# libgenerics

Generated by Doxygen 1.8.11

# Contents

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# Class Index

## 1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

# Chapter 2

# File Index

## 2.1 File List

Here is a list of all files with brief descriptions:

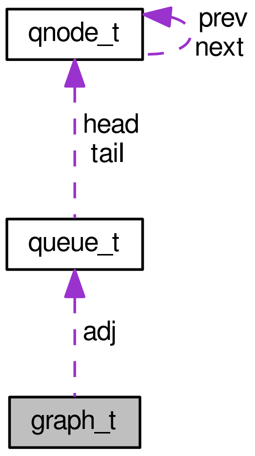
# Chapter 3

# Class Documentation

## 3.1 graph_t Struct Reference

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

Collaboration diagram for graph_t:



### Public Attributes

- size_t V
- size_t E
- size_t member_size
- struct queue_t ∗ adj
- void ∗ label

### 3.1.1 Detailed Description

Graph structure and elements.

### 3.1.2 Member Data Documentation

#### 3.1.2.1 struct queue_t∗ graph_t::adj

#### 3.1.2.2 size_t graph_t::E

#### 3.1.2.3 void∗ graph_t::label

#### 3.1.2.4 size_t graph_t::member_size

#### 3.1.2.5 size_t graph_t::V

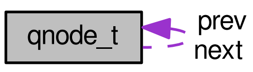
The documentation for this struct was generated from the following file:

- include/graph.h

## 3.2 qnode_t Struct Reference

```
#include <queue.h>
```

Collaboration diagram for qnode_t:



### Public Attributes

- struct qnode_t ∗ next
- struct qnode_t ∗ prev
- void ∗ data

### 3.2.1 Detailed Description

queue node.

### 3.2.2 Member Data Documentation

#### 3.2.2.1 void∗ qnode_t::data

#### 3.2.2.2 struct qnode_t∗ qnode_t::next

#### 3.2.2.3 struct qnode_t∗ qnode_t::prev

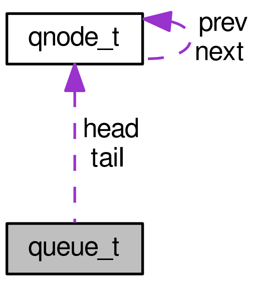
The documentation for this struct was generated from the following file:

- include/queue.h

## 3.3 queue_t Struct Reference

```
#include <queue.h>
```

Collaboration diagram for queue_t:



### Public Attributes

- size_t size
- size_t member_size
- struct qnode_t ∗ head
- struct qnode_t ∗ tail

### 3.3.1 Detailed Description

Represents a queue structure.

### 3.3.2 Member Data Documentation

#### 3.3.2.1 struct qnode_t∗ queue_t::head

#### 3.3.2.2 size_t queue_t::member_size

#### 3.3.2.3 size_t queue_t::size

#### 3.3.2.4 struct qnode_t∗ queue_t::tail

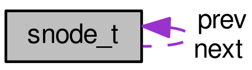
The documentation for this struct was generated from the following file:

- include/queue.h

## 3.4 snode_t Struct Reference

```
#include <stack.h>
```

Collaboration diagram for snode_t:



### Public Attributes

- struct snode_t ∗ next
- struct snode_t ∗ prev
- void ∗ data

### 3.4.1 Detailed Description

node of a stack

### 3.4.2 Member Data Documentation

#### 3.4.2.1 void∗ snode_t::data

#### 3.4.2.2 struct snode_t∗ snode_t::next

#### 3.4.2.3 struct snode_t∗ snode_t::prev

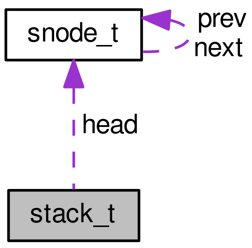
The documentation for this struct was generated from the following file:

- include/stack.h

## 3.5 stack_t Struct Reference

```
#include <stack.h>
```

Collaboration diagram for stack_t:



### Public Attributes

- size_t size
- size_t member_size
- struct snode_t ∗ head

### 3.5.1 Detailed Description

represents the stack structure.

### 3.5.2 Member Data Documentation

#### 3.5.2.1 struct snode_t∗ stack_t::head

#### 3.5.2.2 size_t stack_t::member_size

#### 3.5.2.3 size_t stack_t::size

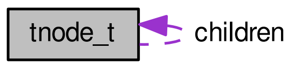
The documentation for this struct was generated from the following file:

- include/stack.h

## 3.6 tnode_t Struct Reference

`#include <trie.h>`

Collaboration diagram for tnode_t:



### Public Attributes

- void ∗ value
- struct tnode_t ∗ children [NBYTE]

### 3.6.1 Detailed Description

node of a trie_t element.

