Blis

trunk

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Contents

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1.1 Class Hierarchy

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

std::basic_fstream< char >
std::basic_fstream< wchar_t >
std::basic_ifstream< char >
std::basic_ifstream< wchar_t >
std::basic_ios< char >
std::basic_ios< wchar_t >
std::basic_iostream< char >
std::basic_iostream< wchar_t >
std::basic_istream< char >
std::basic_istream< wchar_t >
std::basic_istringstream< char >
std::basic_istringstream< wchar_t >
std::basic_ofstream< char >
std::basic_ofstream< wchar_t >

2 Class Index

2.1 Class List

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

3 Class Documentation

3.1 BlisBranchObjectBilevel Class Reference

Public Member Functions

- BlisBranchObjectBilevel ()

  Default constructor.
- BlisBranchObjectBilevel (BcpsModel ∗model)

  Another useful constructor.
- BlisBranchObjectBilevel (const BlisBranchObjectBilevel &rhs)

  Copy constructor.
- BlisBranchObjectBilevel & operator= (const BlisBranchObjectBilevel &rhs)

  Assignment operator.
- virtual BcpsBranchObject ∗ clone () const

  Clone.
- virtual ∼BlisBranchObjectBilevel ()

  Destructor.
- std::deque< int > ∗ getBranchingSet () const

  Get a pointer to the branching set.
- void addToBranchingSet (int item)

  Get a pointer to the branching set.
- virtual double branch (bool normalBranch=false)

  Set the bounds for the variable according to the current arm of the branch and advances the object state to the next arm.
- virtual void print (bool normalBranch)

  Print something about branch - only if log level high.
- virtual AlpsReturnStatus encode (AlpsEncoded ∗encoded) const

  Pack to an encoded object.
- virtual AlpsReturnStatus decode (AlpsEncoded &encoded)

  Unpack a branching object from an encoded object.

Protected Member Functions

- AlpsReturnStatus encodeBlis (AlpsEncoded ∗encoded) const

  Pack Blis portion to an encoded object.
- AlpsReturnStatus decodeBlis (AlpsEncoded &encoded)

  Unpack Blis portion from an encoded object.

Protected Attributes

- std::deque< int > ∗ branchingSet_

  The indices of variables in the branching set.

3.1.1 Detailed Description

Definition at line 38 of file BlisBranchObjectBilevel.h.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 BlisBranchObjectBilevel::BlisBranchObjectBilevel ( ) `[inline]`

Default constructor.

Definition at line 48 of file BlisBranchObjectBilevel.h.

3.1.2.2 BlisBranchObjectBilevel::BlisBranchObjectBilevel (BcpsModel ∗ *model*) `[inline]`

Another useful constructor.

Definition at line 55 of file BlisBranchObjectBilevel.h.

3.1.2.3 BlisBranchObjectBilevel::BlisBranchObjectBilevel (const BlisBranchObjectBilevel & *rhs*) `[inline]`

Copy constructor.

Definition at line 62 of file BlisBranchObjectBilevel.h.

3.1.2.4 virtual BlisBranchObjectBilevel::∼BlisBranchObjectBilevel ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 75 of file BlisBranchObjectBilevel.h.

3.1.3 Member Function Documentation

3.1.3.1 BlisBranchObjectBilevel& BlisBranchObjectBilevel::operator= (const BlisBranchObjectBilevel & *rhs*)

Assignment operator.

3.1.3.2 virtual BcpsBranchObject∗ BlisBranchObjectBilevel::clone ( ) const `[inline]`, `[virtual]`

Clone.

Definition at line 70 of file BlisBranchObjectBilevel.h.

3.1.3.3 virtual double BlisBranchObjectBilevel::branch (bool *normalBranch* = `false`) `[virtual]`

Set the bounds for the variable according to the current arm of the branch and advances the object state to the next arm.

Returns change in guessed objective on next branch.

3.1.3.4 virtual void BlisBranchObjectBilevel::print (bool *normalBranch*) `[virtual]`

Print something about branch - only if log level high.

3.1.3.5 AlpsReturnStatus BlisBranchObjectBilevel::encodeBlis (AlpsEncoded ∗ *encoded*) const `[inline]`, `[protected]`

Pack Blis portion to an encoded object.

Definition at line 94 of file BlisBranchObjectBilevel.h.

3.1.3.6 AlpsReturnStatus BlisBranchObjectBilevel::decodeBlis (AlpsEncoded & *encoded*) `[inline]`, `[protected]`

Unpack Blis portion from an encoded object.

Definition at line 101 of file BlisBranchObjectBilevel.h.

3.1.3.7 virtual AlpsReturnStatus BlisBranchObjectBilevel::encode (AlpsEncoded ∗ *encoded*) const [inline], [virtual]

Pack to an encoded object.

Definition at line 109 of file BlisBranchObjectBilevel.h.

3.1.3.8 virtual AlpsReturnStatus BlisBranchObjectBilevel::decode (AlpsEncoded & *encoded*) [inline], [virtual]

Unpack a branching object from an encoded object.

Definition at line 119 of file BlisBranchObjectBilevel.h.

3.1.4 Member Data Documentation

3.1.4.1 std::deque<int>∗ BlisBranchObjectBilevel::branchingSet_ [protected]

The indices of variables in the branching set.

Definition at line 43 of file BlisBranchObjectBilevel.h.

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

- BlisBranchObjectBilevel.h

3.2 BlisBranchObjectInt Class Reference

Public Member Functions

- BlisBranchObjectInt ()

  Default constructor.
- BlisBranchObjectInt (BlisModel ∗model, int varInd, int direction, double value)

  Construct a branching object, which branching on variable varInd.
- BlisBranchObjectInt (BlisModel ∗model, int varInd, int intScore, double dblScore, int direction, double value)

  Construct a branching object, which branching on variable varInd.
- BlisBranchObjectInt (BlisModel ∗model, int varInd, int direction, double lowerValue, double upperValue)

  Create a degenerate branching object.
- BlisBranchObjectInt (const BlisBranchObjectInt &)

  Copy constructor.
- BlisBranchObjectInt & operator= (const BlisBranchObjectInt &rhs)

  Assignment operator.
- virtual BcpsBranchObject ∗ clone () const

  Clone.
- virtual ∼BlisBranchObjectInt ()

  Destructor.
- virtual double branch (bool normalBranch=false)

  Set the bounds for the variable according to the current arm of the branch and advances the object state to the next arm.
- virtual void print (bool normalBranch)

  Print something about branch - only if log level high.
- const double ∗ getDown () const

Get down arm bounds.

- const double ∗ getUp () const

  Get upper arm bounds.
- virtual AlpsReturnStatus encode (AlpsEncoded ∗encoded) const

  Pack to an encoded object.
- virtual AlpsReturnStatus decode (AlpsEncoded &encoded)

  Unpack a branching object from an encoded object.

Protected Member Functions

- AlpsReturnStatus encodeBlis (AlpsEncoded ∗encoded) const

  Pack Blis portion to an encoded object.
- AlpsReturnStatus decodeBlis (AlpsEncoded &encoded)

  Unpack Blis portion from an encoded object.

Protected Attributes

- double down_ [2]

  Down_[0]: the lower bound of down arm; Down_[1]: the upper bound of down arm;.
- double up_ [2]

  Up_[0]: the lower bound of upper arm; Up_[1]: the upper bound of upper arm;.

3.2.1 Detailed Description

Definition at line 38 of file BlisBranchObjectInt.h.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 BlisBranchObjectInt::BlisBranchObjectInt ( ) [inline]

Default constructor.

Definition at line 53 of file BlisBranchObjectInt.h.

3.2.2.2 BlisBranchObjectInt::BlisBranchObjectInt (BlisModel ∗ *model,* int *varInd,* int *direction,* double *value*) [inline]

Construct a branching object, which branching on variable varInd.

Parameters

varInd	the index of integer variable in object set
direction	the direction of first branching: 1(up), -1(down)
value	the fractional solution value of variable varInd

Definition at line 69 of file BlisBranchObjectInt.h.

3.2.2.3 BlisBranchObjectInt::BlisBranchObjectInt (BlisModel ∗ *model,* int *varInd,* int *intScore,* double *dblScore,* int *direction,* double *value*) [inline]

Construct a branching object, which branching on variable varInd.

Parameters

varInd	the index of integer variable in object set
intScore	the integer score/goodness
dblScore	the double score/goodness
direction	the direction of first branching: 1(up), -1(down)
value	the fractional solution value of variable varInd

Definition at line 91 of file BlisBranchObjectInt.h.

3.2.2.4 BlisBranchObjectInt::BlisBranchObjectInt (BlisModel ∗ *model,* int *varInd,* int *direction,* double *lowerValue,* double *upperValue*) `[inline]`

Create a degenerate branching object.

Specifies a 'one-direction branch'. Calling branch() for this object will always result in lowerValue <= x <= upperValue. Used to fix a variable when lowerValue = upperValue.

Definition at line 113 of file BlisBranchObjectInt.h.

3.2.2.5 BlisBranchObjectInt::BlisBranchObjectInt (const BlisBranchObjectInt &)

Copy constructor.

3.2.2.6 virtual BlisBranchObjectInt::∼BlisBranchObjectInt ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 141 of file BlisBranchObjectInt.h.

3.2.3 Member Function Documentation

3.2.3.1 BlisBranchObjectInt& BlisBranchObjectInt::operator= (const BlisBranchObjectInt & *rhs*)

Assignment operator.

3.2.3.2 virtual BcpsBranchObject∗ BlisBranchObjectInt::clone ( ) const `[inline]`, `[virtual]`

Clone.

Definition at line 136 of file BlisBranchObjectInt.h.

3.2.3.3 virtual double BlisBranchObjectInt::branch (bool *normalBranch* = `false`) `[virtual]`

Set the bounds for the variable according to the current arm of the branch and advances the object state to the next arm.

Returns change in guessed objective on next branch.

3.2.3.4 virtual void BlisBranchObjectInt::print (bool *normalBranch*) `[virtual]`

Print something about branch - only if log level high.

3.2.3.5 const double∗ BlisBranchObjectInt::getDown ( ) const `[inline]`

Get down arm bounds.

Definition at line 152 of file BlisBranchObjectInt.h.

3.2.3.6 const double∗ BlisBranchObjectInt::getUp ( ) const [inline]

Get upper arm bounds.

Definition at line 155 of file BlisBranchObjectInt.h.

3.2.3.7 AlpsReturnStatus BlisBranchObjectInt::encodeBlis (AlpsEncoded ∗ *encoded*) const [inline], [protected]

Pack Blis portion to an encoded object.

Definition at line 160 of file BlisBranchObjectInt.h.

3.2.3.8 AlpsReturnStatus BlisBranchObjectInt::decodeBlis (AlpsEncoded & *encoded*) [inline], [protected]

Unpack Blis portion from an encoded object.

Definition at line 176 of file BlisBranchObjectInt.h.

3.2.3.9 virtual AlpsReturnStatus BlisBranchObjectInt::encode (AlpsEncoded ∗ *encoded*) const [inline], [virtual]

Pack to an encoded object.

Definition at line 193 of file BlisBranchObjectInt.h.

3.2.3.10 virtual AlpsReturnStatus BlisBranchObjectInt::decode (AlpsEncoded & *encoded*) [inline], [virtual]

Unpack a branching object from an encoded object.

Definition at line 203 of file BlisBranchObjectInt.h.

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

- BlisBranchObjectInt.h

3.3 BlisBranchStrategyBilevel Class Reference

This class implements maximum infeasibility branching.

`#include <BlisBranchStrategyBilevel.h>`

Public Member Functions

- BlisBranchStrategyBilevel ()
  Bilevel Constructor.
- BlisBranchStrategyBilevel (BlisModel ∗model)
  Bilevel Constructor.
- virtual ∼BlisBranchStrategyBilevel ()
  Destructor.
- BlisBranchStrategyBilevel (const BlisBranchStrategyBilevel &)
  Copy constructor.
- virtual BcpsBranchStrategy ∗ clone () const
  Clone a brancing strategy.
- virtual int createCandBranchObjects (int numPassesLeft, double ub)
  Create a set of candidate branching objects.
- virtual int betterBranchObject (BcpsBranchObject ∗thisOne, BcpsBranchObject ∗bestSoFar)
  Compare branching object thisOne to bestSoFar.

3.3.1 Detailed Description

This class implements maximum infeasibility branching.

Definition at line 32 of file BlisBranchStrategyBilevel.h.

3.3.2 Constructor & Destructor Documentation

3.3.2.1 BlisBranchStrategyBilevel::BlisBranchStrategyBilevel ( ) [inline]

Bilevel Constructor.

Definition at line 42 of file BlisBranchStrategyBilevel.h.

3.3.2.2 BlisBranchStrategyBilevel::BlisBranchStrategyBilevel (BlisModel ∗ *model*) [inline]

Bilevel Constructor.

Definition at line 47 of file BlisBranchStrategyBilevel.h.

3.3.2.3 virtual BlisBranchStrategyBilevel::∼BlisBranchStrategyBilevel ( ) [inline], [virtual]

Destructor.

Definition at line 52 of file BlisBranchStrategyBilevel.h.

3.3.2.4 BlisBranchStrategyBilevel::BlisBranchStrategyBilevel (const BlisBranchStrategyBilevel &)

Copy constructor.

3.3.3 Member Function Documentation

3.3.3.1 virtual BcpsBranchStrategy∗ BlisBranchStrategyBilevel::clone ( ) const [inline], [virtual]

Clone a brancing strategy.

Definition at line 58 of file BlisBranchStrategyBilevel.h.

3.3.3.2 virtual int BlisBranchStrategyBilevel::createCandBranchObjects (int *numPassesLeft,* double *ub*) [virtual]

Create a set of candidate branching objects.

3.3.3.3 virtual int BlisBranchStrategyBilevel::betterBranchObject (BcpsBranchObject ∗ *thisOne,* BcpsBranchObject ∗ *bestSoFar*) [virtual]

Compare branching object thisOne to bestSoFar.

If thisOne is better than bestObject, return branching direction(1 or -1), otherwise return 0. If bestSorFar is NULL, then always return branching direction(1 or -1).

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

- BlisBranchStrategyBilevel.h

3.4 BlisBranchStrategyMaxInf Class Reference

This class implements maximum infeasibility branching.

```
#include <BlisBranchStrategyMaxInf.h>
```

Public Member Functions

- BlisBranchStrategyMaxInf ()
  MaxInf Constructor.
- BlisBranchStrategyMaxInf (BlisModel ∗model)
  MaxInf Constructor.
- virtual ∼BlisBranchStrategyMaxInf ()
  Destructor.
- BlisBranchStrategyMaxInf (const BlisBranchStrategyMaxInf &)
  Copy constructor.
- virtual BcpsBranchStrategy ∗ clone () const
  Clone a brancing strategy.
- virtual int createCandBranchObjects (int numPassesLeft, double ub)
  Create a set of candidate branching objects.
- virtual int betterBranchObject (BcpsBranchObject ∗thisOne, BcpsBranchObject ∗bestSoFar)
  Compare branching object thisOne to bestSoFar.

3.4.1 Detailed Description

This class implements maximum infeasibility branching.

Definition at line 32 of file BlisBranchStrategyMaxInf.h.

3.4.2 Constructor & Destructor Documentation

3.4.2.1 BlisBranchStrategyMaxInf::BlisBranchStrategyMaxInf ( ) `[inline]`

MaxInf Constructor.

Definition at line 42 of file BlisBranchStrategyMaxInf.h.

