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Software Dev 1
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## Abstract

This is the final writeup for Project 2 in Software Development 1. It was a summary of the Tetris program edited to be played be the computer. There is a UML diagram containing the methods through which the computer moves blocks, and this paper will explain how to use the program.

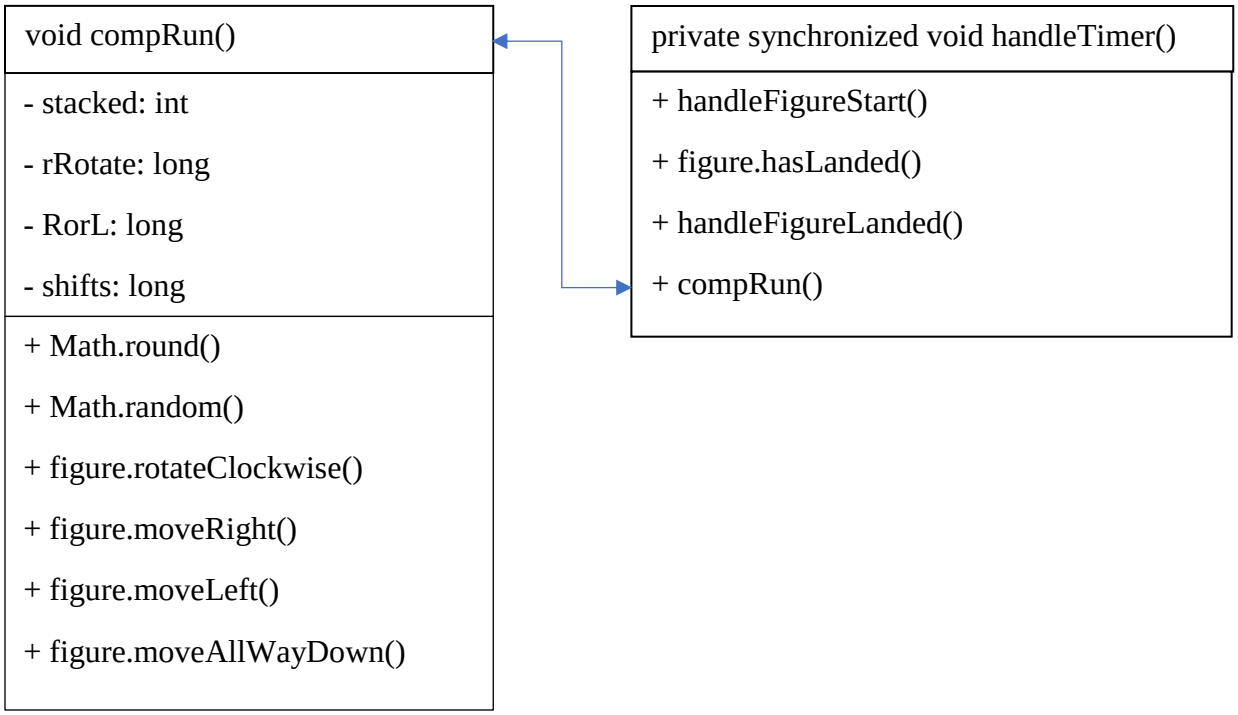
## Introduction

Learning Tetris is a novice exploration into machine learning. My original goal was for it to be able to clear lines with a certain degree of frequency. What I achieved probably can't even be called "machine learning" but the program clears lines without and human input, so that part of my goal was achieved. The computer takes turns dropping blocks with random orientations to the left and right of their start, which is in the middle of the board's width. Dropping blocks like this makes the board very dense. As a result, it is likely that the computer will clear a line, or multiple lines, in a game through force of luck alone.

## System Description

The handleTimer method, in the program's original state, would move each block down one space after a set interval of time. Instead, it now calls the compRun method, which contains directions for randomly assigning the block a direction, shift, and orientation. The original player controls have been disabled.

UML Diagram of Relevant Methods




## Relevant Literature

There is a very similar program on GitHub that requires Linux to run. It also has the goal of teaching a computer Tetris. It operates off of a reward system, where the computer wants an integer value to be as high as possible, and the value increases with each line cleared, effectively “teaching” the computer to clear lines with a series of neural networks. It is a very advanced program that is focused on the “learning” aspect of machine learning. It is the source of my inspiration for this project.

## User Manual

As previously stated, there is not supposed to be any interaction between the “user” and the program. When the user runs the program, the board appears, but nothing happens. Any

keystroke or mouse click will initialize the first block, and the program will run by itself, looping and restarting after every loss until the player ends the program.

## Conclusion

I was in over my head by picking this project because of my utter lack of even the most basic knowledge of machine learning, but it was a good exercise in my own problem-solving capabilities, especially because I succeeded in developing a program that clears lines in a game of Tetris. I personally consider the project to be a success because of its functionality, no matter how minor. The program's record is four lines cleared in one game. In addition, the frequency of line-clearing across multiple games is fairly high.

## Sources

http://www.java2s.com/Code/Java/Game/TetrisGame.htm

This is the open-source program that I originally altered for this project.