Lets Start!

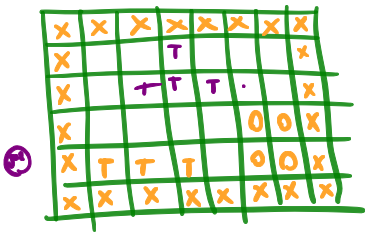
Gebze Technical University
Department of Computer Engineering
CSE 241/501
Object Oriented Programming / Programming
Fall 2022
Homework # 3
Dynamic Memory and Classes
Due date Nov 30th 2022

delete function to delete fits which are fully filled!

You will convert your Tetris game of HW2 into a version that uses dynamic memory with new and delete operators. If you don't have one working we will provide one. You will not use any STL classes in this homework such as vectors.

Your class will again be named Tetris. It will have at least the following functions

- Constructors to take the rectangular size of the Tetris board.
- The operator += to add a Tetromino to the board. The new Tetromino will be added at the top row in the middle.
- No fit function will be implemented!!
- Draw function to draw the Tetris board. It will optionally start the drawing from the top. See how to move your cursor to the top of your screen on a UNIX terminal at https://en.wikipedia.org/wiki/ANSI_escape_code#CSI_sequences. Note that your code will not be portable because it will work only on certain consoles.
- Animate function to animate the added tetromino dropping to the bottom of the board. The animation will be repetition of four steps:
  1. Draw the board with Tetromino at the top
  2. Ask the user rotation direction and rotation count
  3. Ask the user move direction and count
  4. Rotate and move the Tetromino
  5. Draw the board
  6. Sleep 50 miliseconds
  7. Lower the Tetromino one level and go to step 5 until it hits the bottom.



You will submit two driver source files, each will include a main function. Your first driver code will test each member function of both classes (Tetris and Tetromino) and print (or show) the result on the screen.

Your second driver code will do the following

1. Ask the user the size of the Tetris board
2. Ask the Tetromino type (I, O, T, J, L, S, Z). User may enter R for random Tetromino, Q for quit.
3. Add the asked Tetromino to the board and animate
4. Go to 2

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Notes:

- Define your namespace for the classes

- You will submit 2 header and 2 CPP files for two classes. You should also submit 2 driver CPP files named driver1.cpp and driver2.cpp
- You will submit the makefile of your program. Submission without makefile will not be evaluated.
- Do not use any functions from the standard C library (like **`printf`**), do not use C arrays. For math functions you may use standard C functions.
- You will not use any STL classes in this homework such as vectors.
- Your program should have header file and implementation files
- Use all the OOP techniques that we have learned in the lectures such as consts, C++11 features (range for loops, strong enums, auto keyword, decltype keyword, etc.)
- Do not forget to indent your code and provide meaningful comments.
- Check the validity of the user input.
- **Test your programs very carefully at least with 5 different runs. For some runs use trivial cases such as 3 O tetriminos.**
- You should submit your work to the Teams page using the instructions from the TAs.