**UninformedSearch-CSC831**

**Namespaces**

UninformedSearch\_CSC831

, UninformedSearch\_CSC831.Util

**UninformedSearch\_CSC831 Namespace**

**Classes**

BoardNode

, Coordinate

, Searches

, Solution

, TileBoard

**BoardNode Class**

Node manipultion enging

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.BoardNode**

|  |  |
| --- | --- |
| **C#** |  |
| public class BoardNode | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Constructors**

BoardNode

**Methods**

[Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx))

**Fields**

Board

, Cost

, Previous

, Reverse

, TileMoved

**BoardNode Constructor**

|  |  |
| --- | --- |
| **C#** |  |
| public BoardNode(  BoardNode *previous*,  TileBoard *board*,  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *TileMoved* ) | |

**Parameters**

*previous*

|  |
| --- |
|  |

*board*

|  |
| --- |
|  |

*TileMoved*

|  |
| --- |
|  |

**See Also**

Applies to: BoardNode

**Board Field**

|  |  |
| --- | --- |
| **C#** |  |
| public readonly TileBoard Board | |

**See Also**

Applies to: BoardNode

**Cost Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) Cost | |

**See Also**

Applies to: BoardNode

**Previous Field**

|  |  |
| --- | --- |
| **C#** |  |
| public BoardNode Previous | |

**See Also**

Applies to: BoardNode

**Reverse Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) Reverse | |

**See Also**

Applies to: BoardNode

**TileMoved Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) TileMoved | |

**See Also**

Applies to: BoardNode

**Coordinate Class**

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.Coordinate**

|  |  |
| --- | --- |
| **C#** |  |
| public class Coordinate | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Constructors**

Coordinate

**Methods**

AreAdjacent

, [Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx))

**Coordinate Constructor**

|  |  |
| --- | --- |
| **C#** |  |
| public Coordinate(  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *x*,  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *y* ) | |

**Parameters**

*x*

|  |
| --- |
|  |

*y*

|  |
| --- |
|  |

**See Also**

Applies to: Coordinate

**Coordinate.AreAdjacent Method**

|  |  |
| --- | --- |
| **C#** |  |
| public static [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) AreAdjacent(  Coordinate *a*,  Coordinate *b* ) | |

**Parameters**

*a*

|  |
| --- |
|  |

*b*

|  |
| --- |
|  |

**See Also**

Applies to: Coordinate

**Searches Class**

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.Searches**

|  |  |
| --- | --- |
| **C#** |  |
| public class Searches | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Methods**

BidirectionalSearch

, BreadthFirstSearch

, CreateBidirectionalSolution

, CreateSolution

, DepthFirstSearch

, DepthLimitedSearch

, [Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), IterativeDeepeningSearch

, [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), Solve

, Start

, [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), UpgradeChildren

**Fields**

bidirectional

, openNodes

, openNodesReverse

, solution

, visitedNodes

**Searches.BidirectionalSearch Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) BidirectionalSearch(  TileBoard *inputBoard* ) | |

**Parameters**

*inputBoard*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.BreadthFirstSearch Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) BreadthFirstSearch(  TileBoard *inputBoard* ) | |

**Parameters**

*inputBoard*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.CreateBidirectionalSolution Method**

|  |  |
| --- | --- |
| **C#** |  |
| private [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) CreateBidirectionalSolution(  BoardNode *forwardNode*,  BoardNode *reverseNode*,  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *tile* ) | |

**Parameters**

*forwardNode*

|  |
| --- |
|  |

*reverseNode*

|  |
| --- |
|  |

*tile*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.CreateSolution Method**

|  |  |
| --- | --- |
| **C#** |  |
| private [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) CreateSolution(  BoardNode *currentNode* ) | |

**Parameters**

*currentNode*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.DepthFirstSearch Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) DepthFirstSearch(  TileBoard *inputBoard* ) | |

**Parameters**

*inputBoard*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.DepthLimitedSearch Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) DepthLimitedSearch(  TileBoard *inputBoard* ) | |

