mcpp

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Chapter 5

Namespace Documentation

5.1 var Namespace Reference

Classes

- class matrix

  Class for 2d matrix of objects with matrix properties.

5.2 vec Namespace Reference

Functions

- template<typename S >
  std::vector< S > dot (std::vector< S > a, std::vector< S > b)
- template<typename S >
  std::vector< S > cross (std::vector< S > a, std::vector< S > b)
- template<typename S >
  std::vector< S > pow (std::vector< S > a, S b)
- template<typename S >
  std::vector< S > pow (std::vector< S > a, std::vector< S > b)
- template<typename S >
  std::vector< S > sin (std::vector< S > a)
- template<typename S >
  std::vector< S > cos (std::vector< S > a)
- template<typename S >
  std::vector< S > tan (std::vector< S > a)
- template<typename S >
  std::vector< S > sec (std::vector< S > a)
- template<typename S >
  std::vector< S > csc (std::vector< S > a)
- template<typename S >
  std::vector< S > cot (std::vector< S > a)
- template<typename S >
  std::vector< S > asin (std::vector< S > a)
- template<typename S >
  std::vector< S > acos (std::vector< S > a)

- template<typename S >
  std::vector< S > atan (std::vector< S > a)
- template<typename S >
  std::vector< S > asec (std::vector< S > a)
- template<typename S >
  std::vector< S > acsc (std::vector< S > a)
- template<typename S >
  std::vector< S > acot (std::vector< S > a)
- template<typename S >
  std::vector< S > sinh (std::vector< S > a)
- template<typename S >
  std::vector< S > cosh (std::vector< S > a)
- template<typename S >
  std::vector< S > tanh (std::vector< S > a)
- template<typename S >
  std::vector< S > sech (std::vector< S > a)
- template<typename S >
  std::vector< S > csch (std::vector< S > a)
- template<typename S >
  std::vector< S > coth (std::vector< S > a)
- template<typename S >
  std::vector< S > asinh (std::vector< S > a)
- template<typename S >
  std::vector< S > acosh (std::vector< S > a)
- template<typename S >
  std::vector< S > atanh (std::vector< S > a)
- template<typename S >
  std::vector< S > asech (std::vector< S > a)
- template<typename S >
  std::vector< S > acsch (std::vector< S > a)
- template<typename S >
  std::vector< S > acoth (std::vector< S > a)
- template<typename S >
  std::vector< S > exp (std::vector< S > a)

5.2.1 Function Documentation

5.2.1.1 acos()

```
template<typename S >
std::vector<S> vec::acos (
            std::vector< S > a )
```

5.2.1.2 acosh()

```
template<typename S >
std::vector<S> vec::acosh (
            std::vector< S > a )
```

5.2.1.3 acot()

```
template<typename S >
std::vector<S> vec::acot (
            std::vector< S > a )
```

5.2.1.4 acoth()

```
template<typename S >
std::vector<S> vec::acoth (
            std::vector< S > a )
```

5.2.1.5 acsc()

```
template<typename S >
std::vector<S> vec::acsc (
            std::vector< S > a )
```

5.2.1.6 acsch()

```
template<typename S >
std::vector<S> vec::acsch (
            std::vector< S > a )
```

5.2.1.7 asec()

```
template<typename S >
std::vector<S> vec::asec (
            std::vector< S > a )
```

5.2.1.8 asech()

```
template<typename S >
std::vector<S> vec::asech (
            std::vector< S > a )
```

5.2.1.9 asin()

```
template<typename S >
std::vector<S> vec::asin (
             std::vector< S > a )
```

5.2.1.10 asinh()

```
template<typename S >
std::vector<S> vec::asinh (
             std::vector< S > a )
```

5.2.1.11 atan()

```
template<typename S >
std::vector<S> vec::atan (
             std::vector< S > a )
```

5.2.1.12 atanh()

```
template<typename S >
std::vector<S> vec::atanh (
             std::vector< S > a )
```

5.2.1.13 cos()

```
template<typename S >
std::vector<S> vec::cos (
             std::vector< S > a )
```

5.2.1.14 cosh()

```
template<typename S >
std::vector<S> vec::cosh (
             std::vector< S > a )
```

