



# Scratch Programming

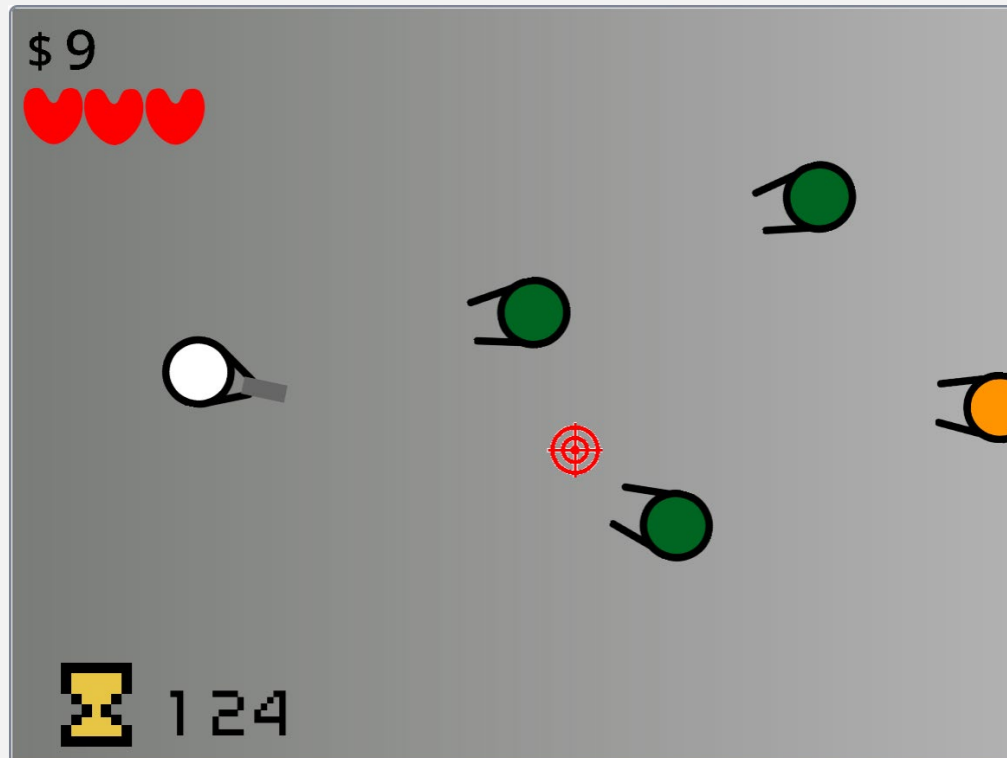
## Lesson 2-10

### Shooting Game II

Presented by Advaspire Team



# Build a Zombie Defence game (Shooting)

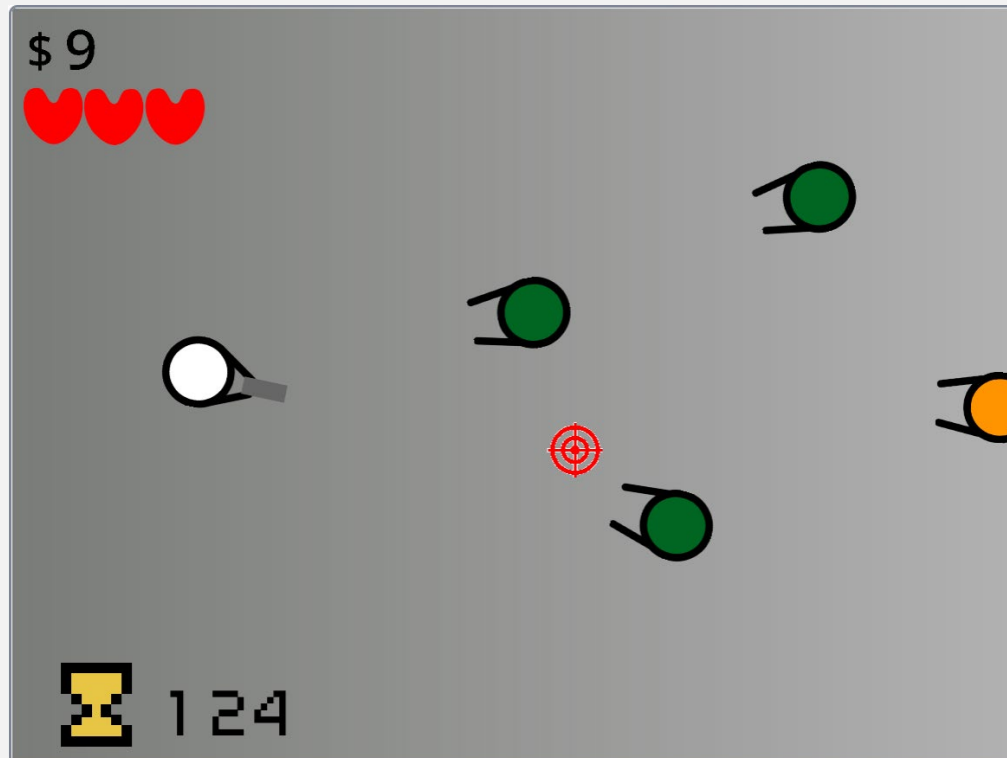


Let's create a zombie shooting game, which does not require fancy graphic with your costume, but we need a good game experience for the players.

So let's start with a simple way before we upgrade the game to advance mode.



