AAC

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Chapter 1

AAC

1.0.1 Ascii Art Conversion library

Little simpley library bringing joy to our dull lifes by creating cute images of ascii frogs and other heart warming things.

1.0.2 Docs

For documentation install Doxygen with Graphviz for website version and for pdf version install latex compiler. After building project run `make doc` to generate website documentation and `make man` for pdf documentation.

Installation of latex

```
sudo apt-get update
sudo apt-get install texlive-latex-extra
```

Chapter 2

Namespace Index

2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

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Main library namespace 11

Chapter 3

Hierarchical Index

3.1 Class Hierarchy

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Class Index

4.1 Class List

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: Simplest possible brightness converter . . . 13

AAC::BrightnessConverter
: Specifies group off classes converting Image to brightness matrix . . . 15

AAC::CC_Braile
: Converter that uses Braile characters (not soo ascii anymore) . . . 16

AAC::CC_Simple
: Simplest possible chunk converter . . . 18

AAC::Chunk
: Representation of groups of pixels which are going to be replaced by single char . . . 20

AAC::ChunkConverter
: Converts chunks matrix into final string . . . 23

AAC::Converter
: Creates main converter combining all other steps to create art . . . 24

AAC::error_category
: Class provideing error messages for AAC library . . . 25

AAC::Image
: Contains full image as pixels matrix . . . 27

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: Multipurpose matrix class . . . 29

AAC::Pixel< E >
: Pixel class for storing Image pixels in more organised way . . . 31

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    Contains the implementation of the AAC::Chunk class . . . 45
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Chapter 6

Namespace Documentation

6.1 AAC Namespace Reference

Main library namespace.

Functions

- void set_error_code (std::error_code ec)
- std::error_code get_error_code ()
- void clear_error_code ()
- std::error_code make_error_code (error_codes ec)
- Image * OpenImage (std::string path)

  Global image opener.

6.1.1 Detailed Description

Main library namespace.

6.1.2 Function Documentation

6.1.2.1 clear_error_code()

```
void AAC::clear_error_code ( )
```

6.1.2.2 get_error_code()

```
std::error_code AAC::get_error_code ( )
```

6.1.2.3 make_error_code()

```
std::error_code AAC::make_error_code (
            error_codes ec )
```

6.1.2.4 OpenImage()

```
Image* AAC::OpenImage (
            std::string path )
```

Global image opener.

6.1.2.5 set_error_code()

```
void AAC::set_error_code (
            std::error_code ec )
```

Chapter 7

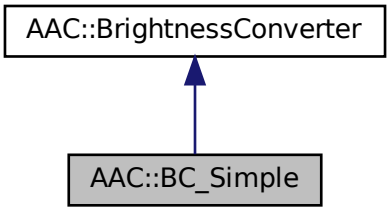
Class Documentation

7.1 AAC::BC_Simple Class Reference

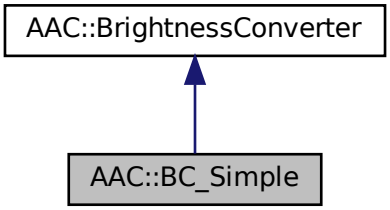
Simplest possible brightness converter.

`#include <AAC.h>`

Inheritance diagram for AAC::BC_Simple:



Collaboration diagram for AAC::BC_Simple:



Public Member Functions

- BC_Simple (float red_weight, float green_weight, float blue_weight, uint8_t negate=0)

  Constructs a new AAC::BC_Simple object with the specified weights and negate flag.
- BC_Simple ()

  Constructs a new AAC::BC_Simple object with default weights and negate flag. The default weights are 1 for all channels.
- std::shared_ptr< Matrix< uint8_t > > convert (Image *img) override

  Converts the given image to a brightness matrix using the specified weights and negate flag.

7.1.1 Detailed Description

Simplest possible brightness converter.

Definition at line 303 of file AAC.h.

7.1.2 Constructor & Destructor Documentation

7.1.2.1 BC_Simple() [1/2]

```
AAC::BC_Simple::BC_Simple (
            float red_weight,
            float green_weight,
            float blue_weight,
            uint8_t negate = 0 )
```

Constructs a new AAC::BC_Simple object with the specified weights and negate flag.

Parameters

red_weight	The weight for the red channel.
green_weight	The weight for the green channel.
blue_weight	The weight for the blue channel.
negate	Flag indicating whether to negate the brightness values.

Definition at line 20 of file AAC_brightness_converter.cpp.

7.1.2.2 BC_Simple() [2/2]

```
AAC::BC_Simple::BC_Simple ( )
```

Constructs a new AAC::BC_Simple object with default weights and negate flag. The default weights are 1 for all channels.

Definition at line 27 of file AAC_brightness_converter.cpp.

7.1.3 Member Function Documentation

7.1.3.1 convert()

```
std::shared_ptr< AAC::Matrix< uint8_t > > AAC::BC_Simple::convert (
            AAC::Image * img )  [override], [virtual]
```

Converts the given image to a brightness matrix using the specified weights and negate flag.

Parameters

img	A pointer to the image to be converted.

Returns

A shared pointer to the resulting brightness matrix.

Exceptions

AAC::error_code	An exception is thrown if the pixel type is invalid.

Implements AAC::BrightnessConverter.

Definition at line 37 of file AAC_brightness_converter.cpp.

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

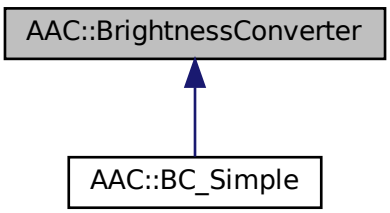
- /home/piotr/stdia/AAC/AAC.h
- /home/piotr/stdia/AAC/sources/AAC_brightness_converter.cpp

7.2 AAC::BrightnessConverter Class Reference

Specifies group off classes converting Image to brightness matrix.

`#include <AAC.h>`

Inheritance diagram for AAC::BrightnessConverter:



Public Member Functions

- virtual std::shared_ptr< Matrix< uint8_t > > convert (Image *img)=0

7.2.1 Detailed Description

Specifies group off classes converting Image to brightness matrix.

Definition at line 291 of file AAC.h.

7.2.2 Member Function Documentation

7.2.2.1 convert()

```
virtual std::shared_ptr<Matrix<uint8_t> > AAC::BrightnessConverter::convert (
            Image * img )  [pure virtual]
```

Implemented in AAC::BC_Simple.