5.2.1.15 cot()

```
template<typename S >
std::vector<S> vec::cot (
            std::vector< S > a )
```

5.2.1.16 coth()

```
template<typename S >
std::vector<S> vec::coth (
            std::vector< S > a )
```

5.2.1.17 cross()

```
template<typename S >
std::vector<S> vec::cross (
            std::vector< S > a,
            std::vector< S > b )
```

5.2.1.18 csc()

```
template<typename S >
std::vector<S> vec::csc (
            std::vector< S > a )
```

5.2.1.19 csch()

```
template<typename S >
std::vector<S> vec::csch (
            std::vector< S > a )
```

5.2.1.20 dot()

```
template<typename S >
std::vector<S> vec::dot (
            std::vector< S > a,
            std::vector< S > b )
```

5.2.1.21 exp()

```
template<typename S >
std::vector<S> vec::exp (
             std::vector< S > a )
```

5.2.1.22 pow() [1/2]

```
template<typename S >
std::vector<S> vec::pow (
             std::vector< S > a,
             S b )
```

5.2.1.23 pow() [2/2]

```
template<typename S >
std::vector<S> vec::pow (
             std::vector< S > a,
             std::vector< S > b )
```

5.2.1.24 sec()

```
template<typename S >
std::vector<S> vec::sec (
             std::vector< S > a )
```

5.2.1.25 sech()

```
template<typename S >
std::vector<S> vec::sech (
             std::vector< S > a )
```

5.2.1.26 sin()

```
template<typename S >
std::vector<S> vec::sin (
             std::vector< S > a )
```

5.2.1.27 sinh()

```
template<typename S >
std::vector<S> vec::sinh (
            std::vector< S > a )
```

5.2.1.28 tan()

```
template<typename S >
std::vector<S> vec::tan (
            std::vector< S > a )
```

5.2.1.29 tanh()

```
template<typename S >
std::vector<S> vec::tanh (
            std::vector< S > a )
```

Chapter 6

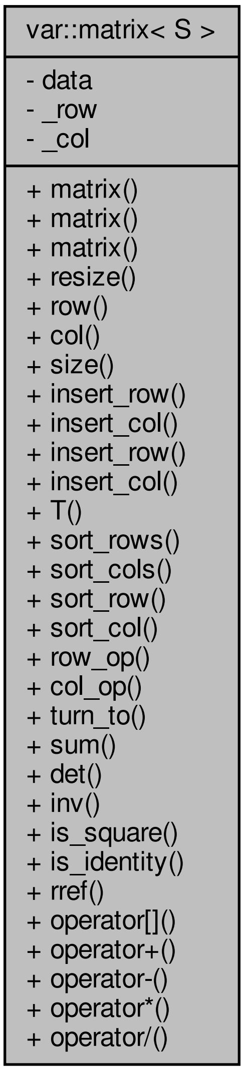
Class Documentation

6.1 var::matrix< S > Class Template Reference

Class for 2d matrix of objects with matrix properties.

```
#include "matrix.hpp"
```

Collaboration diagram for var::matrix< S >:



Classes

- class Row

Public Member Functions

- matrix (int r, int c)

  Construct a new matrix object.
- matrix ()

  Default construct a new matrix object.
- matrix (std::initializer_list< std::initializer_list< S >> a)

- void resize (int r, int c)

  resizes the matrix
- int row ()

  returns the number of rows
- int col ()

  returns the number of columns
- int size ()

  returns total number of elements
- void insert_row (const std::vector< S > &a)

  insterts row at the end
- void insert_col (const std::vector< S > &a)

  insterts column at the end
- void insert_row (int i, const std::vector< S > &a)

  inserts row at specefic index
- void insert_col (int j, const std::vector< S > &a)

  inserts column at specefic index
- void T ()

  mutates data to into transpose
- void sort_rows (int d=1)

  sorts all rows
- void sort_cols (int d=1)

  sorts all columns
- void sort_row (int i, int d=1)
- void sort_col (int j, int d=1)
- template< typename LAMBDA >
  void row_op (int i, LAMBDA f)
- template< typename LAMBDA >
  void col_op (int j, LAMBDA f)
- void turn_to (S n)

  converts all elements to n
- S sum ()

  sum of all elements
- S det ()

  returns the determinant
- S inv ()

  returns the inverse
- bool is_square ()

  checks if matrix is square
- bool is_identity ()

  checks if matrix is an identity matrix
- S rref ()

  rref form of matrix
- Row operator[ ] (int i)
- matrix operator+ (matrix const &other)
- matrix operator- (matrix const &other)
- matrix operator* (matrix const &other)
- matrix operator/ (matrix const &other)

