

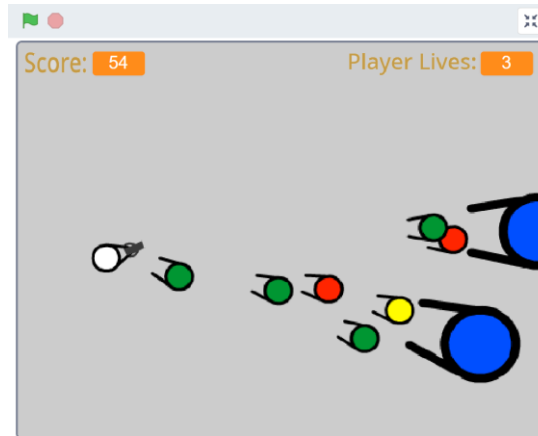
Intro to Programming

Scratch #13h – Zombie Invasion

Objective: Enhance the Zombie Invasion game started in class. Then add a start screen which asks the user if they wish to play an easy game or a hard game.

1. Login to the Scratch website. You should already have a project called *scratch_13_example* that we completed in class.
 - a. Open the *scratch_13_example* project.
 - b. Do *File->Save as a copy*. The name of the project will change to *scratch_13_example copy*.
 - c. Rename the project to *first_last_scratch_13*
 - d. Do *File->Save now*
2. Make the following enhancements:
 - a. Add 2 additional kinds of *Zombie*. Duplicate one of the existing costumes, change its color and give the costume a name. How are your zombies different besides color? Lives? Speed? Size?
 - b. A zombie should spawn every 1.0 to 2.0 seconds. You will need to add additional if-then-else blocks where spawning takes place. Your 5 types of zombies should spawn 30%, 15%, 20%, 25% and 10% of the time. You need to figure out how to do this correctly.
 - c. Make a cool Game Over screen. The one we did in class is lame.
 - d. Add a variable called *Score for all sprites*. This variable should appear on the screen. It should be in large readout mode and text should be present on the Stage describing the variable. It should be set to zero when the green flag is clicked.
 - e. Figure out how to change the score. Killing a *Strong* zombie should give more points than killing a *Fast* zombie. Killing a *Fast* zombie should give more points than killing a *Normal* zombie. How do your new zombies rank?

Hint: create a variable called *zombie points* for the zombie sprite only. Before the zombie is cloned, set this variable value to be the number of points that the player receives when that particular type of zombie is killed. Then, when *zombie lives* is zero, change the value of *Score* by *zombie points* and then delete the clone.
 - f. Add a variable called *Player Lives for all sprites*. This variable should appear on the screen. It should be in large readout mode and text should be present on the Stage describing the variable. When the green flag is clicked, the *Player* sets this variable to 5.
 - g. When a *Zombie* touches the *Player*, broadcast *hit* instead of *game over* and then delete the clone.
 - h. When the *Player* receives *hit*, it plays sound *ow*, and then changes *Player Lives* by -1. If *Player Lives* = 0 then the *Player* broadcasts *game over*.
 - i. Choose music to play while the game is playing. The *Stage* should play the music in a forever loop when the green flag is clicked.



3. Now add the start screen and the additions for *easy* and *hard*.
 - a. Add another backdrop to the Stage. It should look something like this and be named *Start Screen*.



- b. Create 2 different **Sprites**. One is a button with the word *Easy*, the other is a button with the word *Hard*. You can make your own or download images from the Internet.
 - c. Create 3 different variables **for all Sprites**. *EASY*, *HARD*, and *Difficulty Level*. None of these variables appear on the Screen.
 - d. When the Green flag is clicked, have the *Easy* sprite initialize the *EASY* variable to any number you choose, and have the *Hard* sprite initialize the *HARD* variable to a different value.
4. The *Score* and *Player Lives* variables should be hidden on the Start Screen. They should show up when the game starts.
5. Figure out how to make changes so that the *Start Screen* is displayed when the green flag is clicked along with your 2 buttons. You want the game to be harder if the hard button is pressed. The *Difficulty Level* should contain the value of *EASY* or *HARD* variables depending on which button was pressed. Here are some suggestions:
 - a. Change all *When green flag clicked* flags in the existing project to *When I receive start*.
 - b. When the green flag is clicked, the 2 buttons and the start screen should show. Everything else should hide.
 - c. When the *Easy button* is clicked, it sets the variable *Difficulty Level* to *EASY* and then broadcasts *start*. When the *Easy button* receives *start* it should hide. The *Hard button* has the same code except that *Difficulty Level* is set to *HARD*.

6. Now, you need to make changes in the *Zombie* if the **Difficulty Level is HARD**. This means you will have more if-then blocks in the code.
 - a. At a minimum, *Zombies* need to *Point Toward Player* **inside** the forever loop when they start as a clone.
 - b. Choose one or more of the following if *Difficulty Level* is **HARD**: *Zombies* are harder to kill (more lives), *Zombies* move faster, *Zombies* spawn more often. What else can you think of?
 - c. When the *Zombie* starts as a clone, it should NOT have an *if-then-else* block with almost the exact same code for a **Difficulty Level** of **HARD** and a **Difficulty Level** of **EASY**. You will not get full credit for this.
7. Always do *File->Save* now before you log out of the Scratch website.
8. Now do *File->Save* to your computer.
9. Turn in your *first_last_scratch_13.sb3* file to *missblomeyer.com* in the usual way.