# Game Rules – First Draft



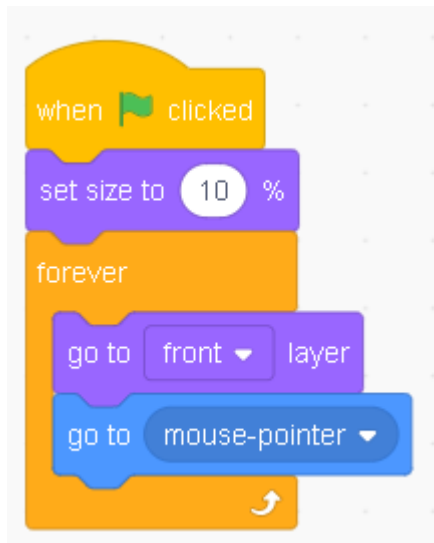
## Rules:

1. You can move the player with up-down-left-right (advance motion control)
2. Aim will always follow the mouse pointer
3. When player left-click then it will shoot (bullet follow the aim point).
4. The zombie will keep coming randomly from the left side.

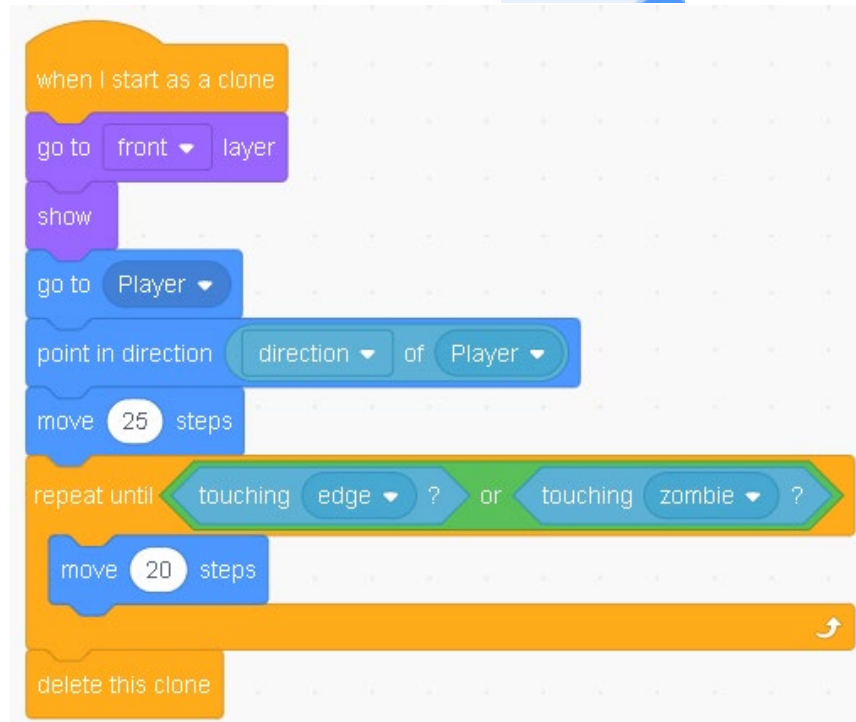


# Programming Tips

## Script (Aim):



## Script (Bullet):

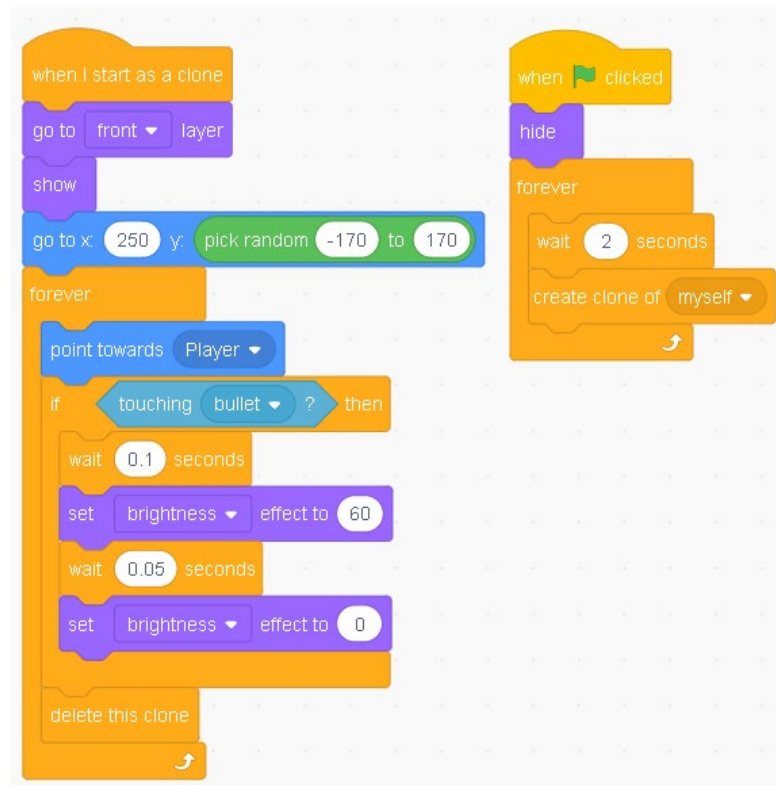


**This are the tips for “Aim” and “Bullet”.**



# Programming Tips

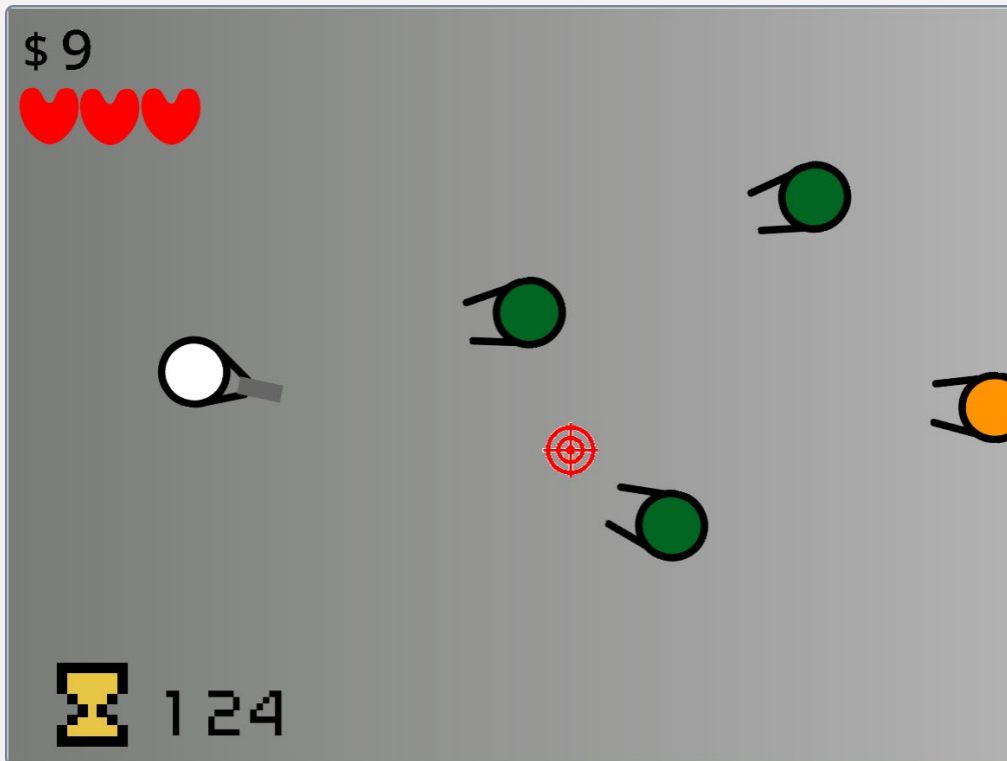
