance();
00566
00568   void operator ++();
00569
00570 private:
00571   class IdCheckFieldsMapIteratorImpl* pimpl_;
00572 };
00573
00574
00575 } } // namespace se::id
00576
00577 #endif // IDENGINE_ID_FIELDS_H_INCLUDED
```

2.20 id_result.h File Reference

id.engine result classes declaration

Classes

- class se::id::IdTemplateDetectionResult

  The class representing the result of page (template) detection.
- class se::id::IdTemplateSegmentationResult

  The class representing the page (template) segmentation result.
- class se::id::IdResult

  The class representing the document recognition result.

2.20.1 Detailed Description

id.engine result classes declaration

Definition in file id_result.h.

2.21 id_result.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_RESULT_H_INCLUDED
00012 #define IDENGINE_ID_RESULT_H_INCLUDED
00013
00014 #include <idengine/id_fields.h>
00015 #include <secommon/se_common.h>
00016
00017 namespace se { namespace id {
00018
00019
00024 class SE_DLL_EXPORT IdTemplateDetectionResult {
00025 public:
00026
00028   ~IdTemplateDetectionResult();
00029
00038   IdTemplateDetectionResult(const char* tpl_name,
00039                             const se::common::Quadrangle& quadrangle,
00040                             bool is_accepted = false,
00041                             double confidence = 0.0,
00042                             const se::common::Size& standard_size = {});
00043
00045   IdTemplateDetectionResult(const IdTemplateDetectionResult& copy);
00046
00048   IdTemplateDetectionResult& operator =(
00049       const IdTemplateDetectionResult& other);
00050
00051 public:
00052
00054   const char* GetTemplateName() const;
00055
00057   void SetTemplateName(const char* name);
00058
00059
00061   const se::common::Quadrangle& GetQuadrangle() const;
00062
00064   void SetQuadrangle(const se::common::Quadrangle& quadrangle);
00065
00066
00068   bool GetIsAccepted() const;
00069
00071   void SetIsAccepted(bool is_accepted);
00072
00073
00075   double GetConfidence() const;
00076
00078   void SetConfidence(double confidence);
00079
00080
00082   const se::common::Size& GetStandardSize() const;
00083
00085   void SetStandardSize(const se::common::Size& standard_size);
00086
00087
00089   int GetAttributesCount() const;
00090
00092   const char* GetAttribute(const char* attr_name) const;
00093
00095   bool HasAttribute(const char* attr_name) const;
00096
00098   void SetAttribute(const char* attr_name, const char* attr_value);
00099
00101   void RemoveAttribute(const char* attr_name);
00102
00104   se::common::StringsMapIterator AttributesBegin() const;
00105
00107   se::common::StringsMapIterator AttributesEnd() const;
00108
00109 private:
00110   class IdTemplateDetectionResultImpl* pimpl_;
00111 };
00112
00113
00117 class SE_DLL_EXPORT IdTemplateSegmentationResult {
00118 public:
00119
00121   ~IdTemplateSegmentationResult();
00122
00128   IdTemplateSegmentationResult(bool is_accepted = false,
00129                                double confidence = 0.0);
```

```
00130
00132   IdTemplateSegmentationResult(const IdTemplateSegmentationResult& copy);
00133
00135   IdTemplateSegmentationResult& operator =(
00136       const IdTemplateSegmentationResult& other);
00137
00138 public:
00139
00141   bool GetIsAccepted() const;
00142
00144   void SetIsAccepted(bool is_accepted);
00145
00146
00148   double GetConfidence() const;
00149
00151   void SetConfidence(double confidence);
00152
00153
00155   int GetRawFieldsCount() const;
00156
00158   bool HasRawField(const char* raw_field_name) const;
00159
00160
00162   const se::common::Quadrangle& GetRawFieldQuadrangle(
00163       const char* raw_field_name) const;
00164
00166   const se::common::Quadrangle& GetRawFieldTemplateQuadrangle(
00167       const char* raw_field_name) const;
00168
00170   void SetRawFieldQuadrangles(
00171       const char* raw_field_name,
00172       const se::common::Quadrangle& quadrangle,
00173       const se::common::Quadrangle& template_quadrangle);
00174
00176   void RemoveRawField(const char* raw_field_name);
00177
00180   se::common::QuadranglesMapIterator RawFieldQuadranglesBegin() const;
00183   se::common::QuadranglesMapIterator RawFieldQuadranglesEnd() const;
00184
00185
00188   se::common::QuadranglesMapIterator RawFieldTemplateQuadranglesBegin() const;
00189
00192   se::common::QuadranglesMapIterator RawFieldTemplateQuadranglesEnd() const;
00193
00194 private:
00195   class IdTemplateSegmentationResultImpl* pimpl_;
00196 };
00197
00198
00200 class IdResultImpl;
00201
00202
00206 class SE_DLL_EXPORT IdResult {
00207 public:
00209   ~IdResult();
00210
00212   IdResult(bool is_terminal = false);
00213
00215   IdResult(const IdResult& copy);
00216
00218   IdResult& operator =(const IdResult& other);
00219
00220 public:
00221
00223   const char* GetDocumentType() const;
00224
00226   void SetDocumentType(const char* document_type);
00227
00228
00230   int GetTemplateDetectionResultsCount() const;
00231
00233   const IdTemplateDetectionResult& GetTemplateDetectionResult(
00234       int result_id) const;
00235
00237   void AppendTemplateDetectionResult(
00238       const IdTemplateDetectionResult& result);
00239
00241   void ClearTemplateDetectionResults();
00242
00243
00245   int GetTemplateSegmentationResultsCount() const;
00246
00248   const IdTemplateSegmentationResult& GetTemplateSegmentationResult(
00249       int result_id) const;
00250
00252   void AppendTemplateSegmentationResult(
00253       const IdTemplateSegmentationResult& result);
```

```
00254
00256   void ClearTemplateSegmentationResults();
00257
00258
00260   bool GetIsTerminal() const;
00261
00263   void SetIsTerminal(bool is_terminal);
00264
00265
00267   const se::common::StringsSet& GetSeenTemplates() const;
00268
00270   const se::common::StringsSet& GetTerminalTemplates() const;
00271
00272
00274   int GetTextFieldsCount() const;
00275
00277   bool HasTextField(const char* field_name) const;
00278