### 3.6.2 Member Data Documentation

#### 3.6.2.1 struct **tnode_t**∗ tnode_t::children[**NBYTE**]

#### 3.6.2.2 void∗ tnode_t::value

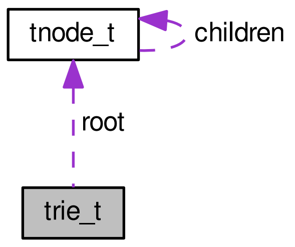
The documentation for this struct was generated from the following file:

- include/trie.h

## 3.7 trie_t Struct Reference

`#include <trie.h>`

Collaboration diagram for trie_t:



### Public Attributes

- size_t size
- size_t member_size
- struct tnode_t root

### 3.7.1 Detailed Description

Represents the trie structure.

### 3.7.2 Member Data Documentation

#### 3.7.2.1 size_t trie_t::member_size

#### 3.7.2.2 struct tnode_t trie_t::root

#### 3.7.2.3 size_t trie_t::size

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

- include/trie.h

## 3.8 vector_t Struct Reference

```
#include <vector.h>
```

### Public Attributes

- void ∗ data
- size_t size
- size_t buffer_size
- size_t member_size

### 3.8.1 Member Data Documentation

#### 3.8.1.1 size_t vector_t::buffer_size

#### 3.8.1.2 void∗ vector_t::data

#### 3.8.1.3 size_t vector_t::member_size

#### 3.8.1.4 size_t vector_t::size

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

- include/vector.h

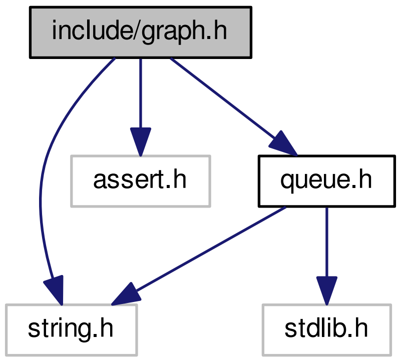
# Chapter 4

# File Documentation

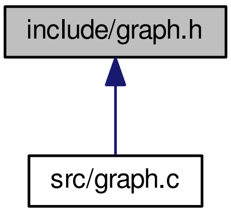
## 4.1 include/graph.h File Reference

```
#include <string.h>
#include <assert.h>
#include "queue.h"
```

Include dependency graph for graph.h:



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



## Classes

- struct graph_t

## Typedefs

- typedef struct graph_t graph_t

## Functions

- void graph_create (graph_t ∗g, size_t size, size_t member_size)
- void graph_add_edge (graph_t ∗g, size_t from, size_t to)
- void ∗ graph_get_label_at (graph_t ∗g, size_t index)
- void graph_set_label_at (graph_t ∗g, size_t index, void ∗label)
- void graph_destroy (graph_t ∗g)

### 4.1.1 Typedef Documentation

#### 4.1.1.1 typedef struct **graph_t graph_t**

Graph structure and elements.

### 4.1.2 Function Documentation

#### 4.1.2.1 void graph_add_edge ( **graph_t** ∗ *g*, size_t *from*, size_t *to* )

Adds an edge on the graph `g` from the vertex `from` to the vertex `to`. Where `from` and `to` are indexes of these vertex.

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *from* | index of the first vertex; |
| *to* | index of the incident vertex. |

#### 4.1.2.2 void graph_create ( graph_t ∗ *g*, size_t *size*, size_t *member_size* )

Creates a graph and populates the previous allocated structure pointed by `g`;

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *member_size* | size of the elements that will be indexed by `g` |

#### 4.1.2.3 void graph_destroy ( graph_t ∗ *g* )

Deallocates the structures in `g`. This function WILL NOT deallocate the pointer `g`.

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |

#### 4.1.2.4 void∗ graph_get_label_at ( graph_t ∗ *g*, size_t *index* )

Gets the label of the vertex in the `index` position of the graph `g`.

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *index* | index of the vertex; |

**Returns**

pointer to the label of the vertex positioned in `index`.

#### 4.1.2.5 void graph_set_label_at ( graph_t ∗ *g*, size_t *index*, void ∗ *label* )

Sets the label at the `index` to `label`.

