Graph beta

Generated by Doxygen 1.10.0

1 Data Structure Index	1
1.1 Data Structures	. 1
2 File Index	3
2.1 File List	. 3
3 Data Structure Documentation	5
3.1 edge Struct Reference	. 5
3.1.1 Detailed Description	. 5
3.1.2 Field Documentation	. 5
3.1.2.1 end_vertex	. 5
3.1.2.2 length	. 5
3.1.2.3 start_vertex	. 6
3.2 graph Struct Reference	. 6
3.2.1 Detailed Description	. 6
3.2.2 Field Documentation	. 7
3.2.2.1 edges	. 7
3.2.2.2 edges_amount	. 7
3.2.2.3 vertices	. 7
3.2.2.4 vertices_amount	. 7
4 File Documentation	9
4.1 D:/files from internet/important/learning/github/c-modules/Graph/code/inc/graph.h File Reference	. 9
4.1.1 Macro Definition Documentation	. 11
4.1.1.1 _GRAPH_EMPTY	. 11
4.1.1.2 _GRAPH_EXIST	. 11
4.1.1.3 _GRAPH_FORBIDDEN_SEPARATORS	. 12
 4.1.1.9 _STRING	
4.1.2 Typedef Documentation	
4.1.2.1 graph error t	
4.1.3 Function Documentation	
4.1.3.1 graph_add_edge()	
4.1.3.2 graph_add_vertex()	
4.1.3.3 graph_adjacency_list_fill()	
4.1.3.4 graph_adjacency_list_size()	
4.1.3.5 graph_delete_edge()	
4.1.3.6 graph_delete_vertex()	
4.1.3.7 graph_dfs()	
$\sigma = \sigma$	-

4.1.3.9 graph_has_edge()	17
4.1.3.10 graph_has_vertex()	18
4.1.3.11 graph_initialize()	19
4.1.3.12 graph_is_empty()	20
4.1.3.13 graph_show()	20
4.1.3.14 graph_to_dot()	21
4.2 graph.h	22
$4.3 \; \text{D:/files from internet/important/learning/github/c-modules/Graph/code/src/graph.c} \; \text{File Reference} . .$	23
4.3.1 Function Documentation	24
4.3.1.1 graph_add_edge()	24
4.3.1.2 graph_add_vertex()	25
4.3.1.3 graph_adjacency_list_fill()	26
4.3.1.4 graph_adjacency_list_size()	26
4.3.1.5 graph_delete_edge()	27
4.3.1.6 graph_delete_vertex()	28
4.3.1.7 graph_dfs()	28
4.3.1.8 graph_free()	28
4.3.1.9 graph_has_edge()	29
4.3.1.10 graph_has_vertex()	30
4.3.1.11 graph_initialize()	30
4.3.1.12 graph_is_empty()	31
4.3.1.13 graph_show()	31
4.3.1.14 graph_to_dot()	32
Index	35

17

Chapter 1

Data Structure Index

1.1 Data Structures

Here are the data structures with brief descriptions:

edge		
	Edge of graph	5
graph		
	Graph	6

2 Data Structure Index

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

D:/files from internet/important/learning/github/c-modules/Graph/code/inc/ graph.h	 9
D:/files.from.internet/important/learning/github/c-modules/Graph/code/src/ graph.c	23

File Index

Chapter 3

Data Structure Documentation

3.1 edge Struct Reference

Edge of graph.

```
#include <graph.h>
```

Data Fields

- char start_vertex [_STRING__+1]
- char end_vertex [_STRING__+1]
- size_t length

3.1.1 Detailed Description

Edge of graph.

Parameters

start_vertex	Name of start vertex
end_vertex	Name of end vertex
length	Length of edge

3.1.2 Field Documentation

3.1.2.1 end_vertex

```
char end_vertex[ _STRING__+1]
```

3.1.2.2 length

size_t length

3.1.2.3 start_vertex

```
char start_vertex[ _STRING__+1]
```

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

• D:/files from internet/important/learning/github/c-modules/Graph/code/inc/ graph.h

3.2 graph Struct Reference

Graph.

```
#include <graph.h>
```

Collaboration diagram for graph:



Data Fields

- char ** vertices
- size_t vertices_amount
- struct edge * edges
- size_t edges_amount

3.2.1 Detailed Description

Graph.