Private Attributes

- table< S > data
- int _row
- int _col

Friends

- std::ostream & operator<< (std::ostream &out, matrix const &other)

    print method for the class var::matrix<int> m; cout << m;

6.1.1 Detailed Description

template<typename S>
class var::matrix< S >

Class for 2d matrix of objects with matrix properties.

Template Parameters

S	can be of any type

6.1.2 Constructor & Destructor Documentation

6.1.2.1 matrix() [1/3]

```
template<typename S >
var::matrix< S >::matrix (
              int r,
              int c )  [inline]
```

Construct a new matrix object.

Parameters

r	number of rows
c	number of colums

6.1.2.2 matrix() [2/3]

```
template<typename S >
var::matrix< S >::matrix ( )  [inline]
```

Default construct a new matrix object.

6.1.2.3 matrix() [3/3]

```
template<typename S >
var::matrix< S >::matrix (
             std::initializer_list< std::initializer_list< S >> a )  [inline]
```

6.1.3 Member Function Documentation

6.1.3.1 col()

```
template<typename S >
int var::matrix< S >::col ( )  [inline]
```

returns the number of columns

Returns

int

6.1.3.2 col_op()

```
template<typename S >
template<typename LAMBDA >
void var::matrix< S >::col_op (
             int j,
             LAMBDA f )  [inline]
```

6.1.3.3 det()

```
template<typename S >
S var::matrix< S >::det ( )  [inline]
```

returns the determinant

Returns

S

6.1.3.4 insert_col() [1/2]

```
template<typename S >
void var::matrix< S >::insert_col (
             const std::vector< S > & a )  [inline]
```

insterts column at the end

Parameters

a	

6.1.3.5 insert_col() [2/2]

```
template<typename S >
void var::matrix< S >::insert_col (
             int j,
             const std::vector< S > & a )  [inline]
```

inserts column at specefic index

Parameters

j	
a	

6.1.3.6 insert_row() [1/2]

```
template<typename S >
void var::matrix< S >::insert_row (
             const std::vector< S > & a )  [inline]
```

insterts row at the end

Parameters

a	

6.1.3.7 insert_row() [2/2]

```
template<typename S >
void var::matrix< S >::insert_row (
             int i,
             const std::vector< S > & a )  [inline]
```

inserts row at specefic index

Parameters

i	
a	

6.1.3.8 inv()

```
template<typename S >
S var::matrix< S >::inv ( )  [inline]
```

returns the inverse

Returns

S

6.1.3.9 is_identity()

```
template<typename S >
bool var::matrix< S >::is_identity ( )  [inline]
```

checks if matrix is an identity matrix

Returns

true

false

6.1.3.10 is_square()

```
template<typename S >
bool var::matrix< S >::is_square ( )  [inline]
```

checks if matrix is square

Returns

true

false

6.1.3.11 operator*()

```
template<typename S >
matrix var::matrix< S >::operator* (
             matrix< S > const & other )  [inline]
```

6.1.3.12 operator+()

```
template<typename S >
matrix var::matrix< S >::operator+ (
             matrix< S > const & other )  [inline]
```

6.1.3.13 operator-()

```
template<typename S >
matrix var::matrix< S >::operator- (
             matrix< S > const & other )  [inline]
```

6.1.3.14 operator/()

```
template<typename S >
matrix var::matrix< S >::operator/ (
             matrix< S > const & other )  [inline]
```

6.1.3.15 operator[]()

```
template<typename S >
Row var::matrix< S >::operator[] (
             int i )  [inline]
```

