



Scratch Programming

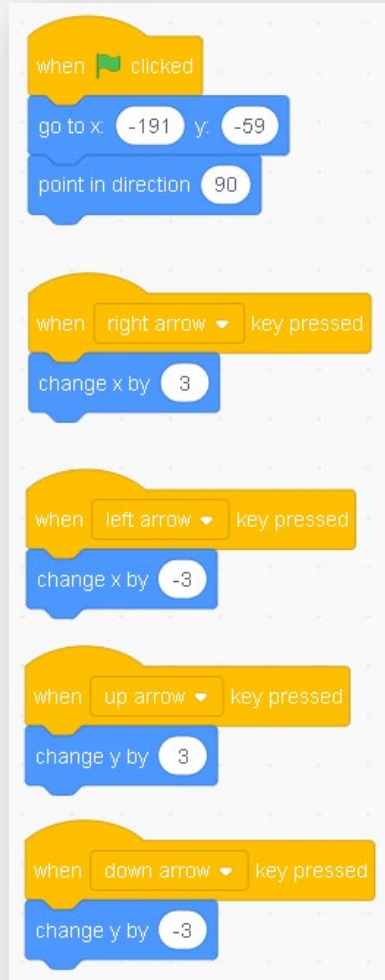
Topic 1.7

Smooth Motion Control II

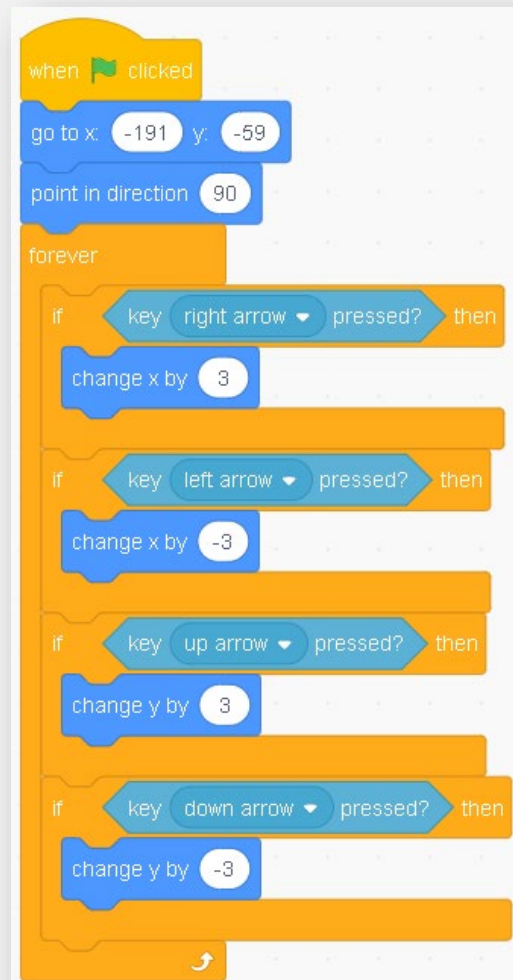
Presented by Advaspire Team



Review Last Topic – Events vs Forever-if Loop



VS



If you are making a game, it's nicer if you can make the control into forever-if loop as the player will have a smooth control of the Sprite.

But if your purpose is just to make an interactive story and arrow buttons are not as frequently used, you can go for event triggered method.

**Try to run the program and observe what's difference between these 2 control method.*



Review Last Topic – If on edge, Bounce

Script:



Script:

when green flag clicked

go to x: -191 y: -59

point in direction: 90

a set rotation style: left-right

forever loop:

- if key: right arrow pressed? then: change x by: 3
- if key: left arrow pressed? then: change x by: -3
- if key: up arrow pressed? then: change y by: 3
- if key: down arrow pressed? then: change y by: -3
- b if on edge, bounce

a

I will set the rotation style to left-right for the Cat.

So no matter how the cat turn its pointing direction, the appearance of the cat is only showing left and right

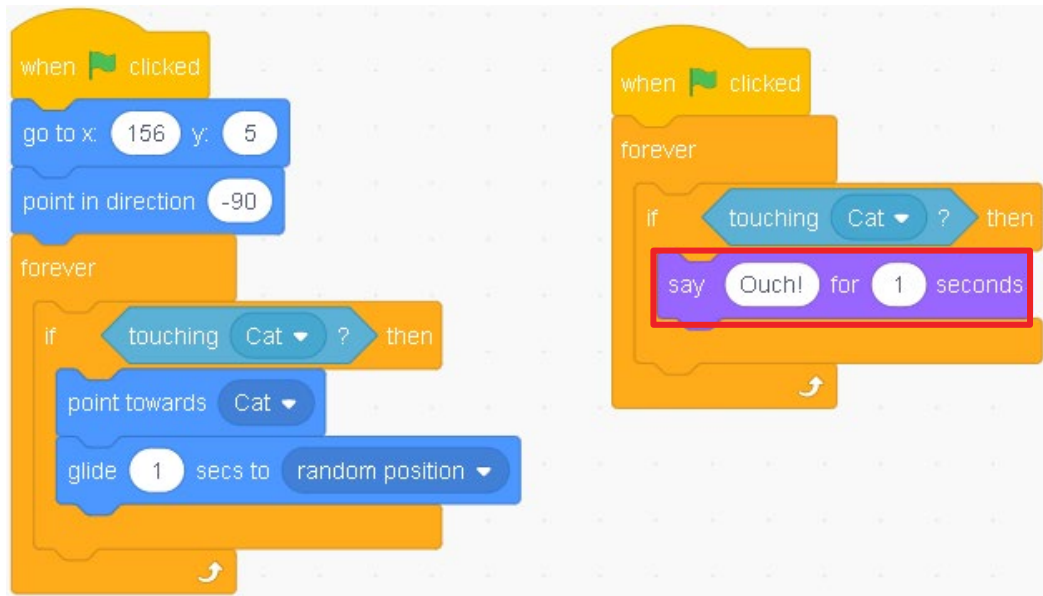
b

I set a “if on edge, bounce” block into the forever loop.
This is to make the cat bounce back if it hit the edge of the stage.
**It's in the forever loop but outside of those if-loop*



Review Last Topic – Mouse Coding

Script:



I split out the “Say ‘Ouch’ for 1 second” block so that the mouse will say ouch and glide to random position at the same time.