Parameters

vertices	Dynamic array of vertices names
vertices_amount	Length of vertices array
edges	Dynamic array of edges
edges_amount	Length of edges array

3.2.2 Field Documentation

3.2.2.1 edges

struct **edge*** edges

3.2.2.2 edges_amount

size_t edges_amount

3.2.2.3 vertices

char** vertices

3.2.2.4 vertices_amount

size_t vertices_amount

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

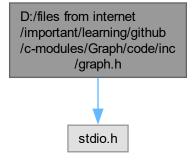
 $\bullet \ \, \text{D:/files from internet/important/learning/github/c-modules/Graph/code/inc/} \ \textbf{graph.h}$

Chapter 4

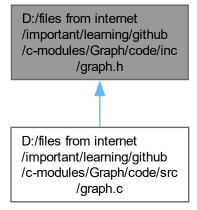
File Documentation

4.1 D:/files from internet/important/learning/github/c-modules/← Graph/code/inc/graph.h File Reference

#include <stdio.h>
Include dependency graph for graph.h:



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



Data Structures

• struct edge

Edge of graph.

struct graph

Graph.

Macros

- #define _STRING__ 256
- #define _GRAPH_FORBIDDEN_SEPARATORS__ "\"\"#%()><{}-\\\|:;;"
- #define _GRAPH_OK__ 0

Positive return code.

• #define _GRAPH_MEM__ -1

Memory shortage error.

• #define _GRAPH_INCORRECT_ARG__ -2

Incorrect arguments in function.

• #define _GRAPH_EMPTY__ -3

Graph is empty.

• #define _GRAPH_NOT_FOUND__ -4

Object not in graph.

• #define _GRAPH_EXIST__ -5

Graph already has object.

• #define _GRAPH_OS_ERROR__ -6

Operating system error.

Typedefs

typedef int graph_error_t

Data type for errors that occur during the operation of functions.

Functions

void graph_initialize (struct graph * graph)

Initialization of graph by zero.

int graph_is_empty (const struct graph * graph)

Checking for graph emtiness.

• int graph_has_vertex (const struct graph * graph, const char *vertex)

Checking for the presence of a vertex in the graph.

• int graph_has_edge (const struct graph * graph, const char *start_vertex, const char *end_vertex)

Checking for the presence of a edge in the graph.

• graph_error_t graph_add_vertex (struct graph * graph, const char *vertex)

Adding a vertex to a graph.

• graph_error_t graph_delete_vertex (struct graph * graph, const char *vertex)

Deleting vertex from graph.

• graph_error_t graph_add_edge (struct graph * graph, const char *start_vertex, const char *end_vertex, size_t edge_length)

Adding an edge to a graph.

graph_error_t graph_delete_edge (struct graph * graph, const char *start_vertex, const char *end_← vertex)

Deleting edge from graph.

• graph_error_t graph_show (const struct graph * graph)

Draw graph using Graphviz and show it.

• graph_error_t graph_to_dot (const struct graph * graph, const char *folder, const char *filename)

Creating a dot file by graph.

• size_t graph_adjacency_list_size (const struct graph * graph, const char *vertex)

Counting the number of adjacent vertices (the size of the adjacency list)

• graph_error_t graph_adjacency_list_fill (const struct graph * graph, const char *vertex, int *adjacency_list)

Filling in the adjacency list.

void graph_dfs (struct graph * graph, void(*vertex_processing)(char *vertex_name))

Graph traversal using a depth-first search algorithm.

• void graph_free (struct graph * graph)

Free graph.

4.1.1 Macro Definition Documentation

4.1.1.1 _GRAPH_EMPTY__

#define _GRAPH_EMPTY__ -3

Graph is empty.

4.1.1.2 _GRAPH_EXIST__

#define _GRAPH_EXIST__ -5

Graph already has object.

4.1.1.3 _GRAPH_FORBIDDEN_SEPARATORS__

Forbidden characters for vertex name

4.1.1.4 _GRAPH_INCORRECT_ARG__

```
#define _GRAPH_INCORRECT_ARG__ -2
```

Incorrect arguments in function.

4.1.1.5 **_GRAPH_MEM__**

```
#define _GRAPH_MEM__ -1
```

Memory shortage error.

4.1.1.6 _GRAPH_NOT_FOUND__

```
#define _GRAPH_NOT_FOUND__ -4
```

Object not in graph.

