



Scratch Programming

Lesson 2-9

Shooting Game I

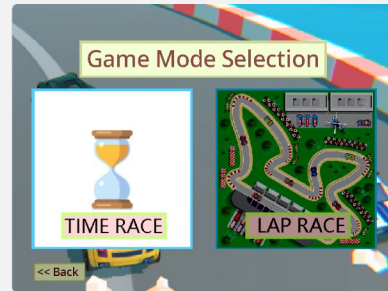
Presented by Advaspire Team



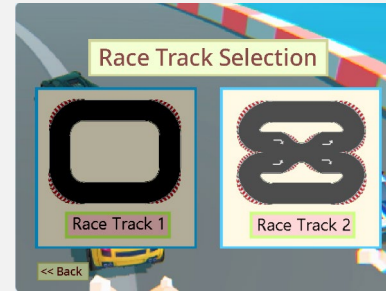
Review - Game Mode Variables



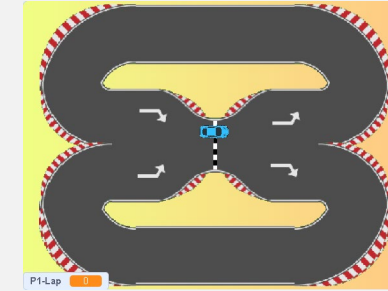
Menu



Game Mode



Race Track



Game Play



Play Again

Now we will need to set variable to store the selected game mode.

It includes “1 or 2 players?”, “Time Race or Lap Race”, “Which Race Track is selected”, “speed of car”, “number of lap”.



Review - Game Mode Variables

- ☐ Mode Selection - Game Mode
- ☐ Mode Selection - No. of Laps
- ☐ Mode Selection - Player Number
- ☐ Mode Selection - Race Track

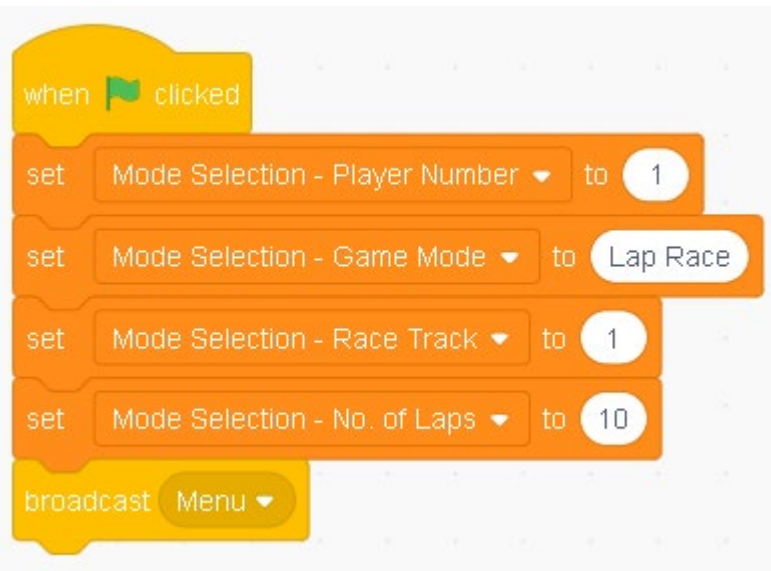
These are the variables required for mode selection.

If we provide more options for the player to choose or manipulate, we will add in later.



Review - Variables - Set Defaults

Script:



Now you can add this script to any of your sprites.

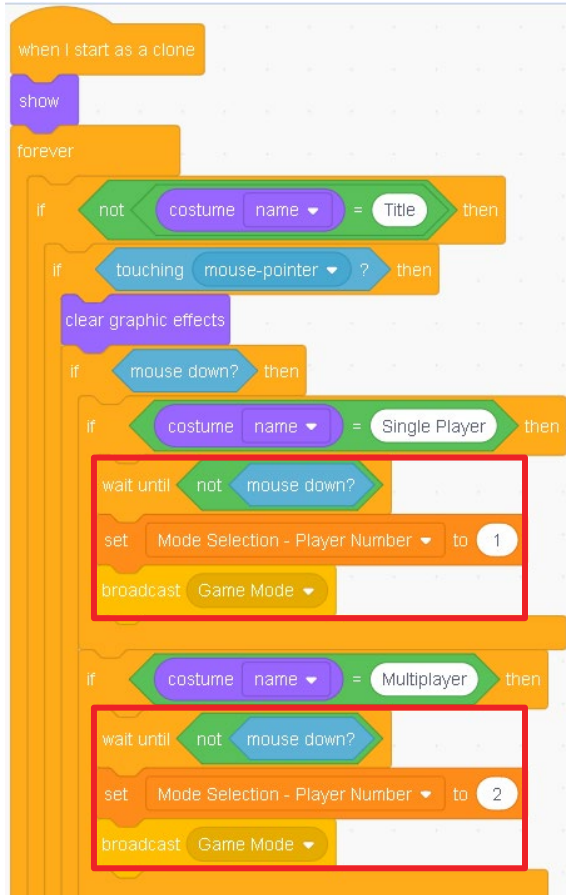
Before starting up with the menu page, all variables will be given in a default values.

But based on player's selection, it will rewrite the variables to player's choices.



Review – Player’s Selection

Script:



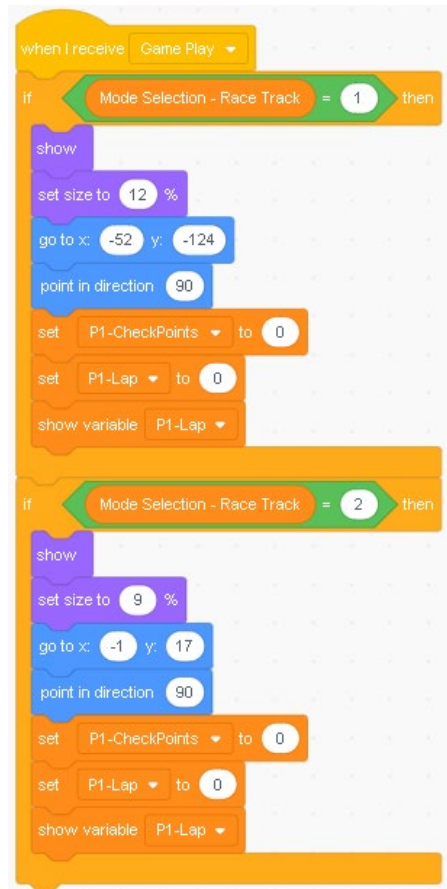
In the script of “Menu_Sprite”, when the button starts as clone, it will check which button is clicked by the player (selected).

So if player select “Single Player”, we will set the “Mode Selection – Player number” to 1, if “Multiplayer”, then set it to 2.



Review - Car in Game Play

Script:

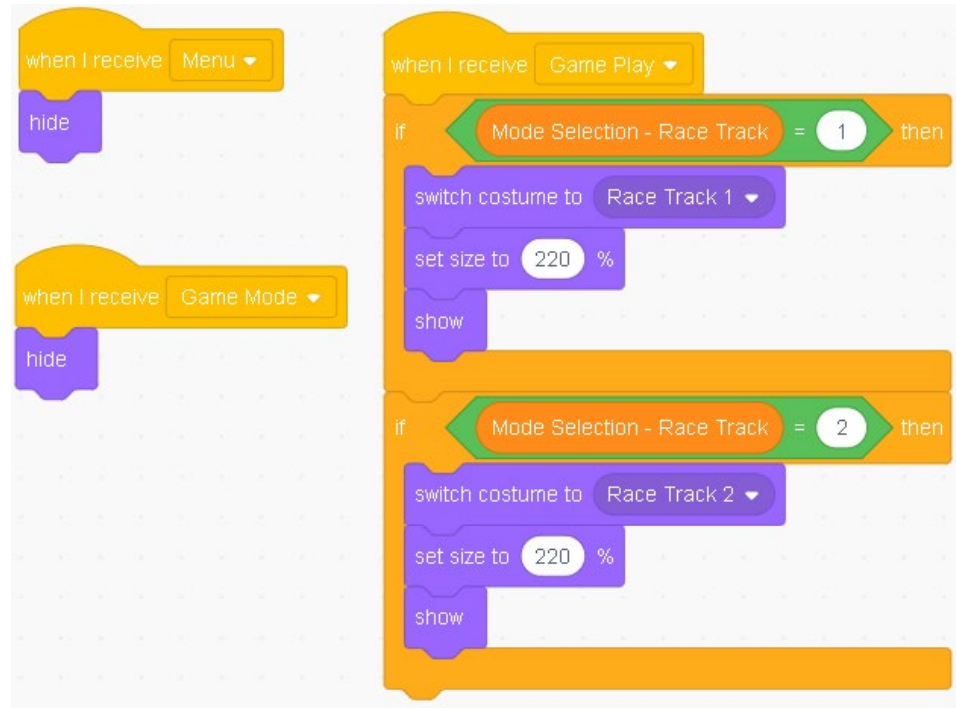
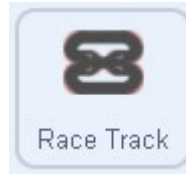


When received “Game Play” message, your P1 (Blue Car) will show itself at starting position before starting off with the control.