6.1.3.16 resize()

```
template<typename S >
void var::matrix< S >::resize (
             int r,
             int c )  [inline]
```

resizes the matrix

Parameters

r	number of rows
c	number of colums

6.1.3.17 row()

```
template<typename S >
int var::matrix< S >::row ( )  [inline]
```

returns the number of rows

Returns

int

6.1.3.18 row_op()

```
template<typename S >
template<typename LAMBDA >
void var::matrix< S >::row_op (
             int i,
             LAMBDA f )  [inline]
```

6.1.3.19 rref()

```
template<typename S >
S var::matrix< S >::rref ( )  [inline]
```

rref form of matrix

Returns

S

6.1.3.20 size()

```
template<typename S >
int var::matrix< S >::size ( )  [inline]
```

returns total number of elements

Returns

int

6.1.3.21 sort_col()

```
template<typename S >
void var::matrix< S >::sort_col (
             int j,
             int d = 1 )  [inline]
```

6.1.3.22 sort_cols()

```
template<typename S >
void var::matrix< S >::sort_cols (
             int d = 1 )  [inline]
```

sorts all columns

Parameters

d	d = 1 is accending order -> sort_cols() d = 0 is decending order -> sort_cols(0)

6.1.3.23 sort_row()

```
template<typename S >
void var::matrix< S >::sort_row (
             int i,
             int d = 1 )  [inline]
```

6.1.3.24 sort_rows()

```
template<typename S >
void var::matrix< S >::sort_rows (
             int d = 1 )  [inline]
```

sorts all rows

Parameters

d	d = 1 is accending order -> sort_rows() d = 0 is decending order -> sort_rows(0)

6.1.3.25 sum()

```
template<typename S >
```

```
S var::matrix< S >::sum ( )  [inline]
```

sum of all elements

Returns

S

6.1.3.26 T()

```
template<typename S >
void var::matrix< S >::T ( )  [inline]
```

mutates data to into transpose

6.1.3.27 turn_to()

```
template<typename S >
void var::matrix< S >::turn_to (
             S n )  [inline]
```

converts all elements to n

Parameters

n	

6.1.4 Friends And Related Function Documentation

6.1.4.1 operator<<

```
template<typename S >
std::ostream& operator<< (
             std::ostream & out,
             matrix< S > const & other )  [friend]
```

print method for the class var::matrix<int> m; cout << m;

Template Parameters

S	

Parameters

out	
other	

Returns

std::ostream&

6.1.5 Member Data Documentation

6.1.5.1 _col

```
template<typename S >
int var::matrix< S >::_col  [private]
```

6.1.5.2 _row

```
template<typename S >
int var::matrix< S >::_row  [private]
```

6.1.5.3 data

```
template<typename S >
table<S> var::matrix< S >::data  [private]
```

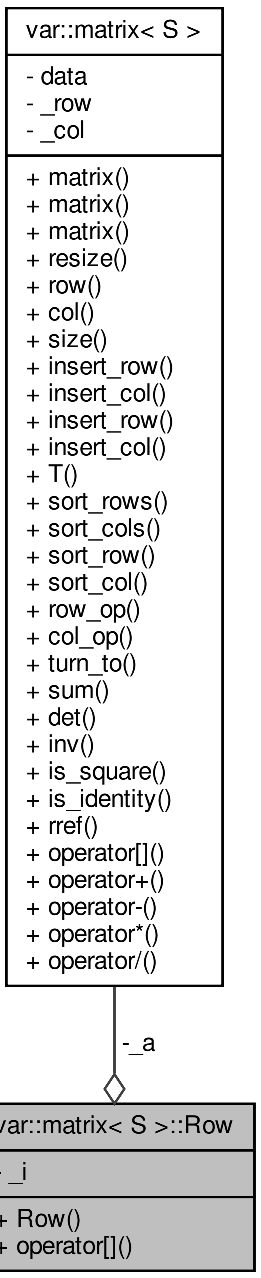
The documentation for this class was generated from the following file:

- includes/variables/matrix.hpp

6.2 var::matrix< S >::Row Class Reference

```
#include "matrix.hpp"
```

Collaboration diagram for var::matrix< S >::Row:



Public Member Functions

- Row (matrix &a, int i)
- S & operator[ ] (int j)

Private Attributes

- matrix & _a
- int _i

6.2.1 Constructor & Destructor Documentation

6.2.1.1 Row()

```
template<typename S >
var::matrix< S >::Row::Row (
             matrix & a,
             int i )  [inline]
```