4.1.1.7 _GRAPH_OK__

```
#define _GRAPH_OK__ 0
```

Positive return code.

4.1.1.8 _GRAPH_OS_ERROR__

```
#define _GRAPH_OS_ERROR__ -6
```

Operating system error.

4.1.1.9 _STRING__

```
#define _STRING__ 256
```

Max length of string

4.1.2 Typedef Documentation

4.1.2.1 graph_error_t

```
typedef int graph_error_t
```

Data type for errors that occur during the operation of functions.

4.1.3 Function Documentation

4.1.3.1 graph_add_edge()

```
graph_error_t graph_add_edge (
    struct graph * graph,
    const char * start_vertex,
    const char * end_vertex,
    size_t edge_length )
```

Adding an edge to a graph.

Parameters

in	graph	Graph descriptor
in	start_vertex	Start vertex name
in	end_vertex	End vertex name

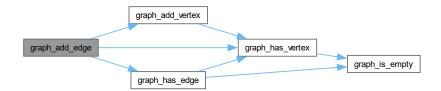
Returns

```
_GRAPH_OK__,_GRAPH_MEM__,_GRAPH_INCORRECT_ARG__,_GRAPH_EXIST__
```

Note

- You cannot add a copy of an existing edge
- When adding an edge consisting of new vertices, new vertices will be added to the graph

Here is the call graph for this function:



4.1.3.2 graph_add_vertex()

Adding a vertex to a graph.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

Returns

```
_GRAPH_OK__, _GRAPH_MEM__, _GRAPH_INCORRECT_ARG__, _GRAPH_EXIST__
```

Note

- You cannot add a copy of an existing vertex
- You cannot add a vertex with a name of zero length
- You cannot add a vertex with a name containing special characters #% () >< { } $-/\setminus|:$; , and quotes

Here is the call graph for this function:



Here is the caller graph for this function:



4.1.3.3 graph_adjacency_list_fill()

Filling in the adjacency list.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name
in	size	Adjacency list size
out	adjacency_list	Adjacency list descriptor

Returns

```
_GRAPH_OK___, _GRAPH_INCORRECT_ARG___
```

4.1.3.4 graph_adjacency_list_size()

Counting the number of adjacent vertices (the size of the adjacency list)

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

Returns

The number of adjacent vertices

Note

- If the arguments is incorrect, the function returns 0

Here is the call graph for this function:



4.1.3.5 graph_delete_edge()

```
graph_error_t graph_delete_edge (
    struct graph * graph,
    const char * start_vertex,
    const char * end_vertex )
```

Deleting edge from graph.

Parameters

in	graph	Graph descriptor
in	start_vertex	Start vertex name
in	end_vertex	End vertex name

Returns

```
_GRAPH_OK__, _GRAPH_INCORRECT_ARG__, _GRAPH_EMPTY__, _GRAPH_NOT_FOUND__
```

Here is the call graph for this function:



Here is the caller graph for this function:



4.1.3.6 graph_delete_vertex()

Deleting vertex from graph.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

Returns

```
_GRAPH_OK__,_GRAPH_INCORRECT_ARG__,_GRAPH_EMPTY__,_GRAPH_NOT_FOUND__
```

Here is the call graph for this function:



4.1.3.7 graph_dfs()

Graph traversal using a depth-first search algorithm.

Parameters

in	graph	Graph descriptor
in	vertex_processing	Vertex processing function

Note

- If the input arguments are incorrect, the function will not work

4.1.3.8 graph_free()

Free graph.

Parameters

in graph C	Graph descriptor
------------	------------------

4.1.3.9 graph_has_edge()

```
const char * start_vertex,
const char * end_vertex )
```

Checking for the presence of a edge in the graph.