00280   const IdTextField& GetTextField(const char* field_name) const;
00281
00283   void SetTextField(const char* field_name, const IdTextField& field);
00284
00286   void RemoveTextField(const char* field_name);
00287
00289   IdTextFieldsMapIterator TextFieldsBegin() const;
00290
00292   IdTextFieldsMapIterator TextFieldsEnd() const;
00293
00294
00296   int GetImageFieldsCount() const;
00297
00299   bool HasImageField(const char* field_name) const;
00300
00302   const IdImageField& GetImageField(const char* field_name) const;
00303
00305   void SetImageField(const char* field_name, const IdImageField& field);
00306
00308   void RemoveImageField(const char* field_name);
00309
00311   IdImageFieldsMapIterator ImageFieldsBegin() const;
00312
00314   IdImageFieldsMapIterator ImageFieldsEnd() const;
00315
00316
00318   int GetAnimatedFieldsCount() const;
00319
00321   bool HasAnimatedField(const char* field_name) const;
00322
00324   const IdAnimatedField& GetAnimatedField(const char* field_name) const;
00325
00327   void SetAnimatedField(const char* field_name, const IdAnimatedField& field);
00328
00330   void RemoveAnimatedField(const char* field_name);
00331
00333   IdAnimatedFieldsMapIterator AnimatedFieldsBegin() const;
00334
00336   IdAnimatedFieldsMapIterator AnimatedFieldsEnd() const;
00337
00338
00340   int GetCheckFieldsCount() const;
00341
00343   bool HasCheckField(const char* field_name) const;
00344
00346   const IdCheckField& GetCheckField(const char* field_name) const;
00347
00349   void SetCheckField(const char* field_name, const IdCheckField& field);
00350
00352   void RemoveCheckField(const char* field_name);
00353
00355   IdCheckFieldsMapIterator CheckFieldsBegin() const;
00356
00358   IdCheckFieldsMapIterator CheckFieldsEnd() const;
00359
00360
00362   int GetForensicTextFieldsCount() const;
00363
00365   bool HasForensicTextField(const char* field_name) const;
00366
00368   const IdTextField& GetForensicTextField(const char* field_name) const;
00369
00371   void SetForensicTextField(const char* field_name, const IdTextField& field);
00372
00374   void RemoveForensicTextField(const char* field_name);
00375
00377   IdTextFieldsMapIterator ForensicTextFieldsBegin() const;
00378
00380   IdTextFieldsMapIterator ForensicTextFieldsEnd() const;
```

```
00381
00382
00384   int GetForensicImageFieldsCount() const;
00385
00387   bool HasForensicImageField(const char* field_name) const;
00388
00390   const IdImageField& GetForensicImageField(const char* field_name) const;
00391
00393   void SetForensicImageField(const char* field_name, const IdImageField& field);
00394
00396   void RemoveForensicImageField(const char* field_name);
00397
00399   IdImageFieldsMapIterator ForensicImageFieldsBegin() const;
00400
00402   IdImageFieldsMapIterator ForensicImageFieldsEnd() const;
00403
00404
00406   int GetForensicAnimatedFieldsCount() const;
00407
00409   bool HasForensicAnimatedField(const char* field_name) const;
00410
00412   const IdAnimatedField& GetForensicAnimatedField(const char* field_name) const;
00413
00415   void SetForensicAnimatedField(
00416       const char* field_name, const IdAnimatedField& field);
00417
00419   void RemoveForensicAnimatedField(const char* field_name);
00420
00422   IdAnimatedFieldsMapIterator ForensicAnimatedFieldsBegin() const;
00423
00425   IdAnimatedFieldsMapIterator ForensicAnimatedFieldsEnd() const;
00426
00427
00429   int GetForensicCheckFieldsCount() const;
00430
00432   bool HasForensicCheckField(const char* field_name) const;
00433
00435   const IdCheckField& GetForensicCheckField(const char* field_name) const;
00436
00438   void SetForensicCheckField(const char* field_name, const IdCheckField& field);
00439
00441   void RemoveForensicCheckField(const char* field_name);
00442
00444   IdCheckFieldsMapIterator ForensicCheckFieldsBegin() const;
00445
00447   IdCheckFieldsMapIterator ForensicCheckFieldsEnd() const;
00448
00449
00451   int GetRawTextFieldsCount() const;
00452
00454   bool HasRawTextField(const char* field_name) const;
00455
00457   const IdTextField& GetRawTextField(const char* field_name) const;
00458
00460   void SetRawTextField(const char* field_name, const IdTextField& field);
00461
00463   void RemoveRawTextField(const char* field_name);
00464
00466   IdTextFieldsMapIterator RawTextFieldsBegin() const;
00467
00469   IdTextFieldsMapIterator RawTextFieldsEnd() const;
00470
00471
00473   int GetRawImageFieldsCount() const;
00474
00476   bool HasRawImageField(const char* field_name) const;
00477
00479   const IdImageField& GetRawImageField(const char* field_name) const;
00480
00482   void SetRawImageField(const char* field_name, const IdImageField& field);
00483
00485   void RemoveRawImageField(const char* field_name);
00486
00488   IdImageFieldsMapIterator RawImageFieldsBegin() const;
00489
00491   IdImageFieldsMapIterator RawImageFieldsEnd() const;
00492
00493
00495   int GetCorrespondingRawFieldsCount(const char* field_name) const;
00496
00499   bool HasCorrespondingRawField(
00500       const char* field_name, const char* raw_field_name) const;
00501
00504   se::common::StringsSetIterator CorrespondingRawFieldNamesBegin(
00505       const char* field_name) const;
00506
00509   se::common::StringsSetIterator CorrespondingRawFieldNamesEnd(
```

```
00510       const char* field_name) const;
00511
00512
00514   int GetCorrespondingFieldsCount(const char* raw_field_name) const;
00515
00518   bool HasCorrespondingField(
00519       const char* raw_field_name, const char* field_name) const;
00520
00523   se::common::StringsSetIterator CorrespondingFieldNamesBegin(
00524       const char* raw_field_name) const;
00525
00528   se::common::StringsSetIterator CorrespondingFieldNamesEnd(
00529       const char* raw_field_name) const;
00530
00531
00533   const IdResultImpl& GetImpl() const;
00534
00536   IdResultImpl& GetMutableImpl();
00537
00538 private:
00539   IdResultImpl* pimpl_;
00540 };
00541
00542
00543 } } // namespace se::id
00544
00545 #endif // IDENGINE_ID_RESULT_H_INCLUDED
```

