Operation Magnet Breakout

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The code is very similar to the game it was based on: Atari Breakout. There is an opening screen and an instruction screen that also lists the powerups. When the main game is prompted by pressing the enter key, there are blocks at the top of the screen that decrease in health whenever the ball comes in contact with one, and a paddle at the bottom that is moved using the left and right arrow keys. The ball bounces off the paddle to try to hit the blocks. Whenever the ball misses the paddle, it bounces off the floor and a life is lost. When the ball hits a block, the block is destroyed and there is a probability that a powerup will fall. If a power-up is created, the computer decides which of the six powerups it is. Some powerups increase or decrease the length of the paddle, while others increase or decrease the speed of the paddle. The final two give the player three shots of a laser and increase the speed of the ball.

The laser is found in its own class. The lasers are controlled with an arraylist. This makes it easier to add and remove lasers. When the player presses the “l” key, a single laser is fired. From there, the display() and move() methods launch the laser up the screen. When the laser hits a block, the block should lose a single health, but due to a glitch, happens to lose two. After that, the laser is deleted. It is also deleted when it passes the top of the screen, if you happen to miss the blocks entirely.

The only outside sources we used were for music paired with different screens: the Minim and Processing Sound libraries in Processing allowed us to play mp3 files on each different menu instance. The mp3 files were downloaded from YouTube and a website called Royalty Free Music.

Along with the opening and instruction menus, we have two “Game Over” menus based on the outcome of the game. If a player loses all three lives before successfully deleting all the blocks, the “Game Over. You Lose” screen is prompted along with the player’s score and sad violin music. If, however, a player manages to eliminate all the blocks on the screen without losing all three lives, the “Game Over. You Win.” menu is displayed along with the player’s score.

Originally, we planned to have multiple levels and designs. For the powerups, we were hoping to make each power-up be identified with a Magnet teacher. For example, a proposed Sanservino power-up would get rid of rows via an animated Sanservino sprite throwing virtual papers. Also, not all of our power-up ideas were used: if more time were available, we would have added powerups that multiply one’s score or give the player an extra life, in addition to color-coding the powerup pills themselves such that the player would be able to identify them from a distance. Most of these ideas, however, were rendered infeasible due to problems with glitches in the code that we already had that required effort to debug, time constraints, and issues with several of our group members’ home PC’s and Github.

Some of our most impressive accomplishments are in the little details of the code. The thing we are most proud of is being able to change the direction of the ball depending on where it hits the paddle. Another big accomplishment was managing to give each block a “health” so that whenever it was hit by the ball it would decrease in health rather than directly be removed. Also, we assigned a color to each health value such that each block could visually display its strength. The final accomplishment that we are most proud of is the powerups and how they change the color of the paddle depending on which powerup it is. There was a lot of effort put into figuring out how to make the powerups work and therefore it was very satisfying to see it successfully in place.