Today's Topic

1. The Virus Disinfectant Game
2. The planning and Logic Flow of Coding
3. Step by step fixing the game requirement

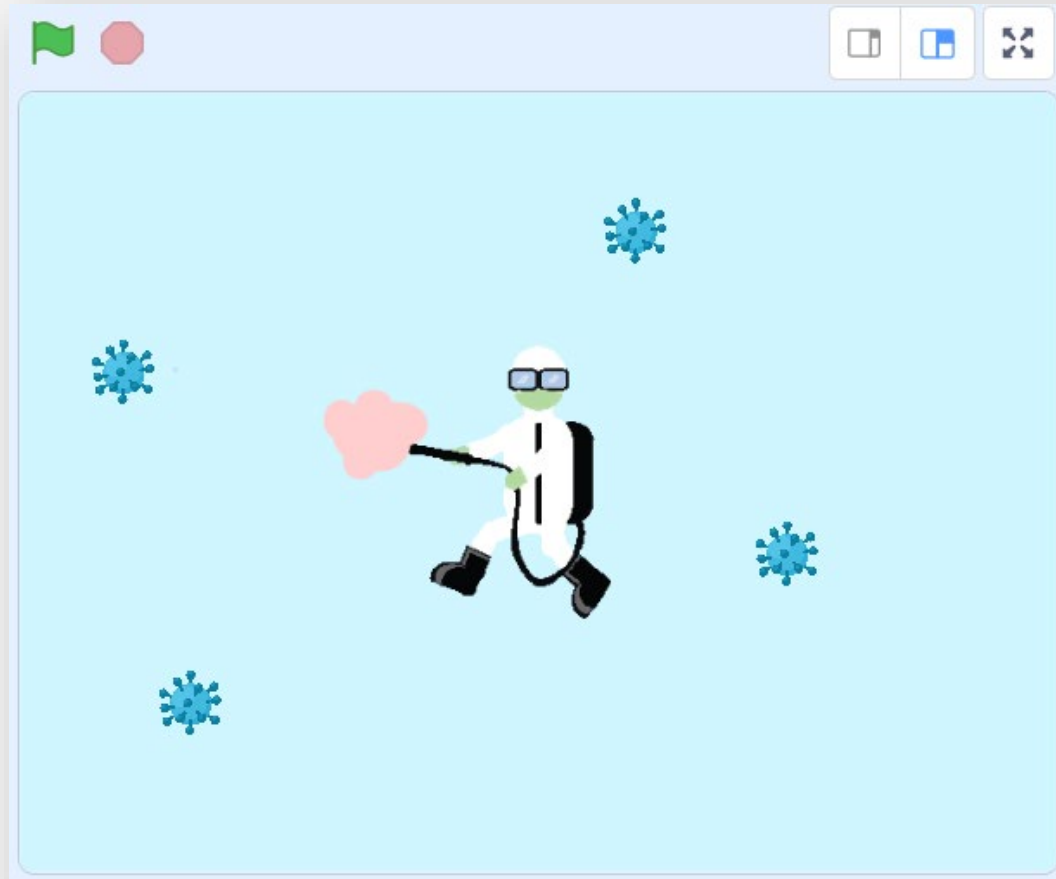


Learning Outcome

- 1. Able to code with step-by-step logical flow for game requirement**
- 2. Able to perform forever-if loop coding for sprite control**
- 3. Able to apply parallel scripting method to code for the main character**



Disinfectant Game – Coding Part



Make a Covid-19 game.

You are required to use the sprites (disinfectant cleaner & virus) in the link that I shared to you through Slack Group.



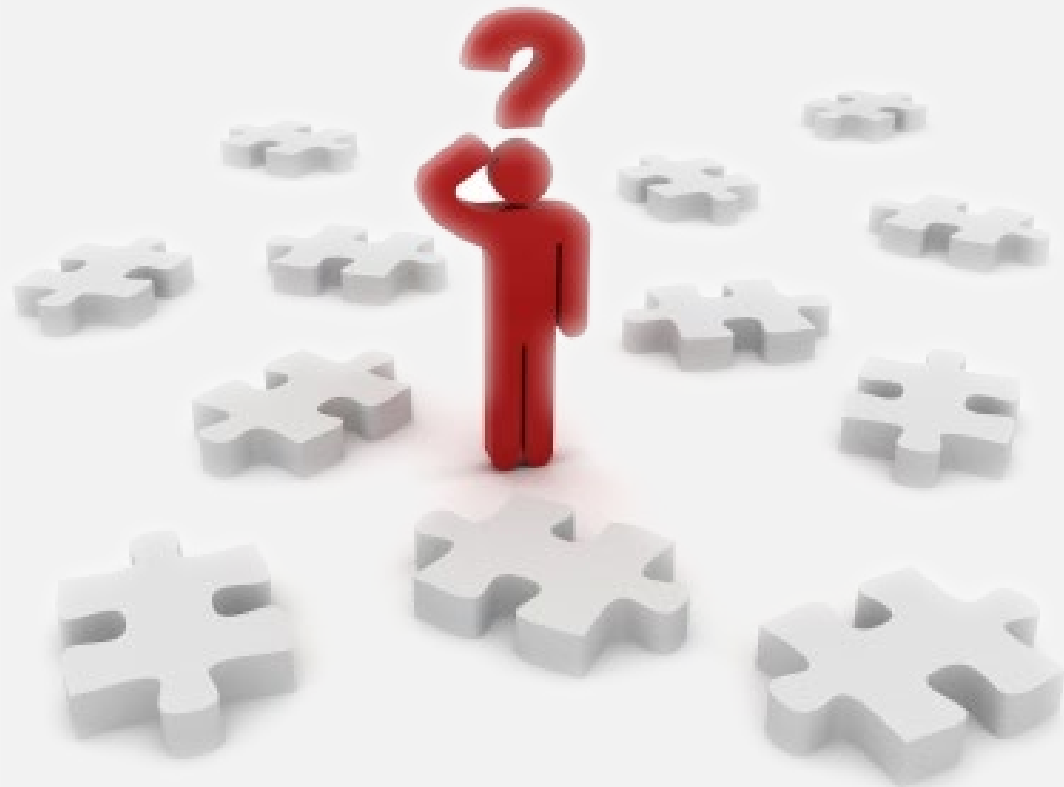
Disinfectant Game – The Game Rules

Game Rules:

1. You are able to control your cleaner with up-down-left-right arrow keys (rotation style = left-right)
2. Your cleaner starts at the centre
3. When pressing <space bar> your disinfectant cleaner will spray the gas but it will remain back to the costume without spraying if <space bar> is not pressed
4. If the cleaner hits the edge, bounce back
5. When your cleaner move to the right, it will face right, otherwise it will face to the left
6. There will be 4 viruses on the stage on the start and all of them spawn randomly
7. If disinfectant hit the virus with spraying costume, the virus will shout “No~~” then disappear.
8. The virus will say “I’m not afraid of you!” and remain there.



Problem Solving – Logical Flow



How do we get started?