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

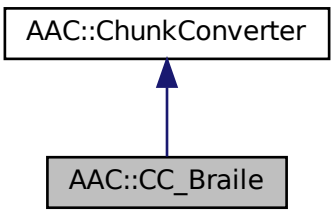
- /home/piotr/stdia/AAC/AAC.h

7.3 AAC::CC_Braile Class Reference

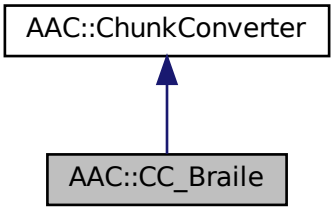
Converter that uses Braile characters (not soo ascii anymore)

```
#include <AAC.h>
```

Inheritance diagram for AAC::CC_Braile:



Collaboration diagram for AAC::CC_Braile:



Public Member Functions

- CC_Braile (uint8_t break_point_brightness)
  Construct for a Braille ASCII art converter implementation.
- std::string convert (Matrix< Chunk > *chunks) override
  Converts the given matrix of chunks to a string using the Braille character encoding.

7.3.1 Detailed Description

Converter that uses Braile characters (not soo ascii anymore)

Definition at line 354 of file AAC.h.

7.3.2 Constructor & Destructor Documentation

7.3.2.1 CC_Braile()

```
AAC::CC_Braile::CC_Braile (
            uint8_t break_point_brightness )
```

Construct for a Braille ASCII art converter implementation.

Definition at line 109 of file AAC_chunk_converter.cpp.

7.3.3 Member Function Documentation

7.3.3.1 convert()

```
std::string AAC::CC_Braile::convert (
            Matrix< Chunk > * chunks )  [override], [virtual]
```

Converts the given matrix of chunks to a string using the Braille character encoding.

Parameters

chunks	A pointer to the matrix of chunks to be converted.

Returns

The resulting string representation of the converted chunks.

Exceptions

AAC::error_code	An exception is thrown if the chunk size is insufficient.

Implements AAC::ChunkConverter.

Definition at line 119 of file AAC_chunk_converter.cpp.

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

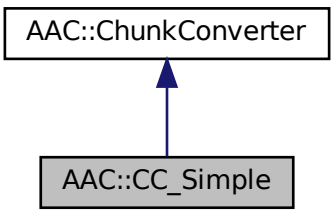
- /home/piotr/stdia/AAC/AAC.h
- /home/piotr/stdia/AAC/sources/AAC_chunk_converter.cpp

7.4 AAC::CC_Simple Class Reference

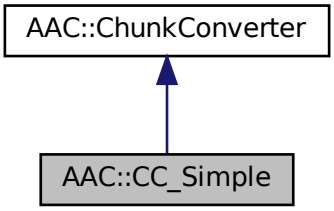
Simplest possible chunk converter.

```
#include <AAC.h>
```

Inheritance diagram for AAC::CC_Simple:



Collaboration diagram for AAC::CC_Simple:



Public Member Functions

- CC_Simple (std::string alphabet)

  Construct for a Simple ASCII art converter implementation.
- std::string convert (Matrix< Chunk > *chunks) override

  Converts the given matrix of chunks to a string using a simple character mapping.

7.4.1 Detailed Description

Simplest possible chunk converter.

Definition at line 337 of file AAC.h.

7.4.2 Constructor & Destructor Documentation

7.4.2.1 CC_Simple()

```
AAC::CC_Simple::CC_Simple (
            std::string alphabet )
```

Construct for a Simple ASCII art converter implementation.

Definition at line 33 of file AAC_chunk_converter.cpp.

7.4.3 Member Function Documentation

7.4.3.1 convert()

```
std::string AAC::CC_Simple::convert (
            Matrix< Chunk > * chunks )  [override], [virtual]
```

Converts the given matrix of chunks to a string using a simple character mapping.

Parameters

chunks	A pointer to the matrix of chunks to be converted.

Returns

The resulting string representation of the converted chunks.

Exceptions

AAC::error_code	An exception is thrown if the alphabet length is invalid.

Implements AAC::ChunkConverter.

Definition at line 43 of file AAC_chunk_converter.cpp.

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

- /home/piotr/stdia/AAC/AAC.h
- /home/piotr/stdia/AAC/sources/AAC_chunk_converter.cpp

7.5 AAC::Chunk Class Reference

Representation of groups of pixels which are going to be replaced by single char.

```
#include <AAC.h>
```

Public Member Functions

- Chunk ()

  Constructs a Chunk object with default values.
- Chunk (unsigned int X_start_index, unsigned int X_end_index, unsigned int Y_start_index, unsigned int Y_end_index, std::shared_ptr< Matrix< uint8_t >> data)
- void SetChunk (unsigned int X_start_index, unsigned int X_end_index, unsigned int Y_start_index, unsigned int Y_end_index, std::shared_ptr< Matrix< uint8_t >> data)

  Sets the parameters of the Chunk object.
- std::shared_ptr< Matrix< uint8_t > > GetData () const

  Gets the shared pointer to the data matrix of the Chunk.
- unsigned int GetXStart () const

  Gets the starting index of the X-axis for the Chunk.
- unsigned int GetXEnd () const

  Gets the ending index of the X-axis for the Chunk.
- unsigned int GetYStart () const

  Gets the starting index of the Y-axis for the Chunk.
- unsigned int GetYEnd () const

  Gets the ending index of the Y-axis for the Chunk.

7.5.1 Detailed Description

Representation of groups of pixels which are going to be replaced by single char.

Definition at line 259 of file AAC.h.

7.5.2 Constructor & Destructor Documentation

7.5.2.1 Chunk() [1/2]

```
AAC::Chunk::Chunk ( )
```

Constructs a Chunk object with default values.

Definition at line 23 of file AAC_chunk.cpp.

7.5.2.2 Chunk() [2/2]

```
AAC::Chunk::Chunk (
            unsigned int X_start_index,
            unsigned int X_end_index,
            unsigned int Y_start_index,
            unsigned int Y_end_index,
            std::shared_ptr< Matrix< uint8_t >> data )
```

7.5.3 Member Function Documentation

7.5.3.1 GetData()

```
std::shared_ptr< AAC::Matrix< uint8_t > > AAC::Chunk::GetData ( ) const
```

Gets the shared pointer to the data matrix of the Chunk.

