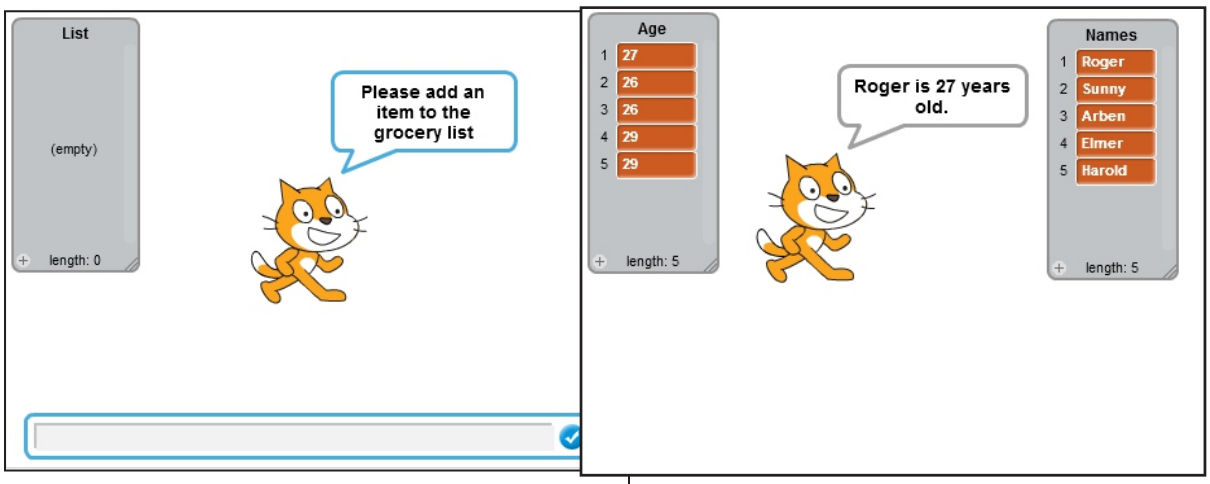
Chapter 8



List it Scratchy!

After completing this chapter you will be able to know how to use and create List Blocks and :

- **create a List from scratch;**
- **create a shopping list and add items to the list;**
- **search, replace and remove an item from the list; and**
- **replace an item from a user input and from a value of the variable.**

List

Variables give you more flexibility in your scripts, as you learned in Chapter 7, but are limited to storing a single value at any one time. What if you need to store multiple, related values, such as a wish list or a grocery list? You could use several separate variables, but you'd have to create them all ahead of time, which takes time and guess work. Scratch offers another, easier solution: you can create a list .

Just like the kind you write on paper, a list in Scratch can store multiple values in one place. Like variables, a list can contain either strings of characters (letters, numbers, or symbols) or numeric values. Each value in a list also has a position, referred to as its index number. For example, a list called grocery could include the following:

- Bread
- Water
- Peanuts

The Bread value is at the first position in the list with index number 1, the Water value is at the second position (index number 2), and the Peanuts value is at the third and last position (index number 3) in the list. In Scratch, you can modify a list by applying several different actions to it, such as adding, removing, or replacing values. In this chapter, you'll learn all about putting lists to work. I'll start first by showing you how to create lists and discussing the various blocks that control lists. Finally, you can practice with some example scripts where lists are put into action.

Creating and Working with Lists

This section will teach you how to create and control lists. To create a new list in Scratch, the first step is to go to the block palette and select the Data category (see Figure 8-1).

Once there, click the Make a List button (see Figure 8-2) to open the New List window (see Figure 8-3).

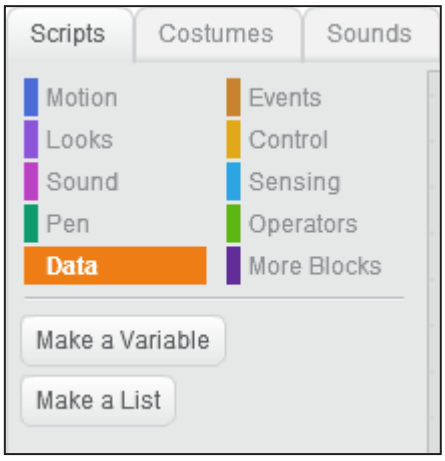


Figure 8-1. Go to the Data category to create a list

Figure 8-2. Make list

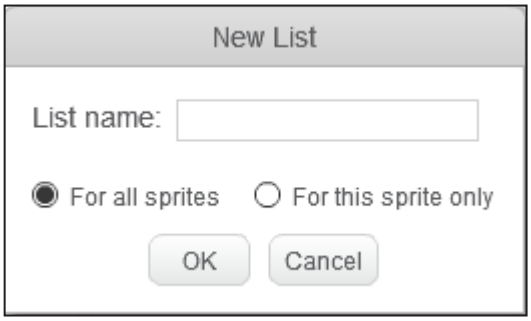


Figure 8-3. The New List window

In the New List window, you enter a name for the list and choose if you want the list to be available for the currently selected sprite only or for all sprites. Just like for variables, you create a list per project; so if you select For all sprites, this means that the list is available for all the sprites in one specific project. If you want to use a list in another project, you'll need to recreate it. Click the **OK** button to create the list. After you do, Scratch automatically creates a number of other blocks of code, which appear in the Data category (see Figure 8-4), such as the list reporter block that holds and reports the current values of the list. In this activity, the name of the list is **List** . There is no limit to the length of an item in a list. There's also no limit to the number of items that a list can hold.

Four blocks in the Data category enable you to control and change the contents of your lists. In each block, you can choose which list to work with using a pull-down menu. The add thing to List block adds the value you specify to the end of the list. In this activity, the text, thing , is added to the end of the list called **List**. The delete 1 of List block removes the values from specified index numbers in a list. Using the left pull-down menu, you can select the first value in the list, last value in the list, or all the values in the list, or you can type the index number that you want to remove. In this activity, the value at index number 1 is removed from **List** . Removing items from a list rearranges the list; for example, if a list has four items and you remove the second item, the third item will move up to take the second position (index number 2), and the fourth will move into the third position (index number 3).

Figure 8-4. List blocks

The insert thing at 1 of List block inserts a value in a list at the specified position in the list. You can use the left pull-down menu to select the last index number or a random position. You can also type the index number for the position in the list you want to insert the value. In this activity, thing is inserted at the first position in **List** .

