Tetris

Group member:

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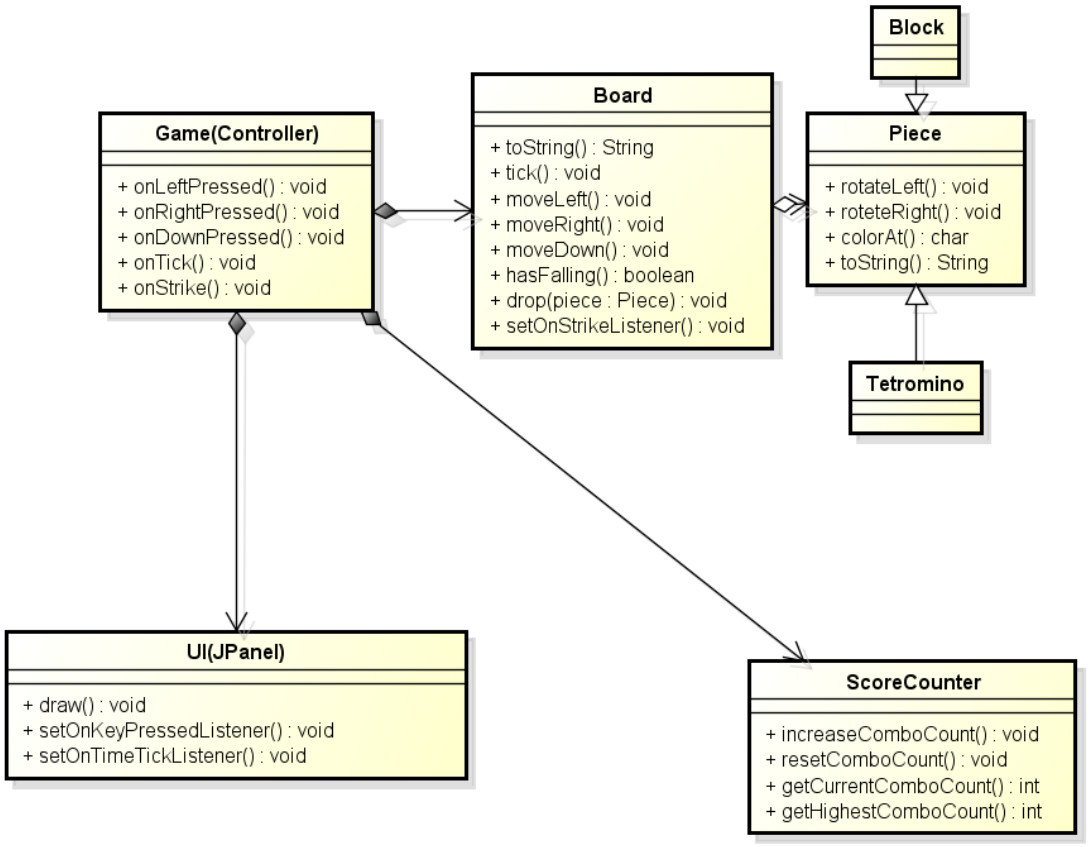
Description:

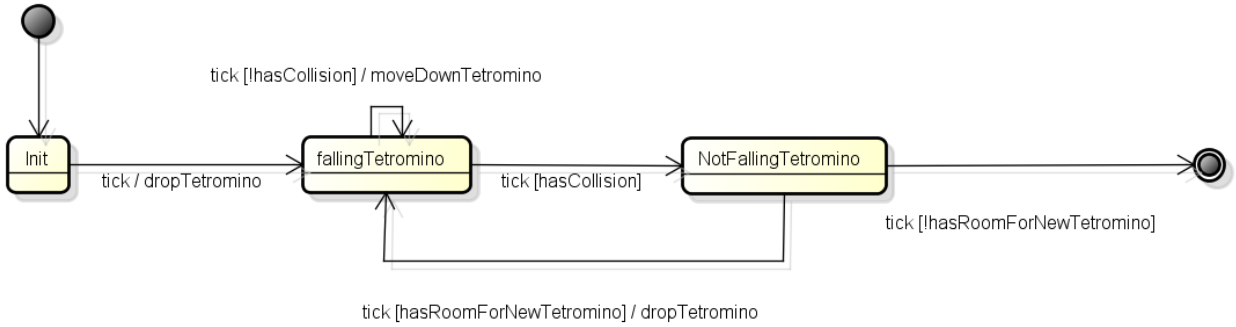
Tetriminos are game pieces shaped like tetrominoes, geometric shapes composed of four square blocks each. A random sequence of Tetriminos fall down the playing field (a rectangular vertical shaft, called the "well" or "matrix"). The objective of the game is to manipulate these Tetriminos, by moving each one sideways and rotating it by 90 degree units, with the aim of creating a horizontal line of ten blocks without gaps. When such a line is created, it disappears, and any block above the deleted line will fall.

Specification:

Class Diagram



State Diagram



Object Constraint Language Specification

Context Borad
inv: 0 <= tetromino.x <= this.width – tetromino.width and 0 <= tetromino.height <= this.y – tetromino.height

Context Borad::tick()
pre: this.hasRoomForNewTetromino()
post: if (this.hasNoCollision()) {
    tetromino.y = tetromino.y@pre + 1;
} else {
    this.hasFallingPiece();
}

Context Borad::moveLeft()
pre : tetromino.x > 0
post tetromino.x = tetromino.x@pre – 1;

Context Borad::moveRight()
pre: tetromino.x < this.width – tetromino.width
post tetromino.x = tetromino.x@pre + 1;

Context Borad::moveDown()
pre: tetromino.y < this.height – tetromino.height and this.hasNoCollision();
post tetromino.y = tetromino.y@pre + 1;

Context Board::drop()
pre: this.hasRoomForNewTetromino() and !this.hasFallingPiece();
post: this.tetromino = new Tetromino();

Work distribution:

李培寧，藍翊庭: UI and ScoreCounter

黃喬苡，陳南宏: GameController, Board, and Piece