**Moved Methods to their own class, removed redundant code.**

Showing **2 changed files** with **13 additions** and **23 deletions**

We agree with extracting out the method. More elaboration on remove redundant code.

NimController.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -36,18 +36,6 @@ |
| [36](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_36_36) | [36](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_36_36) |  |
| [37](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_37_37) | [37](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_37_37) | "Welcome To nim, his name is Fred.".ToConsole(); |
| [38](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_38_38) | [38](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_38_38) |  |
| [39](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_39_39) |  | - if (IOHelper.PromptForInputBool("Do you want to train Fred first? (y/n)", "y", "n")) { |
| [40](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_40_39) |  | - |
| [41](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_41_39) |  | - Player1 = new Player("Player 1"); |
| [42](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_42_39) |  | - Player2 = new Player("Player 2"); |
| [43](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_43_39) |  | - |
| [44](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_44_39) |  | - Player1.GetNextState += CalculateNextMove; |
| [45](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_45_39) |  | - Player2.GetNextState += CalculateNextMove; |
| [46](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_46_39) |  | - |
| [47](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_47_39) |  | - for (int i = 0; i < 500; i++) |
| [48](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_48_39) |  | - DoGame(); |
| [49](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_49_39) |  | - } |
| [50](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_50_39) |  | - |
| [51](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_51_39) | [39](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_51_39) | while (true) { |
| [52](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_52_40) | [40](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_52_40) |  |
| [53](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_53_41) | [41](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_53_41) | Player1 = new Player("Player 1"); |
| [54](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_54_42) | [42](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_54_42) |  |
| [55](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_55_43) | [43](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_55_43) |  |
| ... | ... | @@ -102,23 +90,13 @@ |
| [102](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_102_90) | [90](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_102_90) | Console.WriteLine(); |
| [103](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_103_91) | [91](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_103_91) | } |
| [104](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_104_92) | [92](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_104_92) |  |
| [105](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_105_93) |  | - ("Database weight is now: " + GetWeight()).ToConsole(); |
|  | [93](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_106_93) | + ("Database weight is now: " + StateStore.GetWeight()).ToConsole(); |
| [106](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_106_94) | [94](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_106_94) | "And again we player...".ToConsole(); |
| [107](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_95) | [95](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_95) | Console.WriteLine(); |
| [108](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_96) | [96](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_96) | } |
| [109](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_109_97) | [97](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_109_97) | } |
| [110](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_98) | [98](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_98) |  |
| [111](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_111_99) |  | - private float GetWeight() { |
| [112](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_112_99) | [99](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_112_99) |  |
| [113](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_113_100) |  | - double consensus = 0; |
| [114](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_114_100) |  | - short count = 0; |
| [115](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_115_100) |  | - foreach (KeyValuePair<NimState, NimScore> keyValuePair in StateStore.Scores) { |
| [116](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_116_100) |  | - consensus += keyValuePair.Value.Score; |
| [117](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_117_100) |  | - count++; |
| [118](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_118_100) |  | - } |
| [119](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_119_100) |  | - consensus /= count; |
| [120](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_120_100) |  | - return (float) (consensus); |
| [121](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_121_100) |  | - } |
| [122](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_122_100) | [100](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_122_100) |  |
| [123](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_123_101) | [101](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_123_101) | private Player DoGame() { |
| [124](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_124_102) | [102](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_124_102) |  |

NimStateStore.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -32,6 +32,18 @@ |
| [32](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_32_32) | [32](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_32_32) | Scores.Add(state, score); |
| [33](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_33_33) | [33](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_33_33) | } |
| [34](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_34_34) | [34](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_34_34) | } |
|  | [35](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_35) | + |
|  | [36](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_36) | + public float GetWeight() { |
|  | [37](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_37) | + |
|  | [38](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_38) | + double consensus = 0; |
|  | [39](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_39) | + short count = 0; |
|  | [40](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_40) | + foreach (KeyValuePair<NimState, NimScore> keyValuePair in Scores) { |
|  | [41](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_41) | + consensus += keyValuePair.Value.Score; |
|  | [42](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_42) | + count++; |
|  | [43](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_43) | + } |
|  | [44](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_44) | + consensus /= count; |
|  | [45](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_45) | + return (float) (consensus); |
|  | [46](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_46) | + } |
| [35](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_47) | [47](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_35_47) | } |
| [36](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_36_48) | [48](https://git.silvenga.com/root/nimproject/commit/25237fcc0e06c974adea94847ad6a2d77f7009f9#8e116fa710ea84a990cde032b589224549ac0b36_36_48) | } |