2.22 id_session.h File Reference

id.engine session declaration

Classes

- class se::id::IdSession

  The main processing class for the Smart ID Engine documen recognition functionality.

2.22.1 Detailed Description

id.engine session declaration

Definition in file id_session.h.

2.23 id_session.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_SESSION_H_INCLUDED
00012 #define IDENGINE_ID_SESSION_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015 #include <idengine/id_result.h>
00016
00017 namespace se { namespace id {
00018
00019
00024 class SE_DLL_EXPORT IdSession {
00025 public:
00026
00028   virtual ~IdSession() = default;
00029
00034   virtual const char* GetActivationRequest() = 0;
00035
```

```
00040   virtual void Activate(const char* activation_response) = 0;
00041
00046   virtual bool IsActivated() const = 0;
00047
00053   virtual const IdResult& Process(const se::common::Image& image) = 0;
00054
00060   virtual const IdResult& Process(const se::common::ByteString& data) = 0;
00061
00063   virtual const IdResult& GetCurrentResult() const = 0;
00064
00066   virtual bool IsResultTerminal() const = 0;
00067
00069   virtual void Reset() = 0;
00070 };
00071
00072
00073 } } // namespace se::id
00074
00075 #endif // IDENGINE_ID_SESSION_H_INCLUDED
```

2.24 id_session_settings.h File Reference

id.engine session settings class declaration

Classes

- class se::id::IdSessionSettings

  The class representing the session settings for the Smart ID Engine document recognition functionality.

2.24.1 Detailed Description

id.engine session settings class declaration

Definition in file id_session_settings.h.

2.25 id_session_settings.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef IDENGINE_ID_SESSION_SETTINGS_H_INCLUDED
00012 #define IDENGINE_ID_SESSION_SETTINGS_H_INCLUDED
00013
00014 #include <secommon/se_common.h>
00015 #include <idengine/id_document_info.h>
00016 #include <idengine/id_fields.h>
00017
00018 namespace se { namespace id {
00019
00020
00025 class SE_DLL_EXPORT IdSessionSettings {
00026 public:
00027
00029   virtual ~IdSessionSettings() = default;
00030
00037   virtual IdSessionSettings* Clone() const = 0;
00038
00039
00041   virtual int GetOptionsCount() const = 0;
00042
00044   virtual const char* GetOption(const char* option_name) const = 0;
00045
00047   virtual bool HasOption(const char* option_name) const = 0;
00048
```

```
00050   virtual void SetOption(const char* option_name, const char* option_value) = 0;
00051
00053   virtual void RemoveOption(const char* option_name) = 0;
00054
00056   virtual se::common::StringsMapIterator OptionsBegin() const = 0;
00057
00059   virtual se::common::StringsMapIterator OptionsEnd() const = 0;
00060
00061
00063   virtual int GetSupportedModesCount() const = 0;
00064
00066   virtual bool HasSupportedMode(const char* mode_name) const = 0;
00067
00069   virtual se::common::StringsSetIterator SupportedModesBegin() const = 0;
00070
00072   virtual se::common::StringsSetIterator SupportedModesEnd() const = 0;
00073
00075   virtual const char* GetCurrentMode() const = 0;
00076
00078   virtual void SetCurrentMode(const char* mode_name) = 0;
00079
00080
00082   virtual int GetInternalEnginesCount() const = 0;
00083
00086   virtual bool HasInternalEngine(const char* engine_name) const = 0;
00087
00090   virtual se::common::StringsSetIterator InternalEngineNamesBegin() const = 0;
00091
00094   virtual se::common::StringsSetIterator InternalEngineNamesEnd() const = 0;
00095
00098   virtual int GetSupportedDocumentTypesCount(const char* engine_name) const = 0;
00099
00102   virtual bool HasSupportedDocumentType(
00103       const char* engine_name, const char* doc_name) const = 0;
00104
00107   virtual se::common::StringsSetIterator SupportedDocumentTypesBegin(
00108       const char* engine_name) const = 0;
00109
00112   virtual se::common::StringsSetIterator SupportedDocumentTypesEnd(
00113       const char* engine_name) const = 0;
00114
00115
00117   virtual int GetEnabledDocumentTypesCount() const = 0;
00118
00120   virtual bool HasEnabledDocumentType(const char* doc_name) const = 0;
00121
00124   virtual se::common::StringsSetIterator EnabledDocumentTypesBegin() const = 0;
00127   virtual se::common::StringsSetIterator EnabledDocumentTypesEnd() const = 0;
00128
00129
00141   virtual void AddEnabledDocumentTypes(const char* doc_type_mask) = 0;
00142
00150   virtual void RemoveEnabledDocumentTypes(const char* doc_type_mask) = 0;
00151
00152
00154   virtual const IdDocumentInfo& GetDocumentInfo(const char* doc_name) const = 0;
00155
00156
00159   virtual int GetSupportedFieldsCount(const char* doc_name) const = 0;
00160
00163   virtual bool HasSupportedField(const char* doc_name,
00164                                  const char* field_name) const = 0;
00165
00168   virtual se::common::StringsSetIterator SupportedFieldsBegin(
00169       const char* doc_name) const = 0;
00170
00173   virtual se::common::StringsSetIterator SupportedFieldsEnd(
00174       const char* doc_name) const = 0;
00175
00178   virtual IdFieldType GetFieldType(const char* doc_name,
00179                                    const char* field_name) const = 0;
00180
00181
00184   virtual int GetEnabledFieldsCount(const char* doc_name) const = 0;
00185
00188   virtual bool HasEnabledField(const char* doc_name,
00189                                const char* field_name) const = 0;
00190
00193   virtual se::common::StringsSetIterator EnabledFieldsBegin(
00194       const char* doc_name) const = 0;
00195
00198   virtual se::common::StringsSetIterator EnabledFieldsEnd(
00199       const char* doc_name) const = 0;
00200
00202   virtual void EnableField(const char* doc_name,
00203                            const char* field_name) = 0;
00204
```

```
00206   virtual void DisableField(const char* doc_name,
00207                             const char* field_name) = 0;
00208
00209
00211   virtual bool IsForensicsEnabled() const = 0;
00212
00214   virtual void EnableForensics() = 0;
00215
00217   virtual void DisableForensics() = 0;
00218
00219
00223   virtual int GetSupportedForensicFieldsCount(const char* doc_name) const = 0;
00224
00228   virtual bool HasSupportedForensicField(
00229       const char* doc_name, const char* field_name) const = 0;
00230
00234   virtual se::common::StringsSetIterator SupportedForensicFieldsBegin(
00235       const char* doc_name) const = 0;
00236
00240   virtual se::common::StringsSetIterator SupportedForensicFieldsEnd(
00241       const char* doc_name) const = 0;
00242
00243
00246   virtual IdFieldType GetForensicFieldType(
00247       const char* doc_name, const char* field_name) const = 0;
00248
00249
00253   virtual int GetEnabledForensicFieldsCount(const char* doc_name) const = 0;
00254
00258   virtual bool HasEnabledForensicField(
00259       const char* doc_name, const char* field_name) const = 0;
00260
00264   virtual se::common::StringsSetIterator EnabledForensicFieldsBegin(
00265       const char* doc_name) const = 0;
00266
00270   virtual se::common::StringsSetIterator EnabledForensicFieldsEnd(
00271       const char* doc_name) const = 0;
00272
00276   virtual void EnableForensicField(
00277       const char* doc_name, const char* field_name) = 0;
00278
00282   virtual void DisableForensicField(
00283       const char* doc_name, const char* field_name) = 0;
00284
00285
00288   virtual se::common::StringsSetIterator PermissiblePrefixDocMasksBegin() = 0;
00291   virtual se::common::StringsSetIterator PermissiblePrefixDocMasksEnd() = 0;
00292 };
00293
00294
00295 } } // namespace se::id
00296
00297 #endif // IDENGINE_ID_SESSION_SETTINGS_H_INCLUDED
```

2.26 se_common.h File Reference

Include all interface headers of secommon library.

2.26.1 Detailed Description

Include all interface headers of secommon library.

Definition in file se_common.h.

