

Minimum Vertex Cover

0.01

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Chapter 1

Namespace Index

1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

vex	Vertex cover namespace	9
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Chapter 2

Class Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

vex::Graph< Tobj, Tint >	11
vex::VexCov< Tobj, Tint >	13

Chapter 3

Class Index

3.1 Class List

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

vex::Graph< Tobj, Tint >	
Graph class	11
vex::VexCov< Tobj, Tint >	
Vertex cover class	13

Chapter 4

File Index

4.1 File List

Here is a list of all files with brief descriptions:

src/include/ Graph.hpp	17
src/include/ MinVertexCover.hpp	17

Chapter 5

Namespace Documentation

5.1 vex Namespace Reference

Vertex cover namespace.

Classes

- class [Graph](#)
Graph class.
- class [VexCov](#)
Vertex cover class.

5.1.1 Detailed Description

Vertex cover namespace.

Chapter 6

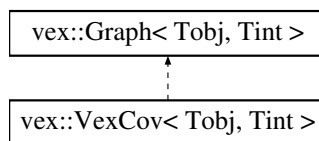
Class Documentation

6.1 vex::Graph< Tobj, Tint > Class Template Reference

[Graph](#) class.

```
#include <Graph.hpp>
```

Inheritance diagram for vex::Graph< Tobj, Tint >:



Public Member Functions

- [Graph](#) (const vector< Tobj > &parent, const vector< Tobj > &child)
- [~Graph](#) ()
- void [Make](#) (const vector< Tobj > &parent, const vector< Tobj > &child)
- void [Purge](#) ()
- void [GetGraph](#) (vector< Tobj > &parent, vector< Tobj > &child)

Protected Member Functions

- void [MakeGraph](#) (const vector< Tobj > &parent, const vector< Tobj > &child)

Protected Attributes

- unordered_map< Tobj, vector< Tobj > > [GraphMap](#)
- Tint [Max](#)

6.1.1 Detailed Description

`template<typename Tobj, typename Tint>class vex::Graph< Tobj, Tint >`

[Graph](#) class.

6.1.2 Constructor & Destructor Documentation

6.1.2.1 `template<typename Tobj , typename Tint > vex::Graph< Tobj, Tint >::Graph (const vector< Tobj > & parent, const vector< Tobj > & child)`

Class constructor

Parameters

<i>parent</i>	[const vector<Tobj>&]
<i>child</i>	[const vector<Tobj>&]

6.1.2.2 `template<typename Tobj , typename Tint > vex::Graph< Tobj, Tint >::~~Graph ()`

Class destructor

6.1.3 Member Function Documentation

6.1.3.1 `template<typename Tobj , typename Tint > void vex::Graph< Tobj, Tint >::GetGraph (vector< Tobj > & parent, vector< Tobj > & child)`

Function converts a map-of-vectors back into two vector format containing a set of predecessors and their corresponding successor vertices

Parameters

<i>parent</i>	[const vector<Tobj>&]
<i>child</i>	[const vector<Tobj>&]

6.1.3.2 `template<typename Tobj , typename Tint > void vex::Graph< Tobj, Tint >::Make (const vector< Tobj > & parent, const vector< Tobj > & child)`

Class explicit constructor

Parameters

<i>parent</i>	[const vector<Tobj>&]
<i>child</i>	[const vector<Tobj>&]

Reimplemented in [vex::VexCov< Tobj, Tint >](#).

```
6.1.3.3  template<typename Tobj , typename Tint > void vex::Graph< Tobj, Tint
>::MakeGraph ( const vector< Tobj > & parent, const vector< Tobj > & child )
[protected]
```

Function creates a simple map-of-vectors data structure which contains a parent-child relationships of vertices for a given graph

Parameters

<i>parent</i>	[const vector<Tobj>&]
<i>child</i>	[const vector<Tobj>&]

```
6.1.3.4  template<typename Tobj , typename Tint > void vex::Graph< Tobj, Tint >::Purge (
)
```

Class explicit destructor

Reimplemented in [vex::VexCov< Tobj, Tint >](#).