### Push Down Methods, Simplified static methods.

Showing **3 changed files** with **12 additions** and **9 deletions**

**We agree but a little hard to follow.**

NimController.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -116,14 +116,12 @@ |
| [116](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_116_116) | [116](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_116_116) |  |
| [117](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_117_117) | [117](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_117_117) | // loosing player |
| [118](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_118_118) | [118](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_118_118) | PlayerCurrent.History.Add(state.Clone()); |
| [119](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_119_119) |  | - PlayerCurrent.History.CalculateResults(false, StateStore); |
| [120](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_120_119) |  | - PlayerCurrent.History.Reset(); |
|  | [119](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_121_119) | + PlayerCurrent.PushHistory(StateStore, false); |
| [121](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_121_120) | [120](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_121_120) | TogglePlayer(); |
| [122](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_122_121) | [121](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_122_121) |  |
| [123](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_123_122) | [122](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_123_122) | // winner |
| [124](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_124_123) | [123](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_124_123) | PlayerCurrent.History.Add(new NimState()); |
| [125](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_125_124) |  | - PlayerCurrent.History.CalculateResults(true, StateStore); |
| [126](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_126_124) |  | - PlayerCurrent.History.Reset(); |
|  | [124](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_127_124) | + PlayerCurrent.PushHistory(StateStore, true); |
| [127](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_127_125) | [125](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_127_125) |  |
| [128](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_128_126) | [126](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_128_126) | return PlayerCurrent; |
| [129](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_129_127) | [127](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_129_127) | } |
| [130](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_130_128) | [128](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_130_128) |  |
| ... | ... | @@ -137,12 +135,11 @@ |
| [137](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_137_135) | [135](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_137_135) |  |
| [138](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_138_136) | [136](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_138_136) | NimState bestState = new NimState(0, 0, 1); |
| [139](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_139_137) | [137](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_139_137) | double bestScore = -1; |
| [140](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_140_138) |  | - List<NimState> states = NimHelper.GetPossibleStates(state); |
|  | [138](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_141_138) | + List<NimState> states = state.GetPossibleStates(); |
| [141](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_141_139) | [139](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_141_139) |  |
| [142](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_142_140) | [140](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_142_140) | foreach (NimState nimState in states) { |
| [143](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_143_141) | [141](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_143_141) |  |
| [144](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_144_142) | [142](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_144_142) | double tempScore = StateStore.GetScore(nimState.Clone()); |
| [145](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_145_143) |  | - // (nimState + ": " + tempScore).ToConsole(); |
| [146](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_146_143) | [143](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_146_143) |  |
| [147](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_147_144) | [144](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_147_144) | if (tempScore > bestScore) { |
| [148](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_148_145) | [145](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_148_145) |  |
| ... | ... | @@ -153,7 +150,7 @@ |
| [153](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_150) | [150](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_150) |  |
| [154](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_154_151) | [151](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_154_151) | ("Of the " + states.Count + " States, Move: " + bestState + " decided, confidence: " + ((float) bestScore)).ToConsole(); |
| [155](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_155_152) | [152](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_155_152) |  |
| [156](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_156_153) |  | - if (MathHelper.GetRandomBoolean(10) || Math.Abs(bestScore) < .2) { |
|  | [153](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_153) | + if (MathHelper.GetRandomBoolean(10)) { |
| [157](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_154) | [154](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_154) |  |
| [158](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_158_155) | [155](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_158_155) | bestState = DoRandomMove(state.Clone()); |
| [159](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_159_156) | [156](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_159_156) | bestScore = StateStore.GetScore(state.Clone()); |
| ... | ... | @@ -166,7 +163,7 @@ |
| [166](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_166_163) | [163](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_166_163) |  |
| [167](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_167_164) | [164](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_167_164) | private NimState DoRandomMove(NimState state) { |
| [168](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_168_165) | [165](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_168_165) |  |
| [169](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_169_166) |  | - return NimHelper.GetPossibleStates(state.Clone()).RandomItem<List<NimState>, NimState>(); |
|  | [166](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_170_166) | + return state.Clone().GetPossibleStates().RandomItem<List<NimState>, NimState>(); |
| [170](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_170_167) | [167](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_170_167) | } |
| [171](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_171_168) | [168](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_171_168) |  |
| [172](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_172_169) | [169](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_172_169) | private NimState PromptForNextMove(NimState state) { |

NimHelper.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -21,7 +21,7 @@ |
| [21](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_21_21) | [21](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_21_21) | return diff; |
| [22](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_22_22) | [22](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_22_22) | } |
| [23](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_23_23) | [23](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_23_23) |  |
| [24](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_24_24) |  | - public static List<NimState> GetPossibleStates(NimState state) { |
|  | [24](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_25_24) | + public static List<NimState> GetPossibleStates(this NimState state) { |
| [25](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_25_25) | [25](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_25_25) |  |
| [26](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_26_26) | [26](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_26_26) | List<NimState> states = new List<NimState>(); |
| [27](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_27_27) | [27](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#1082187e10af8277200660b6aa582b7d8e104692_27_27) |  |

Player.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -23,6 +23,12 @@ |
| [23](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_23_23) | [23](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_23_23) | public override string ToString() { |
| [24](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_24_24) | [24](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_24_24) | return Name; |
| [25](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_25_25) | [25](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_25_25) | } |
|  | [26](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_26) | + |
|  | [27](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_27) | + public void PushHistory(NimStateStore store, bool winner) { |
|  | [28](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_28) | + |
|  | [29](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_29) | + History.CalculateResults(winner, store); |
|  | [30](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_30) | + History.Reset(); |
|  | [31](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_31) | + } |
| [26](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_32) | [32](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_32) | } |
| [27](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_27_33) | [33](https://git.silvenga.com/root/nimproject/commit/52362ba4d69eec7470b499b279aa567cb34999de#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_27_33) | } |