3.4.2.2 BlisBranchStrategyMaxInf::BlisBranchStrategyMaxInf (BlisModel ∗ *model*) `[inline]`

MaxInf Constructor.

Definition at line 47 of file BlisBranchStrategyMaxInf.h.

3.4.2.3 virtual BlisBranchStrategyMaxInf::∼BlisBranchStrategyMaxInf ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 52 of file BlisBranchStrategyMaxInf.h.

3.4.2.4 BlisBranchStrategyMaxInf::BlisBranchStrategyMaxInf (const BlisBranchStrategyMaxInf &)

Copy constructor.

3.4.3 Member Function Documentation

3.4.3.1 virtual BcpsBranchStrategy∗ BlisBranchStrategyMaxInf::clone ( ) const [inline], [virtual]

Clone a brancing strategy.

Definition at line 58 of file BlisBranchStrategyMaxInf.h.

3.4.3.2 virtual int BlisBranchStrategyMaxInf::createCandBranchObjects (int *numPassesLeft,* double *ub*) [virtual]

Create a set of candidate branching objects.

3.4.3.3 virtual int BlisBranchStrategyMaxInf::betterBranchObject (BcpsBranchObject ∗ *thisOne,* BcpsBranchObject ∗ *bestSoFar*) [virtual]

Compare branching object thisOne to bestSoFar.

If thisOne is better than bestObject, return branching direction(1 or -1), otherwise return 0. If bestSorFar is NULL, then always return branching direction(1 or -1).

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

- BlisBranchStrategyMaxInf.h

3.5 BlisBranchStrategyPseudo Class Reference

Blis branching strategy.

`#include <BlisBranchStrategyPseudo.h>`

Public Member Functions

- BlisBranchStrategyPseudo ()

    Default Constructor.
- BlisBranchStrategyPseudo (BlisModel ∗model, int rel)

    Useful Constructor.
- virtual ∼BlisBranchStrategyPseudo ()

    Destructor.
- BlisBranchStrategyPseudo (const BlisBranchStrategyPseudo &)

    Copy constructor.
- void setRelibility (int rel)

    Set relibility.
- virtual BcpsBranchStrategy ∗ clone () const

    Clone a brancing strategy.
- virtual int betterBranchObject (BcpsBranchObject ∗thisOne, BcpsBranchObject ∗bestSoFar)

    Compare branching object thisOne to bestSoFar.
- int createCandBranchObjects (int numPassesLeft, double ub)

    Create a set of candidate branching objects.

3.5.1 Detailed Description

Blis branching strategy.

This class implements pseudocost branching.

Definition at line 40 of file BlisBranchStrategyPseudo.h.

3.5.2 Constructor & Destructor Documentation

3.5.2.1 BlisBranchStrategyPseudo::BlisBranchStrategyPseudo ( ) [inline]

Default Constructor.

Definition at line 51 of file BlisBranchStrategyPseudo.h.

3.5.2.2 BlisBranchStrategyPseudo::BlisBranchStrategyPseudo (BlisModel ∗ *model*, int *rel*) [inline]

Useful Constructor.

Definition at line 57 of file BlisBranchStrategyPseudo.h.

3.5.2.3 virtual BlisBranchStrategyPseudo::∼BlisBranchStrategyPseudo ( ) [inline], [virtual]

Destructor.

Definition at line 64 of file BlisBranchStrategyPseudo.h.

3.5.2.4 BlisBranchStrategyPseudo::BlisBranchStrategyPseudo (const BlisBranchStrategyPseudo &)

Copy constructor.

3.5.3 Member Function Documentation

3.5.3.1 void BlisBranchStrategyPseudo::setRelibility (int *rel*) [inline]

Set relibility.

Definition at line 70 of file BlisBranchStrategyPseudo.h.

3.5.3.2 virtual BcpsBranchStrategy∗ BlisBranchStrategyPseudo::clone ( ) const [inline], [virtual]

Clone a brancing strategy.

Definition at line 73 of file BlisBranchStrategyPseudo.h.

3.5.3.3 virtual int BlisBranchStrategyPseudo::betterBranchObject (BcpsBranchObject ∗ *thisOne*, BcpsBranchObject ∗ *bestSoFar*) [virtual]

Compare branching object thisOne to bestSoFar.

If thisOne is better than bestObject, return branching direction(1 or -1), otherwise return 0. If bestSorFar is NULL, then always return branching direction(1 or -1).

3.5.3.4 int BlisBranchStrategyPseudo::createCandBranchObjects (int *numPassesLeft*, double *ub*)

Create a set of candidate branching objects.

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

- BlisBranchStrategyPseudo.h

3.6 BlisBranchStrategyRel Class Reference

Blis branching strategy.

`#include <BlisBranchStrategyRel.h>`

Public Member Functions

- BlisBranchStrategyRel ()

  Default Constructor.
- BlisBranchStrategyRel (BlisModel ∗model, int rel)

  Useful Constructor.
- virtual ∼BlisBranchStrategyRel ()

  Destructor.
- BlisBranchStrategyRel (const BlisBranchStrategyRel &)

  Copy constructor.
- void setRelibility (int rel)

  Set relibility.
- virtual BcpsBranchStrategy ∗ clone () const

  Clone a brancing strategy.
- virtual int betterBranchObject (BcpsBranchObject ∗thisOne, BcpsBranchObject ∗bestSoFar)

  Compare branching object thisOne to bestSoFar.
- int createCandBranchObjects (int numPassesLeft, double ub)

  Create a set of candidate branching objects.

3.6.1 Detailed Description

Blis branching strategy.

This class implements reliability branching.

Definition at line 40 of file BlisBranchStrategyRel.h.

3.6.2 Constructor & Destructor Documentation

3.6.2.1 BlisBranchStrategyRel::BlisBranchStrategyRel ( ) [inline]

Default Constructor.

Definition at line 51 of file BlisBranchStrategyRel.h.

3.6.2.2 BlisBranchStrategyRel::BlisBranchStrategyRel (BlisModel ∗ *model,* int *rel*) [inline]

Useful Constructor.

Definition at line 57 of file BlisBranchStrategyRel.h.

3.6.2.3 virtual BlisBranchStrategyRel::∼BlisBranchStrategyRel ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 64 of file BlisBranchStrategyRel.h.

3.6.2.4 BlisBranchStrategyRel::BlisBranchStrategyRel (const **BlisBranchStrategyRel** &)

Copy constructor.

3.6.3 Member Function Documentation

3.6.3.1 void BlisBranchStrategyRel::setRelibility (int *rel*) `[inline]`

Set relibility.

Definition at line 70 of file BlisBranchStrategyRel.h.

3.6.3.2 virtual BcpsBranchStrategy∗ BlisBranchStrategyRel::clone ( ) const `[inline]`, `[virtual]`

Clone a brancing strategy.

Definition at line 73 of file BlisBranchStrategyRel.h.

3.6.3.3 virtual int BlisBranchStrategyRel::betterBranchObject (BcpsBranchObject ∗ *thisOne,* BcpsBranchObject ∗ *bestSoFar*) `[virtual]`

Compare branching object thisOne to bestSoFar.

If thisOne is better than bestObject, return branching direction(1 or -1), otherwise return 0. If bestSorFar is NULL, then always return branching direction(1 or -1).

3.6.3.4 int BlisBranchStrategyRel::createCandBranchObjects (int *numPassesLeft,* double *ub*)

Create a set of candidate branching objects.

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

- BlisBranchStrategyRel.h

3.7 BlisBranchStrategyStrong Class Reference

This class implements strong branching.

```
#include <BlisBranchStrategyStrong.h>
```

Public Member Functions

- BlisBranchStrategyStrong ()

    Strong Constructor.
- BlisBranchStrategyStrong (BlisModel ∗model)

    Strong Constructor.
- virtual ∼BlisBranchStrategyStrong ()

    Destructor.
- BlisBranchStrategyStrong (const BlisBranchStrategyStrong &)

Copy constructor.

- virtual BcpsBranchStrategy ∗ clone () const

  Clone a brancing strategy.
- virtual int createCandBranchObjects (int numPassesLeft, double ub)

  Create a set of candidate branching objects.
- virtual int betterBranchObject (BcpsBranchObject ∗thisOne, BcpsBranchObject ∗bestSoFar)

  Compare branching object thisOne to bestSoFar.

3.7.1 Detailed Description

This class implements strong branching.

Definition at line 57 of file BlisBranchStrategyStrong.h.

3.7.2 Constructor & Destructor Documentation

3.7.2.1 BlisBranchStrategyStrong::BlisBranchStrategyStrong ( ) `[inline]`

Strong Constructor.

Definition at line 67 of file BlisBranchStrategyStrong.h.

3.7.2.2 BlisBranchStrategyStrong::BlisBranchStrategyStrong (BlisModel ∗ *model*) `[inline]`

Strong Constructor.

Definition at line 72 of file BlisBranchStrategyStrong.h.

3.7.2.3 virtual BlisBranchStrategyStrong::∼BlisBranchStrategyStrong ( ) `[inline], [virtual]`

Destructor.

Definition at line 78 of file BlisBranchStrategyStrong.h.

3.7.2.4 BlisBranchStrategyStrong::BlisBranchStrategyStrong (const BlisBranchStrategyStrong &)

Copy constructor.

3.7.3 Member Function Documentation

3.7.3.1 virtual BcpsBranchStrategy∗ BlisBranchStrategyStrong::clone ( ) const `[inline], [virtual]`

Clone a brancing strategy.

Definition at line 84 of file BlisBranchStrategyStrong.h.

3.7.3.2 virtual int BlisBranchStrategyStrong::createCandBranchObjects (int *numPassesLeft,* double *ub*) `[virtual]`

Create a set of candidate branching objects.

3.7.3.3 virtual int BlisBranchStrategyStrong::betterBranchObject (BcpsBranchObject ∗ *thisOne,* BcpsBranchObject ∗ *bestSoFar*) `[virtual]`

Compare branching object thisOne to bestSoFar.

If thisOne is better than bestObject, return branching direction(1 or -1), otherwise return 0. If bestSorFar is NULL, then always return branching direction(1 or -1).

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

- BlisBranchStrategyStrong.h

3.8 BlisConGenerator Class Reference

Interface between Blis and Cut Generation Library.

```
#include <BlisConGenerator.h>
```

Public Member Functions

Constructors and destructors

- BlisConGenerator ()
  Default constructor.
- BlisConGenerator (BlisModel ∗model, CglCutGenerator ∗generator, const char ∗name=NULL, BlisCutStrategy strategy=BlisCutStrategyAuto, int cutGenerationFrequency_=1, bool normal=true, bool atSolution=false, bool infeasible=false)
  Useful constructor.
- BlisConGenerator (const BlisConGenerator &)
  Copy constructor.
- BlisConGenerator & operator= (const BlisConGenerator &rhs)
  Assignment operator.
- virtual ∼BlisConGenerator ()
  Destructor.

Generate Constraints

- virtual bool generateConstraints (BcpsConstraintPool &conPool)
  Generate cons for the client model.

Gets and sets

- BlisModel ∗ getModel ()
  Set the client model.
- void setModel (BlisModel ∗m)
  Set the model.
- void refreshModel (BlisModel ∗model)
  Refresh the model.
- void setName (const char ∗str)
  return name of generator.
- std::string name () const
  return name of generator.
- void setStrategy (BlisCutStrategy value)
  Set the con generation strategy.
- BlisCutStrategy strategy () const
  Get the con generation interval.
- void setCutGenerationFreq (int freq)
  Set the con generation strategy.
- int cutGenerationFreq () const

Get the con generation interval.
- bool normal () const

  Get whether the con generator should be called in the normal place.
- void setNormal (bool value)

  Set whether the con generator should be called in the normal place.
- bool atSolution () const

  Get whether the con generator should be called when a solution is found.
- void setAtSolution (bool value)

  Set whether the con generator should be called when a solution is found.
- bool whenInfeasible () const

  Get whether the con generator should be called when the subproblem is found to be infeasible.
- void setWhenInfeasible (bool value)

  Set whether the con generator should be called when the subproblem is found to be infeasible.
- CglCutGenerator ∗ generator () const

  Get the `CglCutGenerator` bound to this `BlisConGenerator`.
- int numConsGenerated ()

  Get number of generated cons.
- void addNumConsGenerated (int n)

  Increase the number of generated cons.
- int numConsUsed ()

  Get number of used cons.
- void addNumConsUsed (int n)

  Increase the number of generated cons.
- double time () const

  Cpu time used.
- void addTime (double t)

  Increase Cpu time used.
- int calls () const

  Number called.
- void addCalls (int n=1)

  Increase the number of called.
- int noConsCalls () const

  Number called and no cons found.
- void addNoConsCalls (int n=1)

  Increase the number of no cons called.

Protected Attributes

- BlisModel ∗ model_

  The client model.
- CglCutGenerator ∗ generator_

  The CglCutGenerator object.
- BlisCutStrategy strategy_

  When to call CglCutGenerator::generateCuts routine.
- int cutGenerationFrequency_

  The frequency of calls to the cut generator.
- std::string name_

  Name of generator.
- bool normal_

  Whether to call the generator in the normal place.
- bool atSolution_

  Whether to call the generator when a new solution is found.

- bool whenInfeasible_

  Whether to call generator when a subproblem is found to be infeasible.
- int numConsGenerated_

  Number of cons generated.
- int numConsUsed_

  Number of cons used.
- double time_

  Used CPU/User time.
- int calls_

  The times of calling this generator.
- int noConsCalls_

  The times of calling this generator and no cons found.

3.8.1 Detailed Description

Interface between Blis and Cut Generation Library.

`BlisConGenerator` is intended to provide an intelligent interface between Blis and the cutting plane algorithms in the CGL. A `BlisConGenerator` is bound to a `CglCutGenerator` and to an `BlisModel`. It contains parameters which control when and how the `generateCuts` method of the `CglCutGenerator` will be called.

The builtin decision criteria available to use when deciding whether to generate cons are: at root, autmatic, every X nodes, when a solution is found, and when a subproblem is found to be infeasible.

Definition at line 58 of file BlisConGenerator.h.

3.8.2 Constructor & Destructor Documentation

3.8.2.1 BlisConGenerator::BlisConGenerator ( ) `[inline]`

Default constructor.

Definition at line 119 of file BlisConGenerator.h.

3.8.2.2 BlisConGenerator::BlisConGenerator (**BlisModel** * *model*, CglCutGenerator * *generator*, const char * *name* = `NULL`, BlisCutStrategy *strategy* = `BlisCutStrategyAuto`, int *cutGenerationFrequency_* = `1`, bool *normal* = `true`, bool *atSolution* = `false`, bool *infeasible* = `false`)

Useful constructor.

3.8.2.3 BlisConGenerator::BlisConGenerator (const **BlisConGenerator** &)

Copy constructor.

3.8.2.4 virtual BlisConGenerator::~BlisConGenerator ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 152 of file BlisConGenerator.h.

3.8.3 Member Function Documentation

3.8.3.1 **BlisConGenerator**& BlisConGenerator::operator= (const **BlisConGenerator** & *rhs*)

Assignment operator.

3.8.3.2 virtual bool BlisConGenerator::generateConstraints (BcpsConstraintPool & *conPool*) `[virtual]`

Generate cons for the client model.

Evaluate the state of the client model and decide whether to generate cons. The generated cons are inserted into and returned in the collection of cons `cs`.

The routine returns true if reoptimisation is needed (because the state of the solver interface has been modified).