2.27 se_common.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
```

```
00012 #ifndef SECOMMON_SE_COMMON_H_INCLUDED
00013 #define SECOMMON_SE_COMMON_H_INCLUDED
00014
00015 #include <secommon/se_export_defs.h>
00016 #include <secommon/se_serialization.h>
00017 #include <secommon/se_string.h>
00018 #include <secommon/se_strings_iterator.h>
00019 #include <secommon/se_strings_set.h>
00020 #include <secommon/se_exception.h>
00021 #include <secommon/se_geometry.h>
00022 #include <secommon/se_image.h>
00023
00024 #endif // SECOMMON_SE_COMMON_H_INCLUDED
```

2.28 se_exception.h File Reference

Exception classes for secommon library.

Classes

- class se::common::BaseException

  BaseException class - base class for all SE exeptions. Cannot be created directly.
- class se::common::InvalidKeyException

  InvalidKeyException: thrown if to an associative container the access is performed with an invalid or a non-existent key, or if the access to a list is performed with an invalid or out-of-range index.
- class se::common::NotSupportedException

  NotSupportedException: thrown when trying to access a method which given the current state or given the passed arguments is not supported in the current version of the library or is not supported at all by design.
- class se::common::FileSystemException

  FileSystemException: thrown if an attempt is made to read from a non-existent file, or other file-system related IO error.
- class se::common::UninitializedObjectException

  UninitializedObjectException: thrown if an attempt is made to access a non-existent or non-initialized object.
- class se::common::InvalidArgumentException

  InvalidArgumentException: thrown if a method is called with invalid input parameters.
- class se::common::MemoryException

  MemoryException: thrown if an allocation is attempted with insufficient RAM.
- class se::common::InvalidStateException

  InvalidStateException: thrown if an error occurs within the system in relation to an incorrect internal state of the system objects.
- class se::common::InternalException

  InternalException: thrown if an unknown error occurs or if the error occurs within internal system components.

2.28.1 Detailed Description

Exception classes for secommon library.

Definition in file se_exception.h.

2.29 se_exception.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef SECOMMON_SE_EXCEPTION_H_INCLUDED
00012 #define SECOMMON_SE_EXCEPTION_H_INCLUDED
00013
00014 #include <secommon/se_export_defs.h>
00015
00016 namespace se { namespace common {
00017
00022 class SE_DLL_EXPORT BaseException {
00023 public:
00025   virtual ~BaseException();
00026
00028   BaseException(const BaseException& copy);
00029
00031   virtual const char* ExceptionName() const;
00032
00034   virtual const char* what() const;
00035
00036 protected:
00038   BaseException(const char* msg);
00039
00040 private:
00041   char* msg_;
00042 };
00043
00044
00050 class SE_DLL_EXPORT InvalidKeyException : public BaseException {
00051 public:
00053   InvalidKeyException(const char* msg);
00054
00056   InvalidKeyException(const InvalidKeyException& copy);
00057
00059   virtual ~InvalidKeyException() override = default;
00060
00062   virtual const char* ExceptionName() const override;
00063 };
00064
00065
00072 class SE_DLL_EXPORT NotSupportedException : public BaseException {
00073 public:
00075   NotSupportedException(const char* msg);
00076
00078   NotSupportedException(const NotSupportedException& copy);
00079
00081   virtual ~NotSupportedException() override = default;
00082
00084   virtual const char* ExceptionName() const override;
00085 };
00086
00087
00092 class SE_DLL_EXPORT FileSystemException : public BaseException {
00093 public:
00095   FileSystemException(const char* msg);
00096
00098   FileSystemException(const FileSystemException& copy);
00099
00101   virtual ~FileSystemException() override = default;
00102
00104   virtual const char* ExceptionName() const override;
00105 };
00106
00107
00112 class SE_DLL_EXPORT UninitializedObjectException : public BaseException {
00113 public:
00115   UninitializedObjectException(const char* msg);
00116
00118   UninitializedObjectException(const UninitializedObjectException& copy);
00119
00121   virtual ~UninitializedObjectException() override = default;
00122
00124   virtual const char* ExceptionName() const override;
00125 };
00126
00127
00132 class SE_DLL_EXPORT InvalidArgumentException : public BaseException {
00133 public:
00135   InvalidArgumentException(const char* msg);
00136
00138   InvalidArgumentException(const InvalidArgumentException& copy);
```

```
00139
00141   virtual ~InvalidArgumentException() override = default;
00142
00144   virtual const char* ExceptionName() const override;
00145 };
00146
00147
00152 class SE_DLL_EXPORT MemoryException : public BaseException {
00153 public:
00155   MemoryException(const char* msg);
00156
00158   MemoryException(const MemoryException& copy);
00159
00161   virtual ~MemoryException() override = default;
00162
00164   virtual const char* ExceptionName() const override;
00165 };
00166
00167
00172 class SE_DLL_EXPORT InvalidStateException : public BaseException {
00173 public:
00175   InvalidStateException(const char* msg);
00176
00178   InvalidStateException(const InvalidStateException& copy);
00179
00181   virtual ~InvalidStateException() override = default;
00182
00184   virtual const char* ExceptionName() const override;
00185 };
00186
00187
00192 class SE_DLL_EXPORT InternalException : public BaseException {
00193 public:
00195   InternalException(const char* msg);
00196
00198   InternalException(const InternalException& copy);
00199
00201   virtual ~InternalException() override = default;
00202
00204   virtual const char* ExceptionName() const override;
00205 };
00206
00207
00208 } } // namespace se::common
00209
00210 #endif // SECOMMON_SE_EXCEPTION_H_INCLUDED
```

2.30 se_export_defs.h File Reference

Export-related definitions for secommon library.

2.30.1 Detailed Description

Export-related definitions for secommon library.

Definition in file se_export_defs.h.

2.30.2 Macro Definition Documentation

SE_DLL_EXPORT

```
#define SE_DLL_EXPORT
```

Definition at line 20 of file se_export_defs.h.