Parameters

in	graph	Graph descriptor
in	start_vertex	Start vertex name
in	end_vertex	End vertex name

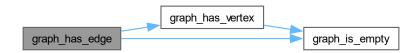
Returns

```
1-True/0-False
```

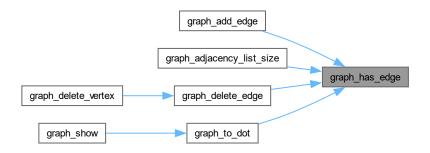
Note

- If incorrect arguments are passed, the function returns 0 (False)

Here is the call graph for this function:



Here is the caller graph for this function:



4.1.3.10 graph_has_vertex()

Checking for the presence of a vertex in the graph.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

Returns

```
1-True/0-False
```

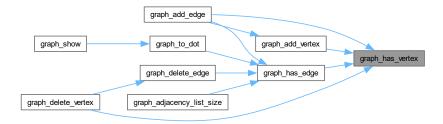
Note

- If incorrect arguments are passed, the function returns 0 (False)

Here is the call graph for this function:



Here is the caller graph for this function:



4.1.3.11 graph_initialize()

Initialization of graph by zero.

Parameters

in	graph	Graph descriptor
----	-------	------------------

Note

- If the graph descriptor is NULL, the function will not cause a segmentation error

4.1.3.12 graph_is_empty()

```
int graph_is_empty ( {\tt const\ struct} \quad {\tt \bf graph}\ *\ {\tt \it graph}\ )
```

Checking for graph emtiness.

Parameters

in	graph	Graph descriptor

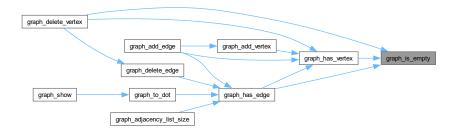
Returns

```
1-True/0-False
```

Note

- If incorrect arguments are passed, the function returns 1 (True)

Here is the caller graph for this function:



4.1.3.13 graph_show()

Draw graph using Graphviz and show it.

Parameters

in graph Graph descriptor	in	graph	Graph descriptor
---------------------------	----	-------	------------------

Returns

```
_GRAPH_OK__, _GRAPH_MEM__, _GRAPH_INCORRECT_ARGS__, _GRAPH_OS_ERROR__
```

Note

- Linux: the graph is demonstrated using eog
- Windows: the graph is demonstrated using mspaint
- The function creates a separate folder for temporary files and deletes it at the end of the work

Here is the call graph for this function:



4.1.3.14 graph_to_dot()

Creating a dot file by graph.

Parameters

in	graph	Graph descriptor
in	folder	Folder name
in	filename	File name

Returns

```
_GRAPH_OK__,_GRAPH_INCORRECT_ARG__,_GRAPH_MEM__,_GRAPH_OS_ERROR__
```

Note

- The pointer to the ${\tt folder}$ string can take the ${\tt NULL}$ value. In this case, the folder will not be created

Here is the call graph for this function:



Here is the caller graph for this function:



4.2 graph.h

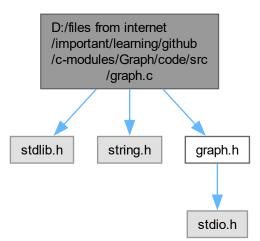
Go to the documentation of this file.

```
00001 #ifndef GRAPH_H_
00002 #define GRAPH_H_
00003
00004 #include <stdio.h>
00005
00006 // Macro
00007
00011 #define _STRING__ 256
00012
00016 #define _GRAPH_FORBIDDEN_SEPARATORS__ "\"\'#%()><{}-/\\|:;,"
00021 #define _GRAPH_OK__ 0
00022
00026 #define _GRAPH_MEM__ -1
00027
00031 #define _GRAPH_INCORRECT_ARG__ -2
00036 #define _GRAPH_EMPTY__ -3
00037
00041 #define _GRAPH_NOT_FOUND__ -4
00042
00046 #define _GRAPH_EXIST__ -5
00051 #define _GRAPH_OS_ERROR__ -6
00052
00053 // Structs and functions
00054
00062 struct edge
00063 {
          char start_vertex[_STRING__ + 1];
char end_vertex[_STRING__ + 1];
00064
00065
00066
          size_t length;
00067 };
00068
00077 struct graph
00078 {
00079
          char **vertices;
08000
          size_t vertices_amount;
00081
          struct edge *edges;
00082
          size_t edges_amount;
00083 };
00084
00088 typedef int graph_error_t;
00089
00097 void graph_initialize(struct graph *graph);
00098
00108 int graph_is_empty(const struct graph *graph);
00109
00120 int graph_has_vertex(const struct graph *graph, const char *vertex);
00121
00133 int graph_has_edge(const struct graph *graph, const char *start_vertex, const char *end_vertex);
00134
00147 graph_error_t graph_add_vertex(struct graph *graph, const char *vertex);
00157 graph_error_t graph_delete_vertex(struct graph *graph, const char *vertex);
00158
00171 graph_error_t graph_add_edge(struct graph *graph, const char *start_vertex, const char *end_vertex,
      size_t edge_length);
00172
00182 graph_error_t graph_delete_edge(struct graph *graph, const char *start_vertex, const char
      *end_vertex);
```

```
00183
00195 graph_error_t graph_show(const struct graph *graph);
00196
00208 graph_error_t graph_to_dot(const struct graph *graph, const char *folder, const char *filename);
00209
00220 size_t graph_adjacency_list_size(const struct graph *graph, const char *vertex);
00221
00233 graph_error_t graph_adjacency_list_fill(const struct graph *graph, const char *vertex, int *adjacency_list);
00234
00243 void graph_dfs(struct graph *graph, void (*vertex_processing)(char *vertex_name));
00244
00250 void graph_free(struct graph *graph);
00251
00252 #endif // GRAPH_H__
```

4.3 D:/files from internet/important/learning/github/c-modules/ Graph/code/src/graph.c File Reference

```
#include <stdlib.h>
#include <string.h>
#include "graph.h"
Include dependency graph for graph.c:
```



Functions

- void graph_initialize (struct graph * graph)
 - Initialization of graph by zero.
- int graph_is_empty (const struct graph * graph)
 - Checking for graph emtiness.
- int $\mbox{graph_has_vertex}$ (const struct $\mbox{graph}*\mbox{graph},$ const char *vertex)
 - Checking for the presence of a vertex in the graph.
- int **graph_has_edge** (const struct **graph** * **graph**, const char *start_vertex, const char *end_vertex)

 Checking for the presence of a edge in the graph.
- graph_error_t graph_add_vertex (struct graph * graph, const char *vertex)

Adding a vertex to a graph.

graph_error_t graph_delete_vertex (struct graph * graph, const char *vertex)

Deleting vertex from graph.

• graph_error_t graph_add_edge (struct graph * graph, const char *start_vertex, const char *end_vertex, size t edge length)

Adding an edge to a graph.

graph_error_t graph_delete_edge (struct graph * graph, const char *start_vertex, const char *end_←
vertex)

Deleting edge from graph.

- graph_error_t graph_to_dot (const struct graph * graph, const char *folder, const char *filename)

 Creating a dot file by graph.
- graph_error_t graph_show (const struct graph * graph)

Draw graph using Graphviz and show it.

• size_t graph_adjacency_list_size (const struct graph * graph, const char *vertex)

Counting the number of adjacent vertices (the size of the adjacency list)

• graph_error_t graph_adjacency_list_fill (const struct graph * graph, const char *vertex, int *adjacency_list)

Filling in the adjacency list.

- void **graph_dfs** (struct **graph** * **graph**, void(*vertex_processing)(char *vertex_name))
 - Graph traversal using a depth-first search algorithm.
- void graph_free (struct graph * graph)

Free graph.

4.3.1 Function Documentation

4.3.1.1 graph_add_edge()

```
graph_error_t graph_add_edge (
    struct graph * graph,
    const char * start_vertex,
    const char * end_vertex,
    size_t edge_length )
```

Adding an edge to a graph.

Parameters

in	graph	Graph descriptor
in	start_vertex	Start vertex name
in	end_vertex	End vertex name

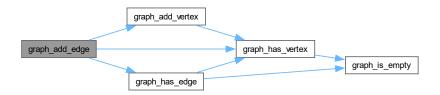
Returns

```
_GRAPH_OK__,_GRAPH_MEM__,_GRAPH_INCORRECT_ARG__,_GRAPH_EXIST__
```

Note

- You cannot add a copy of an existing edge
- When adding an edge consisting of new vertices, new vertices will be added to the graph

Here is the call graph for this function:



4.3.1.2 graph_add_vertex()

```
graph_error_t graph_add_vertex (
          struct graph * graph,
          const char * vertex )
```

Adding a vertex to a graph.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

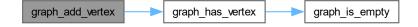
Returns

```
_GRAPH_OK__,_GRAPH_MEM__,_GRAPH_INCORRECT_ARG__,_GRAPH_EXIST__
```

Note

- You cannot add a copy of an existing vertex
- You cannot add a vertex with a name of zero length
- You cannot add a vertex with a name containing special characters #% () >< { } $-/\setminus|:;$, and quotes

Here is the call graph for this function:



Here is the caller graph for this function:



4.3.1.3 graph_adjacency_list_fill()

Filling in the adjacency list.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name
in	size	Adjacency list size
out	adjacency_list	Adjacency list descriptor

Returns

```
_GRAPH_OK__, _GRAPH_INCORRECT_ARG__
```

4.3.1.4 graph_adjacency_list_size()

Counting the number of adjacent vertices (the size of the adjacency list)

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

Returns

The number of adjacent vertices

Note

- If the arguments is incorrect, the function returns 0

Here is the call graph for this function:



4.3.1.5 graph_delete_edge()

```
graph_error_t graph_delete_edge (
    struct graph * graph,
    const char * start_vertex,
    const char * end_vertex )
```

Deleting edge from graph.

Parameters

in	graph	Graph descriptor
in	start_vertex	Start vertex name
in	end_vertex	End vertex name

Returns

```
_GRAPH_OK__,_GRAPH_INCORRECT_ARG__,_GRAPH_EMPTY__,_GRAPH_NOT_FOUND__
```

Here is the call graph for this function:



Here is the caller graph for this function:



4.3.1.6 graph_delete_vertex()

Deleting vertex from graph.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

Returns

```
_GRAPH_OK__, _GRAPH_INCORRECT_ARG__, _GRAPH_EMPTY__, _GRAPH_NOT_FOUND__
```

Here is the call graph for this function:



4.3.1.7 graph_dfs()

Graph traversal using a depth-first search algorithm.

Parameters

in	graph	Graph descriptor
in	vertex_processing	Vertex processing function

Note

- If the input arguments are incorrect, the function will not work

4.3.1.8 graph_free()

```
void graph_free ( {\tt struct} \quad {\tt graph} \ * \ graph \ )
```

Free graph.

Parameters

in <i>graph</i>	Graph descriptor
-----------------	------------------

4.3.1.9 graph_has_edge()

Checking for the presence of a edge in the graph.

Parameters

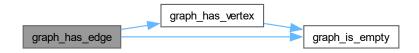
in	graph	Graph descriptor
in	start_vertex	Start vertex name
in	end_vertex	End vertex name

Returns

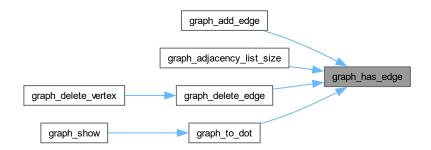
Note

- If incorrect arguments are passed, the function returns 0 (False)

Here is the call graph for this function:



Here is the caller graph for this function:



4.3.1.10 graph_has_vertex()

Checking for the presence of a vertex in the graph.

Parameters

in	graph	Graph descriptor
in	vertex	Vertex name

Returns

```
1-True/0-False
```

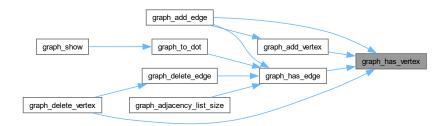
Note

- If incorrect arguments are passed, the function returns 0 (False)

Here is the call graph for this function:



Here is the caller graph for this function:



4.3.1.11 graph_initialize()

Initialization of graph by zero.

Parameters

in graph Graph descriptor

Note

- If the graph descriptor is NULL, the function will not cause a segmentation error

4.3.1.12 graph_is_empty()

Checking for graph emtiness.

Parameters

in graph Graph descrip

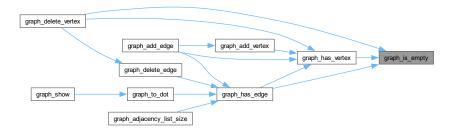
Returns

```
1-True/0-False
```

Note

- If incorrect arguments are passed, the function returns 1 (True)

Here is the caller graph for this function:



4.3.1.13 graph_show()

Draw graph using Graphviz and show it.

Parameters

in <i>graph</i>	Graph descriptor
-----------------	------------------

Returns

```
_GRAPH_OK__, _GRAPH_MEM__, _GRAPH_INCORRECT_ARGS__, _GRAPH_OS_ERROR__
```

Note

- Linux: the graph is demonstrated using eog
- Windows: the graph is demonstrated using mspaint
- The function creates a separate folder for temporary files and deletes it at the end of the work

Here is the call graph for this function:



4.3.1.14 graph_to_dot()

Creating a dot file by graph.