Based on different race track selected, your car will appear at it's starting position. Then only broadcast to Play.

Review - Race Track Script

Script:

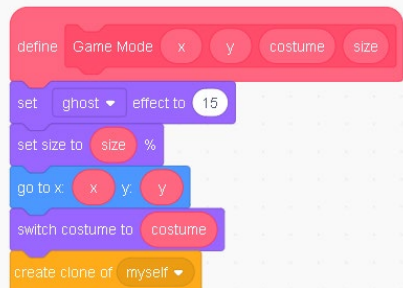


The race track concept is also similar to the car, it will check which race track is selected, then show it.



Review - Play Again Script

Script:



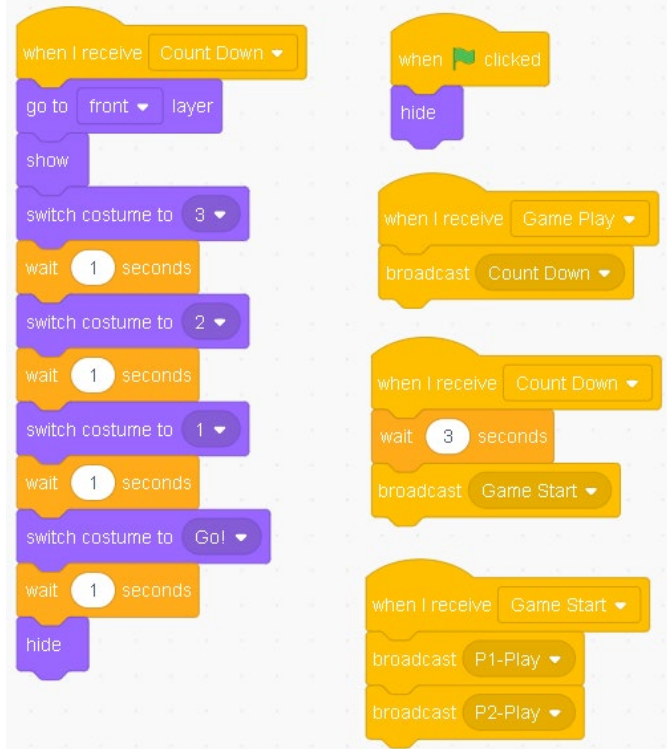
For the Play Again script, we will need to setup the position of the box first, then it will check who wins the game, and it will show the winner in the title.

Of course do remember to do the function for the clones, it's totally same as others.



Review – Count Down For 3 Seconds

Script:



Now we want to set up a 3 seconds count down before car race starts.

I created “Count Down” sprite with “3, 2, 1, and Go!” costumes. I will use broadcast to call this out.

I will use a “Game Start” broadcast to call out both “P1- and P2-Play”.



Review – Count Down For 3 Seconds

Script:

The script consists of three main parts:

- When I receive Count Down:** This script controls the sequence of costumes. It starts by going to the front layer and showing the object. It then switches to the '3' costume, broadcasts 'Count Down Effect', waits 1 second, switches to '2', broadcasts 'Count Down Effect', waits 1 second, switches to '1', broadcasts 'Count Down Effect', waits 1 second, switches to 'Go!', and finally broadcasts 'Count Down Effect'.
- When clicked:** This script simply hides the object.
- When I receive Count Down Effect:** This script is triggered by the broadcasts from the first script. It goes to the front layer, sets the size to 100%, and then enters a repeat loop for 30 iterations, each time changing the size by 2%.

If you want some effect to your Count Down digit, you can use a broadcast and code a size changing script for the costume.

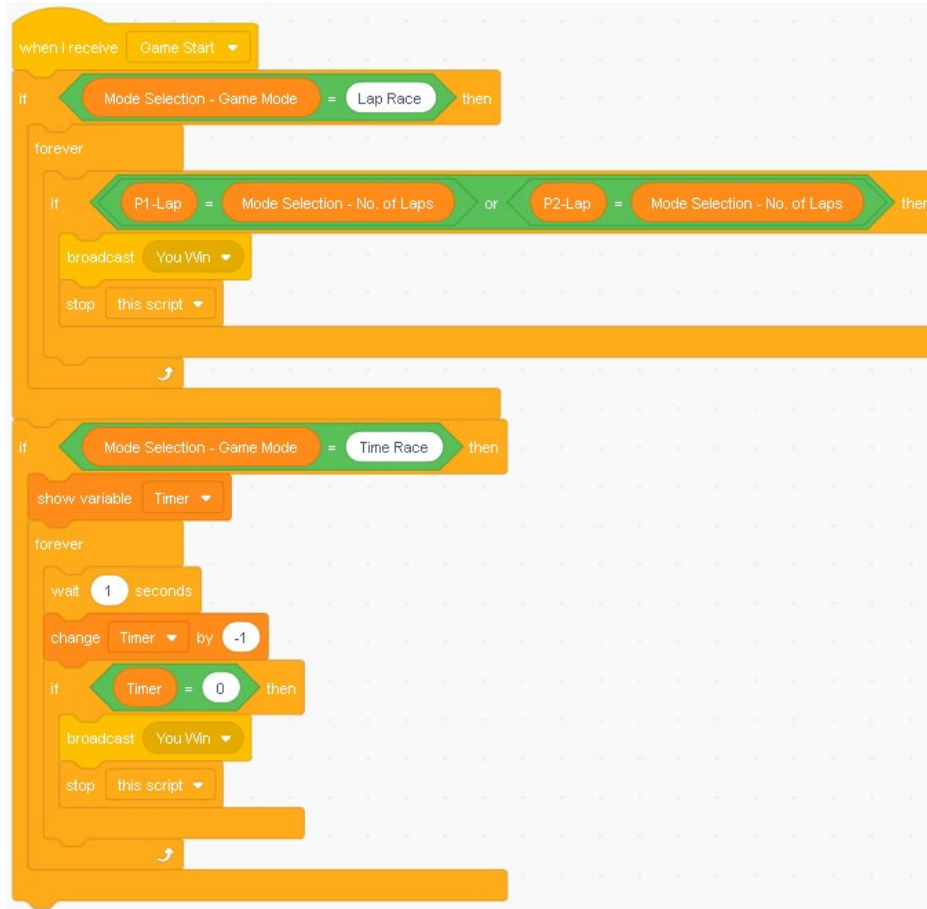
Review – Winning Condition

Script:



Backdrops

2



I will set my winning condition in backdrop.

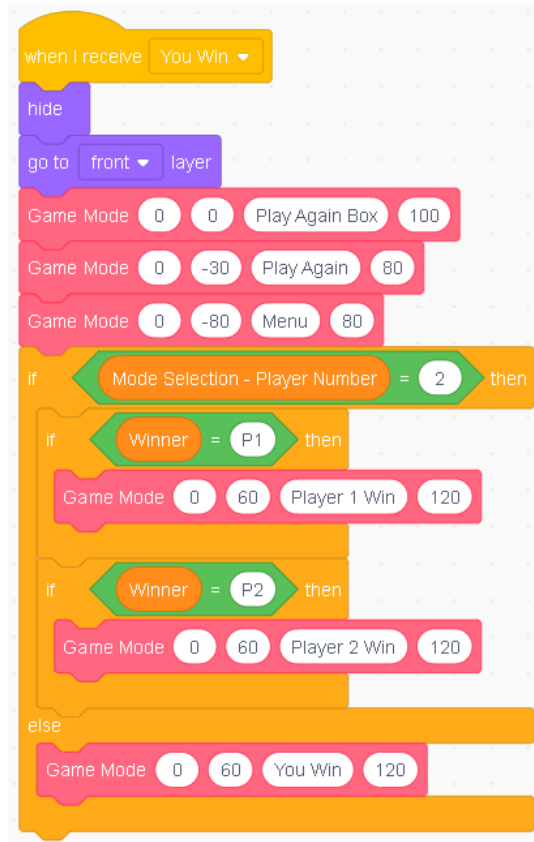
It will check if it's Lap race or a Time race.

