Chess Engine

1.4.3

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Chapter 1

Namespace Index

1.1 Package List

Here are the packages with brief descriptions (if available):

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

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

Chapter 3

Class Index

3.1 Class List

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

Chapter 4

Namespace Documentation

4.1 ChessEngine Namespace Reference

Classes

- class AttackInfo

  Holds information about an attack.
- class Bishop

  Implementation of a Chess Bishop.
- class ChessPiece

  An abstract component intended to be inherited from to define the behaviours of individual chess pieces.
- class ChessTable

  The ChessTable component is to be attached to a gameObject on which 'ChessTableTiles' will be created.
- class ChessTableTile

  A ChessTableTile component is to be attached to each individual tile that makes up a chess table, each tile holds information about intself like offset.
- class Instance

  An instance of a chess engine. The core class that operates the chess engine.
- class King

  Implementation of a Chess King.
- class Knight

  Implementation of a Chess Knight.
- class MoveData

  Move data contains simply the 'from' tile index, the 'to' tile index, and a readonly boolean 'isAttack' that tracks whether the move is an attack or just a move.
- class MoveInfo

  A class containing information about a move.
- class Pawn

  Implementation of a Chess Pawn.
- class Queen

  Implementation of a Chess Queen.
- class Rook

  Implementation of a Chess Rook.
- class RookReferences

  A class containing references to Rook pieces based on what color and side they are on.
- struct TileIndex

  A TileIndex represents the index of a ChessTableTile along an 8x8 grid. Note that x == 0, y == 0, represents the lower-left origin of the chess table.

Enumerations

- enum ChessColor

  Represents the colors of the tiles and pieces on the chess table.
- enum ChessPieceType

  An enumerate that contains all valid chess piece types.
- enum GameOverReason

  The reason the game ended.

4.1.1 Enumeration Type Documentation

4.1.1.1 ChessColor

```
enum ChessEngine.ChessColor
```

Represents the colors of the tiles and pieces on the chess table.

Author: Mathew Aloisio

4.2 ChessEngine.Delegates Namespace Reference

Functions

- delegate void ActionRef< T > (ref T pItem)

  A simple delegate for events where an argument is passed by reference.
- delegate void ValueActionRef< VAL_T, REF_T > (VAL_T pValue, ref REF_T pItem)

  A simple delegate for events where the first argument is a reference to some type and the second argument is passed by reference.
- delegate void ValueActionRef< VAL_T, VAL_T2, REF_T > (VAL_T pValue, VAL_T2 pValue2, ref REF_T pItem)

  A simple delegate for events where the first 2 arguments are a reference to some type and the last argument is passed by reference.
- delegate void ValueActionRef< VAL_T, VAL_T2, VAL_T3, REF_T > (VAL_T pValue, VAL_T2 pValue2, VAL_T3 pValue3, ref REF_T pItem)

  A simple delegate for events where the first 3 arguments are a reference to some type and the last argument is passed by reference.
- delegate void ValueActionRef< VAL_T, VAL_T2, VAL_T3, VAL_T4, REF_T > (VAL_T pValue, VAL_T2 pValue2, VAL_T3 pValue3, VAL_T4 pValue4, ref REF_T pItem)

  A simple delegate for events where the first 4 arguments are a reference to some type and the last argument is passed by reference.

4.2.1 Function Documentation

4.2.1.1 ActionRef< T >()

```
delegate void ChessEngine.Delegates.ActionRef< T > (
            ref T pItem )
```

A simple delegate for events where an argument is passed by reference.

Template Parameters

T	

Parameters

pItem	

4.2.1.2 ValueActionRef< VAL_T, REF_T >()

```
delegate void ChessEngine.Delegates.ValueActionRef< VAL_T, REF_T > (
            VAL_T pValue,
            ref REF_T pItem )
```

A simple delegate for events where the first argument is a reference to some type and the second argument is passed by reference.

Template Parameters

VAL_T	The type of the non-reference parameter.
REF_T	The type of the reference parameter.

Parameters

pValue	The non-reference value argument.
pItem	The reference.

4.2.1.3 ValueActionRef< VAL_T, VAL_T2, REF_T >()

```
delegate void ChessEngine.Delegates.ValueActionRef< VAL_T, VAL_T2, REF_T > (
            VAL_T pValue,
            VAL_T2 pValue2,
            ref REF_T pItem )
```

A simple delegate for events where the first 2 arguments are a reference to some type and the last argument is passed by reference.

Template Parameters

VAL_T	The type of the first non-reference parameter.
VAL_T2	The type of the second non-reference parameter.
REF_T	The type of the reference parameter.

Parameters

pValue	The first non-reference value argument.
pValue2	The second non-reference value argument.
pItem	The reference.

4.2.1.4 ValueActionRef< VAL_T, VAL_T2, VAL_T3, REF_T >()

```
delegate void ChessEngine.Delegates.ValueActionRef< VAL_T, VAL_T2, VAL_T3, REF_T > (
            VAL_T pValue,
            VAL_T2 pValue2,
            VAL_T3 pValue3,
            ref REF_T pItem )
```

A simple delegate for events where the first 3 arguments are a reference to some type and the last argument is passed by reference.

Template Parameters

VAL_T	The type of the first non-reference parameter.
VAL_T2	The type of the second non-reference parameter.
VAL_T3	The type of the third non-reference parameter.
REF↩ _T	The type of the reference parameter.

Parameters

pValue	The first non-reference value argument.
pValue2	The second non-reference value argument.
pValue3	The third non-reference value argument.
pItem	The reference.

4.2.1.5 ValueActionRef< VAL_T, VAL_T2, VAL_T3, VAL_T4, REF_T >()

```
delegate void ChessEngine.Delegates.ValueActionRef< VAL_T, VAL_T2, VAL_T3, VAL_T4, REF_T > (
            VAL_T pValue,
            VAL_T2 pValue2,
            VAL_T3 pValue3,
            VAL_T4 pValue4,
            ref REF_T pItem )
```

A simple delegate for events where the first 4 arguments are a reference to some type and the last argument is passed by reference.

Template Parameters

VAL_T	The type of the first non-reference parameter.
VAL_T2	The type of the second non-reference parameter.
VAL_T3	The type of the third non-reference parameter.
VAL_T4	The type of the fourth non-reference parameter.
REF_T	The type of the reference parameter.

Parameters

pValue	The first non-reference value argument.
pValue2	The second non-reference value argument.
pValue3	The third non-reference value argument.
pValue4	The fourth non-reference value argument.
pItem	The reference.

4.3 ChessEngine.Serialization Namespace Reference

Classes

- class SerializedChessInstance

  A serializable class that provides a complete representation of a chess Instance.
- class SerializedChessPiece
- class SerializedChessTable

  A serializable class that provides a complete representation of a Chess board.
- class SerializedInstanceHistory

  A serializable class that provides a complete representation of the moves and undone moves stacks for an InstanceHistory object.
- class SerializedMoveInfo

  A serializable class that provides a complete representation of a MoveInfo instance.
- class SerializedPawn

  Derived from SerializedPawn this class represents a serialized Pawn piece.
- class SerializedRook

  Derived from SerializedRook this class represents a serialized Rook piece.

4.4 ChessEngine.TimeSystem Namespace Reference

Classes

- class TimeManager

  A class that provides easy-to-use time related methods.

4.5 ChessEngine.Undo Namespace Reference

Classes

- class HistoryEntry

  A class that contains data about a move so it can be undone or redone.
- class InstanceHistory

  A class that tracks moves in a chess engine Instance and allows for undoing and redoing of moves.

4.6 ChessEngine.Utility Namespace Reference

Classes

- class **FENUtility**

  A public static class with utility methods that help parse FEN strings.
- class **InputValidation**

  A public static class that validates Chess notation related inputs.

Chapter 5

Class Documentation

5.1 ChessEngine.AttackInfo Class Reference

Holds information about an attack.

Public Attributes

- ChessTableTile **moveToTile**

  The ChessTableTile the attacker is moving to.
- ChessTableTile **attackTile**

  The ChessTableTile being attacked.

5.1.1 Detailed Description

Holds information about an attack.

Author: Mathew Aloisio

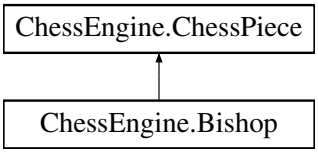
The documentation for this class was generated from the following file:

- AttackInfo.cs

5.2 ChessEngine.Bishop Class Reference

Implementation of a Chess Bishop.

Inheritance diagram for ChessEngine.Bishop:



Public Member Functions

- **Bishop** (ChessTable pTable, ChessColor pColor, TileIndex pTileIndex)
- **Bishop** (ChessTable pTable, ChessPiece pOther)
- override List< ChessTableTile > GenerateMovesList ()

  Returns a list with the ChessTableTiles of all possible moves for this piece.
- override List< AttackInfo > GenerateAttacksList (ChessTableTile pSpoofOccupiedTile, ChessTableTile pSpoofUnoccupiedTile)

  Returns a list with the AttackInfos of all possible attacks for this piece.
- override string GetFENIdentifier ()

  Returns the FEN identifier for the chess piece.
- override ChessPieceType GetChessPieceType ()

  Returns the ChessPieceType for this ChessPiece.

Additional Inherited Members

5.2.1 Detailed Description

Implementation of a Chess Bishop.

Author: Mathew Aloisio

5.2.2 Member Function Documentation

5.2.2.1 GenerateAttacksList()

```
override List< AttackInfo > ChessEngine.Bishop.GenerateAttacksList (
            ChessTableTile pSpoofOccupiedTile,
            ChessTableTile pSpoofUnoccupiedTile )  [virtual]
```

Returns a list with the AttackInfos of all possible attacks for this piece.

Returns

A list of AttackInfos for all possible attacks of this piece.

Implements ChessEngine.ChessPiece.

5.2.2.2 GenerateMovesList()

```
override List< ChessTableTile > ChessEngine.Bishop.GenerateMovesList ( )  [virtual]
```

Returns a list with the ChessTableTiles of all possible moves for this piece.

Returns

A list of ChessTableTiles for all possible moves of this piece.

Implements ChessEngine.ChessPiece.

5.2.2.3 GetChessPieceType()

```
override ChessPieceType ChessEngine.Bishop.GetChessPieceType ( )  [virtual]
```

Returns the ChessPieceType for this ChessPiece.

Returns

the ChessPieceType for this ChessPiece.

Implements ChessEngine.ChessPiece.

5.2.2.4 GetFENIdentifier()

```
override string ChessEngine.Bishop.GetFENIdentifier ( )  [virtual]
```

Returns the FEN identifier for the chess piece.

White Piece | Black Piece | Chess Piece P | p | Pawn N | n | Knight B | b | Bishop R | r | Rook Q | q | Queen K | k | King

Returns

a string representing the FEN identifier for the chess piece.

Implements ChessEngine.ChessPiece.

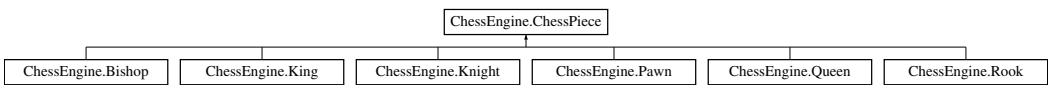
The documentation for this class was generated from the following file:

- Bishop.cs

5.3 ChessEngine.ChessPiece Class Reference

An abstract component intended to be inherited from to define the behaviours of individual chess pieces.

Inheritance diagram for ChessEngine.ChessPiece:



Public Member Functions

- ChessPiece (ChessTable pTable, ChessColor pColor, TileIndex pTileIndex)

  Invoked whenever a ChessPiece instance is constructed.
- ChessPiece (ChessTable pTable, ChessPiece pOther)

  Constructs a ChessPiece instance that is a copy of pOther except belonging to the pTable chess table.
- MoveInfo Move (TileIndex pToTileIndex, ChessPiece pAttackingPiece)

  Moves the chess piece to the given TileIndex, invokes the 'Moved' event.
- void Capture (MoveInfo pMoveInfo)

  Marks the ChessPiece as captured.
- List< ChessTableTile > GetMoves ()

  Returns a list with the ChessTabletiles of all possible moves for this piece.
- List< AttackInfo > GetAttacks (ChessTableTile pSpoofOccupiedTile=null, ChessTableTile pSpoof↩ UnoccupiedTile=null)

  Returns a list with the AttackInfos of all possible attacks for this piece.
- List< ChessTableTile > GetValidMoves ()

  Uses overrideable GetMove() to get a list of moves and then filters them based on current check status, and whether or not the move will put you in check.
- List< AttackInfo > GetValidAttacks ()

  Uses overrideable GetAttacks() to get a list of attacks and then filters them based on current check status, and whether or not the attack will put you in check.
- abstract List< ChessTableTile > GenerateMovesList ()

  Returns a list with the ChessTabletiles of all possible moves for this piece. (These moves are not neccesarily valid and may be prevented by check, or other scenarios.)
- abstract List< AttackInfo > GenerateAttacksList (ChessTableTile pSpoofOccupiedTile=null, ChessTableTile pSpoofUnoccupiedTile=null)

  Returns a list with the AttackInfos of all possible attacks for this piece. (These attacks are not neccesarily valid and may be prevented by check, or other scenarios.)
- abstract string GetFENIdentifier ()

  Returns the FEN identifier for the chess piece.
- abstract ChessPieceType GetChessPieceType ()

  Returns the ChessPieceType for the ChessPiece.

Static Public Attributes

- const int **RightX** = 1

  Returns the 'right' x direction for this chess piece, i.e. 1 on both teams.

