CSE 241 HW5 REPORT

BoardGame2D CLASS

- This class is an abstract class beacuse of the pure virtual functions inside of it.
- The only non-pure virtual functions are playUser(), playAutoAll(), playVector and overloaded << operator.
- playUser() Function: This function is a final, so it takes an input from the console and calls the other overloaded playUser(string input) and plays until the game ends.
- The string input changes according to the game. In PegSolitaire, the string input should indicate the letter and number with the move way crossing the table. If the user wants to play A5 to right, they should input A5R. In Slider, user puts the column and row as numbers. If the user wants to move second column and first row to the right, 12R should be given as input.
- playAutoAll() Function: This function continously calls playAuto function for the according game till the endgame() function returns true. Another calling parameter for this function is putted for Slider game. Slider game's auto function plays randomly so it has very low chance to actually win the game. So i added an i<35 rule. If the computer cannot win in 35 moves, the function stops.
- playVector Function: This function takes a vector of BoardGame2D * objects and plays the games inside of it. I downcasted with the pointer and called playAutoAll function for each game.
- Other functions in this class are pure virtual so they are defined in derived classes.

PegSolitaire CLASS

- This class is derived from the abstract class BoardGame2D.
- playAuto Function: This function searches through the board, finds a valid move and plays.
- playAutoOver Function: This function purely exists for deriving the final playAutoAll() function.
- playUserOver Function: This function purely exists for deriving the final playUser() function.
- endgame Function: Searches for all the ways in board. If there is no valid moves left, returns true.
- scoreBoard function: Counts the peg number in class. Lower the peg number, better the score it returns.

Slider CLASS

- This class is derived from the abstract class BoardGame2D.

- playAuto Function: This function randomly selects a way to search a valid move. If it finds it, it switches the index with the blank space.
- playAutoOver Function: This function purely exists for deriving the final playAutoAll() function.
- playUserOver Function: This function purely exists for deriving the final playUser() function.
- playUser(input) Function: The 2. index of the string input indicates the move way. This function selects the true move way and calls the according move function.
- scoreBoard function :This function goes through the board an counts the uncontinous numbers. For example:
  128
  457
  36
- In this game, the function counts 5 uncontinous numbers and it returns it.
- endgame Function: Starting from beginning, adds every index number to eachother. If they are not equal to the index, this means game has not finished yet.

Klotski CLASS

- This class is derived from the abstract class BoardGame2D.

Board design: A, B, C, D and E represents the rectangular pieces.

X represents the big square block.

F, G, H and I represents little square blocks.

O represents the empty spaces.

- endgame Function: If the X's are at the bottom index of the board, this means that the game is won.
- boardScore Function: This score works as the distance of the lowest X to the bottom of the board. Lower the distance, lower the score.

Other Derived Functions:

- print and << operator just prints the boards of the game.
- initialize function makes sure that board is at its initial state.

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