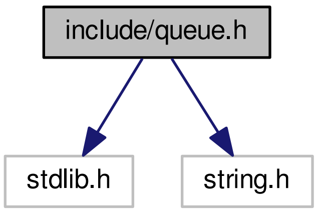
**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *index* | index of the vertex; |
| *label* | the new label of the vertex positioned in `index` |

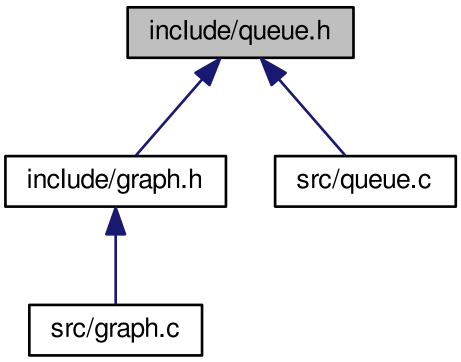
## 4.2 include/queue.h File Reference

```
#include <stdlib.h>
#include <string.h>
```

Include dependency graph for queue.h:



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



### Classes

- struct qnode_t
- struct queue_t

### Typedefs

- typedef struct qnode_t qnode_t
- typedef struct queue_t queue_t

### Functions

- void queue_create (struct queue_t ∗q, size_t member_size)
- void queue_enqueue (struct queue_t ∗q, void ∗e)
- void ∗ queue_dequeue (struct queue_t ∗q)
- void queue_destroy (struct queue_t ∗q)
- void ∗ queue_remove (struct queue_t ∗q, struct qnode_t ∗node)

## 4.2.1 Typedef Documentation

#### 4.2.1.1 typedef struct qnode_t qnode_t

queue node.

#### 4.2.1.2 typedef struct queue_t queue_t

Represents a queue structure.

## 4.2.2 Function Documentation

#### 4.2.2.1 void queue_create ( struct queue_t ∗ *q*, size_t *member_size* )

Creates a queue and populates the previous allocated structure pointed by `q`;

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |
| *member_size* | size of the elements that will be indexed by `q` |

#### 4.2.2.2 void∗ queue_dequeue ( struct queue_t ∗ *q* )

Dequeues the first element of the queue `q`

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |

**Returns**

a pointer to the element that must be freed;

#### 4.2.2.3 void queue_destroy ( struct queue_t ∗ *q* )

Deallocate the nodes of the queue q. This function WILL NOT deallocate the pointer q.

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |

#### 4.2.2.4 void queue_enqueue ( struct queue_t ∗ *q*, void ∗ *e* )

Enqueues the element pointed by `e` in the queue `q`.

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |
| *e* | pointer to the element that will be indexed by q. |

#### 4.2.2.5 void∗ queue_remove ( struct queue_t ∗ *q*, struct qnode_t ∗ *node* )

Removes the element `node` of the queue `q`.

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |
| *node* | element to be removed from the queue |

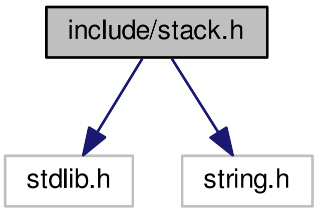
**Returns**

a pointer to the value of the node just removed

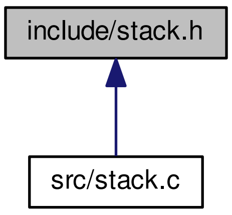
## 4.3 include/stack.h File Reference

```
#include <stdlib.h>
#include <string.h>
```

Include dependency graph for stack.h:



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



## Classes

- struct snode_t
- struct stack_t

## Typedefs

- typedef struct snode_t snode_t
- typedef struct stack_t stack_t

## Functions

- void stack_create (struct stack_t ∗q, size_t member_size)
- void stack_push (struct stack_t ∗q, void ∗e)
- void ∗ stack_pop (struct stack_t ∗q)
- void stack_destroy (struct stack_t ∗q)

### 4.3.1 Typedef Documentation

#### 4.3.1.1 typedef struct snode_t snode_t

node of a stack

#### 4.3.1.2 typedef struct stack_t stack_t

represents the stack structure.

### 4.3.2 Function Documentation

#### 4.3.2.1 void stack_create ( struct stack_t ∗ *s*, size_t *member_size* )

Creates a stack and populates the previous allocated structure pointed by `s`;

**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |
| *member_size* | size of the elements that will be indexed by `s` |

#### 4.3.2.2 void stack_destroy ( struct stack_t ∗ *s* )

Deallocates the nodes of the structure pointed by `s`. This function WILL NOT deallocate the pointer `q`.

