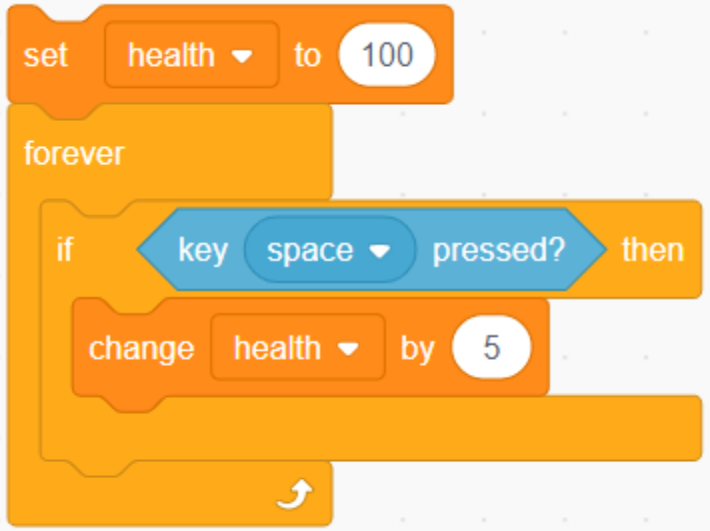
# Intro to Programming with Scratch


## Lesson 4

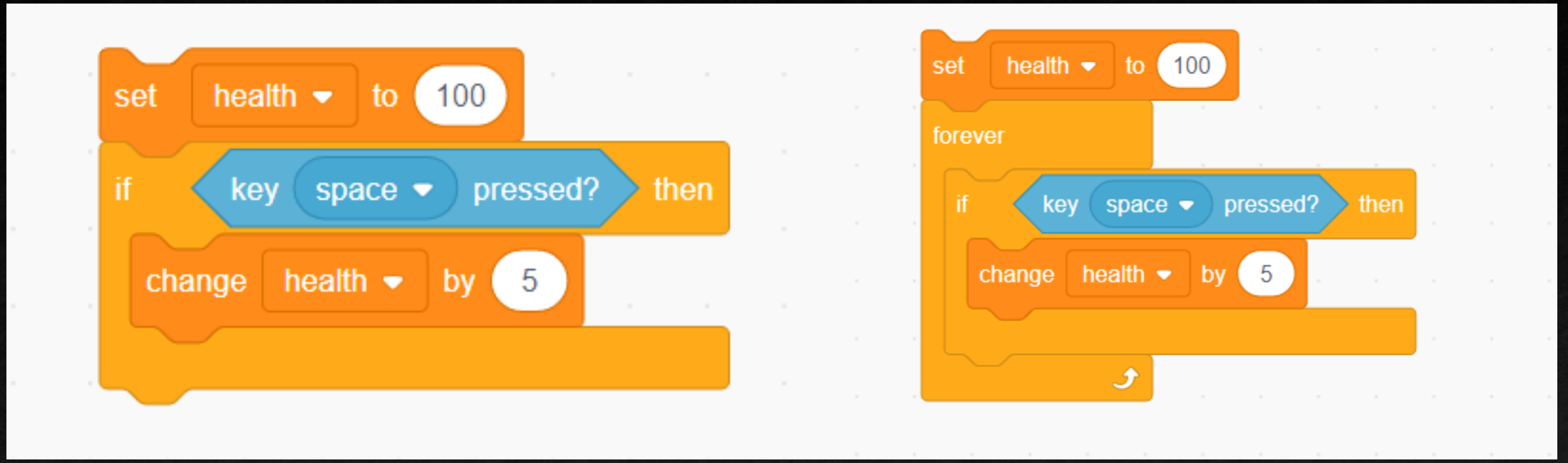
-Presented By: Sean Li

# Quick Review

# Do they work? Why or why not

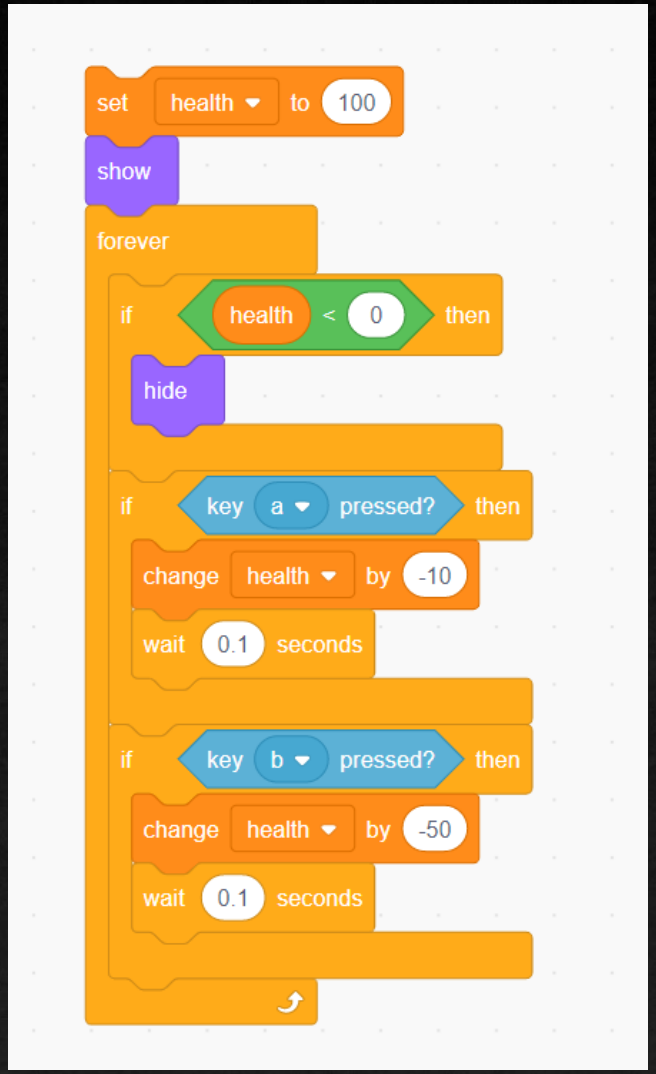
# Do they work? Why or why not




If statement only executes once. The code finishes instantly.

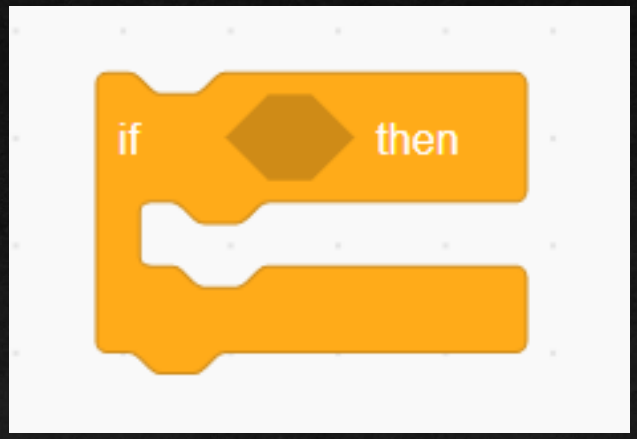
Forever loop repeats thousands of times per second. It will detect your press many times

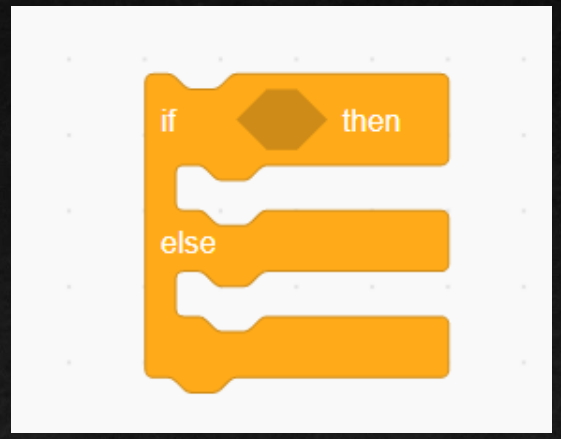
# My Approach


set health to 100
show
forever
if health < 0 then
hide
if key a pressed? then
change health by -10
wait 0.1 seconds
if key b pressed? then
change health by -50
wait 0.1 seconds

# Conditionals

An "if" statement



# Keys to form a conditional statement:

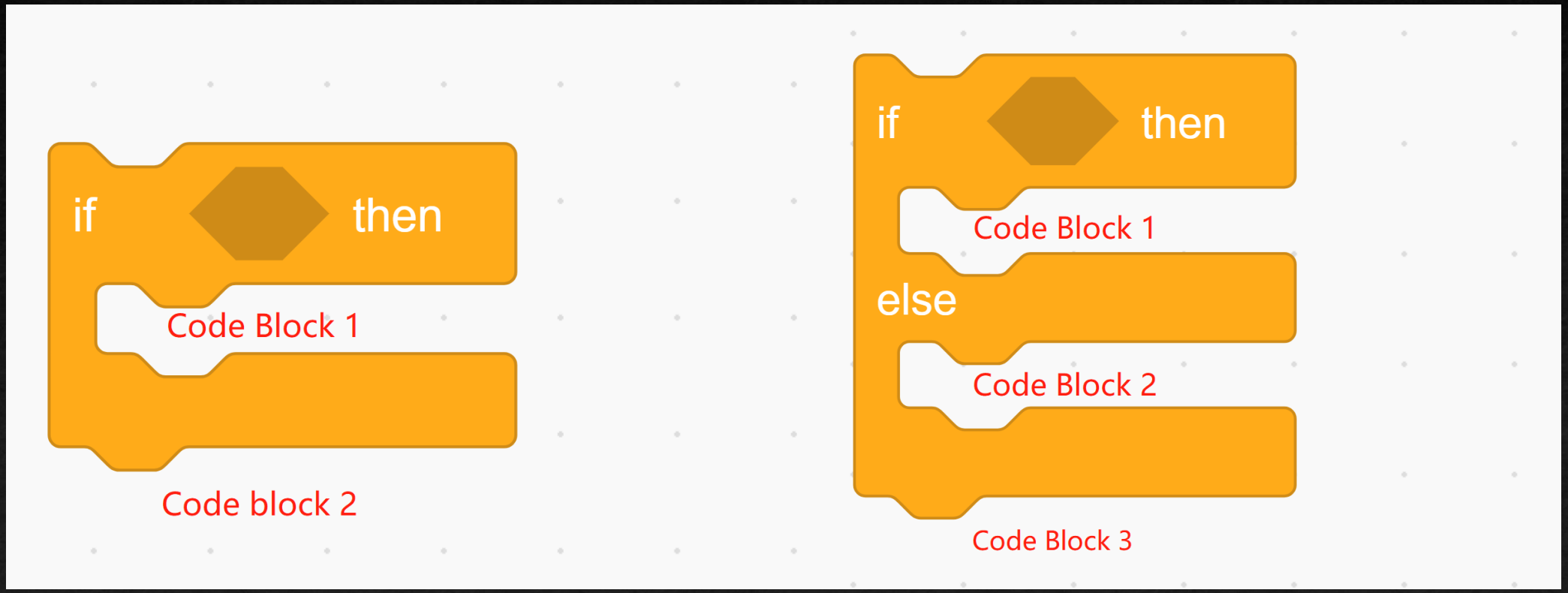
- One predicate.
- It can either happen or not happen.
- If it happens, then something will get executed, if not, something else will get executed. They WILL NOT both be executed.

# Example:

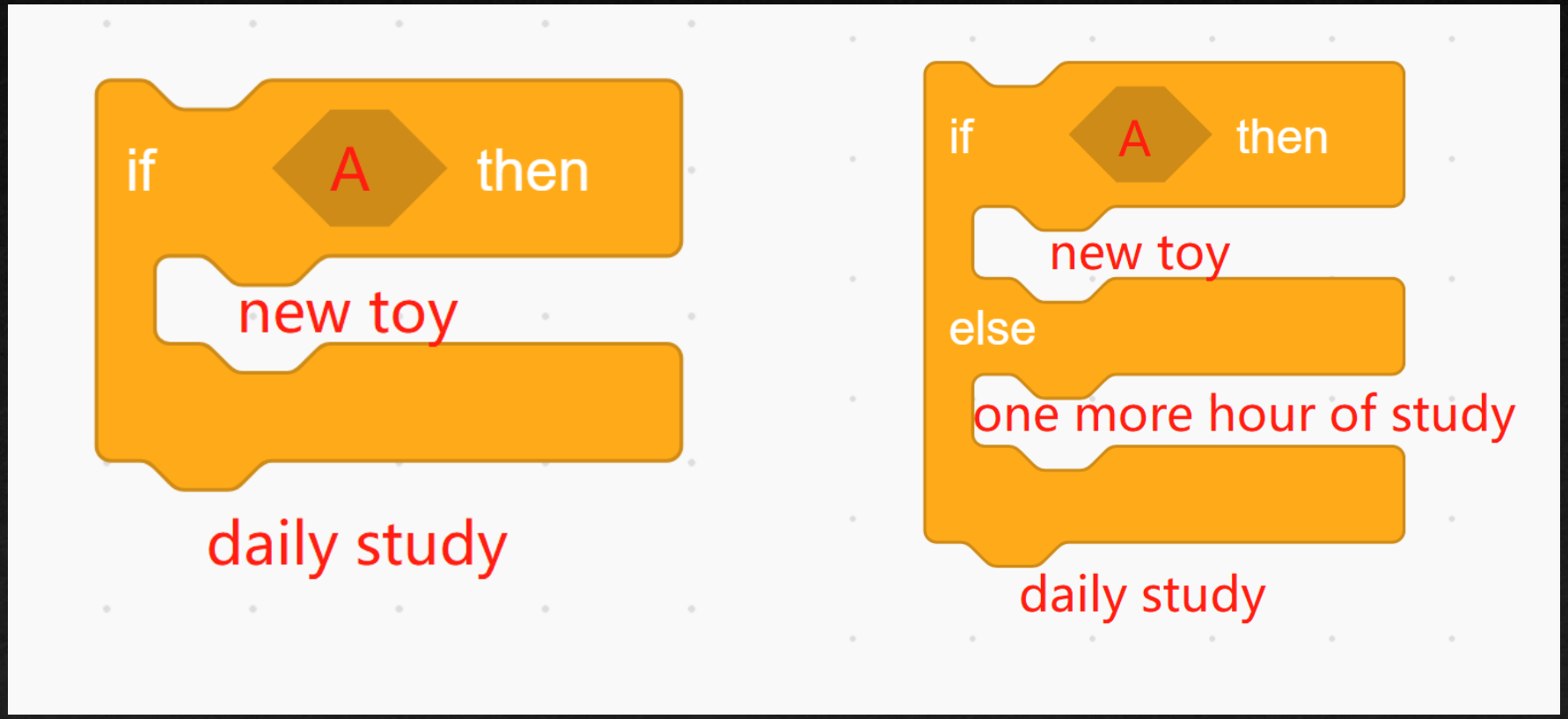
Remember the time when your mom tells you: If you get an A on this exam, you will get a new toy; otherwise, you get one more hour of study per day. But no matter what, you need to study every day.

# Conditionals

## Fill in the blanks

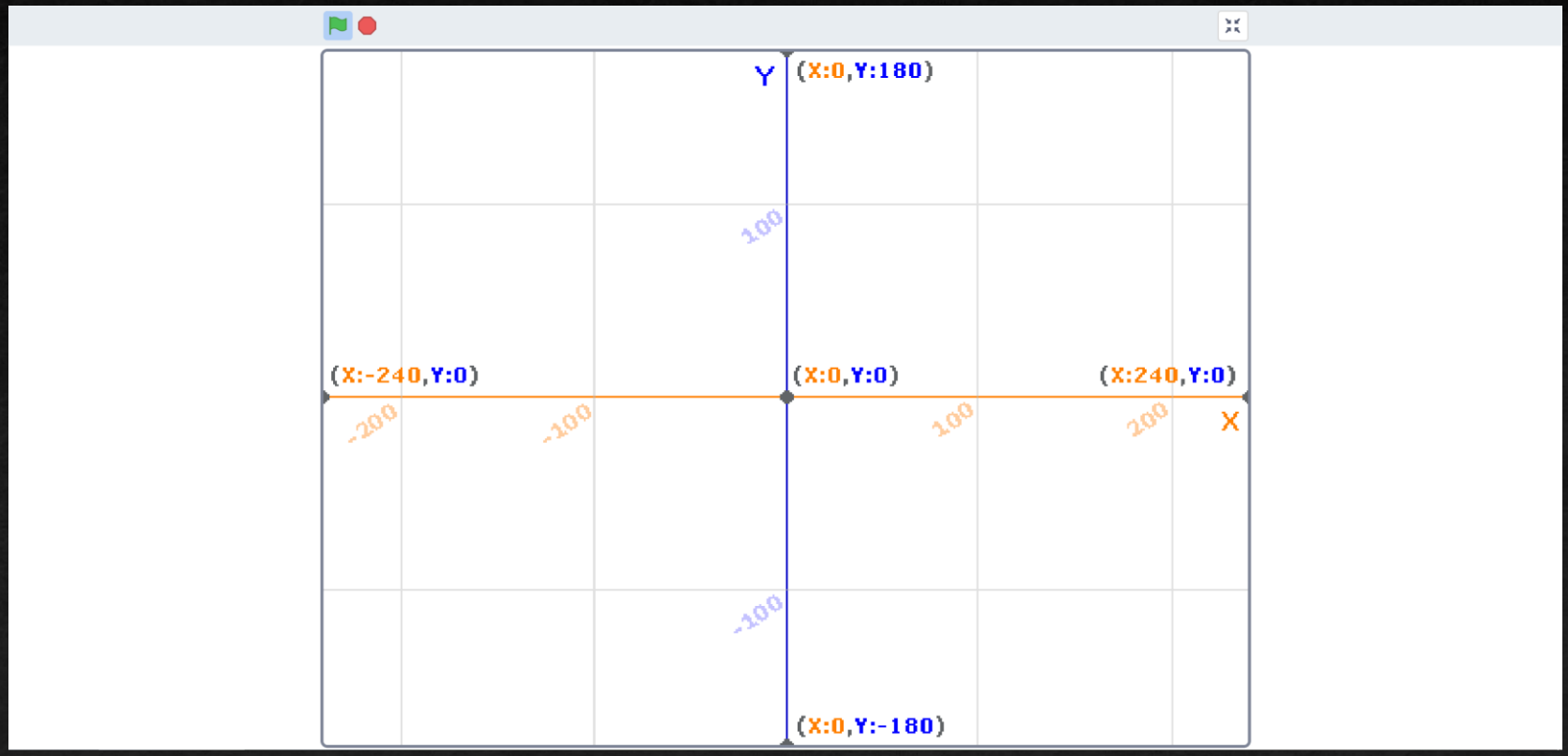


# Conditionals



# Coordinates:

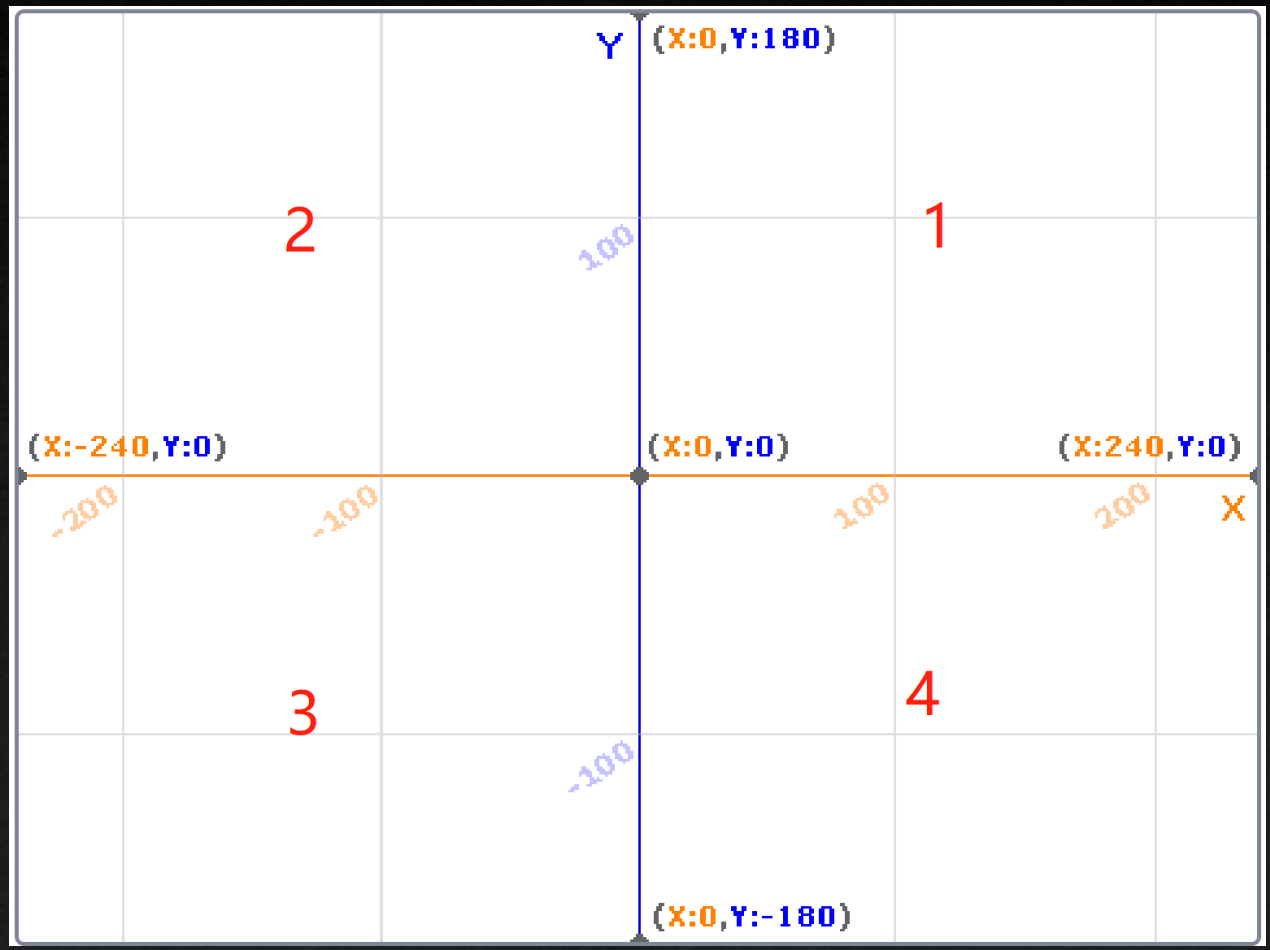
## X-Y axis



# Coordinates:

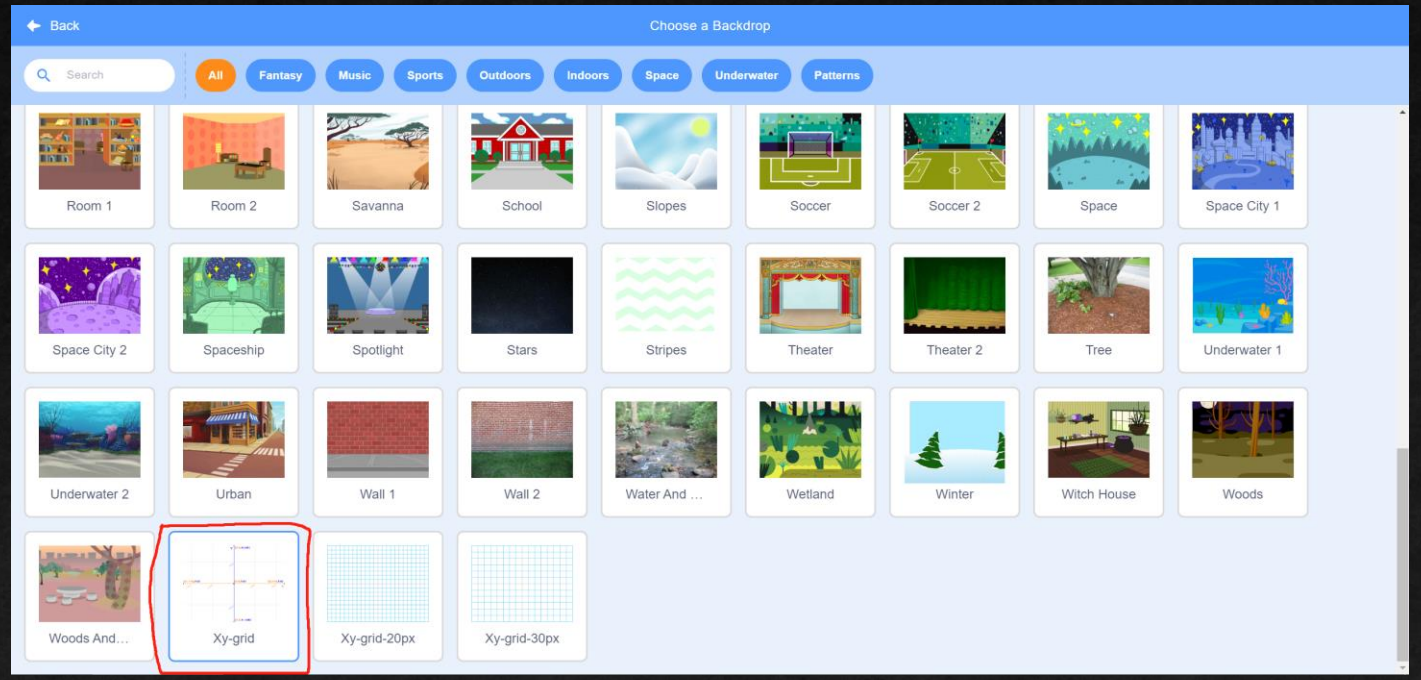
X-Y axis:

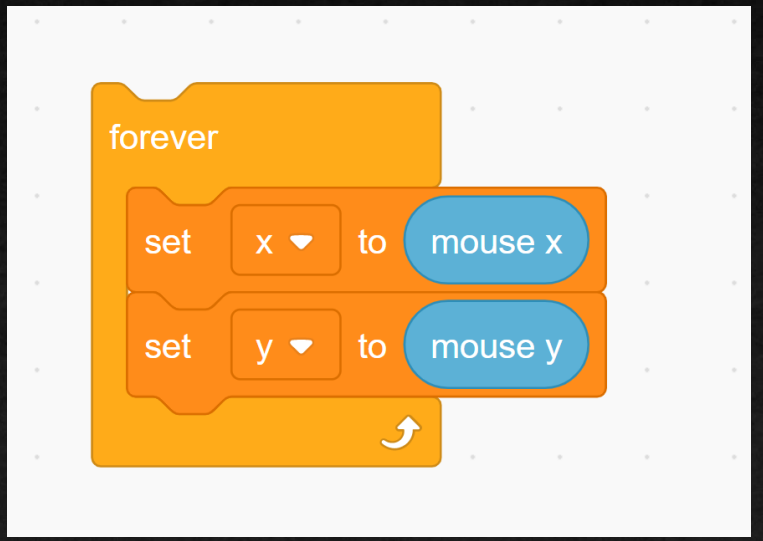
- 4 Quadrants
  - What's the difference?



# Coordinates:

To check the coordinate of your mouse



# Exercise

1. If I press "g", go to (100, 50), otherwise, say hello
2. If I press "c", go to (-100, -50), stay for two seconds, and come back to the origin(0, 0). Otherwise, go to (-50, 0) for two seconds and come back to the origin.

# Iteration/Loops

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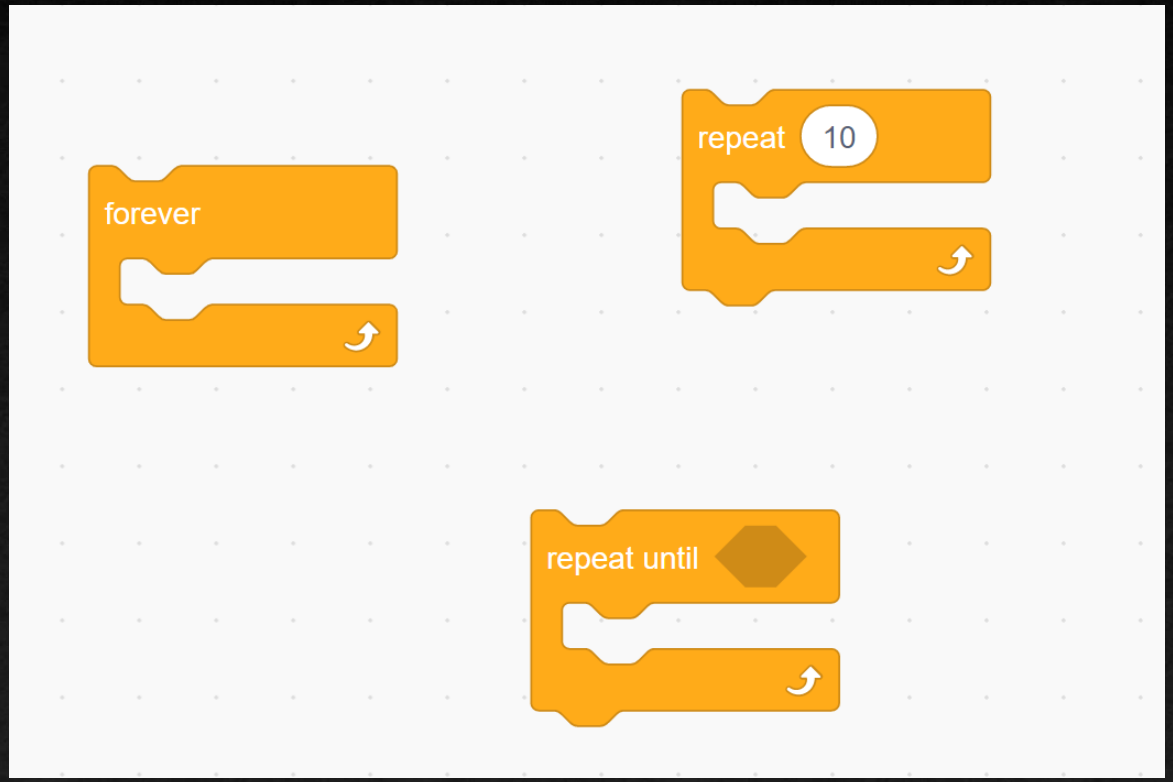
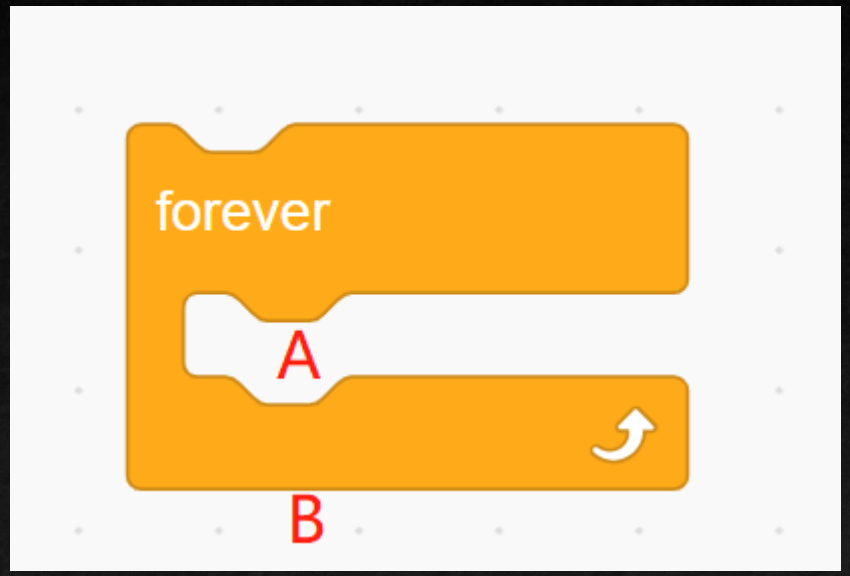


# Iteration/Loops

Forever loop:

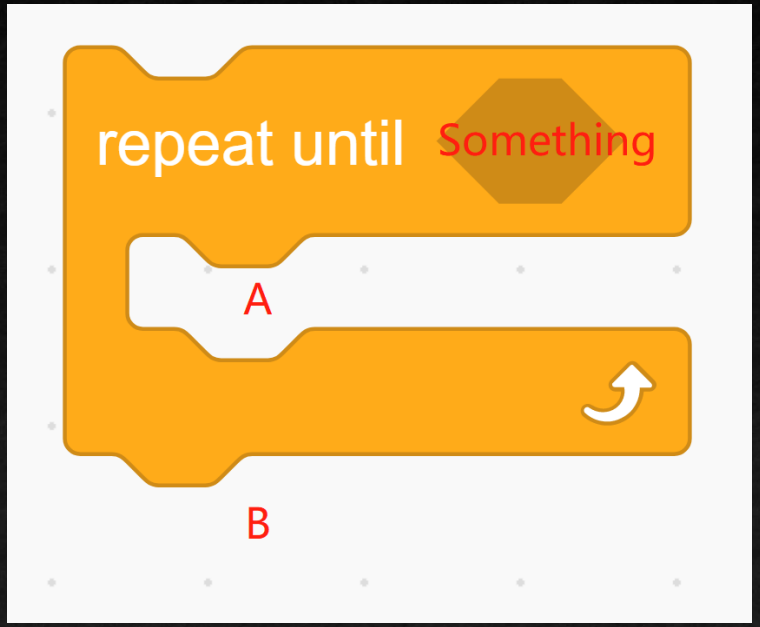
Repeat A forever, till the end of the world. Unless otherwise instructed, it will never get to B.



# Iteration/Loops

Repeat Until:

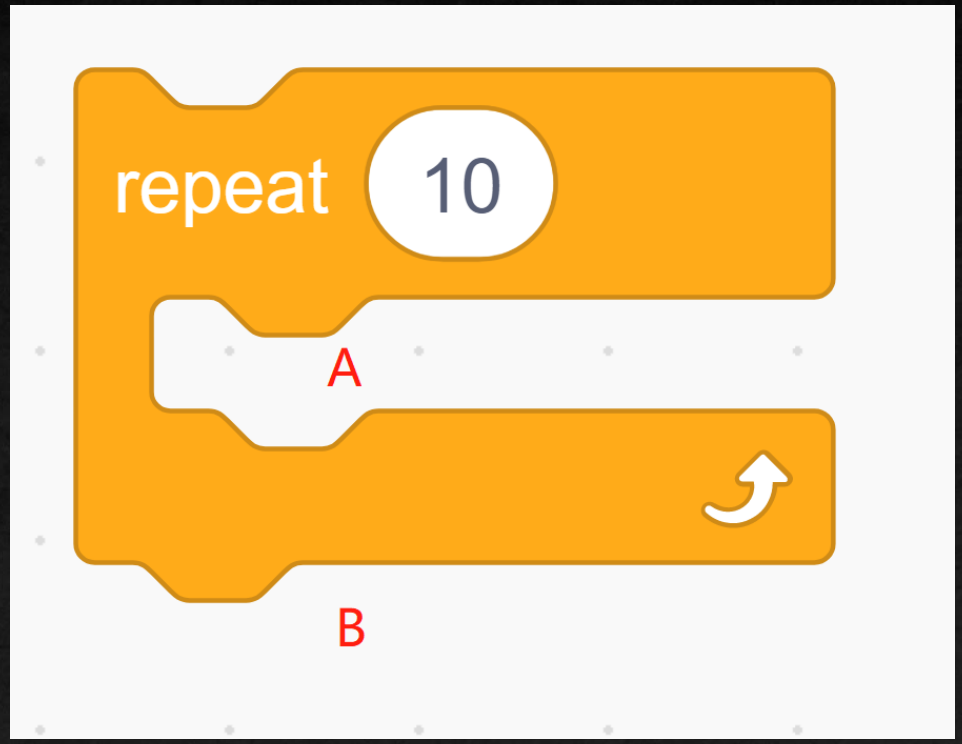
Repeat A until the "something" happens. Then go on to execute B. If "something" never happens, then B will never get executed.



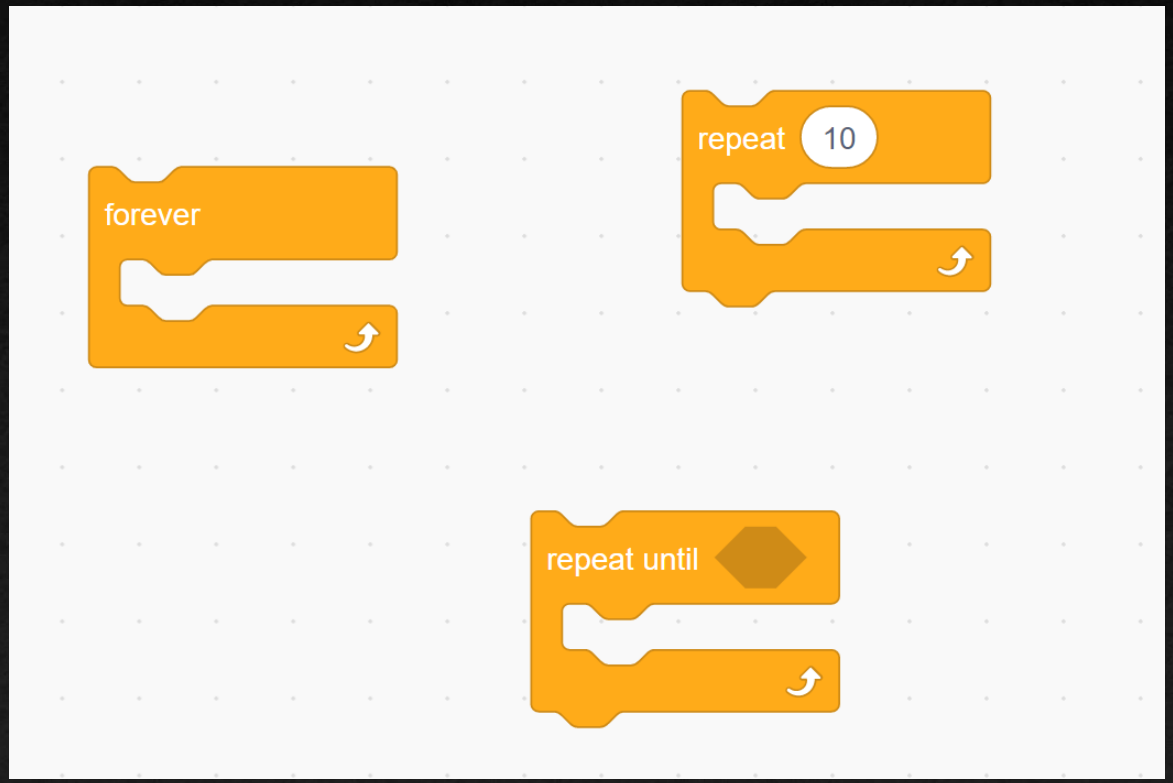
# Iteration/Loops

Repeat:

Similar to the last one. This loop repeats A for only a certain number of times, and then it goes on to execute B.

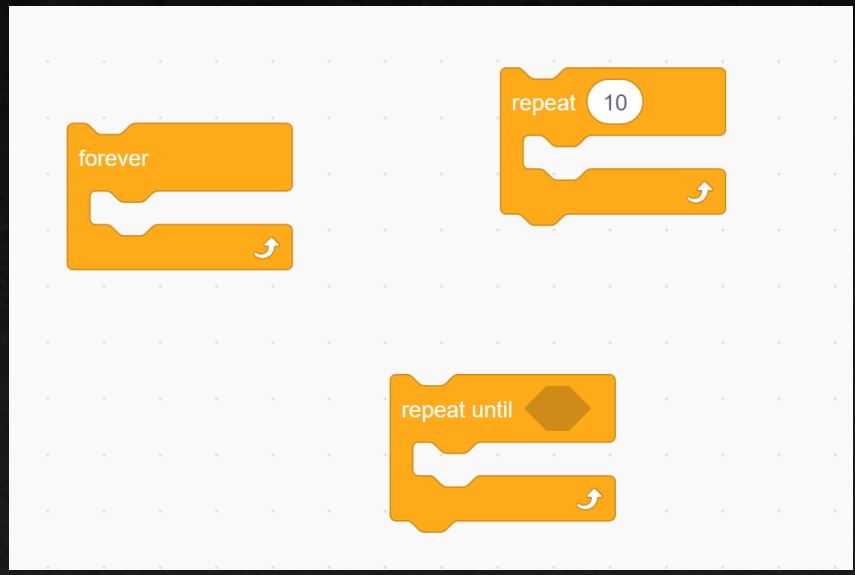


# Difference? When to use which?



# Difference? When to use which?

- When you want something to repeat forever (to detect whether a key is pressed), use the forever loop.
- When you know the exact times you want to repeat, use the repeat loop.
- When you need a predicate to determine the number of times it repeats/don't know the exact time, use the repeat until loop.

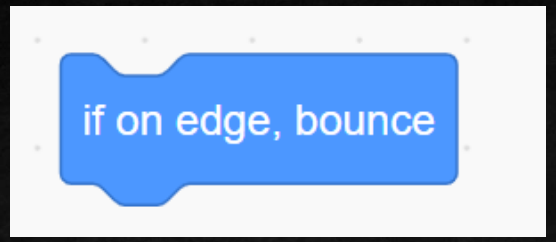


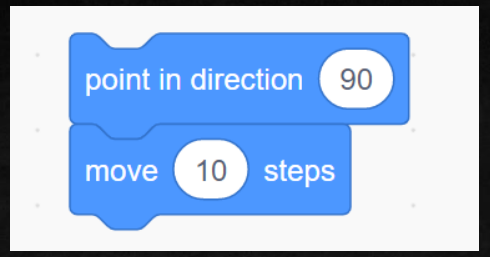
# Challenge

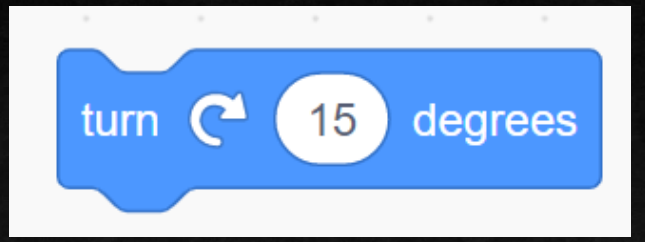
Create two new sprites: walls. Place one of them at x = 200 line, place the other one at x = -200 line.

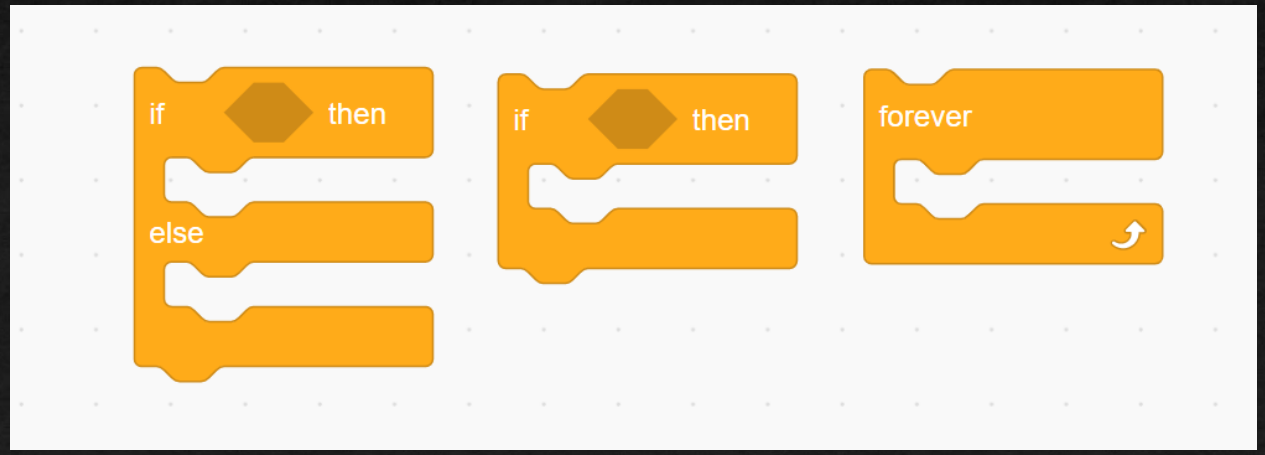
Use the sprite basketball. Starting from the origin (0, 0), Let it fly to the right. As it hits the wall, bounce back at a certain angle that you wish. When it hits the top and bottom edge, bounce back. Theoretically, the ball should fly forever.

# Challenge Hints



Think about the project you want to work on