3.8.3.3 BlisModel∗ BlisConGenerator::getModel ( ) `[inline]`

Set the client model.

In addition to setting the client model, refreshModel also calls the `refreshSolver` method of the CglCutGenerator object.Get a pointer to the model

Definition at line 182 of file BlisConGenerator.h.

3.8.3.4 void BlisConGenerator::setName (const char ∗ *str*) `[inline]`

return name of generator.

Definition at line 191 of file BlisConGenerator.h.

3.8.3.5 std::string BlisConGenerator::name ( ) const `[inline]`

return name of generator.

Definition at line 194 of file BlisConGenerator.h.

3.8.3.6 void BlisConGenerator::setStrategy (BlisCutStrategy *value*) `[inline]`

Set the con generation strategy.

Definition at line 197 of file BlisConGenerator.h.

3.8.3.7 BlisCutStrategy BlisConGenerator::strategy ( ) const `[inline]`

Get the con generation interval.

Definition at line 200 of file BlisConGenerator.h.

3.8.3.8 void BlisConGenerator::setCutGenerationFreq (int *freq*) `[inline]`

Set the con generation strategy.

Definition at line 203 of file BlisConGenerator.h.

3.8.3.9 int BlisConGenerator::cutGenerationFreq ( ) const `[inline]`

Get the con generation interval.

Definition at line 206 of file BlisConGenerator.h.

3.8.3.10 bool BlisConGenerator::normal ( ) const `[inline]`

Get whether the con generator should be called in the normal place.

Definition at line 209 of file BlisConGenerator.h.

3.8.3.11 void BlisConGenerator::setNormal (bool *value*) `[inline]`

Set whether the con generator should be called in the normal place.

Definition at line 212 of file BlisConGenerator.h.

3.8.3.12 bool BlisConGenerator::atSolution ( ) const `[inline]`

Get whether the con generator should be called when a solution is found.

Definition at line 216 of file BlisConGenerator.h.

3.8.3.13 void BlisConGenerator::setAtSolution (bool *value*) `[inline]`

Set whether the con generator should be called when a solution is found.

Definition at line 220 of file BlisConGenerator.h.

3.8.3.14 bool BlisConGenerator::whenInfeasible ( ) const `[inline]`

Get whether the con generator should be called when the subproblem is found to be infeasible.

Definition at line 224 of file BlisConGenerator.h.

3.8.3.15 void BlisConGenerator::setWhenInfeasible (bool *value*) `[inline]`

Set whether the con generator should be called when the subproblem is found to be infeasible.

Definition at line 228 of file BlisConGenerator.h.

3.8.3.16 CglCutGenerator* BlisConGenerator::generator ( ) const `[inline]`

Get the `CglCutGenerator` bound to this `BlisConGenerator`.

Definition at line 231 of file BlisConGenerator.h.

3.8.3.17 int BlisConGenerator::numConsGenerated ( ) `[inline]`

Get number of generated cons.

Definition at line 234 of file BlisConGenerator.h.

3.8.3.18 void BlisConGenerator::addNumConsGenerated (int *n*) `[inline]`

Increase the number of generated cons.

Definition at line 237 of file BlisConGenerator.h.

3.8.3.19 int BlisConGenerator::numConsUsed ( ) `[inline]`

Get number of used cons.

Definition at line 240 of file BlisConGenerator.h.

3.8.3.20 void BlisConGenerator::addNumConsUsed (int *n*) `[inline]`

Increase the number of generated cons.

Definition at line 243 of file BlisConGenerator.h.

3.8.3.21 double BlisConGenerator::time ( ) const [inline]

Cpu time used.

Definition at line 246 of file BlisConGenerator.h.

3.8.3.22 void BlisConGenerator::addTime (double *t*) [inline]

Increase Cpu time used.

Definition at line 249 of file BlisConGenerator.h.

3.8.3.23 int BlisConGenerator::calls ( ) const [inline]

Number called.

Definition at line 252 of file BlisConGenerator.h.

3.8.3.24 void BlisConGenerator::addCalls (int *n* = 1) [inline]

Increase the number of called.

Definition at line 255 of file BlisConGenerator.h.

3.8.3.25 int BlisConGenerator::noConsCalls ( ) const [inline]

Number called and no cons found.

Definition at line 258 of file BlisConGenerator.h.

3.8.3.26 void BlisConGenerator::addNoConsCalls (int *n* = 1) [inline]

Increase the number of no cons called.

Definition at line 261 of file BlisConGenerator.h.

3.8.4 Member Data Documentation

3.8.4.1 BlisModel* BlisConGenerator::model_ [protected]

The client model.

Definition at line 62 of file BlisConGenerator.h.

3.8.4.2 CglCutGenerator* BlisConGenerator::generator_ [protected]

The CglCutGenerator object.

Definition at line 65 of file BlisConGenerator.h.

3.8.4.3 BlisCutStrategy BlisConGenerator::strategy_ [protected]

When to call CglCutGenerator::generateCuts routine.

BlisCutStrategyNone: disable BlisCutStrategyRoot: just root BlisCutStrategyAuto: automatically decided by BLIS Blis-CutStrategyPeriodic: Generate every 't' nodes

Definition at line 77 of file BlisConGenerator.h.

3.8.4.4 int BlisConGenerator::cutGenerationFrequency_ [protected]

The frequency of calls to the cut generator.

Definition at line 80 of file BlisConGenerator.h.

3.8.4.5 std::string BlisConGenerator::name_ [protected]

Name of generator.

Definition at line 83 of file BlisConGenerator.h.

3.8.4.6 bool BlisConGenerator::normal_ [protected]

Whether to call the generator in the normal place.

Definition at line 86 of file BlisConGenerator.h.

3.8.4.7 bool BlisConGenerator::atSolution_ [protected]

Whether to call the generator when a new solution is found.

Definition at line 89 of file BlisConGenerator.h.

3.8.4.8 bool BlisConGenerator::whenInfeasible_ [protected]

Whether to call generator when a subproblem is found to be infeasible.

Definition at line 93 of file BlisConGenerator.h.

3.8.4.9 int BlisConGenerator::numConsGenerated_ [protected]

Number of cons generated.

Definition at line 100 of file BlisConGenerator.h.

3.8.4.10 int BlisConGenerator::numConsUsed_ [protected]

Number of cons used.

Definition at line 103 of file BlisConGenerator.h.

3.8.4.11 double BlisConGenerator::time_ [protected]

Used CPU/User time.

Definition at line 106 of file BlisConGenerator.h.

3.8.4.12 int BlisConGenerator::calls_ [protected]

The times of calling this generator.

Definition at line 109 of file BlisConGenerator.h.

3.8.4.13 int BlisConGenerator::noConsCalls_ [protected]

The times of calling this generator and no cons found.

Definition at line 112 of file BlisConGenerator.h.

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

- BlisConGenerator.h

3.9 BlisConstraint Class Reference

Public Member Functions

- BlisConstraint ()

  Default constructor.
- BlisConstraint (int s, const int ∗ind, const double ∗val)

  Useful constructor.
- BlisConstraint (double lbh, double ubh, double lbs, double ubs)

  Useful constructor.
- BlisConstraint (double lbh, double ubh, double lbs, double ubs, int size, const int ∗ind, const double ∗val)

  Useful constructor.
- virtual ∼BlisConstraint ()

  Destructor.
- BlisConstraint (const BlisConstraint &rhs)

  Copy constructor.
- OsiRowCut ∗ createOsiRowCut ()

  Create a OsiRowCut based on this constraint.
- virtual void hashing (BcpsModel ∗model=NULL)

  Compute a hash key.
- double violation (const double ∗lpSolution)

  Check if violates a given lp solution.
- virtual AlpsReturnStatus encode (AlpsEncoded ∗encoded)

  Pack into a encode object.
- virtual AlpsKnowledge ∗ decode (AlpsEncoded &encoded) const

  Decode a constraint from an encoded object.

- int getSize () const

  Return data.

- void setData (int s, const int ∗ind, const double ∗val)

  Set data.

Protected Member Functions

- AlpsReturnStatus encodeBlis (AlpsEncoded ∗encoded)

  Pack Blis part into an encoded object.
- AlpsReturnStatus decodeBlis (AlpsEncoded &encoded)

  Unpack Blis part from a encode object.

Protected Attributes

- int size_

  Number of nonzero coefficients.
- int ∗ indices_

  Variable indices.
- double ∗ values_

  Value of nonzero coefficients.

3.9.1 Detailed Description

Definition at line 33 of file BlisConstraint.h.

3.9.2 Constructor & Destructor Documentation

3.9.2.1 BlisConstraint::BlisConstraint ( )

Default constructor.

3.9.2.2 BlisConstraint::BlisConstraint (int *s*, const int ∗ *ind*, const double ∗ *val*)

Useful constructor.

3.9.2.3 BlisConstraint::BlisConstraint (double *lbh*, double *ubh*, double *lbs*, double *ubs*)

Useful constructor.

3.9.2.4 BlisConstraint::BlisConstraint (double *lbh*, double *ubh*, double *lbs*, double *ubs*, int *size*, const int ∗ *ind*, const double ∗ *val*)

Useful constructor.

3.9.2.5 virtual BlisConstraint::∼BlisConstraint ( ) `[virtual]`

Destructor.

3.9.2.6 BlisConstraint::BlisConstraint (const BlisConstraint & *rhs*)

Copy constructor.

3.9.3 Member Function Documentation

3.9.3.1 AlpsReturnStatus BlisConstraint::encodeBlis (AlpsEncoded ∗ *encoded*) `[protected]`

Pack Blis part into an encoded object.

3.9.3.2 AlpsReturnStatus BlisConstraint::decodeBlis (AlpsEncoded & *encoded*) `[protected]`

Unpack Blis part from a encode object.

3.9.3.3 OsiRowCut∗ BlisConstraint::createOsiRowCut ( )

Create a OsiRowCut based on this constraint.

3.9.3.4 virtual void BlisConstraint::hashing (BcpsModel ∗ *model* = `NULL`) `[virtual]`

Compute a hash key.

3.9.3.5 double BlisConstraint::violation (const double ∗ *lpSolution*)

Check if violates a given lp solution.

3.9.3.6 virtual AlpsReturnStatus BlisConstraint::encode (AlpsEncoded ∗ *encoded*) [virtual]

Pack into a encode object.

3.9.3.7 virtual AlpsKnowledge∗ BlisConstraint::decode (AlpsEncoded & *encoded*) const [virtual]

Decode a constraint from an encoded object.

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

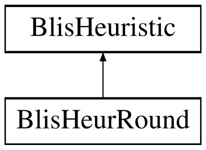
- BlisConstraint.h

3.10 BlisHeuristic Class Reference

Heuristic base class.

`#include <BlisHeuristic.h>`

Inheritance diagram for BlisHeuristic:



Public Member Functions

- BlisHeuristic ()

  Default Constructor.
- BlisHeuristic (BlisModel ∗model, const char ∗name, BlisHeurStrategy strategy, int heurCallFrequency)

  Useful constructor.
- virtual ∼BlisHeuristic ()

  Distructor.
- BlisHeuristic (const BlisHeuristic &rhs)

  Copy constructor.
- virtual void setModel (BlisModel ∗model)

  update model (This is needed if cliques update matrix etc).
- virtual void setStrategy (BlisHeurStrategy strategy)

  Get/set strategy.
- virtual void setHeurCallFrequency (int freq)

  Get/set call frequency.
- virtual BlisHeuristic ∗ clone () const

  Clone a heuristic.
- virtual bool searchSolution (double &objectiveValue, double ∗newSolution)=0

  returns 0 if no solution, 1 if valid solution with better objective value than one passed in Sets solution values if good, sets objective value This is called after cuts have been added - so can not add cuts
- virtual bool searchSolution (double &objectiveValue, double ∗newSolution, OsiCuts &cs)

returns 0 if no solution, 1 if valid solution, -1 if just returning an estimate of best possible solution with better objective value than one passed in Sets solution values if good, sets objective value (only if nonzero code) This is called at same time as cut generators - so can add cuts Default is do nothing

- const char ∗ name () const

  return name of generator.
- void addNumSolutions (int num=1)

  Record number of solutions found.
- int numSolutions () const

  Number of solutions found.
- void addTime (double t=0.0)

  Record Cpu time used.
- double time () const

  Cpu time used.
- void addCalls (int c=1)

  Record number of times called.
- int calls () const

  Number of times called.
- int noSolCalls () const

  Number called and no cons found.
- void addNoSolCalls (int n=1)

  Increase the number of no cons called.

Protected Attributes

- BlisModel ∗ model_

  Pointer to the model.
- char ∗ name_

  Heuristics name.
- BlisHeurStrategy strategy_

  When to call findSolution() routine.
- int heurCallFrequency_

  The frequency with which to call the heuristic.
- int numSolutions_

  Number of solutions found.
- double time_

  Used CPU/User time.
- int calls_

  The times of calling this heuristic.
- int noSolsCalls_

  The times of calling this heuristic and no solutions found.

3.10.1 Detailed Description

Heuristic base class.

Definition at line 48 of file BlisHeuristic.h.

3.10.2 Constructor & Destructor Documentation

3.10.2.1 BlisHeuristic::BlisHeuristic ( ) `[inline]`

Default Constructor.

Definition at line 90 of file BlisHeuristic.h.

3.10.2.2 BlisHeuristic::BlisHeuristic (BlisModel ∗ *model,* const char ∗ *name,* BlisHeurStrategy *strategy,* int *heurCallFrequency*) `[inline]`

Useful constructor.

Definition at line 102 of file BlisHeuristic.h.

3.10.2.3 virtual BlisHeuristic::∼BlisHeuristic ( ) `[inline]`, `[virtual]`

Distructor.

Definition at line 120 of file BlisHeuristic.h.

3.10.2.4 BlisHeuristic::BlisHeuristic (const BlisHeuristic & *rhs*) `[inline]`

Copy constructor.

Definition at line 123 of file BlisHeuristic.h.

3.10.3 Member Function Documentation

3.10.3.1 virtual void BlisHeuristic::setModel (BlisModel ∗ *model*) `[inline]`, `[virtual]`

update model (This is needed if cliques update matrix etc).

Reimplemented in BlisHeurRound.

Definition at line 135 of file BlisHeuristic.h.

3.10.3.2 virtual void BlisHeuristic::setStrategy (BlisHeurStrategy *strategy*) `[inline]`, `[virtual]`

Get/set strategy.

Definition at line 139 of file BlisHeuristic.h.

3.10.3.3 virtual void BlisHeuristic::setHeurCallFrequency (int *freq*) `[inline]`, `[virtual]`

Get/set call frequency.

Definition at line 145 of file BlisHeuristic.h.

3.10.3.4 virtual BlisHeuristic∗ BlisHeuristic::clone ( ) const `[inline]`, `[virtual]`

Clone a heuristic.

Reimplemented in BlisHeurRound.

Definition at line 150 of file BlisHeuristic.h.

3.10.3.5 const char∗ BlisHeuristic::name ( ) const `[inline]`

return name of generator.

Definition at line 177 of file BlisHeuristic.h.

3.10.3.6 void BlisHeuristic::addNumSolutions (int *num* = `1`) `[inline]`

Record number of solutions found.

Definition at line 180 of file BlisHeuristic.h.

3.10.3.7 int BlisHeuristic::numSolutions ( ) const `[inline]`

Number of solutions found.

Definition at line 183 of file BlisHeuristic.h.

3.10.3.8 void BlisHeuristic::addTime (double *t* = `0.0`) `[inline]`

Record Cpu time used.