### Gave better names to methods, Moved static Fields, Moved Methods.

Showing **4 changed files** with **35 additions** and **18 deletions**

**Good renaming conventions. Mostly naming changes for cohesion.**

NimController.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -38,8 +38,7 @@ |
| [38](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_38_38) | [38](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_38_38) |  |
| [39](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_39_39) | [39](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_39_39) | while (true) { |
| [40](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_40_40) | [40](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_40_40) |  |
| [41](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_41_41) |  | - Player1 = new Player("Player 1"); |
| [42](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_42_41) |  | - Player2 = new Player("Player 2"); |
|  | [41](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_43_41) | + ResetGame(); |
| [43](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_43_42) | [42](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_43_42) |  |
| [44](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_44_43) | [43](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_44_43) | "Game Mode?".ToConsole(); |
| [45](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_45_44) | [44](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_45_44) | "1) PvP".ToConsole(); |
| ... | ... | @@ -71,8 +70,8 @@ |
| [71](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_71_70) | [70](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_71_70) | break; |
| [72](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_72_71) | [71](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_72_71) | case 5: |
| [73](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_73_72) | [72](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_73_72) | roundsToPlay = IOHelper.PromptForInputInt("Number of rounds to train?", 1); |
| [74](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_74_73) |  | - Player1.GetNextState += CalculateNextMove; |
| [75](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_75_73) |  | - Player2.GetNextState += CalculateNextMove; |
|  | [73](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_76_73) | + Player1.GetNextState += CalculateLearningMove; |
|  | [74](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_76_74) | + Player2.GetNextState += CalculateLearningMove; |
| [76](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_76_75) | [75](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_76_75) | while (roundsToPlay-- >= 1) |
| [77](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_77_76) | [76](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_77_76) | DoGame(); |
| [78](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_78_77) | [77](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_78_77) | roundsToPlay = 0; |
| ... | ... | @@ -85,7 +84,7 @@ |
| [85](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_85_84) | [84](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_85_84) |  |
| [86](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_86_85) | [85](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_86_85) | while (roundsToPlay-- >= 1) { |
| [87](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_87_86) | [86](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_87_86) |  |
| [88](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_88_87) |  | - ("Game Winner is: " + DoGame()).ToConsole(); |
|  | [87](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_89_87) | + ("\nGame Winner is: " + DoGame()).ToConsole(); |
| [89](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_89_88) | [88](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_89_88) | IOHelper.Pause(); |
| [90](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_90_89) | [89](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_90_89) | Console.WriteLine(); |
| [91](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_91_90) | [90](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_91_90) | } |
| [92](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_92_91) | [91](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_92_91) |  |
| [93](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_93_92) | [92](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_93_92) |  |
| [94](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_94_93) | [93](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_94_93) |  |
| ... | ... | @@ -96,14 +95,18 @@ |
| [96](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_96_95) | [95](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_96_95) | } |
| [97](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_97_96) | [96](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_97_96) | } |
| [98](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_98_97) | [97](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_98_97) |  |
|  | [98](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_99_98) | + private void ResetGame() { |
| [99](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_99_99) | [99](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_99_99) |  |
|  | [100](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_100_100) | + Player1 = new Player("Player 1"); |
|  | [101](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_100_101) | + Player2 = new Player("Player 2"); |
|  | [102](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_100_102) | + } |
| [100](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_100_103) | [103](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_100_103) |  |
| [101](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_101_104) | [104](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_101_104) | private Player DoGame() { |
| [102](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_102_105) | [105](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_102_105) |  |
| [103](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_103_106) |  | - NimState state = new NimState(3, 5, 7); |
|  | [106](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_104_106) | + NimState state = NimHelper.StartingNimState.Clone(); |
| [104](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_104_107) | [107](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_104_107) | PlayerCurrent = Player1; |
| [105](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_105_108) | [108](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_105_108) |  |
| [106](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_106_109) |  | - while (!state.IsNextLossing() && state.HasValidMoves()) { |
|  | [109](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_109) | + while (!state.IsNextLossing()) { |
| [107](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_110) | [110](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_110) |  |
| [108](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_111) | [111](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_111) | ("Current Player: " + PlayerCurrent).ToConsole(); |
| [109](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_109_112) | [112](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_109_112) |  |
| [110](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_113) | [113](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_113) |  |
| [111](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_111_114) | [114](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_111_114) |  |
| [112](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_112_115) | [115](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_112_115) |  |
| [113](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_113_116) | [116](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_113_116) |  |
| [114](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_114_117) | [117](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_114_117) |  |
| ... | ... | @@ -150,20 +153,33 @@ |
| [150](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_150_153) | [153](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_150_153) |  |
| [151](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_151_154) | [154](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_151_154) | ("Of the " + states.Count + " States, Move: " + bestState + " decided, confidence: " + ((float) bestScore)).ToConsole(); |
| [152](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_152_155) | [155](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_152_155) |  |
|  | [156](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_156) | + return bestState; |
|  | [157](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_157) | + } |
|  | [158](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_158) | + |
|  | [159](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_159) | + private NimState CalculateRandomMove(NimState state) { |
|  | [160](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_160) | + |
|  | [161](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_161) | + return state.Clone().GetPossibleStates().RandomItem<List<NimState>, NimState>(); |
|  | [162](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_162) | + } |
|  | [163](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_163) | + |
|  | [164](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_164) | + private NimState CalculateLearningMove(NimState state) { |
|  | [165](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_165) | + |
|  | [166](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_166) | + NimState bestState; |
|  | [167](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_167) | + |
|  | [168](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_168) | + // Get random bool with weight of 10% will be true |
| [153](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_169) | [169](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_169) | if (MathHelper.GetRandomBoolean(10)) { |
| [154](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_154_170) | [170](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_154_170) |  |
| [155](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_155_171) |  | - bestState = DoRandomMove(state.Clone()); |
| [156](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_156_171) |  | - bestScore = StateStore.GetScore(state.Clone()); |
|  | [171](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_171) | + bestState = CalculateRandomMove(state.Clone()); |
|  | [172](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_172) | + float bestScore = (float) StateStore.GetScore(bestState.Clone()); |
| [157](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_173) | [173](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_173) |  |
| [158](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_158_174) |  | - ("But I want to learn so I picked move: " + bestState + ", confidence: " + ((float) bestScore)).ToConsole(); |
| [159](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_159_174) |  | - } |
|  | [174](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_160_174) | + ("I want to learn so this move might be a mistake: " + bestState + ", confidence: " + bestScore) |
|  | [175](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_160_175) | + .ToConsole(); |
| [160](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_160_176) | [176](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_160_176) |  |
| [161](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_161_177) |  | - return bestState; |
| [162](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_162_177) |  | - } |
|  | [177](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_163_177) | + } else { |
| [163](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_163_178) | [178](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_163_178) |  |
| [164](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_164_179) |  | - private NimState DoRandomMove(NimState state) { |
|  | [179](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_165_179) | + bestState = CalculateNextMove(state.Clone()); |
|  | [180](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_165_180) | + } |
| [165](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_165_181) | [181](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_165_181) |  |
| [166](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_166_182) |  | - return state.Clone().GetPossibleStates().RandomItem<List<NimState>, NimState>(); |
|  | [182](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_167_182) | + return bestState; |
| [167](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_167_183) | [183](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_167_183) | } |
| [168](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_168_184) | [184](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_168_184) |  |
| [169](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_169_185) | [185](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_169_185) | private NimState PromptForNextMove(NimState state) { |

NimHelper.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -4,6 +4,8 @@ |
| [4](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_4_4) | [4](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_4_4) |  |
| [5](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_5_5) | [5](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_5_5) | public static class NimHelper { |
| [6](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_6_6) | [6](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_6_6) |  |
|  | [7](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_7_7) | + public static NimState StartingNimState = new NimState(3, 5, 7); |
|  | [8](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_7_8) | + |
| [7](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_7_9) | [9](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_7_9) | public static bool IsCompatibleWith(this NimState from, NimState to) { |
| [8](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_8_10) | [10](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_8_10) |  |
| [9](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_9_11) | [11](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#1082187e10af8277200660b6aa582b7d8e104692_9_11) | return GetDiff(from, to) == 1; |