2.31 se_export_defs.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef SECOMMON_SE_EXPORT_DEFS_H_INCLUDED
00012 #define SECOMMON_SE_EXPORT_DEFS_H_INCLUDED
00013
00014 #if defined _WIN32 && SE_EXPORTS
00015 # define SE_DLL_EXPORT __declspec(dllexport)
00016 #else // defined _WIN32 && SE_EXPORTS
00017 # if defined(__clang__) || defined(__GNUC__)
00018 #  define SE_DLL_EXPORT __attribute__ ((visibility ("default")))
00019 # else // clang of gnuc
00020 #  define SE_DLL_EXPORT
00021 # endif // clang of gnuc
00022 #endif // defined _WIN32 && SE_EXPORTS
00023
00024 #endif // SECOMMON_SE_EXPORT_DEFS_H_INCLUDED
```

2.32 se_geometry.h File Reference

Basic geometric classes and procedures for secommon library.

Classes

- class se::common::Rectangle

  Class representing a rectangle in an image.
- class se::common::Point

  Class representing a point in an image.
- class se::common::Size

  Class representing a size of the (rectangular) object.
- class se::common::Quadrangle

  Class representing a quadrangle in an image.
- class se::common::QuadranglesMapIterator

  QuadranglesMapIterator: iterator object for maps of named quadrangles.
- class se::common::RectanglesVectorIterator
- class se::common::Polygon

  Class representing a polygon in an image.
- class se::common::ProjectiveTransform

  Class representing projective transformation of a plane.

2.32.1 Detailed Description

Basic geometric classes and procedures for secommon library.

Definition in file se_geometry.h.

2.33 se_geometry.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef SECOMMON_SE_GEOMETRY_H_INCLUDED
00012 #define SECOMMON_SE_GEOMETRY_H_INCLUDED
00013
00014 #include <secommon/se_export_defs.h>
00015 #include <secommon/se_serialization.h>
00016
00017 namespace se { namespace common {
00018
00022 class SE_DLL_EXPORT Rectangle {
00023 public:
00025   Rectangle();
00026
00028   Rectangle(int x, int y, int width, int height);
00029
00031   void Serialize(Serializer& serializer) const;
00032
00034   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00035
00036 public:
00037   int x;
00038   int y;
00039   int width;
00040   int height;
00041 };
00042
00043
00047 class SE_DLL_EXPORT Point {
00048 public:
00050   Point();
00051
00053   Point(double x, double y);
00054
00056   void Serialize(Serializer& serializer) const;
00057
00059   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00060
00061 public:
00062   double x;
00063   double y;
00064 };
00065
00066
00070 class SE_DLL_EXPORT Size {
00071 public:
00073   Size();
00074
00076   Size(int width, int height);
00077
00079   void Serialize(Serializer& serializer) const;
00080
00082   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00083
00084 public:
00085   int width;
00086   int height;
00087 };
00088
00089
00093 class SE_DLL_EXPORT Quadrangle {
00094 public:
00096   Quadrangle();
00097
00099   Quadrangle(const Point& a, const Point& b, const Point& c, const Point& d);
00100
00102   Point& operator[](int index);
00103
00105   const Point& operator[](int index) const;
00106
00108   const Point& GetPoint(int index) const;
00109
00111   Point& GetMutablePoint(int index);
00112
00114   void SetPoint(int index, const Point& p);
00115
00117   Rectangle GetBoundingRectangle() const;
00118
00120   void Serialize(Serializer& serializer) const;
00121
```

```
00123   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00124
00125 private:
00126   Point pts_[4];
00127 };
00128
00130 class QuadranglesMapIteratorImpl;
00131
00135 class SE_DLL_EXPORT QuadranglesMapIterator {
00136 private:
00138   QuadranglesMapIterator(const QuadranglesMapIteratorImpl& pimpl);
00139
00140 public:
00142   QuadranglesMapIterator(const QuadranglesMapIterator& other);
00143
00145   QuadranglesMapIterator& operator =(const QuadranglesMapIterator& other);
00146
00148   ~QuadranglesMapIterator();
00149
00151   static QuadranglesMapIterator ConstructFromImpl(
00152       const QuadranglesMapIteratorImpl& pimpl);
00153
00155   const char* GetKey() const;
00156
00158   const Quadrangle& GetValue() const;
00159
00161   bool Equals(const QuadranglesMapIterator& rvalue) const;
00162
00164   bool operator ==(const QuadranglesMapIterator& rvalue) const;
00165
00167   bool operator !=(const QuadranglesMapIterator& rvalue) const;
00168
00170   void Advance();
00171
00173   void operator ++();
00174
00175 private:
00176   class QuadranglesMapIteratorImpl* pimpl_;
00177 };
00178
00179 class RectanglesVectorIteratorImpl;
00180
00181 class SE_DLL_EXPORT RectanglesVectorIterator {
00182 private:
00184   RectanglesVectorIterator(const RectanglesVectorIteratorImpl& pimpl);
00185
00186 public:
00188   RectanglesVectorIterator(const RectanglesVectorIterator& other);
00189
00191   RectanglesVectorIterator& operator =(const RectanglesVectorIterator& other);
00192
00194   ~RectanglesVectorIterator();
00195
00197   static RectanglesVectorIterator ConstructFromImpl(
00198       const RectanglesVectorIteratorImpl& pimpl);
00199
00201   const Rectangle& GetValue() const;
00202
00204   bool Equals(const RectanglesVectorIterator& rvalue) const;
00205
00207   bool operator ==(const RectanglesVectorIterator& rvalue) const;
00208
00210   bool operator !=(const RectanglesVectorIterator& rvalue) const;
00211
00213   void Advance();
00214
00216   void operator ++();
00217
00218 private:
00219   class RectanglesVectorIteratorImpl* pimpl_;
00220 };
00221
00225 class SE_DLL_EXPORT Polygon {
00226 public:
00228   Polygon();
00229
00231   Polygon(const Point* points, int points_count);
00232
00234   Polygon(const Polygon& other);
00235
00237   Polygon& operator =(const Polygon& other);
00238
00240   ~Polygon();
00241
00243   int GetPointsCount() const;
00244
00246   const Point* GetPoints() const;
```

```
00247
00249   Point& operator [](int index);
00250
00252   const Point& operator [](int index) const;
00253
00255   const Point& GetPoint(int index) const;
00256
00258   Point& GetMutablePoint(int index);
00259
00261   void SetPoint(int index, const Point& p);
00262
00266   void Resize(int size);
00267
00269   Rectangle GetBoundingRectangle() const;
00270
00272   void Serialize(Serializer& serializer) const;
00273
00275   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00276
00277 private:
00278   int pts_cnt_;
00279   Point* pts_;
00280 };
00281
00282
00286 class SE_DLL_EXPORT ProjectiveTransform {
00287 public:
00288   using Raw2dArrayType = double[3][3];
00289
00290 public:
00291
00299   static bool CanCreate(const Quadrangle& src_quad, const Quadrangle& dst_quad);
00300
00309   static bool CanCreate(const Quadrangle& src_quad, const Size& dst_size);
00310
00315   static ProjectiveTransform* Create();
00316
00324   static ProjectiveTransform* Create(
00325       const Quadrangle& src_quad,
00326       const Quadrangle& dst_quad);
00327
00335   static ProjectiveTransform* Create(
00336       const Quadrangle& src_quad,
00337       const Size&       dst_size);
00338
00344   static ProjectiveTransform* Create(const Raw2dArrayType& coeffs);
00345
00346 public:
00348   virtual ~ProjectiveTransform() = default;
00349
00351   virtual ProjectiveTransform* Clone() const = 0;
00352
00354   virtual Point TransformPoint(const Point& p) const = 0;
00355
00357   virtual Quadrangle TransformQuad(const Quadrangle& q) const = 0;
00358
00360   virtual Polygon TransformPolygon(const Polygon& poly) const = 0;
00361
00363   virtual bool IsInvertable() const = 0;
00364
00366   virtual void Invert() = 0;
00367
00369   virtual ProjectiveTransform* CloneInverted() const = 0;
00370
00372   virtual const Raw2dArrayType& GetRawCoeffs() const = 0;
00373
00375   virtual Raw2dArrayType& GetMutableRawCoeffs() = 0;
00376
00378   virtual void Serialize(Serializer& serializer) const = 0;
00379 };
00380
00381
00382 } } // namespace se::common
00383
00384 #endif // SECOMMON_SE_GEOMETRY_H_INCLUDED
```

2.34 se_image.h File Reference

secommon library Image

Classes

- class se::common::YUVDimensions

  The YUVDimensions struct - extended YUV parameters.
- class se::common::Image

  Class representing bitmap image.

Variables

- IPF_G = 0

  Greyscale.
- IPF_GA

  Greyscale + Alpha.
- IPF_AG

  Alpha + Greyscale.
- IPF_RGB

  RGB.
- IPF_BGR

  BGR.
- IPF_BGRA

  BGR + Alpha.
- IPF_ARGB

  Alpha + RGB.
- YUVTYPE_UNDEFINED = 0

  No format.
- YUVTYPE_NV21 = 1

  NV 21.

2.34.1 Detailed Description

secommon library Image

Definition in file se_image.h.

2.34.2 Variable Documentation

IPF_G

```
IPF_G = 0
```

Greyscale.

Definition at line 27 of file se_image.h.

IPF_GA

```
IPF_GA
```

Greyscale + Alpha.

Definition at line 28 of file se_image.h.

IPF_AG

```
IPF_AG
```

Alpha + Greyscale.

Definition at line 29 of file se_image.h.

IPF_RGB

```
IPF_RGB
```

RGB.

Definition at line 30 of file se_image.h.

IPF_BGR

```
IPF_BGR
```

BGR.

Definition at line 31 of file se_image.h.

IPF_BGRA

```
IPF_BGRA
```

BGR + Alpha.

Definition at line 32 of file se_image.h.

IPF_ARGB

```
IPF_ARGB
```

Alpha + RGB.

Definition at line 33 of file se_image.h.

YUVTYPE_UNDEFINED

```
YUVTYPE_UNDEFINED = 0
```

No format.

Definition at line 41 of file se_image.h.

YUVTYPE_NV21

```
YUVTYPE_NV21 = 1
```

NV 21.

Definition at line 42 of file se_image.h.