Definition at line 186 of file BlisHeuristic.h.

3.10.3.9 double BlisHeuristic::time ( ) const `[inline]`

Cpu time used.

Definition at line 189 of file BlisHeuristic.h.

3.10.3.10 void BlisHeuristic::addCalls (int *c* = `1`) `[inline]`

Record number of times called.

Definition at line 192 of file BlisHeuristic.h.

3.10.3.11 int BlisHeuristic::calls ( ) const `[inline]`

Number of times called.

Definition at line 195 of file BlisHeuristic.h.

3.10.3.12 int BlisHeuristic::noSolCalls ( ) const `[inline]`

Number called and no cons found.

Definition at line 198 of file BlisHeuristic.h.

3.10.3.13 void BlisHeuristic::addNoSolCalls (int *n* = `1`) `[inline]`

Increase the number of no cons called.

Definition at line 201 of file BlisHeuristic.h.

3.10.4 Member Data Documentation

3.10.4.1 BlisHeurStrategy BlisHeuristic::strategy_ `[protected]`

When to call findSolution() routine.

BlisHeurStrategyNone: disable BlisHeurStrategyRoot: just root BlisHeurStrategyAuto: automatically decided by BLIS BlisHeurStrategyPeriodic: every 't' nodes BlisHeurStrategyBeforeRoot: before solving first LP

Definition at line 70 of file BlisHeuristic.h.

3.10.4.2 int BlisHeuristic::numSolutions_ [protected]

Number of solutions found.

Definition at line 76 of file BlisHeuristic.h.

3.10.4.3 double BlisHeuristic::time_ [protected]

Used CPU/User time.

Definition at line 79 of file BlisHeuristic.h.

3.10.4.4 int BlisHeuristic::calls_ [protected]

The times of calling this heuristic.

Definition at line 82 of file BlisHeuristic.h.

3.10.4.5 int BlisHeuristic::noSolsCalls_ [protected]

The times of calling this heuristic and no solutions found.

Definition at line 85 of file BlisHeuristic.h.

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

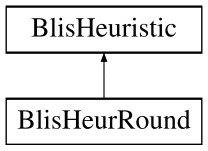
- BlisHeuristic.h

3.11 BlisHeurRound Class Reference

Rounding Heuristic.

`#include <BlisHeurRound.h>`

Inheritance diagram for BlisHeurRound:



Public Member Functions

- BlisHeurRound ()

  Default Constructor.
- BlisHeurRound (BlisModel ∗model, const char ∗name, BlisHeurStrategy strategy, int freq)

  Constructor with model - assumed before cuts.
- ∼BlisHeurRound ()

  Destructor.
- BlisHeurRound (const BlisHeurRound &)

  Copy constructor.
- virtual BlisHeuristic ∗ clone () const

  Clone a rounding heuristic.
- virtual void setModel (BlisModel ∗model)

update model (This is needed if cliques update matrix etc).

- virtual bool searchSolution (double &objectiveValue, double ∗newSolution)

  returns 0 if no solution, 1 if valid solution with better objective value than one passed in Sets solution values if good, sets objective value (only if good) This is called after cuts have been added - so can not add cuts

- void setSeed (int value)

  Set seed.

Protected Attributes

- CoinPackedMatrix matrix_

  Column majored matrix.

- CoinPackedMatrix matrixByRow_

  Row majored matrix.

- int seed_

  Seed for random stuff.

3.11.1 Detailed Description

Rounding Heuristic.

Definition at line 44 of file BlisHeurRound.h.

3.11.2 Constructor & Destructor Documentation

3.11.2.1 BlisHeurRound::BlisHeurRound ( ) `[inline]`

Default Constructor.

Definition at line 61 of file BlisHeurRound.h.

3.11.2.2 BlisHeurRound::BlisHeurRound (BlisModel ∗ *model*, const char ∗ *name*, BlisHeurStrategy *strategy*, int *freq*) `[inline]`

Constructor with model - assumed before cuts.

Definition at line 64 of file BlisHeurRound.h.

3.11.2.3 BlisHeurRound::∼BlisHeurRound ( ) `[inline]`

Destructor.

Definition at line 73 of file BlisHeurRound.h.

3.11.2.4 BlisHeurRound::BlisHeurRound (const BlisHeurRound &)

Copy constructor.

3.11.3 Member Function Documentation

3.11.3.1 virtual void BlisHeurRound::setModel (BlisModel ∗ *model*) `[virtual]`

update model (This is needed if cliques update matrix etc).

Reimplemented from BlisHeuristic.

3.11.4 Member Data Documentation

3.11.4.1 CoinPackedMatrix BlisHeurRound::matrix_ `[protected]`

Column majored matrix.

Definition at line 51 of file BlisHeurRound.h.

3.11.4.2 CoinPackedMatrix BlisHeurRound::matrixByRow_ `[protected]`

Row majored matrix.

Definition at line 54 of file BlisHeurRound.h.

3.11.4.3 int BlisHeurRound::seed_ `[protected]`

Seed for random stuff.

Definition at line 57 of file BlisHeurRound.h.

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

- BlisHeurRound.h

3.12 BlisMessage Class Reference

Public Member Functions

Constructors etc

- BlisMessage (Language language=us_en)

  Constructor.

3.12.1 Detailed Description

Definition at line 58 of file BlisMessage.h.

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

- BlisMessage.h

3.13 BlisModel Class Reference

Public Member Functions

- BlisModel ()

  Default construtor.
- virtual ∼BlisModel ()

  Destructor.
- void gutsOfDestructor ()

  Actual destructor.
- void setColMatrix (CoinPackedMatrix ∗mat)

  Pass a matrix in.
- void setNumCons (int num)

Pass column upper bounds.
- void setNumVars (int num)

  Pass column upper bounds.
- void setNumElems (int num)

  Pass column upper bounds.
- void setConLb (double ∗cl)

  Pass column upper bounds.
- void setConUb (double ∗cu)

  Pass column lower bounds.
- void setVarLb (double ∗lb)

  Pass variable upper bounds.
- void setVarUb (double ∗ub)

  Pass variable lower bounds.
- void setColType (char ∗colType)

  Pass variable types.
- void setObjCoef (double ∗obj)

  Pass objective coefficients.
- virtual void readInstance (const char ∗dataFile)

  For parallel code, only the master calls this function.
- virtual void importModel (std::vector< BlisVariable ∗ > vars, std::vector< BlisConstraint ∗ > cons)

  For parallel code, only the master calls this function.
- virtual void readParameters (const int argnum, const char ∗const ∗arglist)

  Read in Alps, Blis parameters.
- virtual void writeParameters (std::ostream &outstream) const

  Write out parameters.
- virtual AlpsTreeNode ∗ createRoot ()

  For parallel code, only the master calls this function.
- virtual bool setupSelf ()

  All processes call this function.
- virtual void preprocess ()

  Preprocessing the model.
- virtual void postprocess ()

  Postprocessing the searching results.
- virtual void setSolver (OsiSolverInterface ∗si)

  Set lp solver.
- virtual OsiSolverInterface ∗ getSolver ()

  Get lp solver.
- virtual OsiSolverInterface ∗ solver ()

  Get lp solver.
- bool resolve ()

  Resolving a lp.
- void setActiveNode (AlpsTreeNode ∗node)

  Set active node.
- void setSolEstimate (double est)

  Set the solution estimate of the active node.
- int getNumStrong ()

  Get number of strong branchings.

- void addNumStrong (int num=1)

  Add num to number of strong branchings.
- int getNumBranchResolve ()

  Get the maximum number of resolve during branching.
- void setNumBranchResolve (int num)

  Set the maximum number of resolve during branching.
- double ∗ getObjCoef () const

  Get objective coefficients.
- const double ∗ getColLower ()

  Get column lower bound.
- const double ∗ getColUpper ()

  Get column upper bound.
- int getNumCols ()

  Get number of columns.
- int getNumRows ()

  Get number of rows.
- double ∗ varLB ()

  Get variable bounds arrary.
- double ∗ conLB ()

  Get original constraint bounds arrary.
- double ∗ startVarLB ()

  The starting variable bounds arrary of a subproblem (internal use).
- double ∗ startConLB ()

  The starting constraint bounds arrary of a subproblem (internal use).
- int ∗ tempVarLBPos ()

  Temparory storage.
- double getLpObjValue () const

  Get current objective function value.
- const double ∗ getLpSolution () const

  Get active lp solution.
- int getNumSolutions () const

  Get number of solutions.
- int getNumHeurSolutions () const

  Get number of heuristic solutions.
- double ∗ incumbent ()

  Return best ip solution found so far.
- int storeSolution (BlisSolutionType how, BlisSolution ∗sol)

  Record a new incumbent solution and update objectiveValue.
- double getCutoff () const

  Get cut off value.
- void setCutoff (double co)

  Set cut off value.
- BlisSolution ∗ feasibleSolutionHeur (const double ∗solution)

  Test if a solution found by heuristic is feasible.
- virtual BlisSolution ∗ feasibleSolution (int &numIntegerInfs, int &numObjectInfs)

  Test the current LP solution for feasiblility.
- virtual BlisSolution ∗ userFeasibleSolution (const double ∗solution, bool &feasible)

User's criteria for a feasible solution.

- void createIntgerObjects (bool startAgain)

    Identify integer variable.
- int ∗ getIntObjIndices () const

    Get integers' object indices.
- int getNumIntObjects () const

    Get number of integers.
- int ∗ getIntColIndices () const

    Get integers' column indices.
- bool checkInteger (double value) const

    Check if a value is integer.
- void addHeuristic (BlisHeuristic ∗heur)

    Add a heuristic.
- BlisHeuristic ∗ heuristics (int i) const

    Get a specific heuristic.
- int numHeuristics () const

    Get the number of heuristics.
- void addCutGenerator (BlisConGenerator ∗generator)

    Add a Blis cut generator.
- void addCutGenerator (CglCutGenerator ∗generator, const char ∗name=NULL, BlisCutStrategy strategy=BlisCutStrategyAuto, int cutGenerationFrequency=1, bool normal=true, bool atSolution=false, bool whenInfeasible=false)

    Add a Cgl cut generator.
- BlisConGenerator ∗ cutGenerators (int i) const

    Get a specific cut generator.
- int numCutGenerators () const

    Get the number of cut generators.
- int getMaxNumCons () const

    Get the max number of cuts can be generated.
- void setMaxNumCons (int m)

    Set the max number of cuts can be generated.
- BcpsConstraintPool ∗ constraintPool ()

    Access constraint pool.
- BcpsConstraintPool ∗ constraintPoolReceive ()

    Access receive constraint pool.
- BcpsConstraintPool ∗ constraintPoolSend ()

    Access send constraint pool.
- BlisCutStrategy getCutStrategy () const

    Query constraint generation strategy.
- void setCutStrategy (BlisCutStrategy u)

    Set constraint generation strategy.
- int getCutGenerationFrequency () const

    Query constraint generation frequency.
- void setCutStrategy (int f)

    Set constraint generation frequency.
- int getDenseConCutoff () const

    Get the thresheld to be considered as a dense constraint.

- void setDenseConCutoff (int cutoff)

  Set the thresheld to be considered as a dense constraint.
- double ∗ getConRandoms () const

  Get randoms for check parallel constraints.
- void passInPriorities (const int ∗priorities, bool ifNotSimpleIntegers, int defaultValue=1000)

  Pass in branching priorities.
- const int ∗ priority () const

  Priorities.
- int priority (int sequence) const

  Returns priority level for an object (or 1000 if no priorities exist)
- virtual void modelLog ()

  Log of specific models.
- int getNumNodes () const

  Get how many Nodes it took to solve the problem.
- int getNumIterations () const

  Get how many iterations it took to solve the problem.
- int getAveIterations () const

  Get the average iterations it took to solve a lp.
- void addNumNodes (int newNodes=1)

  Increment node count.
- void addNumIterations (int newIter)

  Increment Iteration count.
- CoinMessageHandler ∗ blisMessageHandler () const

  Get the message handler.
- CoinMessages blisMessages ()

  Return messages.
- virtual void nodeLog (AlpsTreeNode ∗node, bool force)

  Node log.
- virtual bool fathomAllNodes ()

  Return true, if all nodes can be fathomed.
- virtual void registerKnowledge ()

  Register knowledge.
- virtual AlpsEncoded ∗ encode () const

  The method that encodes the model into an encoded object.
- virtual void decodeToSelf (AlpsEncoded &)

  The method that decodes the model from an encoded object.
- virtual AlpsEncoded ∗ packSharedKnowlege ()

  Pack knowledge to be shared with others into an encoded object.
- virtual void unpackSharedKnowledge (AlpsEncoded &)

  Unpack and store shared knowledge from an encoded object.

Branching Strategys

See the BcpsBranchStrategy class for additional information.

- BcpsBranchStrategy ∗ branchStrategy () const

  Get the current branching strategy.
- void setBranchingMethod (BcpsBranchStrategy ∗method)

  Set the branching strategy.

  - void setBranchingMethod (BcpsBranchStrategy &method)

    Set the branching stratedy.
  - BcpsBranchStrategy ∗ **rampUpBranchStrategy** () const

Object manipulation routines

  - int numObjects () const

    Get the number of objects.
  - void setNumObjects (int num)

    Set the number of objects.
  - BcpsObject ∗∗ objects ()

    Get the array of objects.
  - BcpsObject ∗ objects (int which)

    Get the specified object.
  - void setSharedObjectMark (int i)

    Mark object to be shared.
  - void clearSharedObjectMark ()

    Clear all the share mark.
  - void deleteObjects ()

    Delete all object information.
  - void addObjects (int numObjects, BcpsObject ∗∗objects)

    Add in object information.

- int getNumOldConstraints () const

  Get number of old constraints.
- void setNumOldConstraints (int num)

  Set number of old constraints.
- int getOldConstraintsSize () const

  Get max number of old constraints.
- void setOldConstraintsSize (int num)

  Set max number of old constraints.
- BlisConstraint ∗∗ oldConstraints ()

  Access old constraints.
- void setOldConstraints (BlisConstraint ∗∗old)

  set old constraints.
- void delOldConstraints ()

  Set max number of old constraints.

- BlisParams ∗ BlisPar ()

  Access parameters.

Public Attributes

- bool isRoot_

  If root node.
- int boundingPass_

  The number of passes during bounding procedure.
- double integerTol_

  Integer tolerance.
- double optimalRelGap_

Input relative optimal gap.

- double optimalAbsGap_

  Input absolute optimal gap.
- double currRelGap_

  Current relative optimal gap.
- double currAbsGap_

  Current absolute optimal gap.
- BlisHeurStrategy heurStrategy_

  If use heuristics.
- int heurCallFrequency_

  Frequency of using heuristics.
- OsiCuts newCutPool_

  Store new cuts in each pass.
- std::vector< AlpsTreeNode ∗ > leafToRootPath

  Record the path from leaf to root.

Protected Member Functions

- void init ()

  Intialize member data.
- void createObjects ()

  Create variables and constraints.
- AlpsReturnStatus encodeBlis (AlpsEncoded ∗encoded) const

  Pack Blis portion of the model into an encoded object.
- AlpsReturnStatus decodeBlis (AlpsEncoded &encoded)

  Unpack Blis portion of the model from an encoded object.
- void packSharedPseudocost (AlpsEncoded ∗encoded, int numToShare)

  Retrieve and pack shared pseudocost.
- void unpackSharedPseudocost (AlpsEncoded &encoded)

  Unpack and store shared pseduocost.
- void packSharedConstraints (AlpsEncoded ∗encoded)

  Retrieve and pack shared constraints.
- void unpackSharedConstraints (AlpsEncoded &encoded)

  Unpack and store shared constraints.
- void packSharedVariables (AlpsEncoded ∗encoded)

  Retrieve and pack shared variables.
- void unpackSharedVariables (AlpsEncoded &encoded)

  Unpack and store shared variables.