6.1.4 Member Data Documentation

```
6.1.4.1  template<typename Tobj , typename Tint > unordered_map<Tobj, vector<Tobj> >
vex::Graph< Tobj, Tint >::GraphMap [protected]
```

```
6.1.4.2  template<typename Tobj , typename Tint > Tint vex::Graph< Tobj, Tint >::Max
[protected]
```

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

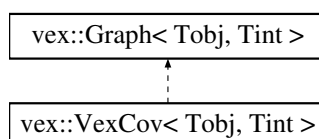
- [src/include/Graph.hpp](#)

6.2 vex::VexCov< Tobj, Tint > Class Template Reference

Vertex cover class.

```
#include <MinVertexCover.hpp>
```

Inheritance diagram for `vex::VexCov< Tobj, Tint >`:



Public Member Functions

- [VexCov](#) ()
- [VexCov](#) (const vector< Tobj > &parent, const vector< Tobj > &child)
- [~VexCov](#) ()
- void [Make](#) (const vector< Tobj > &parent, const vector< Tobj > &child)
- void [Purge](#) ()
- vector< Tobj > [GetMinVexCov](#) ()
- Tint [GetError](#) ()

Protected Member Functions

- void [MakeGraph](#) (const vector< Tobj > &parent, const vector< Tobj > &child)
- void [GetGraph](#) (vector< Tobj > &parent, vector< Tobj > &child)

Protected Attributes

- unordered_map< Tobj, vector< Tobj > > [GraphMap](#)
- Tint [Max](#)

6.2.1 Detailed Description

template<typename Tobj, typename Tint>class vex::VexCov< Tobj, Tint >

Vertex cover class.

6.2.2 Constructor & Destructor Documentation

6.2.2.1 template<typename Tobj , typename Tint > vex::VexCov< Tobj, Tint >::VexCov ()

Class constructor

6.2.2.2 template<typename Tobj , typename Tint > vex::VexCov< Tobj, Tint >::VexCov (const vector< Tobj > & *parent*, const vector< Tobj > & *child*)

Class constructor overload

Parameters

<i>parent</i>	[const vector<Tobj>&]
<i>child</i>	[const vector<Tobj>&]

6.2.2.3 `template<typename Tobj , typename Tint > vex::VexCov< Tobj, Tint >::~~VexCov ()`

Class destructor

6.2.3 Member Function Documentation

6.2.3.1 `template<typename Tobj , typename Tint > Tint vex::VexCov< Tobj, Tint >::GetError ()`

Function computes the approximation ratio for here implemented list heuristic

6.2.3.2 `template<typename Tobj , typename Tint > void vex::Graph< Tobj, Tint >::GetGraph (vector< Tobj > & parent, vector< Tobj > & child)`
[inherited]

Function converts a map-of-vectors back into two vector format containing a set of predecessors and their corresponding successor vertices

Parameters

<i>parent</i>	[const vector<Tobj>&]
<i>child</i>	[const vector<Tobj>&]

6.2.3.3 `template<typename Tobj , typename Tint > vector< Tobj > vex::VexCov< Tobj, Tint >::GetMinVexCov ()`

Function returns a vector of objects (vertices) defining the minimum vertex cover set

6.2.3.4 `template<typename Tobj , typename Tint > void vex::VexCov< Tobj, Tint >::Make (const vector< Tobj > & parent, const vector< Tobj > & child)`

Class explicite constructor

Parameters

<i>parent</i>	[const vector<Tobj>&]
<i>child</i>	[const vector<Tobj>&]

Reimplemented from [vex::Graph< Tobj, Tint >](#).

6.2.3.5 `template<typename Tobj , typename Tint > void vex::Graph< Tobj, Tint >::MakeGraph (const vector< Tobj > & parent, const vector< Tobj > & child)`
`[protected, inherited]`

Function creates a simple map-of-vectors data structure which contains a parent-child relationships of vertices for a given graph

Parameters

<i>parent</i>	<code>[const vector<Tobj>&]</code>
<i>child</i>	<code>[const vector<Tobj>&]</code>

6.2.3.6 `template<typename Tobj , typename Tint > void vex::VexCov< Tobj, Tint >::Purge ()`

Class explicit destructor

Reimplemented from [vex::Graph< Tobj, Tint >](#).

6.2.4 Member Data Documentation

6.2.4.1 `template<typename Tobj , typename Tint > unordered_map<Tobj, vector<Tobj> > vex::Graph< Tobj, Tint >::GraphMap` `[protected, inherited]`

6.2.4.2 `template<typename Tobj , typename Tint > Tint vex::Graph< Tobj, Tint >::Max`
`[protected, inherited]`

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

- [src/include/MinVertexCover.hpp](#)

Chapter 7

File Documentation

7.1 src/include/Graph.hpp File Reference

```
#include <vector> #include <unordered_map>
```

Classes

- class `vex::Graph< Tobj, Tint >`
Graph class.

Namespaces

- namespace `vex`
Vertex cover namespace.

7.2 src/include/MinVertexCover.hpp File Reference

```
#include <vector>    #include <set>    #include <sstream> ×  
#include <unordered_map> #include <algorithm> #include  
<cmath> #include <Graph.hpp>
```

Classes

- class `vex::VexCov< Tobj, Tint >`
Vertex cover class.

Namespaces

- namespace [vex](#)

Vertex cover namespace.