Chapter 4

Scratchy Play

After completing this chapter you will be able to know how to use the Looks Blocks and make the sprite:

- **say message(s) using the Say block;**
- **change in color, hide and show using the Color, Hide and Show blocks from the Looks group blocks; Pixelate**
- **change the sprite's costume; and**
- **shrink and grow using the Set Size & Change Size blocks respectively.**

The Playful Cat

By now, you and the cat sprite have been through a lot. You have learned how to move it in various ways and make it draw all kinds of shapes and patterns. In this chapter, you'll learn to give it a new look with costumes and effects, as well as a little personality with speech and thought bubbles. The blocks you need for this are in the Looks category. These purple blocks control the way the sprite looks. After investigating what each of the blocks in this category does, you can put them to work in several examples to better learn how to use them.

Looks Blocks

The blocks in the Looks category allow you to change the size of the sprite, apply graphic effects to the sprite, change the sprite's costume, and create speech and thought bubbles for the sprite. Like all other blocks categories, the Looks category can be found in the block palette(see Figure 4-1).

Figure 4-1. Looks blocks

Four blocks in the Looks category enable your sprites to speak and think—or at least add speech and thought bubbles for your sprite on the stage. The say Hello! for 2 secs block creates a speech bubble filled with the specified text that stays on the stage for a specified number of seconds. This activity displays a Hello! bubble for two seconds. The say Hello! block also creates a speech bubble around the text that you supply, but its bubble remains on the stage until another speech or thought block is activated or until the script is manually stopped. If your sprite is more of a thinker than a talker, you can use the think Hmm... for 2 secs block to create a thought bubble filled with the specified text that stays on stage for the specified time. The think Hmm... block creates a similar thought bubble with the specified text, Hmm... . The bubble stays on the stage until another speech or thought block is activated or until the script is manually stopped. This show and hide blocks make the sprite display on and disappear from the stage, respectively. If a sprite is already visible, then the show block has no effect. If a sprite is already hidden, hide has no effect. These two blocks perform the same actions as selecting and deselecting show in the Sprites info pane (see Figure 4-2).

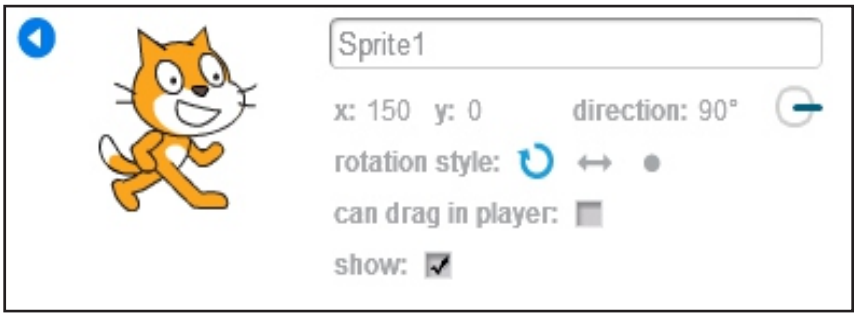


Figure 4-2. Sprites info pane

The switch costume to costume2 block changes the active sprite's costume to one you choose from the pull-down menu. You can see what your choices look like in the Costumes tab. In this activity, the active sprite will change to its costume called costume2 . The next costume block changes the active sprite to the next costume available for it in the Costumes tab. You can use this block to sequentially cycle through all the costumes available for a sprite. To help you keep track of which costume is visible, you can use the costume # block. When you select this reporter block by

clicking in the box in front of it, a window opens on the stage to display the current costume number of the sprite. The change color effect by 25 block applies the chosen graphical effect to the sprite by the specified amount. The graphic effects available in the pull-down menu are color, fisheye, whirl, pixellate, mosaic, brightness, and ghost. If you need to return the active sprite to its original state, use the clear graphic effects block to reset all the graphic effects on the sprite.

