Minimum Vertex Cover

0.01

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- class Graph

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- class VexCov

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5.1.1 Detailed Description

Vertex cover namespace.

Chapter 6

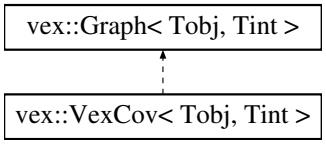
Class Documentation

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

parent	[const vector<Tobj>&]
child	[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

parent	[const vector<Tobj>&]
child	[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 explicite constructor

Parameters

parent	[const vector<Tobj>&]
child	[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 contians a parent-child relationships of vertices for a given graph

Parameters

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

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

Class explicite 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:

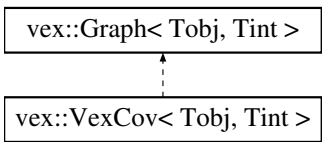
- src/include/Graph.hpp

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

parent	[const vector<Tobj>&]
child	[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

parent	[const vector<Tobj>&]
child	[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

parent	[const vector<Tobj>&]
child	[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 contians a parent-child relationships of vertices for a given graph

Parameters

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

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

Class explicite 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.