## Script (zombie):



This is the basic program for the zombie, if you want to add more function or more game rules to the zombie like it will only be dead after 3 shots, then you need to add in some variables to record the health of the zombie.



## Mission 2-9 – Zombie Shooting Game Draft



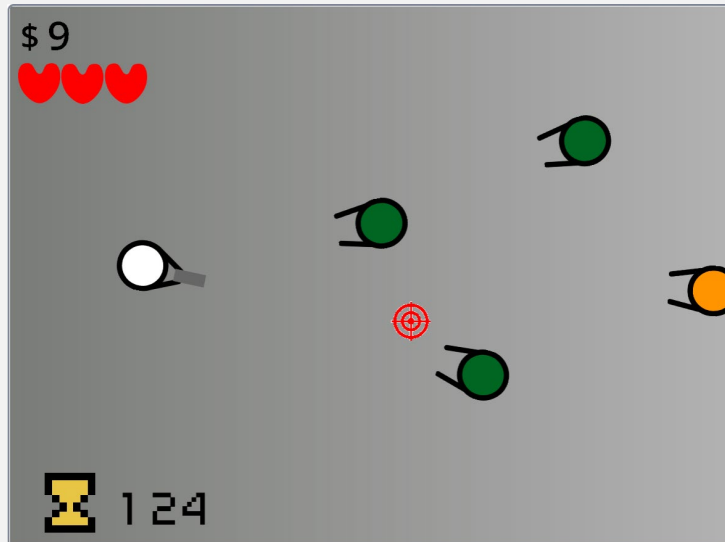
**Draft out your zombie shooting game (top-down view) and list out the game rules.**

**Then try to draw the zombie and the player sprite as well as the bullet, and program the game with basic rules first.**

**This is just a first draft of your game.**



## Sprite needed for the basic game

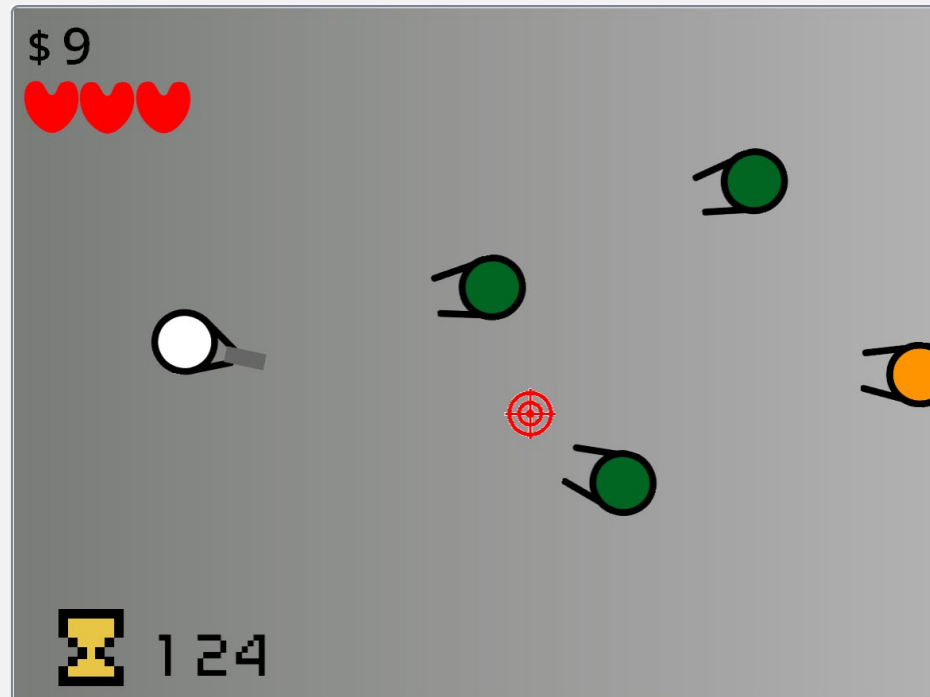


The basic Sprites to be used in this game are the following:

1. Human (Player)
2. Aim
3. Bullet (different weapon)
4. Zombie (Toughness Level)
5. Heart (lives)



## Basic Game Rules



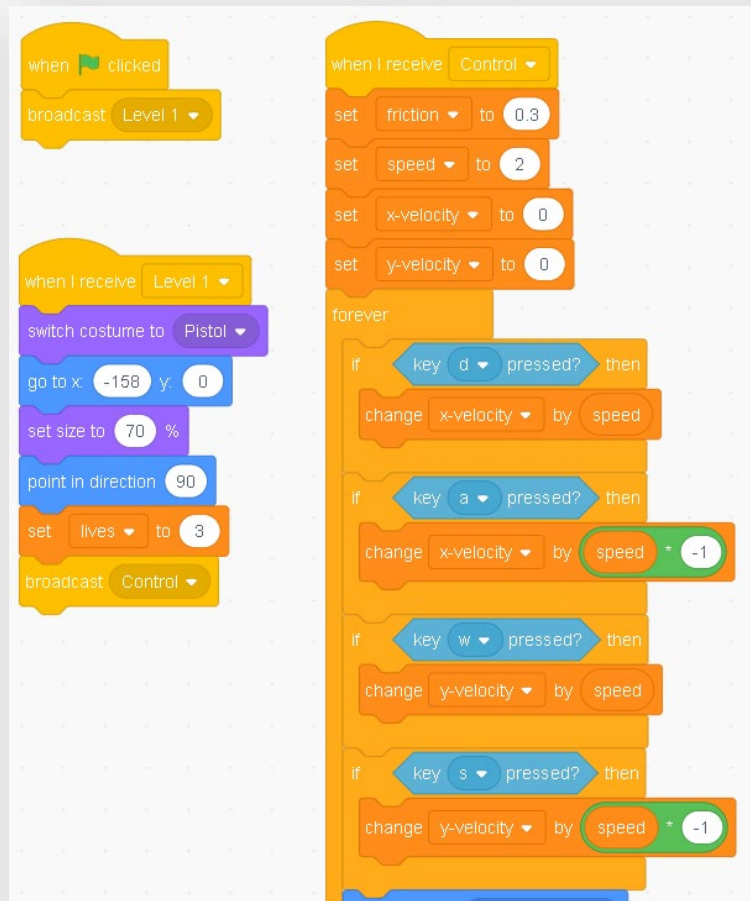
As this is just the first draft, we will just set like the player can move the human (<up> <down> <left> <right> or <w> <s> <a> <d> control).

And we use advance motion control for the player, and set friction to 0.1 (smooth road).





## Script - Human

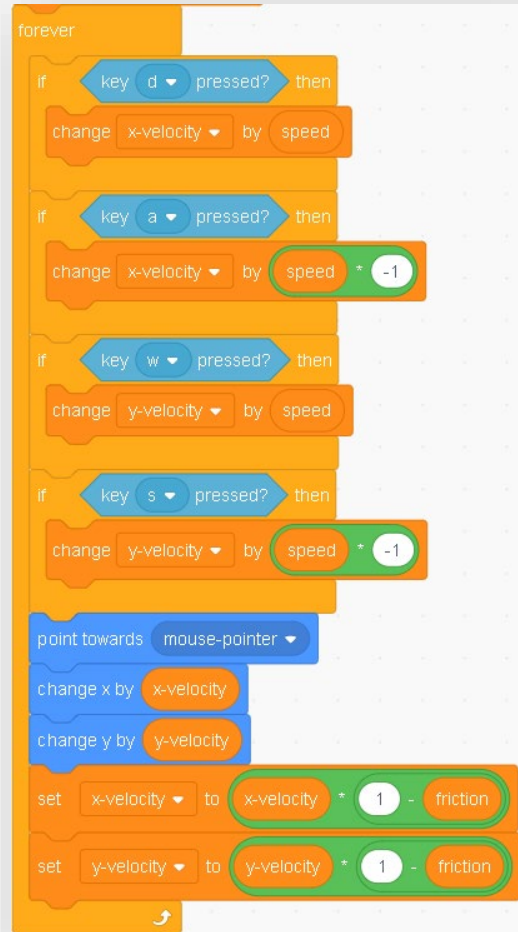


**I separated the control parts and the initial settings for the game player (position, costume, direction, size), so that when I have different map for my game, I can easily reposition my character.**

**The control scripts will be executed after all initial setups.**



## Script - Human



I have set my player control to <w> <s> <a> <d>, and use x- and y-velocity variables to control the position of my “Human” sprite.

This is the concept of Advance motion control, so that my character will have speed up and speed down effect.



## Script – Human Variable



**And I have set some variables for the human so it will make it easy for me if I want to change all these in different levels or when I want to modify to optimize the game play experience.**

**“Friction” is the element that reduce the velocity over the time. The higher the friction is, the faster your velocity will go to zero.**