If a value was already stored in position 1, it gets moved to position 2, the value originally at position 2 moves to position 3, and so on. The replace item 1 of List with thing block replaces the value at a specified position in a list with another value you provide. Not only can you use the pull-down menu to select the last or random position, but you can also type the desired position. In this activity, the value at position 1 in List is replaced by the thing value. If position 1 is currently empty, the new value is simply inserted. The remainder of the Data category's blocks provide information about your lists. Again, you can choose which list to monitor using a pull-down menu. The item 1 of List block holds and reports the value at a specified position in a list. In this activity, the block reports the value at position 1 in List .

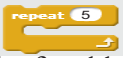
The length of List block holds and reports the length of the specified list. The length of a list is the number of values it contains, meaning the length is equal to the highest index number. In this activity, the length of the list called List is reported. The List contains thing ? block searches the specified list for a value you supply. If the value is in the list, the block returns a result of true, otherwise it will return false. In this activity, it searches List for the thing value. Finally, the show list List and hide list List blocks show and hide the specified list's monitor in the stage area, respectively. The list's monitor shows all the values in the list, their positions in the list, and the length of the list .

Activities

Now that you know how to create and control lists, you are ready to put what you learned into practice. In this section, you'll be creating and running some scripts that use lists.

Activity 8-1: Grocery Shopping List

This script lets the user create a grocery shopping list. The user enters five items, which are added to the list. At the end, the complete list is displayed. Before you create Script 8-1 , click the Make a List button in the block palette's Data category to create a list called List . It doesn't matter if you select For this sprite only or For all sprites .

Script 8-1 starts running when the user presses the space bar. The second block of code deletes all values in List —that is if there were any values in the list. When running a script, if you want to start with an empty list, it's always a good practice to use this block. The next block of code shows the list's monitor in the stage area. The next block of code creates a speech bubble for the sprite that displays the text I need to create a list to go grocery shopping for 2 seconds. Next, a 

block repeats the sequence actions within it 5 times. The first block within the sequence creates a speech bubble that displays Please add an item to the grocery list , opens a user input field, and waits for the user's input (see Figure 8-5). Because the 

block is embedded in the 

block, the script next adds the user input to the end of the list. After five passes through the loop, the script then creates a speech bubble for 2 seconds and displays Thank you. The list is ready. With the help of a 

block, the last block creates a speech that displays the text The list includes the following: followed by the values held in 

for 4 seconds. **Table 8-1** lists the blocks and describes the actions used in this activity.

Script 8-1. Grocery shopping list

OUTPUT

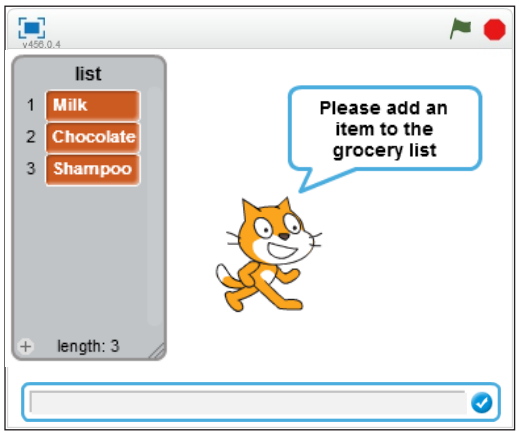
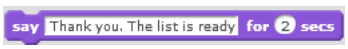


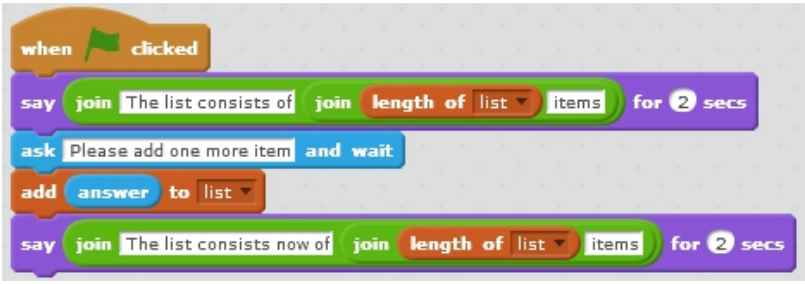
Figure 8-5. Grocery list creation

Table 8-1. Code Blocks in Grocery Shopping List

Blocks	Actions
	Clicking the space bar activates the script. The space bar is the trigger to start the script running.
 	Delete all values from the list called List . Show the monitor in the stage area for List .
	The sprite gets a speech bubble that displays I need to create a list to go grocery shopping for 2 seconds.
	Repeat the actions represented by the blocks within this block five times.
	The sprite gets a speech bubble that displays Please add an item to the grocery list , opens a user input field, and waits for user input.
	Add the specified value to the end of List .
	Hold and report the current user input value.
	The sprite gets a speech bubble that displays Thank you. The list is ready. for 2 seconds.
	The sprite gets a speech bubble that displays the specified text or value for 4 seconds.
	Join the two values that have been specified in the block and report the result.
	Hold and report the current values in List .

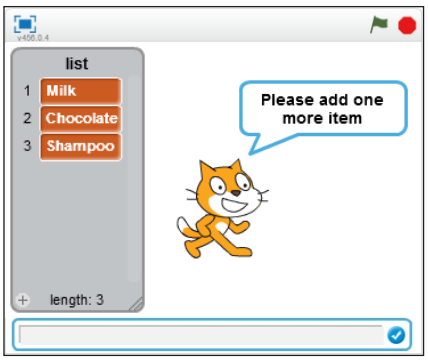
Activity 8-2: Add One More Item

This activity builds on the last script by first displaying the length of the grocery list called List , and then requesting the user to enter another item. The script adds the new item to the end of the list, and then displays the new length of the list. Before creating this script, make sure that List is created.