2.35 se_image.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef SECOMMON_SE_IMAGE_H_INCLUDED
00012 #define SECOMMON_SE_IMAGE_H_INCLUDED
00013
00014 #include <secommon/se_export_defs.h>
00015 #include <secommon/se_geometry.h>
00016 #include <secommon/se_serialization.h>
00017 #include <secommon/se_string.h>
00018
00019 #include <secommon/se_images_iterator.h>
00020
00021 namespace se { namespace common {
00022
00026 enum SE_DLL_EXPORT ImagePixelFormat {
00027   IPF_G = 0,
00028   IPF_GA,
00029   IPF_AG,
00030   IPF_RGB,
00031   IPF_BGR,
00032   IPF_BGRA,
00033   IPF_ARGB,
00034   IPF_RGBA
00035 };
00036
00040 enum SE_DLL_EXPORT YUVType {
00041   YUVTYPE_UNDEFINED = 0,
00042   YUVTYPE_NV21 = 1,
00043   YUVTYPE_420_888 = 2
00044 };
00045
00049 class SE_DLL_EXPORT YUVDimensions {
00050 public:
00052   YUVDimensions();
00053
00055   YUVDimensions(int y_pixel_stride,
00056                 int y_row_stride,
00057                 int u_pixel_stride,
00058                 int u_row_stride,
00059                 int v_pixel_stride,
00060                 int v_row_stride,
00061                 int width,
00062                 int height,
00063                 YUVType type);
00064
00065   int y_plane_pixel_stride;
00066   int y_plane_row_stride;
00067   int u_plane_pixel_stride;
00068   int u_plane_row_stride;
00069   int v_plane_pixel_stride;
00070   int v_plane_row_stride;
00071   int width;
00072   int height;
00073   YUVType type;
00074 };
00075
00079 class SE_DLL_EXPORT Image {
00080 public:
00086   static int GetNumberOfPages(const char* image_filename);
00087
00094   static MutableString GetImagePageName(const char *image_filename,
00095                                         int page_number);
00096
00102   static Image* CreateEmpty();
00103
```

```
00113   static Image* FromFile(
00114       const char* image_filename,
00115       const int   page_number = 0,
00116       const Size& max_size = Size(25000, 25000));
00117
00128   static Image* FromFileBuffer(
00129       unsigned char* data,
00130       int            data_length,
00131       const int      page_number = 0,
00132       const Size&    max_size = Size(25000, 25000));
00133
00147   static Image* FromBuffer(
00148       unsigned char* raw_data,
00149       int            raw_data_length,
00150       int            width,
00151       int            height,
00152       int            stride,
00153       int            channels);
00154
00168   static Image* FromBufferExtended(
00169       unsigned char*   raw_data,
00170       int              raw_data_length,
00171       int              width,
00172       int              height,
00173       int              stride,
00174       ImagePixelFormat pixel_format,
00175       int              bytes_per_channel);
00176
00186   static Image* FromYUVBuffer(
00187       unsigned char* yuv_data,
00188       int            yuv_data_length,
00189       int            width,
00190       int            height);
00191
00192
00205   static Image* FromYUV(
00206       unsigned char*       y_plane,
00207       int                  y_plane_length,
00208       unsigned char*       u_plane,
00209       int                  u_plane_length,
00210       unsigned char*       v_plane,
00211       int                  v_plane_length,
00212       const YUVDimensions& dimensions);
00213
00223   static Image* FromBase64Buffer(
00224       const char* base64_buffer,
00225       const int   page_number = 0,
00226       const Size& max_size = Size(25000, 25000));
00227
00228 public:
00230   virtual ~Image() = default;
00231
00236   virtual int GetNumberOfLayers() const = 0;
00237
00243   virtual const Image& GetLayer(const char* name) const = 0;
00244
00250   virtual const Image* GetLayerPtr(const char* name) const = 0;
00251
00256   virtual ImagesMapIterator LayersBegin() const = 0;
00257
00262   virtual ImagesMapIterator LayersEnd() const = 0;
00263
00269   virtual bool HasLayer(const char* name) const = 0;
00270
00275   virtual bool HasLayers() const = 0;
00276
00281   virtual void RemoveLayer(const char* name) = 0;
00282
00284   virtual void RemoveLayers() = 0;
00285
00292   virtual void SetLayer(const char* name, const Image& image) = 0;
00293
00301   virtual void SetLayerWithOwnership(const char* name, Image* image) = 0;
00302
00303 public:
00309   virtual Image* CloneDeep() const = 0;
00310
00318   virtual Image* CloneShallow() const = 0;
00319
00321   virtual void Clear() = 0;
00322
00328   virtual int GetRequiredBufferLength() const = 0;
00329
00337   virtual int CopyToBuffer(unsigned char* buffer, int buffer_length) const = 0;
00338
00339 #ifndef STRICT_DATA_CONTAINMENT
00345   virtual void Save(const char* image_filename) const = 0;
```

```
00346 #endif // #ifndef STRICT_DATA_CONTAINMENT
00347
00353   virtual int GetRequiredBase64BufferLength() const = 0;
00354
00363   virtual int CopyBase64ToBuffer(
00364       char* out_buffer, int buffer_length) const = 0;
00365
00370   virtual MutableString GetBase64String() const = 0;
00371
00377   virtual double EstimateFocusScore(double quantile = 0.95) const = 0;
00378
00383   virtual void Resize(const Size& new_size) = 0;
00384
00391   virtual Image* CloneResized(const Size& new_size) const = 0;
00392
00399   virtual void Crop(const Quadrangle& quad) = 0;
00400
00408   virtual Image* CloneCropped(const Quadrangle& quad) const = 0;
00409
00415   virtual void Crop(const Quadrangle& quad, const Size& size) = 0;
00416
00424   virtual Image* CloneCropped(const Quadrangle& quad, const Size& size) const = 0;
00425
00430   virtual void Crop(const Rectangle& rect) = 0;
00431
00439   virtual Image* CloneCropped(const Rectangle& rect) const = 0;
00440
00450   virtual Image* CloneCroppedShallow(const Rectangle& rect) const = 0;
00451
00458   virtual void Mask(const Rectangle& rect, int pixel_expand = 0, double pixel_density = 0) = 0;
00459
00467   virtual Image* CloneMasked(const Rectangle& rect, int pixel_expand = 0) const = 0;
00468
00474   virtual void Mask(const Quadrangle& quad, int pixel_expand = 0, double pixel_density = 0) = 0;
00475
00484   virtual Image* CloneMasked(const Quadrangle& quad, int pixel_expand = 0) const = 0;
00485
00496   virtual void Fill(const Rectangle& rect, int ch1, int ch2 = 0, int ch3 = 0, int ch4 = 0, int
      pixel_expand = 0) = 0;
00497
00510   virtual Image* CloneFilled(const Rectangle& rect, int ch1, int ch2 = 0, int ch3 = 0, int ch4 = 0,
      int pixel_expand = 0) const = 0;
00511
00522   virtual void Fill(const Quadrangle& quad, int ch1, int ch2 = 0, int ch3 = 0, int ch4 = 0, int
      pixel_expand = 0) = 0;
00523
00536   virtual Image* CloneFilled(const Quadrangle& quad, int ch1, int ch2 = 0, int ch3 = 0, int ch4 = 0,
      int pixel_expand = 0) const = 0;
00537
00541   virtual void FlipVertical() = 0;
00542
00548   virtual Image* CloneFlippedVertical() const = 0;
00549
00553   virtual void FlipHorizontal() = 0;
00554
00560   virtual Image* CloneFlippedHorizontal() const = 0;
00561
00566   virtual void Rotate90(int times) = 0;
00567
00574   virtual Image* CloneRotated90(int times) const = 0;
00575
00579   virtual void AverageChannels() = 0;
00580
00586   virtual Image* CloneAveragedChannels() const = 0;
00587
00591   virtual void Invert() = 0;
00592
00598   virtual Image* CloneInverted() const = 0;
00599
00601   virtual int GetWidth() const = 0;
00602
00604   virtual int GetHeight() const = 0;
00605
00607   virtual Size GetSize() const = 0;
00608
00610   virtual int GetStride() const = 0;
00611
00613   virtual int GetChannels() const = 0;
00614
00616   virtual void* GetUnsafeBufferPtr() const = 0;
00617
00619   virtual bool IsMemoryOwner() const = 0;
00620
00622   virtual void ForceMemoryOwner() = 0;
00623
00625   virtual void Serialize(Serializer& serializer) const = 0;
00626 };
```

