POPL ASSIGNMENT

2048 Game Design



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Contents

1. Class Matrix

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Functions

1. \_\_init\_\_ -This function is a reserved method. It is a constructor.

Arguments: self which is used to access all instances of the class and dimx, dimy tell the dimension of the matrix of the game and has a default value of 4 for both.

Attributes of the function are length, height which are the dimensions of the game board. maxTileValue which stores the maximum of the game at a particular point. Score which stores the score of the user. mtx is a 2 dimensional array which stores the integer value of the game after every move. tiles which is a 2 dimensional matrix which stores the tiile object which has the value, color and dimension of the tile.

1. buildTiles- This function instantiates the the tile class objects and store in tiles 2 dimensional array.
2. changeTileNum- This function is used to change the tile value which is reflected in gui of the game.
3. addNewTile- This function helps in adding new tile which is reflected in the gui.
4. updateGui- It updates the gui of the game when auser makes a particular move.
5. maxTileNum- This function helps in getting the maximum tile value when called and it stores the maximum value in maxTileValue attribute.
6. emptyAvailable- This function returns true if an empty place is found in the grid of the game else false.
7. checkEqualConsecutiveTiles- checks whether two tiles in adjacent are equal. It helps in merging the adjacent tiles if they are equal after a move. Returns true or false.
8. checkAddandUpdate- It stores the current move made and updates the max tile value. If max value of 2048 is not reached it adds a random tile and updates the gui else if no empty spaces left then gameover attribute is made true and winner attribute as false and if 2048 is reached then winner attribute is made true and the game stops.

10. storeMoves- stores the current values of grid in an array.

The array has size 5 which stores the previous states of the grid.

11. restore- It is called when user presses space to go back to previous state and this function updates the gui and the mtx attriubute which stores the integer values of the current state.

12. leftMove, rightMove, upMove, downMove- This function updates the mtx attribute and updates the gui based on the move made.