And whoever completes the race wins.



Review – Winning Condition

Script:



So in your “Play Again” page, you will have to judge who wins the game.



Mission 2-8 – Settings Setup

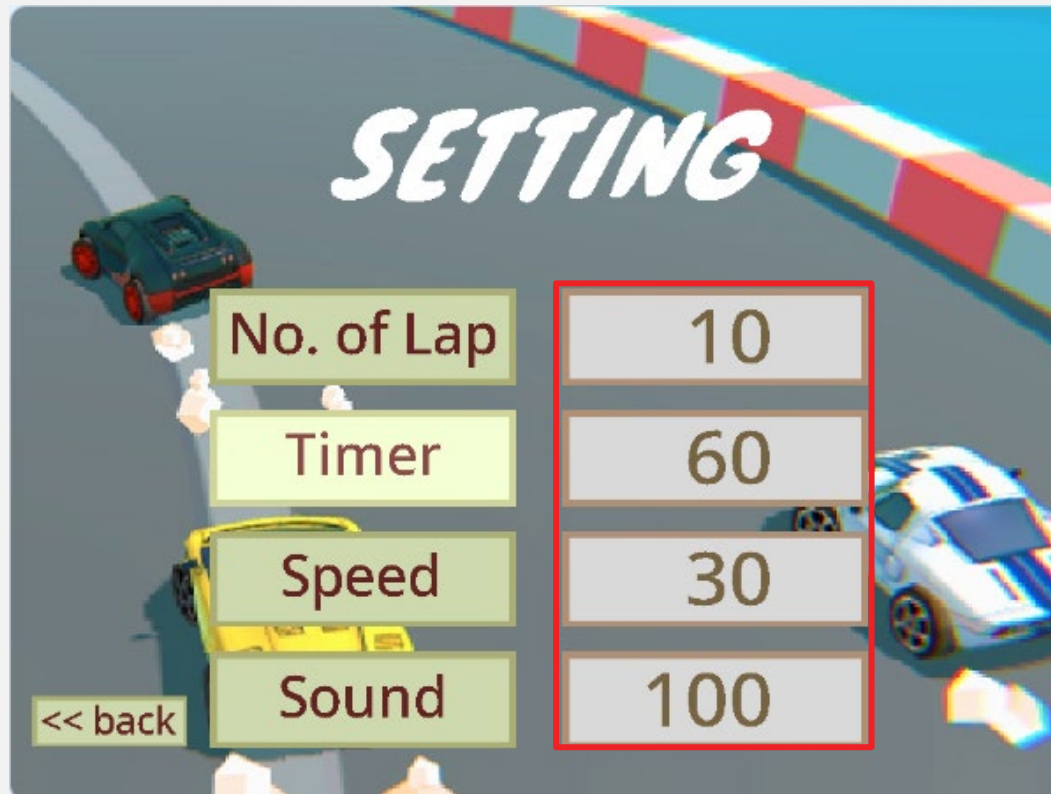


Let's try to make a setting page for the game.

And also try to make an instruction for player to read and learn how to play this game.



Setting – Input Field

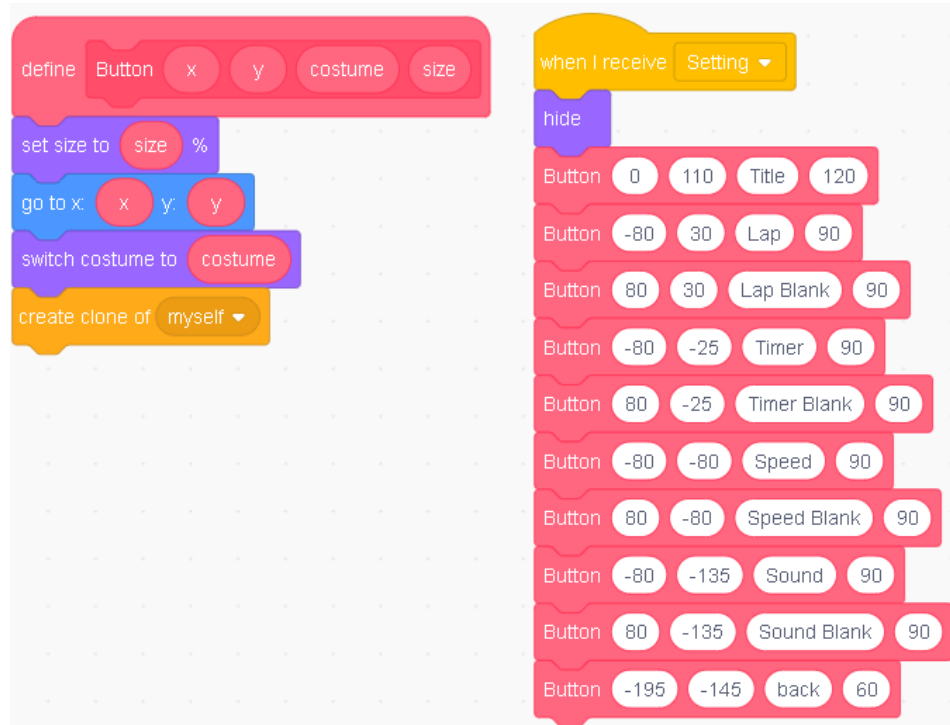


I will create 4 inputs field for the setting which the player can change the variable via by clicking the blank and update the value.



Setting Script

Script:

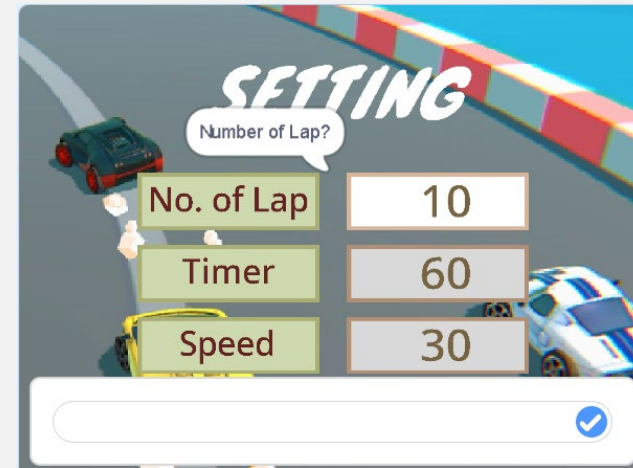
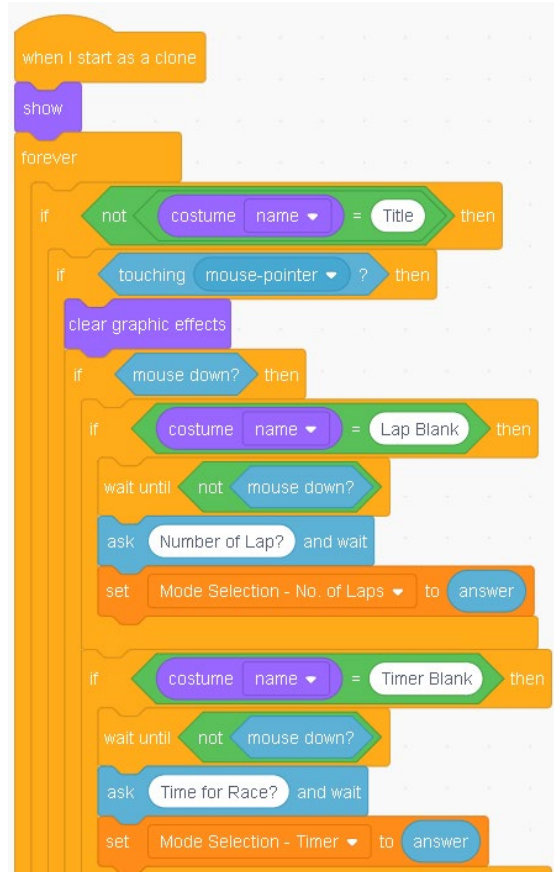


This script is to set up the clones for the positions of each subject.



Setting Script

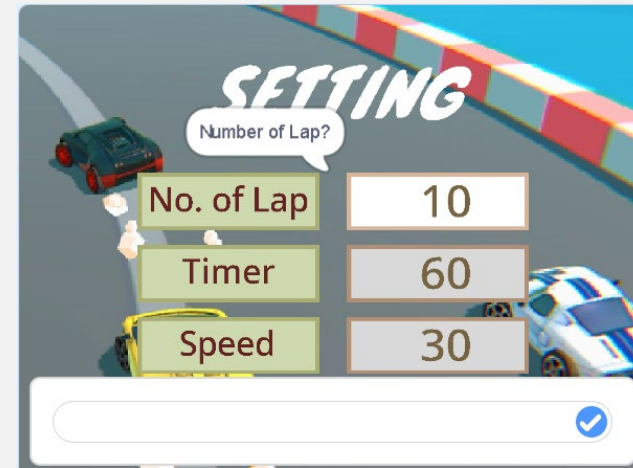
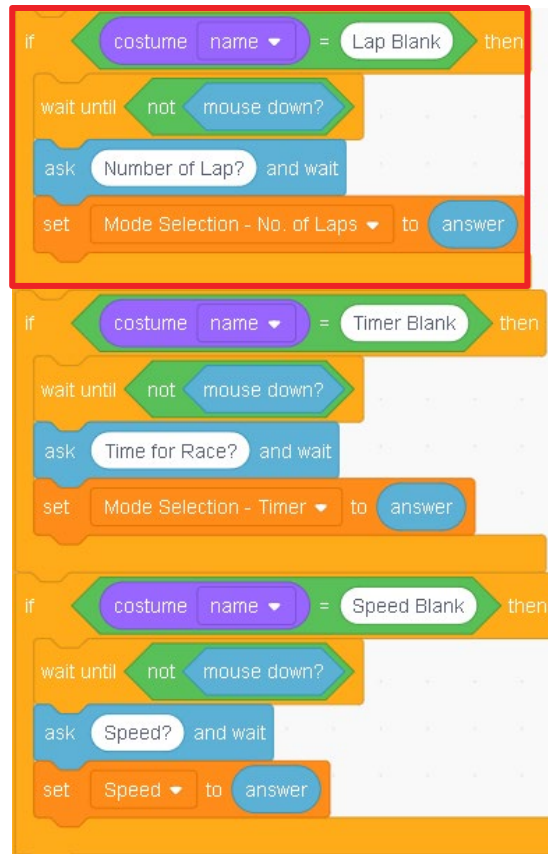
Script:



And we will have the similar button function

Setting Script

Script:

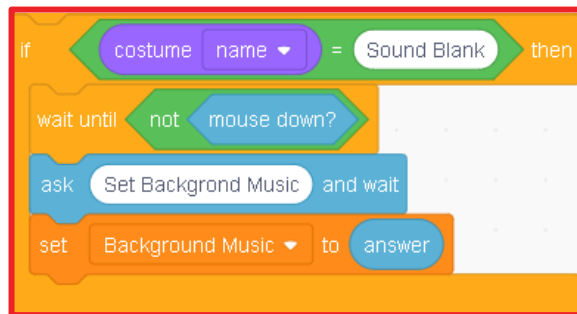
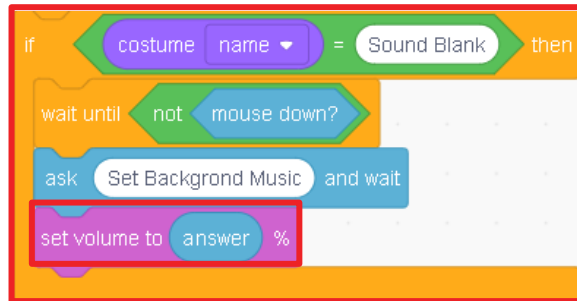


We need to have the input block for player to key in value and update the variable.



Setting Script

Script:

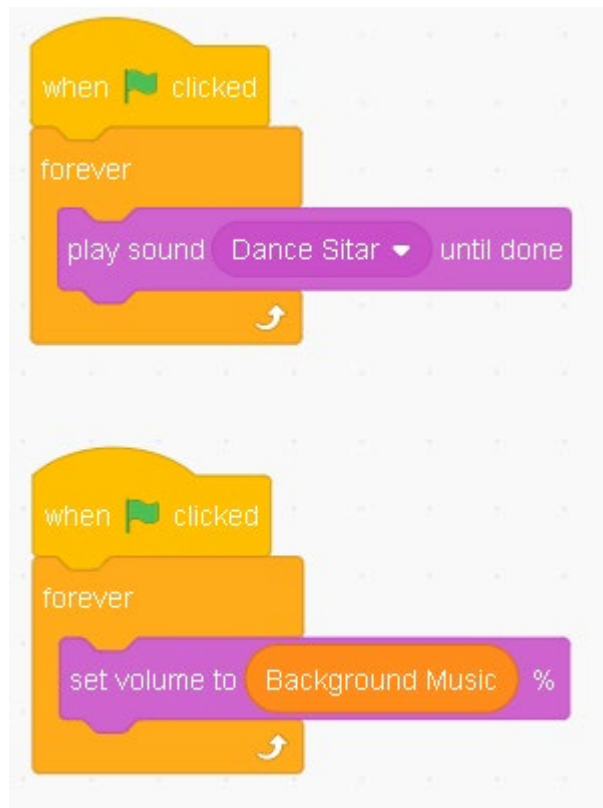


For adjusting the background volume, it doesn't work in this as different sprites have different sounds, it doesn't know which sound volume to switch for.



Setting – Background Music Volume

Script:

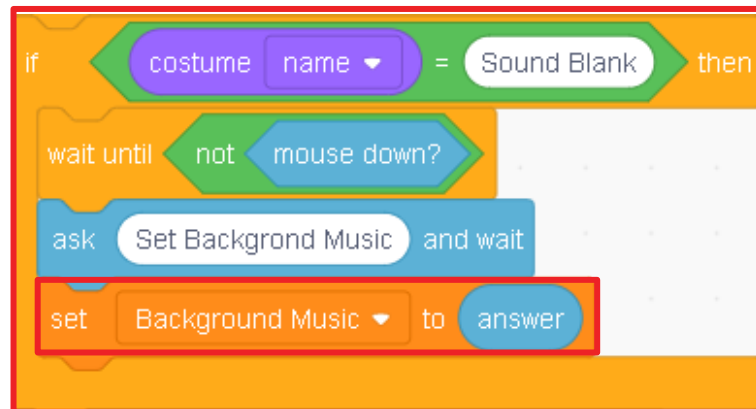


Therefore, we need to create a variable called “Background Music” and set the background volume always to “Background Music”.



Setting Script – Background Music

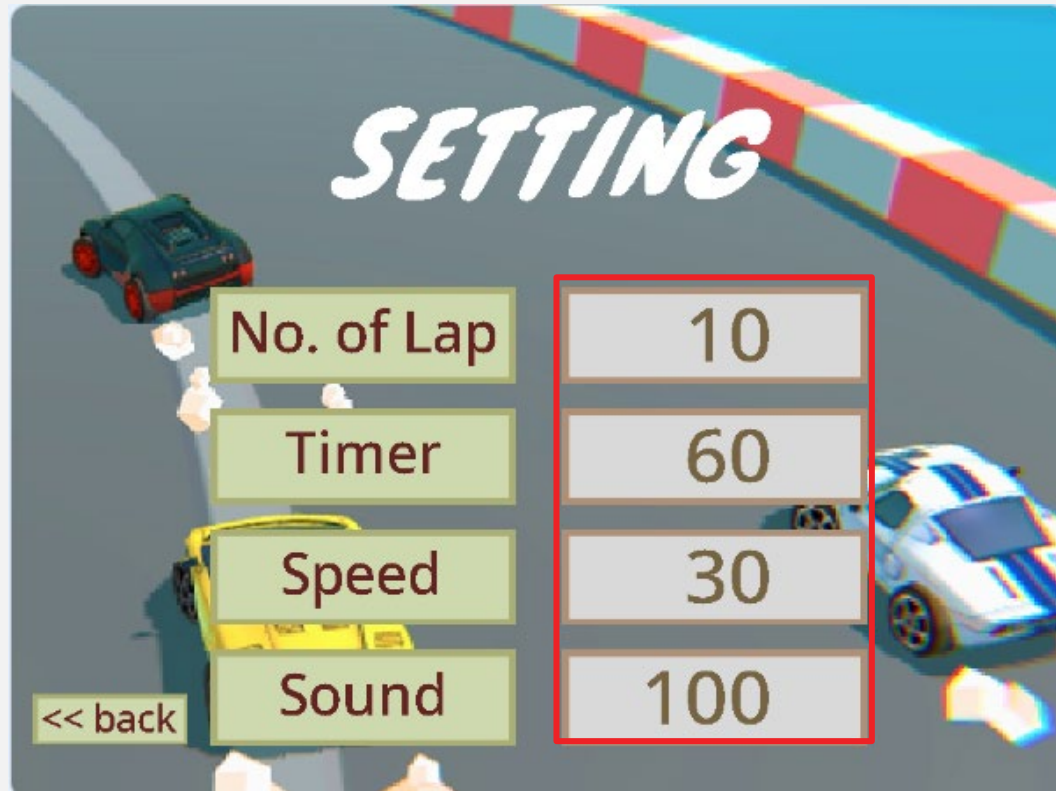
Script:



And at the setting there, for the “Sound Blank” costume, we will set if click, the player will be able to change the variable of the “Background Music”. And it will update the background volume at the same time.



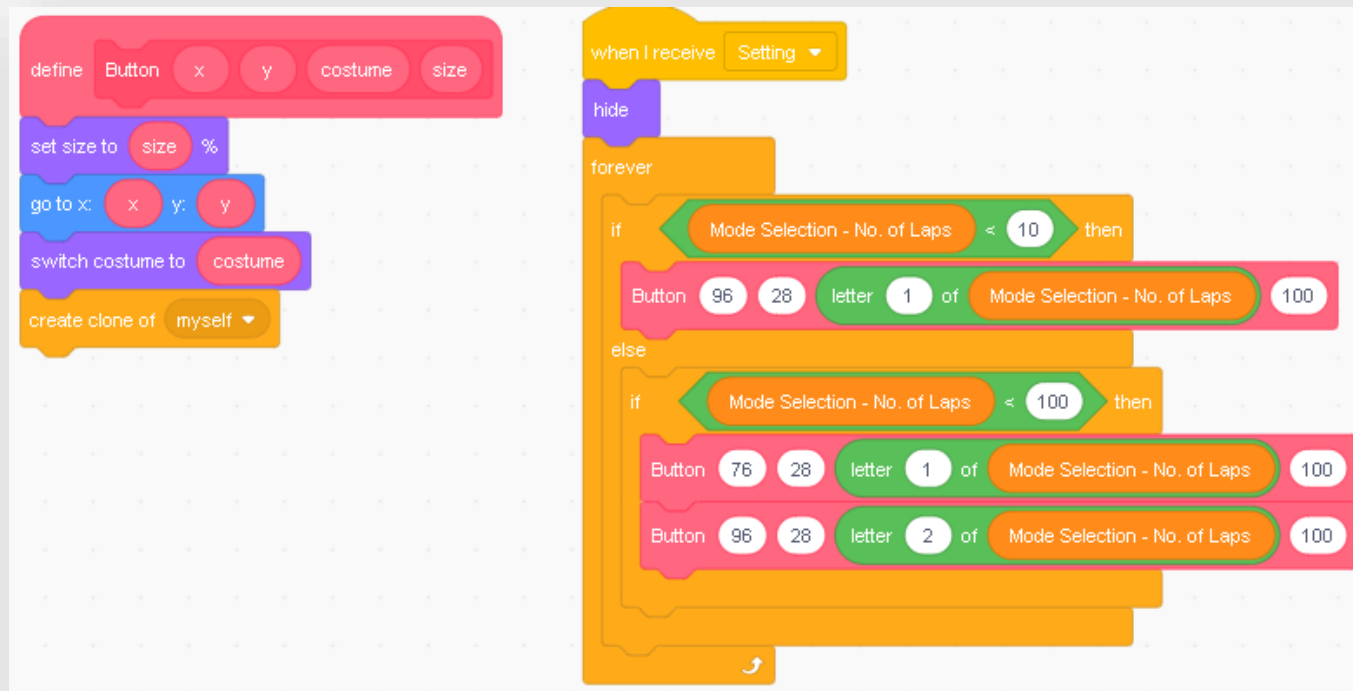
Show Digits



Now if you show your variables and try to update the variables by clicking on the blanks, you will see your variables will be updated, but it still doesn't show the value in the blank field.



Script - Show Digits (No. of Laps)



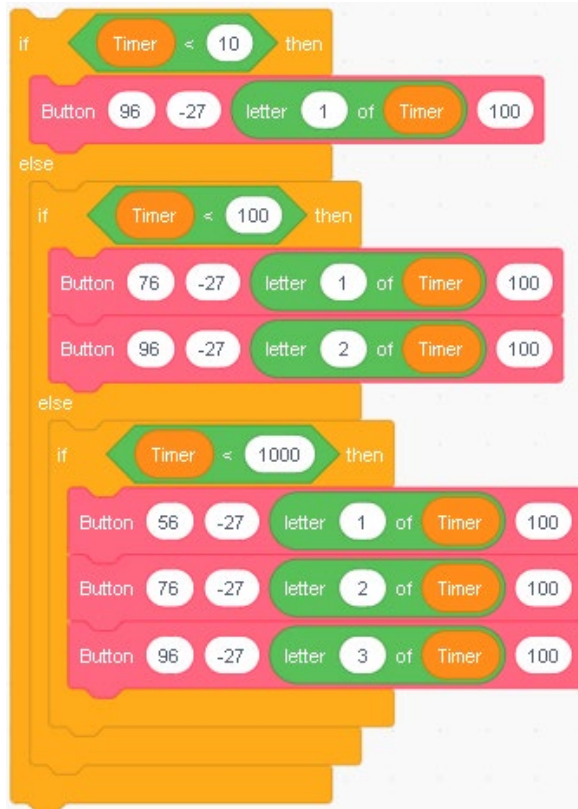
First, let's make a customized blocks to set the position of the digits.

And when in setting page, it will show the variables for number of laps after you put in this script.



Script - Show Digits (Timer)

Script:



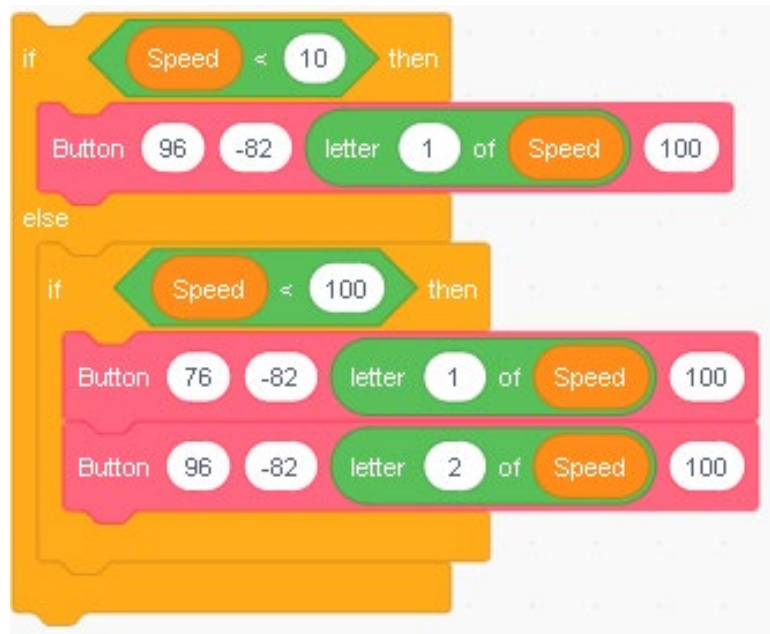
For timer, I will assume that player will probably put in number from 1 to 999 (max is 3 digits).

So I will have if-else statement to check how many digits to show.



Script - Show Digits (Speed)

Script:

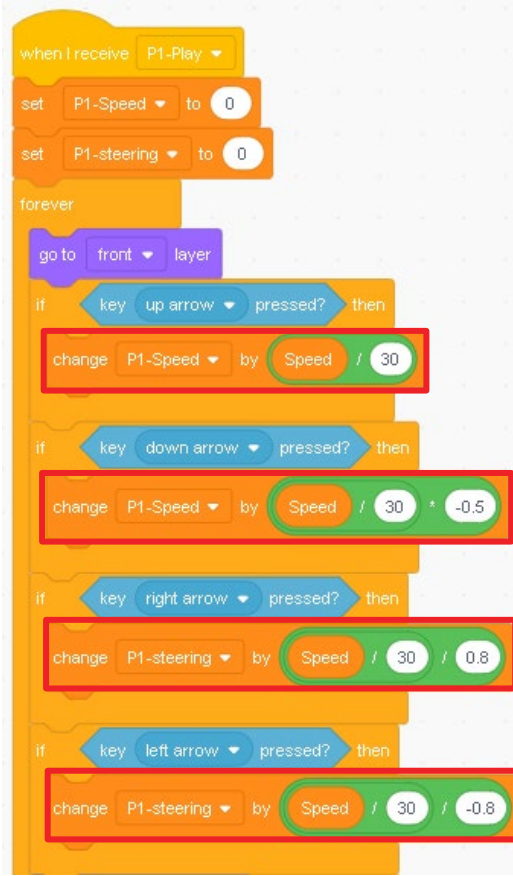


For speed, if we put our speed to 1, the speed will be very fast, and if we want to simulate the world's speed, we can use a ratio to put in. For instance, if player put in 30, it will set the speed in this game to 1 (which is fast enough to play with), if player input 60, the speed of the car should be moving with 2.



Script – Speed Conversion P1

Script:



Now our P1- and P2- speed is not fixed in the game, it can be changed based on the value input by the player.

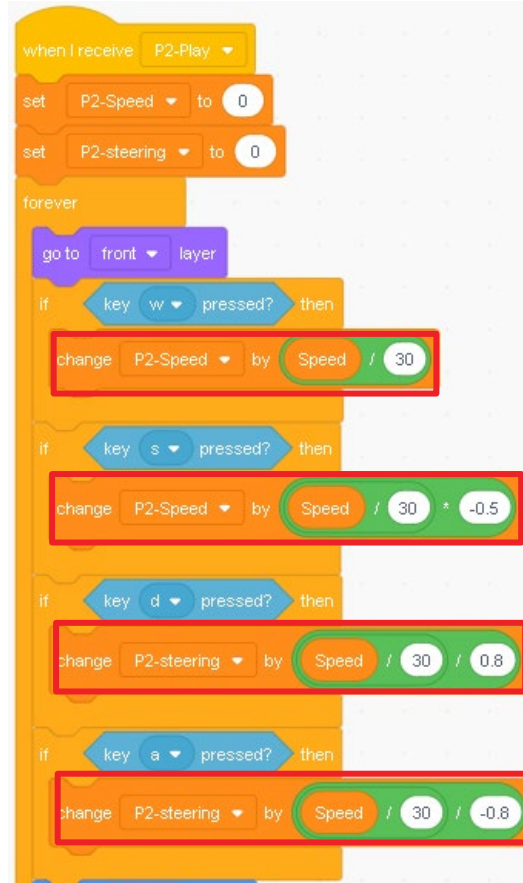
So we need to have a calculation over here (use Math operator), to convert the speed variable with 30:1 ratio and set it to P1-speed.

****The ratio of P1-speed:P1-steering is 0.8:1.***



Script – Speed Conversion P2

Script:



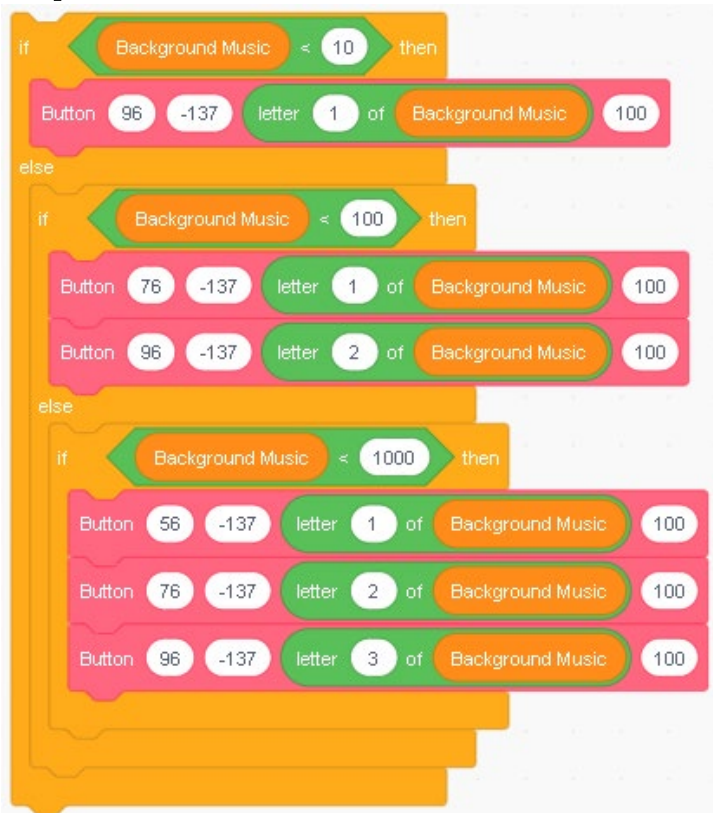
As it is a fair game, both players should be having the same speed and steering value.

So don't forget to set this for P2 also.



Script - Show Digits (Background Music)

Script:



And this will be the digits showing for Background Music variable.

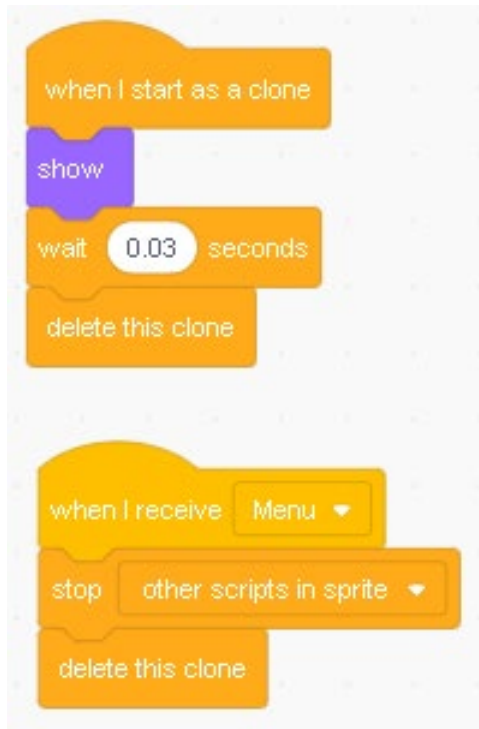
You must put all this if-else checking statement into the forever-loop (you can put all of them in 1 forever-loop).

It will make the digits keep creating the clones of the digits to show the variables on the blank.



Script - Show Digits

Script:

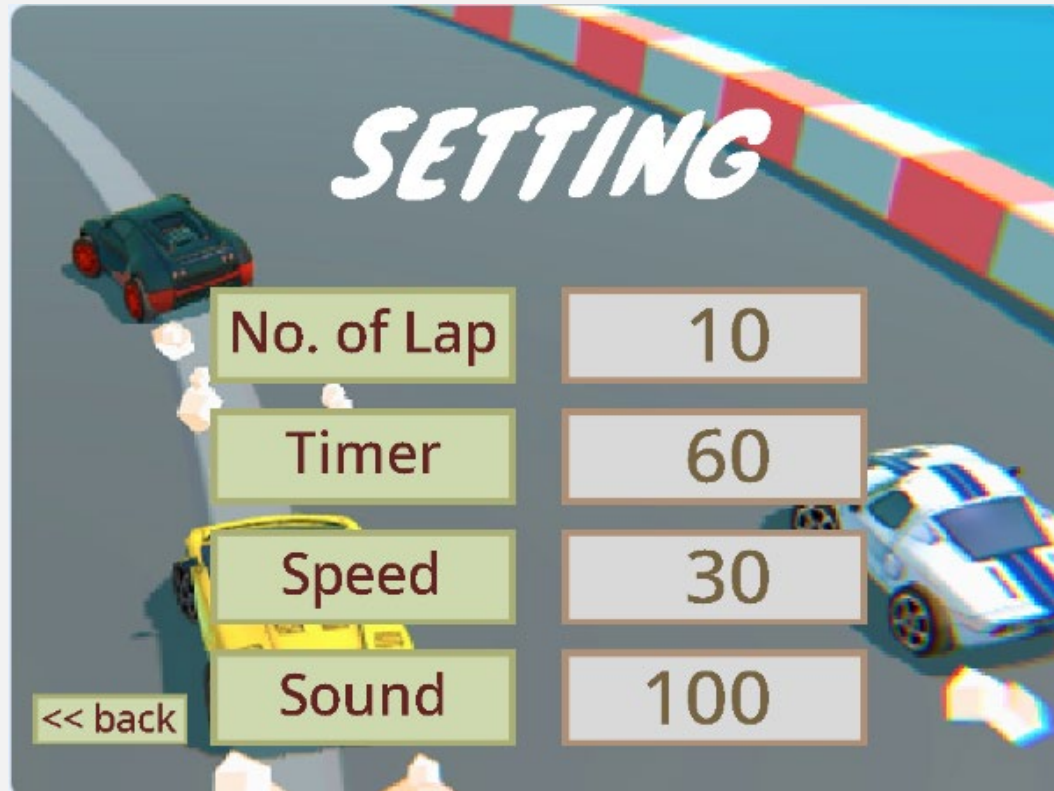


And we have to keep delete the clones of the digits as it will be created by the real one continuously.

This is the way to keep the digits up on the blank, otherwise it can only show 1 time.



Run and test on the setting

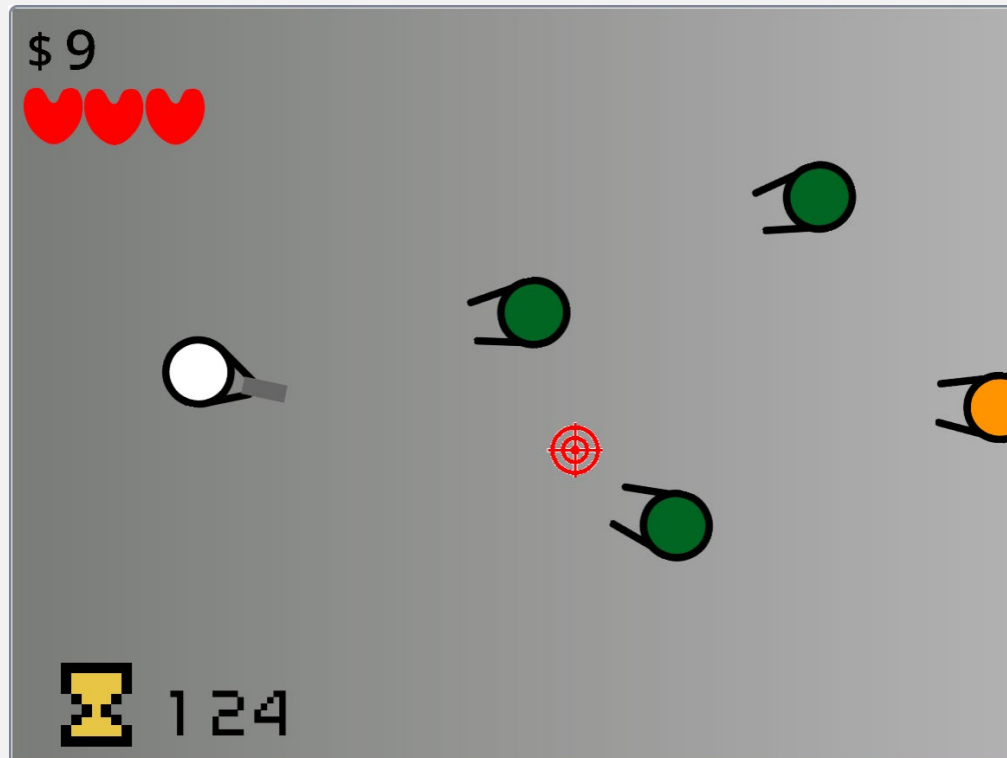


Now you can try to run and click the setting and try input different values.

If the digits aren't changed when you input new value to the variable, you need to look back your scripts and check which parts are not coded correctly.



Build a Zombie Defence game (Shooting)

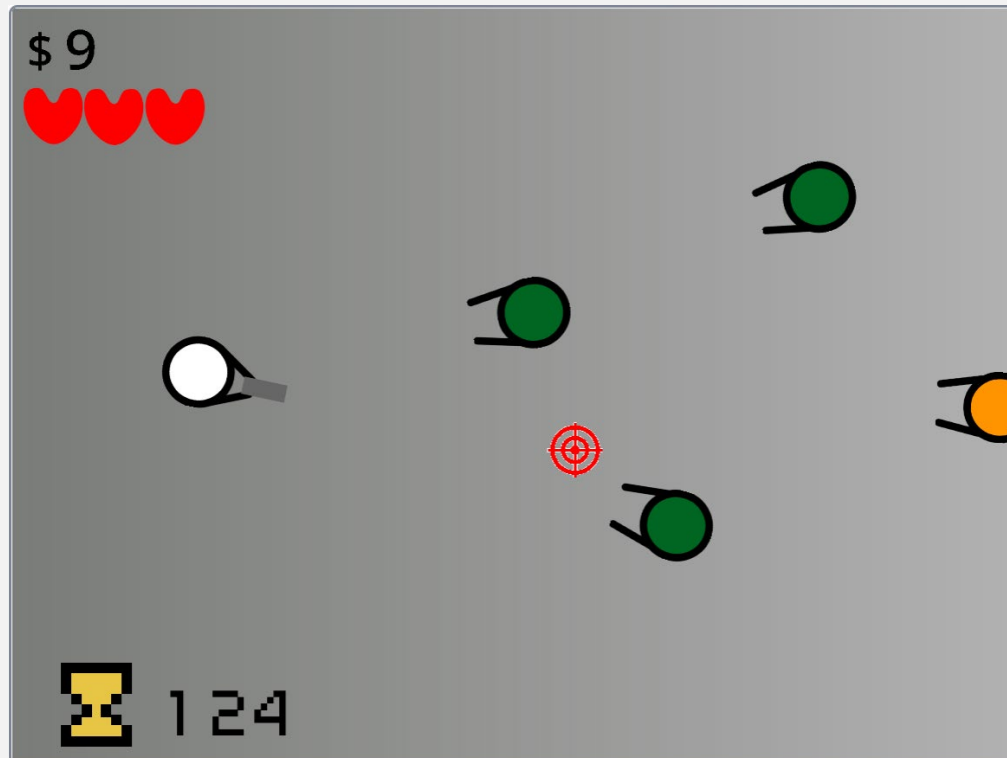


Let's create a zombie shooting game, which does not require fancy graphic with your costume, but we need a good game experience for the players.

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



Game Rules – First Draft



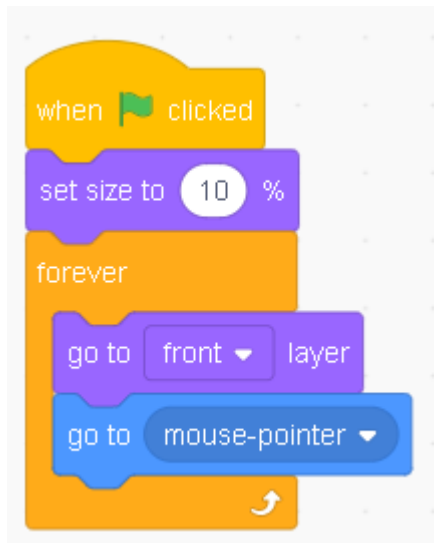
Rules:

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.