Script 8-2. Add one more

OUTPUT



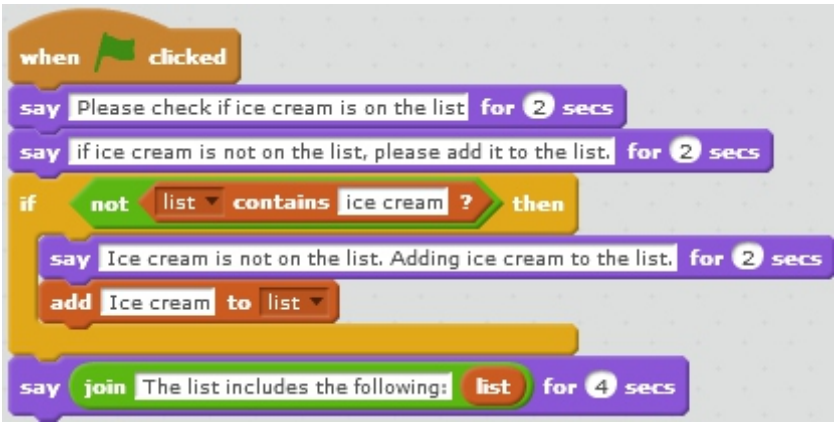
Script 8-2 starts running when the user clicks the green flag. The second block is composed of two join blocks and the length of List block embedded within a say for 2 secs block. The result is it creates a speech bubble for the sprite that lasts 2 seconds and displays The list consists of , the length of List , and the text items . The next block creates a speech bubble that displays the text Please add one more item , opens a user input field, and waits for the user's input. The next block adds the user input to the end of List. The last block creates a speech bubble that lasts for 2 seconds and displays The list consists now of , the length of the list, and the text items. **Table 8-2** lists the blocks and describes the actions used in this activity.

Table 8-2. Code Blocks in Add One More Item

Blocks	Actions
when clicked	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
say for 2 secs	The sprite gets a speech bubble that displays the specified text or value for 2 seconds.
join The list consists of	Join the two values that have been specified in the block and report the result.
join items	Join the two values that have been specified in the block and report the result.
length of List	Hold and report the length of the specified list.
ask Please add one more item and wait	The sprite gets a speech bubble that displays Please add one more item , opens a user input field, and waits for user input.
add to List	Add the specified value to the end of List .
answer	Hold and report the current user input value.
say for 2 secs	The sprite gets a speech bubble that displays the specified text or value for 2 seconds.
join The list consists now of	Join the two values that have been specified in the block and report the result.
join items	Join the two values that have been specified in the block and report the result.
length of List	Hold and report the length of the specified list.

Activity 8-3: Search List

Sometimes you'll need to determine whether your list contains a specific value, and then take different actions depending on the result. This activity, for instance, searches the grocery list for the value ice cream . If the value is not on the list, it is then added to the list. Before creating Script 8-3 , make sure that the list called List is created.



Script 8-3. Search list

The script starts running when the user clicks the green flag. The second block creates a speech bubble that displays Please check if ice cream is on the list. for 2 seconds. The next block also creates a speech bubble that displays If ice cream is not on the list, please add it to the list. for 2 seconds. An If/Then conditional statement then checks whether List does not contain a value called ice cream , as instructed by the embedded not and list contains ice cream ? blocks. If the list does not contain a value called ice cream then the condition is true, and the script executes the sequence of actions within the C block. The first block in the sequence creates a speech bubble that displays the text Ice cream is not on the list. Adding ice cream to the list. for 2 seconds. The next add Ice cream to list adds the item ice cream to the end of the list. The last block creates a speech bubble that displays the text The list includes the following: followed by the contents of List for 4 seconds.

OUTPUT

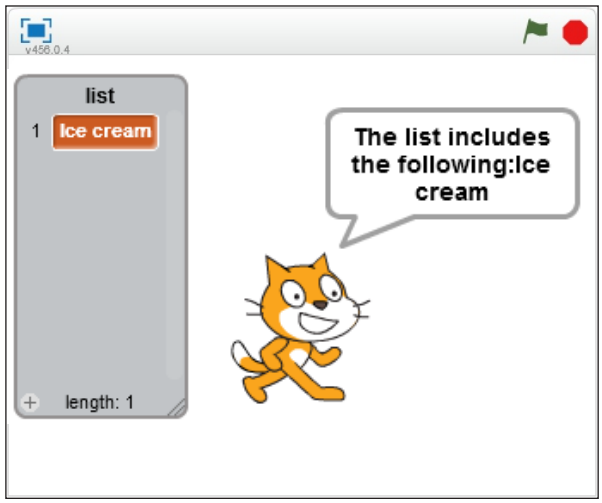
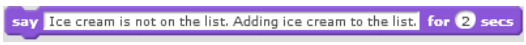


Table 8-3 lists the blocks and describes the actions used in this activity.

Table 8-3. Code Blocks in Search List

Blocks	Actions
when clicked	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
say Please check if ice cream is on the list for 2 secs	The sprite gets a speech bubble that displays Please check if ice cream is on the list. for 2 seconds.
say if ice cream is not on the list, please add it to the list. for 2 secs	The sprite gets a speech bubble that displays If ice cream is not on the list, please add it to the list. for 2 seconds.

	Check if the condition is true. If the condition is true, execute the actions within it. If the condition is false, skip to the next block.
	Check the condition within this block. If the condition within the block is true, return false; otherwise, return true.
	Search in the specified list, List , for the specified value, ice cream. If the specified value is in the list, the condition is true; otherwise, it's false.
	The sprite gets a speech bubble that displays Ice cream is not on the list. Adding ice cream to the list. for 2 seconds.
	Add the ice cream value to the end of List .
	The sprite gets a speech bubble that displays the specified text or value for 4 seconds.
	Join the two values that have been specified in the block and report the result.
	Hold and report the current values in List .

Activity 8-4: Replace an Item

This activity demonstrates replacing the last value of a list. Specifically, Script 8-4 replaces the last item of List with the value Broccoli. (Make sure that the list is created.)

Script 8-4 starts running when the user presses the A key on the keyboard. The next two blocks create each speech bubbles that display the text for 4 seconds, saying I don't need ice cream anymore. It's too fattening. I have to stay in shape. I will replace it with broccoli in the list. The next block replaces the last value in List with the Broccoli value. Next an If/Then conditional statement block that evaluates whether the list contains the value Broccoli . If it does, then the condition is true and the script creates a speech bubble that displays Broccoli has now been added to the list for 2 seconds.

Table 8-4 lists the blocks and describes the actions used in this activity.