```
00627
00628
00629 } } // namespace se::common
00630
00631 #endif // SECOMMON_SE_IMAGE_H_INCLUDED
```

2.36 se_serialization.h File Reference

Facilities for serialization of objects.

Classes

- class se::common::SerializationParameters

  Class representing serialization parameters.
- class se::common::Serializer

  Class representing the serializer object.

2.36.1 Detailed Description

Facilities for serialization of objects.

Definition in file se_serialization.h.

2.37 se_serialization.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef SECOMMON_SE_SERIALIZATION_H_INCLUDED
00012 #define SECOMMON_SE_SERIALIZATION_H_INCLUDED
00013
00014 #include <secommon/se_export_defs.h>
00015 #include <secommon/se_strings_iterator.h>
00016
00017 namespace se { namespace common {
00018
00020 class SerializationParametersImpl;
00021
00025 class SE_DLL_EXPORT SerializationParameters {
00026 public:
00028   SerializationParameters();
00030   ~SerializationParameters();
00032   SerializationParameters(const SerializationParameters& copy);
00034   SerializationParameters& operator =(
00035       const SerializationParameters& other);
00036
00037 public:
00044   bool HasIgnoredObjectType(const char* object_type) const;
00045
00050   void AddIgnoredObjectType(const char* object_type);
00051
00056   void RemoveIgnoredObjectType(const char* object_type);
00057
00059   se::common::StringsSetIterator IgnoredObjectTypesBegin() const;
00060
00062   se::common::StringsSetIterator IgnoredObjectTypesEnd() const;
00063
00069   bool HasIgnoredKey(const char* key) const;
00070
00075   void AddIgnoredKey(const char* key);
00076
00081   void RemoveIgnoredKey(const char* key);
00082
```

```
00084   se::common::StringsSetIterator IgnoredKeysBegin() const;
00085
00087   se::common::StringsSetIterator IgnoredKeysEnd() const;
00088
00089 public:
00091   const SerializationParametersImpl& GetImpl() const;
00092
00093 private:
00094   SerializationParametersImpl* pimpl_;
00095 };
00096
00097
00099 class SerializerImplBase;
00100
00104 class SE_DLL_EXPORT Serializer {
00105 public:
00107   virtual ~Serializer() = default;
00108
00110   virtual void Reset() = 0;
00111
00113   virtual const char* GetCStr() const = 0;
00114
00116   virtual const char* SerializerType() const = 0;
00117
00118 public:
00125   static Serializer* CreateJSONSerializer(
00126       const SerializationParameters& params);
00127 };
00128
00129
00130 } } // namespace se::common
00131
00132 #endif // SECOMMON_SE_SERIALIZATION_H_INCLUDED
```

2.38 se_string.h File Reference

OcrString and related classes for secommon library.

Classes

- class se::common::MutableString

  Class representing a mutable, memory-owner string.
- class se::common::OcrCharVariant

  Class representing a possible character recognition result.
- class se::common::OcrChar

  Class representing an OCR information for a given recognized character.
- class se::common::OcrString

  Class representing text string recognition result.
- class se::common::ByteString

  Class representing byte string.

2.38.1 Detailed Description

OcrString and related classes for secommon library.

Definition in file se_string.h.

2.39 se_string.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef SECOMMON_SE_STRING_H_INCLUDED
00012 #define SECOMMON_SE_STRING_H_INCLUDED
00013
00014 #include <cstddef>
00015 #include <cstdint>
00016 #include <secommon/se_export_defs.h>
00017 #include <secommon/se_geometry.h>
00018 #include <secommon/se_serialization.h>
00019
00020 namespace se { namespace common {
00021
00025 class SE_DLL_EXPORT MutableString {
00026 public:
00028   MutableString();
00029
00031   explicit MutableString(const char* c_str);
00032
00034   MutableString(const MutableString& other);
00035
00037   MutableString& operator =(const MutableString& other);
00038
00040   ~MutableString();
00041
00043   MutableString& operator +=(const MutableString& other);
00044
00046   MutableString operator +(const MutableString& other) const;
00047
00049   const char* GetCStr() const;
00050
00053   int GetLength() const;
00054
00056   void Serialize(Serializer& serializer) const;
00057
00059   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00060
00061 private:
00062   int len_;
00063   char* buf_;
00064 };
00065
00066
00070 class SE_DLL_EXPORT OcrCharVariant {
00071 public:
00073   OcrCharVariant();
00074
00080   OcrCharVariant(const MutableString& utf8_char, float confidence);
00081
00087   OcrCharVariant(const char* utf8_char, float confidence);
00088
00090   ~OcrCharVariant() = default;
00091
00093   const char* GetCharacter() const;
00094
00096   void SetCharacter(const MutableString& utf8_char);
00097
00099   void SetCharacter(const char* utf8_char);
00100
00102   float GetConfidence() const;
00103
00105   void SetConfidence(float confidence);
00106
00108   float GetInternalScore() const;
00109
00111   void SetInternalScore(float internal_score);
00112
00114   void Serialize(Serializer& serializer) const;
00115
00117   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00118
00119 private:
00120   MutableString char_;
00121   float conf_;
00122   float internal_score_;
00123 };
00124
00125
00129 class SE_DLL_EXPORT OcrChar {
00130 public:
```

