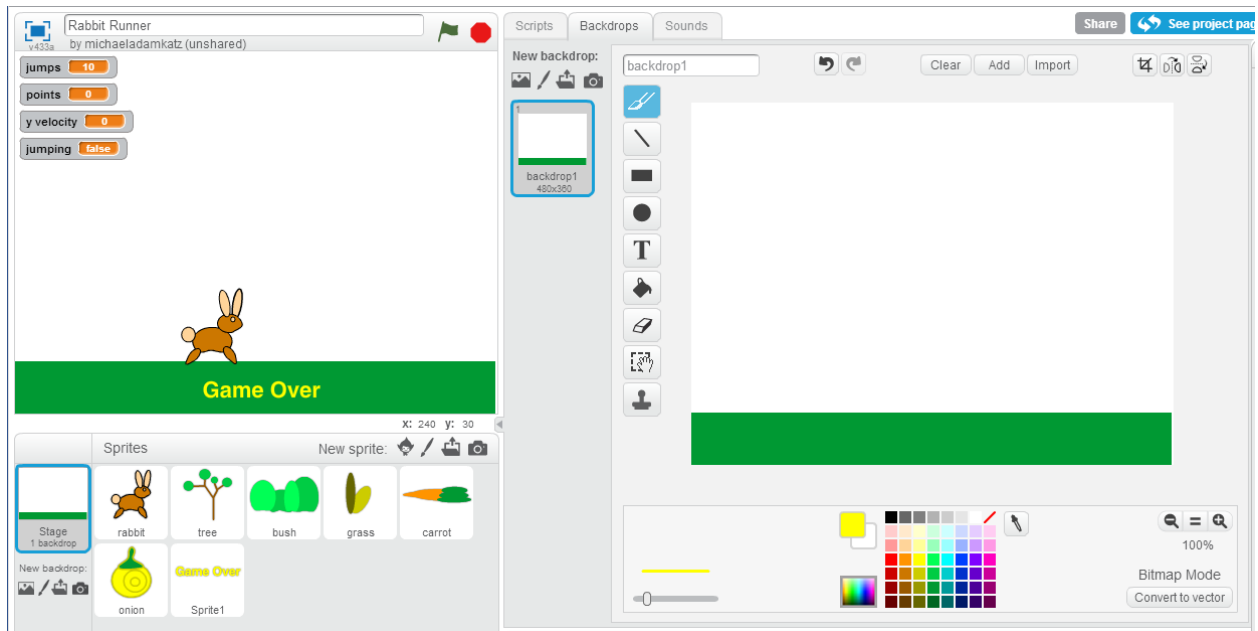
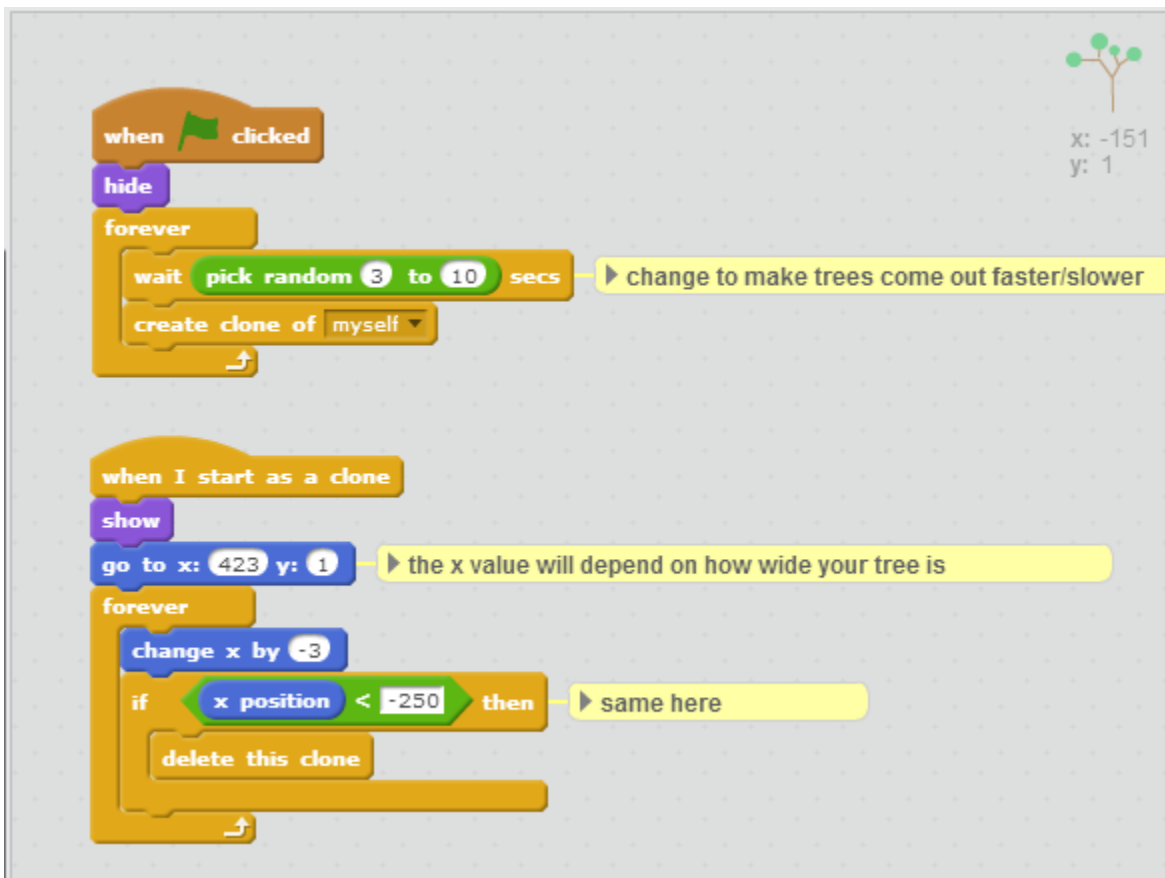
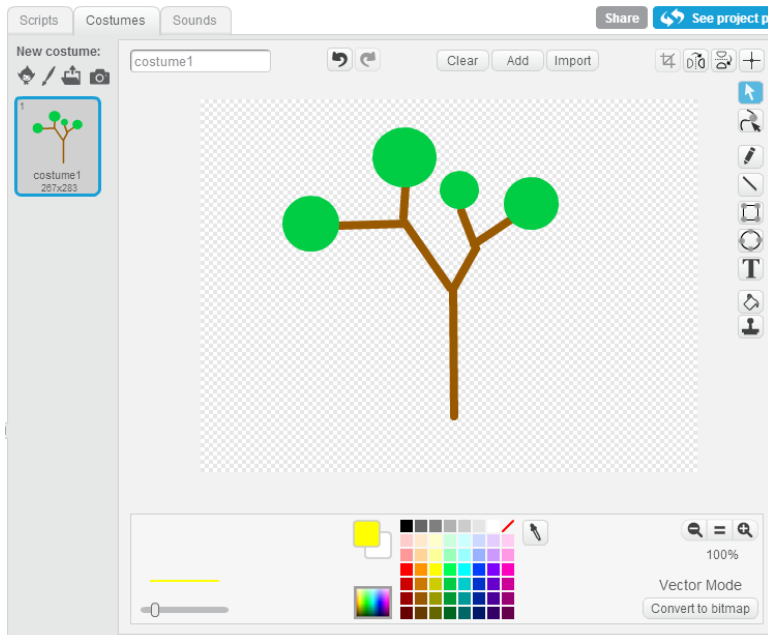


# Rabbit Runner

## 1. Stage.

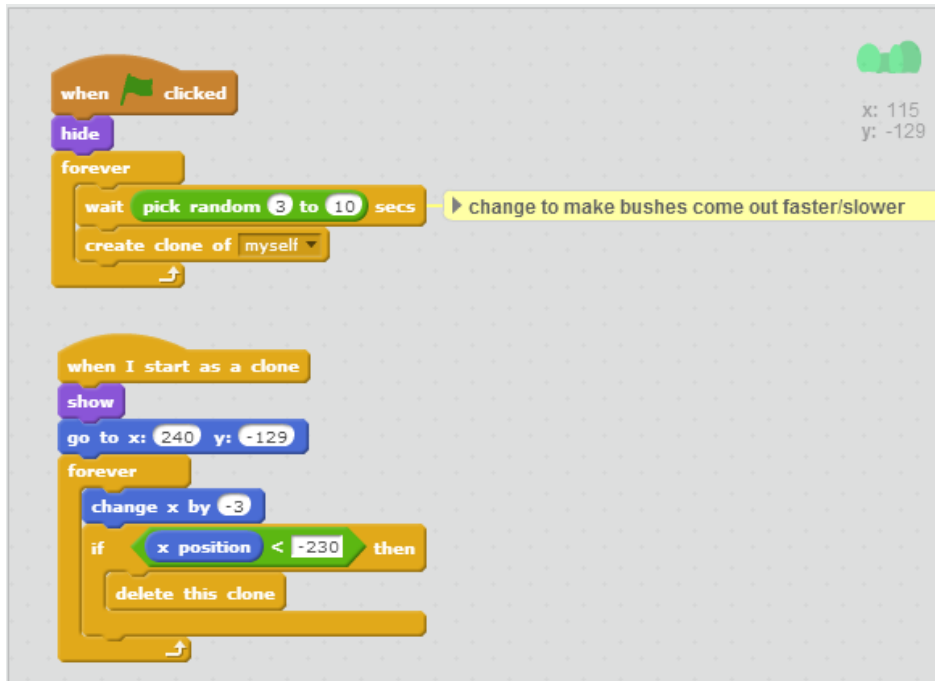


## 2. Tree



You can test your program even after you've added just the tree.

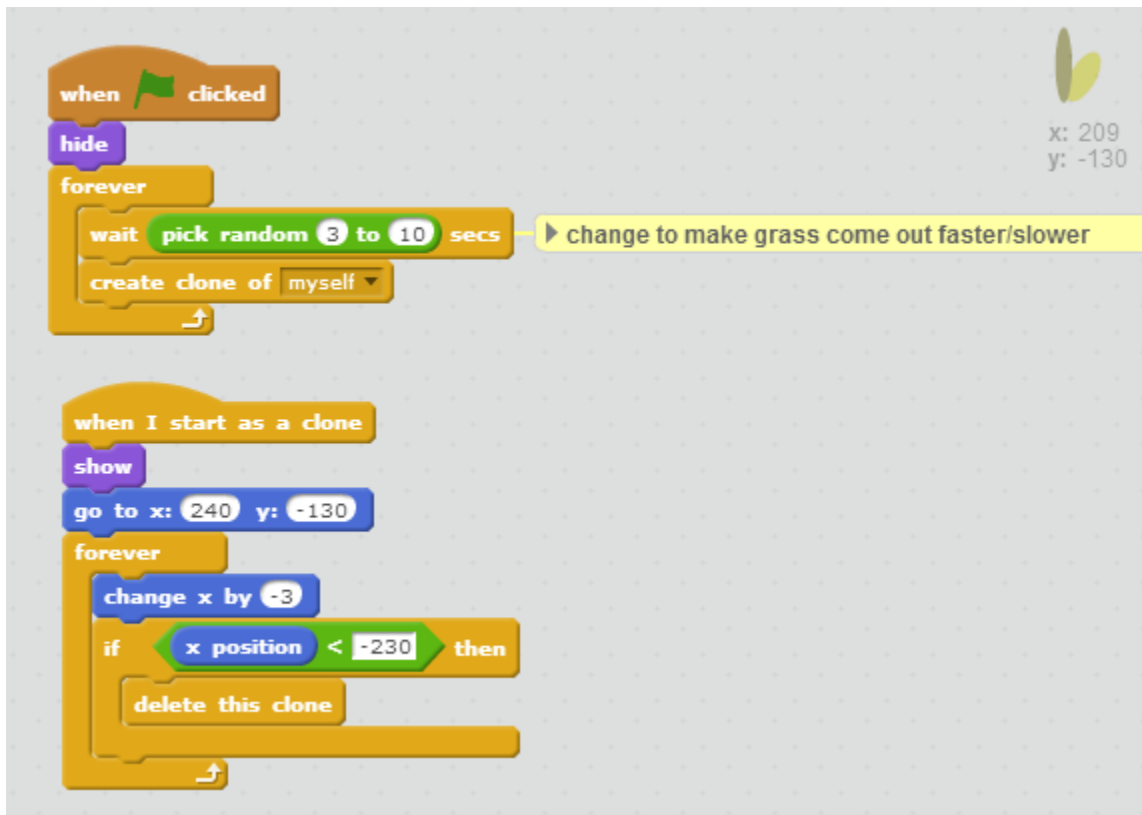
### 3. Bush and grass



The image shows a Scratch script for a bush. It starts with a 'when clicked' event, followed by a 'hide' block. A 'forever' loop contains a 'wait pick random 3 to 10 secs' block with a yellow callout 'change to make bushes come out faster/slower', and a 'create clone of myself' block. Below this is a 'when I start as a clone' event, followed by a 'show' block, a 'go to x: 240 y: -129' block, and another 'forever' loop. This second loop contains a 'change x by -3' block, an 'if x position < -230 then' block, and a 'delete this clone' block. A small bush icon is visible in the top right corner with coordinates x: 115, y: -129.

```
when clicked clicked
hide
forever
  wait pick random 3 to 10 secs
  create clone of myself

when I start as a clone
show
go to x: 240 y: -129
forever
  change x by -3
  if x position < -230 then
    delete this clone
```



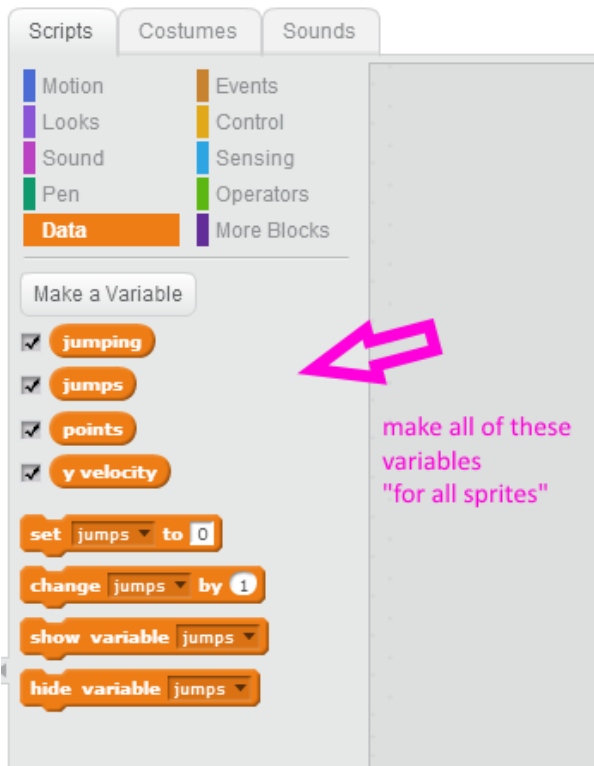
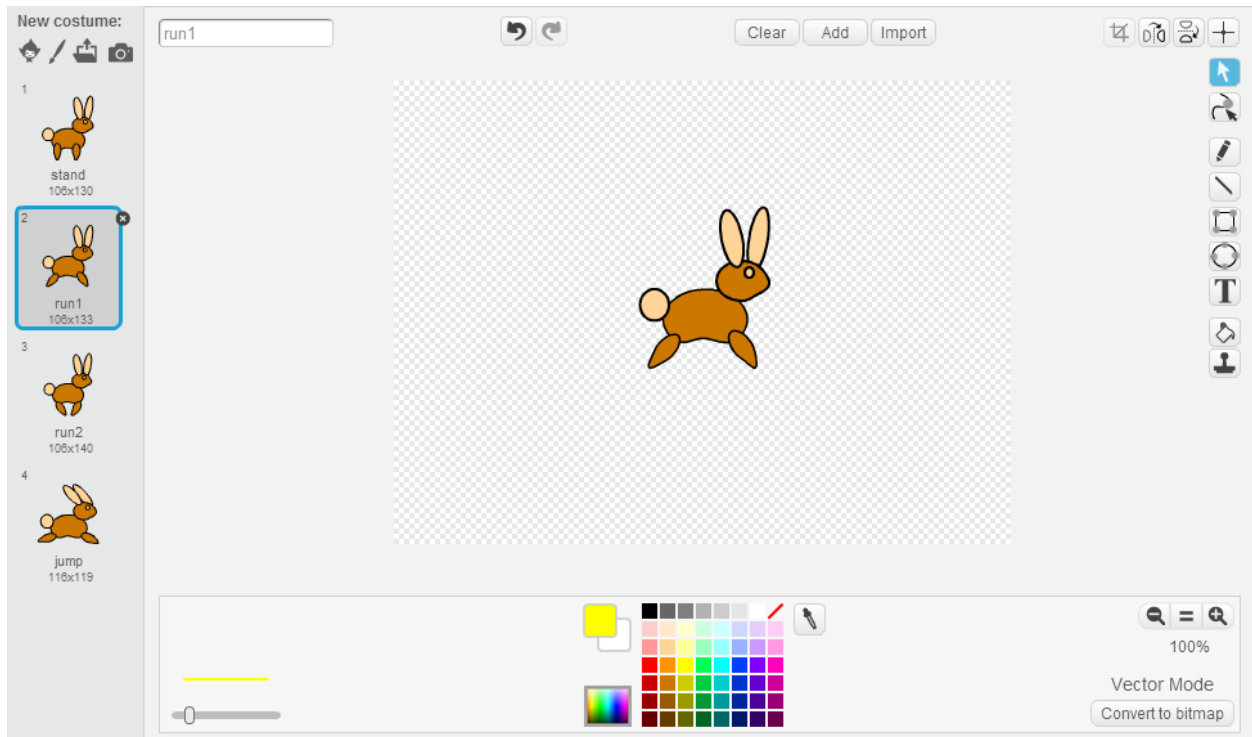
The image shows a Scratch script for grass. It starts with a 'when clicked' event, followed by a 'hide' block. A 'forever' loop contains a 'wait pick random 3 to 10 secs' block with a yellow callout 'change to make grass come out faster/slower', and a 'create clone of myself' block. Below this is a 'when I start as a clone' event, followed by a 'show' block, a 'go to x: 240 y: -130' block, and another 'forever' loop. This second loop contains a 'change x by -3' block, an 'if x position < -230 then' block, and a 'delete this clone' block. A small grass icon is visible in the top right corner with coordinates x: 209, y: -130.

```
when clicked clicked
hide
forever
  wait pick random 3 to 10 secs
  create clone of myself

when I start as a clone
show
go to x: 240 y: -130
forever
  change x by -3
  if x position < -230 then
    delete this clone
```

Test your program again after you've added the bush and grass.

#### 4. Rabbit



Rabbit scripts:

The image displays four Scratch scripts for a rabbit character, with a small rabbit icon and coordinates (x: -45, y: -105) in the top right corner.

- Initialization Script:** Triggered by a green flag click, it sets `points` to 0, `jumps` to 10, `jumping` to false, and `y velocity` to 0. It then moves the character to the front and to the coordinates x: -45, y: -105.
- Jump Trigger Script:** Triggered by the space key press, it checks if `jumps > 0`. If true, it sets `y velocity` to 15 (labeled "jump strength"), sets `jumping` to true, decreases `jumps` by 1, and switches the costume to "jump".
- Gravity and Landing Script:** A "forever" loop that checks if `jumping = true`. If true, it changes `y velocity` by -0.6 (labeled "gravity") and updates `y` by the velocity. When `y position < -105`, it sets `y` to -105 and sets `jumping` to false.
- Running State Script:** A "forever" loop that waits 0.1 seconds. It checks if `jumping = false`. If true, it switches the costume to "run2". Otherwise, it switches the costume to "run1".

## 5. Carrot

The image shows a Scratch script for a carrot character. The script is divided into two main sections: one for when the green flag is clicked, and another for when the character starts as a clone.

**When green flag clicked:**

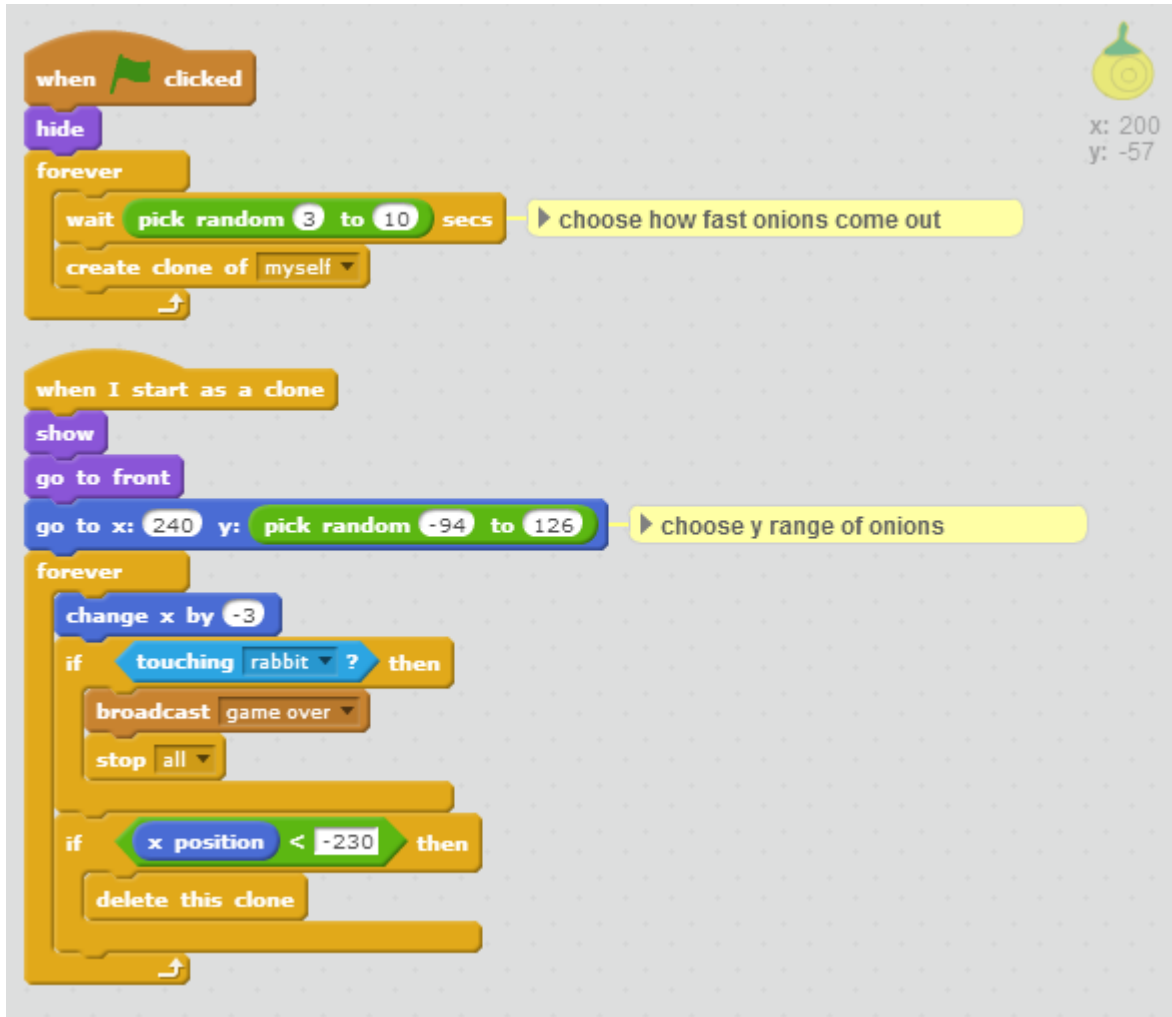
- hide
- forever loop:
  - wait pick random 3 to 10 secs (comment: change to make carrots come out faster/slower)
  - create clone of myself

**When I start as a clone:**

- show
- go to front
- go to x: 240 y: pick random -94 to 126 (comment: change to pick y range of carrots (how high/low they can be))
- forever loop:
  - change x by -3
  - if touching rabbit? then:
    - change points by 1 (comment: change these values to choose how much a carrot is worth)
    - change jumps by 2
    - delete this clone
  - if x position < -230 then:
    - delete this clone

Coordinates in the top right corner: x: -236, y: 42.

## 6. Onion



The image shows the Scratch code for an onion character. The code is organized into two main sections: one for when the onion is clicked and one for when it starts as a clone.

**When clicked:**

- when clicked
- hide
- forever loop:
  - wait pick random 3 to 10 secs (comment: choose how fast onions come out)
  - create clone of myself

**When I start as a clone:**

- when I start as a clone
- show
- go to front
- go to x: 240 y: pick random -94 to 126 (comment: choose y range of onions)
- forever loop:
  - change x by -3
  - if touching rabbit? then:
    - broadcast game over
    - stop all
  - if x position < -230 then:
    - delete this clone

Coordinates in the top right: x: 200, y: -57.

## 7. Game Over label



The image shows the Scratch code for a Game Over label. The code is organized into two main sections: one for when the label is clicked and one for when it receives a broadcast message.

**When clicked:**

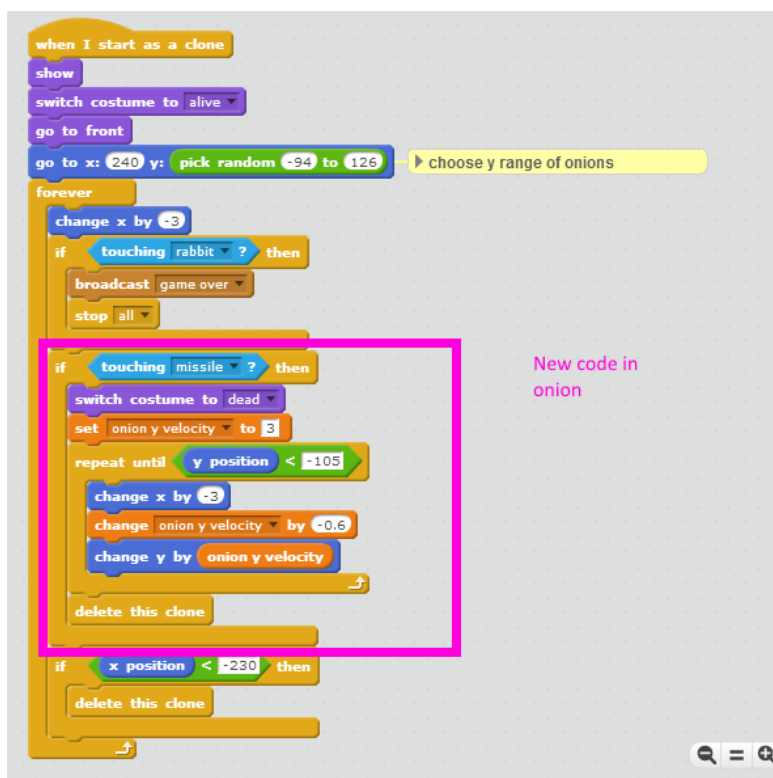
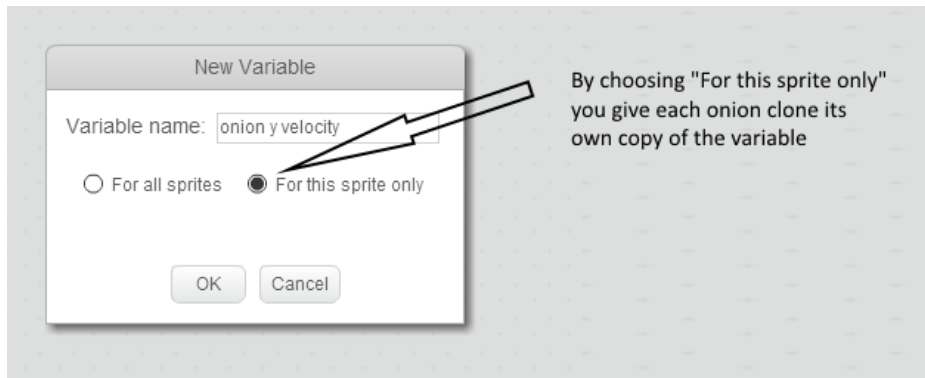
- when clicked
- hide

**When I receive game over:**

- when I receive game over
- show

Coordinates in the top right: Game Over, x: 10, y: -156.

## 8. Missiles





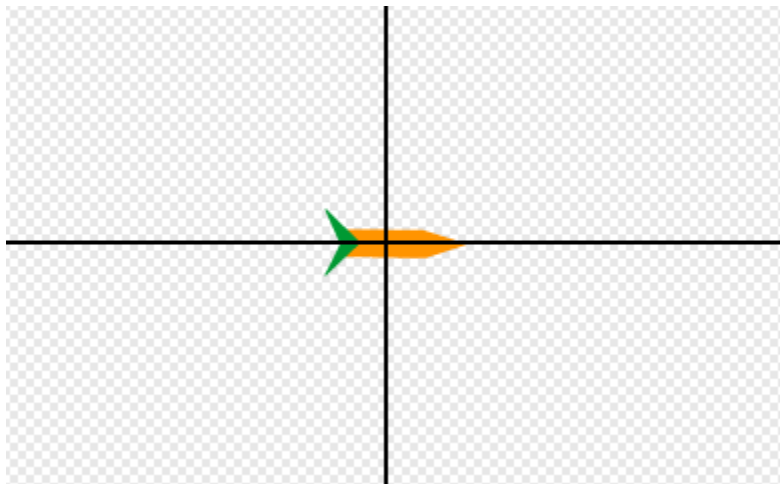
```

when clicked
  set points to 0
  set jumps to 10
  set jumping to false
  set missiles to 10
  set y velocity to 0
  go to front
  go to x: -45 y: -105

when up arrow key pressed
  if jumps > 0 then
    set y velocity to 15
    set jumping to true
    change jumps by -1
    switch costume to jump

when space key pressed
  if missiles > 0 then
    create clone of missile
    change missiles by -1
  
```

Code changes in rabbit



missile costume

```

when clicked
  hide

when I start as a clone
  show
  go to front
  go to rabbit
  forever
    change x by 10
    if x position > 230 then
      delete this clone
  
```

missile code

## 9. Challenges

- a) Now that you have a way to kill onions, make it so more onions come out.
- b) Where do you have to insert a line of code so that you get more missiles every time you get a carrot?
- c) Where do you have to insert a line of code so that you get more points every time you kill an onion?
- d) Can you make the dead onion spin as it falls?
- e) Right now, when you get a carrot, it's a little boring because the carrot just disappears. Can you make it so the carrot shrinks and flies quickly to your score boxes?
- f) Right now, when the rabbit dies, it's a little boring because it just freezes in place. Can you make a "dead rabbit" costume?
- g) Instead of the space bar shooting a missile, change it so the right arrow shoots a missile forward. Then make it so the left arrow shoots an a missile backward!

## 10. Challenges for experts

- h) Can you make the game get faster and faster as time goes on?
- i) Can you make the game more interesting by making the carrots and onions move at different speeds (some faster and some slower)?