Script 8-4. Replace an item

OUTPUT

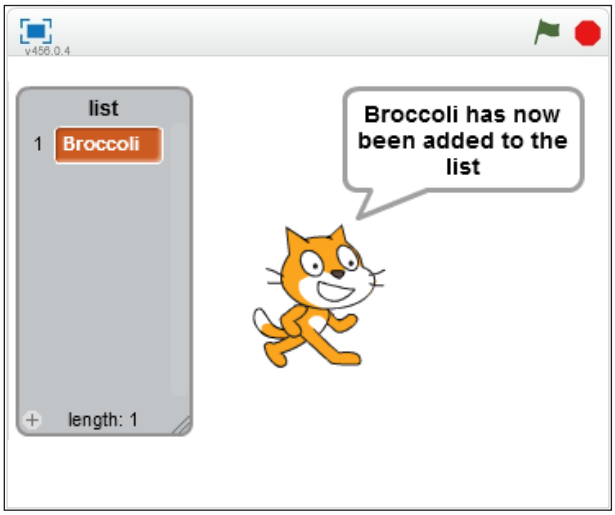


Table 8-4. Code Blocks in Replace an Item

Blocks	Actions
	Pressing the A key activates the script. The A key is the trigger to start the script running.
	The sprite gets a speech bubble that displays I don't need ice cream anymore. It's too fattening. for 4 seconds.
	The sprite gets a speech bubble that displays I have to stay in shape. I will replace it with broccoli in the list. for 4 seconds.
	Replace the last value of List with the specified value, Broccoli .
	Check if the condition is true. If the condition is true, execute the actions within it. If the condition is false, skip to the next block.
	Search in the specified list, List , for the specified value, Broccoli . If the specified value is in the list, the condition is true; otherwise, it's false.
	The sprite gets a speech bubble that displays Broccoli has now been added to the list for 2 seconds.

Activity 8-5: Remove Items

Deleting individual items from a list is simple, as you'll see in Script 8-5 . You'll continue to use the grocery list called List and remove values at some specific positions in the list. Script 8-5 starts running when the user clicks the green flag. The next block creates a speech bubble that displays Please remove items 1 and 4 from the list for 2 seconds. The  block removes the value at the first position of List , so now the list gets rearranged and all the remaining items get moved one position up the list. The list now consists of 4 items and  removes the value at index number 4. The last block creates a speech bubble that displays. The list includes the following: followed by the contents of List for 4 seconds.

Table 8-5 lists the blocks and describes the actions used in this activity.

Script 8-5. Remove items

OUTPUT

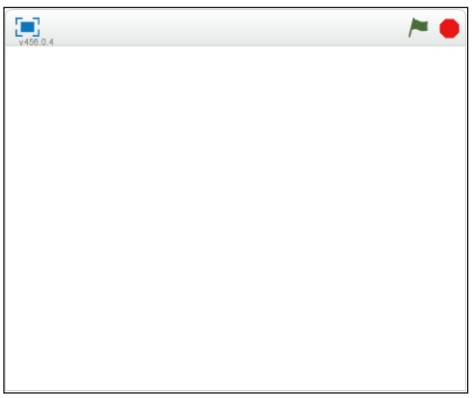
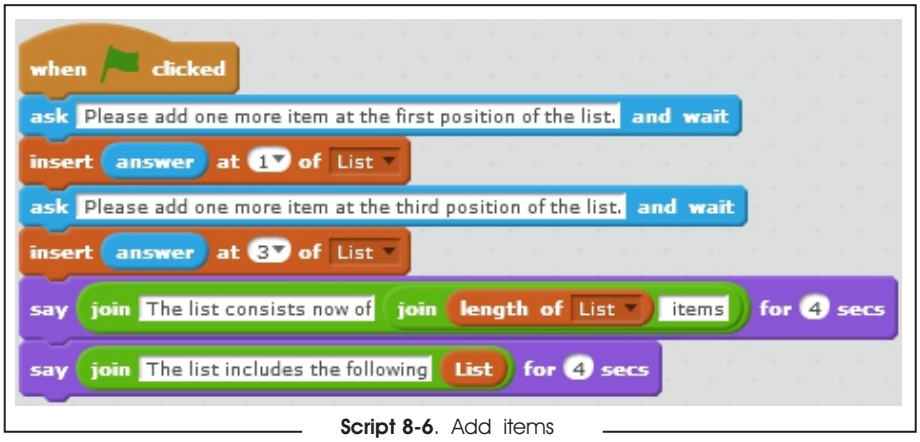


Table 8-5. Code Blocks in Remove Items

Blocks	Actions
when clicked	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
say Please remove items 1 and 4 from the list. for 2 secs	The sprite gets a speech bubble that displays Please remove items 1 and 4 from the list for 2 seconds.
delete 1 of List	Delete the value at the first position from List .
delete 4 of List	Delete the value at the fourth position from List .
say for 4 secs	The sprite gets a speech bubble that displays the specified text or value for 4 seconds.
join The list includes the following:	Join the two values that have been specified in the block and report the result.
List	Hold and report the current values in List .

Activity 8-6: Add Items at Specific Positions

Just as you can remove items from specific positions, you can add them too. This script asks for the user's input, and then inserts it at the first and third positions (index numbers 1 and 3) of the list called List .



Script 8-6. Add items

Script 8-6 starts running when the user clicks the green flag. The next block creates a speech bubble that displays the text Please add one more item at the first position of the list , opens a user input field, and waits for the user's input. The next block embeds answer in the insert at of List block to insert the user input at the first position of the list. The next block creates a speech bubble that displays the text Please add one more item at the third position of the list , opens a user input field, and waits for the user's input. The next block inserts the user input at the third position of the list. The next block creates a speech bubble for the sprite that displays the text The list consists now of , the length of the list, and the text items. for 4 seconds. The last block creates a speech bubble that displays The list includes the following: followed by the contents of the list for 4 seconds.