**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |

#### 4.3.2.3 void∗ stack_pop ( struct stack_t ∗ *s* )

Pops the first element of the stack `s`.

**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |

**Returns**

a pointer to the element that must be freed;

#### 4.3.2.4 void stack_push ( struct stack_t ∗ *s,* void ∗ *e* )

Add the element `e` in the beginning of the stack `s`.

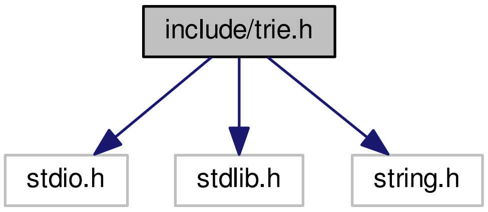
**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |
| *e* | pointer to the element that will be indexed by s. |

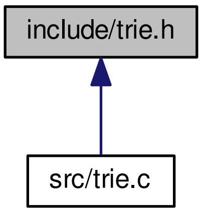
## 4.4 include/trie.h File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
```

Include dependency graph for trie.h:



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



## Classes

- struct tnode_t
- struct trie_t

## Macros

- #define NBYTE (0x100)

## Typedefs

- typedef struct tnode_t tnode_t
- typedef struct trie_t trie_t

## Functions

- void trie_create (struct trie_t ∗t, size_t member_size)
- void trie_destroy (struct trie_t ∗t)
- void trie_add_element (struct trie_t ∗t, void ∗string, size_t size, void ∗elem)
- void ∗ trie_remove_element (struct trie_t ∗t, void ∗string, size_t size)
- void ∗ trie_get_element (struct trie_t ∗t, void ∗string, size_t size)
- void trie_set_element (struct trie_t ∗t, void ∗string, size_t size, void ∗elem)

### 4.4.1 Macro Definition Documentation

#### 4.4.1.1 #define NBYTE (0x100)

### 4.4.2 Typedef Documentation

#### 4.4.2.1 typedef struct tnode_t tnode_t

node of a trie_t element.

#### 4.4.2.2 typedef struct trie_t trie_t

Represents the trie structure.

### 4.4.3 Function Documentation

#### 4.4.3.1 void trie_add_element ( struct trie_t ∗ *t,* void ∗ *string,* size_t *size,* void ∗ *elem* )

Adds the `elem` and maps it with the `string` with size `size`. This function overwrite any data left in the trie mapped with string.

**Parameters**

| | |
|---|---|
| *t* | pointer to the trie structure; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes |
| *elem* | pointer to the element to add |

#### 4.4.3.2 void trie_create ( struct trie_t ∗ *t,* size_t *member_size* )

Inicialize structure `t` with `member_size` size. The t has to be allocated.

**Parameters**

| | |
|---|---|
| *t* | pointer to the allocated struct trie_t; |
| *member_size* | size in bytes of the indexed elements by the trie. |

#### 4.4.3.3 void trie_destroy ( struct trie_t ∗ *t* )

Destroy the members pointed by `t`. The structure is not freed.

**Parameters**

| | |
|---|---|
| *t* | pointer to the structure |

#### 4.4.3.4 void∗ trie_get_element ( struct trie_t ∗ *t*, void ∗ *string*, size_t *size* )

Returns the element mapped by `string`.

**Parameters**

| | |
|---|---|
| *t* | pointer to the structure; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes. |

**Returns**

The removed element mapped by `string`.

#### 4.4.3.5 void∗ trie_remove_element ( struct trie_t ∗ *t*, void ∗ *string*, size_t *size* )

Removes the element mapped by `string`.

**Parameters**

| | |
|---|---|
| *t* | pointer to the structure trie_t; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes. |

**Returns**

pointer to the removed element

#### 4.4.3.6 void trie_set_element ( struct trie_t ∗ *t*, void ∗ *string*, size_t *size*, void ∗ *elem* )

Sets the value mapped by `string`. Encapsulates the remove and add functions.

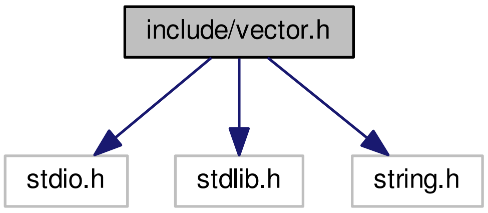
**Parameters**

| | |
|---|---|
| *t* | pointer to the structure; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes. |
| *elem* | pointer to the element to add |

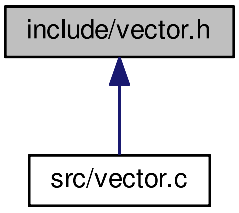
## 4.5 include/vector.h File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
```