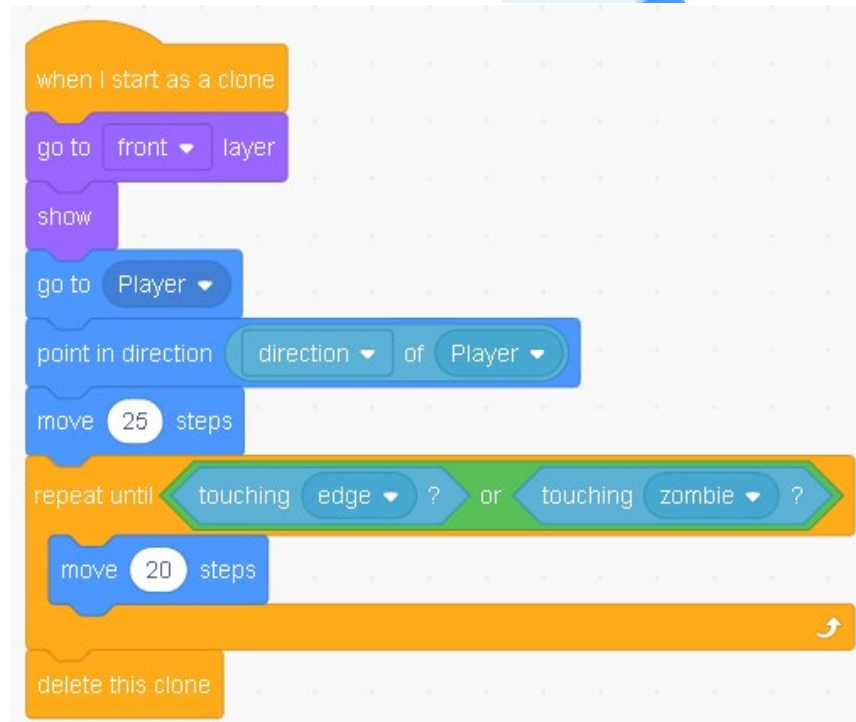


Programming Tips

Script (Aim):



Script (Bullet):

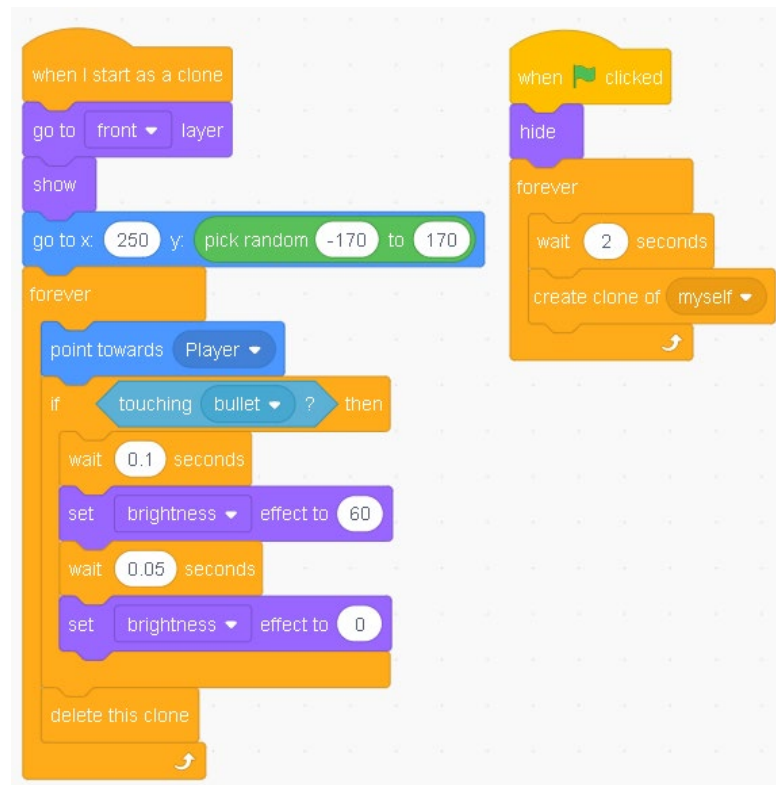


This are the tips for “Aim” and “Bullet”.



Programming Tips

Script (zombie):

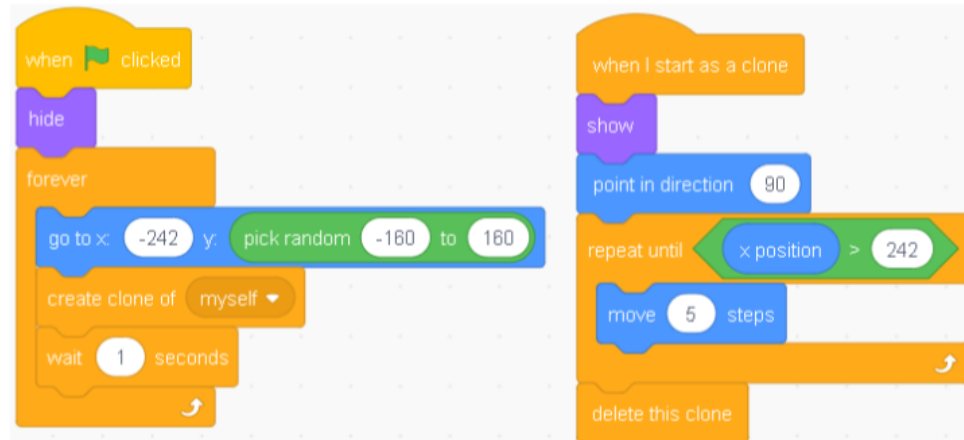


This is the basic program for the zombie, if you want to add more function or more game rules to the zombie like it will only be dead after 3 shots, then you need to add in some variables to record the health of the zombie.



Review Lesson 1-11 (Level 1)

Script:



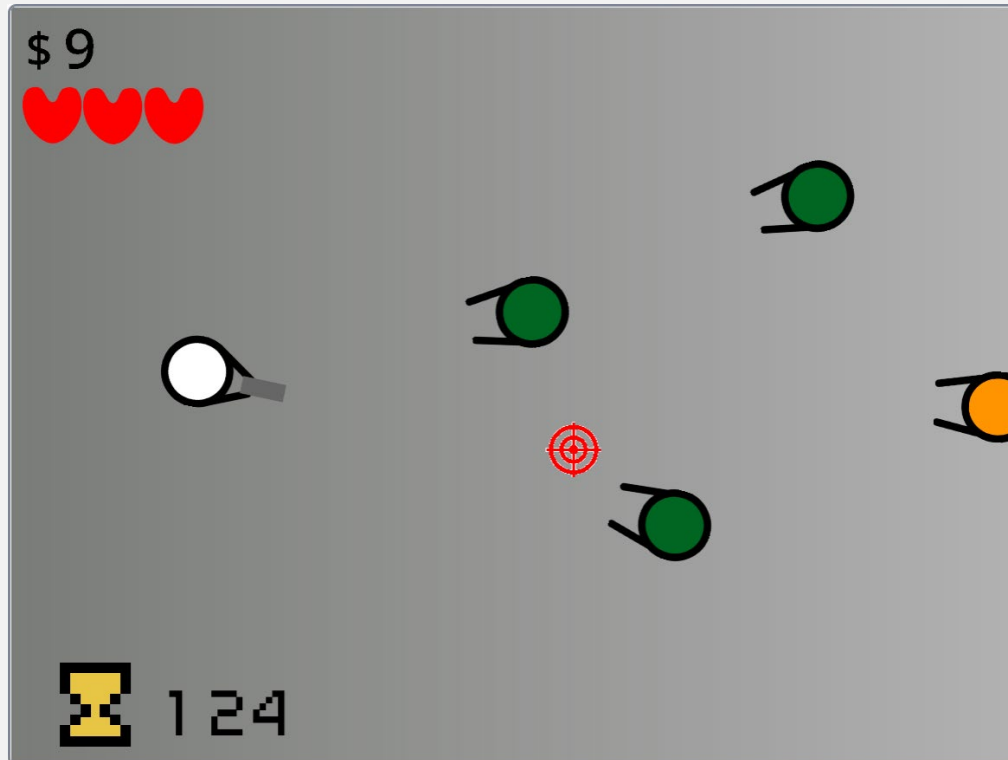
As we want to keep creating bat from left to move to the right, therefore we use create clone function in this case.

Let's do an arrangement for this.



ASSIGNMENT *for*

Lesson 2-9



L2-9 – Mission

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.



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 :)