OUTPUT

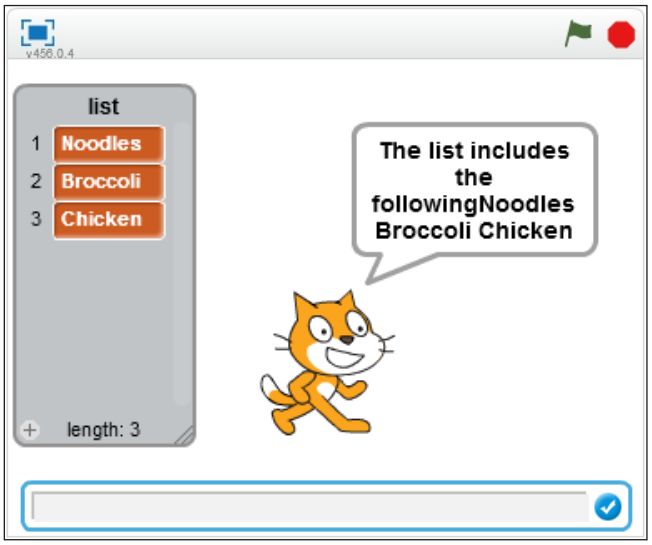


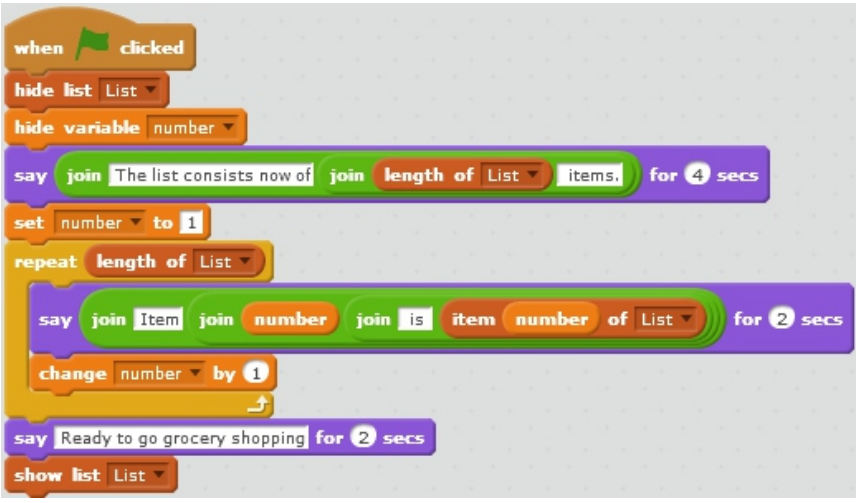
Table 8-6 lists the blocks and describes the actions used in this activity.

Table 8-6. Code Blocks in Add Items at Specific Positions

Blocks	Actions
	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
	The sprite gets a speech bubble that displays Please add one more item at the first position of the list. , opens a user input field, and waits for user input.
	Insert the specified value at the first position in the list.
	Hold and report the current user input value.
	The sprite gets a speech bubble that displays Please add one more item at the third position of the list. , opens a user input field, and waits for user input.
	Insert the specified value at the third position in the list.
	Hold and report the current user input value.
	The sprite gets a speech bubble that displays the specified text or value for 4 seconds.
	Join the two values that have been specified in the block and report the result.
	Join the two values that have been specified in the block and report the result.
	Hold and report the length of the specified list.
	The sprite gets a speech bubble that displays the specified text or value for 4 seconds.
	Join the two values that have been specified in the block and report the result.
	Hold and report the current values in List.

Activity 8-7 Read the List Back to Me

This activity shows you how to sequentially display each item in a list along with its index number (position) Once again, it uses the List grocery list. In addition, you'll need to create a variable called **number**. Script 8-7 starts running when the user clicks the green flag. The next block hides the list's monitor from the stage area. The next block of code hides the monitor for the number variable from the stage area. The next block creates a speech bubble that displays.



Script 8-7. Read the list

The list consists now of , the length of the list, and the text items. for 4 seconds. The next block assigns the value 1 to the variable called number . Next, by embedding length of List in a repeat block, you can instruct the C block to repeat the sequence of actions within for all the index numbers in the list. First, it creates a speech bubble that displays the text Item , the value of the number variable, the text is , and the item in the list at the same position as the value of the number variable. So, for activity, if the current value of the number variable is 2 , then the block returns the item in the list at position 2.

The next block in the sequence adds 1 to the current value of the number variable. After the loop completes all its passes, the next block creates a speech bubble that displays Ready to go grocery shopping. for 2 seconds. The last block shows the list's monitor in the stage area.

Table 8-7 lists the blocks and describes the actions used in this activity.

OUTPUT

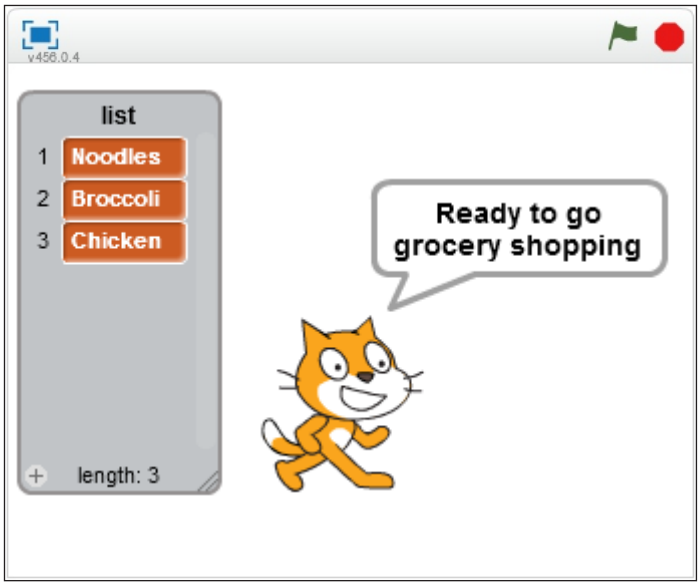
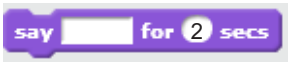
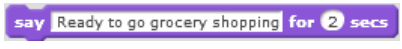
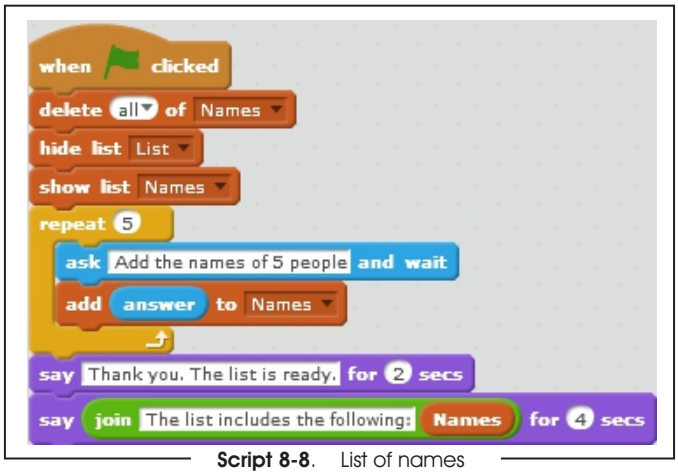