Returns

The shared pointer to the data matrix.

Definition at line 47 of file AAC_chunk.cpp.

7.5.3.2 GetXEnd()

```
unsigned int AAC::Chunk::GetXEnd ( ) const
```

Gets the ending index of the X-axis for the Chunk.

Returns

The ending index of the X-axis.

Definition at line 74 of file AAC_chunk.cpp.

7.5.3.3 GetXStart()

```
unsigned int AAC::Chunk::GetXStart ( ) const
```

Gets the starting index of the X-axis for the Chunk.

Returns

The starting index of the X-axis.

Definition at line 56 of file AAC_chunk.cpp.

7.5.3.4 GetYEnd()

```
unsigned int AAC::Chunk::GetYEnd ( ) const
```

Gets the ending index of the Y-axis for the Chunk.

Returns

The ending index of the Y-axis.

Definition at line 83 of file AAC_chunk.cpp.

7.5.3.5 GetYStart()

```
unsigned int AAC::Chunk::GetYStart ( ) const
```

Gets the starting index of the Y-axis for the Chunk.

Returns

The starting index of the Y-axis.

Definition at line 65 of file AAC_chunk.cpp.

7.5.3.6 SetChunk()

```
void AAC::Chunk::SetChunk (
            unsigned int X_start_index,
            unsigned int X_end_index,
            unsigned int Y_start_index,
            unsigned int Y_end_index,
            std::shared_ptr< Matrix< uint8_t >> data )
```

Sets the parameters of the Chunk object.

Parameters

X_start_index	The starting index of the X-axis.
X_end_index	The ending index of the X-axis.
Y_start_index	The starting index of the Y-axis.
Y_end_index	The ending index of the Y-axis.
data	The shared pointer to the data matrix.

Definition at line 34 of file AAC_chunk.cpp.

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

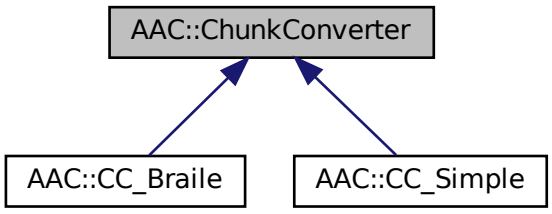
- /home/piotr/stdia/AAC/AAC.h
- /home/piotr/stdia/AAC/sources/AAC_chunk.cpp

7.6 AAC::ChunkConverter Class Reference

Converts chunks matrix into final string.

`#include <AAC.h>`

Inheritance diagram for AAC::ChunkConverter:



Public Member Functions

- virtual std::string convert (Matrix< Chunk > *chunks)=0

7.6.1 Detailed Description

Converts chunks matrix into final string.

Definition at line 325 of file AAC.h.

7.6.2 Member Function Documentation

7.6.2.1 convert()

```
virtual std::string AAC::ChunkConverter::convert (
            Matrix< Chunk > * chunks )  [pure virtual]
```

Implemented in AAC::CC_Braile, and AAC::CC_Simple.

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

- /home/piotr/stdia/AAC/AAC.h

7.7 AAC::Converter Class Reference

Creates main converter combining all other steps to create art.

```
#include <AAC.h>
```

Public Member Functions

- Converter (BrightnessConverter *brightness_conv, ChunkConverter *chunk_conv)
  Constructs a Converter object with the specified brightness converter and chunk converter.
- std::string CreateArt (Image *img, size_t chunk_size)
  Creates ASCII art from the image using the specified chunk size.

7.7.1 Detailed Description

Creates main converter combining all other steps to create art.

Definition at line 376 of file AAC.h.

7.7.2 Constructor & Destructor Documentation

7.7.2.1 Converter()

```
AAC::Converter::Converter (
            AAC::BrightnessConverter * brightness_conv,
            AAC::ChunkConverter * chunk_conv )
```

Constructs a Converter object with the specified brightness converter and chunk converter.

Parameters

brightness_conv	The brightness converter.
chunk_conv	The chunk converter.

Definition at line 14 of file AAC_converter.cpp.

7.7.3 Member Function Documentation

7.7.3.1 CreateArt()

```
std::string AAC::Converter::CreateArt (
            AAC::Image * img,
            size_t chunk_size )
```

Creates ASCII art from the image using the specified chunk size.

Parameters

img	The image to create ASCII art from.
chunk_size	The size of each chunk.

Returns

The generated ASCII art.

Exceptions

std::error_code	if the image is null.

Definition at line 63 of file AAC_converter.cpp.

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

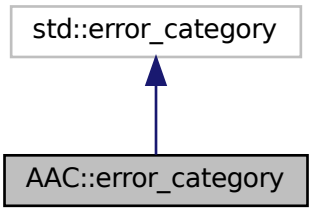
- /home/piotr/stdia/AAC/AAC.h
- /home/piotr/stdia/AAC/AAC.cpp
- /home/piotr/stdia/AAC/sources/AAC_converter.cpp

7.8 AAC::error_category Class Reference

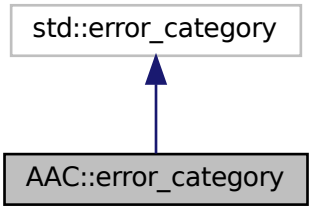
Class provideing error messages for AAC library.

```
#include <AAC.h>
```

Inheritance diagram for AAC::error_category:



Collaboration diagram for AAC::error_category:



Public Member Functions

- virtual const char * name () const noexcept override
- virtual std::string message (int ec) const override

7.8.1 Detailed Description

Class provideing error messages for AAC library.

Definition at line 50 of file AAC.h.

7.8.2 Member Function Documentation

7.8.2.1 message()

```
virtual std::string AAC::error_category::message (
            int ec ) const  [inline], [override], [virtual]
```

Definition at line 55 of file AAC.h.

7.8.2.2 name()

```
virtual const char* AAC::error_category::name ( ) const  [inline], [override], [virtual], [noexcept]
```

Definition at line 53 of file AAC.h.

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

- /home/piotr/stdia/AAC/AAC.h

7.9 AAC::Image Class Reference

Contains full image as pixels matrix.

`#include <AAC.h>`

Public Member Functions

- Image (std::string path, unsigned int size_x, unsigned int size_y, unsigned int n, unsigned char *data)
  Constructs an Image object with the specified parameters.
- ~Image ()
  Destructor for the Image object.
- void * GetMatrix ()
  Gets the matrix associated with the Image object.

