Project #1: Theory of Computer Games, 2015

You are required to write an AI program in C/C++ that plays a 2048-like game called Fib-2584, which is similar to the one at http://www.crazygames.com/game/2584-fibonacci with the following changes:

* Drop new tiles, 1-tiles or 3-tiles with probabilities of 3/4 and 1/4, respectively.

For this project, your program does not have to play particularly well. There are two main purposes for this project:

1. Familiarize yourselves with the Fib-2584 framework which we have provided, so that project 2 can be completed more easily.
2. Compare between the AI methods used in the first and second project, so you get a sense of how suitable certain methods are to a specific game. For example, you may attempt project 1 with a simple search, while project 2 may be completed using TD-learning (which the Prof. will cover in the coming lectures).

The following is a quick description of what you need to do to complete project 1:

* The program takes 1 argument, which is the total number of games to play (e.g. “play\_game 1000”, where the program is compiled as “play\_game”, will play 1000 games using the AI program, and show some interesting statistics)
* You need to go into Fib2584Ai.cpp and replace the generateMove function definition. We have included a random player.
* The MoveDirection type is enumerated in MoveDirection.h
* You are allowed to define new functions so long as the 3 APIs in the Fib2584Ai class are available. More specifically, you may even define new classes, as long as they do not share the same class name or namespace as any other classes included with the framework (BitBoard, Random, MoveTable, GameBoard, etc.).
* **MOST IMPORTANTLY: Do not make changes to main.cpp and any other included source files, since I will be replacing them with the original files during the demo!** If your program’s intended behavior depends on modifications to any framework files other than Fib2584Ai.h and .cpp, there is probably something wrong with your design!

The objective is to write any AI program so that your average score is considerably higher than the random program that we have included. The random program tends to average a score of 2500/game. You will be awarded scores according to the following table:

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| Score | Grade |
| 2500~6000 | 70% |
| 6001~10000 | 80% |
| 10001~20000 | 90% |
| Above 20000 | 100% |