Table 8-7. Code Blocks in Read the List Back to Me

Blocks	Actions
	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
	Hide the specified list's (List) monitor from the stage area.
	Hide the specified variable's (number) monitor from the stage area.
	The sprite gets a speech bubble that displays the specified text or value for 4 seconds.
	Join the two values that have been specified in the block and report the result.
	Join the two values that have been specified in the block and report the result.
	Hold and report the length of the specified list.
	Set the current value of the variable called number to 1.
	Repeat the actions represented by the blocks within this block a certain number of times.
	Hold and report the length of the specified list.
	The sprite gets a speech bubble that displays the specified text or value for 2 seconds.
	Join the two values that have been specified in the block and report the result.
	Join the two values that have been specified in the block and report the result.
	Hold and report the current value of the number variable.
	Join the two values that have been specified in the block and report the result.
	Hold and report the value at a certain position in List .
	Hold and report the current value of the number variable.
	Add 1 to the current value of the number variable.
	The sprite gets a speech bubble that displays Ready to go grocery shopping. for 2 seconds.
	Show the monitor in the stage area for List.

Activity 8-8: List of Names

The script asks the user to enter 5 names, which are then added to the list called **Names**. At the end, the contents of the list are displayed. Before creating Script 8-8 , make sure that the Names list is created. The script start running when the user clicks the green flag. The next block deletes all the values in Names to ensure that the list is empty. The next block hides the grocery list's monitor (List) from the stage area.



Script 8-8. List of names

The next block shows the monitor for the Names list in the stage area. Next, a 

block repeats the sequence of actions within it 5 times. The first block in the sequence creates a speech bubble that displays the text Add the names of 5 people , opens a user input field, and waits for the user's input. The next block adds the user input to the end of the Names list. When the loop is finished, action moves to the next block which creates a speech bubble that displays Thank you. The list is ready. for 2 seconds. The last block also creates a speech bubble that lasts for 4 seconds. The final speech bubble displays the text. The list includes the following: and the contents of the Names list for 4 seconds. **Table 8-8** lists the blocks and describes the actions used in this activity.

OUTPUT

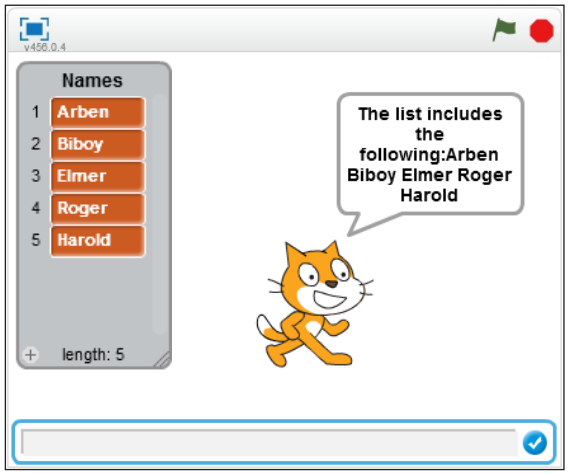


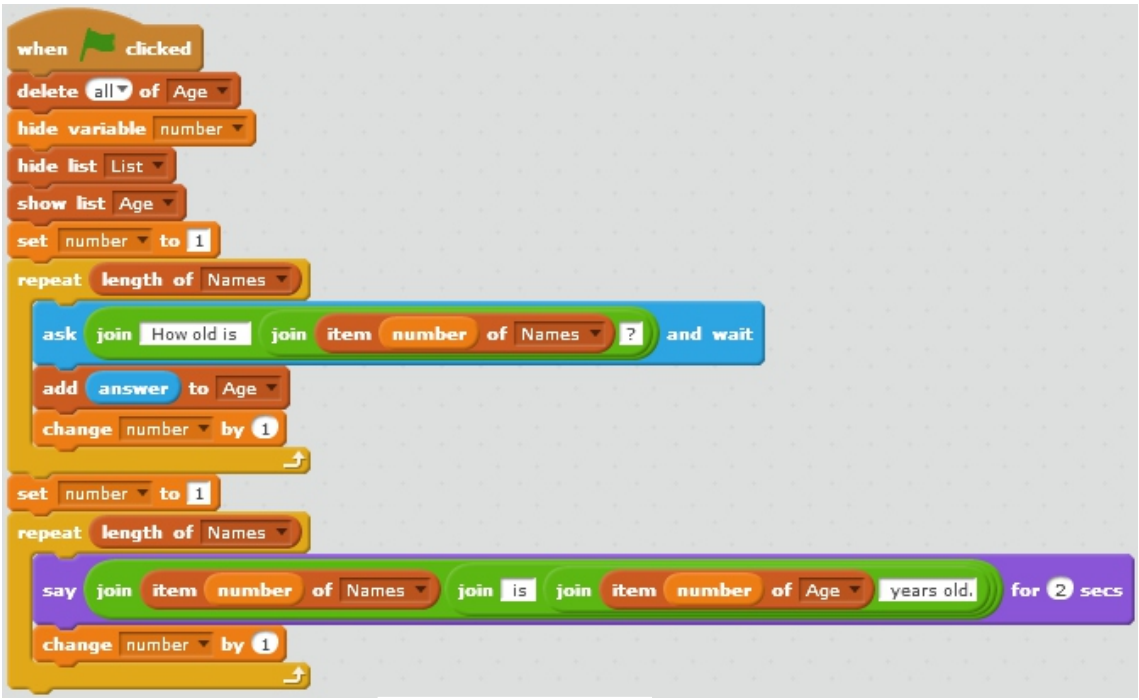
Table 8-8. Code Blocks in List of Names

Blocks	Actions
	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
	Delete all values from the list called Names .
	Hide the specified list's (List) monitor from the stage area.
	Show the monitor in the stage area for Names.
	Repeat the actions represented by the blocks within this block five times.
	The sprite gets a speech bubble that displays Add the names of 5 people , opens a user input field, and waits for user input.

add [ ] to Names	Add the specified value to the end of Names .
answer	Hold and report the current user input value.
say Thank you. The list is ready. for 2 secs	The sprite gets a speech bubble that displays Thank you. The list is ready. for 2 seconds.
say [ ] for 4 secs	The sprite gets a speech bubble that displays the specified text or value for 4 seconds.
join The list includes the following: [ ]	Join the two values that have been specified in the block and report the result.
Names	Hold and report the current values in Names .