Protected Attributes

- OsiSolverInterface ∗ origLpSolver_

  Input by user.
- OsiSolverInterface ∗ presolvedLpSolver_

  Presolved.
- OsiSolverInterface ∗ lpSolver_

  Actually used.

- CoinPackedMatrix ∗ colMatrix_

  Column majored matrix.
- double incObjValue_

  Incumbent objective value.
- double ∗ incumbent_

  Incumbent.
- double cutoff_

  Cutoff in lp solver.
- double cutoffInc_

  Cutoff increment.
- BcpsBranchStrategy ∗ branchStrategy_

  Variable selection function.
- int numObjects_

  Number of objects.
- BcpsObject ∗∗ objects_

  The set of objects.
- char ∗ sharedObjectMark_

  The objects that can be shared.
- int ∗ priority_

  Priorities of integer object.
- AlpsTreeNode ∗ activeNode_

  Active node.
- int numStrong_

  Number of strong branching.
- int numBranchResolve_

  Maximum number of resolve during branching.
- int numHeuristics_

  Number of heuristics.
- BlisHeuristic ∗∗ heuristics_

  The list of heuristics.
- BlisCutStrategy cutStrategy_

  If use cut generators.
- int cutGenerationFrequency_

  Frequency of cut generation.
- int numCutGenerators_

  Number of cut generators used.
- int maxNumCons_

  Number of cuts can be generators.
- BlisConGenerator ∗∗ generators_

  The list of cut generators used.
- BcpsConstraintPool ∗ constraintPool_

  Store all the cuts.
- BlisConstraint ∗∗ oldConstraints_

  Temporary store old cuts at a node when installing a node.
- int oldConstraintsSize_

  The memory size allocated for oldConstraints_.
- int numOldConstraints_

Number of old constraints.

- double $*$ conRandoms_

  Random keys.

- int denseConCutoff_

  Dense constraint cutoff.

- BlisParams $*$ BlisPar_

  Blis parameters.

- CoinMessageHandler $*$ blisMessageHandler_

  Message handler.

- CoinMessages blisMessages_

  Blis messages.

- int numNodes_

  Number of processed nodes.

- int numIterations_

  Number of lp(Simplex) iterations.

- int aveIterations_

  Average number of lp iterations to solve a subproblem.

- BcpsConstraintPool $*$ constraintPoolSend_

  Constraints that can be sent/broadcasted to other processes.

- BcpsConstraintPool $*$ constraintPoolReceive_

  Constraints that are received from other processses.

- double $*$ varLB_

  Variable and constraint bounds.

- int numCols_

  Number of columns/rows/elements.

- double objSense_

  Objective function.

- int numIntObjects_

  Column types.

- std::vector$<$ BcpsVariable $*$ $>$ inputVar_

  User's input objects.

- double $*$ startVarLB_

  Starting var/con bounds for processing each node.

- int $*$ tempVarLBPos_

  Tempory storage for var/con indices.

3.13.1 Detailed Description

Definition at line 69 of file BlisModel.h.

3.13.2 Constructor & Destructor Documentation

3.13.2.1 BlisModel::BlisModel ( ) [inline]

Default construtor.

Definition at line 339 of file BlisModel.h.

3.13.2.2 virtual BlisModel::∼BlisModel ( ) [virtual]

Destructor.

3.13.3 Member Function Documentation

3.13.3.1 void BlisModel::createObjects ( ) [protected]

Create variables and constraints.

3.13.3.2 void BlisModel::gutsOfDestructor ( )

Actual destructor.

3.13.3.3 virtual void BlisModel::readInstance (const char ∗ *dataFile*) [virtual]

For parallel code, only the master calls this function.

1) Read in the instance data 2) Set colMatrix_, varLB_, varUB_, conLB_, conUB numCols_, numRows_ 3) Set objCoef_ and objSense_ 4) Set colType_ ('C', 'I', or 'B') 5) Create variables and constraints 6) Set numCoreVariables_ and numCoreConstraints_

3.13.3.4 virtual void BlisModel::importModel (std::vector< **BlisVariable** ∗ > *vars,* std::vector< **BlisConstraint** ∗ > *cons*) [virtual]

For parallel code, only the master calls this function.

Import model from vars and cons. 1) Set colMatrix_, varLB_, varUB_, conLB_, conUB numCols_, numRows_ 2) Set objCoef_ (Assume minimization) 3) Set colType_ ('C', 'I', or 'B') 4) Set variables_ and constraints_ 5) Set numCoreVariables_ and numCoreConstraints_ NOTE: Blis takes over the memory ownship of vars and cons, which means users must NOT free vars or cons.

3.13.3.5 virtual void BlisModel::readParameters (const int *argnum,* const char ∗const ∗ *arglist*) [virtual]

Read in Alps, Blis parameters.

3.13.3.6 virtual void BlisModel::writeParameters (std::ostream & *outstream*) const [virtual]

Write out parameters.

3.13.3.7 virtual AlpsTreeNode∗ BlisModel::createRoot ( ) [virtual]

For parallel code, only the master calls this function.

Create the root node based on model.

3.13.3.8 virtual bool BlisModel::setupSelf ( ) [virtual]

All processes call this function.

Do necessary work to make model usable. Return success or not. 1) Set numIntObjects_, intColIndices_, intObject-Indices_ 2) Load problem to LP solver. 3) Create integer objects (must after load to lp since using lp info) 4) Set branch strategy 5) Add heuristics 6) Add Cgl cut generators

3.13.3.9 virtual void BlisModel::preprocess ( ) [virtual]

Preprocessing the model.

3.13.3.10 virtual void BlisModel::postprocess ( ) [virtual]

Postprocessing the searching results.

3.13.3.11 virtual void BlisModel::setSolver (OsiSolverInterface ∗ *si*) [inline], [virtual]

Set lp solver.

Definition at line 440 of file BlisModel.h.

3.13.3.12 virtual OsiSolverInterface∗ BlisModel::getSolver ( ) [inline], [virtual]

Get lp solver.

Definition at line 443 of file BlisModel.h.

3.13.3.13 virtual OsiSolverInterface∗ BlisModel::solver ( ) [inline], [virtual]

Get lp solver.

Definition at line 446 of file BlisModel.h.

3.13.3.14 bool BlisModel::resolve ( )

Resolving a lp.

3.13.3.15 void BlisModel::setActiveNode (AlpsTreeNode ∗ *node*) [inline]

Set active node.

Definition at line 452 of file BlisModel.h.

3.13.3.16 void BlisModel::setSolEstimate (double *est*) [inline]

Set the solution estimate of the active node.

Definition at line 455 of file BlisModel.h.

3.13.3.17 int BlisModel::getNumStrong ( ) [inline]

Get number of strong branchings.

Definition at line 458 of file BlisModel.h.

3.13.3.18 void BlisModel::addNumStrong (int *num* = 1) [inline]

Add num to number of strong branchings.

Definition at line 461 of file BlisModel.h.

3.13.3.19 int BlisModel::getNumBranchResolve ( ) [inline]

Get the maximum number of resolve during branching.

Definition at line 464 of file BlisModel.h.

3.13.3.20 void BlisModel::setNumBranchResolve (int *num*) [inline]

Set the maximum number of resolve during branching.

Definition at line 467 of file BlisModel.h.

3.13.3.21 double∗ BlisModel::getObjCoef ( ) const [inline]

Get objective coefficients.

Definition at line 474 of file BlisModel.h.

3.13.3.22 const double∗ BlisModel::getColLower ( ) [inline]

Get column lower bound.

Definition at line 477 of file BlisModel.h.

3.13.3.23 const double∗ BlisModel::getColUpper ( ) [inline]

Get column upper bound.

Definition at line 480 of file BlisModel.h.

3.13.3.24 int BlisModel::getNumCols ( ) [inline]

Get number of columns.

Definition at line 483 of file BlisModel.h.

3.13.3.25 int BlisModel::getNumRows ( ) [inline]

Get number of rows.

Definition at line 486 of file BlisModel.h.

3.13.3.26 double∗ BlisModel::varLB ( ) [inline]

Get variable bounds arrary.

Definition at line 489 of file BlisModel.h.

3.13.3.27 double∗ BlisModel::conLB ( ) [inline]

Get original constraint bounds arrary.

Definition at line 493 of file BlisModel.h.

3.13.3.28 double∗ BlisModel::startVarLB ( ) [inline]

The starting variable bounds arrary of a subproblem (internal use).

Definition at line 497 of file BlisModel.h.

3.13.3.29 double∗ BlisModel::startConLB ( ) [inline]

The starting constraint bounds arrary of a subproblem (internal use).

Definition at line 501 of file BlisModel.h.

3.13.3.30 int∗ BlisModel::tempVarLBPos ( ) `[inline]`

Temparory storage.

Definition at line 505 of file BlisModel.h.

3.13.3.31 double BlisModel::getLpObjValue ( ) const `[inline]`

Get current objective function value.

Definition at line 515 of file BlisModel.h.

3.13.3.32 const double∗ BlisModel::getLpSolution ( ) const `[inline]`

Get active lp solution.

Definition at line 518 of file BlisModel.h.

3.13.3.33 int BlisModel::getNumSolutions ( ) const `[inline]`

Get number of solutions.

Definition at line 525 of file BlisModel.h.

3.13.3.34 int BlisModel::getNumHeurSolutions ( ) const `[inline]`

Get number of heuristic solutions.

Definition at line 528 of file BlisModel.h.

3.13.3.35 double∗ BlisModel::incumbent ( ) `[inline]`

Return best ip solution found so far.

Definition at line 531 of file BlisModel.h.

3.13.3.36 int BlisModel::storeSolution (BlisSolutionType *how*, BlisSolution ∗ *sol*)

Record a new incumbent solution and update objectiveValue.

3.13.3.37 double BlisModel::getCutoff ( ) const `[inline]`

Get cut off value.

Definition at line 537 of file BlisModel.h.

3.13.3.38 void BlisModel::setCutoff (double *co*) `[inline]`

Set cut off value.

Definition at line 540 of file BlisModel.h.

3.13.3.39 BlisSolution∗ BlisModel::feasibleSolutionHeur (const double ∗ *solution*)

Test if a solution found by heuristic is feasible.

3.13.3.40 virtual BlisSolution∗ BlisModel::feasibleSolution (int & *numIntegerInfs*, int & *numObjectInfs*) `[virtual]`

Test the current LP solution for feasiblility.

Scan all objects for indications of infeasibility. This is broken down into simple integer infeasibility (`numIntegerInfs`) and all other reports of infeasibility(`numObjectInfs`).

3.13.3.41 virtual BlisSolution∗ BlisModel::userFeasibleSolution (const double ∗ *solution,* bool & *feasible*) [inline], [virtual]

User's criteria for a feasible solution.

If user think the given solution is feasible then need 1) set userFeasible to true, and 2) return a non-null solution. If user think the solution is infeasible then need 1) set userFeasible to false, and 2) return a null.

Definition at line 571 of file BlisModel.h.

3.13.3.42 BcpsBranchStrategy∗ BlisModel::branchStrategy ( ) const [inline]

Get the current branching strategy.

Definition at line 587 of file BlisModel.h.

3.13.3.43 void BlisModel::setBranchingMethod (BcpsBranchStrategy ∗ *method*) [inline]

Set the branching strategy.

Definition at line 591 of file BlisModel.h.

3.13.3.44 void BlisModel::setBranchingMethod (BcpsBranchStrategy & *method*) [inline]

Set the branching stratedy.

This is an overloaded member function, provided for convenience. It differs from the above function only in what argument(s) it accepts.

Definition at line 597 of file BlisModel.h.

3.13.3.45 int BlisModel::numObjects ( ) const [inline]

Get the number of objects.

Definition at line 609 of file BlisModel.h.

3.13.3.46 void BlisModel::setNumObjects (int *num*) [inline]

Set the number of objects.

Definition at line 612 of file BlisModel.h.

3.13.3.47 BcpsObject∗∗ BlisModel::objects ( ) [inline]

Get the array of objects.

Definition at line 615 of file BlisModel.h.

3.13.3.48 BcpsObject∗ BlisModel::objects (int *which*) [inline]

Get the specified object.

Definition at line 618 of file BlisModel.h.

3.13.3.49 void BlisModel::setSharedObjectMark (int *i*) [inline]

Mark object to be shared.

Definition at line 621 of file BlisModel.h.

3.13.3.50 void BlisModel::clearSharedObjectMark ( ) [inline]

Clear all the share mark.

Definition at line 624 of file BlisModel.h.

3.13.3.51 void BlisModel::deleteObjects ( )

Delete all object information.

3.13.3.52 void BlisModel::addObjects (int *numObjects,* BcpsObject $**$ *objects*)

Add in object information.

Objects are cloned; the owner can delete the originals.

3.13.3.53 void BlisModel::createIntgerObjects (bool *startAgain*)

Identify integer variable.

3.13.3.54 int$*$ BlisModel::getIntObjIndices ( ) const [inline]

Get integers' object indices.

Definition at line 642 of file BlisModel.h.

3.13.3.55 int BlisModel::getNumIntObjects ( ) const [inline]

Get number of integers.

Definition at line 645 of file BlisModel.h.

3.13.3.56 int$*$ BlisModel::getIntColIndices ( ) const [inline]

Get integers' column indices.

Definition at line 648 of file BlisModel.h.

3.13.3.57 bool BlisModel::checkInteger (double *value*) const [inline]

Check if a value is integer.

Definition at line 651 of file BlisModel.h.

3.13.3.58 void BlisModel::addHeuristic (BlisHeuristic $*$ *heur*)

Add a heuristic.

3.13.3.59 BlisHeuristic$*$ BlisModel::heuristics (int *i*) const [inline]

Get a specific heuristic.

Definition at line 672 of file BlisModel.h.

3.13.3.60 int BlisModel::numHeuristics ( ) const [inline]

Get the number of heuristics.

Definition at line 675 of file BlisModel.h.

3.13.3.61 void BlisModel::addCutGenerator (**BlisConGenerator** ∗ *generator*)

Add a Blis cut generator.

3.13.3.62 void BlisModel::addCutGenerator (CglCutGenerator ∗ *generator*, const char ∗ *name* = `NULL`, BlisCutStrategy *strategy* = `BlisCutStrategyAuto`, int *cutGenerationFrequency* = `1`, bool *normal* = `true`, bool *atSolution* = `false`, bool *whenInfeasible* = `false`)

Add a Cgl cut generator.

3.13.3.63 **BlisConGenerator**∗ BlisModel::cutGenerators (int *i*) const `[inline]`

Get a specific cut generator.

Definition at line 694 of file BlisModel.h.

3.13.3.64 int BlisModel::numCutGenerators ( ) const `[inline]`

Get the number of cut generators.

Definition at line 697 of file BlisModel.h.

3.13.3.65 int BlisModel::getMaxNumCons ( ) const `[inline]`

Get the max number of cuts can be generated.

Definition at line 700 of file BlisModel.h.

3.13.3.66 void BlisModel::setMaxNumCons (int *m*) `[inline]`

Set the max number of cuts can be generated.

Definition at line 703 of file BlisModel.h.

3.13.3.67 BcpsConstraintPool∗ BlisModel::constraintPool ( ) `[inline]`

Access constraint pool.

Definition at line 706 of file BlisModel.h.

3.13.3.68 BcpsConstraintPool∗ BlisModel::constraintPoolReceive ( ) `[inline]`

Access receive constraint pool.

Definition at line 709 of file BlisModel.h.

3.13.3.69 BcpsConstraintPool∗ BlisModel::constraintPoolSend ( ) `[inline]`

Access send constraint pool.

Definition at line 713 of file BlisModel.h.

3.13.3.70 int BlisModel::getNumOldConstraints ( ) const `[inline]`

Get number of old constraints.

Definition at line 717 of file BlisModel.h.

3.13.3.71 void BlisModel::setNumOldConstraints (int *num*) `[inline]`

Set number of old constraints.

Definition at line 720 of file BlisModel.h.

3.13.3.72 int BlisModel::getOldConstraintsSize ( ) const [inline]

Get max number of old constraints.

Definition at line 723 of file BlisModel.h.

3.13.3.73 void BlisModel::setOldConstraintsSize (int *num*) [inline]

Set max number of old constraints.

Definition at line 726 of file BlisModel.h.

3.13.3.74 BlisConstraint** BlisModel::oldConstraints ( ) [inline]

Access old constraints.

Definition at line 729 of file BlisModel.h.

3.13.3.75 void BlisModel::setOldConstraints (BlisConstraint ** *old*) [inline]

set old constraints.

Definition at line 732 of file BlisModel.h.

3.13.3.76 void BlisModel::delOldConstraints ( ) [inline]

Set max number of old constraints.

Definition at line 735 of file BlisModel.h.

3.13.3.77 BlisCutStrategy BlisModel::getCutStrategy ( ) const [inline]

Query constraint generation strategy.

Definition at line 742 of file BlisModel.h.

3.13.3.78 void BlisModel::setCutStrategy (BlisCutStrategy *u*) [inline]

Set constraint generation strategy.

Definition at line 747 of file BlisModel.h.

3.13.3.79 int BlisModel::getCutGenerationFrequency ( ) const [inline]

Query constraint generation frequency.

Definition at line 750 of file BlisModel.h.

3.13.3.80 void BlisModel::setCutStrategy (int *f*) [inline]

Set constraint generation frequency.

Definition at line 753 of file BlisModel.h.

3.13.3.81 int BlisModel::getDenseConCutoff ( ) const [inline]

Get the thresheld to be considered as a dense constraint.

Definition at line 756 of file BlisModel.h.

3.13.3.82 void BlisModel::setDenseConCutoff (int *cutoff*) [inline]

Set the thresheld to be considered as a dense constraint.

Definition at line 759 of file BlisModel.h.

3.13.3.83 double∗ BlisModel::getConRandoms ( ) const [inline]

Get randoms for check parallel constraints.

Definition at line 762 of file BlisModel.h.

3.13.3.84 void BlisModel::passInPriorities (const int ∗ *priorities,* bool *ifNotSimpleIntegers,* int *defaultValue =* 1000)

Pass in branching priorities.

If ifClique then priorities are on cliques otherwise priorities are on integer variables. Other type (if exists set to default) 1 is highest priority. (well actually -INT_MAX is but that's ugly) If hotstart $>$ 0 then branches are created to force the variable to the value given by best solution. This enables a sort of hot start. The node choice should be greatest depth and hotstart should normally be switched off after a solution.

If ifNotSimpleIntegers true then appended to normal integers

3.13.3.85 const int∗ BlisModel::priority ( ) const [inline]

Priorities.

Definition at line 787 of file BlisModel.h.

3.13.3.86 virtual void BlisModel::modelLog ( ) [virtual]

Log of specific models.

3.13.3.87 int BlisModel::getNumNodes ( ) const [inline]

Get how many Nodes it took to solve the problem.

Definition at line 808 of file BlisModel.h.

3.13.3.88 int BlisModel::getNumIterations ( ) const [inline]

Get how many iterations it took to solve the problem.

Definition at line 811 of file BlisModel.h.

3.13.3.89 int BlisModel::getAveIterations ( ) const [inline]

Get the average iterations it took to solve a lp.

Definition at line 814 of file BlisModel.h.

3.13.3.90 void BlisModel::addNumNodes (int *newNodes =* 1) [inline]

Increment node count.

Definition at line 817 of file BlisModel.h.

3.13.3.91 void BlisModel::addNumIterations (int *newIter*) [inline]

Increment Iteration count.

Definition at line 820 of file BlisModel.h.

3.13.3.92 CoinMessageHandler∗ BlisModel::blisMessageHandler ( ) const [inline]

Get the message handler.

Definition at line 826 of file BlisModel.h.

3.13.3.93 CoinMessages BlisModel::blisMessages ( ) [inline]

Return messages.

Definition at line 830 of file BlisModel.h.

3.13.3.94 BlisParams∗ BlisModel::BlisPar ( ) [inline]

Access parameters.

Definition at line 834 of file BlisModel.h.

3.13.3.95 virtual void BlisModel::nodeLog (AlpsTreeNode ∗ *node,* bool *force*) [virtual]

Node log.

3.13.3.96 virtual bool BlisModel::fathomAllNodes ( ) [virtual]

Return true, if all nodes can be fathomed.

3.13.3.97 AlpsReturnStatus BlisModel::encodeBlis (AlpsEncoded ∗ *encoded*) const [protected]

Pack Blis portion of the model into an encoded object.

3.13.3.98 AlpsReturnStatus BlisModel::decodeBlis (AlpsEncoded & *encoded*) [protected]

Unpack Blis portion of the model from an encoded object.

3.13.3.99 void BlisModel::packSharedPseudocost (AlpsEncoded ∗ *encoded,* int *numToShare*) [protected]

Retrieve and pack shared pseudocost.

3.13.3.100 void BlisModel::packSharedConstraints (AlpsEncoded ∗ *encoded*) [protected]

Retrieve and pack shared constraints.

3.13.3.101 void BlisModel::unpackSharedConstraints (AlpsEncoded & *encoded*) [protected]

Unpack and store shared constraints.

3.13.3.102 void BlisModel::packSharedVariables (AlpsEncoded ∗ *encoded*) [protected]

Retrieve and pack shared variables.

3.13.3.103 void BlisModel::unpackSharedVariables (AlpsEncoded & *encoded*) [protected]

Unpack and store shared variables.

3.13.3.104 virtual void BlisModel::registerKnowledge ( ) [virtual]

Register knowledge.

3.13.3.105 virtual AlpsEncoded∗ BlisModel::encode ( ) const [virtual]

The method that encodes the model into an encoded object.

3.13.3.106 virtual void BlisModel::decodeToSelf (AlpsEncoded &) [virtual]

The method that decodes the model from an encoded object.

3.13.3.107 virtual AlpsEncoded∗ BlisModel::packSharedKnowlege ( ) [virtual]

Pack knowledge to be shared with others into an encoded object.

Return NULL means that no knowledge can be shared.

3.13.3.108 virtual void BlisModel::unpackSharedKnowledge (AlpsEncoded &) [virtual]

Unpack and store shared knowledge from an encoded object.

3.13.4 Member Data Documentation

3.13.4.1 OsiSolverInterface∗ BlisModel::origLpSolver_ [protected]

Input by user.

Definition at line 78 of file BlisModel.h.

3.13.4.2 OsiSolverInterface∗ BlisModel::presolvedLpSolver_ [protected]

Presolved.

Definition at line 80 of file BlisModel.h.

3.13.4.3 OsiSolverInterface∗ BlisModel::lpSolver_ [protected]

Actually used.

If using presolve, then it is presolved; otherwise it is the original.

Definition at line 83 of file BlisModel.h.

3.13.4.4 CoinPackedMatrix∗ BlisModel::colMatrix_ [protected]

Column majored matrix.

(For MPS file, etc.)

Definition at line 90 of file BlisModel.h.

3.13.4.5 double∗ BlisModel::varLB_ [protected]

Variable and constraint bounds.

Definition at line 94 of file BlisModel.h.

3.13.4.6 double BlisModel::objSense_ [protected]

Objective function.

Definition at line 109 of file BlisModel.h.

3.13.4.7 int BlisModel::numIntObjects_ [protected]

Column types.

Definition at line 115 of file BlisModel.h.

3.13.4.8 std::vector< BcpsVariable *> BlisModel::inputVar_ [protected]

User's input objects.

Definition at line 121 of file BlisModel.h.

3.13.4.9 double BlisModel::incObjValue_ [protected]

Incumbent objective value.

Definition at line 143 of file BlisModel.h.

3.13.4.10 double BlisModel::cutoff_ [protected]

Cutoff in lp solver.

Definition at line 149 of file BlisModel.h.

3.13.4.11 double BlisModel::cutoffInc_ [protected]

Cutoff increment.

Definition at line 152 of file BlisModel.h.

3.13.4.12 BcpsBranchStrategy* BlisModel::branchStrategy_ [protected]

Variable selection function.

Definition at line 170 of file BlisModel.h.

3.13.4.13 int BlisModel::numObjects_ [protected]

Number of objects.

Definition at line 179 of file BlisModel.h.

3.13.4.14 BcpsObject** BlisModel::objects_ [protected]

The set of objects.

Definition at line 182 of file BlisModel.h.

3.13.4.15 char* BlisModel::sharedObjectMark_ [protected]

The objects that can be shared.

Definition at line 185 of file BlisModel.h.

3.13.4.16 int* BlisModel::priority_ [protected]

Priorities of integer object.

Definition at line 188 of file BlisModel.h.

3.13.4.17 AlpsTreeNode* BlisModel::activeNode_ [protected]

Active node.

Definition at line 191 of file BlisModel.h.

3.13.4.18 int BlisModel::numStrong_ [protected]

Number of strong branching.

Definition at line 194 of file BlisModel.h.

3.13.4.19 int BlisModel::numBranchResolve_ [protected]

Maximum number of resolve during branching.

Definition at line 200 of file BlisModel.h.

3.13.4.20 int BlisModel::numHeuristics_ [protected]

Number of heuristics.

Definition at line 207 of file BlisModel.h.

3.13.4.21 BlisHeuristic** BlisModel::heuristics_ [protected]

The list of heuristics.

Definition at line 210 of file BlisModel.h.

3.13.4.22 BlisCutStrategy BlisModel::cutStrategy_ [protected]

If use cut generators.

Definition at line 217 of file BlisModel.h.

3.13.4.23 int BlisModel::numCutGenerators_ [protected]

Number of cut generators used.

Definition at line 223 of file BlisModel.h.

3.13.4.24 int BlisModel::maxNumCons_ [protected]

Number of cuts can be generators.

Definition at line 226 of file BlisModel.h.

3.13.4.25 BlisConGenerator** BlisModel::generators_ [protected]

The list of cut generators used.

Definition at line 229 of file BlisModel.h.

3.13.4.26 BcpsConstraintPool* BlisModel::constraintPool_ [protected]

Store all the cuts.

Definition at line 232 of file BlisModel.h.

3.13.4.27 BlisConstraint∗∗ BlisModel::oldConstraints_ [protected]

Temporary store old cuts at a node when installing a node.

Definition at line 235 of file BlisModel.h.

3.13.4.28 int BlisModel::oldConstraintsSize_ [protected]

The memory size allocated for oldConstraints_.

Definition at line 238 of file BlisModel.h.

3.13.4.29 int BlisModel::numOldConstraints_ [protected]

Number of old constraints.

Definition at line 241 of file BlisModel.h.

3.13.4.30 double∗ BlisModel::conRandoms_ [protected]

Random keys.

Definition at line 244 of file BlisModel.h.

3.13.4.31 BlisParams∗ BlisModel::BlisPar_ [protected]

Blis parameters.

Definition at line 254 of file BlisModel.h.

3.13.4.32 CoinMessageHandler∗ BlisModel::blisMessageHandler_ [protected]

Message handler.

Definition at line 257 of file BlisModel.h.

3.13.4.33 CoinMessages BlisModel::blisMessages_ [protected]

Blis messages.

Definition at line 260 of file BlisModel.h.

3.13.4.34 int BlisModel::numNodes_ [protected]

Number of processed nodes.

Definition at line 263 of file BlisModel.h.

3.13.4.35 int BlisModel::numIterations_ [protected]

Number of lp(Simplex) iterations.

Definition at line 266 of file BlisModel.h.

3.13.4.36 int BlisModel::aveIterations_ [protected]

Average number of lp iterations to solve a subproblem.

Definition at line 269 of file BlisModel.h.

3.13.4.37 int∗ BlisModel::tempVarLBPos_ [protected]

Tempory storage for var/con indices.

Definition at line 277 of file BlisModel.h.

3.13.4.38 BcpsConstraintPool∗ BlisModel::constraintPoolSend_ [protected]

Constraints that can be sent/broadcasted to other processes.

Definition at line 288 of file BlisModel.h.

3.13.4.39 BcpsConstraintPool∗ BlisModel::constraintPoolReceive_ [protected]

Constraints that are received from other processses.

Definition at line 291 of file BlisModel.h.

3.13.4.40 bool BlisModel::isRoot_

If root node.

Definition at line 296 of file BlisModel.h.

3.13.4.41 int BlisModel::boundingPass_

The number of passes during bounding procedure.

Definition at line 299 of file BlisModel.h.

3.13.4.42 double BlisModel::integerTol_

Integer tolerance.

Definition at line 302 of file BlisModel.h.

3.13.4.43 double BlisModel::optimalRelGap_

Input relative optimal gap.

Definition at line 305 of file BlisModel.h.

3.13.4.44 double BlisModel::optimalAbsGap_

Input absolute optimal gap.

Definition at line 308 of file BlisModel.h.

3.13.4.45 double BlisModel::currRelGap_

Current relative optimal gap.

Definition at line 311 of file BlisModel.h.

3.13.4.46 double BlisModel::currAbsGap_

Current absolute optimal gap.

Definition at line 314 of file BlisModel.h.

3.13.4.47 BlisHeurStrategy BlisModel::heurStrategy_

If use heuristics.

Definition at line 317 of file BlisModel.h.

3.13.4.48 int BlisModel::heurCallFrequency_

Frequency of using heuristics.

Definition at line 320 of file BlisModel.h.

3.13.4.49 OsiCuts BlisModel::newCutPool_

Store new cuts in each pass.

Definition at line 323 of file BlisModel.h.

3.13.4.50 std::vector< AlpsTreeNode ∗> BlisModel::leafToRootPath

Record the path from leaf to root.

Definition at line 326 of file BlisModel.h.

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

- BlisModel.h

3.14 BlisNodeDesc Class Reference

Public Member Functions

- BlisNodeDesc ()

  Default constructor.
- BlisNodeDesc (BlisModel ∗m)

  Useful constructor.
- virtual ∼BlisNodeDesc ()

  Destructor.
- void setBasis (CoinWarmStartBasis ∗&ws)

  Set basis.
- CoinWarmStartBasis ∗ getBasis () const

  Get warm start basis.
- void setBranchedDir (int d)

  Set branching direction.
- int getBranchedDir () const

  Get branching direction.
- void setBranchedInd (int d)

  Set branching object index.
- int getBranchedInd () const

  Get branching object index.
- void setBranchedVal (double d)

  Set branching value.
- double getBranchedVal () const

  Get branching direction.