```
00132   OcrChar();
00133
00141   OcrChar(const OcrCharVariant* variants,
00142           int                   variants_count,
00143           bool                  is_highlighted,
00144           const Quadrangle&     quad);
00145
00147   OcrChar(const OcrChar& other);
00148
00150   OcrChar& operator =(const OcrChar& other);
00151
00153   ~OcrChar();
00154
00156   int GetVariantsCount() const;
00157
00159   const OcrCharVariant* GetVariants() const;
00160
00162   OcrCharVariant& operator [](int index);
00163
00165   const OcrCharVariant& operator [](int index) const;
00166
00168   const OcrCharVariant& GetVariant(int index) const;
00169
00171   OcrCharVariant& GetMutableVariant(int index);
00172
00174   void SetVariant(int index, const OcrCharVariant& v);
00175
00177   void Resize(int size);
00178
00180   bool GetIsHighlighted() const;
00181
00183   void SetIsHighlighted(bool is_highlighted);
00184
00186   const Quadrangle& GetQuadrangle() const;
00187
00189   Quadrangle& GetMutableQuadrangle();
00190
00192   void SetQuadrangle(const Quadrangle& quad);
00193
00195   void SortVariants();
00196
00198   const OcrCharVariant& GetFirstVariant() const;
00199
00201   void Serialize(Serializer& serializer) const;
00202
00204   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00205
00206 private:
00207   int vars_cnt_;
00208   OcrCharVariant* vars_;
00209   bool is_highlighted_;
00210   Quadrangle quad_;
00211 };
00212
00213
00215 class OcrStringImpl;
00216
00220 class SE_DLL_EXPORT OcrString {
00221 private:
00223   OcrString(const OcrStringImpl& ocr_string_impl);
00224
00225 public:
00227   OcrString();
00228
00234   OcrString(const char* utf8_str);
00235
00241   OcrString(const OcrChar* chars, int chars_count);
00242
00244   OcrString(const OcrString& other);
00245
00247   OcrString& operator =(const OcrString& other);
00248
00250   ~OcrString();
00251
00256   static OcrString ConstructFromImpl(const class OcrStringImpl& ocr_string_impl);
00257
00259   const class OcrStringImpl* GetOcrStringImplPtr() const;
00260
00262   int GetCharsCount() const;
00263
00265   const OcrChar* GetChars() const;
00266
00268   OcrChar& operator [](int index);
00269
00271   const OcrChar& operator [](int index) const;
00272
00274   const OcrChar& GetChar(int index) const;
```

```
00275
00277   OcrChar& GetMutableChar(int index);
00278
00280   void SetChar(int index, const OcrChar& chr);
00281
00283   void AppendChar(const OcrChar& chr);
00284
00286   void AppendString(const OcrString& str);
00287
00289   void Resize(int size);
00290
00292   const Quadrangle GetQuadrangleByIndex(int idx) const;
00293
00295   float GetBestVariantConfidenceByIndex(int idx) const;
00296
00298   void SortVariants();
00299
00301   MutableString GetFirstString() const;
00302
00304   void UnpackChars();
00305
00307   void RepackChars();
00308
00310   void Serialize(Serializer& serializer) const;
00311
00313   void SerializeImpl(SerializerImplBase& serializer_impl) const;
00314
00315 private:
00316   OcrStringImpl* ocr_string_impl_;
00317 };
00318
00322 class SE_DLL_EXPORT ByteString {
00323 public:
00325   ByteString();
00326
00328   ~ByteString();
00329
00331   explicit ByteString(const unsigned char* bytes, size_t n);
00332
00334   ByteString(const ByteString &other);
00335
00337   ByteString &operator=(const ByteString &other);
00338
00340   void swap(ByteString &other) noexcept;
00341
00343   int GetLength() const noexcept;
00344
00346   int GetRequiredBase64BufferLength() const;
00347
00349   int CopyBase64ToBuffer(char* out_buffer, int buffer_length) const;
00350
00352   MutableString GetBase64String() const;
00353
00355   int GetRequiredHexBufferLength() const;
00356
00358   int CopyHexToBuffer(char* out_buffer, int buffer_length) const;
00359
00361   MutableString GetHexString() const;
00362
00363 private:
00364   size_t len_;
00365   uint8_t *buf_;
00366 };
00367
00368 } } // namespace se::common::
00369
00370 #endif // SECOMMON_SE_STRING_H_INCLUDED
```

2.40 se_strings_iterator.h File Reference

String iterators used in SE libraries.

Classes

- class se::common::StringsVectorIterator

  Iterator to a vector-like collection of strings.
- class se::common::StringsSetIterator

Iterator to a set-like collection of strings.

- class se::common::StringsMapIterator

  Iterator to a map from strings to strings.

2.40.1 Detailed Description

String iterators used in SE libraries.

Definition in file se_strings_iterator.h.

2.41 se_strings_iterator.h

Go to the documentation of this file.

```
00001 /*
00002   Copyright (c) 2016-2024, Smart Engines Service LLC
00003   All rights reserved.
00004 */
00005
00011 #ifndef SECOMMON_SE_STRINGS_ITERATOR_H_INCLUDED
00012 #define SECOMMON_SE_STRINGS_ITERATOR_H_INCLUDED
00013
00014 #include <secommon/se_export_defs.h>
00015
00016 namespace se { namespace common {
00017
00018
00020 class StringsVectorIteratorImpl;
00021
00022
00026 class SE_DLL_EXPORT StringsVectorIterator {
00027 private:
00029   StringsVectorIterator(const StringsVectorIteratorImpl& pimpl);
00030
00031 public:
00033   StringsVectorIterator(const StringsVectorIterator& other);
00034
00036   StringsVectorIterator& operator =(const StringsVectorIterator& other);
00037
00039   ~StringsVectorIterator();
00040
00042   static StringsVectorIterator ConstructFromImpl(
00043       const StringsVectorIteratorImpl& pimpl);
00044
00046   const char* GetValue() const;
00047
00049   bool Equals(const StringsVectorIterator& rvalue) const;
00050
00052   bool operator ==(const StringsVectorIterator& rvalue) const;
00053
00055   bool operator !=(const StringsVectorIterator& rvalue) const;
00056
00058   void Advance();
00059
00061   void operator ++();
00062
00063 private:
00064   class StringsVectorIteratorImpl* pimpl_;
00065 };
00066
00067
00069 class StringsSetIteratorImpl;
00070
00071
00075 class SE_DLL_EXPORT StringsSetIterator {
00076 private:
00078   StringsSetIterator(const StringsSetIteratorImpl& pimpl);
00079
00080 public:
00082   StringsSetIterator(const StringsSetIterator& other);
00083
00085   StringsSetIterator& operator =(const StringsSetIterator& other);
00086
00088   ~StringsSetIterator();
00089
00091   static StringsSetIterator ConstructFromImpl(
```

```
00092       const StringsSetIteratorImpl& pimpl);
00093
00095   const char* GetValue() const;
00096
00098   bool Equals(const StringsSetIterator& rvalue) const;
00099
00101   bool operator ==(const StringsSetIterator& rvalue) const;
00102
00104   bool operator !=(const StringsSetIterator& rvalue) const;
00105
00107   void Advance();
00108
00110   void operator ++();
00111
00112 private:
00113   class StringsSetIteratorImpl* pimpl_;
00114 };
00115
00116
00118 class StringsMapIteratorImpl;
00119
00120
00124 class SE_DLL_EXPORT StringsMapIterator {
00125 private:
00127   StringsMapIterator(const StringsMapIteratorImpl& pimpl);
00128
00129 public:
00131   StringsMapIterator(const StringsMapIterator& other);
00132
00134   StringsMapIterator& operator =(const StringsMapIterator& other);
00135
00137   ~StringsMapIterator();
00138
00140   static StringsMapIterator ConstructFromImpl(
00141       const StringsMapIteratorImpl& pimpl);
00142
00144   const char* GetKey() const;
00145
00147   const char* GetValue() const;
00148
00150   bool Equals(const StringsMapIterator& rvalue) const;
00151
00153   bool operator==(const StringsMapIterator& rvalue) const;
00154
00156   bool operator!=(const StringsMapIterator& rvalue) const;
00157
00159   void Advance();
00160
00162   void operator ++();
00163
00164 private:
00165   class StringsMapIteratorImpl* pimpl_;
00166 };
00167
00168
00169 } } // namespace se::common::
00170
00171 #endif // SECOMMON_SE_STRINGS_ITERATOR_H_INCLUDED
```

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