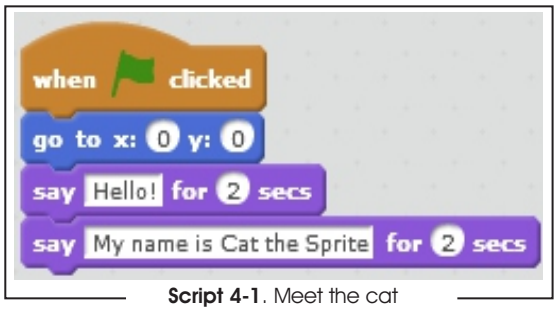
You can also adjust the size of your sprite from the Looks category. The change size by 10 block changes the size of the sprite by the percentage that you specify. Setting the block to 0 does not change the size of the sprite. Setting it to an amount less than 0 shrinks the sprite, and an amount greater than 0 increases the size of the sprite. In the preceding example, the percentage is set to 10. This means that 10% will be added to the current size of the sprite; so if the current size of the sprite is 100%, adding 10% to it will result in a size of 110%. If the percentage was set to –50, this means that 50% would be subtracted from the current size of the sprite. If you prefer, you can resize your sprite using a specific percentage with the set size to 100 % block. The default size of the sprite is 100%. A setting of less than 100% shrinks the size of the sprite, whereas a setting greater than 100% increases the size of the sprite. To keep track of your active sprite's size, use the size reporter block. When you select this block, a window appears on the stage that shows the current size of the sprite.

Activities

Next, try the Looks blocks in action by creating some scripts. These scripts will help you practice creating speech bubbles, applying graphical effects to the sprite, and more. Remember that to create scripts, you need to drag the blocks from the block palette and drop them in the scripts area. You can always modify the scripts in the examples by changing the values in the blocks.

Activity 4-1: Meet the Cat

Let's start with something easy and add some speech bubbles for the cat. You'll find the blocks that you need for Script 4-1 in the Control, Motion, and Looks categories. The first block of code is a trigger; when a user clicks the green flag above the stage, the script activates. The next block moves the sprite to the middle of the stage. The third block creates a speech bubble for the sprite that lasts for 2 seconds. The speech bubble displays the Hello! text. The last block of code creates a speech bubble that also lasts for 2 seconds and contains the text My name is Cat the Sprite. After you have created this script, click the green flag to chat with the cat. **Table 4-1** lists the blocks and describes the actions used in this activity.



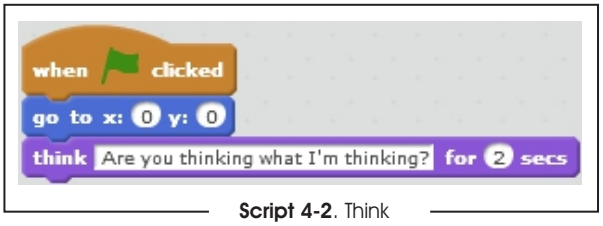
Script 4-1. Meet the cat

Table 4-1. Code Blocks in Meet the Cat

Blocks	Actions
when clicked	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
go to x: 0 y: 0	Move the sprite to the position where X = 0 and Y = 0.
say Hello! for 2 secs	The sprite gets a speech bubble that displays Hello! for 2 seconds
say My name is Cat the Sprite for 2 secs	The sprite gets a speech bubble that displays My name is Cat the Sprite for 2 seconds.

Activity 4-2: Think

Thought bubbles work just like speech bubbles , as you can see in Script 4-2 . The first block of code starts the script running when the green flag is clicked. The second block of code moves the sprite to the center of the stage at coordinates (0, 0). The last block of code creates a thought bubble for the sprite that displays Are you thinking what I'm thinking? and lasts for 2 seconds.



Script 4-2. Think

Click the green flag to run the script and produce the thought bubble (see Figure 4-3). **Table 4-2** lists the blocks and describes the actions used in this activity.

Figure 4-3. Result of Script 5-2

Table 4-2. Code Blocks in Think

Blocks	Actions
when clicked	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
go to x: 0 y: 0	Move the sprite to the position where X = 0 and Y = 0.
think Are you thinking what I'm thinking? for 2 secs	The sprite gets a speech bubble that displays Are you thinking what I'm thinking? for 2 seconds.

Activity 4-3: Color Change

This activity introduces three new blocks: a trigger from the **Events** category and two effects-related blocks from the **Looks** category. The trigger block in Script 4-3 requires the user to click the sprite to activate the script. The clear graphic effects block acts like an eraser for effects: it resets the sprite to its original state and removes any graphic effects that may have been applied to the sprite. If no graphic effects were applied, nothing happens. The last block of code changes the color of the sprite by the specified amount, in this case 25. So basically, what this script does is change the color of the sprite once (see Figure 4-4).

Script 4-3. Color change

If you'd like to try a different effect, you can choose it from the block's pull-down menu, or change the value to see a different color. **Table 4-3** lists the blocks and describes the actions used in this activity.