Public Attributes

- const Pixel_Type pixel_type
- const unsigned int size_x
- const unsigned int size_y

7.9.1 Detailed Description

Contains full image as pixels matrix.

Definition at line 226 of file AAC.h.

7.9.2 Constructor & Destructor Documentation

7.9.2.1 Image()

```
AAC::Image::Image (
            std::string path,
            unsigned int size_x,
            unsigned int size_y,
            unsigned int n,
            unsigned char * data )
```

Constructs an Image object with the specified parameters.

Parameters

path	The path to the image.
size_x	The size of the image in the x-axis.
size_y	The size of the image in the y-axis.
n	The number of color components per pixel.
data	The image data.

Definition at line 108 of file AAC_image.cpp.

7.9.2.2 ~Image()

```
AAC::Image::~Image ( )
```

Destructor for the Image object.

Definition at line 141 of file AAC_image.cpp.

7.9.3 Member Function Documentation

7.9.3.1 GetMatrix()

```
void * AAC::Image::GetMatrix ( )
```

Gets the matrix associated with the Image object.

Returns

A pointer to the matrix.

Definition at line 167 of file AAC_image.cpp.

7.9.4 Member Data Documentation

7.9.4.1 pixel_type

```
const Pixel_Type AAC::Image::pixel_type
```

Definition at line 234 of file AAC.h.

7.9.4.2 size_x

```
const unsigned int AAC::Image::size_x
```

Definition at line 235 of file AAC.h.

7.9.4.3 size_y

```
const unsigned int AAC::Image::size_y
```

Definition at line 236 of file AAC.h.

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

- /home/piotr/stdia/AAC/AAC.h
- /home/piotr/stdia/AAC/sources/AAC_image.cpp

7.10 AAC::Matrix< T > Class Template Reference

Multipurpose matrix class.

```
#include <AAC.h>
```

Public Member Functions

- Matrix (unsigned int size_x, unsigned int size_y)
- ~Matrix ()
- T GetElement (unsigned int x, unsigned int y) const
- T & GetElementReference (unsigned int x, unsigned int y)
- unsigned int GetXSize () const
- unsigned int GetYSize () const

7.10.1 Detailed Description

template<typename T>
class AAC::Matrix< T >

Multipurpose matrix class.

Definition at line 97 of file AAC.h.

7.10.2 Constructor & Destructor Documentation

7.10.2.1 Matrix()

```
template<typename T >
AAC::Matrix< T >::Matrix (
            unsigned int size_x,
            unsigned int size_y )
```

7.10.2.2 ~Matrix()

```
template<typename T >
AAC::Matrix< T >::~Matrix ( )
```

7.10.3 Member Function Documentation

7.10.3.1 GetElement()

```
template<typename T >
T AAC::Matrix< T >::GetElement (
            unsigned int x,
            unsigned int y ) const
```

7.10.3.2 GetElementReference()

```
template<typename T >
T& AAC::Matrix< T >::GetElementReference (
            unsigned int x,
            unsigned int y )
```

7.10.3.3 GetXSize()

```
template<typename T >
unsigned int AAC::Matrix< T >::GetXSize ( ) const
```

7.10.3.4 GetYSize()

```
template<typename T >
unsigned int AAC::Matrix< T >::GetYSize ( ) const
```

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

- /home/piotr/stdia/AAC/AAC.h

7.11 AAC::Pixel< E > Class Template Reference

Pixel class for storing Image pixels in more organised way.

```
#include <AAC.h>
```

7.11.1 Detailed Description

template<Pixel_Type E>
class AAC::Pixel< E >

Pixel class for storing Image pixels in more organised way.

Definition at line 126 of file AAC.h.

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

- /home/piotr/stdia/AAC/AAC.h

7.12 AAC::Pixel< Pixel_Type::EMPTY > Class Reference

```
#include <AAC.h>
```

Public Member Functions

- Pixel ()

7.12.1 Detailed Description

Definition at line 207 of file AAC.h.

7.12.2 Constructor & Destructor Documentation

7.12.2.1 Pixel()

```
AAC::Pixel< Pixel_Type::EMPTY >::Pixel ( )
```

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

- /home/piotr/stdia/AAC/AAC.h

7.13 AAC::Pixel< Pixel_Type::G > Class Reference

```
#include <AAC.h>
```

Public Member Functions

- Pixel ()
- Pixel (uint8_t grey)
- struct Pixel_G GetPixelValues ()
- void SetPixelValues (uint8_t grey)

7.13.1 Detailed Description

Definition at line 135 of file AAC.h.

7.13.2 Constructor & Destructor Documentation

7.13.2.1 Pixel() [1/2]

```
AAC::Pixel< Pixel_Type::G >::Pixel ( )
```

7.13.2.2 Pixel() [2/2]

```
AAC::Pixel< Pixel_Type::G >::Pixel (
            uint8_t grey )
```

7.13.3 Member Function Documentation

7.13.3.1 GetPixelValues()

```
struct Pixel_G AAC::Pixel< Pixel_Type::G >::GetPixelValues ( )
```

7.13.3.2 SetPixelValues()

```
void AAC::Pixel< Pixel_Type::G >::SetPixelValues (
            uint8_t grey )
```

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

- /home/piotr/stdia/AAC/AAC.h

7.14 AAC::Pixel< Pixel_Type::GA > Class Reference

```
#include <AAC.h>
```

Public Member Functions

- Pixel ()
- Pixel (uint8_t grey, uint8_t alpha)
- struct Pixel_GA GetPixelValues ()
- void SetPixelValues (uint8_t grey, uint8_t alpha)

7.14.1 Detailed Description

Definition at line 153 of file AAC.h.

7.14.2 Constructor & Destructor Documentation

7.14.2.1 Pixel() [1/2]

```
AAC::Pixel< Pixel_Type::GA >::Pixel ( )
```

7.14.2.2 Pixel() [2/2]

```
AAC::Pixel< Pixel_Type::GA >::Pixel (
            uint8_t grey,
            uint8_t alpha )
```

7.14.3 Member Function Documentation

7.14.3.1 GetPixelValues()

```
struct Pixel_GA AAC::Pixel< Pixel_Type::GA >::GetPixelValues ( )
```

7.14.3.2 SetPixelValues()

```
void AAC::Pixel< Pixel_Type::GA >::SetPixelValues (
            uint8_t grey,
            uint8_t alpha )
```

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

- /home/piotr/stdia/AAC/AAC.h

7.15 AAC::Pixel< Pixel_Type::RGB > Class Reference

```
#include <AAC.h>
```

Public Member Functions

- Pixel ()
- Pixel (uint8_t red, uint8_t green, uint8_t blue)
- struct Pixel_RGB GetPixelValues ()
- void SetPixelValues (uint8_t red, uint8_t green, uint8_t blue)

7.15.1 Detailed Description

Definition at line 171 of file AAC.h.

7.15.2 Constructor & Destructor Documentation

7.15.2.1 Pixel() [1/2]

```
AAC::Pixel< Pixel_Type::RGB >::Pixel ( )
```

7.15.2.2 Pixel() [2/2]

```
AAC::Pixel< Pixel_Type::RGB >::Pixel (
            uint8_t red,
            uint8_t green,
            uint8_t blue )
```

7.15.3 Member Function Documentation

7.15.3.1 GetPixelValues()

```
struct Pixel_RGB AAC::Pixel< Pixel_Type::RGB >::GetPixelValues ( )
```

7.15.3.2 SetPixelValues()

```
void AAC::Pixel< Pixel_Type::RGB >::SetPixelValues (
            uint8_t red,
            uint8_t green,
            uint8_t blue )
```

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

- /home/piotr/stdia/AAC/AAC.h

7.16 AAC::Pixel< Pixel_Type::RGBA > Class Reference

```
#include <AAC.h>
```

Public Member Functions

- Pixel ()
- Pixel (uint8_t red, uint8_t green, uint8_t blue, uint8_t alpha)
- struct Pixel_RGBA GetPixelValues ()
- void SetPixelValues (uint8_t red, uint8_t green, uint8_t blue, uint8_t alpha)

7.16.1 Detailed Description

Definition at line 189 of file AAC.h.

7.16.2 Constructor & Destructor Documentation

7.16.2.1 Pixel() [1/2]

```
AAC::Pixel< Pixel_Type::RGBA >::Pixel ( )
```

7.16.2.2 Pixel() [2/2]

```
AAC::Pixel< Pixel_Type::RGBA >::Pixel (
            uint8_t red,
            uint8_t green,
            uint8_t blue,
            uint8_t alpha )
```

7.16.3 Member Function Documentation

7.16.3.1 GetPixelValues()

```
struct Pixel_RGBA AAC::Pixel< Pixel_Type::RGBA >::GetPixelValues ( )
```

7.16.3.2 SetPixelValues()

```
void AAC::Pixel< Pixel_Type::RGBA >::SetPixelValues (
            uint8_t red,
            uint8_t green,
            uint8_t blue,
            uint8_t alpha )
```

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

- /home/piotr/stdia/AAC/AAC.h

7.17 AAC::Pixel_EMPTY Struct Reference

`#include <structs.h>`

7.17.1 Detailed Description

Definition at line 33 of file structs.h.

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

- /home/piotr/stdia/AAC/headers/structs.h

7.18 AAC::Pixel_G Struct Reference

`#include <structs.h>`

Public Attributes

- uint8_t grey

7.18.1 Detailed Description

Definition at line 7 of file structs.h.

7.18.2 Member Data Documentation

7.18.2.1 grey

`uint8_t AAC::Pixel_G::grey`

Definition at line 9 of file structs.h.

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

- /home/piotr/stdia/AAC/headers/structs.h

7.19 AAC::Pixel_GA Struct Reference

`#include <structs.h>`

Public Attributes

- uint8_t grey
- uint8_t alpha

7.19.1 Detailed Description

Definition at line 12 of file structs.h.

7.19.2 Member Data Documentation

7.19.2.1 alpha

```
uint8_t AAC::Pixel_GA::alpha
```

Definition at line 15 of file structs.h.

7.19.2.2 grey

```
uint8_t AAC::Pixel_GA::grey
```

Definition at line 14 of file structs.h.

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

- /home/piotr/stdia/AAC/headers/structs.h

7.20 AAC::Pixel_RGB Struct Reference

```
#include <structs.h>
```

Public Attributes

- uint8_t red
- uint8_t green
- uint8_t blue

7.20.1 Detailed Description

Definition at line 18 of file structs.h.

7.20.2 Member Data Documentation

7.20.2.1 blue

```
uint8_t AAC::Pixel_RGB::blue
```

Definition at line 22 of file structs.h.

7.20.2.2 green

```
uint8_t AAC::Pixel_RGB::green
```

Definition at line 21 of file structs.h.

7.20.2.3 red

```
uint8_t AAC::Pixel_RGB::red
```

Definition at line 20 of file structs.h.

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

- /home/piotr/stdia/AAC/headers/structs.h

7.21 AAC::Pixel_RGBA Struct Reference

```
#include <structs.h>
```

Public Attributes

- uint8_t red
- uint8_t green
- uint8_t blue
- uint8_t alpha

7.21.1 Detailed Description

Definition at line 25 of file structs.h.

7.21.2 Member Data Documentation

7.21.2.1 alpha

```
uint8_t AAC::Pixel_RGBA::alpha
```

Definition at line 30 of file structs.h.

7.21.2.2 blue

```
uint8_t AAC::Pixel_RGBA::blue
```

Definition at line 29 of file structs.h.

7.21.2.3 green

```
uint8_t AAC::Pixel_RGBA::green
```

Definition at line 28 of file structs.h.

7.21.2.4 red

```
uint8_t AAC::Pixel_RGBA::red
```

Definition at line 27 of file structs.h.

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

- /home/piotr/stdia/AAC/headers/structs.h

Chapter 8

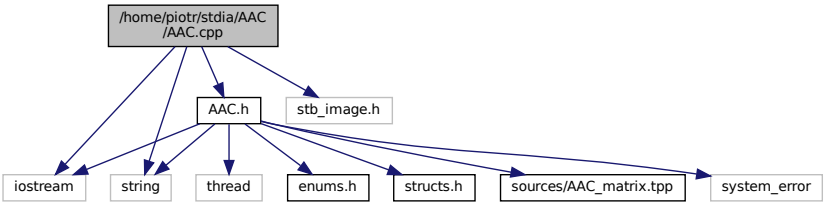
File Documentation

8.1 /home/piotr/stdia/AAC/AAC.cpp File Reference

Global functions and static variables for AAC.h.

```
#include "AAC.h"
#include <iostream>
#include <string>
#include "stb_image.h"
```

Include dependency graph for AAC.cpp:



Macros

- #define CUSTOM_FOPEN_LOAD
- #define STBI_FAILURE_USERMSG
- #define STB_IMAGE_IMPLEMENTATION

8.1.1 Detailed Description

Global functions and static variables for AAC.h.

8.1.2 Macro Definition Documentation

8.1.2.1 CUSTOM_FOPEN_LOAD

```
#define CUSTOM_FOPEN_LOAD
```

Definition at line 16 of file AAC.cpp.

8.1.2.2 STB_IMAGE_IMPLEMENTATION

```
#define STB_IMAGE_IMPLEMENTATION
```

Definition at line 18 of file AAC.cpp.

8.1.2.3 STBI_FAILURE_USERMSG

```
#define STBI_FAILURE_USERMSG
```

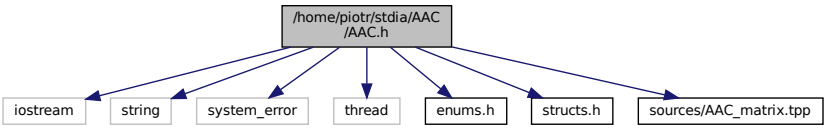
Definition at line 17 of file AAC.cpp.

8.2 /home/piotr/stdia/AAC/AAC.h File Reference

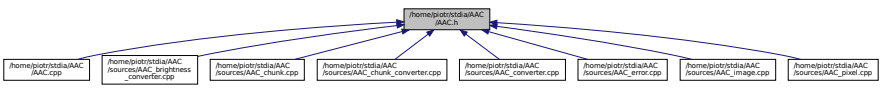
Main library header file.

```
#include <iostream>
#include <string>
#include <system_error>
#include <thread>
#include "enums.h"
#include "structs.h"
#include "sources/AAC_matrix.tpp"
```

Include dependency graph for AAC.h:



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



Classes

- class AAC::error_category

  Class provideing error messages for AAC library.
- class AAC::Matrix< T >

  Multipurpose matrix class.
- class AAC::Pixel< E >

  Pixel class for storing Image pixels in more organised way.
- class AAC::Pixel< Pixel_Type::G >
- class AAC::Pixel< Pixel_Type::GA >
- class AAC::Pixel< Pixel_Type::RGB >
- class AAC::Pixel< Pixel_Type::RGBA >
- class AAC::Pixel< Pixel_Type::EMPTY >
- class AAC::Image

  Contains full image as pixels matrix.
- class AAC::Chunk

  Representation of groups of pixels which are going to be replaced by single char.
- class AAC::BrightnessConverter

  Specifies group off classes converting Image to brightness matrix.
- class AAC::BC_Simple

  Simplest possible brightness converter.
- class AAC::ChunkConverter

  Converts chunks matrix into final string.
- class AAC::CC_Simple

  Simplest possible chunk converter.
- class AAC::CC_Braile

  Converter that uses Braile characters (not soo ascii anymore)
- class AAC::Converter

  Creates main converter combining all other steps to create art.

Namespaces

- AAC

  Main library namespace.

Macros

- #define MAX_SIZE 4000

Functions

- void AAC::set_error_code (std::error_code ec)
- std::error_code AAC::get_error_code ()
- void AAC::clear_error_code ()
- std::error_code AAC::make_error_code (error_codes ec)
- Image * AAC::OpenImage (std::string path)

  Global image opener.

8.2.1 Detailed Description

Main library header file.

8.2.2 Macro Definition Documentation

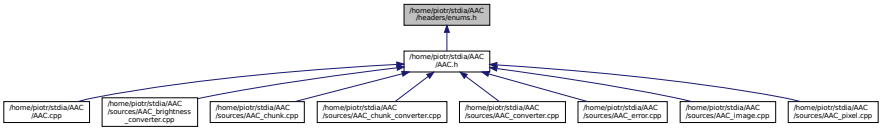
8.2.2.1 MAX_SIZE

```
#define MAX_SIZE 4000
```

Definition at line 18 of file AAC.h.

8.3 /home/piotr/stdia/AAC/headers/enums.h File Reference

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



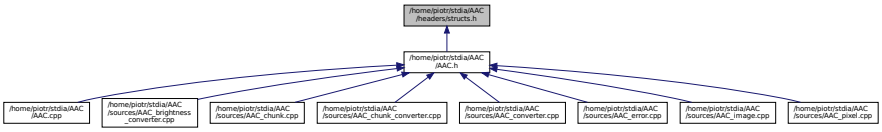
Namespaces

- AAC

  Main library namespace.

8.4 /home/piotr/stdia/AAC/headers/structs.h File Reference

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



Classes

- struct AAC::Pixel_G
- struct AAC::Pixel_GA
- struct AAC::Pixel_RGB
- struct AAC::Pixel_RGBA
- struct AAC::Pixel_EMPTY

Namespaces

- AAC

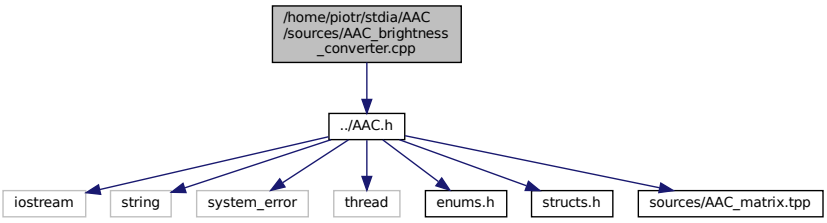
  Main library namespace.

