**A\_StarAlgorithmCSC831**

**Namespaces**

AStarAlgorithm

**A\* is an informed search algorithm, or a best-first search, meaning that it solves problems by searching among all possible paths to the solution (goal) for the one that incurs the smallest cost (least distance travelled, shortest time, etc.), and among these paths it first considers the ones that appear to lead most quickly to the solution.**

**AStarAlgorithm Namespace**

**Classes**

Cell

, Form1

, Utility

**Cell Class**

The represents the graph cells

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

**AStarAlgorithm.Cell**

|  |  |
| --- | --- |
| **C#** |  |
| public class Cell | |

**Requirements**

**Namespace:**AStarAlgorithm

**Assembly:** AStarAlgorithm (in AStarAlgorithm.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)), FindCell

, [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)), [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))

**Cell.FindCell Method**

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

**Parameters**

*x*

|  |
| --- |
|  |

*y*

|  |
| --- |
|  |

*map*

|  |
| --- |
|  |

**See Also**

Applies to: Cell

**Form1 Class**

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

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

[System.ComponentModel.Component](http://msdn.microsoft.com/en-us/library/system.componentmodel.component.aspx)

[System.Windows.Forms.Control](http://msdn.microsoft.com/en-us/library/system.windows.forms.control.aspx)

[System.Windows.Forms.ScrollableControl](http://msdn.microsoft.com/en-us/library/system.windows.forms.scrollablecontrol.aspx)

[System.Windows.Forms.ContainerControl](http://msdn.microsoft.com/en-us/library/system.windows.forms.containercontrol.aspx)

[System.Windows.Forms.Form](http://msdn.microsoft.com/en-us/library/system.windows.forms.form.aspx)

**AStarAlgorithm.Form1**

|  |  |
| --- | --- |
| **C#** |  |
| public class Form1 : [Form](http://msdn.microsoft.com/en-us/library/system.windows.forms.form.aspx) | |

**Requirements**

**Namespace:**AStarAlgorithm

**Assembly:** AStarAlgorithm (in AStarAlgorithm.exe)

**Constructors**

Form1

**Form1 Constructor**

|  |  |
| --- | --- |
| **C#** |  |
| public Form1() | |

**See Also**

Applies to: Form1

**Form1.Algorithm Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> Algorithm(  Cell *start*,  Cell *goal* ) | |

**Parameters**

*start*

|  |
| --- |
|  |

*goal*

|  |
| --- |
|  |

**See Also**

Applies to: Form1

**Form1.CoverOverPath Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [void](http://msdn.microsoft.com/en-us/library/system.void.aspx) CoverOverPath(  [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> *resultPath* ) | |

**Parameters**

*resultPath*

|  |
| --- |
|  |

**See Also**

Applies to: Form1

**Form1.GetDistanceBetweenCells Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [double](http://msdn.microsoft.com/en-us/library/system.double.aspx) GetDistanceBetweenCells(  Cell *currentCell*,  Cell *neighbour* ) | |

**Parameters**

*currentCell*

|  |
| --- |
|  |

*neighbour*

|  |
| --- |
|  |

**See Also**

Applies to: Form1

**Form1.GetFullPath Method**

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

**Parameters**

*goal*

|  |
| --- |
|  |

**See Also**

Applies to: Form1

**Form1.GetHeuristicValue Method**

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

**Parameters**

*currentCell*

|  |
| --- |
|  |

*goal*

|  |
| --- |
|  |

**See Also**

Applies to: Form1

**Form1.GetMap Method**

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

**See Also**

Applies to: Form1

**Form1.GetNeighboursList Method**

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> GetNeighboursList(  Cell *currentCell*,  [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> *mapCells* ) | |

**Parameters**

*currentCell*

|  |
| --- |
|  |

*mapCells*

|  |
| --- |
|  |

**See Also**

Applies to: Form1

**Utility Class**

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

**AStarAlgorithm.Utility**

|  |  |
| --- | --- |
| **C#** |  |
| public class Utility | |

**Requirements**

**Namespace:**AStarAlgorithm

**Assembly:** AStarAlgorithm (in AStarAlgorithm.exe)

**Methods**

Algorithm

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

, GetFullPath

, [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)), GetHeuristicValue

, GetMap

, GetNeighboursList

, [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)), [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))

**Utility.Algorithm Method**

A\* Algorithm implemented here

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> Algorithm(  Cell *start*,  Cell *goal*,  [DataGridView](http://msdn.microsoft.com/en-us/library/system.windows.forms.datagridview.aspx) *dgvMap*,  [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> *path* ) | |

**Parameters**

*start*

|  |
| --- |
|  |

*goal*

|  |
| --- |
|  |

*dgvMap*

|  |
| --- |
|  |

*path*

|  |
| --- |
|  |

**See Also**

Applies to: Utility

**Utility.GetDistanceBetweenCells Method**

Function distance between nodes

|  |  |
| --- | --- |
| **C#** |  |
| public [double](http://msdn.microsoft.com/en-us/library/system.double.aspx) GetDistanceBetweenCells(  Cell *currentCell*,  Cell *neighbour* ) | |

**Parameters**

*currentCell*

|  |
| --- |
|  |

*neighbour*

|  |
| --- |
|  |

**See Also**

Applies to: Utility

**Utility.GetFullPath Method**

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

**Parameters**

*goal*

|  |
| --- |
|  |

**See Also**

Applies to: Utility

**Utility.GetHeuristicValue Method**

Function calculates Heuristic value

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

**Parameters**

*currentCell*

|  |
| --- |
|  |

*goal*

|  |
| --- |
|  |

**See Also**

Applies to: Utility

**Utility.GetMap Method**

Function interprets the map

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> GetMap(  [DataGridView](http://msdn.microsoft.com/en-us/library/system.windows.forms.datagridview.aspx) *dgvMap* ) | |

**Parameters**

*dgvMap*

|  |
| --- |
|  |

**See Also**

Applies to: Utility

**Utility.GetNeighboursList Method**

Function get all neighbours of the node

|  |  |
| --- | --- |
| **C#** |  |
| public [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> GetNeighboursList(  Cell *currentCell*,  [List](http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx)<Cell> *mapCells*,  Cell *goal* ) | |

**Parameters**

*currentCell*

|  |
| --- |
|  |

*mapCells*

|  |
| --- |
|  |

*goal*

|  |
| --- |
|  |

**See Also**

Applies to: Utility