Include dependency graph for vector.h:



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



## Classes

- struct vector_t

## Typedefs

- typedef struct vector_t vector_t

## Functions

- void vector_create (vector_t ∗v, size_t initial_size, size_t member_size)
- void vector_destroy (vector_t ∗v)
- void vector_resize_buffer (vector_t ∗v, size_t new_size)
- void ∗ vector_at (vector_t ∗v, size_t index)
- void vector_set_elem_at (vector_t ∗v, size_t index, void ∗elem)
- void vector_add (vector_t ∗v, void ∗elem)
- void vector_set_min_buf_siz (size_t new_min_buf_size)
- size_t vector_get_min_buf_siz (void)

### 4.5.1 Typedef Documentation

#### 4.5.1.1 typedef struct vector_t vector_t

### 4.5.2 Function Documentation

#### 4.5.2.1 void vector_add ( vector_t ∗ *v*, void ∗ *elem* )

adds the `elem` in the structure `vector_t` pointed by `v`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` |
| *elem* | the element to be add in `v` |

#### 4.5.2.2 void∗ vector_at ( vector_t ∗ *v*, size_t *index* )

Get the element in the `index` position indexed by the `vector_t` structure pointed by `v`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` |
| *index* | index of the position |

**Returns**

a pointer to the member at `index`

#### 4.5.2.3 void vector_create ( vector_t ∗ *v*, size_t *initial_buf_siz*, size_t *member_size* )

Populate the `vetor_t` structure pointed by `v` and allocates `member_size*initial_size` for initial buffer←_size.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` structure already allocated; |
| *inicial_buf_size* | number of the members of the initial allocated buffer; |
| *member_size* | size of every member indexed by `v`. |

#### 4.5.2.4 void vector_destroy ( vector_t ∗ *v* )

Destroy the structure `vector_t` pointed by `v`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` structure |

#### 4.5.2.5 size_t vector_get_min_buf_siz ( void )

Returns the `vector_min_siz`: a private variable that holds the minimal number of elements that `vector_t` will index. This variable is important for avoid multiple small resizes in the `vector_t` container.

**Returns**

vector_min_siz

#### 4.5.2.6 void vector_resize_buffer ( vector_t * *v*, size_t *n_elements* )

Resize the buffer in the `vector_t` strucuture pointed by `v`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` structure. |
| *new_size* | the new size of the `v` |

#### 4.5.2.7 void vector_set_elem_at ( vector_t * *v*, size_t *index*, void * *elem* )

set the element at `index` pointed by `v` with the element pointed by `elem`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` |
| *index* | index of the position |
| *elem* | the element to be set in `v` |

#### 4.5.2.8 void vector_set_min_buf_siz ( size_t *new_min_buf_siz* )

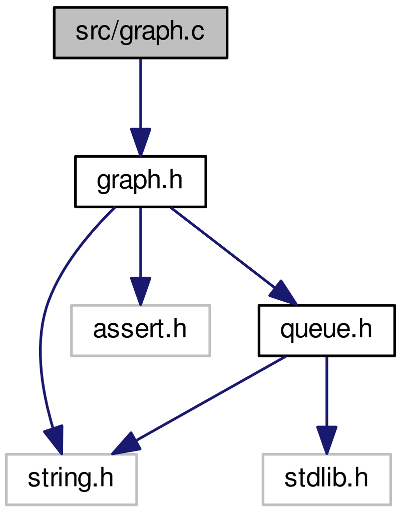
Set the `vector_min_siz`: a private variable that holds the minimal number of elements that `vector_t` will index. This variable is important for avoid multiple small resizes in the `vector_t` container.

**Parameters**

| | |
|---|---|
| *new_min_buf_siz* | the new size of `vector_min_siz` |

## 4.6 src/graph.c File Reference

```
#include "graph.h"
```
Include dependency graph for graph.c:



### Functions

- void graph_create (graph_t ∗g, size_t size, size_t member_size)
- void graph_add_edge (graph_t ∗g, size_t from, size_t to)
- void ∗ graph_get_label_at (graph_t ∗g, size_t index)
- void graph_set_label_at (graph_t ∗g, size_t index, void ∗label)
- void graph_destroy (graph_t ∗g)

### 4.6.1 Function Documentation

#### 4.6.1.1 void graph_add_edge ( graph_t ∗ *g*, size_t *from*, size_t *to* )

Adds an edge on the graph `g` from the vertex `from` to the vertex `to`. Where `from` and `to` are indexes of these vertex.