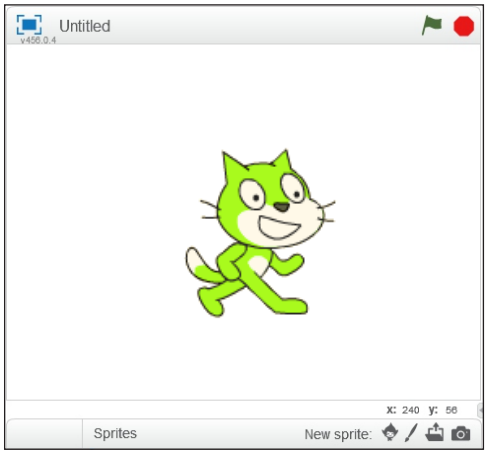


Figure 4-4. Result of Script 4-3

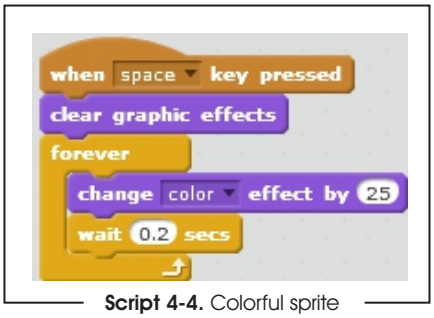
Table 4-3. Code Blocks in Color Change

Blocks	Actions
	The script starts running by clicking the sprite. Clicking the sprite is the trigger that activates the script.
	Reset all graphic effects on the sprite. It will return the sprite to its original state (before any graphic effects were applied to it).
	Change the color of the sprite by the amount of 25.

Activity 4-4: Colorful Sprite

Have you already figured out what this Script 4-4 does? The addition of a repeat block enables the effect from Script 4-3 to repeat. In addition, this activity demonstrates yet another way to start the script. The first block of code is a trigger block that starts the script running when the user presses the space bar. The second block resets all graphic effects applied to the sprite. Next is the  block, which is found in the **Control** blocks category. This **repeat** block repeats the sequence of actions within it forever; you must stop the script manually. The sequence of actions within the **repeat** block is as follows: change the color of the sprite by 25 and pause the script by 0.2 seconds.

The script continues looping through these actions until the user clicks the red button icon (next to the green flag) above the stage. **Table 4-4** lists the blocks and describes the actions used in this activity.



Script 4-4. Colorful sprite

OUTPUT

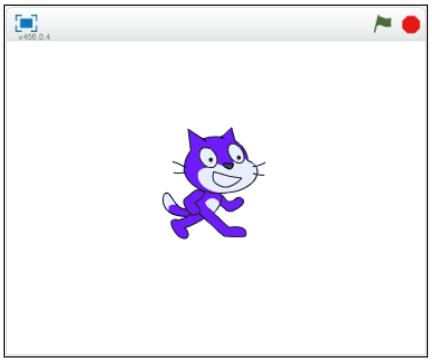


Table 4-4. Code Blocks in Colorful Sprite

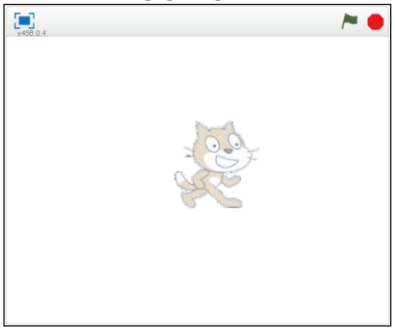
Blocks	Actions
	The script starts running by clicking the space bar. Clicking the space bar is the trigger that activates the script.
	Reset all graphic effects on the sprite. It will return the sprite to its original state (before any graphic effects were applied to it).
	The actions within the forever block will be repeated forever or until the script is stopped manually.
	Change the color of the sprite by the amount of 25.
	The script waits 0.2 seconds. No actions are performed for 0.2 seconds.

Activity 4-5: Hide and Show

You can easily make your sprite appear on and disappear from the stage. All you need is a few familiar blocks and Script 4-5 . The first block of code resets all graphic effects that were applied to the sprite previously. The next block of code will move the sprite to the center of the stage. The C block then repeats the sequence of actions within it 10 times. The first block within that sequence is the hide block, which makes the sprite disappear from the stage. The next block stops the script for 1 second. The show block then makes the sprite appear on the stage. The next block will make the script stop for 1 second, and then the sequence loops. So, Script 4-6 moves the sprite to the center of the stage and then makes the sprite disappear and reappear 10 times.

Script 4-5. Hide and show

OUTPUT



If you'd like to make your sprite disappear and then reappear in a new position, try adding a go to x: 0 y: 0 block or a move 10 steps block, and adjusting its settings before the show block in your repeat loop. **Table 4-5** lists the blocks and describes the actions used in this activity.

Table 4-5. Code Blocks in Hide and Show

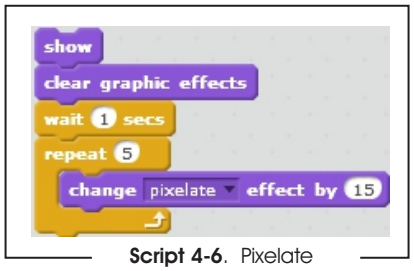
Blocks	Actions
clear graphic effects	Reset all graphic effects on the sprite. It will return the sprite to its original state before any graphic effects were applied to it.
go to x: 0 y: 0	Move the sprite to the position where X = 0 and Y = 0, which is the center of the stage.
repeat 10	Repeat the actions represented by the blocks within this block 10 times.
hide	Make the sprite disappear from the stage.
wait 1 secs	The script waits 1 second. No actions are performed for 1 second.
show	Make the sprite appear on the stage.
wait 1 secs	The script waits 1 second. No actions are performed for 1 second.

Activity 4-6: Pixellate

Let's try a different effect and repeat it.

The first block of Script 4-7 makes the sprite appear on the stage if it was hidden. The next block resets all graphic effects that were applied to the sprite. If no graphic effects were applied to the sprite, nothing happens. The script then pauses for 1 second before entering the **repeat** block, which repeats the action within it five times. It contains a single block, which applies the **pixellate** graphic effect by the amount of 15. Remember, you can change this number and see how it affects the sprite.

Click the script to activate it and watch how it performs (see Figure 4-5). **Table 4-6** lists the blocks and describes the actions used in this activity.



Script 4-6. Pixelate

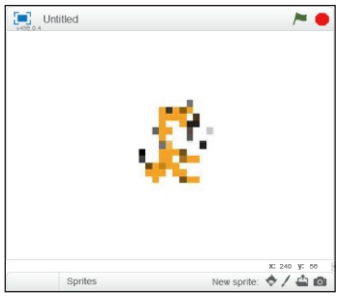


Figure 4-5. Result of Script 4-6

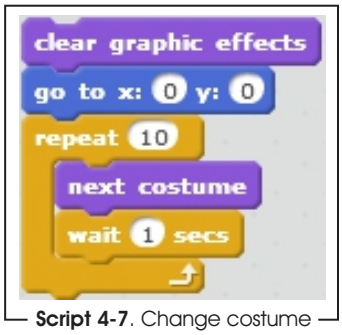
Table 4-6. Code Blocks in Pixellate

Blocks	Actions
show	Make the sprite appear on the stage.
clear graphic effects	Reset all graphic effects on the sprite. It will return the sprite to its original state before any graphic effects were applied to it.
wait 1 secs	The script waits 1 second. No actions are performed for 1 second.
repeat 5	Repeat the actions represented by the blocks within this block five times.
change pixelate effect by 15	Apply the pixelate effect to the sprite by the amount of 15.

Activity 4-7: Change Costume

In this activity, the sprite will change its costume 10 times in a row. This will give the illusion of the cat moving its legs and walking in place. Give it a try. Script 4-7 begins by resetting all graphic effects that were applied previously to the sprite, and then moves the sprite to the center of the stage (0, 0). Next, the  block repeats the sequence of actions within it 10 times. The first action of the sequence is to change the costume of the sprite to the sprite's next available costume in the Costumes tab.

The script keeps cycling through all the costumes available. So if the last costume is used, it will go back to the first one and start all over again. The last block of code in the sequence stops the script for 1 second, and then the action loops back to the start of the sequence. **Table 4-7** lists the blocks and describes the actions used in this activity.



Script 4-7. Change costume

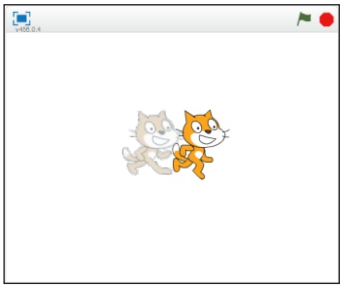


Table 4-7. Code Blocks in Change Costume

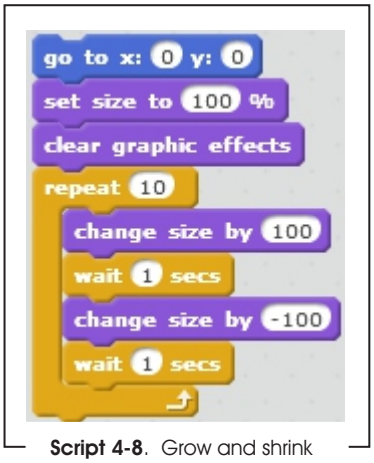
Blocks	Actions
	Reset all graphic effects on the sprite. It will return the sprite to its original state before any graphic effects were applied to it.
	Move the sprite to the position where X = 0 and Y = 0, which is the center of the stage.
	Repeat the actions represented by the blocks within this block 10 times.
	Change the sprite to the next costume in the costumes tab.
	The script waits 1 second. No actions are performed for 1 second.

Activity 4-8: Grow and Shrink

This activity doubles the size of the sprite and decreases the size back to the default size as it loops through a  block. Script 4-8 starts by moving the sprite to the center of the stage, if it's not there already. The next block of code sets the size of the sprite to 100%, which is the default size. The third block then resets all graphic effects that were applied to the sprite. The action then reaches the C block, which will repeat the sequence of actions within it 10 times. The first action in the sequence is to change the size of the sprite by 100.

Because the size of the sprite was 100, adding another 100 to it doubles the sprite's size. The sequence pauses for 1 second, and then the next block changes the size of the sprite by –100. Because the size of the sprite was previously 200, subtracting 100 from it brings the size back to 100 (the default size).

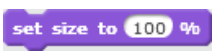
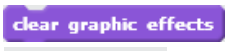
The last block in the sequence stops the script again for 1 second, after which the action loops back to the start of the sequence. The sprite grows and shrinks 10 times. **Table 4-8** lists the blocks and describes the actions used in this activity.



Script 4-8. Grow and shrink

OUTPUT

Table 4-8. Code Blocks in Grow and Shrink

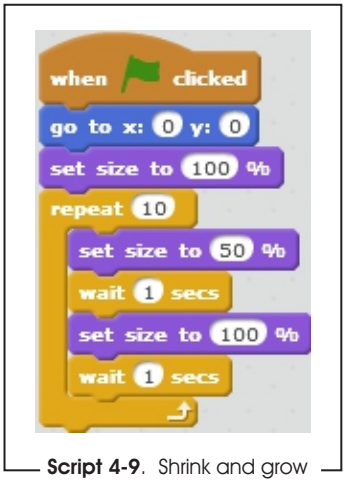
Blocks	Actions
	Move the sprite to the position where X = 0 and Y = 0, which is the center of the stage.
	Set the sprite to its default size.
	Reset all graphic effects on the sprite. It will return the sprite to its original state before any graphic effects were applied to it.
	Repeat the actions represented by the blocks within this block 10 times.

change size by 100	Double the default size of the sprite.
wait 1 secs	The script waits 1 second. No actions are performed for 1 second.
change size by -100	Shrink the sprite to half its size.
wait 1 secs	The script waits 1 second. No actions are performed for 1 second.

Activity 4-9: Shrink and Grow

Script 4-9 is almost the same as the previous activity, except that it decreases the size of the sprite first and then increases it. This script also shows another way to change the size of the sprite. In programming, often there is more than one way to achieve the same result. The script activates when the user clicks the green flag and the sprite moves to the center of the stage. If the sprite is already at the center of the stage, nothing happens. The second block sets the size of the sprite to 100% (the default size). Next is a repeat 10 block that repeats the sequence of actions within it 10 times. The first block in the sequence sets the size of the sprite to 50%, which is half its default size.

The sequence pauses for 1 second, and then the next block sets the size of the sprite back to its original size (100%). After another pause of 1 second, the sequence repeats. When you run the script, the sprite shrinks to half its original size and then grows back to its original size 10 times before the script stops. **Table 4-9** lists the blocks and describes the actions used in this activity.



Script 4-9. Shrink and grow

OUTPUT

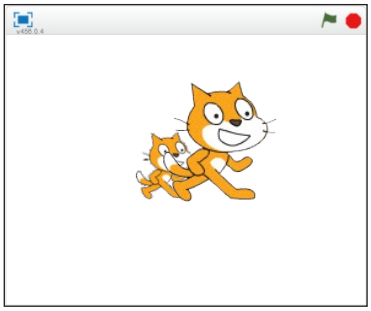
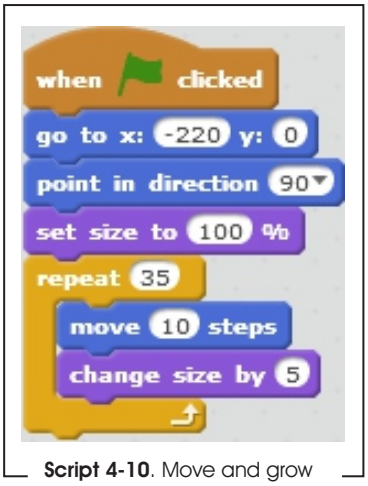


Table 4-9. Code Blocks in Shrink and Grow

Blocks	Actions
when clicked	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
go to x: 0 y: 0	Move the sprite to the position where X = 0 and Y = 0, which is the center of the stage.
set size to 100 %	Set the sprite to its default size.
repeat 10	Repeat the actions represented by the blocks within this block 10 times.
set size to 50 %	Shrink the sprite to half its size.
wait 1 secs	The script waits 1 second. No actions are performed for 1 second.
set size to 100 %	Reset the sprite to its default size.
wait 1 secs	The script waits 1 second. No actions are performed for 1 second.

Activity 4-10: Move and Grow



Script 4-10. Move and grow

Have you already figured out what Script 4-10 does? It builds on the concepts in Script 4-9 , increasing the size of the sprite as it moves. The first block is the trigger that starts the script running when the user clicks the green flag. The next block moves the sprite to the coordinates (–220, 0), which is to the left on the stage area along the X axis. The next pair of code blocks makes the sprite face to the right and sets the size of the sprite to 100%. The 

block repeats the sequence of actions within it 35 times.

The first block in that sequence moves the sprite 10 pixels in the direction it's facing, which is to the right. The next block in the sequence increases the sprite's size by 5, and then the action loops back to the start of the sequence. Script 4-10 increases the size of the sprite as it moves from left to the right across the stage, which gives the illusion of the sprite traveling from distance and coming nearer.

This technique is handy if you want a 3D effect in your Scratch project. **Table 4-10** lists the blocks and describes the actions used in this activity.

OUTPUT

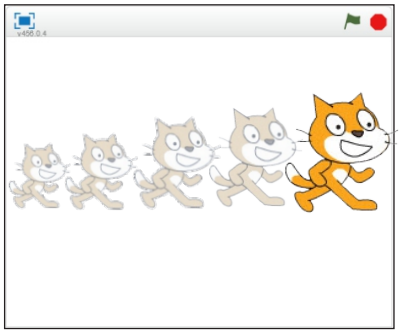
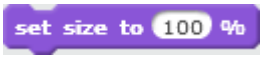
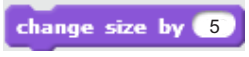
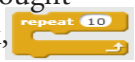


Table 4-10. Code Blocks in Move and Grow

Blocks	Actions
	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
	Move the sprite to the position where X = –220 and Y = 0, which is the center of the stage.
	Make the sprite face to the right.
	Set the sprite to its default size.
	Repeat the actions represented by the blocks within this block 35 times.
	Move the sprite 10 pixels in the direction it's facing.
	Increase the sprite by 5%.

Activity 4-11: A Short Story

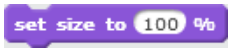
Here's where you put together all that you've learned so far. Script 4-11 is one long script that tells a short story. The cat starts going for a walk, but then changes its mind and goes for a run. At the end, the sprite stops and says that it's tired. Don't let the length of this example intimidate you—give it a try! The first block activates the script when the user clicks the green flag. The next pair of blocks moves the sprite to the center of the stage and makes the sprite face to the right. The fourth block sets the rotation style of the sprite to **left-right** , meaning the sprite will be able to face left or right only. The next block sets the size of the sprite to 100%, which is its default size. The next block changes the sprite's costume to **costume1** . The  block creates a speech bubble for the sprite that displays Let's go for a walk. Next, the  block repeats the sequence of actions within it 100 times. The sequence of actions begins by moving the sprite 10 pixels in the direction that it's facing, changing the sprite to its next costume. The action pauses for 0.2 seconds. The last block within the sequence block makes the sprite bounce and travel in the opposite direction, if it reaches the edge of the stage. After 100 repeats of this sequence, the  block creates a thought bubble for the sprite that displays We better run! The next block,  , repeats the sequence of actions within it 200 times. That sequence moves the sprite 10 pixels in the direction that it's facing, changes the sprite to its next costume, stops the script for 0.001 seconds, and finally instructs the sprite to bounce and travel in the opposite direction if it hits the edge of the stage, and then the sequence repeats. The last block in this script creates a speech bubble for the sprite that displays I'm tired!

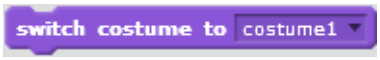
Script 4-11. A short story

OUTPUT

This activity shows how you can combine techniques from previous activities to tell a story. Experiment with this script, modify it to your liking, and create your own story. **Table 4-11** lists the blocks and describes the actions used in this activity.

Table 4-11. Code Blocks in a Short Story

Blocks	Actions
	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
	Move the sprite to the position where X = 0 and Y = 0, which is the center of the stage.
	Make the sprite face to the right.
	Set the rotation style of the sprite, so it can only turn left or right.
	Set the sprite to its default size.



Switch the sprite to the costume called costume1 .

The sprite gets a speech bubble that displays Let's go for a walk for 2 seconds.

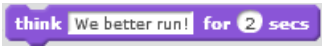
Repeat the actions represented by the blocks within this block 100 times.

Move the sprite 10 pixels in the direction that it's facing.

Change the sprite to the next costume in the costumes tab.

The script waits 0.2 seconds. No actions are performed for 0.2 seconds.

If the sprite reaches the edge of the stage, bounce in the opposite direction.



The sprite gets a thought bubble that displays We better run! for 2 seconds.

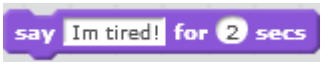
Repeat the actions represented by the blocks within this block 200 times.

Move the sprite 10 pixels in the direction that it's facing.

Change the sprite to the next costume in the Costumes tab.

The script waits 0.001 seconds. No actions are performed for 0.001 seconds.

If the sprite reaches the edge of the stage, bounce in the opposite direction.



The sprite gets a speech bubble that displays I'm tired! for 2 seconds.

Summary

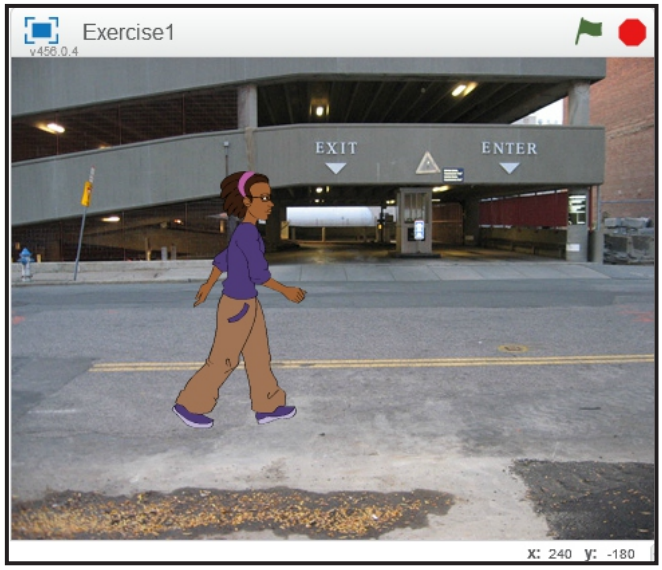
You've a come a long way, but there are still exciting things ahead. In this chapter, you learned how to change the look of the sprite and how to add graphic effects to it. You have also learned how to create speech and thought bubbles for the sprite and change its costume, resulting in the illusion that the sprite is moving. The next chapter focuses on the Sound block category. These blocks add sound to your Scratch project. After that chapter, you start the second part of this book. The second part of this book puts together all the basic concepts that you have learned and creates more advanced and complex scripts.

Snap Script

a Short hands-on activity

1. Select the Avery Walking sprite. Create a script that makes the sprite walk across the stage, back and forth. Change its costume while moving and activate the script when the space bar is pressed.

Output:



2. Select any sprite. Apply the Brightness effect. Apply the Ghost effect to make the sprite disappear. At the end, make the sprite show up again.

Output: