# Scratch Programming Part 3

In the previous lesson, we created our very first Scratch animation by first creating a story line, then creating sprites, finally adding very simple scripts. In this lesson, we will introduce more interactions to make the animation more interesting. While adding interactions, you will learn about how sprites communicate with each other.

## Step 1: Revisit Our Story Line

Let’s revisit our story line and lay it down step by step for each sprite.

<table>
<thead>
<tr>
<th>Sprite</th>
<th>Story Line Step by Step from the Start</th>
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</table>
| ![Mr. Meow](image) | 1) Mr. Meow shows up first at his house  
2) He waits for the donut from Donut Man.  
3) When Donut shows up, Mr. Meow eats it quickly. Then he says "mmmm...." and smiles happily.  
4) Mr. Meow goes back home. |
| ![Donut Man](image) | 1) Donut Man shows up at his house  
2) He "sends" Mr. Meow a donut.  
3) He said "I hope you like it" when Mr. Meow is done with Donut. |
| ![Donut](image) | 1) Donut hides  
2) Donut appears on the plate when Donut Man delivers it.  
3) It hides when Mr. Meow is done with it. |
Step 2: Adding Extra Costumes

Based on the story line above, we need to add at least two new costumes: one for Mr. Meow when he is happy and another for the Donut Man when he is throwing.

Make a copy of the costume “costume2” costume; rename it to “happy” and edit it to have a big, toothy smile.

For Donut Man, make a copy of the “regular” costume and change it to have throw lines. Then name the new costume to “throw”.

![Image of Mr. Meow with a big toothy smile]

![Image of Donut Man with a new costume named “throw”]

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**Step 2: Throw and Catch**

With new costumes in place, let’s use them to create scripts that make Donut Man throw and Mr. Meow catch. First let’s make scripts so Donut Man does as shown below:

Mr. Meow’s sequence of actions and corresponding scripts are illustrated as below:

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To create a new message, click the “new...” from the popped up bubble to open the Message Name Editor. Enter “throw donut” for message name and click “OK” to save this new Broadcast Message.

You should now see the “throw donut” Broadcast Message added to the “broadcast” Script Block.
Create another broadcast message called “got donut” to be used to notify everyone that the Donut has been eaten.

To receive a Broadcast Message, use the block called “when I receive”.

**Step 4: Sending and Receiving Broadcast Messages**

Change Donut Man’s scripts so that he sends out a “throw donut” message.

Change Mr. Meow’s scripts so that he waits for a “throw donut” message to go “mmmm”. Then he sends out a “got donut” message.
We also want Donut to hide first upon start, to show up only when it receives a “throw donut” message, and then to hide again when it receives a “got donut” message.

Donut Man’s scripts now should look like the snapshot below.
Donut’s scripts should look like the snapshot below.

Mr. Meow’s scripts should now look like the snapshot below.
The animation should play like this diagram, which is called a Time-Space diagram in Computer Science term.