Protected Member Functions

- virtual void OnPreMoved (ref MoveInfo pMoveInfo)

  Invoked just before the piece moves.
- virtual void OnPostMoved (MoveInfo pMoveInfo)

  Invoked just after the piece moves.
- virtual void OnTileIndexChanged (bool pWasEmpty, TileIndex pOldIndex)

  Executed automatically when the TileIndex of the ChessPiece is changed.

Properties

- int **ForwardY** `[get]`

  Returns the 'forward' y direction for this chess piece, i.e. 1 on white team -1 on black.
- ChessTable **Table** `[get, set]`

  Returns the ChessTable that this ChessPiece belongs to.
- ChessTableTile **Tile** `[get]`

  Returns the Tile this ChessPiece lays on based on it's tile index.
- ChessColor **Color** `[get, set]`

  Returns the ChessColor team/color that this ChessPiece belongs to.
- bool **IsCaptured** `[get, set]`

  Returns true if this piece has been captured, otherwise false.
- int **MoveCount** `[get, set]`

  The number of moves this chess piece has made.
- TileIndex **TileIndex** `[get, set]`

  Represents the chess table tile this chess piece is on.

Events

- ActionRef< MoveInfo > **PreMoved**

  An event that is invoked just before this chess piece is moved (just after virtual OnPreMoved). Arg0: ref MoveInfo - The MoveInfo about the impending move, a reference that may be modified.
- Action< MoveInfo > **Moved**

  An event that is invoked when this chess piece is moved. Arg0: MoveInfo - The MoveInfo about the move.
- Action< ChessPiece, List< ChessTableTile > > **MovesOverrideCallback**

  A simple callback that is invoked after potential moves for a chess piece are calculated, before the moves are validated. Arg0: ChessPiece - The ChessPiece who invoked the callback. Arg1: List of ChessTableTiles - the list of potential (not neccesarily valid) moves for the chess piece.
- Action< ChessPiece, List< AttackInfo > > **AttacksOverrideCallback**

  A simple callback that is invoked after potential attacks for a chess piece are calculated, before the attacks are validated. Arg0: ChessPiece - The ChessPiece who invoked the callback. Arg1: List of AttackInfos - the list of potential (not neccesarily valid) attacks for the chess piece.
- Action< MoveInfo > **Captured**

  An event that is invoked when this chess piece is captured. Arg0: MoveInfo - The MoveInfo about the move the piece was captured on.
- Action< MoveInfo > **PreCaptured**

  An event that is invoked just before this chess piece is captured. Arg0: MoveInfo - The MoveInfo about the move the piece was captured on.
- ValueActionRef< ChessTableTile, bool > **IsMoveValidCallback**

  Invoked during move validity checking to allow external programs to subscribe and override move validity for this chess piece. Arg0: ChessTableTile - The tile being moved to. Arg1: ref bool - A reference to a boolean value that controls whether or not a move is valid.
- ValueActionRef< AttackInfo, bool > **IsAttackValidCallback**

  Invoked during attack validity checking to allow external programs to subscribe and override attack validity for this chess piece. Arg0: AttackInfo - The information about the attack. Arg1: ref bool - A reference to a boolean value that controls whether or not an attack is valid.

5.3.1 Detailed Description

An abstract component intended to be inherited from to define the behaviours of individual chess pieces.

Author: Mathew Aloisio

5.3.2 Constructor & Destructor Documentation

5.3.2.1 ChessPiece() [1/2]

```
ChessEngine.ChessPiece.ChessPiece (
            ChessTable pTable,
            ChessColor pColor,
            TileIndex pTileIndex )
```

Invoked whenever a ChessPiece instance is constructed.

Parameters

pTable	The ChessTable the piece belongs to.
pColor	The ChessColor of the team the piece belongs to.
pTileIndex	The TileIndex the chess piece starts on.

5.3.2.2 ChessPiece() [2/2]

```
ChessEngine.ChessPiece.ChessPiece (
            ChessTable pTable,
            ChessPiece pOther )
```

Constructs a ChessPiece instance that is a copy of pOther except belonging to the pTable chess table.

Parameters

pTable	
pOther	

5.3.3 Member Function Documentation

5.3.3.1 Capture()

```
void ChessEngine.ChessPiece.Capture (
            MoveInfo pMoveInfo )
```

Marks the ChessPiece as captured.

Parameters

pMoveInfo	The MoveInfo for the move that was piece was captured on.

5.3.3.2 GenerateAttacksList()

```
abstract List< AttackInfo > ChessEngine.ChessPiece.GenerateAttacksList (
            ChessTableTile pSpoofOccupiedTile = null,
            ChessTableTile pSpoofUnoccupiedTile = null )  [pure virtual]
```

Returns a list with the AttackInfos of all possible attacks for this piece. (These attacks are not neccesarily valid and may be prevented by check, or other scenarios.)

Parameters

pSpoofOccupiedTile	The tile to test as 'occupied' or null.
pSpoofUnoccupiedTile	The tile to test as 'unoccupied' or null.

Returns

A list of AttackInfos for all possible attacks of this piece.

Implemented in ChessEngine.Bishop, ChessEngine.King, ChessEngine.Knight, ChessEngine.Pawn, ChessEngine.Queen, and ChessEngine.Rook.

5.3.3.3 GenerateMovesList()

```
abstract List< ChessTableTile > ChessEngine.ChessPiece.GenerateMovesList ( )  [pure virtual]
```

Returns a list with the ChessTabletiles of all possible moves for this piece. (These moves are not neccesarily valid and may be prevented by check, or other scenarios.)

Returns

A list of ChessTableTiles for all possible moves of this piece.

Implemented in ChessEngine.Bishop, ChessEngine.King, ChessEngine.Knight, ChessEngine.Pawn, ChessEngine.Queen, and ChessEngine.Rook.

5.3.3.4 GetAttacks()

```
List< AttackInfo > ChessEngine.ChessPiece.GetAttacks (
            ChessTableTile pSpoofOccupiedTile = null,
            ChessTableTile pSpoofUnoccupiedTile = null )
```

Returns a list with the AttackInfos of all possible attacks for this piece.

Parameters

pSpoofOccupiedTile	The tile to test as 'occupied' or null.
pSpoofUnoccupiedTile	The tile to test as 'unoccupied' or null.

Returns

A list of ChessTableTiles for all possible attacks of this piece.

5.3.3.5 GetChessPieceType()

```
abstract ChessPieceType ChessEngine.ChessPiece.GetChessPieceType ( )  [pure virtual]
```

Returns the ChessPieceType for the ChessPiece.

Returns

the ChessPieceType for the ChessPiece.

Implemented in ChessEngine.Bishop, ChessEngine.King, ChessEngine.Knight, ChessEngine.Pawn, ChessEngine.Queen, and ChessEngine.Rook.

5.3.3.6 GetFENIdentifier()

```
abstract string ChessEngine.ChessPiece.GetFENIdentifier ( )  [pure virtual]
```

Returns the FEN identifier for the chess piece.

White Piece | Black Piece | Chess Piece P | p | Pawn N | n | Knight B | b | Bishop R | r | Rook Q | q | Queen K | k | King

Returns

a string representing the FEN identifier for the chess piece.

Implemented in ChessEngine.Bishop, ChessEngine.King, ChessEngine.Knight, ChessEngine.Pawn, ChessEngine.Queen, and ChessEngine.Rook.

5.3.3.7 GetMoves()

```
List< ChessTableTile > ChessEngine.ChessPiece.GetMoves ( )
```

Returns a list with the ChessTabletiles of all possible moves for this piece.

Returns

A list of ChessTableTiles for all possible moves of this piece.

5.3.3.8 GetValidAttacks()

```
List< AttackInfo > ChessEngine.ChessPiece.GetValidAttacks ( )
```

Uses overrideable GetAttacks() to get a list of attacks and then filters them based on current check status, and whether or not the attack will put you in check.

Returns

A list of valid AttackInfos for attacks.

5.3.3.9 GetValidMoves()

```
List< ChessTableTile > ChessEngine.ChessPiece.GetValidMoves ( )
```

Uses overrideable GetMove() to get a list of moves and then filters them based on current check status, and whether or not the move will put you in check.

Returns

A list of valid tiles to move to.

5.3.3.10 Move()

```
MoveInfo ChessEngine.ChessPiece.Move (
            TileIndex pToTileIndex,
            ChessPiece pAttackingPiece )
```

Moves the chess piece to the given TileIndex, invokes the 'Moved' event.

Parameters

pToTileIndex	
pAttackingPiece	The ChessPiece being attacked, or null if no attack (en passant excluded as it is handled specially by the pawns 'OnMoved' override).

Returns

MoveInfo containing information about the move.

5.3.3.11 OnPostMoved()

```
virtual void ChessEngine.ChessPiece.OnPostMoved (
            MoveInfo pMoveInfo )  [protected], [virtual]
```

Invoked just after the piece moves.

Parameters

pMoveInfo	The info for the move that was made.

Reimplemented in ChessEngine.Pawn.

5.3.3.12 OnPreMoved()

```
virtual void ChessEngine.ChessPiece.OnPreMoved (
            ref MoveInfo pMoveInfo )  [protected], [virtual]
```

Invoked just before the piece moves.

Parameters

pMoveInfo	A reference to the MoveInfo. Can be changed before move is made.

Reimplemented in ChessEngine.Pawn.

5.3.3.13 OnTileIndexChanged()

```
virtual void ChessEngine.ChessPiece.OnTileIndexChanged (
            bool pWasEmpty,
            TileIndex pOldIndex )  [protected], [virtual]
```

Executed automatically when the TileIndex of the ChessPiece is changed.

Parameters

pWasEmpty	Was the space empty prior to the move?
pOldIndex	The previous index of the chess piece.

Reimplemented in ChessEngine.King, and ChessEngine.Pawn.

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

- ChessPiece.cs

5.4 ChessEngine.ChessTable Class Reference

The ChessTable component is to be attached to a gameObject on which 'ChessTableTiles' will be created.

Public Member Functions

- ChessTable (Instance pChessInstance)

  Invoked whenever a ChessTable instance is constructed.
- ChessTable (Instance pChessInstance, ChessTable pOther)

  Creates a copy of the chess table pOther that belongs to the Instance pChessInstance.
- ChessTable (Instance pChessInstance, SerializedChessTable pSerializedTable)

  Constructs a new chess table instance belonging to the pChessInstance Instance. Copies the state of the provided pSerializedTable.
- void SetState (SerializedChessTable pSerializedTable)

  Overwrites the state of the Table with the information from pSerializedTable without needing to construct a new ChessTable.
- ChessPiece CreateSerializedPiece (SerializedChessPiece pSerializedPiece)

  Creates a ChessPiece from a SerializedChessPiece and returns it.
- void **ResetChessPieces** ()

  When called removes all existing chess pieces and instantiates new ones at their proper initiual spawn locations.
- void **DestroyChessPieces** ()

  Destroys all existing chess pieces.
- void **SpawnDefaultPieces** ()

  Spawns the default chess pieces (if not overridden by 'ShouldSpawnDefaultPiecesCallback' listener(s)).
- bool IsInCheck (ChessColor pTeamColor)

  Returns true if the team with the specified color is in check, otherwise false.
- ChessTableTile GetTile (TileIndex pTileIndex)

  Returns Tiles[pTileIndex.x][pTileIndex.y].
- ChessTableTile GetTile (int pX, int pY)

  Returns Tiles[pX][pY].
- ChessTableTile GetTileByID (string pID)

  Returns the ChessTableTile where ChessTableTile.TileIndex.GetTileID() == pID, otherwise null.
- ChessPiece CreateKing (TileIndex pTileIndex, ChessColor pColor)

  Instantiates a king and returns the ChessPiece, or null.
- ChessPiece CreateQueen (TileIndex pTileIndex, ChessColor pColor)

  Instantiates a queen and returns the ChessPiece, or null. This method is public because the Pawn needs to beable to replace itself with a queen.
- ChessPiece CreateBishop (TileIndex pTileIndex, ChessColor pColor)

  Instantiates a bishop and returns the ChessPiece, or null.
- ChessPiece CreateKnight (TileIndex pTileIndex, ChessColor pColor)

  Instantiates a knight and returns the ChessPiece, or null.
- ChessPiece CreateRook (TileIndex pTileIndex, ChessColor pColor, bool pIsKingSide)

  Instantiates a rook and returns the ChessPiece, or null.
- ChessPiece CreatePawn (TileIndex pTileIndex, ChessColor pColor)

  Instantiates a pawn and returns the ChessPiece, or null.
- ChessPiece CreatePieceByType (ChessPieceType pType, TileIndex pTileIndex, ChessColor pColor)

  Instantiates a chess piece of the given type and returns it, or null.
- void DestroyPiece (ChessPiece pPiece)

  Removes the specified ChessPiece from the table if it is a part of it.
- void DestroyPieceByIndex (int pPieceIndex)

  Removes the ChessPiece in the specifeid index from the table.
- ChessPiece GetPieceByIndex (int pIndex)

  Returns the ChessPiece in the given index of the 'chess pieces' array. Note that 'PieceCount' can be used to get the total # of pieces on the table.
- King GetKing (ChessColor pColor)

  Returns a reference to the King piece of the team of the specified color.

- RookReferences GetRookReferences ()

  Returns a RookReferences object that contains references to all Rook pieces (captured or not) and organizes them based on their team color and 'king' or 'queen' side.
- void DetermineRookSides (bool pCanWhiteCastleKingside, bool pCanWhiteCastleQueenside, bool pCan↩ BlackCastleKingside, bool pCanBlackCastleQueenside)

  Generally used after loading an EPD state, this function will automatically attempt to determine the king and queen side Rooks or pick them at random. NOTE: Do not invoke this unless you know exactly why you want to invoke this. SIDE EFFECT: This will adjust the Rooks move counts based on the castle states.
- string GenerateEPDString ()

  Generates an EPD string based on the current table layout and returns it.
- bool SetStateToEPD (string pEPD, bool pCanWhiteCastleKingside, bool pCanWhiteCastleQueenside, bool pCanBlackCastleKingside, bool pCanBlackCastleQueenside)

  Sets the state of the chess table using the 'EPD' string given by pEPD.