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *from* | index of the first vertex; |
| *to* | index of the incident vertex. |

### 4.6.1.2 void graph_create ( graph_t ∗ *g,* size_t *size,* size_t *member_size* )

Creates a graph and populates the previous allocated structure pointed by `g`;

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *member_size* | size of the elements that will be indexed by `g` |

### 4.6.1.3 void graph_destroy ( graph_t ∗ *g* )

Deallocates the structures in `g`. This function WILL NOT deallocate the pointer `g`.

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |

### 4.6.1.4 void∗ graph_get_label_at ( graph_t ∗ *g,* size_t *index* )

Gets the label of the vertex in the `index` position of the graph `g`.

**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *index* | index of the vertex; |

**Returns**

pointer to the label of the vertex positioned in `index`.

### 4.6.1.5 void graph_set_label_at ( graph_t ∗ *g,* size_t *index,* void ∗ *label* )

Sets the label at the `index` to `label`.

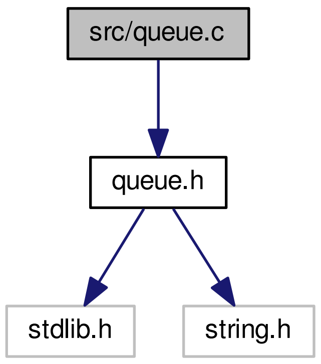
**Parameters**

| | |
|---|---|
| *g* | pointer to a graph structure; |
| *index* | index of the vertex; |
| *label* | the new label of the vertex positioned in `index` |

## 4.7 src/queue.c File Reference

```
#include "queue.h"
```

Include dependency graph for queue.c:



### Functions

- void queue_create (struct queue_t ∗q, size_t member_size)
- void queue_enqueue (struct queue_t ∗q, void ∗e)
- void ∗ queue_dequeue (struct queue_t ∗q)
- void ∗ queue_remove (struct queue_t ∗q, struct qnode_t ∗node)
- void queue_destroy (struct queue_t ∗q)

### 4.7.1 Function Documentation

#### 4.7.1.1 void queue_create ( struct queue_t ∗ *q*, size_t *member_size* )

Creates a queue and populates the previous allocated structure pointed by `q`;

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |
| *member_size* | size of the elements that will be indexed by `q` |

#### 4.7.1.2 void∗ queue_dequeue ( struct queue_t ∗ *q* )

Dequeues the first element of the queue `q`

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |

**Returns**

a pointer to the element that must be freed;

#### 4.7.1.3 void queue_destroy ( struct **queue_t** ∗ *q* )

Deallocate the nodes of the queue q. This function WILL NOT deallocate the pointer q.

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |

#### 4.7.1.4 void queue_enqueue ( struct **queue_t** ∗ *q*, void ∗ *e* )

Enqueues the element pointed by `e` in the queue `q`.

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |
| *e* | pointer to the element that will be indexed by q. |

#### 4.7.1.5 void∗ queue_remove ( struct **queue_t** ∗ *q*, struct **qnode_t** ∗ *node* )

Removes the element `node` of the queue `q`.

**Parameters**

| | |
|---|---|
| *q* | pointer to a queue structure; |
| *node* | element to be removed from the queue |

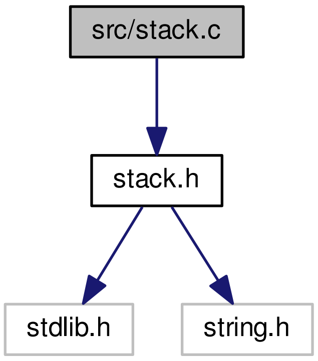
**Returns**

a pointer to the value of the node just removed

## 4.8 src/stack.c File Reference

```
#include "stack.h"
```

Include dependency graph for stack.c:



## Functions

- void stack_create (struct stack_t ∗s, size_t member_size)
- void stack_push (struct stack_t ∗s, void ∗e)
- void ∗ stack_pop (struct stack_t ∗s)
- void stack_destroy (struct stack_t ∗s)

## 4.8.1 Function Documentation

### 4.8.1.1 void stack_create ( struct stack_t ∗ *s*, size_t *member_size* )

Creates a stack and populates the previous allocated structure pointed by `s`;

**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |
| *member_size* | size of the elements that will be indexed by `s` |

### 4.8.1.2 void stack_destroy ( struct stack_t ∗ *s* )

Deallocates the nodes of the structure pointed by `s`. This function WILL NOT deallocate the pointer `q`.