NimStateHistory.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -23,9 +23,8 @@ |
| [23](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_23_23) | [23](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_23_23) | History.Add(state); |
| [24](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_24_24) | [24](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_24_24) | } |
| [25](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_25_25) | [25](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_25_25) |  |
| [26](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_26_26) |  | - public void CalculateResults(bool isWinner, NimStateStore stateStore) { |
|  | [26](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_27_26) | + public void StoreResults(bool isWinner, NimStateStore stateStore) { |
| [27](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_27_27) | [27](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_27_27) |  |
| [28](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_28_28) |  | - // Does not care about starting = score of 0 |
| [29](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_29_28) | [28](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_29_28) | int multi = (!isWinner) ? 1 : -1; |
| [30](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_30_29) | [29](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_30_29) | for (int i = 0; i < History.Count; i++) |
| [31](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_31_30) | [30](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#98a7eab7e159e940f4e00bff7efdd99d9ae0b473_31_30) | stateStore.AddScore(History[i], ((double) (multi \* (i + 1))) / History.Count); |

Player.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -26,7 +26,7 @@ |
| [26](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_26) | [26](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_26_26) |  |
| [27](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_27_27) | [27](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_27_27) | public void PushHistory(NimStateStore store, bool winner) { |
| [28](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_28_28) | [28](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_28_28) |  |
| [29](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_29_29) |  | - History.CalculateResults(winner, store); |
|  | [29](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_30_29) | + History.StoreResults(winner, store); |
| [30](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_30_30) | [30](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_30_30) | History.Reset(); |
| [31](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_31_31) | [31](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_31_31) | } |
| [32](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_32_32) | [32](https://git.silvenga.com/root/nimproject/commit/ee5f7e3bdb3e44e8e8515aeab554d5d8b538747b#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_32_32) | } |

### Reverted old correct code, making NimState as constant as I can, Player.Name should be public

Showing **3 changed files** with **3 additions** and **3 deletions**

**Do not know which rule being applied.**

NimController.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -106,7 +106,7 @@ |
| [106](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_106_106) | [106](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_106_106) | NimState state = NimHelper.StartingNimState.Clone(); |
| [107](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_107) | [107](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_107) | PlayerCurrent = Player1; |
| [108](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_108) | [108](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_108) |  |
| [109](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_109_109) |  | - while (!state.IsNextLossing()) { |
|  | [109](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_109) | + while (!state.IsNextLossing() && state.HasValidMoves()) { |
| [110](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_110) | [110](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_110) |  |
| [111](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_111_111) | [111](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_111_111) | ("Current Player: " + PlayerCurrent).ToConsole(); |
| [112](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_112_112) | [112](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_112_112) |  |

NimHelper.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -4,7 +4,7 @@ |
| [4](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_4_4) | [4](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_4_4) |  |
| [5](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_5_5) | [5](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_5_5) | public static class NimHelper { |
| [6](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_6_6) | [6](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_6_6) |  |
| [7](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_7_7) |  | - public static NimState StartingNimState = new NimState(3, 5, 7); |
|  | [7](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_8_7) | + public static readonly NimState StartingNimState = new NimState(3, 5, 7); |
| [8](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_8_8) | [8](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_8_8) |  |
| [9](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_9_9) | [9](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_9_9) | public static bool IsCompatibleWith(this NimState from, NimState to) { |
| [10](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_10_10) | [10](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#1082187e10af8277200660b6aa582b7d8e104692_10_10) |  |

Player.cs

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -6,7 +6,7 @@ |
| [6](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_6_6) | [6](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_6_6) |  |
| [7](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_7_7) | [7](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_7_7) | public string Name { |
| [8](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_8_8) | [8](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_8_8) | get; |
| [9](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_9_9) |  | - private set; |
|  | [9](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_10_9) | + set; |
| [10](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_10_10) | [10](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_10_10) | } |
| [11](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_11_11) | [11](https://git.silvenga.com/root/nimproject/commit/e9a4f82b49e14c551ba6b1b8b34d9417f845e28c#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_11_11) |  |

Top of Form

### Promoted Functional Cohesion.

### Showing **6 changed files** with **173 additions** and **124 deletions**

Rule of replace algorithm seen throughout the changes. Extract subclass to make more cohesive.

AIPlayer.cs

|  |  |  |
| --- | --- | --- |
|  | [1](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_1) | +﻿using System.Collections.Generic; |
|  | [2](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_2) | +using SlightLibrary.Extensions; |
|  | [3](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_3) | + |
|  | [4](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_4) | +namespace Nim { |
|  | [5](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_5) | + class AIPlayer : Player { |
|  | [6](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_6) | + |
|  | [7](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_7) | + private readonly NimStateStore \_store; |
|  | [8](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_8) | + |
|  | [9](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_9) | + public AIPlayer(string playerName, NimStateStore store) |
|  | [10](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_10) | + : base(playerName) { |
|  | [11](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_11) | + |
|  | [12](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_12) | + \_store = store; |
|  | [13](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_13) | + } |
|  | [14](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_14) | + |
|  | [15](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_15) | + public override NimState GetNextState(NimState state) { |
|  | [16](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_16) | + |
|  | [17](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_17) | + NimState bestState = new NimState(0, 0, 1); |
|  | [18](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_18) | + double bestScore = -1; |
|  | [19](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_19) | + List<NimState> states = state.GetPossibleStates(); |
|  | [20](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_20) | + |
|  | [21](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_21) | + foreach (NimState nimState in states) { |
|  | [22](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_22) | + |
|  | [23](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_23) | + double tempScore = \_store.GetScore(nimState.Clone()); |
|  | [24](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_24) | + |
|  | [25](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_25) | + if (tempScore > bestScore) { |
|  | [26](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_26) | + |
|  | [27](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_27) | + bestScore = tempScore; |
|  | [28](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_28) | + bestState = nimState.Clone(); |
|  | [29](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_29) | + } |
|  | [30](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_30) | + } |
|  | [31](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_31) | + |
|  | [32](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_32) | + ("Of the " + states.Count + " States, Move: " + bestState + " decided, confidence: " + ((float) bestScore)).ToConsole(); |
|  | [33](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_33) | + |
|  | [34](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_34) | + return bestState; |
|  | [35](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_35) | + } |
|  | [36](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_36) | + } |
|  | [37](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#4cf3b42dba31ed970cf85afba13092ae2e6f6321_1_37) | +} |

HumanPlayer.cs

|  |  |  |
| --- | --- | --- |
|  | [1](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_1) | +﻿using System; |
|  | [2](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_2) | +using SlightLibrary.Extensions; |
|  | [3](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_3) | +using SlightLibrary.Helpers; |
|  | [4](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_4) | + |
|  | [5](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_5) | +namespace Nim { |
|  | [6](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_6) | + class HumanPlayer : Player { |
|  | [7](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_7) | + |
|  | [8](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_8) | + public HumanPlayer(string playerName) |
|  | [9](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_9) | + : base(playerName) { |
|  | [10](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_10) | + } |
|  | [11](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_11) | + |
|  | [12](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_12) | + public override NimState GetNextState(NimState state) { |
|  | [13](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_13) | + |
|  | [14](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_14) | + ("1) " + state.XReal).ToConsole(); |
|  | [15](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_15) | + ("2) " + state.YReal).ToConsole(); |
|  | [16](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_16) | + ("3) " + state.ZReal).ToConsole(); |
|  | [17](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_17) | + |
|  | [18](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_18) | + int option = 0; |
|  | [19](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_19) | + |
|  | [20](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_20) | + bool goodRow = false; |
|  | [21](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_21) | + |
|  | [22](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_22) | + while (!goodRow) { |
|  | [23](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_23) | + |
|  | [24](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_24) | + option = IOHelper.PromptForInputInt("Which Row to Edit?", 1, 3); |
|  | [25](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_25) | + |
|  | [26](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_26) | + switch (option) { |
|  | [27](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_27) | + case 1: |
|  | [28](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_28) | + goodRow = state.XReal > 0; |
|  | [29](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_29) | + break; |
|  | [30](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_30) | + case 2: |
|  | [31](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_31) | + goodRow = state.YReal > 0; |
|  | [32](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_32) | + break; |
|  | [33](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_33) | + case 3: |
|  | [34](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_34) | + goodRow = state.ZReal > 0; |
|  | [35](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_35) | + break; |
|  | [36](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_36) | + } |
|  | [37](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_37) | + |
|  | [38](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_38) | + if (!goodRow) |
|  | [39](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_39) | + "Bad Row".ToConsole(); |
|  | [40](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_40) | + } |
|  | [41](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_41) | + |
|  | [42](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_42) | + int numberToRemove = IOHelper.PromptForInputInt("Number to Remove?", 1); |
|  | [43](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_43) | + |
|  | [44](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_44) | + switch (option) { |
|  | [45](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_45) | + case 1: |
|  | [46](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_46) | + state.XReal -= numberToRemove; |
|  | [47](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_47) | + break; |
|  | [48](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_48) | + case 2: |
|  | [49](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_49) | + state.YReal -= numberToRemove; |
|  | [50](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_50) | + break; |
|  | [51](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_51) | + case 3: |
|  | [52](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_52) | + state.ZReal -= numberToRemove; |
|  | [53](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_53) | + break; |
|  | [54](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_54) | + } |
|  | [55](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_55) | + |
|  | [56](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_56) | + Console.WriteLine(); |
|  | [57](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_57) | + |
|  | [58](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_58) | + return state; |
|  | [59](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_59) | + } |
|  | [60](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_60) | + } |
|  | [61](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#bfa29d9671c0546f279e8f100d4665727b1b635e_1_61) | +} |

Nim.csproj

|  |  |  |
| --- | --- | --- |
| ... | ... | @@ -45,10 +45,12 @@ |
| [45](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_45_45) | [45](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_45_45) | <Reference Include="WindowsBase" /> |
| [46](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_46_46) | [46](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_46_46) | </ItemGroup> |
| [47](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_47_47) | [47](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_47_47) | <ItemGroup> |
|  | [48](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_48_48) | + <Compile Include="AIPlayer.cs" /> |
|  | [49](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_48_49) | + <Compile Include="HumanPlayer.cs" /> |
| [48](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_48_50) | [50](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_48_50) | <Compile Include="NimController.cs" /> |
| [49](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_49_51) |  | - <Compile Include="NimHelper.cs" /> |
| [50](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_50_51) | [51](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_50_51) | <Compile Include="NimScore.cs" /> |
| [51](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_51_52) | [52](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_51_52) | <Compile Include="NimState.cs" /> |
|  | [53](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_52_53) | + <Compile Include="NimStateHelper.cs" /> |
| [52](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_52_54) | [54](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_52_54) | <Compile Include="NimStateHistory.cs" /> |
| [53](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_53_55) | [55](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_53_55) | <Compile Include="NimStateStore.cs" /> |
| [54](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_54_56) | [56](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#239f0608eff4c1254c2c1bc565127ee15df7d68b_54_56) | <Compile Include="Player.cs" /> |

NimController.cs

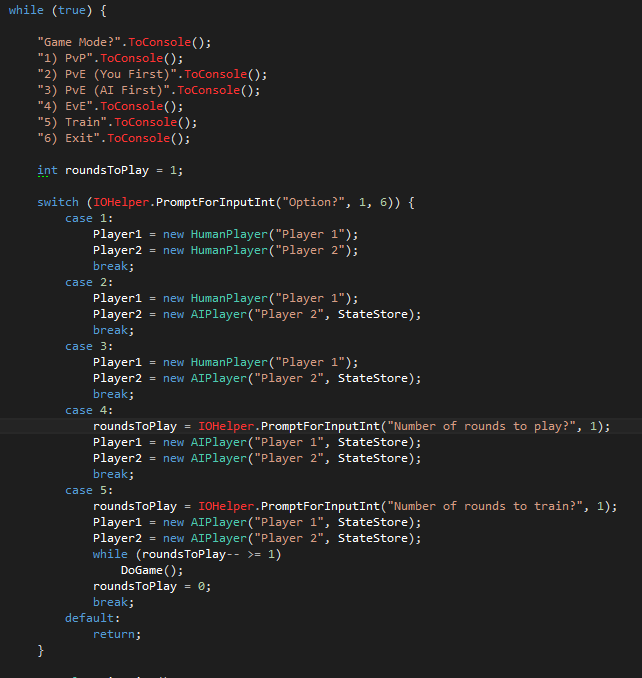
|  |  |  |
| --- | --- | --- |
| [1](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_1_1) | [1](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_1_1) | ﻿using System; |
| [2](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_2_2) |  | -using System.Collections.Generic; |
| [3](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_3_2) | [2](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_3_2) | using SlightLibrary.Extensions; |
| [4](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_4_3) | [3](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_4_3) | using SlightLibrary.Helpers; |
| [5](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_5_4) | [4](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_5_4) |  |
| ... | ... | @@ -38,8 +37,6 @@ |
| [38](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_38_37) | [37](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_38_37) |  |
| [39](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_39_38) | [38](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_39_38) | while (true) { |
| [40](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_40_39) | [39](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_40_39) |  |
| [41](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_41_40) |  | - ResetGame(); |
| [42](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_42_40) |  | - |
| [43](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_43_40) | [40](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_43_40) | "Game Mode?".ToConsole(); |
| [44](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_44_41) | [41](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_44_41) | "1) PvP".ToConsole(); |
| [45](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_45_42) | [42](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_45_42) | "2) PvE (You First)".ToConsole(); |
| [46](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_46_43) | [43](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_46_43) |  |
| [47](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_47_44) | [44](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_47_44) |  |
| [48](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_48_45) | [45](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_48_45) |  |
| [49](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_49_46) | [46](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_49_46) |  |
| ... | ... | @@ -52,26 +49,26 @@ |
| [52](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_52_49) | [49](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_52_49) |  |
| [53](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_53_50) | [50](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_53_50) | switch (IOHelper.PromptForInputInt("Option?", 1, 6)) { |
| [54](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_54_51) | [51](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_54_51) | case 1: |
| [55](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_55_52) |  | - Player1.GetNextState += PromptForNextMove; |
| [56](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_56_52) |  | - Player2.GetNextState += PromptForNextMove; |
|  | [52](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_57_52) | + Player1 = new HumanPlayer("Player 1"); |
|  | [53](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_57_53) | + Player2 = new HumanPlayer("Player 2"); |
| [57](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_57_54) | [54](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_57_54) | break; |
| [58](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_58_55) | [55](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_58_55) | case 2: |
| [59](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_59_56) |  | - Player1.GetNextState += PromptForNextMove; |
| [60](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_60_56) |  | - Player2.GetNextState += CalculateNextMove; |
|  | [56](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_61_56) | + Player1 = new HumanPlayer("Player 1"); |
|  | [57](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_61_57) | + Player2 = new AIPlayer("Player 2", StateStore); |
| [61](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_61_58) | [58](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_61_58) | break; |
| [62](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_62_59) | [59](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_62_59) | case 3: |
| [63](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_63_60) |  | - Player1.GetNextState += CalculateNextMove; |
| [64](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_64_60) |  | - Player2.GetNextState += PromptForNextMove; |
|  | [60](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_65_60) | + Player1 = new HumanPlayer("Player 1"); |
|  | [61](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_65_61) | + Player2 = new AIPlayer("Player 2", StateStore); |
| [65](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_65_62) | [62](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_65_62) | break; |
| [66](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_66_63) | [63](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_66_63) | case 4: |
| [67](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_67_64) | [64](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_67_64) | roundsToPlay = IOHelper.PromptForInputInt("Number of rounds to play?", 1); |
| [68](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_68_65) |  | - Player1.GetNextState += CalculateNextMove; |
| [69](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_69_65) |  | - Player2.GetNextState += CalculateNextMove; |
|  | [65](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_70_65) | + Player1 = new AIPlayer("Player 1", StateStore); |
|  | [66](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_70_66) | + Player2 = new AIPlayer("Player 2", StateStore); |
| [70](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_70_67) | [67](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_70_67) | break; |
| [71](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_71_68) | [68](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_71_68) | case 5: |
| [72](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_72_69) | [69](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_72_69) | roundsToPlay = IOHelper.PromptForInputInt("Number of rounds to train?", 1); |
| [73](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_73_70) |  | - Player1.GetNextState += CalculateLearningMove; |
| [74](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_74_70) |  | - Player2.GetNextState += CalculateLearningMove; |
|  | [70](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_75_70) | + Player1 = new AIPlayer("Player 1", StateStore); |
|  | [71](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_75_71) | + Player2 = new AIPlayer("Player 2", StateStore); |
| [75](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_75_72) | [72](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_75_72) | while (roundsToPlay-- >= 1) |
| [76](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_76_73) | [73](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_76_73) | DoGame(); |
| [77](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_77_74) | [74](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_77_74) | roundsToPlay = 0; |
| [78](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_78_75) | [75](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_78_75) |  |
| [79](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_79_76) | [76](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_79_76) |  |
| ... | ... | @@ -95,21 +92,15 @@ |
| [95](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_95_92) | [92](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_95_92) | } |
| [96](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_96_93) | [93](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_96_93) | } |
| [97](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_97_94) | [94](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_97_94) |  |
| [98](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_98_95) |  | - private void ResetGame() { |
| [99](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_99_95) |  | - |
| [100](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_100_95) |  | - Player1 = new Player("Player 1"); |
| [101](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_101_95) |  | - Player2 = new Player("Player 2"); |
| [102](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_102_95) |  | - } |
| [103](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_103_95) |  | - |
| [104](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_104_95) | [95](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_104_95) | private Player DoGame() { |
| [105](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_105_96) | [96](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_105_96) |  |
| [106](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_106_97) |  | - NimState state = NimHelper.StartingNimState.Clone(); |
|  | [97](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_97) | + NimState state = NimStateHelper.StartingNimState.Clone(); |
| [107](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_98) | [98](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_107_98) | PlayerCurrent = Player1; |
| [108](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_99) | [99](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_108_99) |  |
| [109](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_109_100) | [100](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_109_100) | while (!state.IsNextLossing() && state.HasValidMoves()) { |
| [110](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_101) | [101](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_110_101) |  |
| [111](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_111_102) | [102](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_111_102) | ("Current Player: " + PlayerCurrent).ToConsole(); |
| [112](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_112_103) |  | - |
|  | [103](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_113_103) | + ("Current State is: " + state).ToConsole(); |
| [113](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_113_104) | [104](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_113_104) | PlayerCurrent.History.Add(state.Clone()); |
| [114](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_114_105) | [105](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_114_105) | state = PlayerCurrent.GetNextState(state.Clone()); |
| [115](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_115_106) | [106](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_115_106) |  |
| ... | ... | @@ -132,104 +123,6 @@ |
| [132](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_132_123) | [123](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_132_123) | private void TogglePlayer() { |
| [133](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_133_124) | [124](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_133_124) |  |
| [134](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_134_125) | [125](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_134_125) | PlayerCurrent = (PlayerCurrent.Equals(Player1)) ? Player2 : Player1; |
| [135](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_135_126) |  | - } |
| [136](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_136_126) |  | - |
| [137](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_137_126) |  | - private NimState CalculateNextMove(NimState state) { |
| [138](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_138_126) |  | - |
| [139](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_139_126) |  | - NimState bestState = new NimState(0, 0, 1); |
| [140](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_140_126) |  | - double bestScore = -1; |
| [141](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_141_126) |  | - List<NimState> states = state.GetPossibleStates(); |
| [142](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_142_126) |  | - |
| [143](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_143_126) |  | - foreach (NimState nimState in states) { |
| [144](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_144_126) |  | - |
| [145](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_145_126) |  | - double tempScore = StateStore.GetScore(nimState.Clone()); |
| [146](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_146_126) |  | - |
| [147](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_147_126) |  | - if (tempScore > bestScore) { |
| [148](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_148_126) |  | - |
| [149](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_149_126) |  | - bestScore = tempScore; |
| [150](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_150_126) |  | - bestState = nimState.Clone(); |
| [151](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_151_126) |  | - } |
| [152](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_152_126) |  | - } |
| [153](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_153_126) |  | - |
| [154](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_154_126) |  | - ("Of the " + states.Count + " States, Move: " + bestState + " decided, confidence: " + ((float) bestScore)).ToConsole(); |
| [155](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_155_126) |  | - |
| [156](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_156_126) |  | - return bestState; |
| [157](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_157_126) |  | - } |
| [158](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_158_126) |  | - |
| [159](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_159_126) |  | - private NimState CalculateRandomMove(NimState state) { |
| [160](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_160_126) |  | - |
| [161](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_161_126) |  | - return state.Clone().GetPossibleStates().RandomItem<List<NimState>, NimState>(); |
| [162](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_162_126) |  | - } |
| [163](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_163_126) |  | - |
| [164](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_164_126) |  | - private NimState CalculateLearningMove(NimState state) { |
| [165](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_165_126) |  | - |
| [166](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_166_126) |  | - NimState bestState; |
| [167](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_167_126) |  | - |
| [168](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_168_126) |  | - // Get random bool with weight of 10% will be true |
| [169](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_169_126) |  | - if (MathHelper.GetRandomBoolean(10)) { |
| [170](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_170_126) |  | - |
| [171](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_171_126) |  | - bestState = CalculateRandomMove(state.Clone()); |
| [172](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_172_126) |  | - float bestScore = (float) StateStore.GetScore(bestState.Clone()); |
| [173](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_173_126) |  | - |
| [174](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_174_126) |  | - ("I want to learn so this move might be a mistake: " + bestState + ", confidence: " + bestScore) |
| [175](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_175_126) |  | - .ToConsole(); |
| [176](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_176_126) |  | - |
| [177](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_177_126) |  | - } else { |
| [178](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_178_126) |  | - |
| [179](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_179_126) |  | - bestState = CalculateNextMove(state.Clone()); |
| [180](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_180_126) |  | - } |
| [181](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_181_126) |  | - |
| [182](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_182_126) |  | - return bestState; |
| [183](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_183_126) |  | - } |
| [184](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_184_126) |  | - |
| [185](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_185_126) |  | - private NimState PromptForNextMove(NimState state) { |
| [186](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_186_126) |  | - |
| [187](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_187_126) |  | - ("Current State is: " + state).ToConsole(); |
| [188](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_188_126) |  | - ("1) " + state.XReal).ToConsole(); |
| [189](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_189_126) |  | - ("2) " + state.YReal).ToConsole(); |
| [190](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_190_126) |  | - ("3) " + state.ZReal).ToConsole(); |
| [191](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_191_126) |  | - |
| [192](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_192_126) |  | - int option = 0; |
| [193](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_193_126) |  | - |
| [194](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_194_126) |  | - bool goodRow = false; |
| [195](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_195_126) |  | - |
| [196](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_196_126) |  | - while (!goodRow) { |
| [197](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_197_126) |  | - |
| [198](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_198_126) |  | - option = IOHelper.PromptForInputInt("Which Row to Edit?", 1, 3); |
| [199](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_199_126) |  | - |
| [200](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_200_126) |  | - switch (option) { |
| [201](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_201_126) |  | - case 1: |
| [202](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_202_126) |  | - goodRow = state.XReal > 0; |
| [203](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_203_126) |  | - break; |
| [204](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_204_126) |  | - case 2: |
| [205](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_205_126) |  | - goodRow = state.YReal > 0; |
| [206](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_206_126) |  | - break; |
| [207](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_207_126) |  | - case 3: |
| [208](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_208_126) |  | - goodRow = state.ZReal > 0; |
| [209](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_209_126) |  | - break; |
| [210](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_210_126) |  | - } |
| [211](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_211_126) |  | - |
| [212](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_212_126) |  | - if (!goodRow) |
| [213](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_213_126) |  | - "Bad Row".ToConsole(); |
| [214](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_214_126) |  | - } |
| [215](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_215_126) |  | - |
| [216](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_216_126) |  | - int numberToRemove = IOHelper.PromptForInputInt("Number to Remove?", 1); |
| [217](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_217_126) |  | - |
| [218](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_218_126) |  | - switch (option) { |
| [219](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_219_126) |  | - case 1: |
| [220](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_220_126) |  | - state.XReal -= numberToRemove; |
| [221](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_221_126) |  | - break; |
| [222](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_222_126) |  | - case 2: |
| [223](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_223_126) |  | - state.YReal -= numberToRemove; |
| [224](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_224_126) |  | - break; |
| [225](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_225_126) |  | - case 3: |
| [226](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_226_126) |  | - state.ZReal -= numberToRemove; |
| [227](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_227_126) |  | - break; |
| [228](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_228_126) |  | - } |
| [229](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_229_126) |  | - |
| [230](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_230_126) |  | - Console.WriteLine(); |
| [231](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_231_126) |  | - |
| [232](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_232_126) |  | - return state; |
| [233](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_233_126) | [126](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_233_126) | } |
| [234](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_234_127) | [127](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_234_127) | } |
| [235](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_235_128) | [128](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#dfb6888ada9fc84b21d4be14f5a1e5df0be2d712_235_128) | } |

NimStateHelper.cs

|  |  |  |
| --- | --- | --- |
|  | [1](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_1) | +﻿using System.Collections.Generic; |
|  | [2](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_2) | + |
|  | [3](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_3) | +namespace Nim { |
|  | [4](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_4) | + |
|  | [5](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_5) | + public static class NimStateHelper { |
|  | [6](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_6) | + |
|  | [7](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_7) | + public static readonly NimState StartingNimState = new NimState(3, 5, 7); |
|  | [8](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_8) | + |
|  | [9](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_9) | + public static bool IsCompatibleWith(this NimState from, NimState to) { |
|  | [10](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_10) | + |
|  | [11](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_11) | + return GetDiff(from, to) == 1; |
|  | [12](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_12) | + } |
|  | [13](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_13) | + |
|  | [14](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_14) | + public static int GetDiff(this NimState from, NimState to) { |
|  | [15](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_15) | + |
|  | [16](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_16) | + int diff = 0; |
|  | [17](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_17) | + if (from.X == to.X) |
|  | [18](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_18) | + diff++; |
|  | [19](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_19) | + if (from.Y == to.Y) |
|  | [20](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_20) | + diff++; |
|  | [21](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_21) | + if (from.Z == to.Z) |
|  | [22](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_22) | + diff++; |
|  | [23](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_23) | + return diff; |
|  | [24](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_24) | + } |
|  | [25](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_25) | + |
|  | [26](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_26) | + public static List<NimState> GetPossibleStates(this NimState state) { |
|  | [27](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_27) | + |
|  | [28](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_28) | + List<NimState> states = new List<NimState>(); |
|  | [29](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_29) | + |
|  | [30](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_30) | + for (int i = 1; i <= state.XReal; i++) { |
|  | [31](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_31) | + |
|  | [32](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_32) | + NimState tempState = state.Clone(); |
|  | [33](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_33) | + tempState.XReal -= i; |
|  | [34](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_34) | + if (tempState.HasValidMoves()) |
|  | [35](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_35) | + states.Add(tempState); |
|  | [36](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_36) | + } |
|  | [37](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_37) | + |
|  | [38](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_38) | + for (int i = 1; i <= state.YReal; i++) { |
|  | [39](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_39) | + |
|  | [40](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_40) | + NimState tempState = state.Clone(); |
|  | [41](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_41) | + tempState.YReal -= i; |
|  | [42](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_42) | + if (tempState.HasValidMoves()) |
|  | [43](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_43) | + states.Add(tempState); |
|  | [44](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_44) | + } |
|  | [45](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_45) | + |
|  | [46](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_46) | + for (int i = 1; i <= state.ZReal; i++) { |
|  | [47](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_47) | + |
|  | [48](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_48) | + NimState tempState = state.Clone(); |
|  | [49](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_49) | + tempState.ZReal -= i; |
|  | [50](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_50) | + if (tempState.HasValidMoves()) |
|  | [51](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_51) | + states.Add(tempState); |
|  | [52](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_52) | + } |
|  | [53](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_53) | + |
|  | [54](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_54) | + return states; |
|  | [55](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_55) | + } |
|  | [56](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_56) | + } |
|  | [57](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#9748ba446c7e1e2ce3c52f446fb3056384a2418c_1_57) | +} |

Player.cs

|  |  |  |
| --- | --- | --- |
| [1](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_1_1) | [1](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_1_1) | ﻿namespace Nim { |
| [2](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_2_2) |  | - public class Player { |
|  | [2](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_3_2) | + public abstract class Player { |
| [3](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_3_3) | [3](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_3_3) |  |
| [4](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_4_4) |  | - public delegate NimState NextState(NimState state); |
| [5](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_5_4) |  | - public NextState GetNextState; |
|  | [4](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_6_4) | + public abstract NimState GetNextState(NimState state); |
| [6](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_6_5) | [5](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_6_5) |  |
| [7](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_7_6) | [6](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_7_6) | public string Name { |
| [8](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_8_7) | [7](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_8_7) | get; |
| ... | ... | @@ -14,7 +13,7 @@ |
| [14](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_14_13) | [13](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_14_13) | private set; |
| [15](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_15_14) | [14](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_15_14) | } |
| [16](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_16_15) | [15](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_16_15) |  |
| [17](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_17_16) |  | - public Player(string playerName) { |
|  | [16](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_18_16) | + protected Player(string playerName) { |
| [18](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_18_17) | [17](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_18_17) |  |
| [19](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_19_18) | [18](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_19_18) | Name = playerName; |
| [20](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_20_19) | [19](https://git.silvenga.com/root/nimproject/commit/7189de452007dffda606e7a2a1142427a900ff03#3f0d2ea82b3d9e6dcabce4d9d593725fcce3f4ef_20_19) | History = new NimStateHistory(); |



We would extract this into a method to display and handle menu options.

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