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VK Tetris: Project Report

VK Tetris is an Open Source project in which we modified an existing Tetris project written in Java (<https://gist.github.com/DataWraith/5236083>). Our project abided by the BSD 3-Clause License which is a permissive license that prohibits users from utilizing the name of the project to promote derived products without consent. The license gave us permissions for commercial use, modification, distribution and private use. Ultimately, the goals of our project was to add a start page, change the controls, add options to adjust the difficulty of the game, and add a game over feature. Nevertheless, our ultimate goal was to demonstrate our knowledge of key Open Source principles such as being able to access public works and modifying pre-existing source code.

One of the first challenges our team faced was running our Java project in a Linux environment. First, our team created a Github repository in which we forked the original source code. We then cloned the Github repo on our linux distros and created a local branch of our project. After we consequently researched how to run Java projects in the terminal, we discovered that we had to download the Java JDK for the terminal by using the command: sudo apt-get install openjdk-7-jdk. Once we downloaded the Java JDK we were able to compile our java files with the command: javac nameOfFile.java and also run our generated class files with java nameOfFile. After setting up our testing environment, we began making the modifications to our code, making commits and consequently pushing our commits to the master-branch of our project.

VK Tetris had several libraries implemented, however, the two main libraries utilized were java.awt and java.swing. The original source code used java.awt library elements to ultimately make the graphics of the game. These graphics include the grid, the well in which the Tetriminos blocks fall into, and the actual design and color of the blocks. We also used some features from the java.awt libraries such as java.awt.KeyEvent and java.awt.KeyListener to adjust the key controls and make slight adjustments to the blocks and grid. Moreover, our team imported another library which was the java.swing library. This library allowed us to use JOptionPanes which played a key role in creating the start, navigation, and game over pages. Additionally, java.swing library enabled us to display images under java.swing.ImageIcon.

Our team added several new features to the existing Tetris project. The first feature we worked on was changing the controls. Originally, the existing project had the space bar drop the pieces down and the down arrow key to rotate the Tetrimino pieces. However, we decided to have the spacebar and down arrow make the block move down to make the gameplay more convenient for the user. In addition, we also added an escape option in which the user would press the ESC button to exit the game. Besides adding and editing key controls, we also designed a start page, key navigation page, and a game over feature. For the game over feature, we changed the design of the grid in which there are two red blocks at the top of the grid that indicate the game over line. As for the game over function created, we ultimately checked if the line with the two red blocks are filled with a different color other than the default black background. If there is a different color in that row, then the function would return a game over bool variable as true. We also added various ways to make the game more difficult. For instance, we added a feature in which the speed of the falling blocks would increase if the score reached a certain amount. Moreover, we attempted to add a menu bar in which the user would have access to different features such as changing the level of difficulty to the game, accessing the help page, or even restarting the game. However, although we were able to successfully implement the menu bar, the functionalities of the features do not work. This is because the original source code was too complicated and too messy to manipulate without creating several errors.

VK Tetris, our open-source project, modified an existing Tetris project written in Java. As our team added several new features, we faced a few challenges during the development of this project. Our first challenge was learning how to run a java project on a Linux distro as our team had no prior experience of compiling Java projects in Linux. Our second challenge was manipulating the original source code. The original work was long and complicated in which it was difficult for us to modify without creating several errors. Due to the complicated source code, creating the game over function and creating functionalities for the menu bar was difficult. Although we faced a few challenges with our project, not only did our team learn more about Linux environments but we also strengthened our fundamental knowledge of Open-Source principles.