**Parameters**

*inputBoard*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.IterativeDeepeningSearch Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) IterativeDeepeningSearch(  TileBoard *inputBoard* ) | |

**Parameters**

*inputBoard*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.Solve Method**

|  |  |
| --- | --- |
| **C#** |  |
| private [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) Solve(  [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) *reverse* = false ) | |

**Parameters**

*reverse*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.Start Method**

|  |  |
| --- | --- |
| **C#** |  |
| private [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Start(  TileBoard *inputBoard* ) | |

**Parameters**

*inputBoard*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**Searches.UpgradeChildren Method**

|  |  |
| --- | --- |
| **C#** |  |
| private [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) UpgradeChildren(  **INodeList** *openList*,  BoardNode *visitedNode* ) | |

**Parameters**

*openList*

|  |
| --- |
|  |

*visitedNode*

|  |
| --- |
|  |

**See Also**

Applies to: Searches

**bidirectional Field**

|  |  |
| --- | --- |
| **C#** |  |
| private [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) bidirectional | |

**See Also**

Applies to: Searches

**openNodes Field**

|  |  |
| --- | --- |
| **C#** |  |
| private **INodeList** openNodes | |

**See Also**

Applies to: Searches

**openNodesReverse Field**

|  |  |
| --- | --- |
| **C#** |  |
| private **INodeList** openNodesReverse | |

**See Also**

Applies to: Searches

**solution Field**

|  |  |
| --- | --- |
| **C#** |  |
| private Solution solution | |

**See Also**

Applies to: Searches

**visitedNodes Field**

|  |  |
| --- | --- |
| **C#** |  |
| private [Dictionary](http://msdn.microsoft.com/en-us/library/xfhwa508.aspx)<[string](http://msdn.microsoft.com/en-us/library/system.string.aspx), BoardNode> visitedNodes | |

**See Also**

Applies to: Searches

**Solution Class**

Main implementation to solve the problem for all search ecluding Uniform Cost search

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.Solution**

|  |  |
| --- | --- |
| **C#** |  |
| public class Solution | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Methods**

[Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), Print

, StartTime

, StopTime

, [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx))

**Fields**

EndBoard

, ExpandedNodes

, IsSolved

, MoveList

, StartBoard

, TimeElapsed

, watch

**Solution.Print Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Print() | |

**See Also**

Applies to: Solution

**Solution.StartTime Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) StartTime() | |

**See Also**

Applies to: Solution

**Solution.StopTime Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) StopTime() | |

**See Also**

Applies to: Solution

**EndBoard Field**

|  |  |
| --- | --- |
| **C#** |  |
| public TileBoard EndBoard | |

**See Also**

Applies to: Solution

**ExpandedNodes Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) ExpandedNodes | |

**See Also**

Applies to: Solution

**IsSolved Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) IsSolved | |

**See Also**

Applies to: Solution

**MoveList Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<BoardNode> MoveList | |

**See Also**

Applies to: Solution

**StartBoard Field**

|  |  |
| --- | --- |
| **C#** |  |
| public TileBoard StartBoard | |

**See Also**

Applies to: Solution

**TimeElapsed Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [long](http://msdn.microsoft.com/en-us/library/system.int64.aspx) TimeElapsed | |

**See Also**

Applies to: Solution

**watch Field**

|  |  |
| --- | --- |
| **C#** |  |
| private [Stopwatch](http://msdn.microsoft.com/en-us/library/system.diagnostics.stopwatch.aspx) watch | |

**See Also**

Applies to: Solution

**TileBoard Class**

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.TileBoard**

|  |  |
| --- | --- |
| **C#** |  |
| public class TileBoard | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Constructors**

TileBoard

**Methods**

Copy

, Equals

, [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), GetAdjacents

, [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), GetPosition

, GetTile

, [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), IsSolved

, [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), MoveRandom

, Print

, Randomize

, SetBoard

, SetTile

, Switch

, ToString

**Fields**

AllowedChars

, SolvedBoard

, \_board

, \_random

**TileBoard Constructor**

|  |  |
| --- | --- |
| **C#** |  |
| public TileBoard() | |

**See Also**

Applies to: TileBoard

**TileBoard(String) Constructor**

|  |  |
| --- | --- |
| **C#** |  |
| public TileBoard(  [string](http://msdn.microsoft.com/en-us/library/system.string.aspx) *input* ) | |

**Parameters**

*input*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.Copy Method**

|  |  |
| --- | --- |
| **C#** |  |
| public TileBoard Copy() | |

**See Also**

Applies to: TileBoard

**TileBoard.Equals Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) Equals(  TileBoard *otherBoard* ) | |

**Parameters**

*otherBoard*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.GetAdjacents (Int32, Int32) Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<[char](http://msdn.microsoft.com/en-us/library/system.char.aspx)> GetAdjacents(  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *x*,  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *y* ) | |

**Parameters**

*x*

|  |
| --- |
|  |

*y*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.GetAdjacents (Char) Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<[char](http://msdn.microsoft.com/en-us/library/system.char.aspx)> GetAdjacents(  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *tile* ) | |

**Parameters**

*tile*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.GetPosition Method**

|  |  |
| --- | --- |
| **C#** |  |
| public Coordinate GetPosition(  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *tile* ) | |

**Parameters**

*tile*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.GetTile Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) GetTile(  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *x*,  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *y* ) | |

**Parameters**

*x*

|  |
| --- |
|  |

*y*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.IsSolved Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) IsSolved() | |

**See Also**

Applies to: TileBoard

**TileBoard.MoveRandom Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) MoveRandom(  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *tile* ) | |

**Parameters**

*tile*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.Print Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Print() | |

**See Also**

Applies to: TileBoard

**TileBoard.Randomize Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Randomize(  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *tile* ) | |

**Parameters**

*tile*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.SetBoard Method**

|  |  |
| --- | --- |
| **C#** |  |
| private [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) SetBoard(  [string](http://msdn.microsoft.com/en-us/library/system.string.aspx) *input* ) | |

**Parameters**

*input*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.SetTile Method**

|  |  |
| --- | --- |
| **C#** |  |
| private [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) SetTile(  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *x*,  [int](http://msdn.microsoft.com/en-us/library/system.int32.aspx) *y*,  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *str* ) | |

**Parameters**

*x*

|  |
| --- |
|  |

*y*

|  |
| --- |
|  |

*str*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.Switch Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Switch(  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *charA*,  [char](http://msdn.microsoft.com/en-us/library/system.char.aspx) *charB* ) | |

**Parameters**

*charA*

|  |
| --- |
|  |

*charB*

|  |
| --- |
|  |

**See Also**

Applies to: TileBoard

**TileBoard.ToString Method**

Returns a string that represents the current object.

|  |  |
| --- | --- |
| **C#** |  |
| public override [string](http://msdn.microsoft.com/en-us/library/system.string.aspx) ToString() | |

**Returns**

A string that represents the current object.

**See Also**

Applies to: TileBoard

**\_board Field**

|  |  |
| --- | --- |
| **C#** |  |
| private [char](http://msdn.microsoft.com/en-us/library/system.char.aspx)[][] \_board | |

**See Also**

Applies to: TileBoard

**\_random Field**

|  |  |
| --- | --- |
| **C#** |  |
| new private readonly [Random](http://msdn.microsoft.com/en-us/library/system.random.aspx) \_random | |

**See Also**

Applies to: TileBoard

**AllowedChars Field**

|  |  |
| --- | --- |
| **C#** |  |
| private const [string](http://msdn.microsoft.com/en-us/library/system.string.aspx) AllowedChars = @"\_12345678" | |

**See Also**

Applies to: TileBoard

**SolvedBoard Field**

|  |  |
| --- | --- |
| **C#** |  |
| private const [string](http://msdn.microsoft.com/en-us/library/system.string.aspx) SolvedBoard = @"\_12345678" | |

**See Also**

Applies to: TileBoard

**UninformedSearch\_CSC831.Util Namespace**

**Classes**

City

, Edge

, ListExtensions

, UcsImplementation

**City Class**

the individual nodes

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.Util.City**

|  |  |
| --- | --- |
| **C#** |  |
| public class City | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831.Util

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Constructors**

City

**Methods**

[Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx))

**Fields**

IsStartNode

, Name

**City Constructor**

|  |  |
| --- | --- |
| **C#** |  |
| public City(  [string](http://msdn.microsoft.com/en-us/library/system.string.aspx) *name* ) | |

**Parameters**

*name*

|  |
| --- |
|  |

**See Also**

Applies to: City

**IsStartNode Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) IsStartNode | |

**See Also**

Applies to: City

**Name Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [string](http://msdn.microsoft.com/en-us/library/system.string.aspx) Name | |

**See Also**

Applies to: City

**Edge Class**

edges between nodes

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.Util.Edge**

|  |  |
| --- | --- |
| **C#** |  |
| public class Edge | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831.Util

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Constructors**

Edge

**Methods**

[Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx))

**Fields**

Cost

, Point1

, Point2

**Edge Constructor**

|  |  |
| --- | --- |
| **C#** |  |
| public Edge(  City *p1*,  City *p2*,  [float](http://msdn.microsoft.com/en-us/library/system.single.aspx) *cost* ) | |

**Parameters**

*p1*

|  |
| --- |
|  |

*p2*

|  |
| --- |
|  |

*cost*

|  |
| --- |
|  |

**See Also**

Applies to: Edge

**Cost Field**

|  |  |
| --- | --- |
| **C#** |  |
| public [float](http://msdn.microsoft.com/en-us/library/system.single.aspx) Cost | |

**See Also**

Applies to: Edge

**Point1 Field**

|  |  |
| --- | --- |
| **C#** |  |
| public City Point1 | |

**See Also**

Applies to: Edge

**Point2 Field**

|  |  |
| --- | --- |
| **C#** |  |
| public City Point2 | |

**See Also**

Applies to: Edge

**ListExtensions Class**

an extension to List to allow multiple additions on one line

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.Util.ListExtensions**

|  |  |
| --- | --- |
| **C#** |  |
| public static class ListExtensions | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831.Util

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Methods**

AddMany<T>

, [Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx))

**ListExtensions.AddMany<T> Method**

|  |  |
| --- | --- |
| **C#** |  |
| public static [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) AddMany<T>(  this [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<T> *list*,  params T[] *elements* ) | |

**Type Parameters**

*T*

|  |
| --- |
|  |

**Parameters**

*list*

|  |
| --- |
|  |

*elements*

|  |
| --- |
|  |

**See Also**

Applies to: ListExtensions

**UcsImplementation Class**

1. Nodes are stored according to their priority, which is the total cost of expanding the node.This is implemented

1. Nodes are stored according to their priority, which is the total cost of expanding the node.This is implemented

in the node classes themselves(by their CompareTo() methods). The node with the lowest path cost is expanded first.

2. Repeated-state checking is done after the Successor() function, but I found no efficient way to implement a

Replace() function while maintaining O(log n) time in the heap, so some duplicates occur if there is a node already

in the frontier but not yet in the set of explored nodes.After messing with numerous combinations of data structures to

achieve this functionality, I had to settle on some repeated states in the frontier. The shorter path would be popped first,

and there is a repeated-state check done after a node is popped to see if it has been explored. If so, it is skipped

entirely, so the main loss is in terms of some extra space, not speed.

[System.Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)

**UninformedSearch\_CSC831.Util.UcsImplementation**

|  |  |
| --- | --- |
| **C#** |  |
| public class UcsImplementation | |

**Requirements**

**Namespace:**UninformedSearch\_CSC831.Util

**Assembly:** UninformedSearch-CSC831 (in UninformedSearch-CSC831.exe)

**Methods**

Compare

, [Equals](http://msdn.microsoft.com/en-us/library/bsc2ak47.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), Examine

, Execute

, [Finalize](http://msdn.microsoft.com/en-us/library/system.object.finalize.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetHashCode](http://msdn.microsoft.com/en-us/library/system.object.gethashcode.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [GetType](http://msdn.microsoft.com/en-us/library/system.object.gettype.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), [MemberwiseClone](http://msdn.microsoft.com/en-us/library/system.object.memberwiseclone.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx)), SetEndPoint

, SetStartPoint

, [ToString](http://msdn.microsoft.com/en-us/library/system.object.tostring.aspx) (inherited from [Object](http://msdn.microsoft.com/en-us/library/system.object.aspx))

**Fields**

Edges

, EndPoint

, ExploredEdges

, ExploredNodes

, FirstItem

, Locations

, PotentialEdges

, PotentialNodes

, SearchComplete

, StartPoint

**UcsImplementation.Compare Method**

order the List in ascending order by cost

|  |  |
| --- | --- |
| **C#** |  |
| private static [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Compare(  City *option* ) | |

**Parameters**

*option*

|  |
| --- |
|  |

**See Also**

Applies to: UcsImplementation

**UcsImplementation.Examine Method**

finds next set of potential nodes to check

|  |  |
| --- | --- |
| **C#** |  |
| public static [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Examine(  City *nextNode* ) | |

**Parameters**

*nextNode*

|  |
| --- |
|  |

**See Also**

Applies to: UcsImplementation

**UcsImplementation.Execute Method**

|  |  |
| --- | --- |
| **C#** |  |
| public static [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) Execute() | |

**See Also**

Applies to: UcsImplementation

**UcsImplementation.SetEndPoint Method**

Set Ending point

|  |  |
| --- | --- |
| **C#** |  |
| private static [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) SetEndPoint() | |

**See Also**

Applies to: UcsImplementation

**UcsImplementation.SetStartPoint Method**

Set starting point

|  |  |
| --- | --- |
| **C#** |  |
| private static [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) SetStartPoint() | |

**See Also**

Applies to: UcsImplementation

**Edges Field**

|  |  |
| --- | --- |
| **C#** |  |
| new public static [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Edge> Edges | |

**See Also**

Applies to: UcsImplementation

**EndPoint Field**

|  |  |
| --- | --- |
| **C#** |  |
| public static City EndPoint | |

**See Also**

Applies to: UcsImplementation

**ExploredEdges Field**

|  |  |
| --- | --- |
| **C#** |  |
| new public static [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Edge> ExploredEdges | |

**See Also**

Applies to: UcsImplementation

**ExploredNodes Field**

|  |  |
| --- | --- |
| **C#** |  |
| new public static [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<City> ExploredNodes | |

**See Also**

Applies to: UcsImplementation

**FirstItem Field**

|  |  |
| --- | --- |
| **C#** |  |
| public static [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) FirstItem | |

**See Also**

Applies to: UcsImplementation

**Locations Field**

|  |  |
| --- | --- |
| **C#** |  |
| new public static [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<City> Locations | |

**See Also**

Applies to: UcsImplementation

**PotentialEdges Field**

|  |  |
| --- | --- |
| **C#** |  |
| new public static [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Edge> PotentialEdges | |

**See Also**

Applies to: UcsImplementation

**PotentialNodes Field**

|  |  |
| --- | --- |
| **C#** |  |
| new public static [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<City> PotentialNodes | |

**See Also**

Applies to: UcsImplementation

**SearchComplete Field**

|  |  |
| --- | --- |
| **C#** |  |
| public static [bool](http://msdn.microsoft.com/en-us/library/system.boolean.aspx) SearchComplete | |

**See Also**

Applies to: UcsImplementation

**StartPoint Field**

|  |  |
| --- | --- |
| **C#** |  |
| public static City StartPoint | |

**See Also**

Applies to: UcsImplementation