libgenerics

Generated by Doxygen 1.8.11

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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:

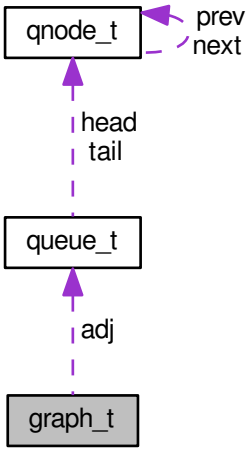
Chapter 3

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

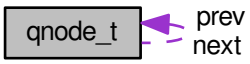
The documentation for this struct was generated from the following file:

- 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

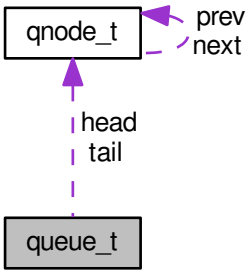
The documentation for this struct was generated from the following file:

- 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

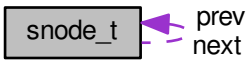
The documentation for this struct was generated from the following file:

- 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

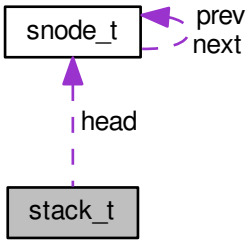
The documentation for this struct was generated from the following file:

- 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

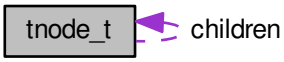
The documentation for this struct was generated from the following file:

- 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

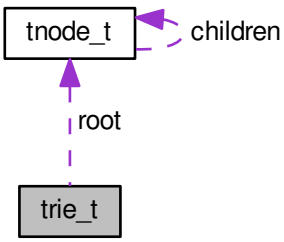
The documentation for this struct was generated from the following file:

- 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

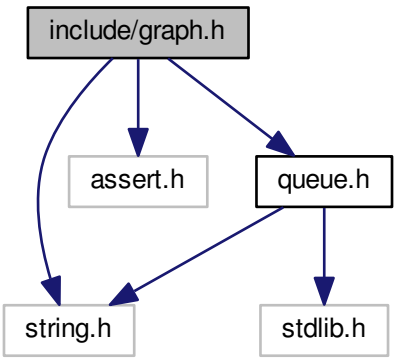
Chapter 4

File Documentation

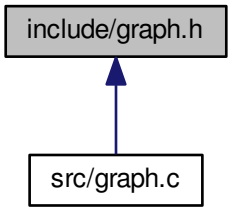
4.1 include/graph.h File Reference

```
#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`.

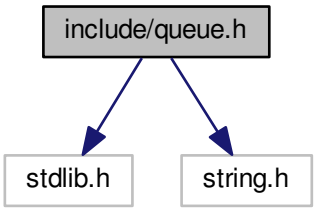
Parameters

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

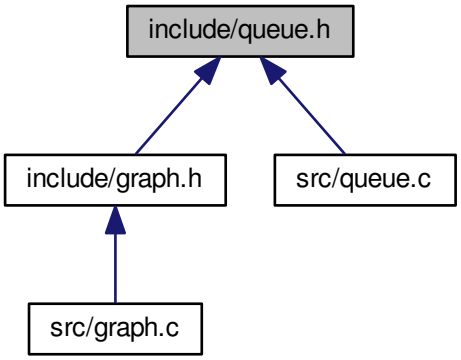
4.2 include/queue.h File Reference

```
#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

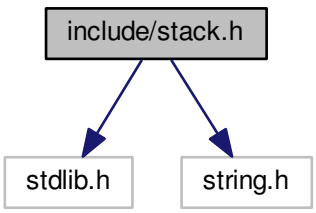
Returns

a pointer to the value of the node just removed

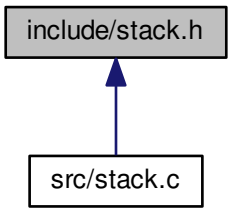
4.3 include/stack.h File Reference

```
#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`.

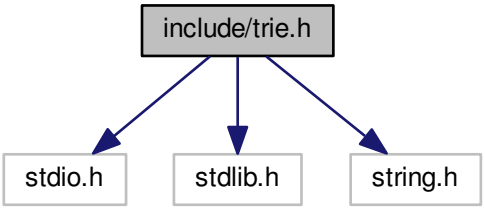
Parameters

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

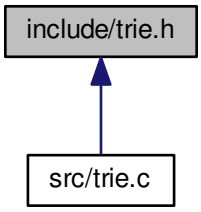
4.4 include/trie.h File Reference

```
#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*)

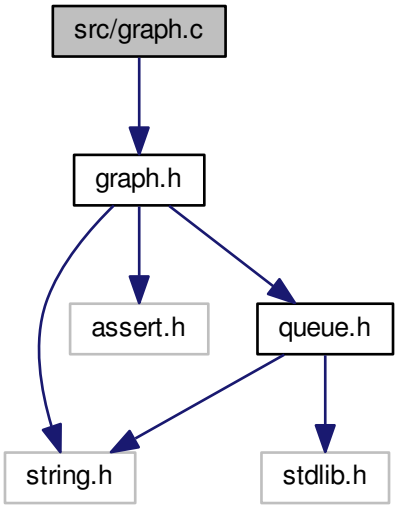
Sets the value mapped by `string`. Encapsulates the remove and add functions.

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 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)

4.5.1 Function Documentation

4.5.1.1 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.

4.5.1.2 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`

4.5.1.3 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;

4.5.1.4 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`.

4.5.1.5 void graph_set_label_at (graph_t * g, size_t index, void * label)

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

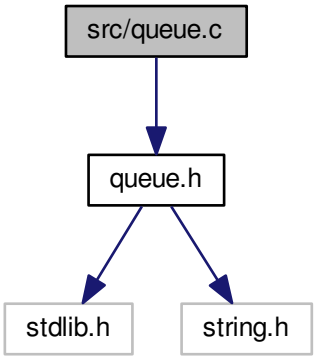
Parameters

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

4.6 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)

4.6.1 Function Documentation

4.6.1.1 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`

4.6.1.2 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;

4.6.1.3 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;

4.6.1.4 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.

4.6.1.5 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

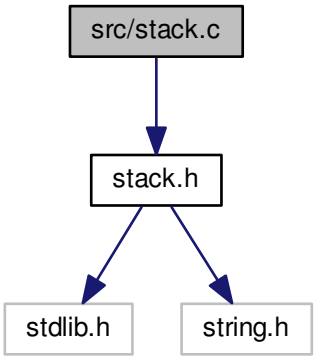
Returns

a pointer to the value of the node just removed

4.7 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)

4.7.1 Function Documentation

4.7.1.1 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`

4.7.1.2 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;

4.7.1.3 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;

4.7.1.4 void stack_push (struct stack_t * s, void * e)

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

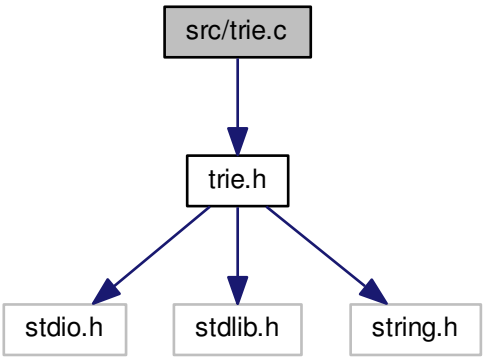
Parameters

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

4.8 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)

4.8.1 Function Documentation

4.8.1.1 tnode_t* node_at (struct trie_t * *t*, void * *string*, size_t *size*)

4.8.1.2 tnode_t* node_at_and_allocate (struct trie_t * *t*, void * *string*, size_t *size*)

4.8.1.3 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

4.8.1.4 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.

4.8.1.5 void trie_destroy (struct trie_t * *t*)

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

Parameters

t	pointer to the structure

4.8.1.6 void trie_destroy_tnode (struct tnode_t * *node*)

4.8.1.7 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`.

4.8.1.8 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

4.8.1.9 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

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