- virtual AlpsReturnStatus encode (AlpsEncoded ∗encoded) const

  Pack node description into an encoded.
- virtual AlpsReturnStatus decode (AlpsEncoded &encoded)

  Unpack a node description from an encoded.

Protected Member Functions

- AlpsReturnStatus encodeBlis (AlpsEncoded ∗encoded) const

  Pack blis portion of node description into an encoded.
- AlpsReturnStatus decodeBlis (AlpsEncoded &encoded)

  Unpack blis portion of node description from an encoded.

3.14.1 Detailed Description

Definition at line 40 of file BlisNodeDesc.h.

3.14.2 Constructor & Destructor Documentation

3.14.2.1 BlisNodeDesc::BlisNodeDesc ( ) `[inline]`

Default constructor.

Definition at line 59 of file BlisNodeDesc.h.

3.14.2.2 BlisNodeDesc::BlisNodeDesc (BlisModel ∗ *m*) `[inline]`

Useful constructor.

Definition at line 68 of file BlisNodeDesc.h.

3.14.2.3 virtual BlisNodeDesc::∼BlisNodeDesc ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 78 of file BlisNodeDesc.h.

3.14.3 Member Function Documentation

3.14.3.1 void BlisNodeDesc::setBasis (CoinWarmStartBasis ∗& *ws*) `[inline]`

Set basis.

Definition at line 81 of file BlisNodeDesc.h.

3.14.3.2 CoinWarmStartBasis∗ BlisNodeDesc::getBasis ( ) const `[inline]`

Get warm start basis.

Definition at line 88 of file BlisNodeDesc.h.

3.14.3.3 void BlisNodeDesc::setBranchedDir (int *d*) `[inline]`

Set branching direction.

Definition at line 91 of file BlisNodeDesc.h.

3.14.3.4 int BlisNodeDesc::getBranchedDir ( ) const [inline]

Get branching direction.

Definition at line 94 of file BlisNodeDesc.h.

3.14.3.5 void BlisNodeDesc::setBranchedInd (int *d*) [inline]

Set branching object index.

Definition at line 97 of file BlisNodeDesc.h.

3.14.3.6 int BlisNodeDesc::getBranchedInd ( ) const [inline]

Get branching object index.

Definition at line 100 of file BlisNodeDesc.h.

3.14.3.7 void BlisNodeDesc::setBranchedVal (double *d*) [inline]

Set branching value.

Definition at line 103 of file BlisNodeDesc.h.

3.14.3.8 double BlisNodeDesc::getBranchedVal ( ) const [inline]

Get branching direction.

Definition at line 106 of file BlisNodeDesc.h.

3.14.3.9 AlpsReturnStatus BlisNodeDesc::encodeBlis (AlpsEncoded ∗ *encoded*) const [inline], [protected]

Pack blis portion of node description into an encoded.

Definition at line 111 of file BlisNodeDesc.h.

3.14.3.10 AlpsReturnStatus BlisNodeDesc::decodeBlis (AlpsEncoded & *encoded*) [inline], [protected]

Unpack blis portion of node description from an encoded.

Definition at line 133 of file BlisNodeDesc.h.

3.14.3.11 virtual AlpsReturnStatus BlisNodeDesc::encode (AlpsEncoded ∗ *encoded*) const [inline], [virtual]

Pack node description into an encoded.

Definition at line 157 of file BlisNodeDesc.h.

3.14.3.12 virtual AlpsReturnStatus BlisNodeDesc::decode (AlpsEncoded & *encoded*) [inline], [virtual]

Unpack a node description from an encoded.

Fill member data.

Definition at line 167 of file BlisNodeDesc.h.

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

- BlisNodeDesc.h

3.15 BlisObjectInt Class Reference

Public Member Functions

- BlisObjectInt ()

  Default Constructor.
- BlisObjectInt (int objectIndex, int iColumn, double lb, double ub, double breakEven=0.5)

  Useful constructor - passed integer index and model index.
- virtual ∼BlisObjectInt ()

  Destructor.
- BlisObjectInt (const BlisObjectInt &)

  Copy constructor.
- virtual BcpsObject ∗ clone () const

  Clone an object.
- BlisObjectInt & operator= (const BlisObjectInt &rhs)

  Assignment operator.
- virtual double infeasibility (BcpsModel ∗m, int &preferredWay) const

  Infeasibility.
- virtual void feasibleRegion (BcpsModel ∗m)

  Set bounds to contain the current solution.
- virtual BcpsBranchObject ∗ createBranchObject (BcpsModel ∗m, int direction) const

  Creates a branching object.
- virtual BcpsBranchObject ∗ preferredNewFeasible (BcpsModel ∗m) const

  Given a valid solution (with reduced costs, etc.), return a branching object which would give a new feasible point in the good direction.
- virtual BcpsBranchObject ∗ notPreferredNewFeasible (BcpsModel ∗m) const

  Given a valid solution (with reduced costs, etc.), return a branching object which would give a new feasible point in a bad direction.
- virtual void resetBounds (BcpsModel ∗m)

  Reset original upper and lower bound values from the solver.
- virtual int columnIndex () const

  Column number if single column object, otherwise.
- double breakEven () const

  Breakeven e.g 0.7 -> >= 0.7 go up first.
- void setBreakEven (double value)

  Set breakeven e.g 0.7 -> >= 0.7 go up first.
- BlisPseudocost & pseudocost ()

  Access pseudocost.

Get or set Original bounds.

- double **originalLowerBound** () const
- void **setOriginalLowerBound** (double value)
- double **originalUpperBound** () const
- void **setOriginalUpperBound** (double value)

Protected Attributes

- int columnIndex_

  Column index in the lp model.
- double originalLower_

  Original lower bound.
- double originalUpper_

  Original upper bound.
- double breakEven_

  Breakeven i.e.
- BlisPseudocost pseudocost_

  Pseudo cost.

3.15.1 Detailed Description

Definition at line 36 of file BlisObjectInt.h.

3.15.2 Constructor & Destructor Documentation

3.15.2.1 BlisObjectInt::BlisObjectInt ( )

Default Constructor.

3.15.2.2 BlisObjectInt::BlisObjectInt (int *objectIndex*, int *iColumn*, double *lb*, double *ub*, double *breakEven* = `0.5`)

Useful constructor - passed integer index and model index.

3.15.2.3 virtual BlisObjectInt::∼BlisObjectInt ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 68 of file BlisObjectInt.h.

3.15.2.4 BlisObjectInt::BlisObjectInt (const BlisObjectInt &)

Copy constructor.

3.15.3 Member Function Documentation

3.15.3.1 virtual BcpsObject∗ BlisObjectInt::clone ( ) const `[inline]`, `[virtual]`

Clone an object.

Definition at line 74 of file BlisObjectInt.h.

3.15.3.2 BlisObjectInt& BlisObjectInt::operator= (const BlisObjectInt & *rhs*)

Assignment operator.

3.15.3.3 virtual double BlisObjectInt::infeasibility (BcpsModel ∗ *m*, int & *preferredWay*) const `[virtual]`

Infeasibility.

Range is [0.0, 0.5].

Parameters

PreferredWay	the direction close to an integer.

3.15.3.4 virtual void BlisObjectInt::feasibleRegion (BcpsModel ∗ *m*) [virtual]

Set bounds to contain the current solution.

More precisely, for the variable associated with this object, take the value given in the current solution, force it within the current bounds if required, then set the bounds to fix the variable at the integer nearest the solution value.

3.15.3.5 virtual BcpsBranchObject∗ BlisObjectInt::createBranchObject (BcpsModel ∗ *m,* int *direction*) const [virtual]

Creates a branching object.

3.15.3.6 virtual BcpsBranchObject∗ BlisObjectInt::preferredNewFeasible (BcpsModel ∗ *m*) const [virtual]

Given a valid solution (with reduced costs, etc.), return a branching object which would give a new feasible point in the good direction.

The preferred branching object will force the variable to be +/-1 from its current value, depending on the reduced cost and objective sense. If movement in the direction which improves the objective is impossible due to bounds on the variable, the branching object will move in the other direction. If no movement is possible, the method returns NULL.

Only the bounds on this variable are considered when determining if the new point is feasible.

3.15.3.7 virtual BcpsBranchObject∗ BlisObjectInt::notPreferredNewFeasible (BcpsModel ∗ *m*) const [virtual]

Given a valid solution (with reduced costs, etc.), return a branching object which would give a new feasible point in a bad direction.

As for preferredNewFeasible(), but the preferred branching object will force movement in a direction that degrades the objective.

3.15.3.8 virtual void BlisObjectInt::resetBounds (BcpsModel ∗ *m*) [virtual]

Reset original upper and lower bound values from the solver.

Handy for updating bounds held in this object after bounds held in the solver have been tightened.

3.15.3.9 virtual int BlisObjectInt::columnIndex ( ) const [inline], [virtual]

Column number if single column object, otherwise.

Definition at line 129 of file BlisObjectInt.h.

3.15.3.10 double BlisObjectInt::breakEven ( ) const [inline]

Breakeven e.g 0.7 -> >= 0.7 go up first.

Definition at line 140 of file BlisObjectInt.h.

3.15.3.11 void BlisObjectInt::setBreakEven (double *value*) [inline]

Set breakeven e.g 0.7 -> >= 0.7 go up first.

Definition at line 143 of file BlisObjectInt.h.

3.15.3.12 BlisPseudocost& BlisObjectInt::pseudocost ( ) [inline]

Access pseudocost.

Definition at line 146 of file BlisObjectInt.h.

3.15.4 Member Data Documentation

3.15.4.1 int BlisObjectInt::columnIndex_ [protected]

Column index in the lp model.

Definition at line 41 of file BlisObjectInt.h.

3.15.4.2 double BlisObjectInt::originalLower_ [protected]

Original lower bound.

Definition at line 44 of file BlisObjectInt.h.

3.15.4.3 double BlisObjectInt::originalUpper_ [protected]

Original upper bound.

Definition at line 47 of file BlisObjectInt.h.

3.15.4.4 double BlisObjectInt::breakEven_ [protected]

Breakeven i.e.

>= this preferred is up.

Definition at line 50 of file BlisObjectInt.h.

3.15.4.5 BlisPseudocost BlisObjectInt::pseudocost_ [protected]

Pseudo cost.

Definition at line 53 of file BlisObjectInt.h.

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

- BlisObjectInt.h

3.16 BlisParams Class Reference

Public Types

- enum chrParams {
cutRampUp, presolve, shareConstraints, shareVariables,
sharePseudocostRampUp, sharePseudocostSearch }

    Character parameters.
- enum intParams {
branchStrategy , cutStrategy, cutGenerationFrequency , quickCutPass,
cutCliqueStrategy , difference, heurStrategy, heurCallFrequency ,
lookAhead, pseudoRelibility, sharePcostDepth, sharePcostFrequency,
strongCandSize }

    Integer paramters.
- enum dblParams {
cutFactor, cutoff, cutoffInc, denseConFactor,
integerTol, objSense, optimalRelGap, optimalAbsGap,

pseudoWeight, scaleConFactor, tailOff }

Double parameters.

- enum strParams

  String parameters.
- enum strArrayParams

  There are no string array parameters.

Public Member Functions

- virtual void createKeywordList ()

  Method for creating the list of keyword looked for in the parameter file.
- virtual void setDefaultEntries ()

  Method for setting the default values for the parameters.
- void setEntry (const chrParams key, const char ∗val)

  char∗ is true(1) or false(0), not used
- void setEntry (const chrParams key, const char val)

  char is true(1) or false(0), not used
- void setEntry (const chrParams key, const bool val)

  This method is the one that ever been used.

Constructors.

- BlisParams ()

  The default constructor creates a parameter set with from the template argument structure.

Query methods

For user application: Following code are do NOT need to change.

The reason can not put following functions in base class `AlpsParameterSet` *is that* `chrParams` *and* `endOfChrParams` *etc., are NOT the same as those declared in base class.*

The members of the parameter set can be queried for using the overloaded entry() method. Using the example in the class documentation the user can get a parameter with the "<code>param.entry(USER_par::parameter_name)</code>" expression.

- bool **entry** (const chrParams key) const
- int **entry** (const intParams key) const
- double **entry** (const dblParams key) const
- const std::string & **entry** (const strParams key) const
- const std::vector< std::string > & **entry** (const strArrayParams key) const

Packing/unpacking methods

- void pack (AlpsEncoded &buf)

  Pack the parameter set into the buffer (AlpsEncoded is used as buffer Here).
- void unpack (AlpsEncoded &buf)

  Unpack the parameter set from the buffer.

3.16.1 Detailed Description

Definition at line 35 of file BlisParams.h.

3.16.2 Member Enumeration Documentation

3.16.2.1 enum **BlisParams::chrParams**

Character parameters.

All of these variable are used as booleans (ture = 1, false = 0).

Enumerator:

cutRampUp Generate cuts during rampup. Default: true

presolve Presolve or not.

shareConstraints Share constraints Default: false.

shareVariables Share constraints Default: false.

sharePseudocostRampUp Share pseudocost during ramp up. Default: true

sharePseudocostSearch Share pseudocost during search Default: false.

Definition at line 39 of file BlisParams.h.

3.16.2.2 enum **BlisParams::intParams**

Integer paramters.

Enumerator:

branchStrategy Branching strategy. 0: max infeasibilty, 1: pseudocost, 2: relibility, 3: strong branching. 4: bilevel branching

cutStrategy Cut generators control. -2: root, -1: auto, 0: disable, any positive frequency

cutGenerationFrequency All constraint generators.

quickCutPass The pass to generate cuts.

cutCliqueStrategy The pass to generate cuts for quick branching.

difference -1 auto, 0, no, any integer frequency

heurStrategy Heuristics control. BlisHeurStrategyRoot: root, BlisHeurStrategyAuto: auto, BlisHuerStrategyNone: disable, BlisHeurStrategyPeriodic: every 't' nodes

heurCallFrequency All heuristics.

lookAhead The look ahead of pseudocost.

pseudoRelibility The relibility of pseudocost.

sharePcostDepth Maximum tree depth of sharing pseudocost.

sharePcostFrequency Frequency of sharing pseudocost.

strongCandSize The number of candidate used in strong branching. Default: 10.

Definition at line 62 of file BlisParams.h.

3.16.2.3 enum **BlisParams::dblParams**

Double parameters.

Enumerator:

cutFactor Limit the max number cuts applied at a node. maxNumCons = (CutFactor - 1) $*$ numCoreConstraints.

cutoff Cutoff any nodes whose objective value is higher than it.

cutoffInc The value added to relaxation value when deciding fathom. Default:1.0e-6

denseConFactor Dense constraint factor.

integerTol Tolerance to treat as an integer. Default: 1.0e-5

objSense Objective sense: min = 1.0, max = -1.0.

optimalRelGap If the relative gap between best feasible and best relaxed fall into this gap, search stops. Default: 1.0e-6

optimalAbsGap If the absolute gap between best feasible and best relaxed fall into this gap, search stops. Default: 1.0e-4

pseudoWeight Weight used to calculate pseudocost.

scaleConFactor Scaling indicator of a constraint.

tailOff Tail off.

Definition at line 133 of file BlisParams.h.

3.16.2.4 enum BlisParams::strParams

String parameters.

Definition at line 174 of file BlisParams.h.

3.16.2.5 enum BlisParams::strArrayParams

There are no string array parameters.

Definition at line 181 of file BlisParams.h.

3.16.3 Constructor & Destructor Documentation

3.16.3.1 BlisParams::BlisParams ( ) `[inline]`

The default constructor creates a parameter set with from the template argument structure.