8.5 /home/piotr/stdia/AAC/README.md File Reference

8.6 /home/piotr/stdia/AAC/sources/AAC_brightness_converter.cpp File Reference

```
#include "../AAC.h"
```

Include dependency graph for AAC_brightness_converter.cpp:

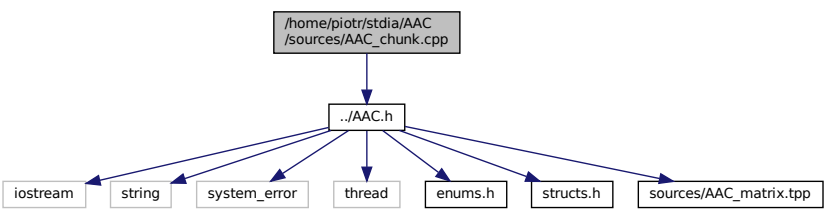


8.7 /home/piotr/stdia/AAC/sources/AAC_chunk.cpp File Reference

Contains the implementation of the AAC::Chunk class.

```
#include "../AAC.h"
```

Include dependency graph for AAC_chunk.cpp:



8.7.1 Detailed Description

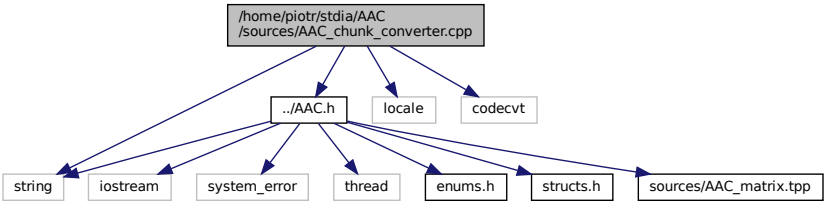
Contains the implementation of the AAC::Chunk class.

8.8 /home/piotr/stdia/AAC/sources/AAC_chunk_converter.cpp File Reference

Contains the implementation of the AAC chunk converter classes.

```
#include "../AAC.h"
#include <locale>
#include <codecvt>
#include <string>
```

Include dependency graph for AAC_chunk_converter.cpp:



Macros

- #define BRAILE_CHUNKX_DIVISOR 2
- #define BRAILE_CHUNKY_DIVISOR 4

Functions

- uint8_t get_char_index (size_t interval_length, uint8_t brightness)

  Calculates the index of a character in the alphabet based on brightness.

8.8.1 Detailed Description

Contains the implementation of the AAC chunk converter classes.

8.8.2 Macro Definition Documentation

8.8.2.1 BRAILE_CHUNKX_DIVISOR

```
#define BRAILE_CHUNKX_DIVISOR 2
```

Definition at line 12 of file AAC_chunk_converter.cpp.

8.8.2.2 BRAILE_CHUNKY_DIVISOR

```
#define BRAILE_CHUNKY_DIVISOR 4
```

Definition at line 13 of file AAC_chunk_converter.cpp.

8.8.3 Function Documentation

8.8.3.1 get_char_index()

```
uint8_t get_char_index (
            size_t interval_length,
            uint8_t brightness )
```

Calculates the index of a character in the alphabet based on brightness.

Parameters

interval_length	The length of each brightness interval.
brightness	The brightness value.

Returns

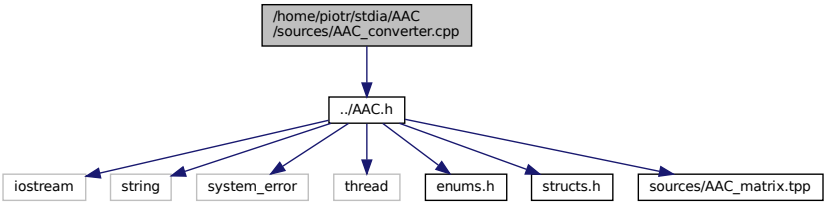
The index of the character in the alphabet.

Definition at line 26 of file AAC_chunk_converter.cpp.

8.9 /home/piotr/stdia/AAC/sources/AAC_converter.cpp File Reference

Contains the implementation of the AAC::Converter class.

```
#include "../AAC.h"
```
Include dependency graph for AAC_converter.cpp:



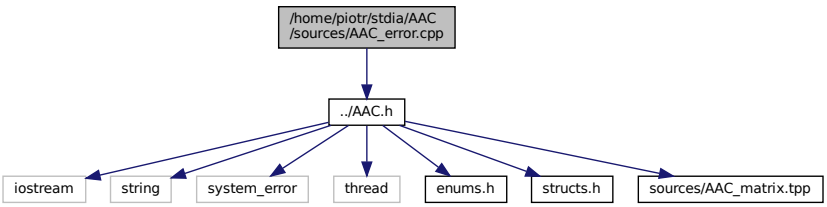
8.9.1 Detailed Description

Contains the implementation of the AAC::Converter class.

8.10 /home/piotr/stdia/AAC/sources/AAC_error.cpp File Reference

Contains the implementation of errors system functions for the library.

```
#include "../AAC.h"
```
Include dependency graph for AAC_error.cpp:



8.10.1 Detailed Description

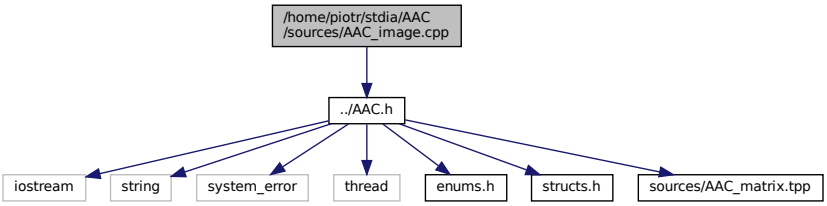
Contains the implementation of errors system functions for the library.

8.11 /home/piotr/stdia/AAC/sources/AAC_image.cpp File Reference

Contains the implementation of the AAC::Image class.

```
#include "../AAC.h"
```

Include dependency graph for AAC_image.cpp:



Functions

- AAC::Matrix< AAC::Pixel< AAC::Pixel_Type::G > > * RefractorDataG (unsigned int size_x, unsigned int size_y, unsigned char *data)

  Refactors the input data into a matrix of Pixel<G> elements.
- AAC::Matrix< AAC::Pixel< AAC::Pixel_Type::GA > > * RefractorDataGA (unsigned int size_x, unsigned int size_y, unsigned int n, unsigned char *data)

  Refactors the input data into a matrix of Pixel<GA> elements.
- AAC::Matrix< AAC::Pixel< AAC::Pixel_Type::RGB > > * RefractorDataRGB (unsigned int size_x, unsigned int size_y, unsigned int n, unsigned char *data)

  Refactors the input data into a matrix of Pixel<RGB> elements.
- AAC::Matrix< AAC::Pixel< AAC::Pixel_Type::RGBA > > * RefractorDataRGBA (unsigned int size_x, unsigned int size_y, unsigned int n, unsigned char *data)

  Refactors the input data into a matrix of Pixel<RGBA> elements.