6.2.2 Member Function Documentation

6.2.2.1 operator[]()

```
template<typename S >
S& var::matrix< S >::Row::operator[] (
             int j )  [inline]
```

6.2.3 Member Data Documentation

6.2.3.1 _a

```
template<typename S >
matrix& var::matrix< S >::Row::_a  [private]
```

6.2.3.2 _i

```
template<typename S >
int var::matrix< S >::Row::_i  [private]
```

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

- includes/variables/matrix.hpp

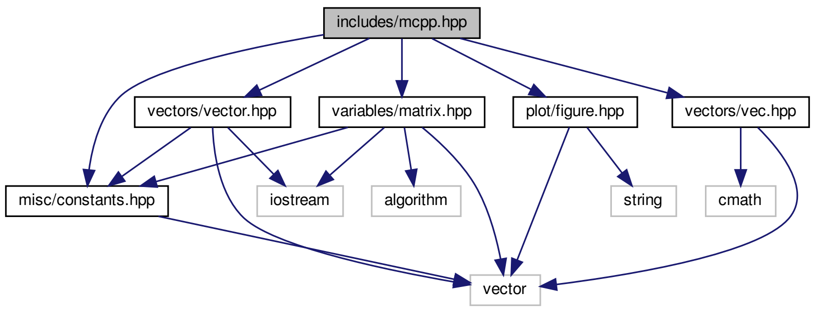
Chapter 7

File Documentation

7.1 includes/mcpp.hpp File Reference

```
#include "misc/constants.hpp"
#include "variables/matrix.hpp"
#include "vectors/vector.hpp"
#include "vectors/vec.hpp"
#include "plot/figure.hpp"
```

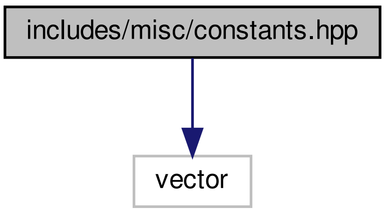
Include dependency graph for mcpp.hpp:



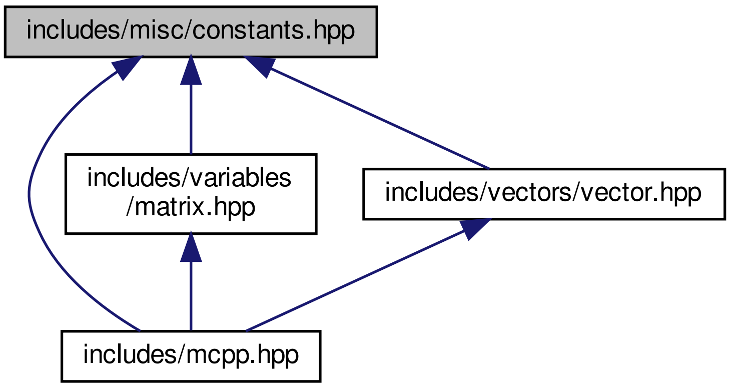
7.2 includes/misc/constants.hpp File Reference

```
#include <vector>
```

Include dependency graph for constants.hpp:



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



Typedefs

- template<typename T >
  using table = std::vector< std::vector< T > >

7.2.1 Typedef Documentation

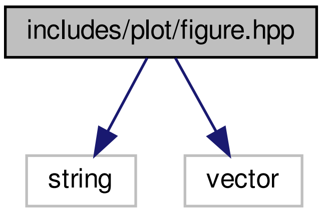
7.2.1.1 table

```
template<typename T >
using table = std::vector<std::vector<T> >
```

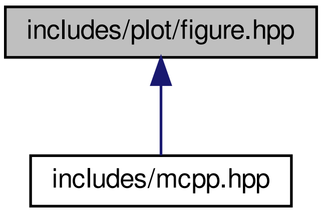
7.3 includes/plot/figure.hpp File Reference

```
#include <string>
#include <vector>
```

Include dependency graph for figure.hpp:



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



Functions

- void check_param (int exp, int act)

    checks parameter for the functions
- void figure (std::string title="Window", int size=400, std::vector< int > background=WHITE)

    initializes figure
- void plot (std::vector< float > x, std::vector< float > y, std::vector< float > xrange={-5, 5}, std::vector< float > yrange={-5, 5}, std::vector< int > draw=BLACK, std::string legend="")

    plots values
- void point (float x, float y, std::vector< float > xrange={-5, 5}, std::vector< float > yrange={-5, 5}, std::vector< int > draw=BLACK, std::string legend="")
- void hline (float x, float y, std::vector< float > xrange={-5, 5}, std::vector< float > yrange={-5, 5}, std::vector< int > draw=BLACK, std::string legend="")
- void vline (float x, float y, std::vector< float > xrange={-5, 5}, std::vector< float > yrange={-5, 5}, std::string legend="", std::vector< int > draw=BLACK)

Variables

- const std::vector< int > RED = {247, 55, 49}

  RGB values for colors.
- const std::vector< int > BLACK = {0, 0, 0}
- const std::vector< int > BLUE = {36, 114, 200}
- const std::vector< int > GREEN = {53, 200, 36}
- const std::vector< int > WHITE = {255, 255, 255}

7.3.1 Function Documentation

7.3.1.1 check_param()

```
void check_param (
             int exp,
             int act )
```

checks parameter for the functions

Parameters

exp	
act	

7.3.1.2 figure()

```
void figure (
             std::string title = "Window",
             int size = 400,
             std::vector< int > background = WHITE )
```

initializes figure

Parameters

title	
size	
background	

7.3.1.3 hline()

```
void hline (
             float x,
             float y,
             std::vector< float > xrange = {-5, 5},
             std::vector< float > yrange = {-5, 5},
             std::vector< int > draw = BLACK,
             std::string legend = "" )
```

7.3.1.4 plot()

```
void plot (
            std::vector< float > x,
            std::vector< float > y,
            std::vector< float > xrange = {-5, 5},
            std::vector< float > yrange = {-5, 5},
            std::vector< int > draw = BLACK,
            std::string legend = "" )
```

plots values

Parameters

x	
y	
xrange	
yrange	
draw	
legend	

7.3.1.5 point()

```
void point (
            float x,
            float y,
            std::vector< float > xrange = {-5, 5},
            std::vector< float > yrange = {-5, 5},
            std::vector< int > draw = BLACK,
            std::string legend = "" )
```

7.3.1.6 vline()

```
void vline (
            float x,
            float y,
            std::vector< float > xrange = {-5, 5},
            std::vector< float > yrange = {-5, 5},
            std::string legend = "",
            std::vector< int > draw = BLACK )
```

7.3.2 Variable Documentation

7.3.2.1 BLACK

```
const std::vector<int> BLACK = {0, 0, 0}  [extern]
```

7.3.2.2 BLUE

```
const std::vector<int> BLUE = {36, 114, 200}  [extern]
```

7.3.2.3 GREEN

```
const std::vector<int> GREEN = {53, 200, 36}  [extern]
```

7.3.2.4 RED

```
const std::vector<int> RED = {247, 55, 49}  [extern]
```

RGB values for colors.

7.3.2.5 WHITE

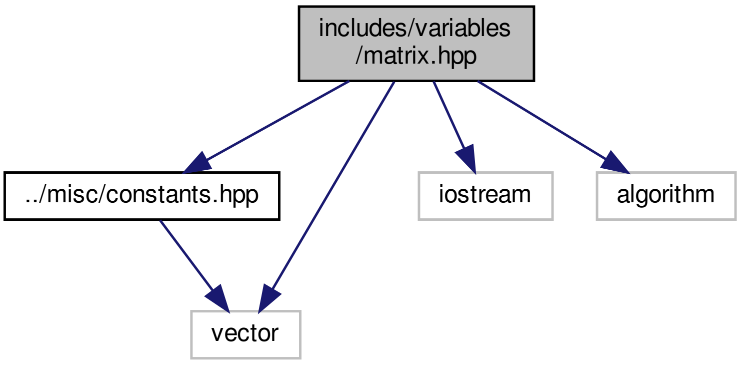
```
const std::vector<int> WHITE = {255, 255, 255}  [extern]
```