The keyword list is created and the defaults are set.

Definition at line 193 of file BlisParams.h.

3.16.4 Member Function Documentation

3.16.4.1 virtual void BlisParams::createKeywordList ( ) `[virtual]`

Method for creating the list of keyword looked for in the parameter file.

3.16.4.2 virtual void BlisParams::setDefaultEntries ( ) `[virtual]`

Method for setting the default values for the parameters.

3.16.4.3 void BlisParams::pack (AlpsEncoded & *buf*) `[inline]`

Pack the parameter set into the buffer (AlpsEncoded is used as buffer Here).

Definition at line 284 of file BlisParams.h.

3.16.4.4 void BlisParams::unpack (AlpsEncoded & *buf*) `[inline]`

Unpack the parameter set from the buffer.

Definition at line 297 of file BlisParams.h.

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

- BlisParams.h

3.17 BlisPresolve Class Reference

A interface to Osi/Coin Presolve.

`#include <BlisPresolve.h>`

Public Member Functions

- BlisPresolve ()

    Default constructor (empty object)
- virtual ∼BlisPresolve ()

    Virtual destructor.
- virtual OsiSolverInterface ∗ preprocess (OsiSolverInterface &origModel, double feasibilityTolerance=0.0, bool keepIntegers=true, int numberPasses=5, const char ∗prohibited=NULL)

    Presolve.
- virtual void postprocess (bool updateStatus=true)

    Postsolve.

3.17.1 Detailed Description

A interface to Osi/Coin Presolve.

Definition at line 37 of file BlisPresolve.h.

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

- BlisPresolve.h

3.18 BlisPseudocost Class Reference

Public Member Functions

- BlisPseudocost ()

    Default constructor.
- BlisPseudocost (double uc, int un, double dc, int dn, double s)

    Useful constructor.
- BlisPseudocost (const BlisPseudocost &cost)

    Copy constructor.
- BlisPseudocost & operator= (const BlisPseudocost &cost)

    Overload operator =.
- void setWeight (double w)

Set weigth.

- void update (const int dir, const double parentObjValue, const double objValue, const double solValue)

  Update pseudocost.
- void update (const int dir, const double objDiff, const double solValue)

  Update pseudocost.
- void update (double upCost, int upCount, double downCost, int downCount)

  Update pseudocost.
- int getUpCount ()

  Get up branching count.
- double getUpCost ()

  Get up branching cost.
- int getDownCount ()

  Get down branching count.
- double getDownCost ()

  Get down branching cost.
- double getScore ()

  Get importance.
- void setScore (double s)

  Set importance.
- AlpsReturnStatus encodeTo (AlpsEncoded ∗encoded) const

  Pack pseudocost to the given object.
- AlpsReturnStatus decodeFrom (AlpsEncoded &encoded)

  Unpack pseudocost from the given encode object.
- virtual AlpsEncoded ∗ encode () const

  Encode this node for message passing.
- virtual AlpsKnowledge ∗ decode (AlpsEncoded &) const

  Decode a node from an encoded object.

3.18.1 Detailed Description

Definition at line 32 of file BlisPseudo.h.

3.18.2 Constructor & Destructor Documentation

3.18.2.1 BlisPseudocost::BlisPseudocost ( ) [inline]

Default constructor.

Definition at line 58 of file BlisPseudo.h.

3.18.2.2 BlisPseudocost::BlisPseudocost (double *uc*, int *un*, double *dc*, int *dn*, double *s*) [inline]

Useful constructor.

Definition at line 68 of file BlisPseudo.h.

3.18.3 Member Function Documentation

3.18.3.1 void BlisPseudocost::setWeight (double *w*) [inline]

Set weigth.

Definition at line 104 of file BlisPseudo.h.

3.18.3.2 void BlisPseudocost::update (const int *dir,* const double *parentObjValue,* const double *objValue,* const double *solValue*)

Update pseudocost.

3.18.3.3 void BlisPseudocost::update (const int *dir,* const double *objDiff,* const double *solValue*)

Update pseudocost.

3.18.3.4 void BlisPseudocost::update (double *upCost,* int *upCount,* double *downCost,* int *downCount*)

Update pseudocost.

3.18.3.5 int BlisPseudocost::getUpCount ( ) [inline]

Get up branching count.

Definition at line 130 of file BlisPseudo.h.

3.18.3.6 double BlisPseudocost::getUpCost ( ) [inline]

Get up branching cost.

Definition at line 133 of file BlisPseudo.h.

3.18.3.7 int BlisPseudocost::getDownCount ( ) [inline]

Get down branching count.

Definition at line 136 of file BlisPseudo.h.

3.18.3.8 double BlisPseudocost::getDownCost ( ) [inline]

Get down branching cost.

Definition at line 139 of file BlisPseudo.h.

3.18.3.9 double BlisPseudocost::getScore ( ) [inline]

Get importance.

Definition at line 142 of file BlisPseudo.h.

3.18.3.10 void BlisPseudocost::setScore (double *s*) [inline]

Set importance.

Definition at line 145 of file BlisPseudo.h.

3.18.3.11 AlpsReturnStatus BlisPseudocost::encodeTo (AlpsEncoded ∗ *encoded*) const

Pack pseudocost to the given object.

3.18.3.12 AlpsReturnStatus BlisPseudocost::decodeFrom (AlpsEncoded & *encoded*)

Unpack pseudocost from the given encode object.

3.18.3.13 virtual AlpsEncoded∗ BlisPseudocost::encode ( ) const `[virtual]`

Encode this node for message passing.

3.18.3.14 virtual AlpsKnowledge∗ BlisPseudocost::decode (AlpsEncoded &) const `[virtual]`

Decode a node from an encoded object.

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

- BlisPseudo.h

3.19 BlisSolution Class Reference

This class contains the solutions generated by the LP solver (either primal or dual.

`#include <BlisSolution.h>`

Public Member Functions

- BlisSolution ()

  Default constructor.
- BlisSolution (int s, const double ∗values, double objValue)

  Useful constructor.
- virtual ∼BlisSolution ()

  Destructor.
- virtual void print (std::ostream &os) const

  Print out the solution.
- virtual AlpsEncoded ∗ encode () const

  The method that encodes the solution into a encoded object.
- virtual AlpsKnowledge ∗ decode (AlpsEncoded &encoded) const

  The method that decodes the solution from a encoded object.

3.19.1 Detailed Description

This class contains the solutions generated by the LP solver (either primal or dual.

The class exists primarily to pass solutions to the object generator(s).

Definition at line 36 of file BlisSolution.h.

3.19.2 Constructor & Destructor Documentation

3.19.2.1 BlisSolution::BlisSolution ( ) `[inline]`

Default constructor.

Definition at line 43 of file BlisSolution.h.

3.19.2.2 BlisSolution::BlisSolution (int *s*, const double ∗ *values*, double *objValue*) [inline]

Useful constructor.

Definition at line 49 of file BlisSolution.h.

3.19.2.3 virtual BlisSolution::∼BlisSolution ( ) [inline], [virtual]

Destructor.

Definition at line 55 of file BlisSolution.h.

3.19.3 Member Function Documentation

3.19.3.1 virtual void BlisSolution::print (std::ostream & *os*) const [inline], [virtual]

Print out the solution.

Print the solution.

Definition at line 59 of file BlisSolution.h.

3.19.3.2 virtual AlpsEncoded∗ BlisSolution::encode ( ) const [inline], [virtual]

The method that encodes the solution into a encoded object.

Definition at line 80 of file BlisSolution.h.

3.19.3.3 virtual AlpsKnowledge∗ BlisSolution::decode (AlpsEncoded & *encoded*) const [inline], [virtual]

The method that decodes the solution from a encoded object.

Definition at line 88 of file BlisSolution.h.

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

- BlisSolution.h

3.20 BlisStrong Struct Reference

3.20.1 Detailed Description

Definition at line 41 of file BlisBranchStrategyStrong.h.

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

- BlisBranchStrategyStrong.h

3.21 BlisTreeNode Class Reference

This is the class in which we are finally able to concretely define the bounding procedure.

`#include <BlisSubTree.h>`

Public Member Functions

- BlisTreeNode ()

Default constructor.

- BlisTreeNode (BlisModel ∗m)

  Useful constructor.
- BlisTreeNode (AlpsNodeDesc ∗&desc)

  Useful constructor.
- virtual ∼BlisTreeNode ()

  Destructor.
- void init ()

  Initilize member data when constructing a node.
- AlpsTreeNode ∗ createNewTreeNode (AlpsNodeDesc ∗&desc) const

  Create a new node based on given desc.
- virtual int installSubProblem (BcpsModel ∗mode)

  intall subproblem
- virtual int process (bool isRoot=false, bool rampUp=false)

  Performing the bounding operation.
- virtual int bound (BcpsModel ∗model)

  Bounding procedure.
- virtual std::vector
  < CoinTriple< AlpsNodeDesc
  ∗, AlpsNodeStatus, double > > branch ()

  Takes the explicit description of the current active node and creates the children's descriptions, which contain information about how the branching is to be done.
- int selectBranchObject (BlisModel ∗model, bool &foundSol, int numPassesLeft)

  Select a branching object based on give branching strategy.
- virtual int chooseBranchingObject (BcpsModel ∗)

  To be defined.
- int generateConstraints (BlisModel ∗model, BcpsConstraintPool &conPool)

  Generate constraints.
- int callHeuristics (BlisModel ∗model, bool onlyBeforeRoot=false)

  Call heuristic to search solutions.
- void getViolatedConstraints (BlisModel ∗model, const double ∗currLpSolution, BcpsConstraintPool &conPool)

  Get violated constraints.
- BlisReturnStatus applyConstraints (BlisModel ∗model, const double ∗solution, BcpsConstraintPool &conPool)

  Select and apply constraints.
- BlisReturnStatus reducedCostFix (BlisModel ∗model)

  Fix and tighten varaibles based optimality conditions.
- virtual AlpsEncoded ∗ encode () const

  Encode this node for message passing.
- virtual AlpsKnowledge ∗ decode (AlpsEncoded &) const

  Decode a node from an encoded object.

- virtual void convertToExplicit ()

  Convert explicit description to difference, and vise-vesa.

3.21.1 Detailed Description

This is the class in which we are finally able to concretely define the bounding procedure.

Here we can assume that we have an LP solver and that the objects are cuts and variables, etc.

Definition at line 33 of file BlisSubTree.h.

3.21.2 Constructor & Destructor Documentation

3.21.2.1 BlisTreeNode::BlisTreeNode ( ) `[inline]`

Default constructor.

Definition at line 79 of file BlisTreeNode.h.

3.21.2.2 BlisTreeNode::BlisTreeNode (BlisModel * *m*) `[inline]`

Useful constructor.

Definition at line 85 of file BlisTreeNode.h.

3.21.2.3 BlisTreeNode::BlisTreeNode (AlpsNodeDesc *& *desc*) `[inline]`

Useful constructor.

Definition at line 91 of file BlisTreeNode.h.

3.21.2.4 virtual BlisTreeNode::∼BlisTreeNode ( ) `[inline]`, `[virtual]`

Destructor.

Definition at line 98 of file BlisTreeNode.h.

3.21.3 Member Function Documentation

3.21.3.1 void BlisTreeNode::init ( ) `[inline]`

Initilize member data when constructing a node.

Definition at line 103 of file BlisTreeNode.h.

3.21.3.2 AlpsTreeNode* BlisTreeNode::createNewTreeNode (AlpsNodeDesc *& *desc*) const

Create a new node based on given desc.

3.21.3.3 virtual int BlisTreeNode::process (bool *isRoot* = `false`, bool *rampUp* = `false`) `[virtual]`

Performing the bounding operation.

3.21.3.4 virtual std::vector< CoinTriple<AlpsNodeDesc*, AlpsNodeStatus, double> > BlisTreeNode::branch ( ) `[virtual]`

Takes the explicit description of the current active node and creates the children's descriptions, which contain information about how the branching is to be done.

The stati of the children are AlpsNodeStatusCandidate.

3.21.3.5 int BlisTreeNode::selectBranchObject (BlisModel * *model*, bool & *foundSol*, int *numPassesLeft*)

Select a branching object based on give branching strategy.

3.21.3.6 virtual int BlisTreeNode::chooseBranchingObject (BcpsModel *) `[inline]`, `[virtual]`

To be defined.

Definition at line 139 of file BlisTreeNode.h.

3.21.3.7 int BlisTreeNode::generateConstraints (BlisModel ∗ *model,* BcpsConstraintPool & *conPool*)

Generate constraints.

3.21.3.8 int BlisTreeNode::callHeuristics (BlisModel ∗ *model,* bool *onlyBeforeRoot =* `false`)

Call heuristic to search solutions.

0: no solution; 1: found solutions; 2: fathom this node. onlyBeforeRoot is for heuristics like feasibility pump.

3.21.3.9 void BlisTreeNode::getViolatedConstraints (BlisModel ∗ *model,* const double ∗ *currLpSolution,* BcpsConstraintPool & *conPool*)

Get violated constraints.

3.21.3.10 BlisReturnStatus BlisTreeNode::applyConstraints (BlisModel ∗ *model,* const double ∗ *solution,* BcpsConstraintPool & *conPool*)

Select and apply constraints.

3.21.3.11 BlisReturnStatus BlisTreeNode::reducedCostFix (BlisModel ∗ *model*)

Fix and tighten varaibles based optimality conditions.

3.21.3.12 virtual AlpsEncoded∗ BlisTreeNode::encode ( ) const `[virtual]`

Encode this node for message passing.

3.21.3.13 virtual AlpsKnowledge∗ BlisTreeNode::decode (AlpsEncoded &) const `[virtual]`

Decode a node from an encoded object.

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

- BlisSubTree.h
- BlisTreeNode.h

3.22 BlisVariable Class Reference

Public Member Functions

- virtual AlpsReturnStatus encode (AlpsEncoded ∗encoded)

    Pack to a encode object.
- virtual AlpsKnowledge ∗ decode (AlpsEncoded &encoded) const

    Decode a variable from an encoded object.

- double getObjCoef ()

    Return data.

- void setData (int s, const int ∗ind, const double ∗val)

    Set data.

Protected Member Functions

- AlpsReturnStatus encodeBlis (AlpsEncoded ∗encoded)

Pack Blis part into an encoded object.

- AlpsReturnStatus decodeBlis (AlpsEncoded &encoded)

  Unpack Blis part from a encode object.

3.22.1 Detailed Description

Definition at line 31 of file BlisVariable.h.

3.22.2 Member Function Documentation

3.22.2.1 AlpsReturnStatus BlisVariable::encodeBlis (AlpsEncoded ∗ *encoded*) [inline], [protected]

Pack Blis part into an encoded object.

Definition at line 106 of file BlisVariable.h.

3.22.2.2 AlpsReturnStatus BlisVariable::decodeBlis (AlpsEncoded & *encoded*) [inline], [protected]

Unpack Blis part from a encode object.

Definition at line 119 of file BlisVariable.h.

3.22.2.3 virtual AlpsReturnStatus BlisVariable::encode (AlpsEncoded ∗ *encoded*) [inline], [virtual]

Pack to a encode object.

Definition at line 135 of file BlisVariable.h.

3.22.2.4 virtual AlpsKnowledge∗ BlisVariable::decode (AlpsEncoded & *encoded*) const [inline], [virtual]

Decode a variable from an encoded object.

Definition at line 145 of file BlisVariable.h.

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

- BlisVariable.h

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