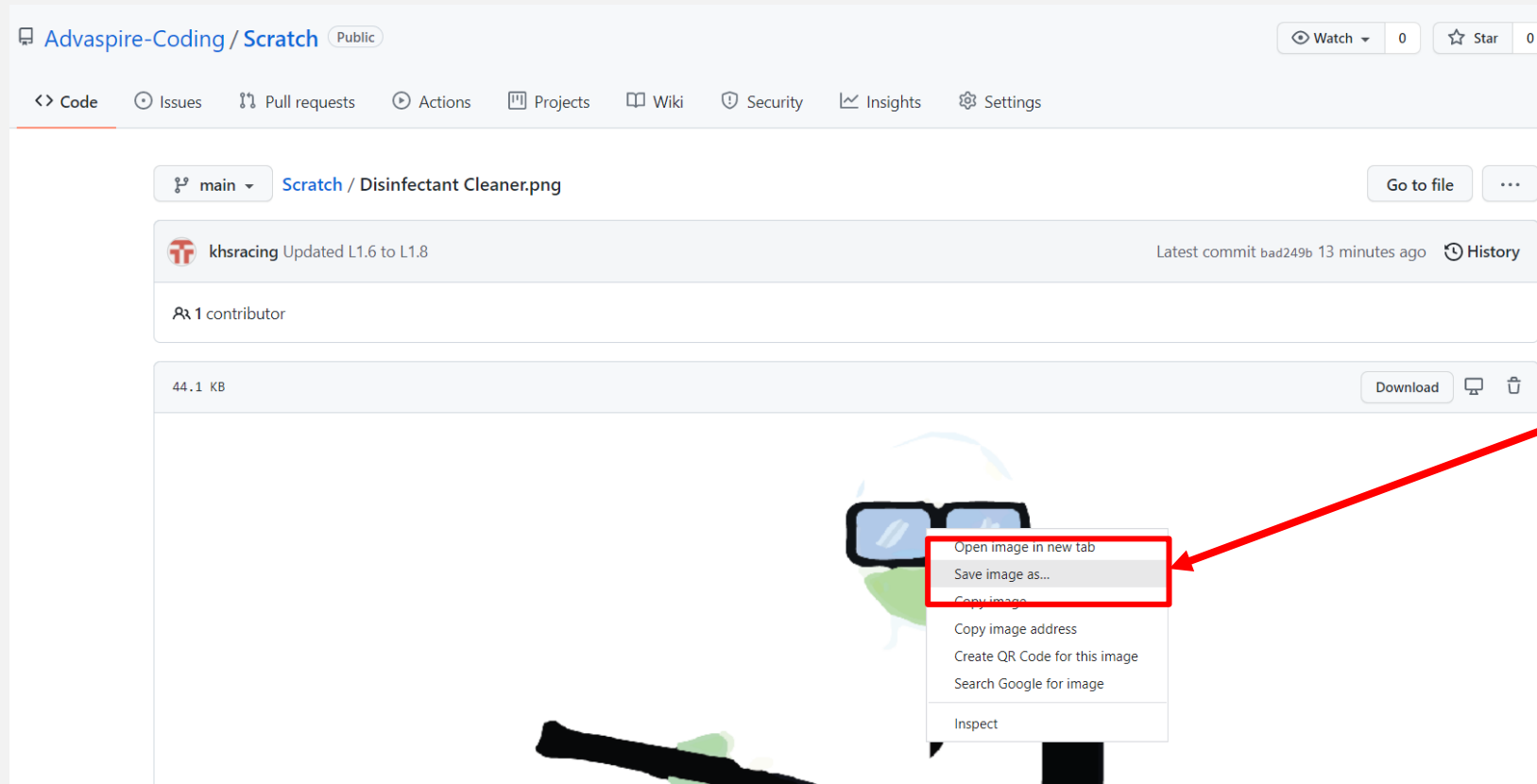
1. Get all sprites in place

Lesson 5 - Interactive Story - Cat vs Bat - <https://git.io/Ju5ZK>
Lesson 6 - Smooth Motion Control I - <https://git.io/Ju9ig>
Sprites for Lesson 6 - Disinfectant Cleaner -> <https://git.io/Ju9iD> Virus -> <https://git.io/Ju9iF>

First steps, go to our discord Group and download virus and Disinfectant Cleaner (click on the link and download the sprites).



1. Get all sprites in place (download from github)

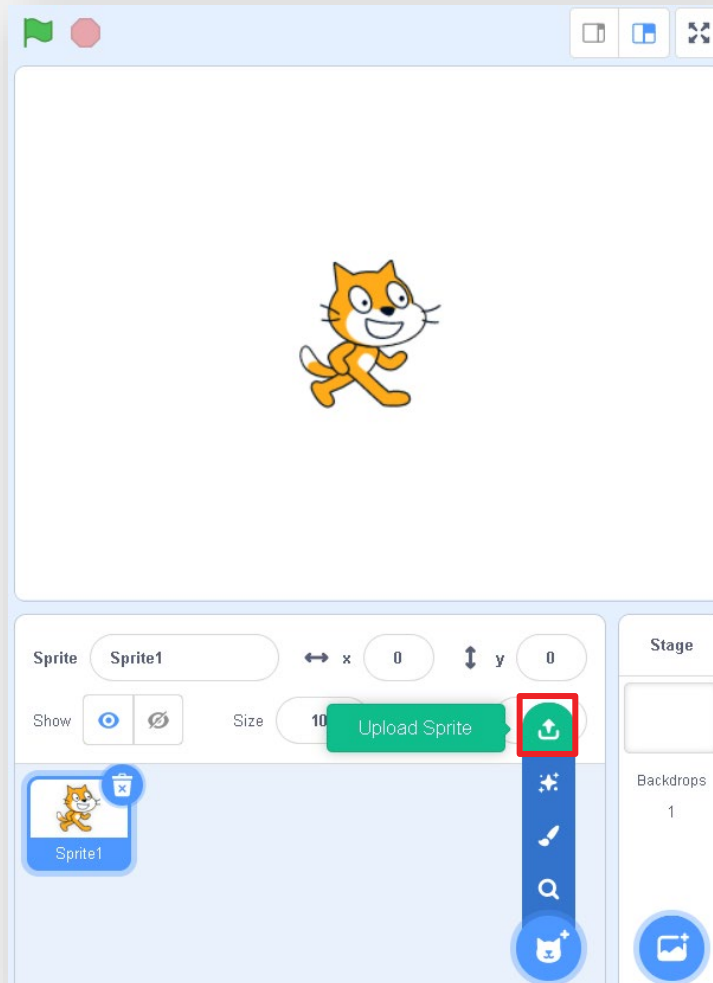


Right click on the picture and select “Save As” to download the sprites.

Do the same way to the virus sprite.



1. Get all sprites in place



Go to your Scratch and upload the Sprite.

You can delete your “Cat”, since we are not going to use it in this game.



1. Get all sprites in place

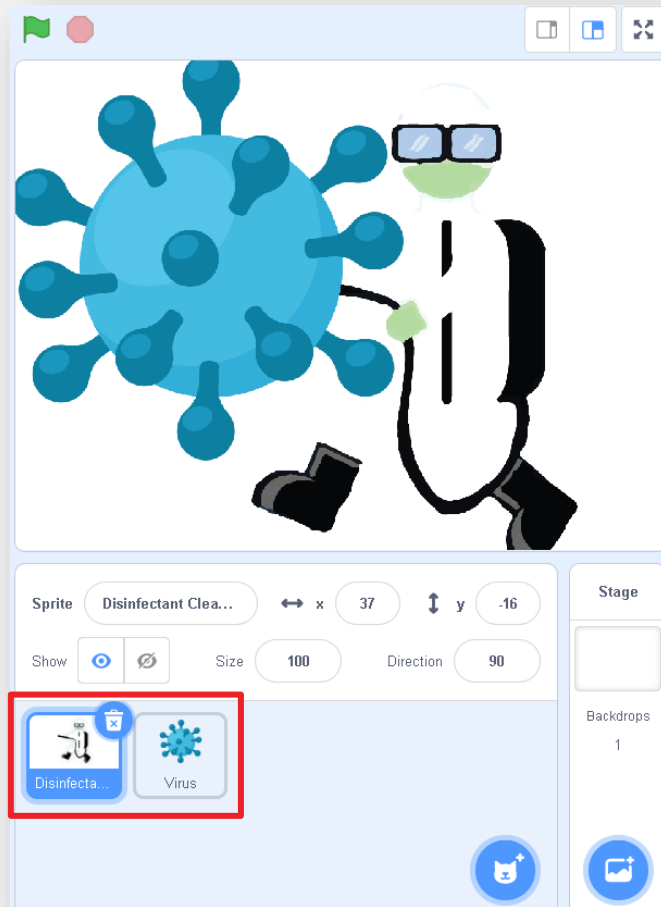
← → ▾ ▴ ⬇ > This PC > Downloads

	Name	Date modified	Type	Size
★ Quick access	▾ Today (2)			
	Disinfectant Cleaner	14/9/2021 11:05 AM	PNG File	45 KB
	Virus	14/9/2021 11:08 AM	PNG File	52 KB
	▾ Yesterday (4)			
	Arduino LCD TFT TouchScreen 2.4 Inch SP...	13/9/2021 3:50 PM	WinRAR archive	3 KB
	SPFD5408-master	13/9/2021 3:37 PM	WinRAR ZIP archive	193 KB
	arduino-1.8.16-windows	13/9/2021 3:21 PM	Application	116,212 KB
	maxwell	13/9/2021 11:33 AM	PNG File	519 KB
	▾ Last week (12)			
Desktop				
Downloads				
Documents				
Pictures				
BNI				
Level 1				
Level 2				
Unit 3 (Music Maker				

Upload both virus and disinfectant cleaner into your Scratch.



1. Get all sprites in place

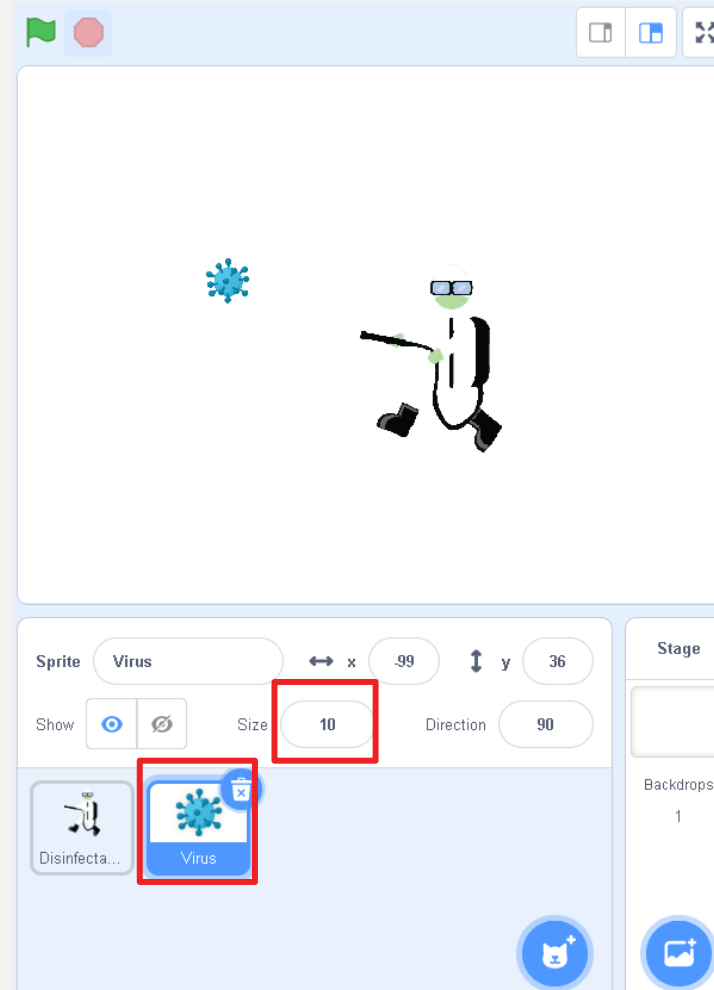
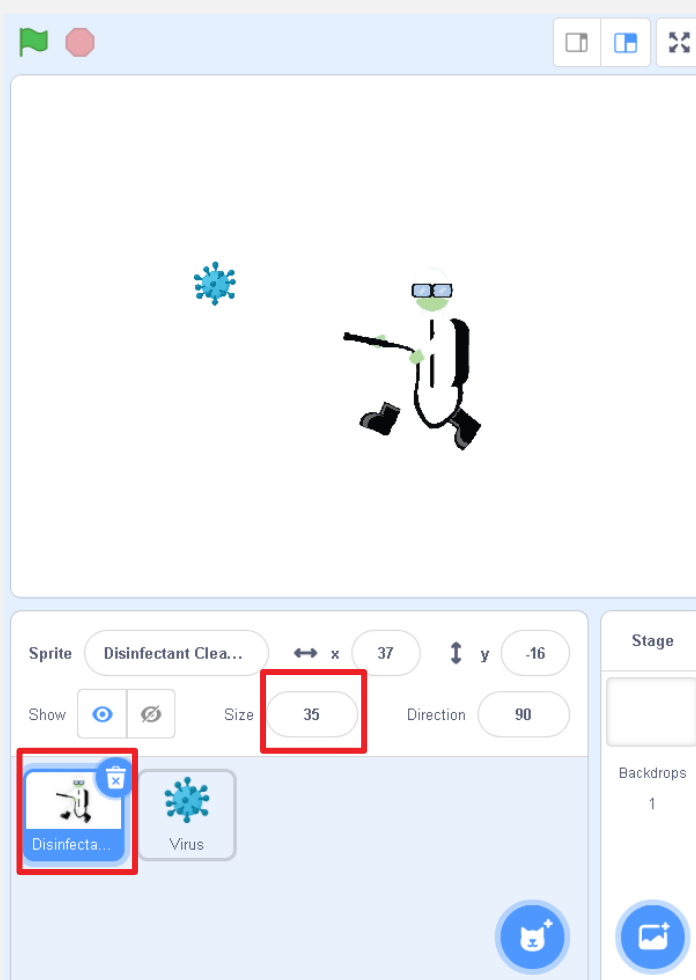


After uploading, you will see something like this.

Both Sprite are very big to display on the Stage.



1. Get all sprites in place

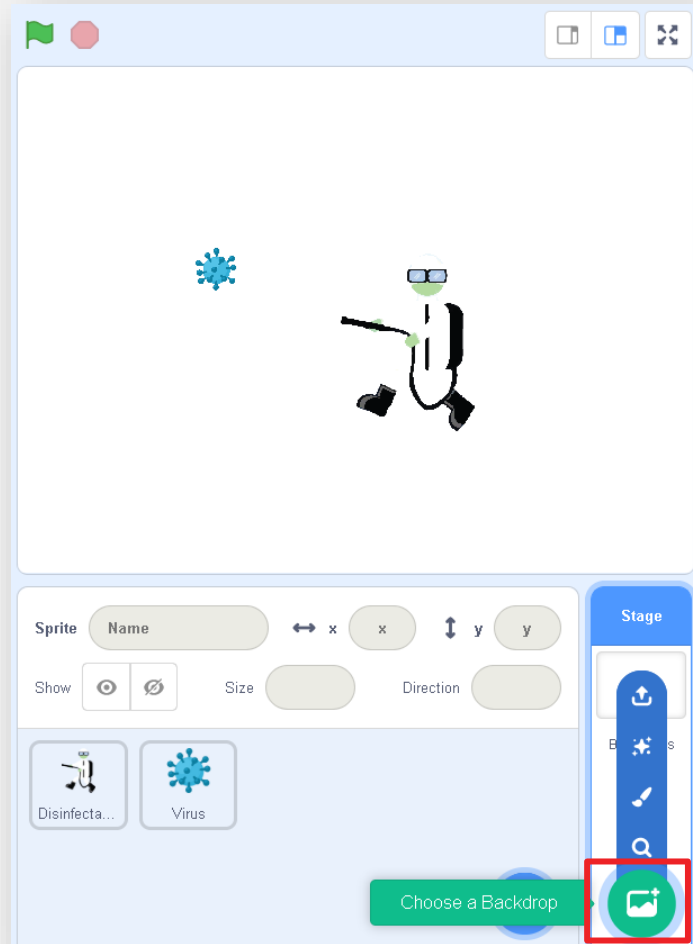


Change the size of the disinfectant cleaner to 35.

Then change the size of the virus to 10.

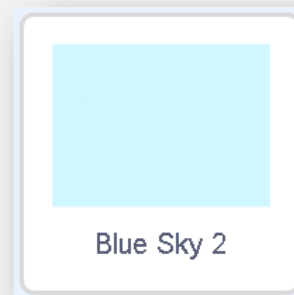


2. Add Backdrop



Add a backdrop for your game. (You choose)

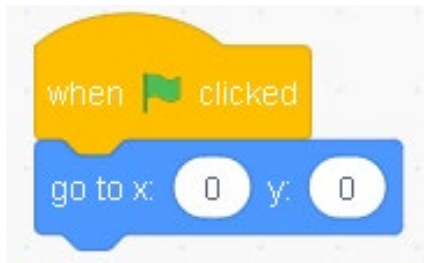
I will use "Blue Sky 2" in my tutorial.





3. Code your Disinfectant Cleaner

Script:



Game Rules #2:

Your cleaner starts at the centre.

Drag a “**when flag clicked**” event block followed by “**go to x: 0, y:0**” block.



3. Code your Disinfectant Cleaner

Script:



a

b

```
when green flag clicked
  go to x: 0 y: 0
  set rotation style left-right
  forever loop
    if key right arrow pressed? then
      change x by 3
    if key left arrow pressed? then
      change x by -3
    if key up arrow pressed? then
      change y by 3
    if key down arrow pressed? then
      change y by -3
```

a

Game Rules #1:

You are able to control your cleaner with up-down-left-right arrow keys (rotation style = left-right).

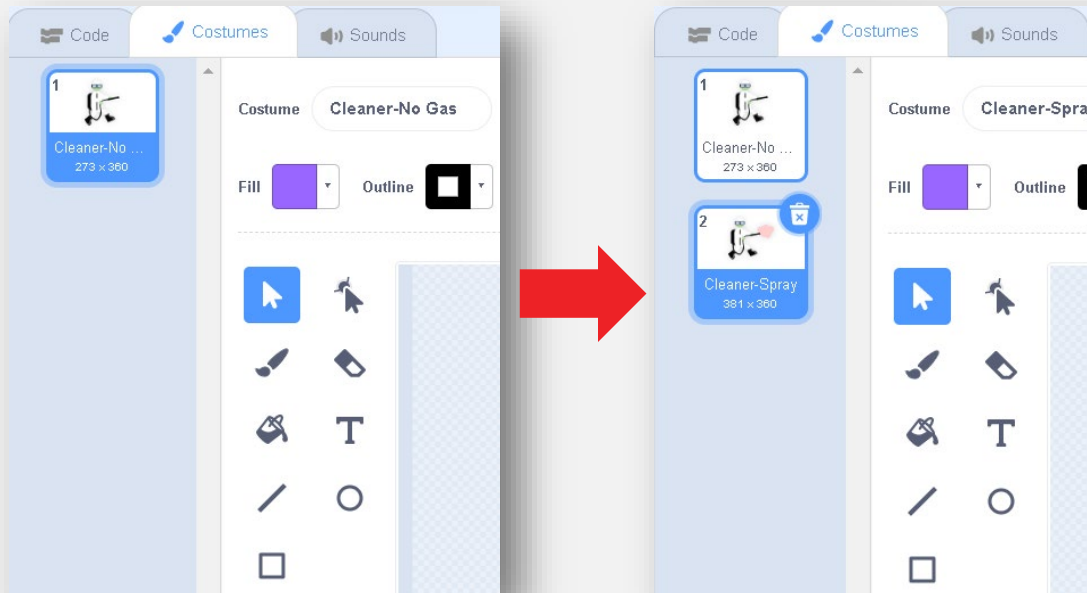
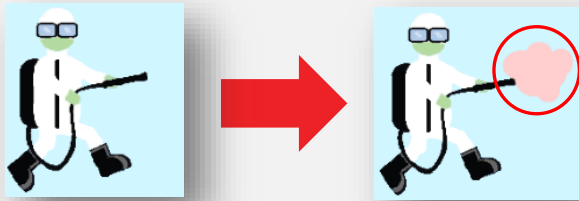
b

Forever-if control loop (like what we did for the cat in previous lesson)

The movement speed is up to you, I will set change by 3 in every movement in this game.



3. Code your Disinfectant Cleaner



Game Rules #3:

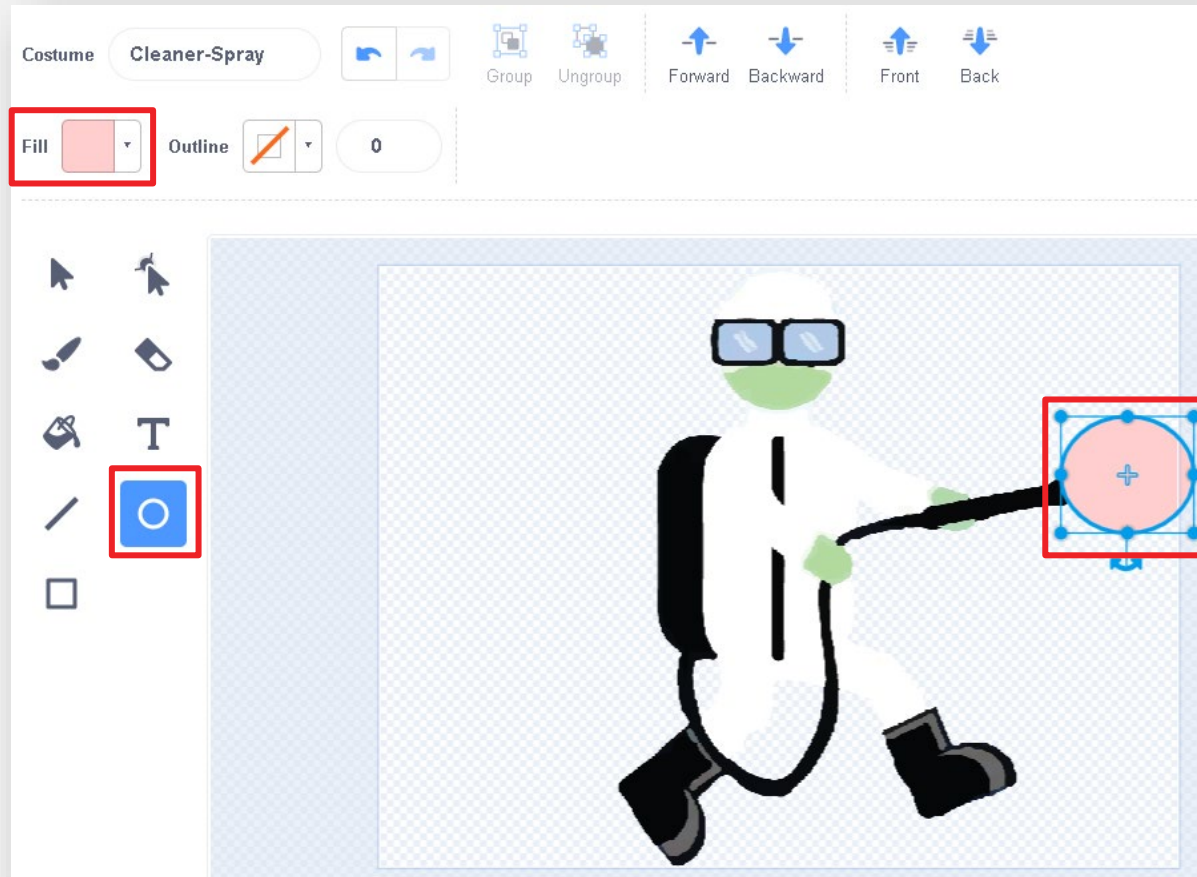
When pressing <space bar> your disinfectant cleaner will spray the gas but it will remain back to the costume without spraying if <space bar> is not pressed

Flip your costume so that your cleaner is facing to the right.

You need duplicate then first costume and add the spraying gas in front of the tip.



3. Code your Disinfectant Cleaner

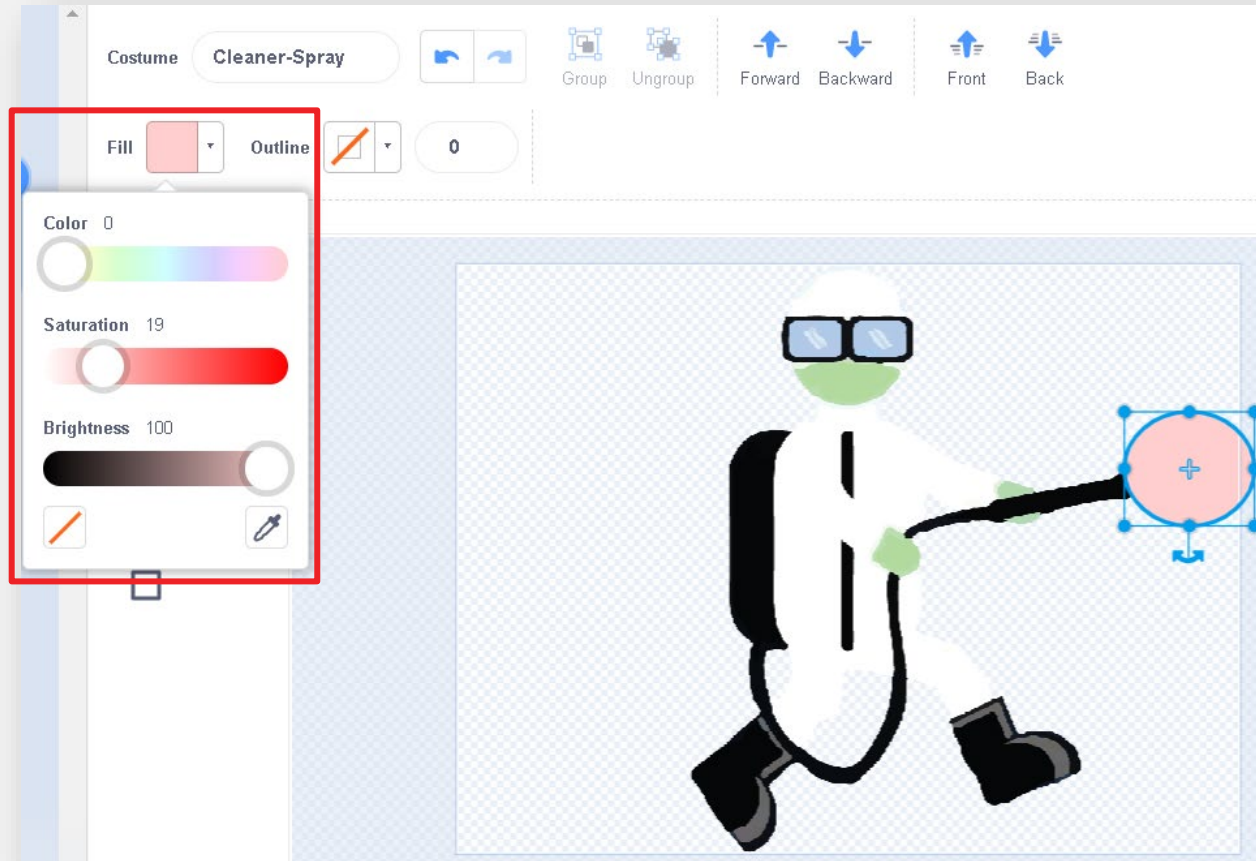


Draw the gas with few white circles

Select the circle tool and drag out a circle.



3. Code your Disinfectant Cleaner

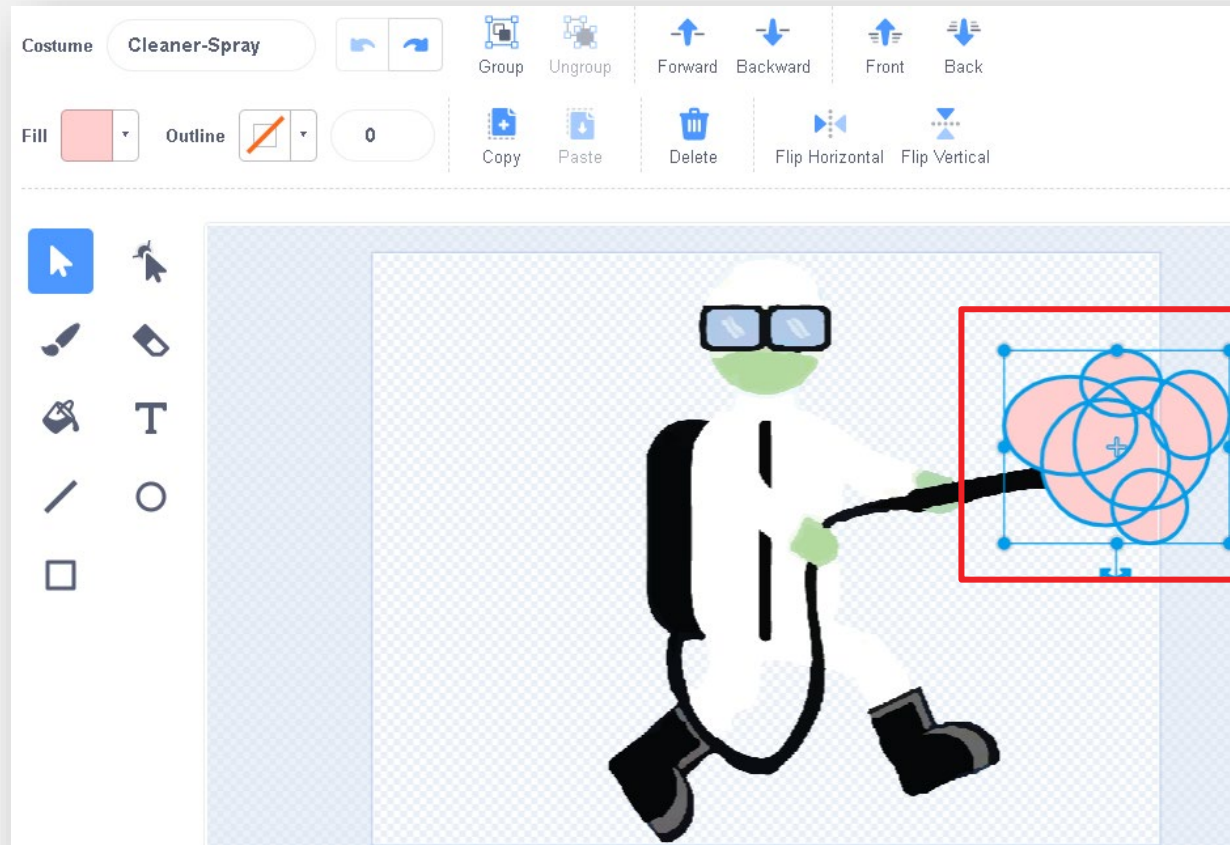


Click the fill, and drag the Saturation to 19

You will see your circle become pink colour



3. Code your Disinfectant Cleaner



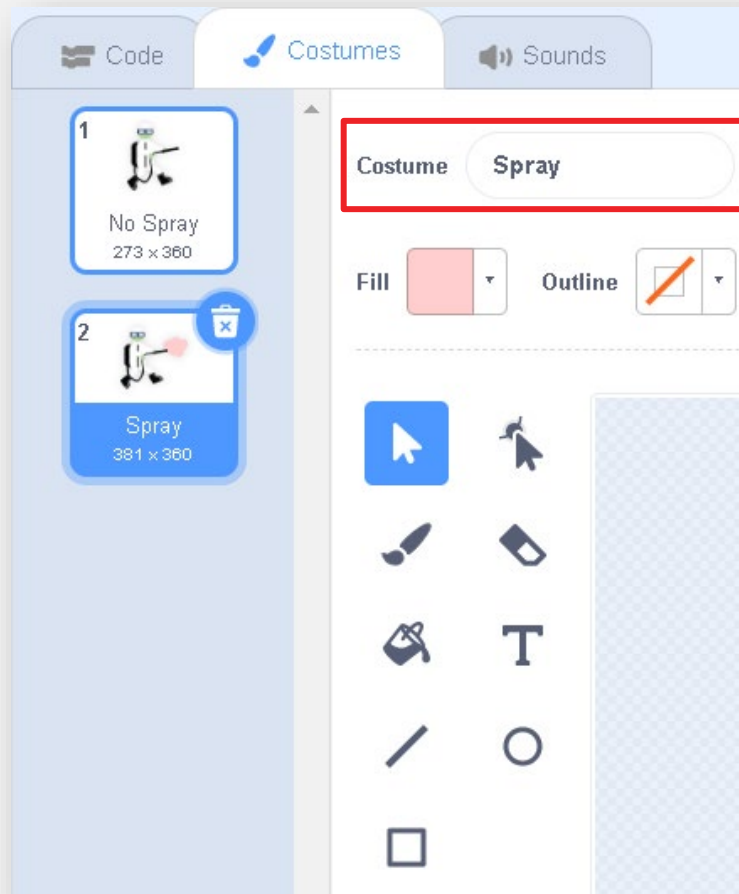
Draw another 5~6 circles to make like it's spraying some disinfectant gas.



You can see the gas form on the stage with a blue backdrop.



3. Code your Disinfectant Cleaner



I have changed the name for the first costume to “**No Spray**” and “**Spray**” for the second costume.

Now you will have 2 costumes over here, and you need to program that when you press <space> on your keyboard, it will switch it to “**Spray**” costume, otherwise it will keep showing the “**No Spray**” only.

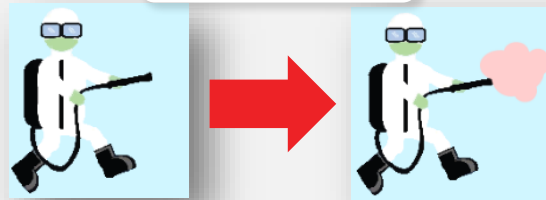


Script:



3. Code your Disinfectant Cleaner

<Spacebar>
pressed



Game Rules #3:

When pressing <space bar> your disinfectant cleaner will spray the gas but it will remain back to the costume without spraying if <space bar> is not pressed.

I put a if-else statement in the loop function.

If <space> pressed, then it will switch to "Spray" costume. Else, it will switch back to "No Spray" costume if <space> is not pressed.





Script:



3. Code your Disinfectant Cleaner

Game Rules #4:

If the cleaner hits the edge, bounce back.

Add “if on edge, bounce” block after the <space> if-else statement (still in the forever loop).



3. Code your Disinfectant Cleaner



Game Rules #5:

When your cleaner move to the right, it will face right, otherwise it will face to the left.

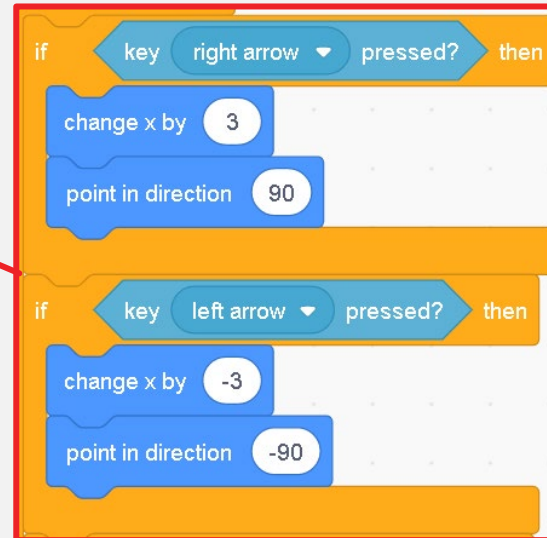
As we already set the rotation style to left-right, we can change its position to 90° when we press <right> arrow, and change to -90° if pressing <left> arrow.



Script:



3. Code your Disinfectant Cleaner



Game Rules #5:

When your cleaner move to the right, it will face right, otherwise it will face to the left

We will add a “point in direction 90°” in the <right arrow> if-statement.

Then add “point in direction -90°” in the <left arrow> if-statement



Disinfectant Game – The Game Rules

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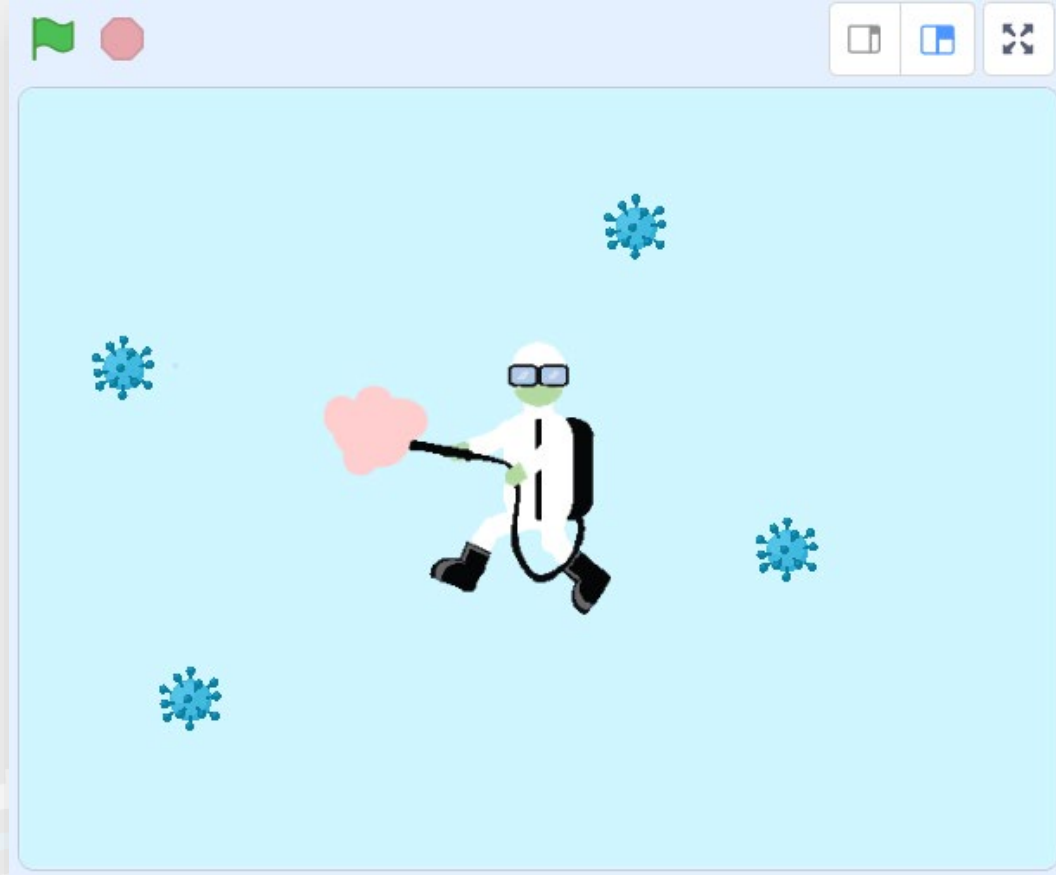
We have settled first 5 rules for the disinfectant cleaner.

We are going to program the virus now.



ASSIGNMENT *for*

Topic 1.7



T1.7 – Mission 1

Complete the Game Rules:

1. There will be 4 viruses on the stage on the start and all of them spawn randomly
2. If disinfectant hit the virus with spraying costume, the virus will shout “No~~” then disappear.
3. The virus will say “I’m not afraid of you!” and remain there.



Summary

1. If we jump into coding without taking step-by-step planning on which to code first, we are getting our project messed in the middle of working
2. We can add a new costume in a sprite to make an option to switch the appearance of the sprite
3. If statement is only execute when your condition is true, where if-else statement will execute action for “True” condition and also for “False” condition.



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 :)