**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |

#### 4.8.1.3 void∗ stack_pop ( struct stack_t ∗ *s* )

Pops the first element of the stack `s`.

**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |

**Returns**

a pointer to the element that must be freed;

#### 4.8.1.4 void stack_push ( struct stack_t ∗ *s*, void ∗ *e* )

Add the element `e` in the beginning of the stack `s`.

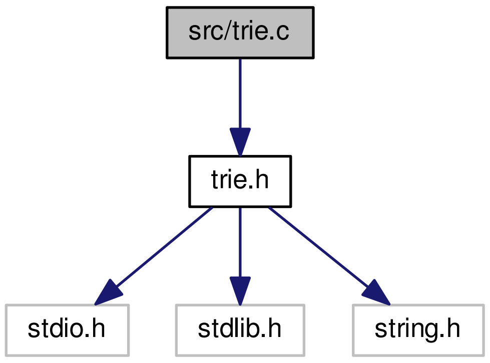
**Parameters**

| | |
|---|---|
| *s* | pointer to a stack structure; |
| *e* | pointer to the element that will be indexed by s. |

## 4.9 src/trie.c File Reference

```
#include "trie.h"
```

Include dependency graph for trie.c:



### Functions

- tnode_t ∗ node_at_and_allocate (struct trie_t ∗t, void ∗string, size_t size)

- tnode_t ∗ node_at (struct trie_t ∗t, void ∗string, size_t size)
- void trie_create (struct trie_t ∗t, size_t member_size)
- void trie_destroy_tnode (struct tnode_t ∗node)
- void trie_destroy (struct trie_t ∗t)
- void trie_add_element (struct trie_t ∗t, void ∗string, size_t size, void ∗elem)
- void ∗ trie_remove_element (struct trie_t ∗t, void ∗string, size_t size)
- void ∗ trie_get_element (struct trie_t ∗t, void ∗string, size_t size)
- void trie_set_element (struct trie_t ∗t, void ∗string, size_t size, void ∗elem)

## 4.9.1 Function Documentation

### 4.9.1.1 tnode_t∗ node_at ( struct trie_t ∗ *t*, void ∗ *string*, size_t *size* )

### 4.9.1.2 tnode_t∗ node_at_and_allocate ( struct trie_t ∗ *t*, void ∗ *string*, size_t *size* )

### 4.9.1.3 void trie_add_element ( struct trie_t ∗ *t*, void ∗ *string*, size_t *size*, void ∗ *elem* )

Adds the `elem` and maps it with the `string` with size `size`. This function overwrite any data left in the trie mapped with string.

**Parameters**

| | |
|---|---|
| *t* | pointer to the trie structure; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes |
| *elem* | pointer to the element to add |

### 4.9.1.4 void trie_create ( struct trie_t ∗ *t*, size_t *member_size* )

Inicialize structure `t` with `member_size` size. The t has to be allocated.

**Parameters**

| | |
|---|---|
| *t* | pointer to the allocated struct trie_t; |
| *member_size* | size in bytes of the indexed elements by the trie. |

### 4.9.1.5 void trie_destroy ( struct trie_t ∗ *t* )

Destroy the members pointed by `t`. The structure is not freed.

**Parameters**

| | |
|---|---|
| *t* | pointer to the structure |

#### 4.9.1.6 void trie_destroy_tnode ( struct tnode_t * *node* )

#### 4.9.1.7 void* trie_get_element ( struct trie_t * *t,* void * *string,* size_t *size* )

Returns the element mapped by `string`.

**Parameters**

| | |
|---|---|
| *t* | pointer to the structure; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes. |

**Returns**

The removed element mapped by `string`.

#### 4.9.1.8 void* trie_remove_element ( struct trie_t * *t,* void * *string,* size_t *size* )

Removes the element mapped by `string`.

**Parameters**

| | |
|---|---|
| *t* | pointer to the structure trie_t; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes. |

**Returns**

pointer to the removed element

#### 4.9.1.9 void trie_set_element ( struct trie_t * *t,* void * *string,* size_t *size,* void * *elem* )

Sets the value mapped by `string`. Encapsulates the remove and add functions.