Activity 8-9: Relationship Between Lists

This activity demonstrates working with multiple lists. Starting with index number 1, the script sequentially asks the user for the age of each name in the list called **Names** and stores each age at the same index number (position) in a list called **Age** . The script also displays each name from Names with its corresponding age from Age . Before you begin building Script 8-9 , make sure the lists called Names and Age are created, as well as the variable called **number** .



Script 8-9. Relationship

Script 8-9 starts running when the user clicks the green flag. The next block deletes all the values in Age to ensure that it is empty to start. The next two blocks hide the monitors for the number variable and the list called List from the stage area. The next block shows the monitor for the **Age** list in the stage area. The next block assigns the value 1 to the number variable. Next, the first  block loops through the sequence of actions within it for the length of the Names list.

The first block in the sequence creates a speech bubble that displays the text How old is and the value in the Names list at the position equal to the current value of number and the ? symbol (see Figure 8-6). It also opens a user input field and waits for the user's input. The next block adds the user input to end of the Age list . The next block adds the value 1 to the number variable. After the final loop of the sequence completes, the 

block assigns the value 1 to number variable. This means that the previous value of the number variable is replaced by the value 1. Next, the second repeat block repeats the sequence of actions within it for the length of the Names list. The first block in the sequence creates a speech bubble that displays the value in the Names list at the position equal to the current value of the number variable, the text is , the value in the Age list at the position equal to the current value of number , and the text years old . for 2 seconds (see Figure 8-7). The next block adds the value 1 to the number variable. **Table 8-9** lists the blocks and describes the actions used in this activity.

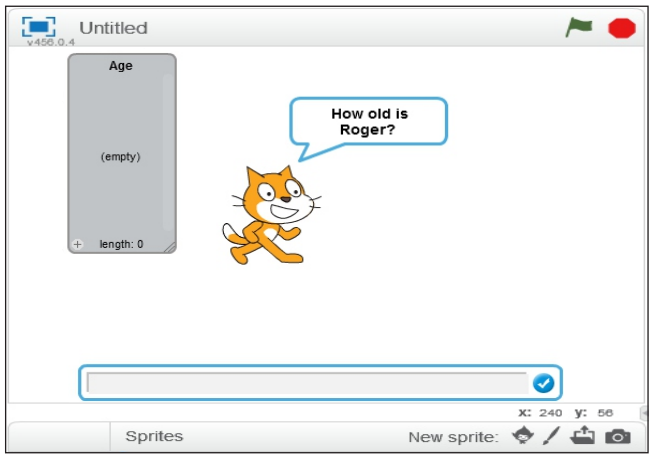


Figure 8-6. Question

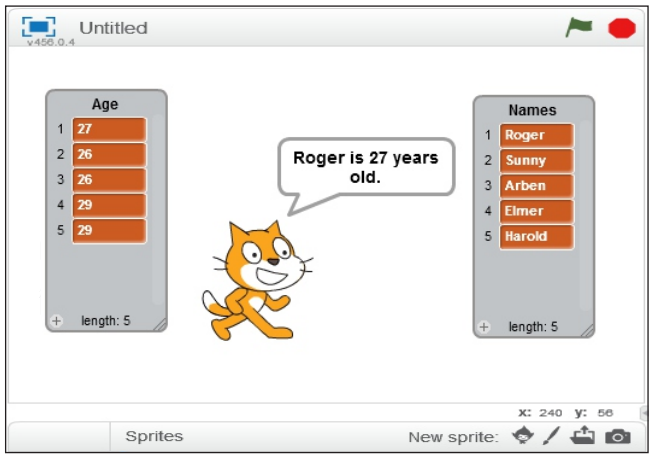


Figure 8-7. Display

Table 8-9. Code Blocks in Relationship Between Lists

Blocks	Actions
	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
	Delete all values from the list called Age .
	Hide the specified variable's (number) monitor from the stage area.
	Hide the specified list's (List) monitor from the stage area.
	Show the monitor in the stage area for Age .
	Set the current value of the variable called number to 1.
	Repeat the actions represented by the blocks within this block a certain number of times.

Hold and report the length of the specified list.

The sprite gets a speech bubble that displays a certain text, opens a user input field, and waits for user input.

Join the two values that have been specified in the block and report the result.

Join the two values that have been specified in the block and report the result.

Hold and report the value at a certain position in Names .

Hold and report the current value of the number variable.

Add the specified value to the end of Age .

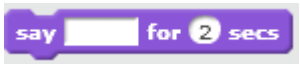
Hold and report the current user input value.

Add 1 to the current value of number .

Set the current value of number to 1.

Repeat the actions represented by the blocks within this block a certain number of times.

Hold and report the length of the specified list.



The sprite gets a speech bubble that displays the specified text or value for 2 seconds.

Join the two values that have been specified in the block and report the result.

Join the two values that have been specified in the block and report the result.

Hold and report the value at a certain position in Names .

Hold and report the current value of the number variable.

Join the two values that have been specified in the block and report the result.

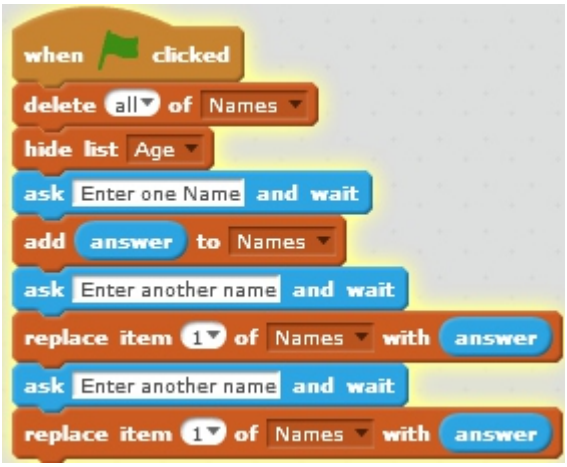
Hold and report the value at a certain position in Age .

Hold and report the current value of number .

Add 1 to the current value of number .