7.4 includes/variables/graph.hpp File Reference

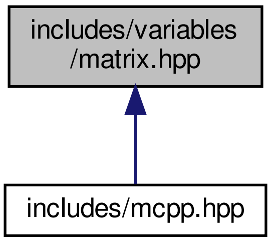
7.5 includes/variables/matrix.hpp File Reference

```
#include "../misc/constants.hpp"
#include <iostream>
#include <vector>
#include <algorithm>
```

Include dependency graph for matrix.hpp:



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



Classes

- class var::matrix< S >

  Class for 2d matrix of objects with matrix properties.
- class var::matrix< S >::Row

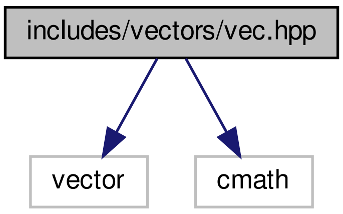
Namespaces

- namespace var

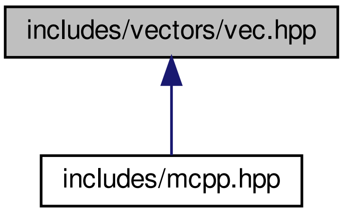
7.6 includes/vectors/vec.hpp File Reference

```
#include <vector>
#include <cmath>
```

Include dependency graph for vec.hpp:



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



Namespaces

- namespace vec

Functions

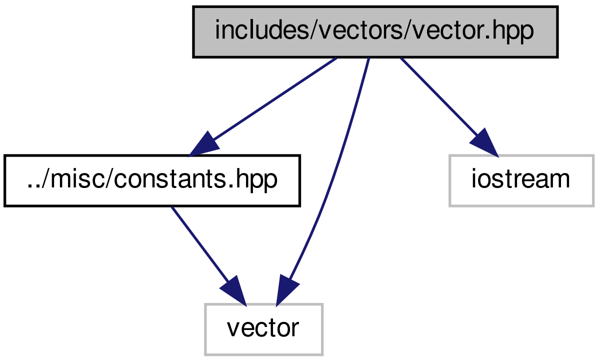
- template<typename S >
  std::vector< S > vec::dot (std::vector< S > a, std::vector< S > b)
- template<typename S >
  std::vector< S > vec::cross (std::vector< S > a, std::vector< S > b)

- template<typename S >
  std::vector< S > vec::pow (std::vector< S > a, S b)
- template<typename S >
  std::vector< S > vec::pow (std::vector< S > a, std::vector< S > b)
- template<typename S >
  std::vector< S > vec::sin (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::cos (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::tan (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::sec (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::csc (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::cot (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::asin (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::acos (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::atan (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::asec (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::acsc (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::acot (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::sinh (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::cosh (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::tanh (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::sech (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::csch (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::coth (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::asinh (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::acosh (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::atanh (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::asech (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::acsch (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::acoth (std::vector< S > a)
- template<typename S >
  std::vector< S > vec::exp (std::vector< S > a)

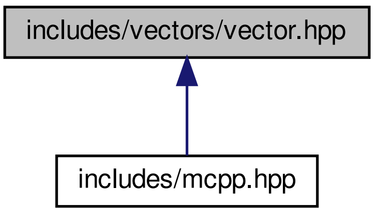
7.7 includes/vectors/vector.hpp File Reference

```
#include "../misc/constants.hpp"
#include <vector>
#include <iostream>
```

Include dependency graph for vector.hpp:



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



Functions

- template<typename S >
  std::vector< S > operator* (std::vector< S > first, std::vector< S > second)

  *vector*vector*

- template<typename S >
  std::vector< S > operator* (S s, std::vector< S > v)

  *var*vector*

- template<typename S >
  std::vector< S > operator* (std::vector< S > v, S s)

vector∗var

- template<typename S >
  std::vector< S > operator+ (std::vector< S > first, std::vector< S > second)

  vector+vector
- template<typename S >
  std::vector< S > operator+ (S s, std::vector< S > v)

  var+vector
- template<typename S >
  std::vector< S > operator+ (std::vector< S > v, S s)

  vector+var
- template<typename S >
  std::vector< S > operator- (std::vector< S > first, std::vector< S > second)

  vector-vector
- template<typename S >
  std::vector< S > operator- (S s, std::vector< S > v)

  var-vector
- template<typename S >
  std::vector< S > operator- (std::vector< S > v, S s)

  vector-var
- template<typename S >
  std::vector< S > operator/ (std::vector< S > first, std::vector< S > second)

  vector/vector
- template<typename S >
  std::vector< S > operator/ (S s, std::vector< S > v)

  var/vector
- template<typename S >
  std::vector< S > operator/ (std::vector< S > v, S s)

  vector/var
- template<typename S >
  std::ostream & operator<< (std::ostream &out, std::vector< S > &other)

  cout << vector
- template<typename S >
  std::vector< S > operator% (std::vector< S > v, S s)

  vectorvar

7.7.1 Function Documentation

7.7.1.1 operator%()

```
template<typename S >
std::vector<S> operator% (
             std::vector< S > v,
             S s )
```

vectorvar

Template Parameters

S	

Parameters

v	
s	

Returns

std::vector<S>

7.7.1.2 operator*() [1/3]

```
template<typename S >
std::vector<S> operator* (
            S s,
            std::vector< S > v )
```

var*vector

Template Parameters

S	

Parameters

s	
v	

Returns

std::vector<S>

7.7.1.3 operator*() [2/3]

```
template<typename S >
std::vector<S> operator* (
            std::vector< S > first,
            std::vector< S > second )
```

vector*vector

Template Parameters

S	

Parameters

first	
second	

Returns

std::vector<S>

7.7.1.4 operator∗() `[3/3]`

```
template<typename S >
std::vector<S> operator* (
            std::vector< S > v,
            S s )
```

vector∗var

Template Parameters

S	

Parameters

v	
s	

Returns

std::vector<S>

7.7.1.5 operator+() `[1/3]`

```
template<typename S >
std::vector<S> operator+ (
            S s,
            std::vector< S > v )
```

var+vector

Template Parameters

S	

Parameters

s	
v	

Returns

std::vector<S>

7.7.1.6 operator+() [2/3]

```
template<typename S >
std::vector<S> operator+ (
            std::vector< S > first,
            std::vector< S > second )
```

vector+vector

Template Parameters

S	

Parameters

first	
second	

Returns

std::vector<S>

7.7.1.7 operator+() [3/3]

```
template<typename S >
std::vector<S> operator+ (
            std::vector< S > v,
            S s )
```

vector+var

Template Parameters

S	

Parameters

v	
s	

Returns

std::vector<S>

7.7.1.8 operator-() [1/3]

```
template<typename S >
std::vector<S> operator- (
            S s,
            std::vector< S > v )
```

var-vector

Template Parameters

S	

Parameters

s	
v	

Returns

std::vector<S>

7.7.1.9 operator-() [2/3]

```
template<typename S >
std::vector<S> operator- (
            std::vector< S > first,
            std::vector< S > second )
```

vector-vector

Template Parameters

S	

Parameters

first	
second	

Returns

std::vector<S>

7.7.1.10 operator-() [3/3]

```
template<typename S >
std::vector<S> operator- (
            std::vector< S > v,
            S s )
```

vector-var

Template Parameters

S	

Parameters

v	
s	

Returns

std::vector<S>

7.7.1.11 operator/() [1/3]

```
template<typename S >
std::vector<S> operator/ (
            S s,
            std::vector< S > v )
```

var/vector

Template Parameters

S	

Parameters

s	
v	

Returns

std::vector<S>

7.7.1.12 operator/() [2/3]

```
template<typename S >
std::vector<S> operator/ (
            std::vector< S > first,
            std::vector< S > second )
```

vector/vector

Template Parameters

S	

Parameters

first	
second	

Returns

std::vector<S>

7.7.1.13 operator/() [3/3]

```
template<typename S >
std::vector<S> operator/ (
            std::vector< S > v,
            S s )
```

vector/var

Template Parameters

S	

Parameters

v	
s	

Returns

std::vector<S>

7.7.1.14 operator<<()

```
template<typename S >
std::ostream& operator<< (
            std::ostream & out,
            std::vector< S > & other )
```

cout << vector

Template Parameters

S	

Parameters

out	
other	

Returns

std::ostream&

7.8 README.md File Reference

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