8.11.1 Detailed Description

Contains the implementation of the AAC::Image class.

8.11.2 Function Documentation

8.11.2.1 RefractorDataG()

```
AAC::Matrix<AAC::Pixel<AAC::Pixel_Type::G> >* RefractorDataG (
            unsigned int size_x,
            unsigned int size_y,
            unsigned char * data )
```

Refactors the input data into a matrix of Pixel<G> elements.

Parameters

size_x	The size of the matrix in the x-axis.
size_y	The size of the matrix in the y-axis.
data	The input data.

Returns

A pointer to the matrix of Pixel<G> elements.

Definition at line 15 of file AAC_image.cpp.

8.11.2.2 RefractorDataGA()

```
AAC::Matrix<AAC::Pixel<AAC::Pixel_Type::GA> >* RefractorDataGA (
            unsigned int size_x,
            unsigned int size_y,
            unsigned int n,
            unsigned char * data )
```

Refactors the input data into a matrix of Pixel<GA> elements.

Parameters

size_x	The size of the matrix in the x-axis.
size_y	The size of the matrix in the y-axis.
n	The number of color components per pixel.
data	The input data.

Returns

A pointer to the matrix of Pixel<GA> elements.

Definition at line 38 of file AAC_image.cpp.

8.11.2.3 RefractorDataRGB()

```
AAC::Matrix<AAC::Pixel<AAC::Pixel_Type::RGB> >* RefractorDataRGB (
            unsigned int size_x,
            unsigned int size_y,
            unsigned int n,
            unsigned char * data )
```

Refactors the input data into a matrix of Pixel<RGB> elements.

Parameters

size_x	The size of the matrix in the x-axis.
size_y	The size of the matrix in the y-axis.
n	The number of color components per pixel.
data	The input data.

Returns

A pointer to the matrix of Pixel<RGB> elements.

Definition at line 61 of file AAC_image.cpp.

8.11.2.4 RefractorDataRGBA()

```
AAC::Matrix<AAC::Pixel<AAC::Pixel_Type::RGBA> >* RefractorDataRGBA (
            unsigned int size_x,
            unsigned int size_y,
            unsigned int n,
            unsigned char * data )
```

Refactors the input data into a matrix of Pixel<RGBA> elements.

Parameters

size_x	The size of the matrix in the x-axis.
size_y	The size of the matrix in the y-axis.
n	The number of color components per pixel.
data	The input data.

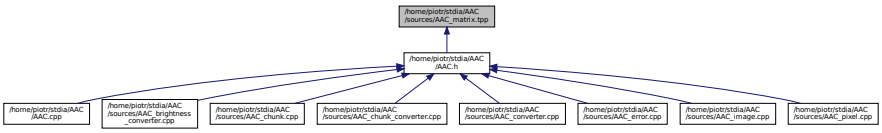
Returns

A pointer to the matrix of Pixel<RGBA> elements.

Definition at line 84 of file AAC_image.cpp.

8.12 /home/piotr/stdia/AAC/sources/AAC_matrix.tpp File Reference

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

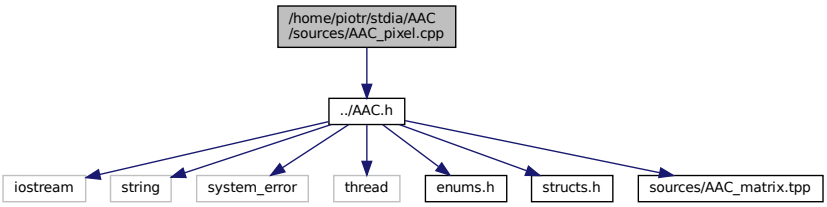


8.13 /home/piotr/stdia/AAC/sources/AAC_pixel.cpp File Reference

Contains the implementation of the AAC::Pixel class.

```
#include "../AAC.h"
```

Include dependency graph for AAC_pixel.cpp:



Functions

- AAC Pixel ::GetPixelValues SetPixelValues (uint8_t grey)

  Sets the pixel values to the specified grey value.
- AAC Pixel ::GetPixelValues SetPixelValues (uint8_t grey, uint8_t alpha)

  Sets the pixel values to the specified grey and alpha values.
- AAC Pixel ::GetPixelValues SetPixelValues (uint8_t red, uint8_t green, uint8_t blue)

  Sets the pixel values to the specified red, green, and blue values.
- AAC Pixel ::GetPixelValues SetPixelValues (uint8_t red, uint8_t green, uint8_t blue, uint8_t alpha)

  Sets the pixel values to the specified red, green, blue, and alpha values.

Variables

- return _pixel_values

8.13.1 Detailed Description

Contains the implementation of the AAC::Pixel class.

8.13.2 Function Documentation

8.13.2.1 SetPixelValues() [1/4]

```
AAC Pixel ::GetPixelValues SetPixelValues (
            uint8_t grey )
```

Sets the pixel values to the specified grey value.

Parameters

grey	The grey value.

Definition at line 37 of file AAC_pixel.cpp.

8.13.2.2 SetPixelValues() [2/4]

```
AAC Pixel ::GetPixelValues SetPixelValues (
            uint8_t grey,
            uint8_t alpha )
```

Sets the pixel values to the specified grey and alpha values.

Parameters

grey	The grey value.
alpha	The alpha value.

Definition at line 74 of file AAC_pixel.cpp.

8.13.2.3 SetPixelValues() [3/4]

```
AAC Pixel ::GetPixelValues SetPixelValues (
            uint8_t red,
            uint8_t green,
            uint8_t blue )
```

Sets the pixel values to the specified red, green, and blue values.

Parameters

red	The red value.
green	The green value.
blue	The blue value.

Definition at line 115 of file AAC_pixel.cpp.

8.13.2.4 SetPixelValues() [4/4]

```
AAC Pixel ::GetPixelValues SetPixelValues (
             uint8_t red,
             uint8_t green,
             uint8_t blue,
             uint8_t alpha )
```

Sets the pixel values to the specified red, green, blue, and alpha values.

Parameters

red	The red value.
green	The green value.
blue	The blue value.
alpha	The alpha value.

Definition at line 160 of file AAC_pixel.cpp.

8.13.3 Variable Documentation

8.13.3.1 _pixel_values

```
return _pixel_values
```

Definition at line 23 of file AAC_pixel.cpp.

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