## Script – Aim Sprite

**Script:**



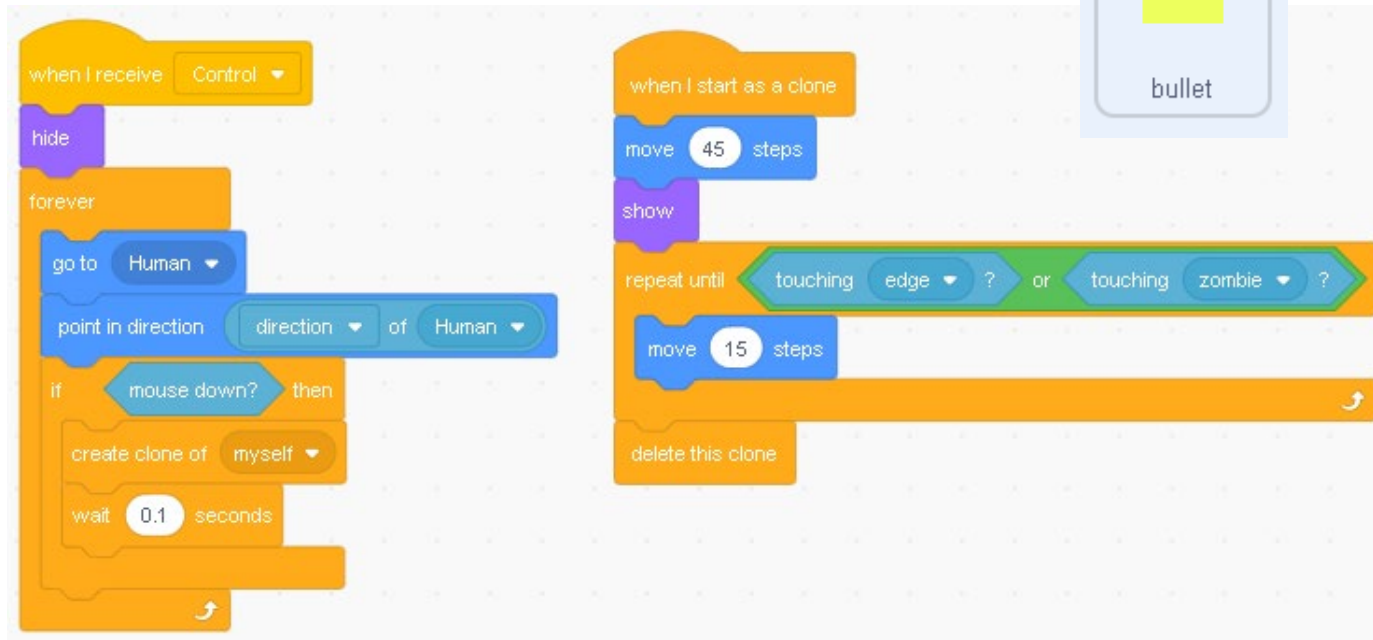
**This is similar to our Hammer in Whack-a-mole game.**

**Just always follow the mouse pointer.**



## Script – Bullet

### Script:



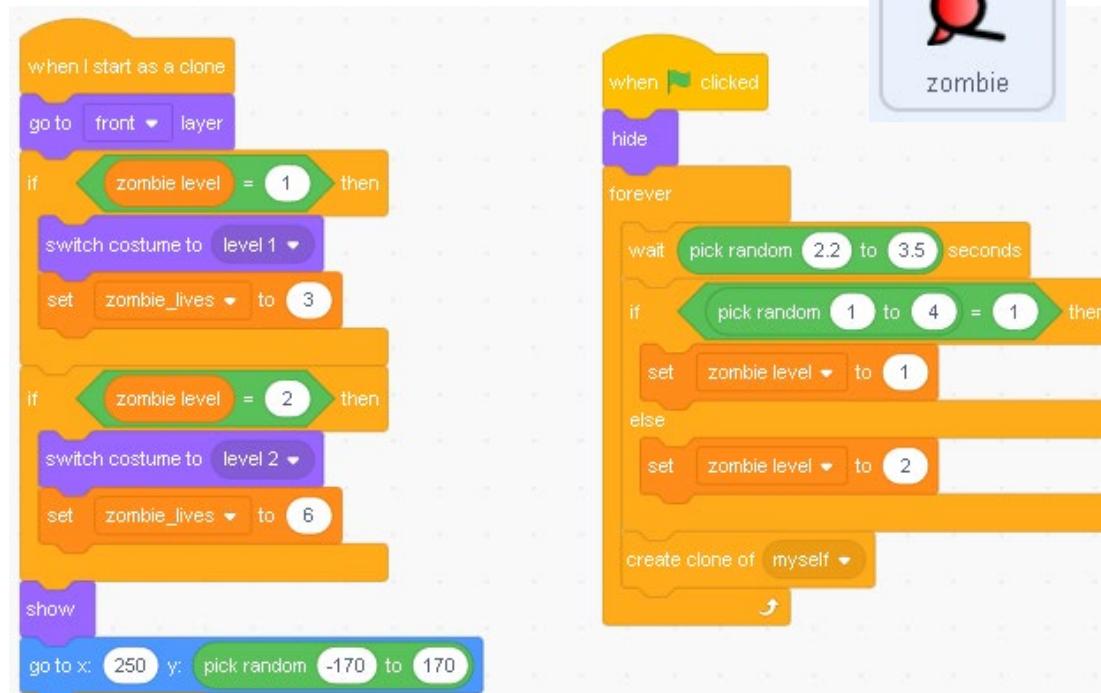
**The bullet also similar to the concept we learnt from L1-11.**

**It will be created when player left click the mouse.**

**It will be shot out based on player's last pointing direction.**

# Script – Zombie

## Script:



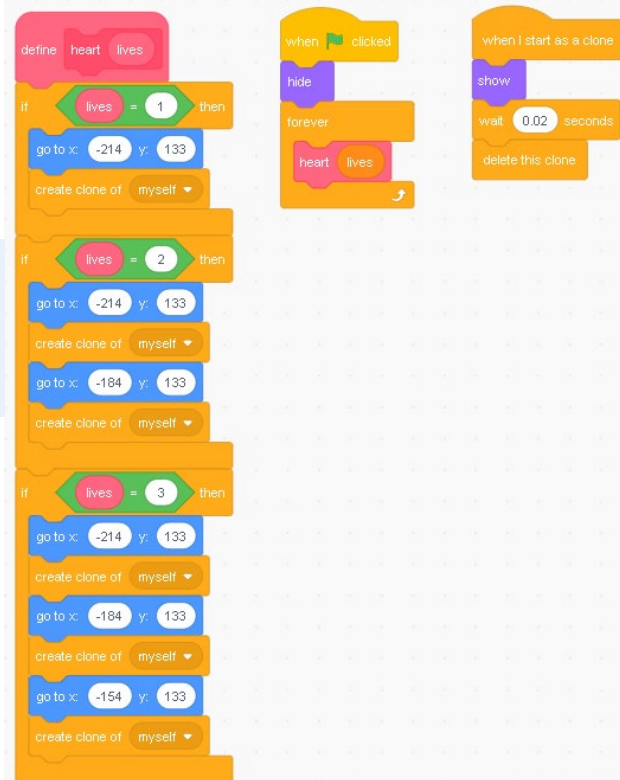
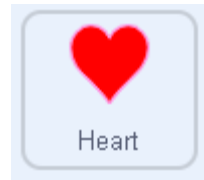
The zombie will be spawn from the left, and keep moving to the Human.

It has possibilities to spawn 2 different kinds of zombies that 1 is with 3 lives while another is tougher and with 6 lives.



## Script – Lives

**Script:**



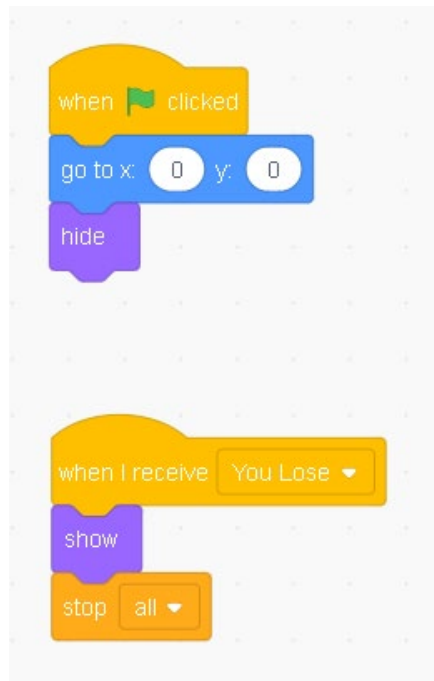
**Let's set the lives to 3 at start and maximum also to 3.**

**It will keep creating clones to show the heart at top left.**



## Script – When ran out of lives

### Script:

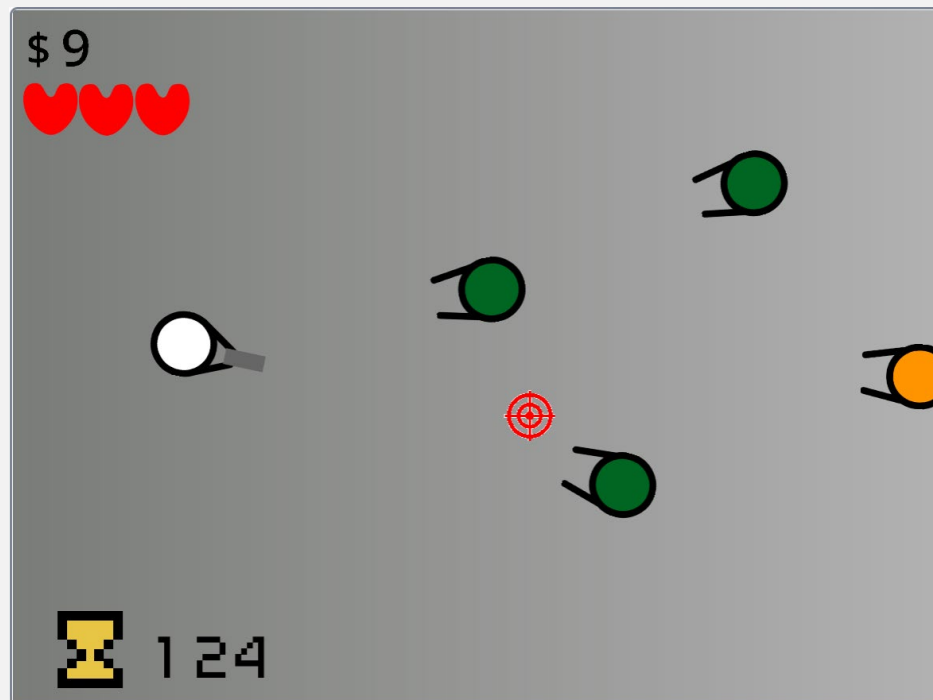


**Let's make a you lose message if the player runs out of lives.**





# Simple Zombie Shooting Game



**A simple zombie shooting game is now on.**



**But we are not stopping at here**



# Improve the Game



**We want different weapon so the damage will be different also.**

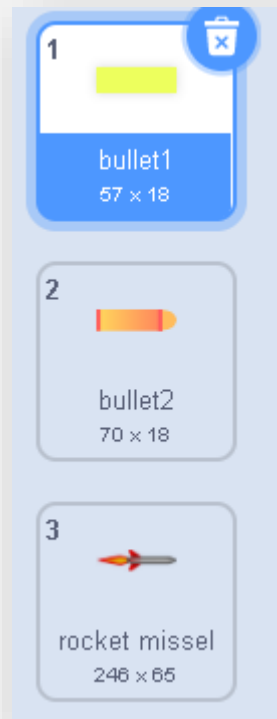
**Then player can upgrade their weapon throughout the game.**

**We will have following options:**

- 1. Pistol – least damage (fast)**
- 2. Shotgun – medium damage (spread)**
- 3. Machine Gun – High damage (super fast)**
- 4. RPG Launcher – Ultra Damage (Explosive)**



## Different bullet



**To make it compatible with the weapon concept, our bullet must also match with our weapon.**

**My pistol & shotgun is going to use bullet 1.**

**Machine Gun – bullet 2**

**RPG Launcher – Rocket Missel**



# Tougher Zombies



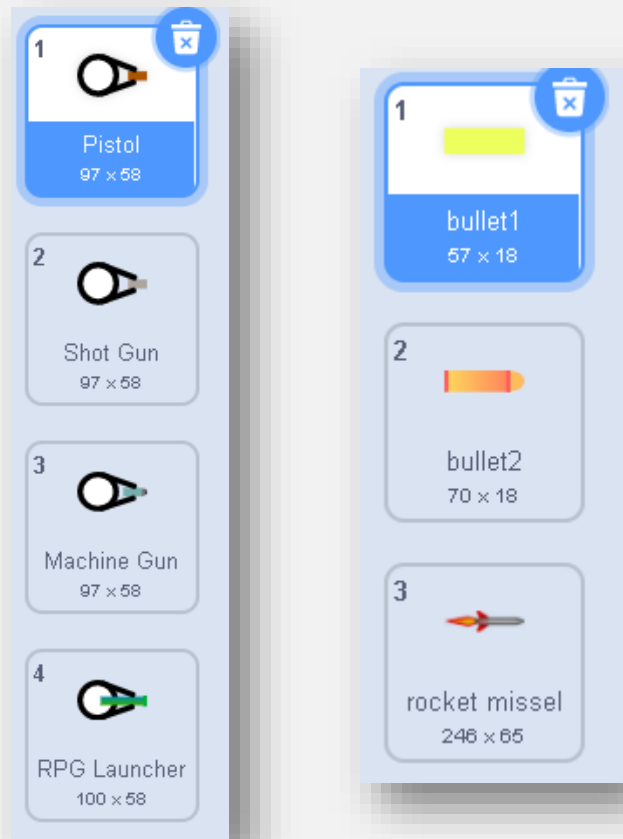
**We can make more zombie type to our game.**

**You can be creative and think for different effect for different types of zombie, but here I will only make the higher level zombie tougher.**

**But we will make the zombie properties in next lesson, today we will code for weapon switching and firing.**



# Weapon & Bullet Problem



**Did you realize your bullets are unlimited and do not need to reload the ammos?**

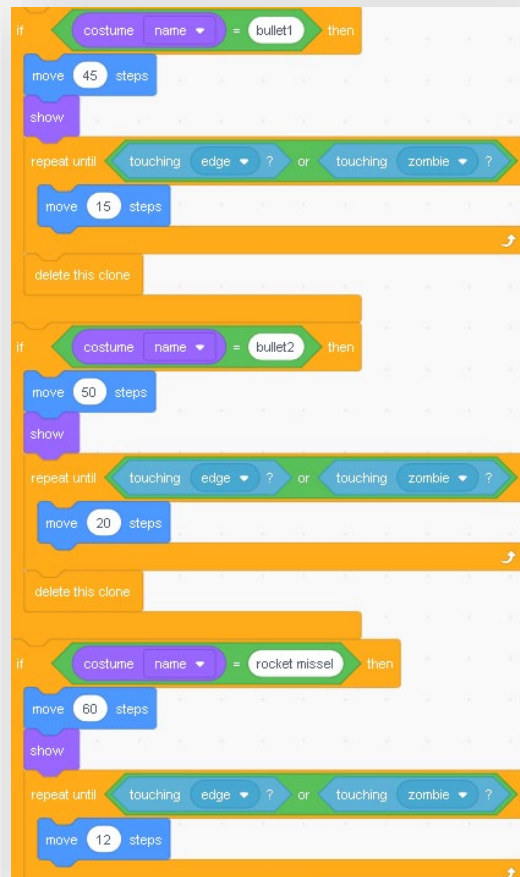
**How many slots for weapon can a person carry?**

**While reloading, can the person still shoot?**

**How to change the bullet speed based on different weapon?**



# Different flying speed for bullets



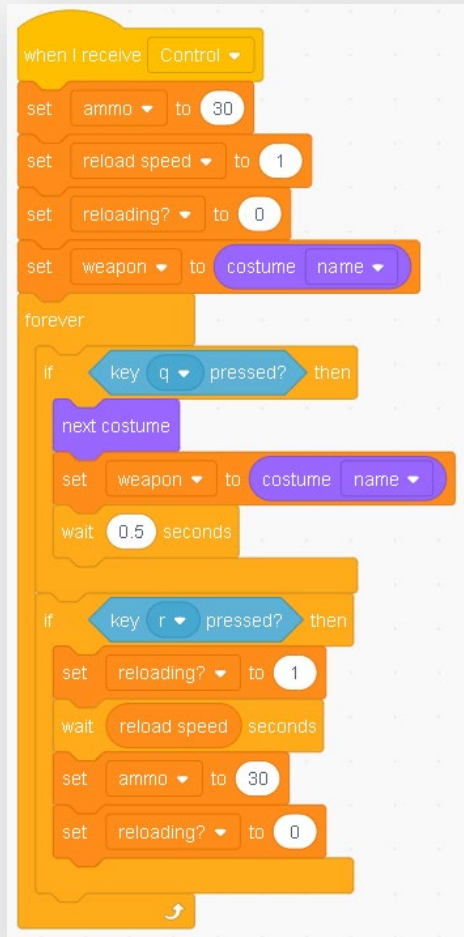
**While spawning the bullet or firing, you will need to check what costume the bullet is, if it is bullet1 (pistol & shotgun), the speed is medium.**

**If bullet2 (Machine gun), the speed should be fast.**

**If rocket missel (RPG launcher), it should be slow.**



## Different flying speed for bullets



So I will need to create some variables to make my weapon switching works.

Set “ammo” to 30 (maximum number in magazine).

Set “reload speed” to 1 (1 second to reload before I can fire).

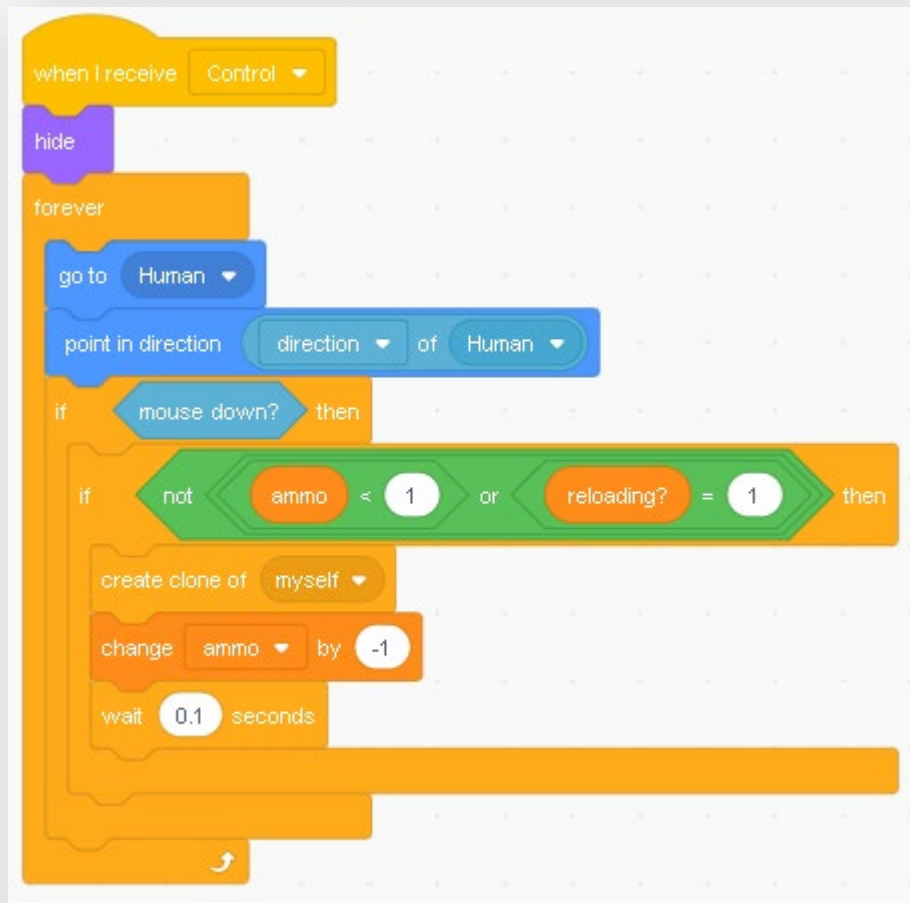
Set “reloading?” to 0 (if 1 mean the player is reloading, during this time, firing is not an option).

Set “weapon” to “costumer name” (this is the weapon slot).





## Can't fire under reloading or zero ammo



**For the bullet firing part, we should check if there is still ammo left or check if the player is reloading.**

**If both of these don't happen, it can fire and deplete the bullet from the ammo.**

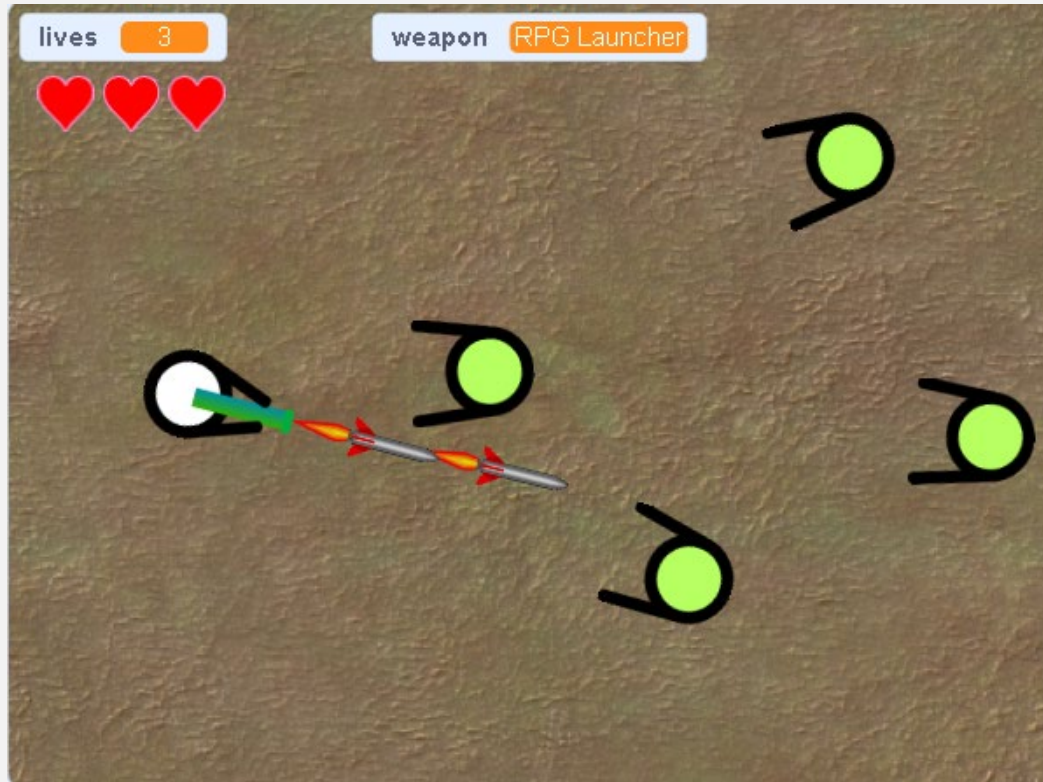
**So when player keeps firing for 30 bullets, the ammo will become "0".**

**It will require player to reload before he can fire the next round.**



# **ASSIGNMENT *for***

## ***Lesson 2-10***



## L2-10 – Mission

Do a changeable weapon option (you can switch your weapon with a button key), and reload option.

While reloading, your player must wait for 1 second to reload.

Set the maximum reload in your magazine.



You can direct message your teacher and ask your question through [Slack Robotene Community](#) or arrange a [One-to-One Consultation](#) with your teacher.



# Any Questions?



Thank you :)