Scratch Programming

Topic 1.8

Smooth Motion Control III

Presented by Advaspire Team

Review Last Topic – Logical Flow

How do we get started?

We should will solve each requirement 1 by 1 instead of jumping into different section.

Using logical flow to settle each tasks won't give you a mess when you are in middle of your project.

Review Last Topic – Solve the first 3 rules

Script:

a

Game Rules #1:

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

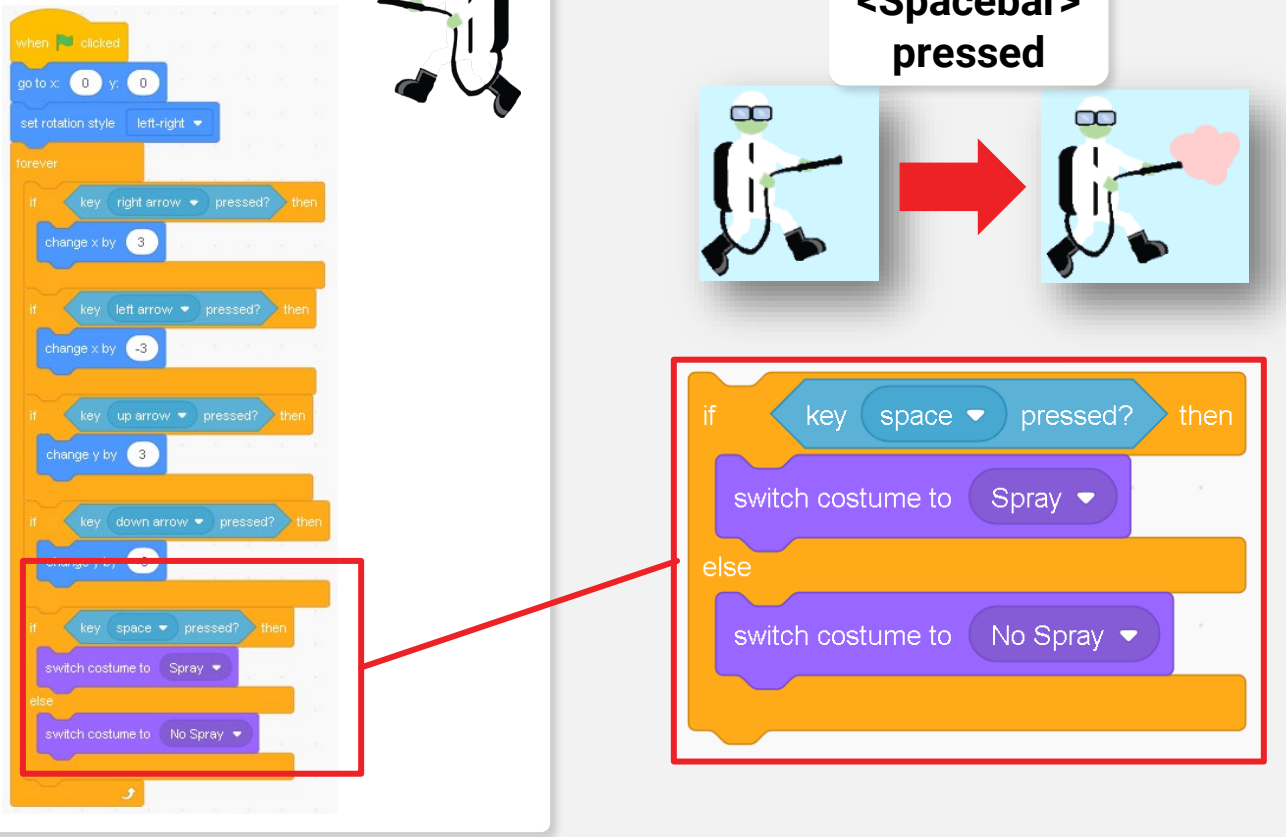
b

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.

Review Last Topic – If-else Block

Script:



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.

Today's Topic

1. Continue coding for the second part (Virus sprite)
2. Using if-else statement for virus sprite
3. Detecting disinfectant with parallel script

Learning Outcome

1. Program the virus sensing from disinfectant cleaner
2. Duplicate sprites for non-playing-character (NPC)
3. Using glide for seconds block for random movement

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.

We have settled first 5 rules for the disinfectant cleaner.

We are going to program the virus now.

4. Code your Virus

Script:

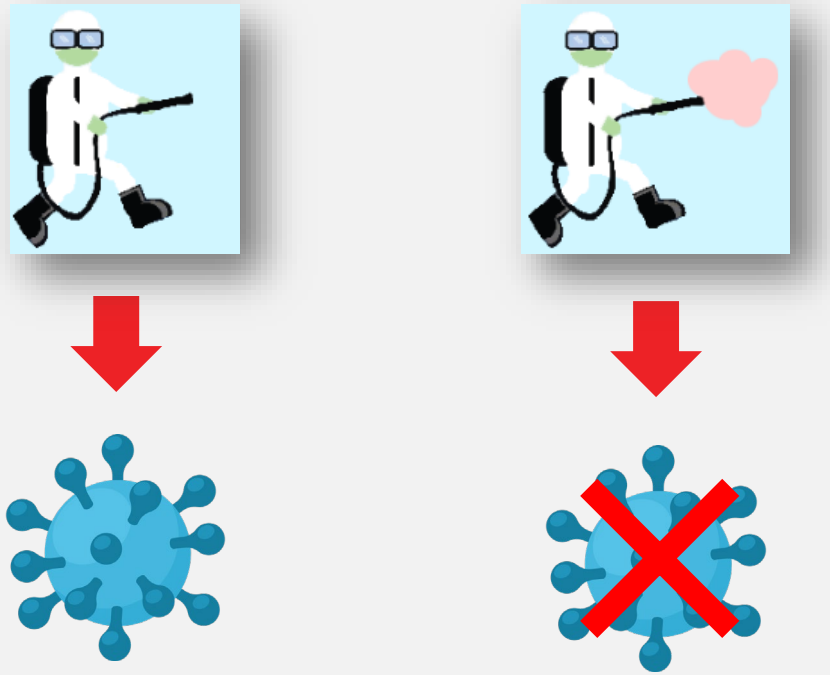
Game Rules #6:

There will be 4 viruses on the stage on the start and all of them spawn randomly

It will spawn randomly on the start, so we will just give a "go to random" position after "flag" pressed.

It will need 4 viruses on the start, so we will code the full program for the virus first, then only duplicate another 3.

4. Code your Virus



Game Rules #7:

If disinfectant hit the virus with spraying costume, the virus will shout "No~~" then disappear.

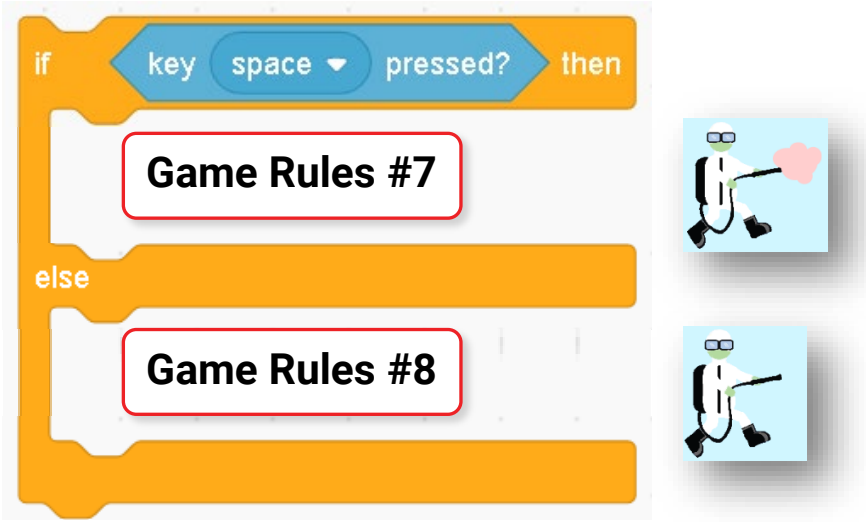
Game Rules #8:

The virus will say "I'm not afraid of you!" and remain there.

These 2 rules basically mean that the virus only will be killed by the spray, otherwise it won't disappear.

4. Code your Virus

Script:

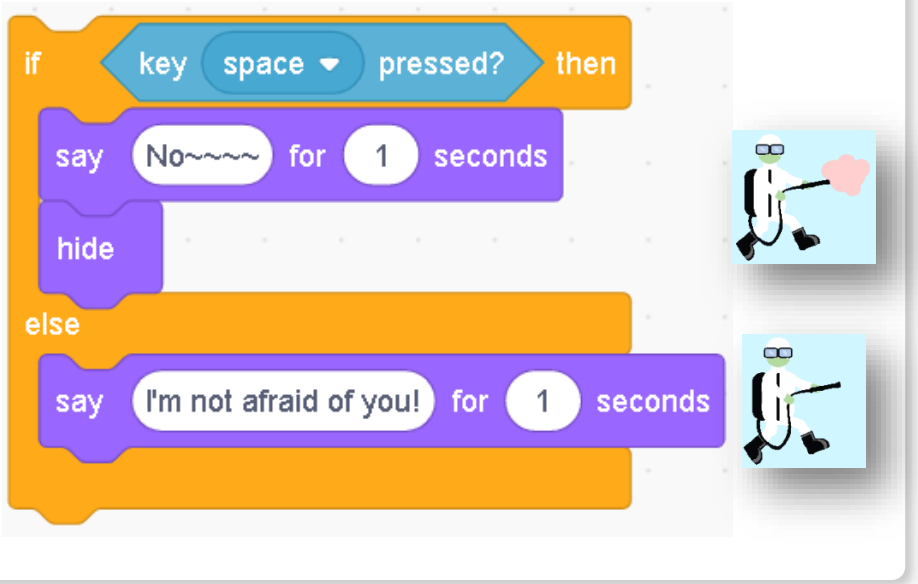


Since we the virus won't know if the "Spray" costume is touching it or "No Spray" is touching it.

One of the ways to determine if the costume is "Spray" or "No Spray" is to check if <space> key is pressed or not. Since we code our disinfectant cleaner to change costume to "Spray" when <space> key pressed and it will change back to "No Spray" if no <space> is pressed.

4. Code your Virus

Script:



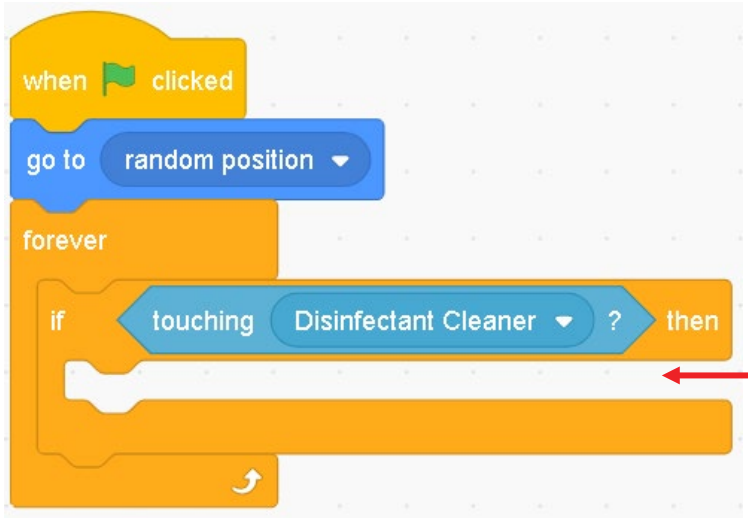
Game Rules #7:

Say "No~~~~" and hide itself (disappear from the screen)

Game Rules #8:
Say "I'm not afraid of you!" and remain there.

4. Code your Virus

Script:

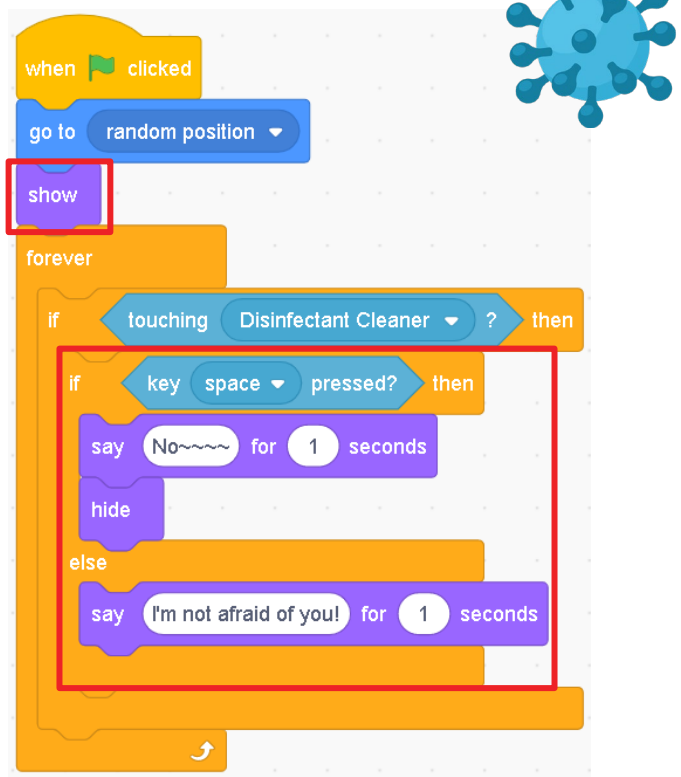


The if-else statement only check if the costume of the disinfectant cleaner is "Spray" or "No Spray".

So you need to add a forever-if loop to check whether the virus is touching the disinfectant cleaner.

4. Code your Virus

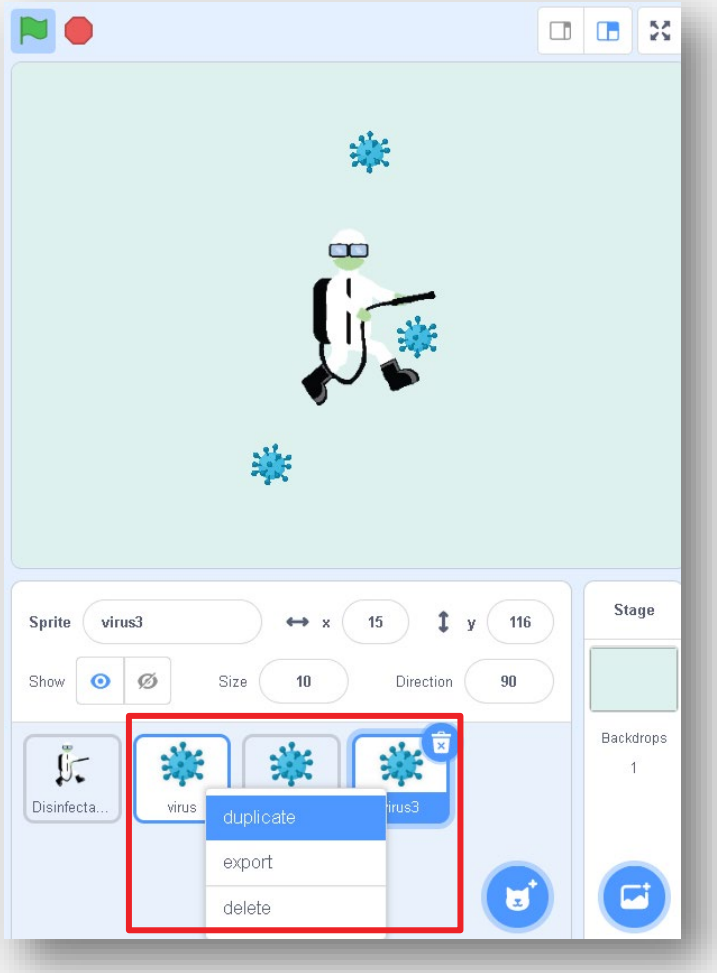
Script:



Remember to add a "Show" block at start, because after you kill all viruses, all of them will hide themselves and they will still be hidden in next game.

Then put the if-statement into the touching disinfectant cleaner loop.

5. Duplicate viruses



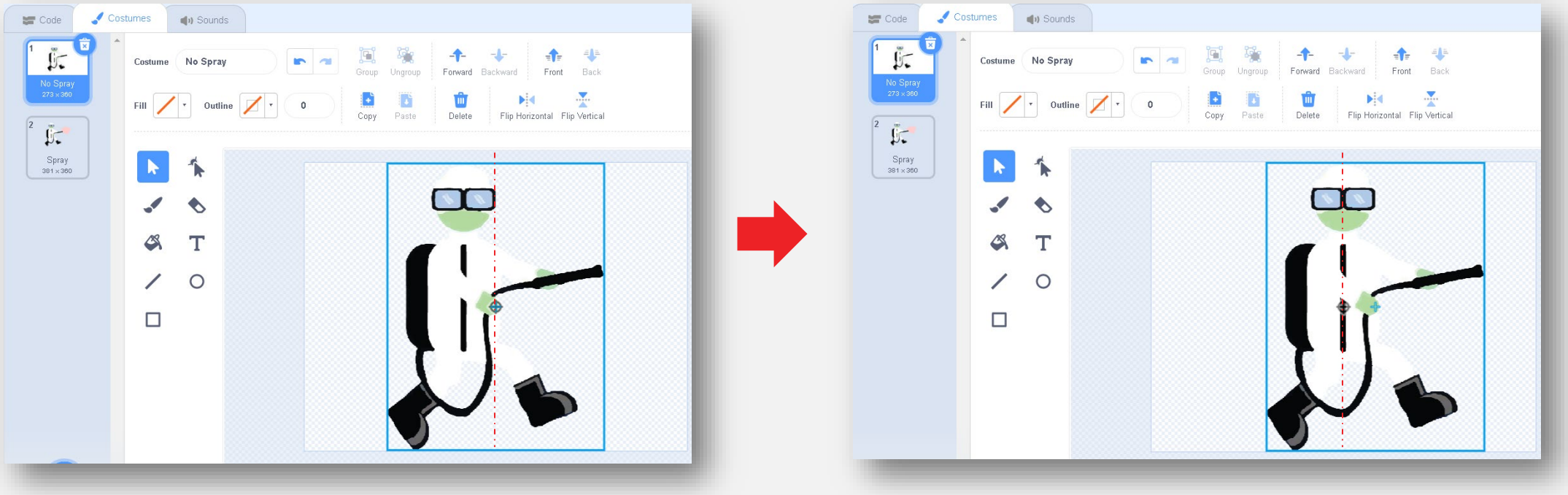
Game Rules #6:

There will be 4 viruses on the stage on the start and all of them spawn randomly

Duplicate other 3 viruses.

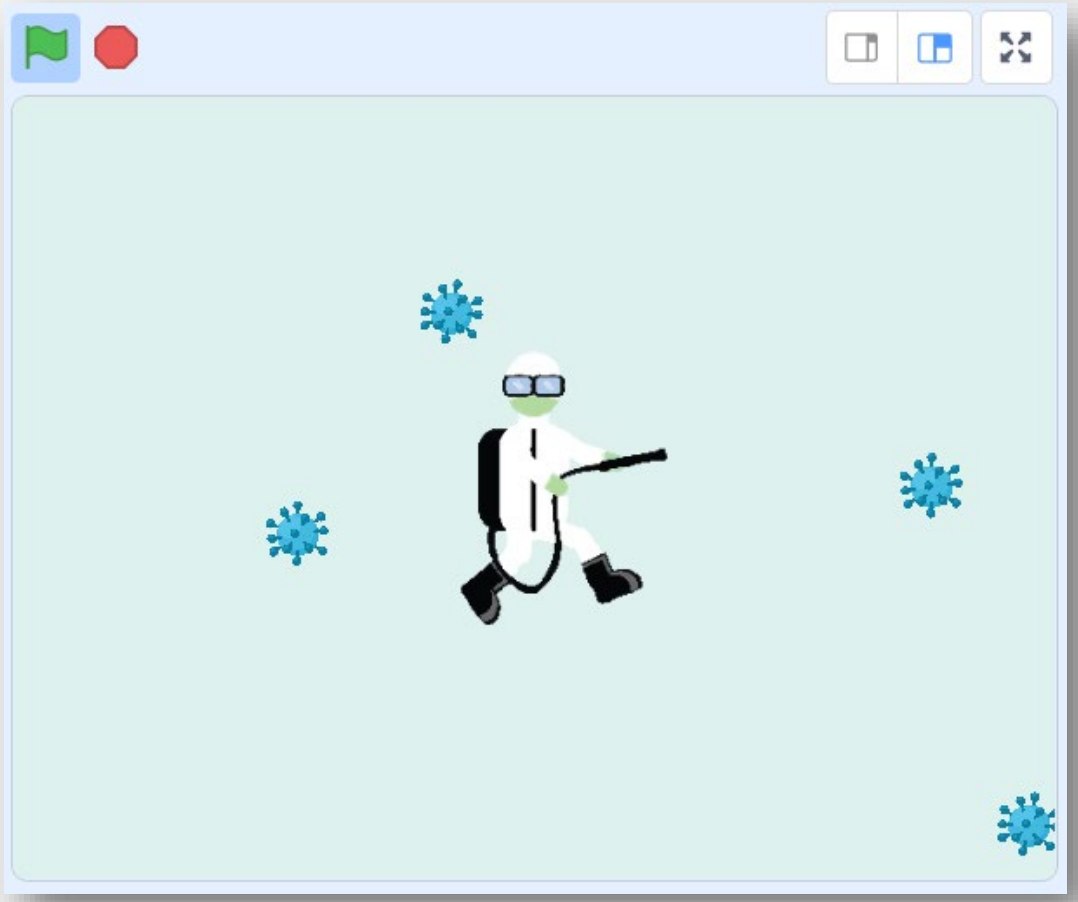
6. Adjust the costume

Align body as the centre to make ease the flipping.

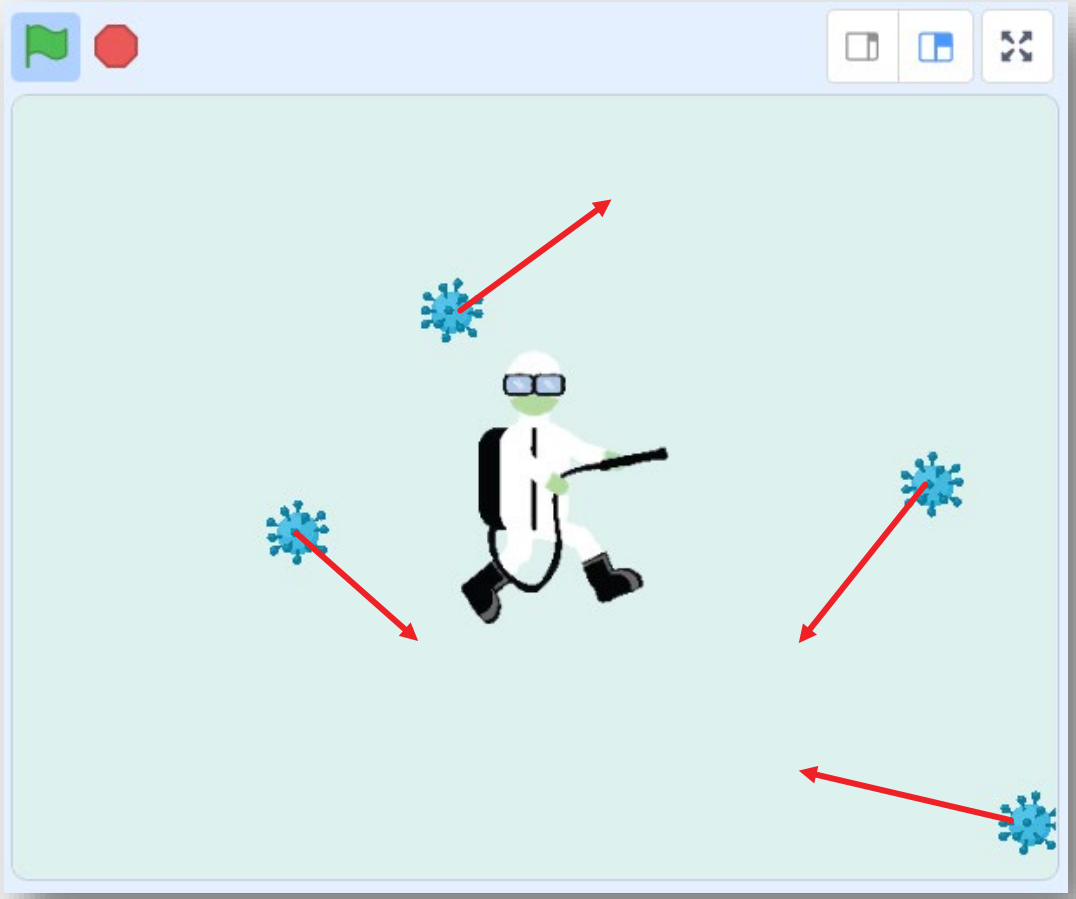


Align your "Spray" and "No Spray" costumes to make the body as centre position.

7. Try the game



8. Make Virus Move Randomly

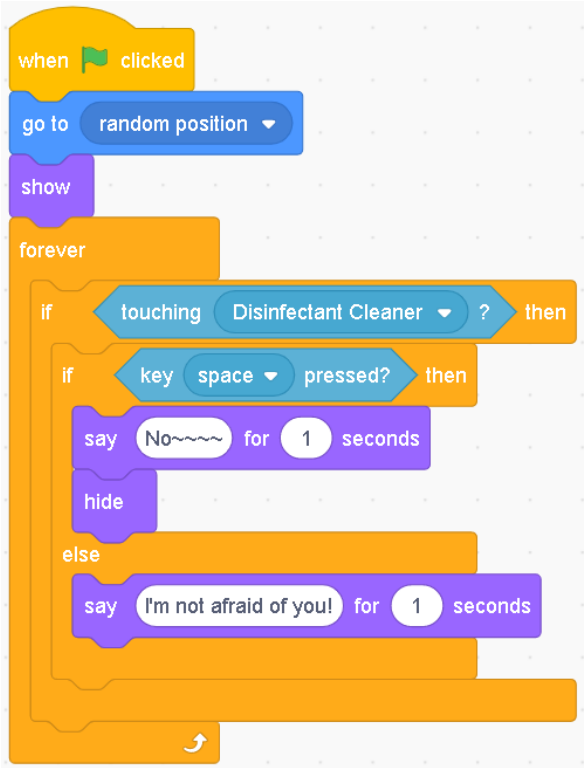


Now you want to make the virus move randomly on the platform

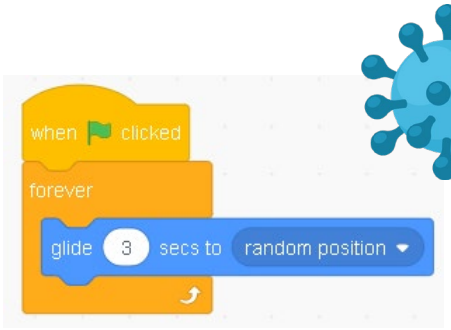
How should you make the virus move?

8. Make Virus Move Randomly

Script:



Check if virus touches disinfectant cleaner



Random movement

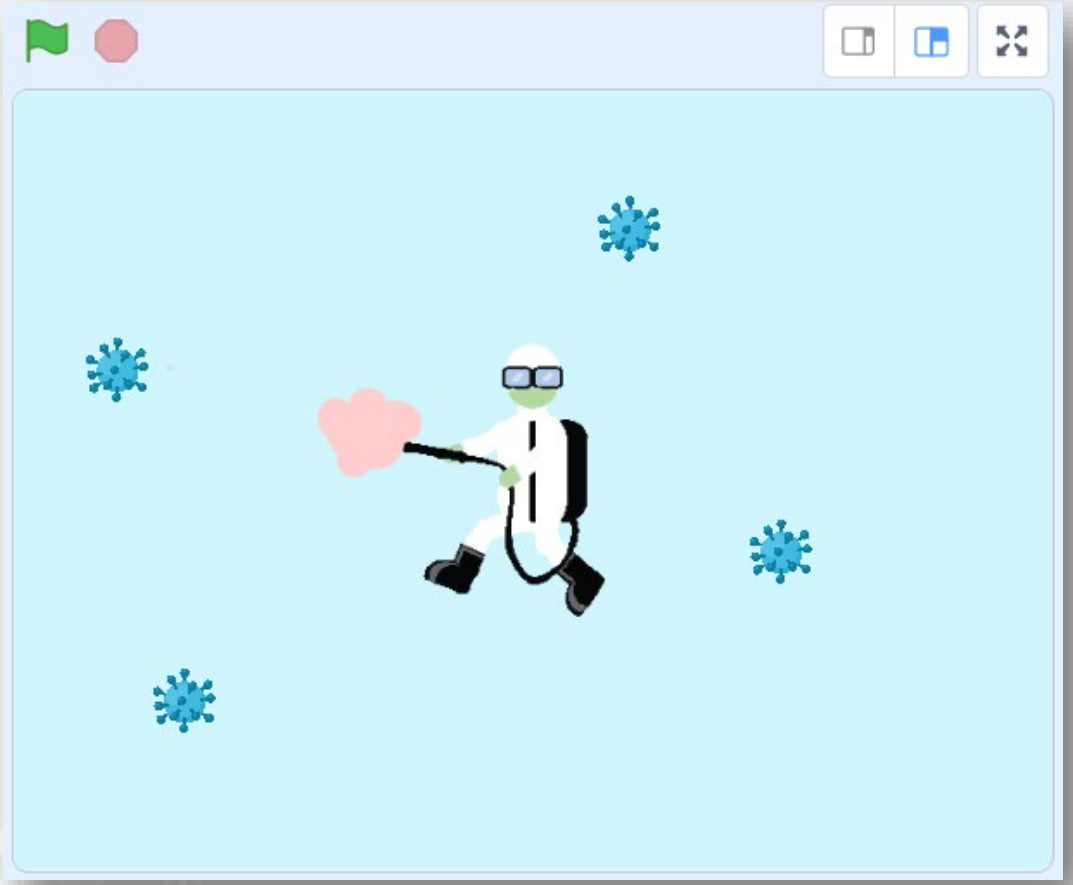
My solution is to add a parallel program that make it glide 3 secs to a random position, and make it loop forever.

So as long as the virus is still on the stage, it will keep gliding to random position with 3 seconds.

Remember to add this program to all other viruses.

ASSIGNMENT *for*

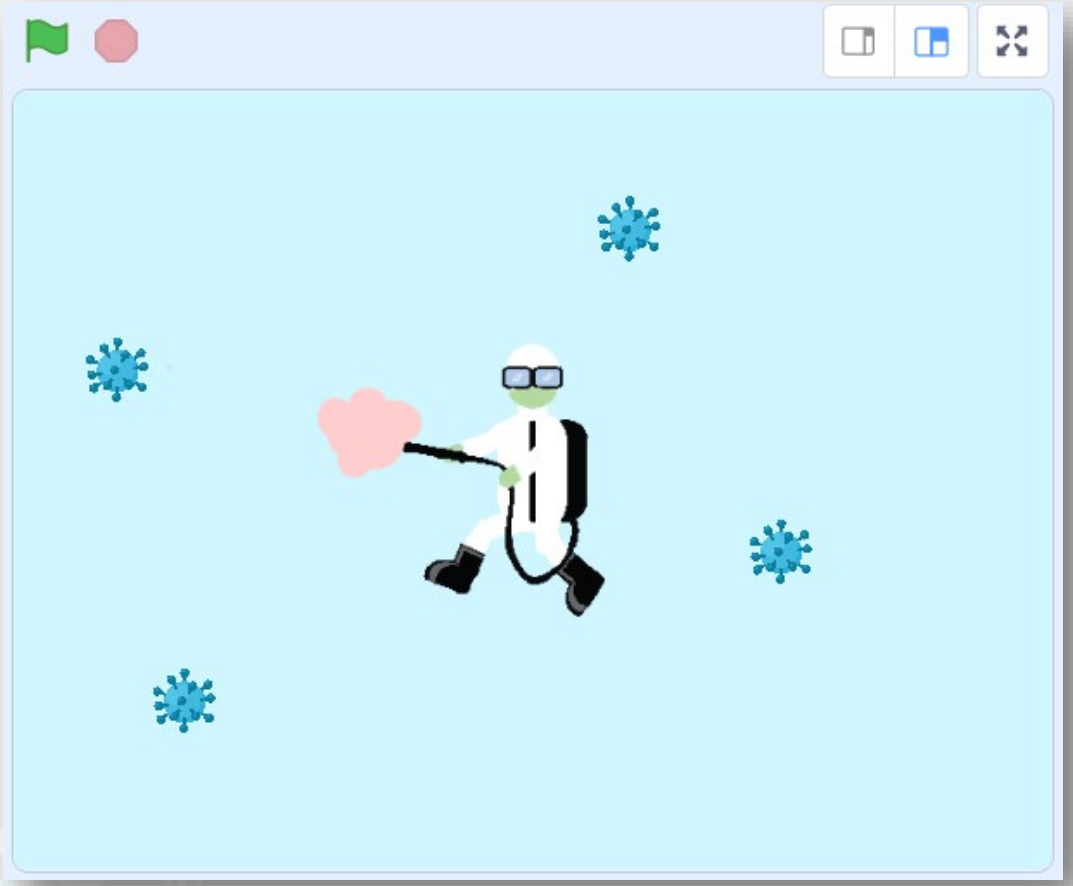
Topic 1.8



T1.8 – Mission 1

Complete your disinfectant cleaner game with:

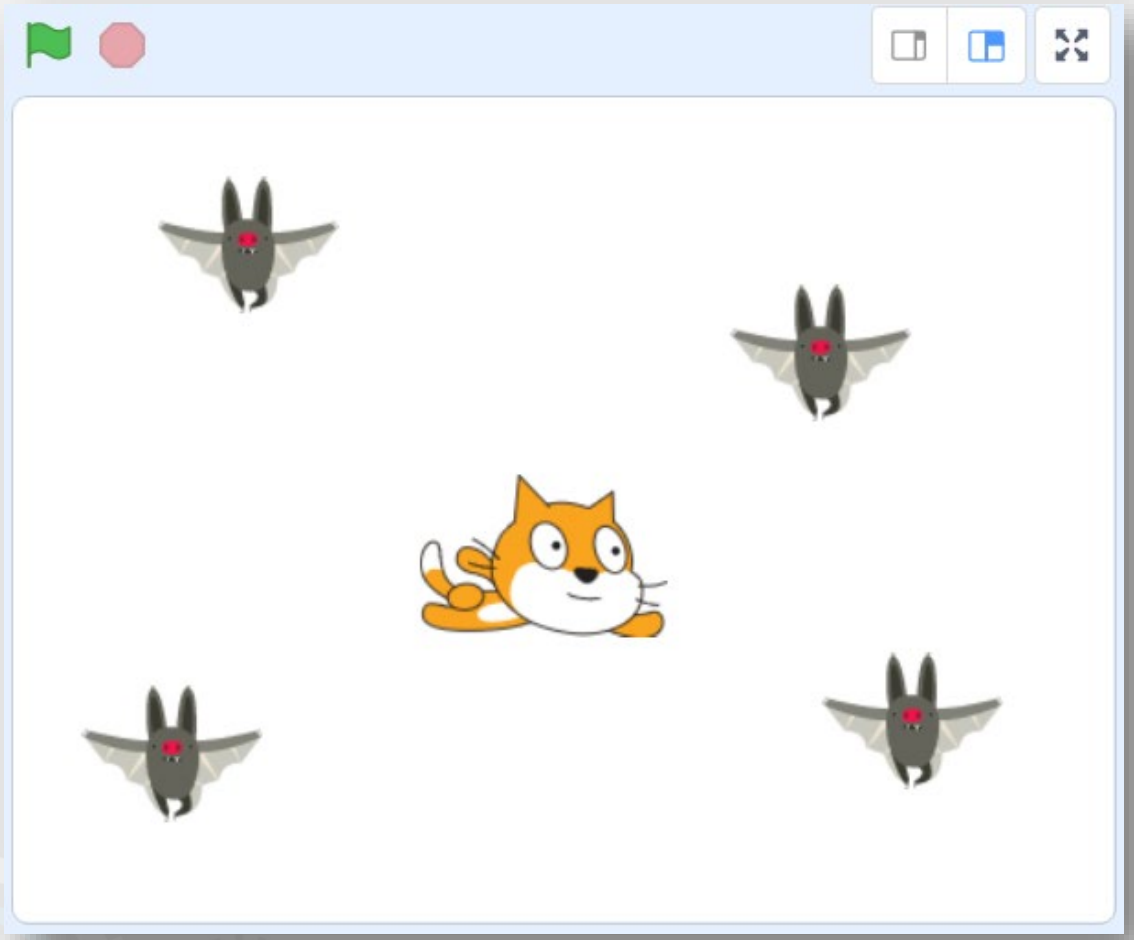
1. **At least 8 viruses in your game**
2. **Ensure the facing direction of your disinfectant cleaner**
3. **Remove the “if on edge, bounce” block for disinfectant cleaner**



T1.8 – Mission 2

Let's build a multiplayer disinfectant cleaner game.

1. **<w-s-a-d> for player 1**
2. **<up-down-left-right> for player 2**
3. **Make at least 12 viruses in the game**
4. **Make different disinfectant gas for each player**



T1.8 – Mission 3

Create a game with title “Cat vs Bat”.

In this game your cat can be controlled by you with arrow buttons (up-down-left-right) and <space> key to change to second costume.

The Bat will move randomly and the cat need to punch and knock out all bats.

>> Game Rules on next page

T1.8 – Mission 3 (Game Rules)

Game Rules:

1. You are able to control your cat with <up-down-left-right> arrow keys
2. Your cat will start at the centre
3. <space> pressed -> Cat Flying (1st costume)
4. <space> not pressed -> Cat Punching (2nd costume)
5. When cat flying to right side -> face right
6. If cat is flying to left -> face left.
7. 6 bats (size = 40%) in the game, spawn randomly and will move randomly
8. When bat gets hit by “Cat Flying”, nothing happen
9. If bat gets hit by “Cat Punching”, disappear from the screen

Summary

1. If-else statement will have 2 different outcome, when condition is true, it will execute action 1; while condition is false, it will execute action 2.

2. Parallel scripting is one of the ways to execute functions at the same time.

3. The difference between glide to position and go to position is,
   Glide to position -> sprite slowly move to that position
   Go to x, y -> sprite will teleport to the position

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 :)