

Play Fetch – Scratch Programming

Create a game of dog fetch with mazes. The object of the game is to guide the red dog toy through the maze. Get points for bouncing the toy off the cat and for getting the toy to the dog. Lose points for running off course and touching the green edges.

Programming Difficulty = Medium
Grade Level = 4th and up

Tutorial by:



<http://oakdome.com>

This is a learn by doing coding lesson using Scratch at <https://scratch.mit.edu/>. Students will learn basic programming concepts by building and coding their own interactive game.



TIP: When coding, it is good practice to test your code often such as when adding new bits of code or making any changes to code.

Testing your code often helps you to learn to read and understand code. It also helps you catch and correct coding errors sooner.

First Things First:

1) Sign up or Sign in to Scratch

<https://scratch.mit.edu/>

2) Upload Game Template to Scratch:

<play-fetch-scratch-game-template-for-kids.sb2>

This template has all the graphics, sounds, and backgrounds you need for this project. [Download the template](#) and put it on your computer desktop or other convenient place, then upload it to Scratch as shown in the picture.

3) Begin Coding:

Follow each step of the tutorial and add the code for each sprite (graphic). See the **TIPS** at the end of this tutorial for help with positioning the cat and for drawing the mazes.



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1) Create these 3 variables.

Points = For keeping score

Level = For changing backgrounds at each level

Shoot = To throw only when mouse is inside circle

The screenshot shows the Scratch interface with the 'Data' menu open. The 'Make a Variable' dialog box is visible, showing the 'Points' variable being created. The 'New Variable' dialog box is also open, showing the 'Points' variable name. Red arrows and boxes highlight the steps to create variables: 1) Click 'Data', 2) Click 'Make a Variable', 3) Type the variable name, and 4) Create all 3 variables: Points, Level, and Shoot.

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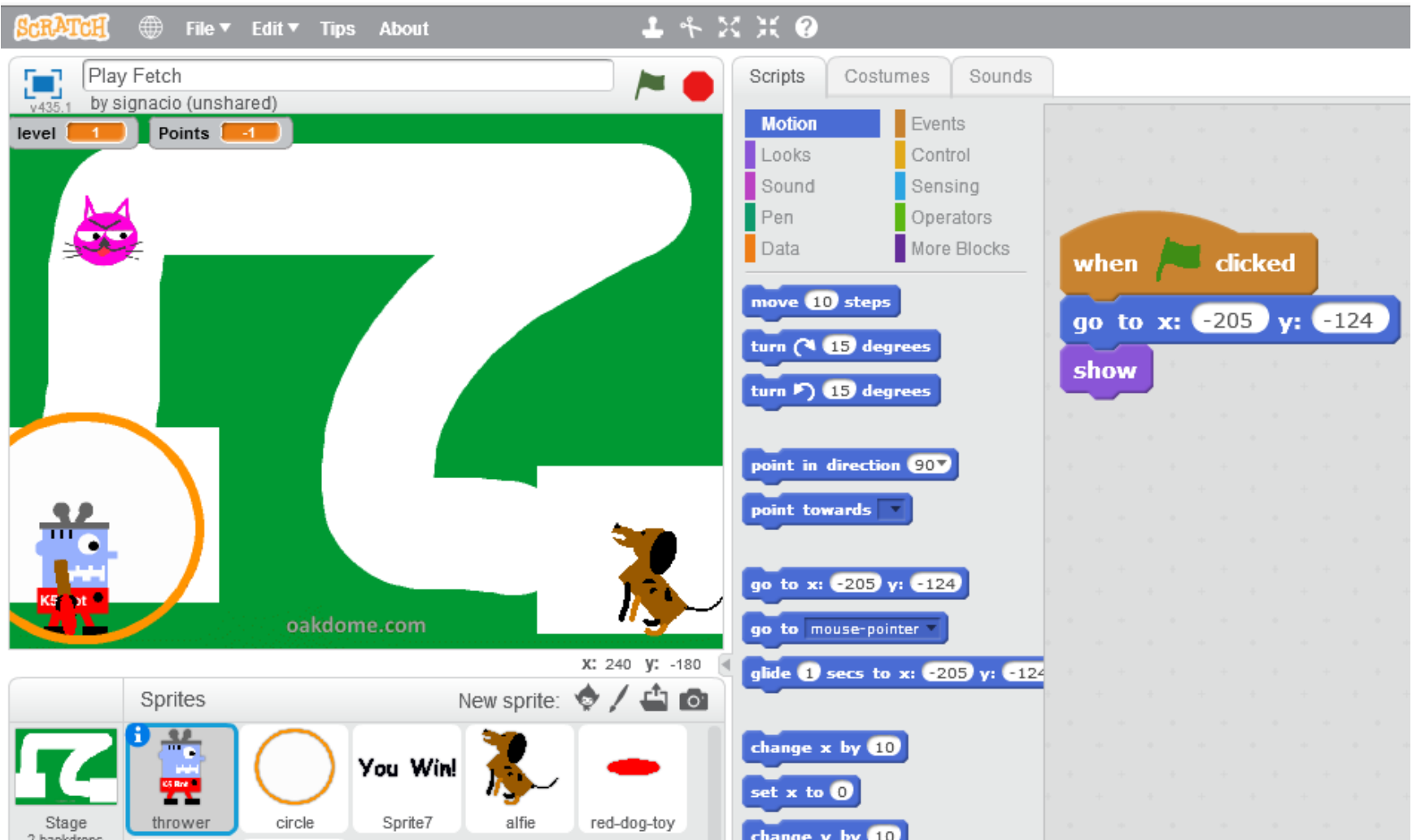
2) Backdrop Code:



The screenshot shows the Scratch programming environment for a project titled "Play Fetch" by signacio (unshared). The stage features a green backdrop with a large white question mark, a pink cat, a blue robot, and a brown dog. The "Scripts" panel is active, showing a "when clicked" event block followed by a "set level to 1" block and a "forever" loop containing "switch backdrop to level" and "hide variable shoot" blocks. The "Data" panel shows variables for "Points", "level", and "shoot". The "Sprites" panel shows the "Stage" backdrop and various sprites like "thrower", "circle", "you-win", "alfie", "red-dog-toy", "arm-with...", and "angry-cat".

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3) Thrower Code:



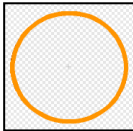
The image shows the Scratch programming environment for a game titled 'Play Fetch' by signacio (unshared). The game's stage features a green field with a white path, a pink cat, a dog named 'alfie', and a blue robot 'K5 Bot' (the thrower) inside a yellow circle. The 'Scripts' block palette is open, showing the code for the 'Thrower' sprite:

- when green flag clicked
- go to x: -205 y: -124
- show
- move 10 steps
- turn 15 degrees
- turn 15 degrees
- point in direction 90
- point towards
- go to x: -205 y: -124
- go to mouse-pointer
- glide 1 secs to x: -205 y: -124
- change x by 10
- set x to 0
- change y by 10

The 'Sprites' palette at the bottom shows the 'thrower' sprite selected, along with other assets like 'circle', 'You Win!', 'alfie', and 'red-dog-toy'.

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4) Circle Code:



The screenshot shows the Scratch IDE with the 'Circle' sprite selected. The stage displays a game scene with a green field, a white path, a pink cat, a blue robot (K5 Bot), and a brown dog (alfie). The 'Circle' sprite is currently on the stage, highlighted with an orange circle. The code blocks for the 'Circle' sprite are as follows:

```
when I receive show ring
go to x: -192 y: -98
set ghost effect to 0
repeat 50
  change ghost effect by 2
when I receive shoot
hide
wait 1.1 secs
show
```

The 'Data' monitor shows the following variables:

- Points: 0
- level: 1
- shoot: 0

The 'Scripts' area shows the following code blocks:

- when I receive show ring
- go to x: -192 y: -98
- set ghost effect to 0
- repeat 50
- change ghost effect by 2
- when I receive shoot
- hide
- wait 1.1 secs
- show

The 'Data' area shows the following code blocks:

- set Points to 0
- change Points by 1
- show variable Points
- hide variable Points

The 'Sprites' area shows the following sprites:

- thrower
- circle (selected)
- you-win
- alfie
- red-dog-toy
- arm-with...
- angry-cat

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5) You Win! Code:

You Win!

The screenshot displays the Scratch programming environment. The stage shows a game titled "Play Fetch" by signacio (unshared). The game interface includes a "level" indicator set to 1 and a "Points" indicator set to 0. The stage background is green with a large white question mark. A pink angry cat is positioned in the top left, and a blue robot (K5 Bot) is in the bottom left. A brown dog (alfie) is in the bottom right. The "You Win!" sprite is highlighted in the sprites panel.

The script editor shows the following code for the "when clicked" event:

```
when clicked  
hide  
switch costume to costume1  
wait 2 secs  
wait until level = 11  
show  
wait 2 secs  
play sound explbomb  
repeat 5  
  next costume  
  wait 0.09 secs  
hide  
wait 1 secs  
stop all
```

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6) Alfie - Dog Code:

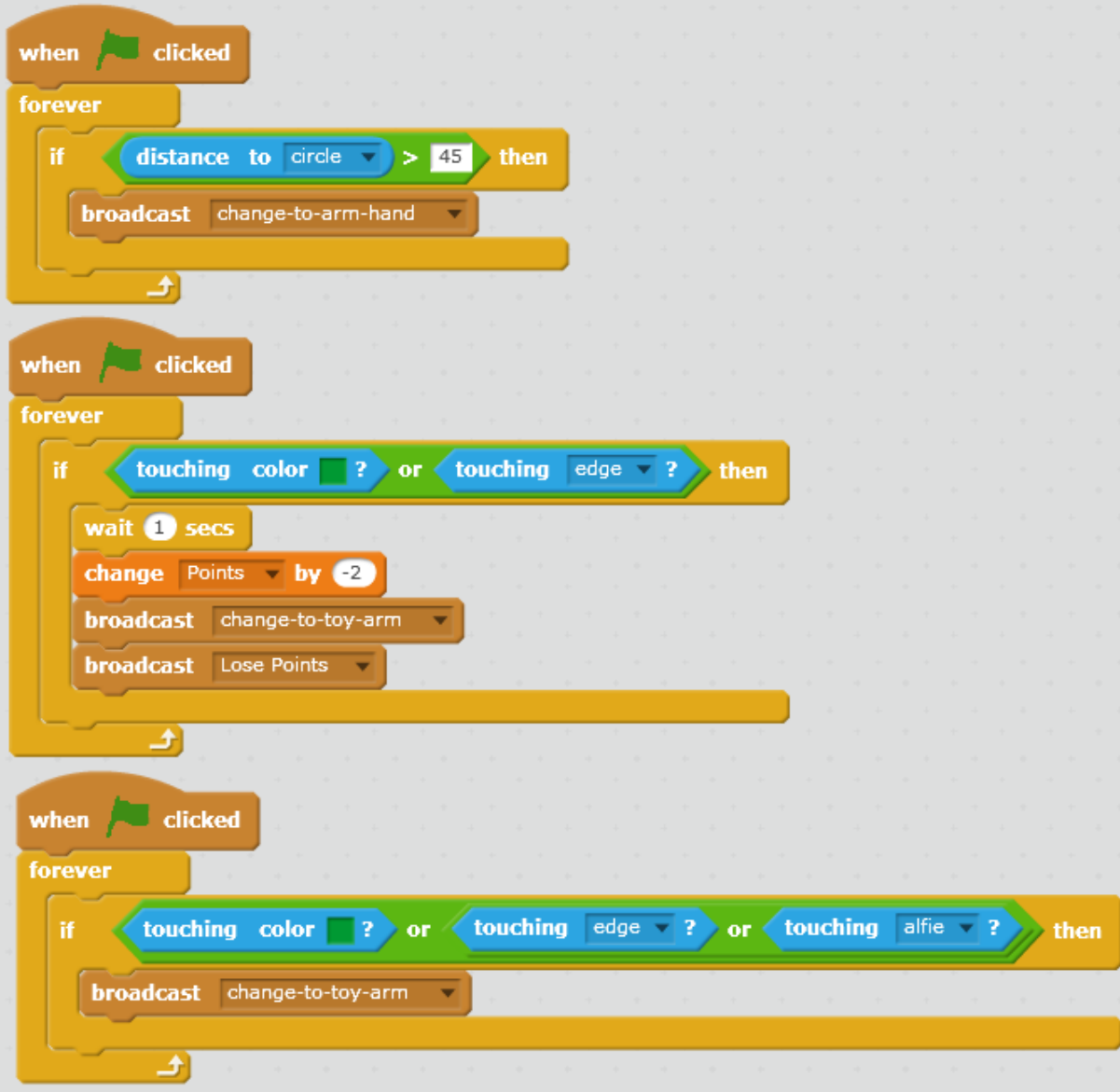


The screenshot displays the Scratch IDE with the 'Play Fetch' project open. The stage shows a green field with a white path, a pink cat, a blue robot, and a brown dog (Alfie). The 'Scripts' tab is active, showing the following code for the dog sprite:

```
when green flag clicked
  forever loop
    switch costume to costume1
    wait until touching red-dog-toy
    wait 0.2 secs
    switch costume to costume2
    play sound dog1
    broadcast change-to-toy-arm
    broadcast shot
    wait 1 secs
    change level by 1
    change Points by 1
  end
when I receive Lose Points
  say Terrible Throw! Lose 2 Points! for 2 secs
```

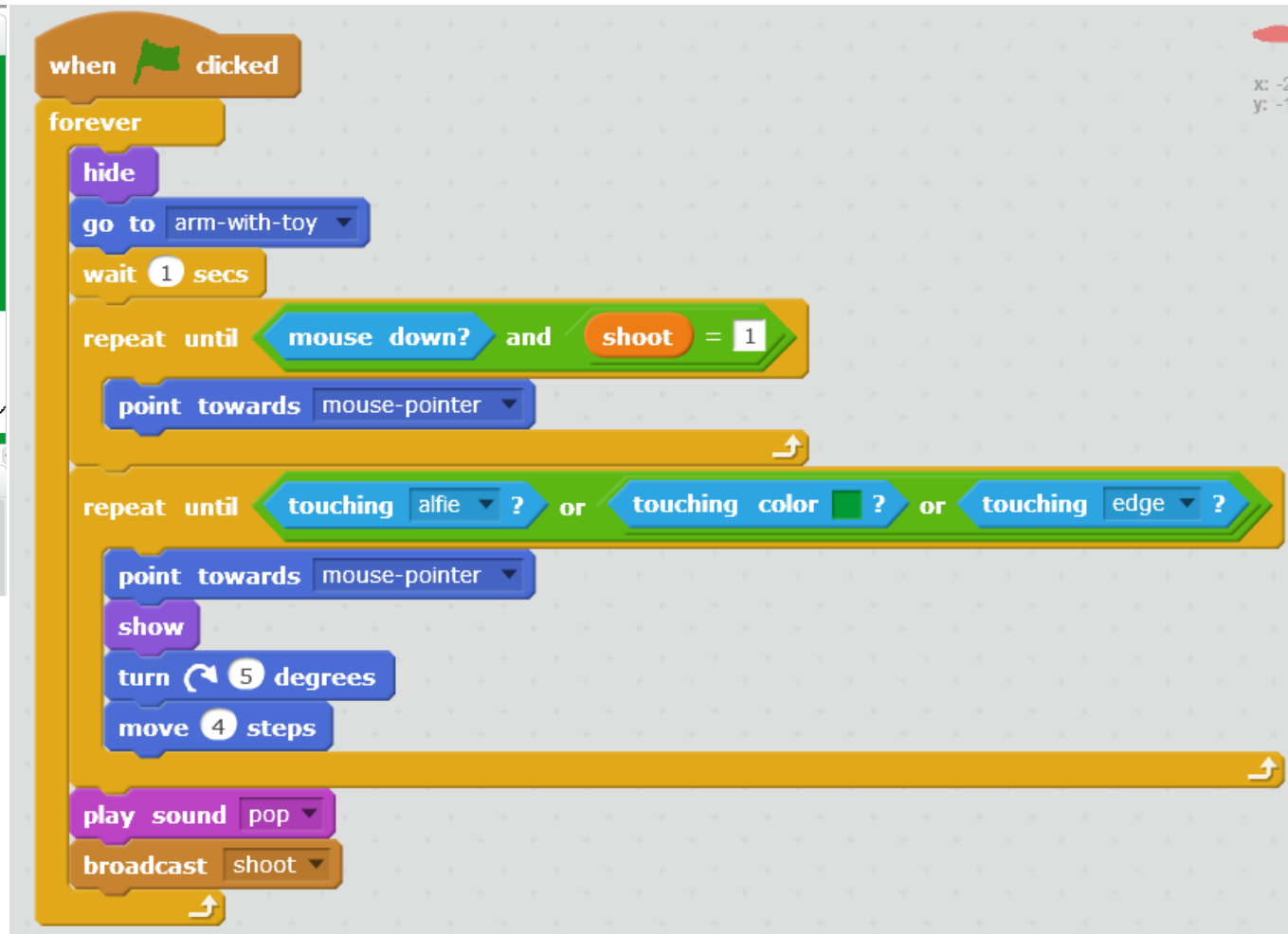
The 'Sprites' panel shows the 'alfie' sprite selected. The 'Scripts' panel lists various event triggers, with the 'when green flag clicked' and 'when I receive Lose Points' events being the most relevant for the code shown.

7) Red Dog Toy – Code:



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8) - More Red Dog Toy – Code:



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9) Arm-with-toy – Code:



Scratch Project: Play Fetch (v435.1) by signacio (unshared)

level: 1 | Points: -1

Stage: 2 backdrops

Sprites: thrower, circle, Sprite7, alfie, red-dog-toy, arm-with..., angry-cat

Code:

```
when green flag clicked
  switch costume to costume2
  forever loop
    go to thrower

when I receive change-to-toy-arm
  switch costume to costume2

when I receive change-to-arm-hand
  switch costume to costume3

when green flag clicked
  switch costume to costume2
  forever loop
    if distance to mouse-pointer < 95 and not level = 11 then
      point towards mouse-pointer
      set shoot to 1
      broadcast show ring
    else
      set shoot to 0
      broadcast show ring
```

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10) Angry-cat – code:



```
when clicked
  set Points to 0
  show
  forever
    if level = 1 then
      go to x: -175 y: 95
    if level = 2 then
      go to x: 6 y: -9
    if level = 3 then
      go to x: 201 y: 46
    if level = 4 then
      go to x: 0 y: 0
    if level = 5 then
      go to x: 0 y: 0
    if level = 6 then
      go to x: 0 y: 0

when I receive shot
  show

when clicked
  forever
    if touching red-dog-toy ? then
      change Points by 1
      play sound explbomb
      repeat 5
        next costume
        wait 0.09 secs
      hide
```

Attention!
Add your own X: Y:
coordinates here.

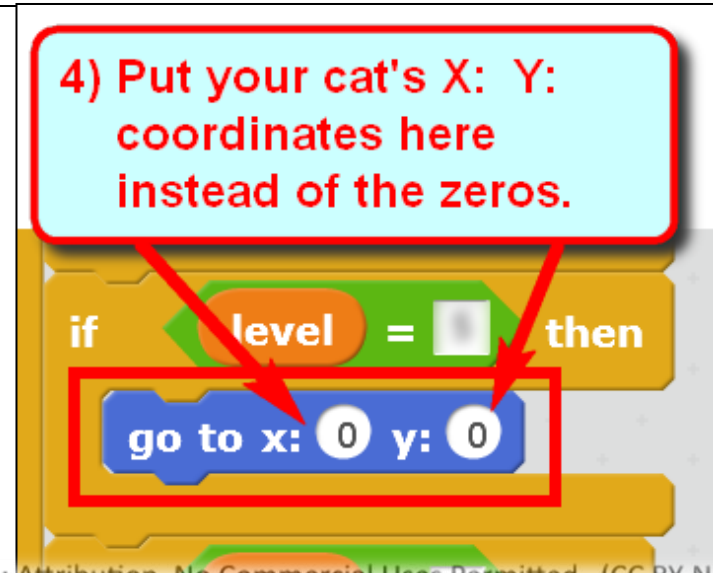
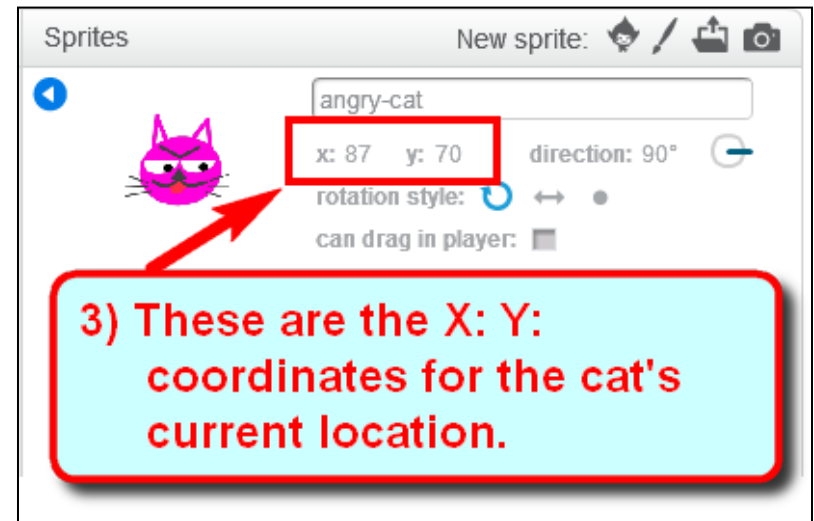
TIP: Finding and Setting the Cat's Location on the Maze for Each Level

1) Move the cat where you want it.

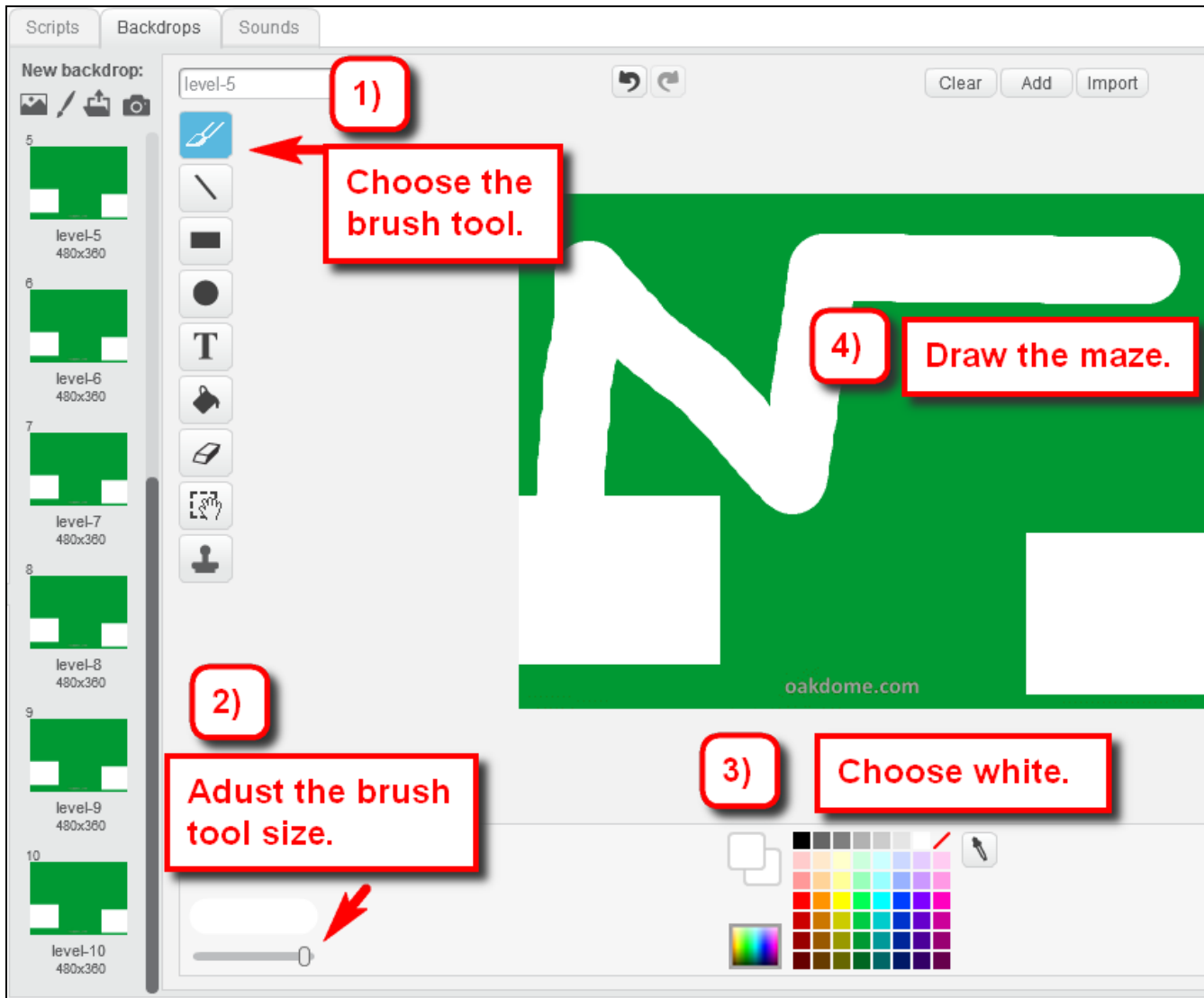
2) Click the "i" on the cat for information.

3) These are the X: Y: coordinates for the cat's current location.

4) Put your cat's X: Y: coordinates here instead of the zeros.



TIP: How to Draw Mazes in 4 Easy Steps



Play Your Game

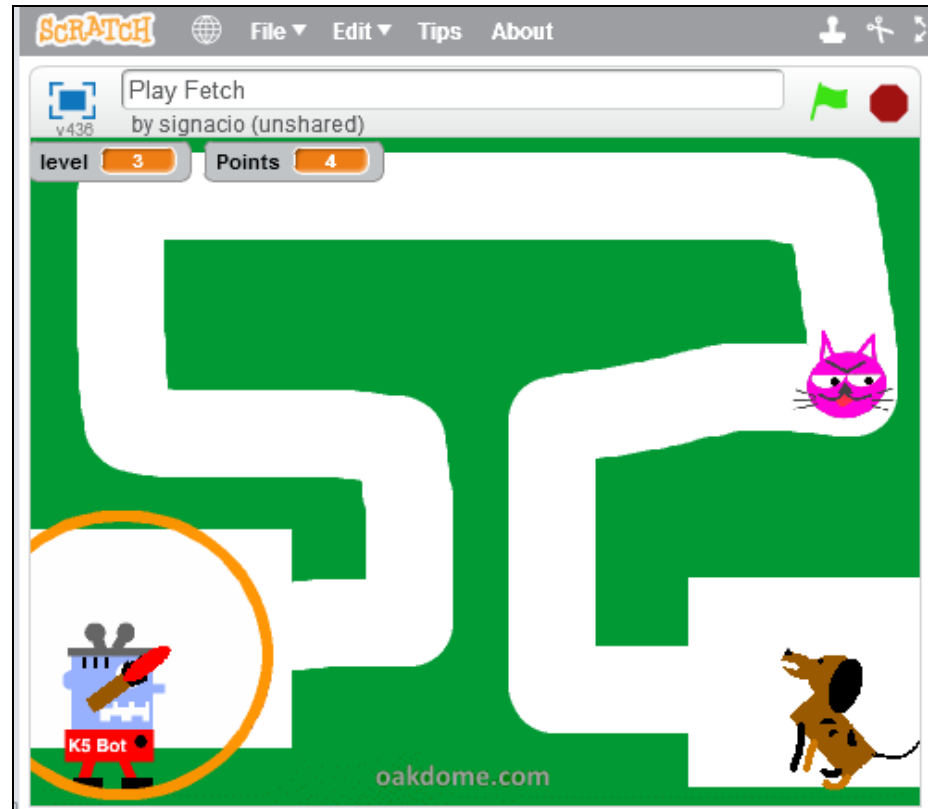
Once you've added all your code and drawn all your mazes, it's time to test and play your game.

How to Play:

Click your mouse inside the orange ring to "throw" the dog toy.

Use the mouse to guide the toy to the dog without running off course.

Score points by touching the cat with the dog toy and by getting the toy to the dog.



If your game doesn't work properly, debug your code. Debugging is the process of finding and fixing errors (bugs) in your code. Carefully check your code for errors such as missing code, incomplete code, incorrect code, code in the wrong order, or errors in number values.