Activity 8-10: Replace an Item by User Input

You can also replace specific items in a list with user input. The script asks the user to enter a name and uses this name to replace the value (the previous name) at the first position of the list called **Names**. (Before creating this script, make sure that the Names list is created.) Script 8-10 starts running when the user clicks the green flag. The next block deletes all the values in the Names list. The next block hides the monitor for the Age list from the stage area. The next block creates a speech bubble that displays the text Enter one name opens a user input field, and waits for the user's input. The next block adds the user input to the end of the Names list. The next block creates a speech bubble that displays Enter another name , opens a user input field, and waits for the user's input. The next block replaces the value at the first position in the Names list with the user input. The next block creates a speech bubble and displays Enter another name , opens a user input field, and waits for the user's input. The next block replaces the value at the first position in the Names list with the user input. **Table 8-10** lists the blocks and describes the actions used in this activity.



Script 8-10. Replace an item

Table 8-10. Code Blocks in Replace an Item by User Input

Blocks	Actions
when clicked	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
delete all of Names	Delete all values from the list called Names .
hide list Age	Hide the specified list's (Age) monitor from the stage area.
ask Enter one Name and wait	The sprite gets a speech bubble that displays Enter one name , opens a user input field, and waits for user input.
add to Names	Add the specified value to the end of Names .
answer	Hold and report the current user input value.
ask Enter another name and wait	The sprite gets a speech bubble that displays Enter another name , opens a user input field, and waits for user input.
replace item 1 of Names with	Replace the value at the first position in Names with another value.
answer	Hold and report the current user input value.

The sprite gets a speech bubble that displays Enter another name , opens a user input field, and waits for user input.

Replace the value at the first position in Names with another value.

Hold and report the current user input value.

Activity 8-11: Replace an Item with a Variable

This activity demonstrates that the value in a list can also be the value of a variable. The script replaces the value at the first position in the list called Names with the current value of a variable. Before creating Script 8-11 , make sure that the list called Names and the variable called name are created. The script starts running when the user clicks the green flag. The next block deletes all the values in the Names list.

The next block shows the monitor for the name variable on the stage area, and then hides the monitor for the Age list from the stage area. The next block creates a speech bubble that displays the text Enter one name , opens a user input field, and waits for the user's input. The next block assigns the previous user input to the name variable. The next block adds the value of the name variable to the end of the list.

The next block of code stops the script for 4 seconds. The next block assigns the value John to the name variable. The next block replaces the value at the first position of the list with the current value (John) of the name variable. The next block of code stops the script for 4 seconds.

The next block of code assigns the value Lea to the name variable. The next block replaces the value at the first position of the Names list with the current value (Lea) of the name variable.

Table 8-11 lists the blocks and describes the actions used in this activity.

Script 8-11. Replace with variable

OUTPUT

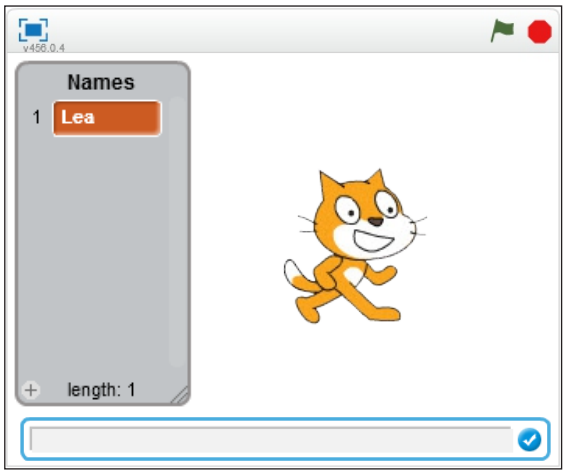


Table 8-11. Code Blocks in Replace an Item with a Variable

Blocks	Actions
	Clicking the green flag activates the script. The green flag is the trigger to start the script running.
	Delete all values from the Names list.
	Show the specified variable's (name) monitor in the stage area.
	Hide the specified list's (Age) monitor from the stage area.
	The sprite gets a speech bubble that displays Enter one name , opens a user input field, and waits for user input.
	Set the current value of the variable called name to a certain value.
	Hold and report the current user input value.
	Add the specified value to the end of Names .
	Hold and report the current value of the name variable.
	The script waits 4 seconds. No actions are performed for 4 seconds.
	Set the current value of the name variable to the value John .
	Replace the value at the first position in Names with another value.
	Hold and report the current value of the name variable.
	The script waits 4 seconds. No actions are performed for 4 seconds.
	Set the current value of name to the value Lea .
	Replace the value at the first position in Names with another value.
	Hold and report the current value of the name variable.

Summary

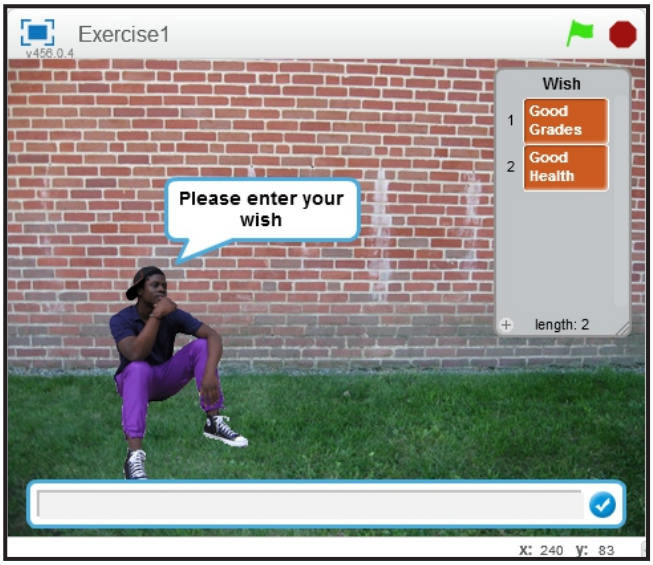
In this chapter, you learned about lists. Most computer programming languages use lists, although they're sometimes called arrays . The difference between a list and a variable is that a list can hold multiple values (items) at a time. You learned where to create lists in Scratch. You also learned how to use the blocks of code that control lists. In the next chapter, you will learn how to use a webcam to interact with Scratch; for example, you'll be using a webcam to control a sprite.

Snap Script

a Short hands-on activity

1. Create a list of three items. The user is granted three wishes. The user needs to enter his or her three wishes and these wishes will make up the list. Show the list in the stage area.

Output:



2. Replace the third wish in the previous list (Exercise 1) with a new user input.

Output: