Personal Enhancement – Aili Gong

Before I did some enhancements, I fixed some bugs in the game implementation to ensure the code will run as expected in Milestone 2.

Random Seed

User is able to give a random seed when execute the program using a command line argument *./azul -s <seed>*. The random seed will be set to 0 if negative number or unmusical argument is given. When the randomness is turned on, the tiles will be shuffled before being placed into the factories.

Box Lid

A box lid is added into the game. It is represented by a **vector** of tiles. Since the size of the box lid is dynamic and we need to add tiles into the box lid frequently. Therefore, I chose to use a vector because the time complexity for a vector to add a new tile is always constant. Also, vector provide a function to shuffle the tiles. The time complexity of adding a tile into the box lid is O(1) and the complexity to add all tiles back into the tile bag is O(n).

Shuffle the bag in a game

Since we need to get first tile often, so I kept the data structure for the tile bag still as a linked list to ensure the efficiency. The tiles are shuffled in the box lid before adding back to the tile bag. When the randomness mode is turned, the game records the tile bag each time it is filled.

Advance mode

Before the enhancement, we used some globe constants to fix some game setting, such as the number of tile colour, the dimension of the mosaic and etc. To give more flexibility of the game mode, I changed the constant utility file into a separate class as a configuration file. It is passed as a parameter when user create a new game.

Six tile mode

When user chooses a six-tile mode, the sixth tile – Orange will be added into the game with an additional broken tile slot. These settings are configured in the

Grey Mode

When the given config indicates that the game is in a grey mode, instead of moving the tiles into the mosaic pattern, it asks the player place the tile manually. The manual movements will be record in the game history.

The efficiency of the six-tile mode and the grey mode is same as the standard mode. There is no data structure changed for these two modes.

Saving/loading a game in an advance mode

To make a distinction between a standard mode as specified in milestone 2 and an advanced mode, I used my own file format to record:

- The random seed when the randomness is turned on
- The number of tile colour used in the game
- Whether the grey mode is turned on
- The player names
- The initial bag
- all tile bag changes when the randomness is turned on
- all turn movements
- all tile manual movement under the grey mode