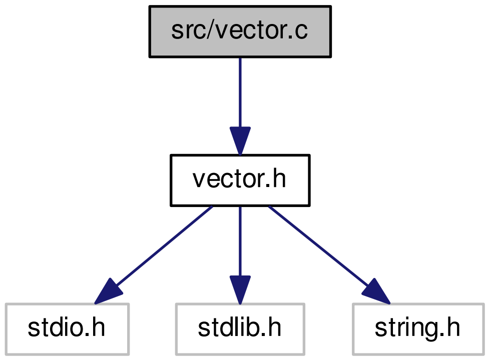
**Parameters**

| | |
|---|---|
| *t* | pointer to the structure; |
| *string* | pointer to the string of bytes to map elem; |
| *size* | size of the string of bytes. |
| *elem* | pointer to the element to add |

## 4.10 src/vector.c File Reference

```
#include "vector.h"
```

Include dependency graph for vector.c:



### Macros

- #define VECTOR_MIN_SIZ 8

### Functions

- void vector_create (vector_t ∗v, size_t initial_buf_siz, size_t member_size)
- void vector_destroy (vector_t ∗v)
- size_t vector_get_min_buf_siz (void)
- void vector_set_min_buf_siz (size_t new_min_buf_siz)
- void vector_resize_buffer (vector_t ∗v, size_t n_elements)
- void ∗ vector_at (vector_t ∗v, size_t index)
- void vector_set_elem_at (vector_t ∗v, size_t index, void ∗elem)
- void vector_add (vector_t ∗v, void ∗elem)

### Variables

- size_t vector_min_siz = VECTOR_MIN_SIZ

### 4.10.1 Macro Definition Documentation

#### 4.10.1.1 #define VECTOR_MIN_SIZ 8

### 4.10.2 Function Documentation

#### 4.10.2.1 void vector_add ( **vector_t** ∗ *v,* void ∗ *elem* )

adds the `elem` in the structure `vector_t` pointed by `v`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to vector_t |
| *elem* | the element to be add in v |

#### 4.10.2.2 void* vector_at ( vector_t * v, size_t index )

Get the element in the index position indexed by the vector_t structure pointed by v.

**Parameters**

| | |
|---|---|
| *v* | a pointer to vector_t |
| *index* | index of the position |

**Returns**

a pointer to the member at index

#### 4.10.2.3 void vector_create ( vector_t * v, size_t initial_buf_siz, size_t member_size )

Populate the vetor_t structure pointed by v and allocates member_size*initial_size for initial buffer↩
_size.

**Parameters**

| | |
|---|---|
| *v* | a pointer to vector_t structure already allocated; |
| *inicial_buf_size* | number of the members of the initial allocated buffer; |
| *member_size* | size of every member indexed by v. |

#### 4.10.2.4 void vector_destroy ( vector_t * v )

Destroy the structure vector_t pointed by v.

**Parameters**

| | |
|---|---|
| *v* | a pointer to vector_t structure |

#### 4.10.2.5 size_t vector_get_min_buf_siz ( void )

Returns the vector_min_siz: a private variable that holds the minimal number of elements that vector_t will index. This variable is important for avoid multiple small resizes in the vector_t container.

**Returns**

vector_min_siz

#### 4.10.2.6 void vector_resize_buffer ( vector_t * *v*, size_t *n_elements* )

Resize the buffer in the `vector_t` strucuture pointed by `v`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` structure. |
| *new_size* | the new size of the `v` |

#### 4.10.2.7 void vector_set_elem_at ( vector_t * *v*, size_t *index*, void * *elem* )

set the element at `index` pointed by `v` with the element pointed by `elem`.

**Parameters**

| | |
|---|---|
| *v* | a pointer to `vector_t` |
| *index* | index of the position |
| *elem* | the element to be set in `v` |

#### 4.10.2.8 void vector_set_min_buf_siz ( size_t *new_min_buf_siz* )

Set the `vector_min_siz`: a private variable that holds the minimal number of elements that `vector_t` will index. This variable is important for avoid multiple small resizes in the `vector_t` container.

**Parameters**

| | |
|---|---|
| *new_min_buf_siz* | the new size of `vector_min_siz` |

### 4.10.3 Variable Documentation

#### 4.10.3.1 size_t vector_min_siz = VECTOR_MIN_SIZ

# Index