Parameters

in	graph	Graph descriptor
in	folder	Folder name
in	filename	File name

Returns

```
_GRAPH_OK__, _GRAPH_INCORRECT_ARG__, _GRAPH_MEM__, _GRAPH_OS_ERROR__
```

Note

- The pointer to the folder string can take the \mathtt{NULL} value. In this case, the folder will not be created

Here is the call graph for this function:



Here is the caller graph for this function:



Index

```
_GRAPH_EMPTY__
                                                         graph_has_vertex, 30
                                                         graph initialize, 30
    graph.h, 11
GRAPH EXIST
                                                         graph is empty, 31
    graph.h, 11
                                                         graph show, 31
_GRAPH_FORBIDDEN_SEPARATORS__
                                                         graph_to_dot, 32
    graph.h, 11
                                                    graph.h
GRAPH INCORRECT ARG
                                                         GRAPH EMPTY , 11
    graph.h, 12
                                                         GRAPH EXIST , 11
                                                          _GRAPH_FORBIDDEN_SEPARATORS__, 11
_GRAPH_MEM_
    graph.h, 12
                                                          GRAPH INCORRECT ARG , 12
                                                         _GRAPH_MEM__, 12
GRAPH NOT FOUND
    graph.h, 12
                                                         _GRAPH_NOT_FOUND__, 12
_GRAPH_OK__
                                                         _GRAPH_OK__, 12
                                                         _GRAPH_OS_ERROR__, 12
    graph.h, 12
GRAPH OS ERROR
                                                         STRING , 12
    graph.h, 12
                                                         graph_add_edge, 13
_STRING_
                                                         graph_add_vertex, 13
    graph.h, 12
                                                         graph_adjacency_list_fill, 14
                                                         graph_adjacency_list_size, 15
D:/files
          from
                  internet/important/learning/github/c-
                                                         graph_delete_edge, 15
         modules/Graph/code/inc/graph.h, 9, 22
                                                         graph_delete_vertex, 16
D:/files
                  internet/important/learning/github/c-
                                                         graph dfs, 17
         modules/Graph/code/src/graph.c, 23
                                                         graph error t, 13
                                                         graph_free, 17
edge, 5
                                                         graph_has_edge, 17
    end vertex, 5
                                                         graph has vertex, 18
    length, 5
                                                         graph initialize, 19
    start vertex, 5
                                                         graph_is_empty, 20
edges
                                                         graph_show, 20
    graph, 7
                                                         graph to dot, 21
edges_amount
                                                    graph add edge
    graph, 7
                                                         graph.c, 24
end_vertex
                                                         graph.h, 13
    edge, 5
                                                    graph add vertex
                                                         graph.c, 25
graph, 6
                                                         graph.h, 13
    edges, 7
                                                    graph_adjacency_list_fill
    edges amount, 7
                                                         graph.c, 26
    vertices, 7
                                                         graph.h, 14
    vertices_amount, 7
                                                    graph_adjacency_list_size
graph.c
                                                         graph.c, 26
    graph add edge, 24
                                                         graph.h, 15
    graph add vertex, 25
                                                    graph delete edge
    graph_adjacency_list_fill, 26
                                                         graph.c, 27
    graph_adjacency_list_size, 26
                                                         graph.h, 15
    graph delete edge, 27
                                                    graph delete vertex
    graph_delete_vertex, 28
                                                         graph.c, 28
    graph dfs, 28
                                                         graph.h, 16
    graph free, 28
                                                    graph dfs
    graph has edge, 29
```

36 INDEX

graph.c, 28 graph.h, 17 graph_error_t graph.h, 13 graph_free graph.c, 28 graph.h, 17 graph_has_edge graph.c, 29 graph.h, 17 graph_has_vertex graph.c, 30 graph.h, 18 graph_initialize graph.c, 30 graph.h, 19 graph_is_empty graph.c, 31 graph.h, 20 graph_show graph.c, 31 graph.h, 20 graph_to_dot graph.c, 32 graph.h, 21 length edge, 5 start_vertex edge, 5 vertices graph, 7

vertices_amount graph, 7