Protected Member Functions

- void **Protected_InitializeChessTable** ()

Properties

- ChessTableTile[ ][ ] **Tiles** `[get]`

  A 2D array of ChessTableTiles.
- Instance **ChessInstance** `[get]`

  A reference to the Instance that this ChessTable belongs to.
- int **PieceCount** `[get]`

  Returns the # of chess pieces on the chess table.

Events

- Action **ChessPiecesReset**

  An event that is invoked whenever the chess pieces on this table are reset.
- Action< ChessPiece, TileIndex > **ChessPieceCreated**

  An event that is invoked whenever a chess piece is created. Arg0: ChessPiece - the ChessPiece that was being created. Arg1: TileIndex - the TileIndex the chess piece was created on.
- Action< ChessPiece > **ChessPieceDestroyed**

  An event that is invoked whenever a chess piece is removed from the table. Arg0: ChessPiece - the ChessPiece that is being destroyed.
- Action< MoveInfo > ChessPieceMoved

  An event that is invoked whenever a ChessPiece that belongs to this table moves for any reason. (Moved by 'Instance', moved by through ChessPiece.Move(...) directly, etc...) Unlike Instance.ChessPieceMoved this event is invoked regardless of what causes the chess piece to move except for the exception noted below.
- Action< MoveInfo > PreChessPieceMoved

  An event that is invoked just before a ChessPiece that belongs to this table moves for any reason. (Moved by 'Instance', moved by through ChessPiece.Move(...) directly, etc...) Unlike Instance.PreChessPieceMoved this event is invoked regardless of what causes the chess piece to move except for the exception noted below.
- Action< ChessPiece, ChessPiece, TileIndex, TileIndex > Castled

  Invoked whenever chess pieces perform a castle move on this table.
- Action< ChessPiece, SerializedChessPiece > CreatedSerializedChessPiece

  An event that is invoked whenever a chess piece is created via a serialized chess piece. Useful when extending serialization behavior outside of the library.
- Action< ChessTable, SerializedChessTable > LoadedSerializedTable

An event that is invoked whenever a chess table is constructed using a SerializedChessTable or has it's state set using one. Useful when extending serialization behavior outside of the library.

- ValueActionRef< ChessTable, bool > **ShouldDefaultPiecesSpawnCallback**

  Invoked during a table chess piece reset to allow listeners to override the default piece spawning behaviour of the ChessTable. NOTE: To completely replace spawned pieces behaviour simply set the 'ref bool (arg1)' argument to false to command the engine not to spawn any chess pieces. Arg0: ChessTable - The ChessTable who is checking for permission to spawn default pieces. Arg1: ref bool - A reference to a boolean value that will flip the game to a 'Unknown' game over reason state if it becomes true.

5.4.1 Detailed Description

The ChessTable component is to be attached to a gameObject on which 'ChessTableTiles' will be created.

NOTE: Chess tables are implemented with a bottom left origin meaning Tiles[0][0] is the bottom-left most corner when the white team is at the 'bottom' of the board. Author: Mathew Aloisio

5.4.2 Constructor & Destructor Documentation

5.4.2.1 ChessTable() [1/3]

```
ChessEngine.ChessTable.ChessTable (
            Instance pChessInstance )
```

Invoked whenever a ChessTable instance is constructed.

Parameters

pChessInstance	The chess engine Instance that this table belongs to.

5.4.2.2 ChessTable() [2/3]

```
ChessEngine.ChessTable.ChessTable (
            Instance pChessInstance,
            ChessTable pOther )
```

Creates a copy of the chess table pOther that belongs to the Instance pChessInstance.

Parameters

pChessInstance	
pOther	

5.4.2.3 ChessTable() [3/3]

```
ChessEngine.ChessTable.ChessTable (
            Instance pChessInstance,
            SerializedChessTable pSerializedTable )
```

Constructs a new chess table instance belonging to the pChessInstance Instance. Copies the state of the provided pSerializedTable.

Parameters

pChessInstance	The chess engine Instance that this table belongs to.
pSerializedTable	The SerializedChessTable to copy the state of.

5.4.3 Member Function Documentation

5.4.3.1 CreateBishop()

```
ChessPiece ChessEngine.ChessTable.CreateBishop (
            TileIndex pTileIndex,
            ChessColor pColor )
```

Instantiates a bishop and returns the ChessPiece, or null.

Parameters

pTileIndex	
pColor	

Returns

ChessPiece component of the instantiated bishop or null.

5.4.3.2 CreateKing()

```
ChessPiece ChessEngine.ChessTable.CreateKing (
            TileIndex pTileIndex,
            ChessColor pColor )
```

Instantiates a king and returns the ChessPiece, or null.

Parameters

pTileIndex	
pColor	

Returns

ChessPiece component of the instantiated king or null.

5.4.3.3 CreateKnight()

```
ChessPiece ChessEngine.ChessTable.CreateKnight (
            TileIndex pTileIndex,
            ChessColor pColor )
```

Instantiates a knight and returns the ChessPiece, or null.

Parameters

pTileIndex	
pColor	

Returns

ChessPiece component of the instantiated knight or null.

5.4.3.4 CreatePawn()

```
ChessPiece ChessEngine.ChessTable.CreatePawn (
            TileIndex pTileIndex,
            ChessColor pColor )
```

Instantiates a pawn and returns the ChessPiece, or null.

Parameters

pTileIndex	
pColor	

Returns

ChessPiece component of the instantiated pawn or null.

5.4.3.5 CreatePieceByType()

```
ChessPiece ChessEngine.ChessTable.CreatePieceByType (
            ChessPieceType pType,
```

```
            TileIndex pTileIndex,
            ChessColor pColor )
```

Instantiates a chess piece of the given type and returns it, or null.

Parameters

pType	
pTileIndex	
pColor	

5.4.3.6 CreateQueen()

```
ChessPiece ChessEngine.ChessTable.CreateQueen (
            TileIndex pTileIndex,
            ChessColor pColor )
```

Instantiates a queen and returns the ChessPiece, or null. This method is public because the Pawn needs to beable to replace itself with a queen.

Parameters

pTileIndex	
pColor	

Returns

ChessPiece component of the instantiated queen or null.

5.4.3.7 CreateRook()

```
ChessPiece ChessEngine.ChessTable.CreateRook (
            TileIndex pTileIndex,
            ChessColor pColor,
            bool pIsKingSide )
```

Instantiates a rook and returns the ChessPiece, or null.

Parameters

pTileIndex	
pColor	
pIsKingSide	true if the Rook is the king side Rook, otherwise false if it is the queen side Rook.

Returns

ChessPiece component of the instantiated rook or null.

5.4.3.8 CreateSerializedPiece()

```
ChessPiece ChessEngine.ChessTable.CreateSerializedPiece (
            SerializedChessPiece pSerializedPiece )
```

Creates a ChessPiece from a SerializedChessPiece and returns it.

Parameters

pSerializedPiece	

Returns

the ChessPiece that was constructed from the SerializedChessPiece, otherwise null if failed.

5.4.3.9 DestroyPiece()

```
void ChessEngine.ChessTable.DestroyPiece (
            ChessPiece pPiece )
```

Removes the specified ChessPiece from the table if it is a part of it.

Parameters

pPiece	

5.4.3.10 DestroyPieceByIndex()

```
void ChessEngine.ChessTable.DestroyPieceByIndex (
            int pPieceIndex )
```

Removes the ChessPiece in the specifeid index from the table.

Parameters

pPieceIndex	

5.4.3.11 DetermineRookSides()

```
void ChessEngine.ChessTable.DetermineRookSides (
            bool pCanWhiteCastleKingside,
```

```
            bool pCanWhiteCastleQueenside,
            bool pCanBlackCastleKingside,
            bool pCanBlackCastleQueenside )
```

Generally used after loading an EPD state, this function will automatically attempt to determine the king and queen side Rooks or pick them at random. NOTE: Do not invoke this unless you know exactly why you want to invoke this. SIDE EFFECT: This will adjust the Rooks move counts based on the castle states.

How Rook sides are determined:

- If a castle is possible we can guarentee the relevant Rook is in the initial position and can accurately set it to king or queenside.
- When a castle is not possible on both sides:
  1. The initial spawn locations will be checked for Rooks... if found they will be set to their relevant appropriate side.
  2. If no Rook found in both spawn positions the sides of the Rooks will be chosen at random.

Parameters

pCanWhiteCastleKingside	
pCanWhiteCastleQueenside	
pCanBlackCastleKingside	
pCanBlackCastleQueenside	

5.4.3.12 GenerateEPDString()

```
string ChessEngine.ChessTable.GenerateEPDString ( )
```

Generates an EPD string based on the current table layout and returns it.

Returns

An EPD string based on the current table layout.

5.4.3.13 GetKing()

```
King ChessEngine.ChessTable.GetKing (
            ChessColor pColor )
```

Returns a reference to the King piece of the team of the specified color.

Parameters

pColor	

Returns

a reference to the King piece of the team of the specified color.

5.4.3.14 GetPieceByIndex()

```
ChessPiece ChessEngine.ChessTable.GetPieceByIndex (
            int pIndex )
```

Returns the ChessPiece in the given index of the 'chess pieces' array. Note that 'PieceCount' can be used to get the total # of pieces on the table.

Parameters

pIndex	

Returns

the ChessPiece in the given index of the 'chess pieces' array.

5.4.3.15 GetRookReferences()

```
RookReferences ChessEngine.ChessTable.GetRookReferences ( )
```

Returns a RookReferences object that contains references to all Rook pieces (captured or not) and organizes them based on their team color and 'king' or 'queen' side.

Returns

a RoookReferences object that contains references to all Rook pices (captured or not).

5.4.3.16 GetTile() [1/2]

```
ChessTableTile ChessEngine.ChessTable.GetTile (
            int pX,
            int pY )
```

Returns Tiles[pX][pY].

Parameters

pX	
pY	

Returns

A reference to the ChessTableTile in Tiles[pX][pY].

5.4.3.17 GetTile() [2/2]

```
ChessTableTile ChessEngine.ChessTable.GetTile (
            TileIndex pTileIndex )
```

Returns Tiles[pTileIndex.x][pTileIndex.y].

Parameters

pTileIndex	

Returns

A reference to the ChessTableTile in Tiles[pTileIndex.x][pTileIndex.y].

5.4.3.18 GetTileByID()

```
ChessTableTile ChessEngine.ChessTable.GetTileByID (
            string pID )
```

Returns the ChessTableTile where ChessTableTile.TileIndex.GetTileID() == pID, otherwise null.

Parameters

pID	

Returns

the ChessTableTile where ChessTableTile.TileIndex.GetTileID() == pID, otherwise null

5.4.3.19 IsInCheck()

```
bool ChessEngine.ChessTable.IsInCheck (
            ChessColor pTeamColor )
```

Returns true if the team with the specified color is in check, otherwise false.

Parameters

pTeamColor	

Returns

true if the team pTeamColor is in check, otherwise false.

5.4.3.20 SetState()

```
void ChessEngine.ChessTable.SetState (
            SerializedChessTable pSerializedTable )
```

Overwrites the state of the Table with the information from pSerializedTable without needing to construct a new ChessTable.

Parameters

pSerializedTable	

5.4.3.21 SetStateToEPD()

```
bool ChessEngine.ChessTable.SetStateToEPD (
            string pEPD,
            bool pCanWhiteCastleKingside,
            bool pCanWhiteCastleQueenside,
            bool pCanBlackCastleKingside,
            bool pCanBlackCastleQueenside )
```

Sets the state of the chess table using the 'EPD' string given by pEPD.

Parameters

pEPD	The EPD string that contains the chess table state.
pCanWhiteCastleKingside	
pCanWhiteCastleQueenside	
pCanBlackCastleKingside	
pCanBlackCastleQueenside	

Returns

true if the EPD string was successfully parsed, otherwise false.

5.4.4 Event Documentation

5.4.4.1 Castled

```
Action<ChessPiece, ChessPiece, TileIndex, TileIndex> ChessEngine.ChessTable.Castled
```

Invoked whenever chess pieces perform a castle move on this table.

NOTE: You can use the last invokation of the 'ChessPieceMoved' event to get the exact move details that led to the castle.

Arg0: ChessPiece - The king chess piece involved in the castle. Arg1: ChessPiece - The rook chess piece involved in the castle. Arg2: TileIndex - The TileIndex of the rook before castling. Arg3: TileIndex - The TileIndex of the rook after castling.

5.4.4.2 ChessPieceMoved

```
Action<MoveInfo> ChessEngine.ChessTable.ChessPieceMoved
```

An event that is invoked whenever a ChessPiece that belongs to this table moves for any reason. (Moved by 'Instance', moved by through ChessPiece.Move(...) directly, etc...) Unlike Instance.ChessPieceMoved this event is invoked regardless of what causes the chess piece to move except for the exception noted below.

EXCEPTION: This is not invoked when a rook is moved due to castling since it is not a 'move' for the rook, it is the kings move.

Arg0: MoveInfo - information about the move.

5.4.4.3 CreatedSerializedChessPiece

```
Action<ChessPiece, SerializedChessPiece> ChessEngine.ChessTable.CreatedSerializedChessPiece
```

An event that is invoked whenever a chess piece is created via a serialized chess piece. Useful when extending serialization behavior outside of the library.

Arg0: ChessPiece - The ChessPiece that was created. Arg1: SerializedChessPiece - The SerializedChessPiece the piece was created from.

5.4.4.4 LoadedSerializedTable

```
Action<ChessTable, SerializedChessTable> ChessEngine.ChessTable.LoadedSerializedTable
```

An event that is invoked whenever a chess table is constructed using a SerializedChessTable or has it's state set using one. Useful when extending serialization behavior outside of the library.

Arg0: ChessTable - The ChessTable the serialized table was loaded to. Arg1: SerializedChessTable - The SerializedChessTable that was 'loaded'.

5.4.4.5 PreChessPieceMoved

```
Action<MoveInfo> ChessEngine.ChessTable.PreChessPieceMoved
```

An event that is invoked just before a ChessPiece that belongs to this table moves for any reason. (Moved by 'Instance', moved by through ChessPiece.Move(...) directly, etc...) Unlike Instance.PreChessPieceMoved this event is invoked regardless of what causes the chess piece to move except for the exception noted below.

EXCEPTION: This is not invoked when a rook is moved due to castling since it is not a 'move' for the rook, it is the kings move.

Arg0: MoveInfo - information about the upcoming move.

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

- ChessTable.cs

5.5 ChessEngine.ChessTableTile Class Reference

A ChessTableTile component is to be attached to each individual tile that makes up a chess table, each tile holds information about intself like offset.

Public Member Functions

- ChessTableTile (ChessTable pTable, TileIndex pTileIndex, ChessColor pTileColor)

  Constructs a ChessTableTile instance.
- ChessTableTile (ChessTable pTable, ChessTableTile pOther)

  Creates a copy of pOther except on the 'Table' pTable.
- void MovePieceToTile (ChessPiece pPiece)

  Moves the specified chess piece to this tile.
- ChessPiece GetPiece ()

  Returns the ChessPiece on this tile, otherwise null. Only valid when called after this tile has been placed on the board using 'PlaceAtIndex'.

Static Public Member Functions

- static bool IsTileThreatened (List< AttackInfo > pAttacks, ChessTableTile pTile)

  Returns true if any attack in the pAttacks list is threatening the tile pTile (if a piece may be captured on said tile), otherwise false. This compares 'pTile' to AttackInfo.attackTile.
- static bool IsTileAttackable (List< AttackInfo > pAttacks, ChessTableTile pTile)

  Returns true if any attack in the pAttacks list is able to move to the tile pTile, otherwise false. This compares 'pTile' to AttackInfo.moveToTile.

Properties

- TileIndex **TileIndex** `[get]`

  Returns the TileIndex this tile is located at.
- ChessTable **Table** `[get]`

  Returns the ChessTable this tile belongs to.
- ChessColor **Color** `[get]`

  Returns the ChessColor of this tile.

5.5.1 Detailed Description

A ChessTableTile component is to be attached to each individual tile that makes up a chess table, each tile holds information about intself like offset.

Author: Mathew Aloisio

5.5.2 Constructor & Destructor Documentation

5.5.2.1 ChessTableTile() [1/2]

```
ChessEngine.ChessTableTile.ChessTableTile (
            ChessTable pTable,
            TileIndex pTileIndex,
            ChessColor pTileColor )
```

Constructs a ChessTableTile instance.

Parameters

pTable	The ChessTable the tile belongs to.
pTileIndex	The TileIndex for the tile.
pTileColor	The ChessColor for the tile.

5.5.2.2 ChessTableTile() [2/2]

```
ChessEngine.ChessTableTile.ChessTableTile (
            ChessTable pTable,
            ChessTableTile pOther )
```

Creates a copy of pOther except on the 'Table' pTable.

Parameters

pTable	
pOther	

5.5.3 Member Function Documentation

5.5.3.1 GetPiece()

```
ChessPiece ChessEngine.ChessTableTile.GetPiece ( )
```

Returns the ChessPiece on this tile, otherwise null. Only valid when called after this tile has been placed on the board using 'PlaceAtIndex'.

Returns

ChessPiece on this tile, otherwise null.

5.5.3.2 IsTileAttackable()

```
static bool ChessEngine.ChessTableTile.IsTileAttackable (
            List< AttackInfo > pAttacks,
            ChessTableTile pTile )  [static]
```

Returns true if any attack in the pAttacks list is able to move to the tile pTile, otherwise false. This compares 'pTile' to AttackInfo.moveToTile.

Parameters

pAttacks	The valid 'enemy' attacks.
pTile	The tile being moved to.

Returns

true if any attack in the pAttacks list is able to move to the tile pTile, otherwise false.

5.5.3.3 IsTileThreatened()

```
static bool ChessEngine.ChessTableTile.IsTileThreatened (
            List< AttackInfo > pAttacks,
            ChessTableTile pTile )  [static]
```

Returns true if any attack in the pAttacks list is threatening the tile pTile (if a piece may be captured on said tile), otherwise false. This compares 'pTile' to AttackInfo.attackTile.

Parameters

pAttacks	The valid 'enemy' attacks.
pTile	The tile being moved to.

Returns

true if any attack in the pAttacks list is threatening the tile pTile, otherwise false.

5.5.3.4 MovePieceToTile()

```
void ChessEngine.ChessTableTile.MovePieceToTile (
            ChessPiece pPiece )
```

Moves the specified chess piece to this tile.

Parameters

pPiece	The ChessPiece to move.

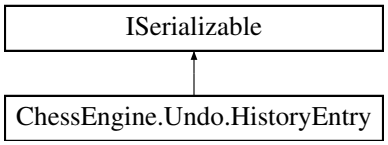
The documentation for this class was generated from the following file:

- ChessTableTile.cs

5.6 ChessEngine.Undo.HistoryEntry Class Reference

A class that contains data about a move so it can be undone or redone.

Inheritance diagram for ChessEngine.Undo.HistoryEntry:



Public Member Functions

- **HistoryEntry** ()
  Default constructor.

Public Attributes

- SerializedChessInstance **preMoveState**
  The state for the game instance before the move.
- SerializedChessInstance **postMoveState**
  The state for the game instance after the move.
- TileIndex **fromTileIndex**
  The TileIndex the chess piece moved from.
- TileIndex **toTileIndex**
  The TileIndex the chess piece moved to.

5.6.1 Detailed Description

A class that contains data about a move so it can be undone or redone.

Author: Mathew Aloisio

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

- HistoryEntry.cs

5.7 ChessEngine.Instance Class Reference

An instance of a chess engine. The core class that operates the chess engine.

Public Member Functions

- **Instance** ()

  Invoked when the chess engine Instance is constructed.
- Instance (string pFEN)

  Instantiates an Instance of the chess engine using the FEN string as the initial state.
- Instance (Instance pOther)

  Creates a unique copy of a chess instance.
- Instance (SerializedChessInstance pSerializedInstance)

  Constructs a new chess instance cloning the state of the provided pSerializedInstance. NOTE: The 'LastMove' property will not be loaded as it is not serialized due to difficulties in tracking 'capturedPiece' and 'piece' references since they may already be off the board or moved.
- void SetState (SerializedChessInstance pSerializedInstance)

  Sets the state of the chess instance using the information from pSerializedInstance without having to construct a new checkers Instance.
- void **ResetGame** ()

  Resets the chess game starting a new game. Note that this method does not start the game, use StartTurn() to start the first turn.
- void **StartTurn** ()

  Invokes the 'OnTurnStarted' callback. Useful to start an already set game without resetting it.
- void EndTurn (MoveInfo pMove)

  Ends a turn and runs win detection.
- void EndGame (ChessColor pEndOnTurn, GameOverReason pGameOverReason)

  Ends the chess game with the given reason on the specified team's turn.
- void QueenPawn (Pawn pPiece, TileIndex pOldTileIndex, bool pWasTileEmpty)

  Queens a pawn while invoking relevant event(s) to provide an opportunity to override the behaviour.
- virtual GameOverReason IsGameOver (MoveInfo pMove)

  IsGameOver may be called to checks for game over events, returns GameOverReason on game over otherwise GameOverReason.NotOver if the game is not over.
- string GenerateFENEnPassantString ()

  Generates the en passant portion of a FEN string based on the current table layout and returns it.
- string GenerateFENCastleStringForRook (Rook pRook)

  Generates the FEN castle string character for a specific Rook. If pRook is null an empty string will be returned.
- string GenerateFENCastleString ()

  Generates the castle portion of a FEN string based on the current table layout and returns it. Tracks whether the relevant rooks and kings have moved, not whether they can actually castle.
- string GenerateFENString ()

  Generates a FEN string based on the current table layout and returns it.
- void SetStateToFEN (string pFEN)

  Set the state of the chess instance using a FEN string.

Public Attributes

- ChessColor **turn**

  The current turn.

Static Public Attributes

- static Action< Instance > **Initialized**

  An event that is invoked whenever a new Instance is constructed. This is even invoked on instances constructed from serialized instances.
- static Action< Instance > **Deinitialized**

  An even that is invoked just before an Instance is destructed.

Protected Member Functions

- virtual void OnGameOver (ChessColor pTeam, GameOverReason pReason)

  Called when the game ends, the winner is whoever's turn it currently is.
- virtual void OnTurnStarted (ChessColor pTurn)

  Invoked when a turn is started.
- virtual void OnTurnEnded (ChessColor pLastTurn, MoveInfo pMove)

  Invoked when a turn is ended.
- void **Protected_Initialize** ()

  A private method that should be called at the start of all Instance constructors.

Properties

- ChessTable **Table** `[get]`

  The ChessTable for this instance.
- int **FullMoveCounter** `[get]`

  The number of full moves this game. Incremented after black's move.
- int **HalfMovesClock** `[get]`

  The number of half moves since the last capture or pawn advance.
- MoveInfo **LastMove** `[get]`

  The MoveInfo from the last move or null if no moves have been made yet.
- Pawn **EnPassantEligible** `[get, set]`

  A reference to a Pawn eligible for en passant, or null.

Events

- Action **PreDestructed**

  Invoked before the instance is destructed.
- Action< ChessColor, MoveInfo > **TurnEnded**

  An event that is invoked when a turn is ended. Arg0: ChessColor - The color whose turn was ended. Arg1: MoveInfo - The MoveInfo from the turn that was ended.
- Action< ChessColor > **TurnStarted**

  An event that is invoked when a turn is started. Arg0: ChessColor - The team whose turn was started.
- Action< ChessColor, GameOverReason > **GameOver**

  An event that is invoked when the game is finished. Arg0: ChessColor - The color whose turn it was when the game ended. Arg1: GameOverReason - The reason the game ended.

- Action **PreGameReset**

  An event that is invoked before the ChessGameManager is reset.
- Action **PostGameReset**

  An event that is invoked after the ChessGamemManager is reset.
- Action< MoveInfo > ChessPieceMoved

  An event that is invoked when a chess piece that belongs to this Instance is moved using ChessPiece.Move(...)
- Action< MoveInfo > PreChessPieceMoved

  An event that is invoked just before a chess piece that belongs to this Instance is moved using ChessPiece.Move(...)
- Action< ChessPiece, ChessPiece, TileIndex, TileIndex > Castled

  Invoked whenever chess pieces perform a castle move in this Instance.
- Action< SerializedChessInstance > LoadedSerializedInstance

  An event that is invoked whenever a chess instance is loaded using a SerializedChessInstance. Useful for extending serialization behavior.
- ValueActionRef< Instance, bool > IsGameOverCallback

  Invoked during an 'IsGameOver' check to allow the game over state to be overridden using the event callback. Used to add additional 'Game Over' conditions. NOTE: To completely replace 'Game Over' conditions override the 'ChessEngine.Instance' class and override the 'IsGameOver' virtual method.
- ValueActionRef< Pawn, TileIndex, bool, bool > QueeningPawnCallback

  Invoked just before a pawn is queened. Used to add custom 'queening' behaviour or to remove it completely. NOTE: To completely replace 'queening' behaviour set the reference 'bool' to true signalling the behaviour has been overridden – alternatively leaving the bool false (or not setting it) will allow you to expand on existing behaviour.

5.7.1 Detailed Description

An instance of a chess engine. The core class that operates the chess engine.

Author: Mathew Aloisio

5.7.2 Constructor & Destructor Documentation

5.7.2.1 Instance() [1/3]

```
ChessEngine.Instance.Instance (
            string pFEN )
```

Instantiates an Instance of the chess engine using the FEN string as the initial state.

WARNING: When creating an instance from a FEN string many things may not perfectly match the previous game as some information is not included in the FEN string. This includes:

1. The 'MoveCount' of pieces is not accurate.
2. Pawns that are not on their starting column will have their move count automatically incremented by 1.
3. Kings and Rooks may have their move count incremented to create conditions that match the 'castle string' from the FEN string.
4. If a castle is possible we can guarentee the relevant Rook is in the initial position and can accurately set it to king or queenside.
5. When a castle is not possible on both sides:
   - The initial spawn locations will be checked for Rooks... if found they will be set to their relevant appropriate side.
   - If no Rook found in both spawn positions the sides of the Rooks will be chosen at random.

Parameters

pFEN	

5.7.2.2 Instance() [2/3]

```
ChessEngine.Instance.Instance (
            Instance pOther )
```

Creates a unique copy of a chess instance.

Parameters

pOther	

5.7.2.3 Instance() [3/3]

```
ChessEngine.Instance.Instance (
            SerializedChessInstance pSerializedInstance )
```

Constructs a new chess instance cloning the state of the provided pSerializedInstance. NOTE: The 'LastMove' property will not be loaded as it is not serialized due to difficulties in tracking 'capturedPiece' and 'piece' references since they may already be off the board or moved.

Parameters

pSerializedInstance	

5.7.3 Member Function Documentation

5.7.3.1 EndGame()

```
void ChessEngine.Instance.EndGame (
            ChessColor pEndOnTurn,
            GameOverReason pGameOverReason )
```

Ends the chess game with the given reason on the specified team's turn.

Parameters

pEndOnTurn	
pGameOverReason	

5.7.3.2 EndTurn()

```
void ChessEngine.Instance.EndTurn (
            MoveInfo pMove )
```

Ends a turn and runs win detection.

Parameters

pMove	The move from the ending turn.

5.7.3.3 GenerateFENCastleString()

```
string ChessEngine.Instance.GenerateFENCastleString ( )
```

Generates the castle portion of a FEN string based on the current table layout and returns it. Tracks whether the relevant rooks and kings have moved, not whether they can actually castle.

FORMAT: KQkq 1234

1. Can white King side Rook castle? K if yes, otherwise -
2. Can white Queen side Rook castle? Q if yes, otherwise -
3. Can black King side Rook castle? k if yes, otherwise -
4. Can black Queen side Rook castle? q if yes, otherwise -

Returns

The castle portion of a FEN string based on the current table layout.

5.7.3.4 GenerateFENCastleStringForRook()

```
string ChessEngine.Instance.GenerateFENCastleStringForRook (
            Rook pRook )
```

Generates the FEN castle string character for a specific Rook. If pRook is null an empty string will be returned.

NOTE: This does not take into consideration whether or not the King has moved.

Parameters

pRook	

Returns

The FEN castle character for the Rook.

5.7.3.5 GenerateFENEnPassantString()

```
string ChessEngine.Instance.GenerateFENEnPassantString ( )
```

Generates the en passant portion of a FEN string based on the current table layout and returns it.

Returns

The en passant portion of a FEN string based on the current table layout.

5.7.3.6 GenerateFENString()

```
string ChessEngine.Instance.GenerateFENString ( )
```

Generates a FEN string based on the current table layout and returns it.

Returns

A FEN string based on the current table layout.

5.7.3.7 IsGameOver()

```
virtual GameOverReason ChessEngine.Instance.IsGameOver (
            MoveInfo pMove )  [virtual]
```

IsGameOver may be called to checks for game over events, returns GameOverReason on game over otherwise GameOverReason.NotOver if the game is not over.

Parameters

pMove	

Returns

GameOverReason if the game is over, otherwise GameOverReason.NotOver if game is not over.

5.7.3.8 OnGameOver()

```
virtual void ChessEngine.Instance.OnGameOver (
            ChessColor pTeam,
            GameOverReason pReason )  [protected], [virtual]
```

Called when the game ends, the winner is whoever's turn it currently is.

Parameters

pTeam	The ChessColor of the team whose turn it was when the game ended.
pReason	The GameOverReason for the game ending.

5.7.3.9 OnTurnEnded()

```
virtual void ChessEngine.Instance.OnTurnEnded (
            ChessColor pLastTurn,
            MoveInfo pMove )  [protected], [virtual]
```

Invoked when a turn is ended.

Parameters

pLastTurn	The ChessColor whose turn ended.
pMove	The move the turn ended on.

5.7.3.10 OnTurnStarted()

```
virtual void ChessEngine.Instance.OnTurnStarted (
            ChessColor pTurn )  [protected], [virtual]
```

Invoked when a turn is started.

Parameters

pTurn	The color whose turn was started.

5.7.3.11 QueenPawn()

```
void ChessEngine.Instance.QueenPawn (
            Pawn pPiece,
            TileIndex pOldTileIndex,
            bool pWasTileEmpty )
```

Queens a pawn while invoking relevant event(s) to provide an opportunity to override the behaviour.

Parameters

pPiece	The Pawn being queened.
pOldTileIndex	The tile index of the pawn before moving to the queening tile.
pWasTileEmpty	True if the tile the pawn moved to was empty, otherwise false.

5.7.3.12 SetState()

```
void ChessEngine.Instance.SetState (
            SerializedChessInstance pSerializedInstance )
```

Sets the state of the chess instance using the information from pSerializedInstance without having to construct a new checkers Instance.

Parameters

pSerializedInstance	

5.7.3.13 SetStateToFEN()

```
void ChessEngine.Instance.SetStateToFEN (
            string pFEN )
```

Set the state of the chess instance using a FEN string.

Parameters

pFEN	

5.7.4 Event Documentation

5.7.4.1 Castled

```
Action<ChessPiece, ChessPiece, TileIndex, TileIndex> ChessEngine.Instance.Castled
```

Invoked whenever chess pieces perform a castle move in this Instance.

NOTE: You can use the last invokation of the 'ChessPieceMoved' event to get the exact move details that led to the castle.

Arg0: ChessPiece - The king chess piece involved in the castle. Arg1: ChessPiece - The rook chess piece involved in the castle. Arg2: TileIndex - The TileIndex of the rook before castling. Arg3: TileIndex - The TileIndex of the rook after castling.

5.7.4.2 ChessPieceMoved

```
Action<MoveInfo> ChessEngine.Instance.ChessPieceMoved
```

An event that is invoked when a chess piece that belongs to this Instance is moved using ChessPiece.Move(...)

EXCEPTION: This is not invoked when a rook is moved due to castling since it is not a 'move' for the rook, it is the kings move.

Arg0: MoveInfo - Information about the move.

5.7.4.3 IsGameOverCallback

```
ValueActionRef<Instance, bool> ChessEngine.Instance.IsGameOverCallback
```

Invoked during an 'IsGameOver' check to allow the game over state to be overridden using the event callback. Used to add additional 'Game Over' conditions. NOTE: To completely replace 'Game Over' conditions override the 'ChessEngine.Instance' class and override the 'IsGameOver' virtual method.

Arg0: Instance - The chess Instance involved in the event. Arg1: ref bool - A reference to a boolean value that will flip the game to a 'Unknown' game over reason state if it becomes true.

5.7.4.4 LoadedSerializedInstance

```
Action<SerializedChessInstance> ChessEngine.Instance.LoadedSerializedInstance
```

An event that is invoked whenever a chess instance is loaded using a SerializedChessInstance. Useful for extending serialization behavior.

Arg0: SerializedChessInstance - The SerializedChessInstance the Instance was loaded from.

5.7.4.5 PreChessPieceMoved

```
Action<MoveInfo> ChessEngine.Instance.PreChessPieceMoved
```

An event that is invoked just before a chess piece that belongs to this Instance is moved using ChessPiece.Move(...)

EXCEPTION: This is not invoked when a rook is moved due to castling since it is not a 'move' for the rook, it is the kings move.

Arg0: MoveInfo - Information about the upcoming move.

5.7.4.6 QueeningPawnCallback

```
ValueActionRef<Pawn, TileIndex, bool, bool> ChessEngine.Instance.QueeningPawnCallback
```

Invoked just before a pawn is queened. Used to add custom 'queening' behaviour or to remove it completely. NOTE: To completely replace 'queening' behaviour set the reference 'bool' to true signalling the behaviour has been overridden – alternatively leaving the bool false (or not setting it) will allow you to expand on existing behaviour.

Arg0: Pawn - The pawn that is being queened. Arg1: TileIndex - The old tile index of the pawn before moving to the queening tile. Arg2: bool - A boolean value that represents whether or not the tile that was moved to was empty or not. If true the tile was empty, if false it was not. Arg3: ref bool - A reference to a boolean value that when true signals the queening behaviour has been overridden, otherwise when false (default) the default behaviour still executes.

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

- Instance.cs

5.8 ChessEngine.Undo.InstanceHistory Class Reference

A class that tracks moves in a chess engine Instance and allows for undoing and redoing of moves.

Public Member Functions

- **InstanceHistory** ()

  Constructs an InstanceHistory instance that is uninitiualized (no 'Instance' reference set).
- InstanceHistory (Instance pInstance)

  Constructs an InstanceHistory instance that tracks history for the specified chess engine Instance, pInstance.
- **InstanceHistory** (Instance pInstance, SerializedInstanceHistory pSerialized)
- void **ClearHistory** ()

  Clears all tracked instance history.
- void **ClearUndoneMoves** ()

  Clears all the tracked instance undone move history.
- HistoryEntry PeekMove ()

  Returns the HistoryEntry at the top of the move history stack.
- HistoryEntry[ ] **GetMoveHistoryArray** ()

  Returns a copy of the move history stack as an array.
- HistoryEntry UndoMove ()

  Pops the top-most MoveInfo from the move history stack and returns it.
- HistoryEntry PeekUndoneMove ()

  Returns a reference to the HistoryEntry at the top of the undone moves stack.
- HistoryEntry[ ] GetUndoneMovesArray ()

  Returns a copy of the 'undone moves' stack as an array.
- HistoryEntry RedoMove ()

  Redoes the last undid move.

Protected Member Functions

- void PushMoveHistory (MoveInfo pMove)

  Pushes a MoveInfo, pMove, to the top of the move history stack.
- void OnInstanceSet (Instance pInstance)

  Invoked whenever the 'Instance' property of this InstanceHistory instance is set to any value (including a null one).
- void OnInstanceUnset (Instance pInstance)

  Invoked whenever the 'Instance' property of this InstanceHistory object is changed from some non-null value to anything else.
- void OnPreChessPieceMoved (MoveInfo pMoveInfo)

  Invoked just before a chess piece for the relevant chess engine Instance is moved.
- void OnGameOver (ChessColor pColor, GameOverReason pReason)

  Invoked when the chess game is over. (Use 'LastMove') to get the game ending move.
- void OnTurnEnded (ChessColor pLastTurn, MoveInfo pMoveInfo)

  Invoked after a turn is ended.

Protected Attributes

- bool **m_SkipNextMove**

  A boolean that tracks whether or not the next move should be skipped and not added to history.
- SerializedChessInstance **m_PreMoveState** = null

  The game state before the last move.

Properties

- Instance **Instance** `[get, set]`

  A reference to the 'Instance' of the chess engine this component is tracking history for, otherwise null.
- int **MoveHistoryCount** `[get]`

  Returns the number of HistoryEntrys there are in the 'move history' array.
- bool **TrackHistory** = true `[get, set]`

  Should this class instance track history? If true history is tracked, otherwise not tracked.
- int **UndoneMovesCount** `[get]`

  Returns the number of HisoryEntrys there are in the 'undone moves' array.
- bool **TrackUndoneMoves** = true `[get, set]`

  Should this class instance track undone moves for 'redo' functionality? If true undone moves are tracked, otherwise not tracked.

Events

- Action< Instance > **InstanceSet**

  Invoked whenever the 'Instance' property of this component is set to any value (including a null value). Arg0: Instance - the chess engine Instance that is now being referenced by the instance history tracker or null.
- Action< Instance > **InstanceUnset**

  Invoked whenever the 'Instance' property of this component is unset from some non-null value to anything. Arg0: Instance - the chess engine Instance that was being referenced by the instance history tracker.
- Action< Instance, HistoryEntry > **PreMoveUndone**

  Invoked just before a move is undone by this InstanceHistory instance just after it is 'popped' from the moves stack. Arg0: Instance - The InstanceHistory object that is about to the move. Arg1: HistoryEntry - The HistoryEntry containing information about the undone move.
- Action< Instance, HistoryEntry > **MoveUndone**

Invoked after a move is undone by this InstanceHistory instance. Arg0: Instance - The InstanceHistory object that undid the move. Arg1: HistoryEntry - The HistoryEntry containing information about the undone move.

- Action< Instance, HistoryEntry > **PreMoveRedone**

  Invoked just before a move is redone by this InstanceHistory instance just after it is 'popped' from the undone moves stack. Arg0: Instance - The InstanceHistory object that is about to redo the move. Arg1: HistoryEntry - The HistoryEntry containing information about the redone move.

- Action< Instance, HistoryEntry > **MoveRedone**

  Invoked after a move is redone by this InstanceHistory instance. Arg0: Instance - The InstanceHistory object that redid the move. Arg1: HistoryEntry - The HistoryEntry containing information about the redone move.

- Action< Instance > **MoveHistoryEmptied**

  Invoked whenever the move history stack becomes empty. Arg0: Instance - the chess engine Instance that move history is being tracked for.

- Action< Instance > **MoveHistoryValid**

  Invoked whenever the move history stack goes from empty to non-empty. Arg0: Instance - the chess engine Instance that move history is being tracked for.

- Action< Instance > **UndoHistoryEmptied**

  Invoked whenever the undo history stack becomes empty. Arg0: Instance - the chess engine Instance that undo history is being tracked for.

- Action< Instance > **UndoHistoryValid**

  Invoked whenever the undo history stack goes from empty to non-empty. Arg0: Instance - the chess engine Instance that undo history is being tracked for.

5.8.1 Detailed Description

A class that tracks moves in a chess engine Instance and allows for undoing and redoing of moves.

Author: Mathew Aloisio

5.8.2 Constructor & Destructor Documentation

5.8.2.1 InstanceHistory()

```
ChessEngine.Undo.InstanceHistory.InstanceHistory (
            Instance pInstance )
```

Constructs an InstanceHistory instance that tracks history for the specified chess engine Instance, pInstance.

Parameters

pInstance	

5.8.3 Member Function Documentation

5.8.3.1 GetUndoneMovesArray()

```
HistoryEntry[] ChessEngine.Undo.InstanceHistory.GetUndoneMovesArray ( )
```

Returns a copy of the 'undone moves' stack as an array.

Returns

an array that is a copy of the 'undone moves' stack.

5.8.3.2 OnGameOver()

```
void ChessEngine.Undo.InstanceHistory.OnGameOver (
            ChessColor pColor,
            GameOverReason pReason )  [protected]
```

Invoked when the chess game is over. (Use 'LastMove') to get the game ending move.

Parameters

pColor	The color whose turn it was when the game ended.
pReason	The reason the game is over.

5.8.3.3 OnInstanceSet()

```
void ChessEngine.Undo.InstanceHistory.OnInstanceSet (
            Instance pInstance )  [protected]
```

Invoked whenever the 'Instance' property of this InstanceHistory instance is set to any value (including a null one).

Parameters

pInstance	

5.8.3.4 OnInstanceUnset()

```
void ChessEngine.Undo.InstanceHistory.OnInstanceUnset (
            Instance pInstance )  [protected]
```

Invoked whenever the 'Instance' property of this InstanceHistory object is changed from some non-null value to anything else.

Parameters

pInstance	

5.8.3.5 OnPreChessPieceMoved()

```
void ChessEngine.Undo.InstanceHistory.OnPreChessPieceMoved (
            MoveInfo pMoveInfo )  [protected]
```

Invoked just before a chess piece for the relevant chess engine Instance is moved.

Parameters

pMoveInfo	

5.8.3.6 OnTurnEnded()

```
void ChessEngine.Undo.InstanceHistory.OnTurnEnded (
            ChessColor pLastTurn,
            MoveInfo pMoveInfo )  [protected]
```

Invoked after a turn is ended.

Parameters

pLastTurn	
pMoveInfo	

5.8.3.7 PeekMove()

```
HistoryEntry ChessEngine.Undo.InstanceHistory.PeekMove ( )
```

Returns the HistoryEntry at the top of the move history stack.

Returns

the HistoryEntry at the top of the move history s tack.

5.8.3.8 PeekUndoneMove()

```
HistoryEntry ChessEngine.Undo.InstanceHistory.PeekUndoneMove ( )
```

Returns a reference to the HistoryEntry at the top of the undone moves stack.

Returns

A reference to the HistoryEntry a the top of the undone moves stack.

5.8.3.9 PushMoveHistory()

```
void ChessEngine.Undo.InstanceHistory.PushMoveHistory (
            MoveInfo pMove ) [protected]
```

Pushes a MoveInfo, pMove, to the top of the move history stack.

Parameters

pMove	

5.8.3.10 RedoMove()

```
HistoryEntry ChessEngine.Undo.InstanceHistory.RedoMove ( )
```

Redoes the last undid move.

Returns

HistoryEntry for the move that was redone.

5.8.3.11 UndoMove()

```
HistoryEntry ChessEngine.Undo.InstanceHistory.UndoMove ( )
```

Pops the top-most MoveInfo from the move history stack and returns it.

Returns

the MoveInfo at the start of the move history stack.

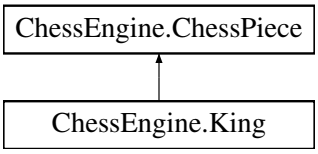
The documentation for this class was generated from the following file:

- InstanceHistory.cs

5.9 ChessEngine.King Class Reference

Implementation of a Chess King.

Inheritance diagram for ChessEngine.King:



Public Member Functions

- **King** (ChessTable pTable, ChessColor pColor, TileIndex pTileIndex)
- **King** (ChessTable pTable, ChessPiece pOther)
- override List< ChessTableTile > GenerateMovesList ()

  Returns a list with the ChessTableTiles of all possible moves for this piece.
- override List< AttackInfo > GenerateAttacksList (ChessTableTile pSpoofOccupiedTile, ChessTableTile pSpoofUnoccupiedTile)

  Returns a list with the AttackInfos of all possible attacks for this piece.
- override string GetFENIdentifier ()

  Returns the FEN identifier for the chess piece.
- override ChessPieceType GetChessPieceType ()

  Returns the ChessPieceType for this ChessPiece.

Protected Member Functions

- override void OnTileIndexChanged (bool pWasEmpty, TileIndex pOldIndex)

  Executed automatically when the TileIndex of the ChessPiece is changed.
- virtual void OnCastled (ChessPiece pRook, TileIndex pPreCastleTile, TileIndex pPostCastleTile)

  Invoked after this King castles with a Rook. Note that the kings move information can be obtained from the last invokation of the 'ChessPieceMoved' event.

Events

- Action< ChessPiece, TileIndex, TileIndex > Castled

  An event that is invoked whenever the King castles with a rook.

Additional Inherited Members

5.9.1 Detailed Description

Implementation of a Chess King.

Author: Mathew Aloisio

5.9.2 Member Function Documentation

5.9.2.1 GenerateAttacksList()

```
override List< AttackInfo > ChessEngine.King.GenerateAttacksList (
            ChessTableTile pSpoofOccupiedTile,
            ChessTableTile pSpoofUnoccupiedTile )  [virtual]
```

Returns a list with the AttackInfos of all possible attacks for this piece.

Returns

A list of AttackInfos for all possible attacks of this piece.

Implements ChessEngine.ChessPiece.

5.9.2.2 GenerateMovesList()

```
override List< ChessTableTile > ChessEngine.King.GenerateMovesList ( )  [virtual]
```

Returns a list with the ChessTableTiles of all possible moves for this piece.

Returns

A list of ChessTableTiles for all possible moves of this piece.

Implements ChessEngine.ChessPiece.

5.9.2.3 GetChessPieceType()

```
override ChessPieceType ChessEngine.King.GetChessPieceType ( )  [virtual]
```

Returns the ChessPieceType for this ChessPiece.

Returns

the ChessPieceType for this ChessPiece.

Implements ChessEngine.ChessPiece.

5.9.2.4 GetFENIdentifier()

```
override string ChessEngine.King.GetFENIdentifier ( )  [virtual]
```

Returns the FEN identifier for the chess piece.

White Piece | Black Piece | Chess Piece P | p | Pawn N | n | Knight B | b | Bishop R | r | Rook Q | q | Queen K | k | King

Returns

a string representing the FEN identifier for the chess piece.

Implements ChessEngine.ChessPiece.

5.9.2.5 OnCastled()

```
virtual void ChessEngine.King.OnCastled (
            ChessPiece pRook,
            TileIndex pPreCastleTile,
            TileIndex pPostCastleTile )  [protected], [virtual]
```

Invoked after this King castles with a Rook. Note that the kings move information can be obtained from the last invokation of the 'ChessPieceMoved' event.

Parameters

pRook	A reference to the rook ChessPiece that the King castled with.
pPreCastleTile	The TileIndex the rook was on before castling.
pPostCastleTile	The TileIndex the rook is on after castling.

5.9.2.6 OnTileIndexChanged()

```
override void ChessEngine.King.OnTileIndexChanged (
            bool pWasEmpty,
            TileIndex pOldIndex )  [protected], [virtual]
```

Executed automatically when the TileIndex of the ChessPiece is changed.

Parameters

pWasEmpty	Was the space empty prior to the move?
pOldIndex	The previous index of the chess piece.

Reimplemented from ChessEngine.ChessPiece.

5.9.3 Event Documentation

5.9.3.1 Castled

```
Action<ChessPiece, TileIndex, TileIndex> ChessEngine.King.Castled
```

An event that is invoked whenever the King castles with a rook.

Arg0: ChessPiece - A reference to the Rook that castled with this King. Arg1: TileIndex - The original tile index for the Rook before castling. Arg2: TileIndex - The new tile index for the Rook after castling.

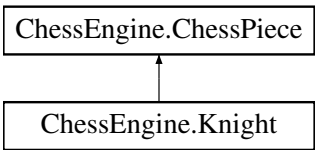
The documentation for this class was generated from the following file:

- King.cs

5.10 ChessEngine.Knight Class Reference

Implementation of a Chess Knight.

Inheritance diagram for ChessEngine.Knight:



Public Member Functions

- **Knight** (ChessTable pTable, ChessColor pColor, TileIndex pTileIndex)
- **Knight** (ChessTable pTable, ChessPiece pOther)
- override List< ChessTableTile > GenerateMovesList ()

  Returns a list with the ChessTableTiles of all possible moves for this piece.
- override List< AttackInfo > GenerateAttacksList (ChessTableTile pSpoofOccupiedTile, ChessTableTile pSpoofUnoccupiedTile)

  Returns a list with the AttackInfos of all possible attacks for this piece.
- override string GetFENIdentifier ()

  Returns the FEN identifier for the chess piece.
- override ChessPieceType GetChessPieceType ()

  Returns the ChessPieceType for this ChessPiece.

Additional Inherited Members

5.10.1 Detailed Description

Implementation of a Chess Knight.

Author: Mathew Aloisio

5.10.2 Member Function Documentation

5.10.2.1 GenerateAttacksList()

```
override List< AttackInfo > ChessEngine.Knight.GenerateAttacksList (
            ChessTableTile pSpoofOccupiedTile,
            ChessTableTile pSpoofUnoccupiedTile )  [virtual]
```

Returns a list with the AttackInfos of all possible attacks for this piece.

Returns

A list of AttackInfos for all possible attacks of this piece.

Implements ChessEngine.ChessPiece.

5.10.2.2 GenerateMovesList()

```
override List< ChessTableTile > ChessEngine.Knight.GenerateMovesList ( )  [virtual]
```

Returns a list with the ChessTableTiles of all possible moves for this piece.

Returns

A list of ChessTableTiles for all possible moves of this piece.

Implements ChessEngine.ChessPiece.

5.10.2.3 GetChessPieceType()

```
override ChessPieceType ChessEngine.Knight.GetChessPieceType ( )  [virtual]
```

Returns the ChessPieceType for this ChessPiece.

Returns

the ChessPieceType for this ChessPiece.

Implements ChessEngine.ChessPiece.

5.10.2.4 GetFENIdentifier()

```
override string ChessEngine.Knight.GetFENIdentifier ( )  [virtual]
```

Returns the FEN identifier for the chess piece.

White Piece | Black Piece | Chess Piece P | p | Pawn N | n | Knight B | b | Bishop R | r | Rook Q | q | Queen K | k | King

Returns

a string representing the FEN identifier for the chess piece.

Implements ChessEngine.ChessPiece.

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

- Knight.cs

5.11 ChessEngine.MoveData Class Reference

Move data contains simply the 'from' tile index, the 'to' tile index, and a readonly boolean 'isAttack' that tracks whether the move is an attack or just a move.

Public Member Functions

- **MoveData** ()
  Constructs a MoveData instance and sets the readonly 'isCapture' field to false.
- MoveData (TileIndex pCaptureTileIndex)
  Constructs a MoveData instance and sets the readonly 'isCapture' field to true and stores the 'capture tile index'.

Public Attributes

- readonly bool **isCapture**
  Returns true if the move is a capture, otherwise false.
- readonly TileIndex **captureTileIndex**
  Only relevant if 'isCapture' is true. Returns the tile index of the piece being captured.
- TileIndex **fromTileIndex**
  The tile index the move is from.
- TileIndex **toTileIndex**
  The tile index the move is to.

5.11.1 Detailed Description

Move data contains simply the 'from' tile index, the 'to' tile index, and a readonly boolean 'isAttack' that tracks whether the move is an attack or just a move.

5.11.2 Constructor & Destructor Documentation

5.11.2.1 MoveData()

```
ChessEngine.MoveData.MoveData (
            TileIndex pCaptureTileIndex )
```

Constructs a MoveData instance and sets the readonly 'isCapture' field to true and stores the 'capture tile index'.

Parameters

pCaptureTileIndex	

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

- MoveData.cs

5.12 ChessEngine.MoveInfo Class Reference

A class containing information about a move.

Public Attributes

- ChessPiece **piece**

  The chess piece moved in the move.
- TileIndex **fromTileIndex**

  The TileIndex the chess piece moved from.
- TileIndex **toTileIndex**

  The TileIndex the chess piece moved to.
- ChessPiece **capturedPiece**

  The ChessPiece that was captured in the move, otherwise null if none was captured
- TileIndex **capturedTileIndex**

  Only valid when capturedPiece is non-null, the tile index the captured piece was taken from. (Exists due to en-passant allowing take without ending up on attacked tile.)

5.12.1 Detailed Description

A class containing information about a move.

Author: Mathew Aloisio

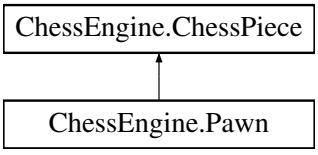
The documentation for this class was generated from the following file:

- MoveInfo.cs

5.13 ChessEngine.Pawn Class Reference

Implementation of a Chess Pawn.

Inheritance diagram for ChessEngine.Pawn:



Public Member Functions

- **Pawn** (ChessTable pTable, ChessColor pColor, TileIndex pTileIndex)
- **Pawn** (ChessTable pTable, ChessPiece pOther)
- bool IsOnStartingRow ()

  Returns true if the Pawn is on its starting row, otherwise false.
- override List< ChessTableTile > GenerateMovesList ()

  Returns a list with the ChessTableTiles of all possible moves for this piece.
- override List< AttackInfo > GenerateAttacksList (ChessTableTile pSpoofOccupiedTile, ChessTableTile pSpoofUnoccupiedTile)

  Returns a list with the AttackInfos of all possible attacks for this piece.
- override string GetFENIdentifier ()

  Returns the FEN identifier for the chess piece.
- override ChessPieceType GetChessPieceType ()

  Returns the ChessPieceType for this ChessPiece.

Public Attributes

- Pawn **enPassanting**

  Reference to a pawn that is currently being taken en passant by this pawn or null.

Static Public Attributes

- const int **SPAWN_ROW_INDEX_WHITE** = 1

  The index of the row white pawns spawn in.
- const int **SPAWN_ROW_INDEX_BLACK** = 6

  The index of the row black pawns spawn in.

Protected Member Functions

- override void OnPreMoved (ref MoveInfo pMoveInfo)

  Invoked just before the Pawn is moved using the 'Move(...)' method.
- override void OnPostMoved (MoveInfo pMoveInfo)

  Invoked just after the pawn is moved using the Move(...) method.
- override void OnTileIndexChanged (bool pWasEmpty, TileIndex pOldIndex)

  Executed automatically when the TileIndex of the ChessPiece is changed.

Additional Inherited Members

5.13.1 Detailed Description

Implementation of a Chess Pawn.

Author: Mathew Aloisio

5.13.2 Member Function Documentation

5.13.2.1 GenerateAttacksList()

```
override List< AttackInfo > ChessEngine.Pawn.GenerateAttacksList (
            ChessTableTile pSpoofOccupiedTile,
            ChessTableTile pSpoofUnoccupiedTile )  [virtual]
```

Returns a list with the AttackInfos of all possible attacks for this piece.

Returns

A list of AttackInfos for all possible attacks of this piece.

Implements ChessEngine.ChessPiece.

5.13.2.2 GenerateMovesList()

```
override List< ChessTableTile > ChessEngine.Pawn.GenerateMovesList ( )  [virtual]
```

Returns a list with the ChessTableTiles of all possible moves for this piece.

Returns

A list of ChessTableTiles for all possible moves of this piece.

Implements ChessEngine.ChessPiece.

5.13.2.3 GetChessPieceType()

```
override ChessPieceType ChessEngine.Pawn.GetChessPieceType ( )  [virtual]
```

Returns the ChessPieceType for this ChessPiece.

Returns

the ChessPieceType for this ChessPiece.

Implements ChessEngine.ChessPiece.

5.13.2.4 GetFENIdentifier()

```
override string ChessEngine.Pawn.GetFENIdentifier ( )  [virtual]
```

Returns the FEN identifier for the chess piece.

White Piece | Black Piece | Chess Piece P | p | Pawn N | n | Knight B | b | Bishop R | r | Rook Q | q | Queen K | k | King

Returns

a string representing the FEN identifier for the chess piece.

Implements ChessEngine.ChessPiece.

5.13.2.5 IsOnStartingRow()

```
bool ChessEngine.Pawn.IsOnStartingRow ( )
```

Returns true if the Pawn is on its starting row, otherwise false.

Returns

true if the Pawn is on its starting row, otherwise false.

5.13.2.6 OnPostMoved()

```
override void ChessEngine.Pawn.OnPostMoved (
            MoveInfo pMoveInfo )  [protected], [virtual]
```

Invoked just after the pawn is moved using the Move(...) method.

Parameters

pMoveInfo	

Reimplemented from ChessEngine.ChessPiece.

5.13.2.7 OnPreMoved()

```
override void ChessEngine.Pawn.OnPreMoved (
            ref MoveInfo pMoveInfo )  [protected], [virtual]
```

Invoked just before the Pawn is moved using the 'Move(...)' method.

Parameters

pMoveInfo	

Reimplemented from ChessEngine.ChessPiece.

5.13.2.8 OnTileIndexChanged()

```
override void ChessEngine.Pawn.OnTileIndexChanged (
            bool pWasEmpty,
            TileIndex pOldIndex )  [protected], [virtual]
```

Executed automatically when the TileIndex of the ChessPiece is changed.

Parameters

pWasEmpty	Was the space empty prior to the move?
pOldIndex	The previous index of the chess piece.

Reimplemented from ChessEngine.ChessPiece.

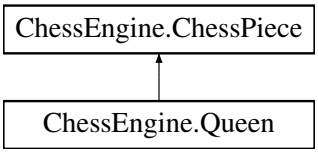
The documentation for this class was generated from the following file:

- Pawn.cs

5.14 ChessEngine.Queen Class Reference

Implementation of a Chess Queen.

Inheritance diagram for ChessEngine.Queen:



Public Member Functions

- **Queen** (ChessTable pTable, ChessColor pColor, TileIndex pTileIndex)
- **Queen** (ChessTable pTable, ChessPiece pOther)
- override List< ChessTableTile > GenerateMovesList ()

  Returns a list with the ChessTableTiles of all possible moves for this piece.
- override List< AttackInfo > GenerateAttacksList (ChessTableTile pSpoofOccupiedTile, ChessTableTile pSpoofUnoccupiedTile)

  Returns a list with the AttackInfos of all possible attacks for this piece.
- override string GetFENIdentifier ()

  Returns the FEN identifier for the chess piece.
- override ChessPieceType GetChessPieceType ()

  Returns the ChessPieceType for this ChessPiece.

Additional Inherited Members

5.14.1 Detailed Description

Implementation of a Chess Queen.

Author: Mathew Aloisio

5.14.2 Member Function Documentation

5.14.2.1 GenerateAttacksList()

```
override List< AttackInfo > ChessEngine.Queen.GenerateAttacksList (
            ChessTableTile pSpoofOccupiedTile,
            ChessTableTile pSpoofUnoccupiedTile )  [virtual]
```

Returns a list with the AttackInfos of all possible attacks for this piece.

Returns

A list of AttackInfos for all possible attacks of this piece.

Implements ChessEngine.ChessPiece.

5.14.2.2 GenerateMovesList()

```
override List< ChessTableTile > ChessEngine.Queen.GenerateMovesList ( )  [virtual]
```

Returns a list with the ChessTableTiles of all possible moves for this piece.

Returns

A list of ChessTableTiles for all possible moves of this piece.

Implements ChessEngine.ChessPiece.

5.14.2.3 GetChessPieceType()

```
override ChessPieceType ChessEngine.Queen.GetChessPieceType ( )  [virtual]
```

Returns the ChessPieceType for this ChessPiece.

Returns

the ChessPieceType for this ChessPiece.

Implements ChessEngine.ChessPiece.

5.14.2.4 GetFENIdentifier()

```
override string ChessEngine.Queen.GetFENIdentifier ( )  [virtual]
```

Returns the FEN identifier for the chess piece.

White Piece | Black Piece | Chess Piece P | p | Pawn N | n | Knight B | b | Bishop R | r | Rook Q | q | Queen K | k | King

Returns

a string representing the FEN identifier for the chess piece.

Implements ChessEngine.ChessPiece.

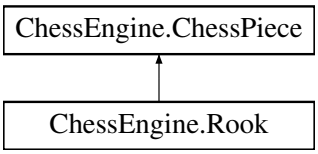
The documentation for this class was generated from the following file:

- Queen.cs

5.15 ChessEngine.Rook Class Reference

Implementation of a Chess Rook.

Inheritance diagram for ChessEngine.Rook:



Public Member Functions

- **Rook** (ChessTable pTable, ChessColor pColor, TileIndex pTileIndex)
- **Rook** (ChessTable pTable, ChessPiece pOther)
- override List< ChessTableTile > GenerateMovesList ()

  Returns a list with the ChessTableTiles of all possible moves for this piece.
- override List< AttackInfo > GenerateAttacksList (ChessTableTile pSpoofOccupiedTile, ChessTableTile pSpoofUnoccupiedTile)

  Returns a list with the AttackInfos of all possible attacks for this piece.
- override string GetFENIdentifier ()

  Returns the FEN identifier for the chess piece.
- override ChessPieceType GetChessPieceType ()

  Returns the ChessPieceType for this ChessPiece.

Static Public Attributes

- static readonly TileIndex **ROOK_SPAWN_KINGSIDE_TILEINDEX_WHITE** = new TileIndex(7, 0)

  The TileIndex the white kingside Rook spawns in when a new game is started.
- static readonly TileIndex **ROOK_SPAWN_QUEENSIDE_TILEINDEX_WHITE** = new TileIndex(0, 0)

  The TileIndex the white queenside Rook spawns in when a new game is started.
- static readonly TileIndex **ROOK_SPAWN_KINGSIDE_TILEINDEX_BLACK** = new TileIndex(7, 7)

  The TileIndex the black kingside Rook spawns in when a new game is started.
- static readonly TileIndex **ROOK_SPAWN_QUEENSIDE_TILEINDEX_BLACK** = new TileIndex(0, 7)

  The TileIndex the black queenside Rook spawns in when a new game is started.

Properties

- bool **IsKingSide** `[get, set]`

  Returns true if this is the king side Rook, otherwise false if it is the Queen side Rook.

Events

- Action< ChessPiece, TileIndex, TileIndex > Castled

  An event that is invoked whenever the rook castles with a king.

Additional Inherited Members

5.15.1 Detailed Description

Implementation of a Chess Rook.

Author: Mathew Aloisio

5.15.2 Member Function Documentation

5.15.2.1 GenerateAttacksList()

```
override List< AttackInfo > ChessEngine.Rook.GenerateAttacksList (
            ChessTableTile pSpoofOccupiedTile,
            ChessTableTile pSpoofUnoccupiedTile )  [virtual]
```

Returns a list with the AttackInfos of all possible attacks for this piece.

Returns

A list of AttackInfos for all possible attacks of this piece.

Implements ChessEngine.ChessPiece.

5.15.2.2 GenerateMovesList()

```
override List< ChessTableTile > ChessEngine.Rook.GenerateMovesList ( )  [virtual]
```

Returns a list with the ChessTableTiles of all possible moves for this piece.

Returns

A list of ChessTableTiles for all possible moves of this piece.

Implements ChessEngine.ChessPiece.

5.15.2.3 GetChessPieceType()

```
override ChessPieceType ChessEngine.Rook.GetChessPieceType ( )  [virtual]
```

Returns the ChessPieceType for this ChessPiece.

Returns

the ChessPieceType for this ChessPiece.

Implements ChessEngine.ChessPiece.

5.15.2.4 GetFENIdentifier()

```
override string ChessEngine.Rook.GetFENIdentifier ( )  [virtual]
```

Returns the FEN identifier for the chess piece.

White Piece | Black Piece | Chess Piece P | p | Pawn N | n | Knight B | b | Bishop R | r | Rook Q | q | Queen K | k | King

Returns

a string representing the FEN identifier for the chess piece.

Implements ChessEngine.ChessPiece.

5.15.3 Event Documentation

5.15.3.1 Castled

```
Action<ChessPiece, TileIndex, TileIndex> ChessEngine.Rook.Castled
```

An event that is invoked whenever the rook castles with a king.

Arg0: ChessPiece - A reference to the King that castled with this Rook. Arg1: TileIndex - The original tile index for the Rook before castling. Arg2: TileIndex - The new tile index for the Rook after castling.

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

- Rook.cs

5.16 ChessEngine.RookReferences Class Reference

A class containing references to Rook pieces based on what color and side they are on.

Public Attributes

- Rook **whiteKingSideRook**

  The Rook on the King side of the white team.
- Rook **whiteQueenSideRook**

  The Rook on the Queen side of the white team.
- Rook **blackKingSideRook**

  The Rook on the King side of the black team.
- Rook **blackQueenSideRook**

  The Rook on the Queen side of the black team.

5.16.1 Detailed Description

A class containing references to Rook pieces based on what color and side they are on.

Author: Mathew Aloisio

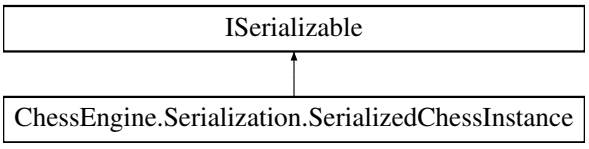
The documentation for this class was generated from the following file:

- RookReferences.cs

5.17 ChessEngine.Serialization.SerializedChessInstance Class Reference

A serializable class that provides a complete representation of a chess Instance.

Inheritance diagram for ChessEngine.Serialization.SerializedChessInstance:



Public Member Functions

- **SerializedChessInstance** ()

  Mandatory argument-less constructor.
- SerializedChessInstance (Instance pInstance)

  Constructs a serializable representation of the chess instance, pInstance.

Properties

- ChessColor **Turn** `[get, set]`

  The turn the serialized chess instance is on.
- SerializedChessTable **SerializedTable** `[get, set]`

  The serialized chess table representation for this serialized chess instance.
- int **FullMoveCounter** `[get, set]`

  The number of full moves this game.
- int **HalfMovesClock** `[get, set]`

  The number of half moves this game.
- bool **IsEnPassantEligible** `[get, set]`

  Returns true if there is a valid en-passant eligible Pawn in the instance, otherwise false.
- TileIndex **EnPassantEligibleTile** `[get, set]`

  Only valid when 'IsEnPassantEligible' is true. The TileIndex of the pawn that is eligible to be taken en-passant.
- bool **IsEnPassantSet** `[get, set]`

  Tracks whether or not 'en passant' eligiblity was set in a given turn for the chess instance. (NOTE: This is the serialized version of a private boolean inside of Instance.)

5.17.1 Detailed Description

A serializable class that provides a complete representation of a chess Instance.

Author: Mathew Aloisio

5.17.2 Constructor & Destructor Documentation

5.17.2.1 SerializedChessInstance()

```
ChessEngine.Serialization.SerializedChessInstance.SerializedChessInstance (
            Instance pInstance )
```

Constructs a serializable representation of the chess instance, pInstance.

Parameters

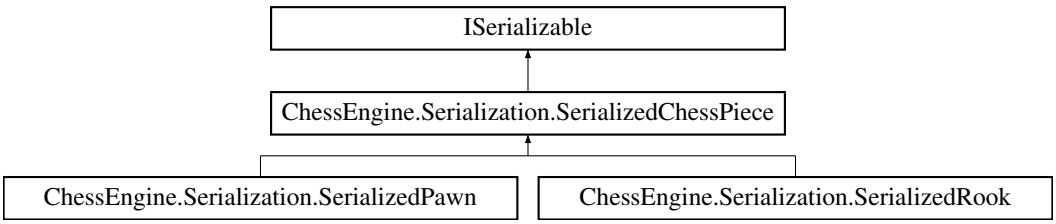
pInstance	

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

- SerializedChessInstance.cs

5.18 ChessEngine.Serialization.SerializedChessPiece Class Reference

Inheritance diagram for ChessEngine.Serialization.SerializedChessPiece:



Public Member Functions

- **SerializedChessPiece** ()

  Instantaites a blank SerializableChessPiece.
- SerializedChessPiece (ChessPiece pPiece)

  Instantiates a SerializableChessPiece from a ChessPiece.

Properties

- ChessColor **Color** `[get, set]`

  Returns the ChessColor team/color that this SerializableChessPiece belongs to.
- bool **IsCaptured** `[get, set]`

  Returns true if this serializable piece has been captured, otherwise false.
- int **MoveCount** `[get, set]`

  The number of moves this serializable Chess piece has made.
- ChessPieceType **PieceType** `[get, set]`

  The ChessPieceType of the serialized piece.
- TileIndex **TileIndex** `[get, set]`

  Represents the table tile index this serializable chess piece is on.

5.18.1 Constructor & Destructor Documentation

5.18.1.1 SerializedChessPiece()

```
ChessEngine.Serialization.SerializedChessPiece.SerializedChessPiece (
            ChessPiece pPiece )
```

Instantiates a SerializableChessPiece from a ChessPiece.

Parameters

pPiece	

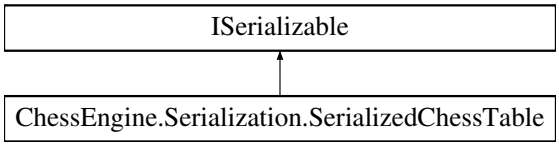
The documentation for this class was generated from the following file:

- SerializedChessPiece.cs

5.19 ChessEngine.Serialization.SerializedChessTable Class Reference

A serializable class that provides a complete representation of a Chess board.

Inheritance diagram for ChessEngine.Serialization.SerializedChessTable:



Public Member Functions

- **SerializedChessTable** ()
  Mandatory argument-less constructor.
- SerializedChessTable (ChessTable pTable)
  Constructs a serialized representation of the ChessTable, pTable.

Properties

- int **SerializedPieceCount** `[get, set]`
  The size of the 'SerializedPieces' list.
- List< SerializedChessPiece > **SerializedPieces** `[get, set]`
  An array of all serializable Chess piece on the serializable Chess table.

5.19.1 Detailed Description

A serializable class that provides a complete representation of a Chess board.

Author: Mathew Aloisio

5.19.2 Constructor & Destructor Documentation

5.19.2.1 SerializedChessTable()

```
ChessEngine.Serialization.SerializedChessTable.SerializedChessTable (
            ChessTable pTable )
```

Constructs a serialized representation of the ChessTable, pTable.

Parameters

pTable	

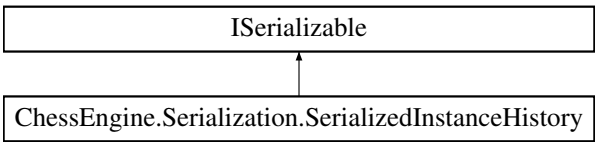
The documentation for this class was generated from the following file:

- SerializedChessTable.cs

5.20 ChessEngine.Serialization.SerializedInstanceHistory Class Reference

A serializable class that provides a complete representation of the moves and undone moves stacks for an InstanceHistory object.

Inheritance diagram for ChessEngine.Serialization.SerializedInstanceHistory:



Public Member Functions

- **SerializedInstanceHistory** ()
  Mandatory argument-less constructor.
- SerializedInstanceHistory (InstanceHistory pHistory)
  Constructs a serializable representation of the instance history object, pHistory.

Properties

- bool **TrackHistory** `[get, set]`
  Should this class instance track history? If true history is tracked, otherwise not tracked.
- int **MoveHistoryCount** `[get, set]`
  The number of entries in the move history stack.
- HistoryEntry[ ] **MoveHistory** `[get, set]`
  A array of all HistoryEntrys from the 'moves' stack.
- int **UndoneMovesCount** `[get, set]`
  The number of entries in the undone move history stack.
- HistoryEntry[ ] **UndoneMoves** `[get, set]`
  A array of all HistoryEntrys from the 'undone moves' stack.

5.20.1 Detailed Description

A serializable class that provides a complete representation of the moves and undone moves stacks for an InstanceHistory object.

Author: Mathew Aloisio

5.20.2 Constructor & Destructor Documentation

5.20.2.1 SerializedInstanceHistory()

```
ChessEngine.Serialization.SerializedInstanceHistory.SerializedInstanceHistory (
            InstanceHistory pHistory )
```

Constructs a serializable representation of the instance history object, pHistory.

Parameters

pHistory	

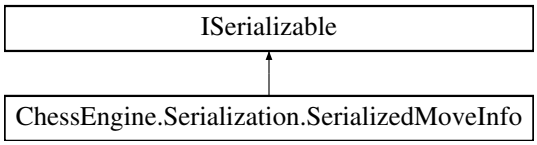
The documentation for this class was generated from the following file:

- SerializedInstanceHistory.cs

5.21 ChessEngine.Serialization.SerializedMoveInfo Class Reference

A serializable class that provides a complete representation of a MoveInfo instance.

Inheritance diagram for ChessEngine.Serialization.SerializedMoveInfo:



Public Member Functions

- **SerializedMoveInfo** ()

  Mandatory argument-less constructor.
- SerializedMoveInfo (MoveInfo pMoveInfo)

  Constructs a serialized representation of the MoveInfo, pMoveInfo.
- MoveInfo ToMoveInfo (ChessTable pTable)

  Converts the SerializedMoveInfo into MoveInfo for the chess table, pTable and returns it. NOTE: This is only able to generate moves before they are performed, otherwise the 'piece' and 'capturedPiece' references may not be possible to find.

Properties

- bool **IsCapture** `[get, set]`

  A boolean that tracks whether or not the move info represents an attack. True if attack, otherwise false.
- TileIndex **CapturedTileIndex** `[get, set]`

  The TileIndex of the tile being captured. This is only valid when 'IsCapture' is true.
- TileIndex **ToTileIndex** `[get, set]`

  The TileIndex being moved to.
- TileIndex **FromTileIndex** `[get, set]`

  The TileIndex being moved from.

5.21.1 Detailed Description

A serializable class that provides a complete representation of a MoveInfo instance.

Author: Mathew Aloisio

5.21.2 Constructor & Destructor Documentation

5.21.2.1 SerializedMoveInfo()

```
ChessEngine.Serialization.SerializedMoveInfo.SerializedMoveInfo (
            MoveInfo pMoveInfo )
```

Constructs a serialized representation of the MoveInfo, pMoveInfo.

Parameters

pMoveInfo	

5.21.3 Member Function Documentation

5.21.3.1 ToMoveInfo()

```
MoveInfo ChessEngine.Serialization.SerializedMoveInfo.ToMoveInfo (
            ChessTable pTable )
```

Converts the SerializedMoveInfo into MoveInfo for the chess table, pTable and returns it. NOTE: This is only able to generate moves before they are performed, otherwise the 'piece' and 'capturedPiece' references may not be possible to find.

Parameters

pTable	

Returns

a MoveInfo object that describes the serialized move on the chess table, pTable.

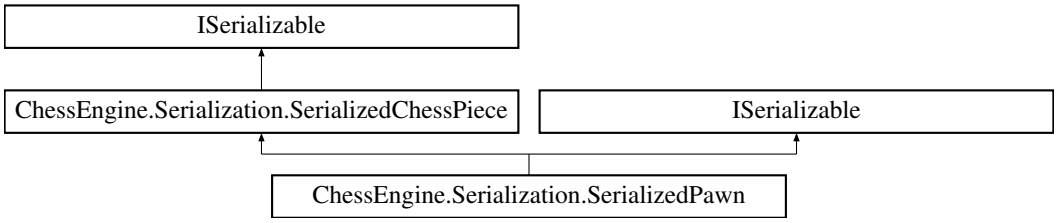
The documentation for this class was generated from the following file:

- SerializedMoveInfo.cs

5.22 ChessEngine.Serialization.SerializedPawn Class Reference

Derived from SerializedPawn this class represents a serialized Pawn piece.

Inheritance diagram for ChessEngine.Serialization.SerializedPawn:



Public Member Functions

- **SerializedPawn** ()

  Instantaites a blank SerializablePawn.
- SerializedPawn (Pawn pPawn)

  Instantiates a SerializablePawn from a Pawn.

Properties

- bool **IsEnPassanting** `[get, set]`

  Tracks whether or not the serialized pawn's 'enPassant' field is valid or null. (true of valid, otherwise null.)
- TileIndex **EnPassantingTile** `[get, set]`

  Tracks the tile of the 'enPassanting' pawn reference for a serialized pawn.

5.22.1 Detailed Description

Derived from SerializedPawn this class represents a serialized Pawn piece.

Author: Mathew Aloisio

5.22.2 Constructor & Destructor Documentation

5.22.2.1 SerializedPawn()

```
ChessEngine.Serialization.SerializedPawn.SerializedPawn (
            Pawn pPawn )
```

Instantiates a SerializablePawn from a Pawn.

Parameters

pPawn	

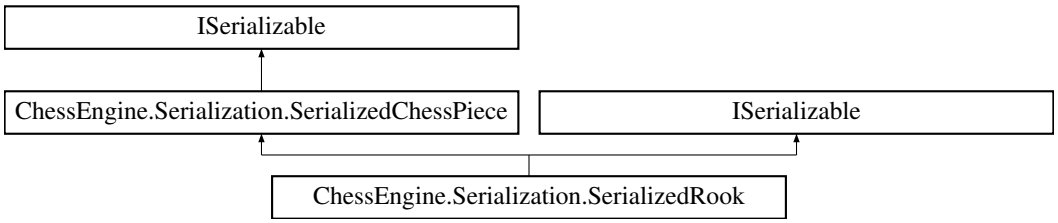
The documentation for this class was generated from the following file:

- SerializedPawn.cs

5.23 ChessEngine.Serialization.SerializedRook Class Reference

Derived from SerializedRook this class represents a serialized Rook piece.

Inheritance diagram for ChessEngine.Serialization.SerializedRook:



Public Member Functions

- **SerializedRook** ()

  Instantaites a blank SerializableRook.
- SerializedRook (Rook pRook)

  Instantiates a SerializableRook from a Rook.

Properties

- bool **IsKingSide** `[get, set]`

  Tracks whether or not the serialized rook is the kingside rook or not. (true for kingside, otherwise false.)

5.23.1 Detailed Description

Derived from SerializedRook this class represents a serialized Rook piece.

Author: Mathew Aloisio

5.23.2 Constructor & Destructor Documentation

5.23.2.1 SerializedRook()

```
ChessEngine.Serialization.SerializedRook.SerializedRook (
            Rook pRook )
```

Instantiates a SerializableRook from a Rook.

Parameters

pRook	

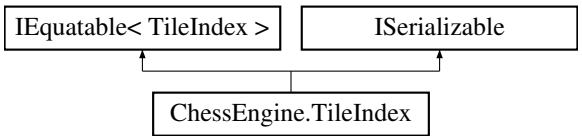
The documentation for this class was generated from the following file:

- SerializedRook.cs

5.24 ChessEngine.TileIndex Struct Reference

A TileIndex represents the index of a ChessTableTile along an 8x8 grid. Note that x == 0, y == 0, represents the lower-left origin of the chess table.

Inheritance diagram for ChessEngine.TileIndex:



Public Member Functions

- string GetTileID ()

  Gets the 'column' 'rank' identifier of the tile. (e.g: a1, e4, etc)
- **TileIndex** (int pX, int pY)
- **TileIndex** (SerializationInfo pInfo, StreamingContext pContext)
- void ISerializable. **GetObjectData** (SerializationInfo pInfo, StreamingContext pContext)
- bool Equals (TileIndex pTileIndex)

  Returns true if the TileIndexes match in both the x and y field, otherwise false.
- override bool **Equals** (object pObject)
- override int **GetHashCode** ()
- override string **ToString** ()

Static Public Member Functions

- static bool **operator==** (TileIndex pLHS, TileIndex pRHS)
- static bool **operator!=** (TileIndex pLHS, TileIndex pRHS)

Public Attributes

- int **x**
- int **y**

5.24.1 Detailed Description

A TileIndex represents the index of a ChessTableTile along an 8x8 grid. Note that x == 0, y == 0, represents the lower-left origin of the chess table.

Author: Intuitive Gaming SOlutions

5.24.2 Member Function Documentation

5.24.2.1 Equals()

```
bool ChessEngine.TileIndex.Equals (
            TileIndex pTileIndex )
```

Returns true if the TileIndexes match in both the x and y field, otherwise false.

Parameters

pTileIndex	The tile index to compare against.

Returns

true if the TileIndexes match in both the x and y field, otherwise false.

5.24.2.2 GetTileID()

```
string ChessEngine.TileIndex.GetTileID ( )
```

Gets the 'column' 'rank' identifier of the tile. (e.g: a1, e4, etc)

Returns

a string representing the tile in classic 'column rank' idenfication.

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

- TileIndex.cs

5.25 ChessEngine.TimeSystem.TimeManager Class Reference

A class that provides easy-to-use time related methods.

Public Member Functions

- void **Pause** ()

  Pauses time.
- void **Unpause** ()

  Unpauses time.
- void SetElapsedTime (float pElapsedTime)

  A public method that allows the TimeManagers elapsed time to be directly overridden.

Properties

- bool **IsPaused** `[get, set]`

  Controls whether or not the TimeManager is paused.
- float **ElapsedTime** `[get]`

  Returns the number of seconds that have elapsed since the TimeManager was constructed or unpaused. (Will return the same value at any time while paused.)

5.25.1 Detailed Description

A class that provides easy-to-use time related methods.

Author: Mathew Aloisio

5.25.2 Member Function Documentation

5.25.2.1 SetElapsedTime()

```
void ChessEngine.TimeSystem.TimeManager.SetElapsedTime (
            float pElapsedTime )
```

A public method that allows the TimeManagers elapsed time to be directly overridden.

Parameters

pElapsedTime	

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

- TimeManager.cs

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