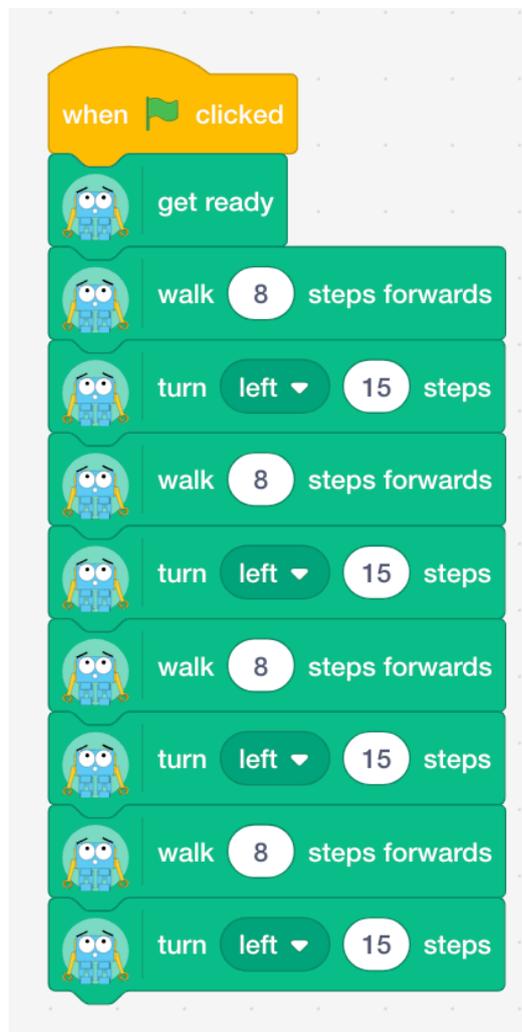


Solutions

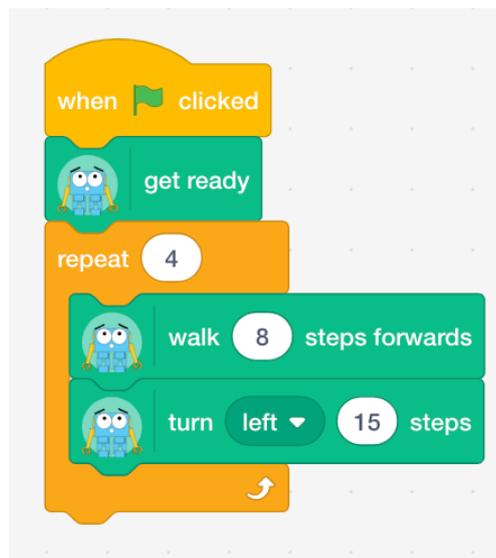
Programming Concepts 1

LESSON 1.5

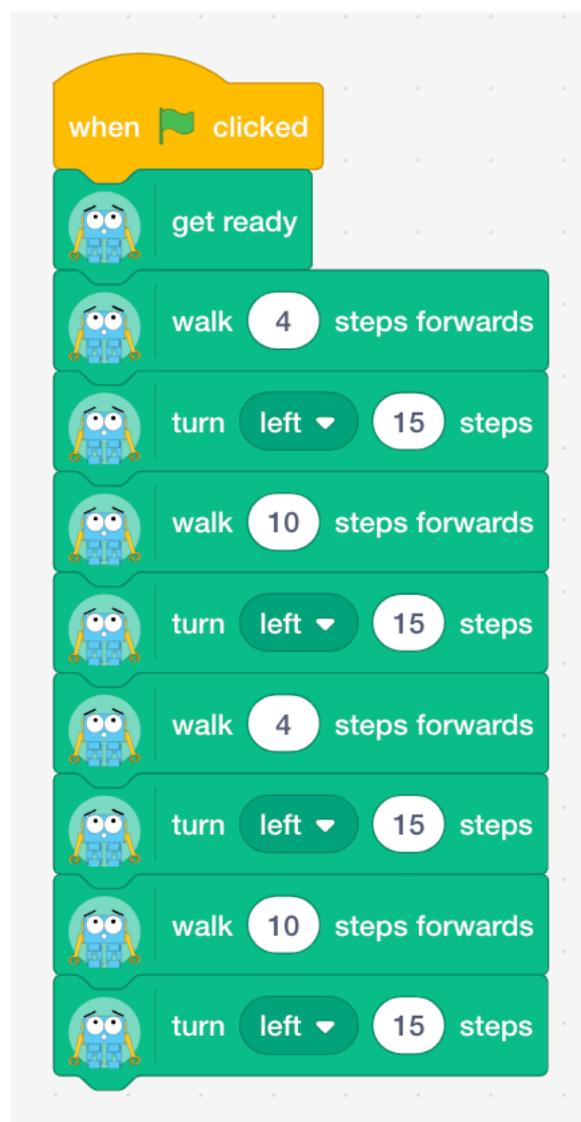
The following are example code blocks to create different shapes, highlighting the difference between using and not using loops. Below is one way to program Marty to walk in a square shape.



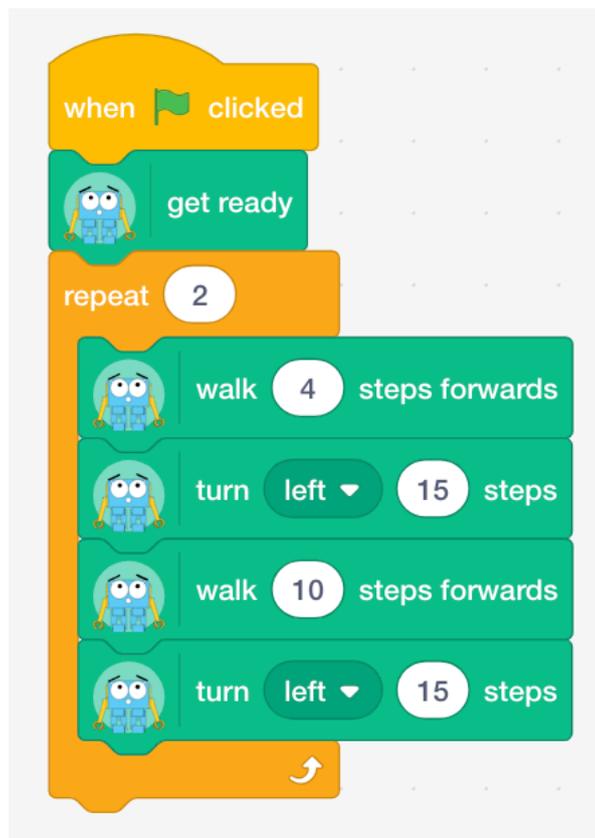
The square shape again but this time using loops.



And the following is an example of getting Marty to walk in a rectangle.

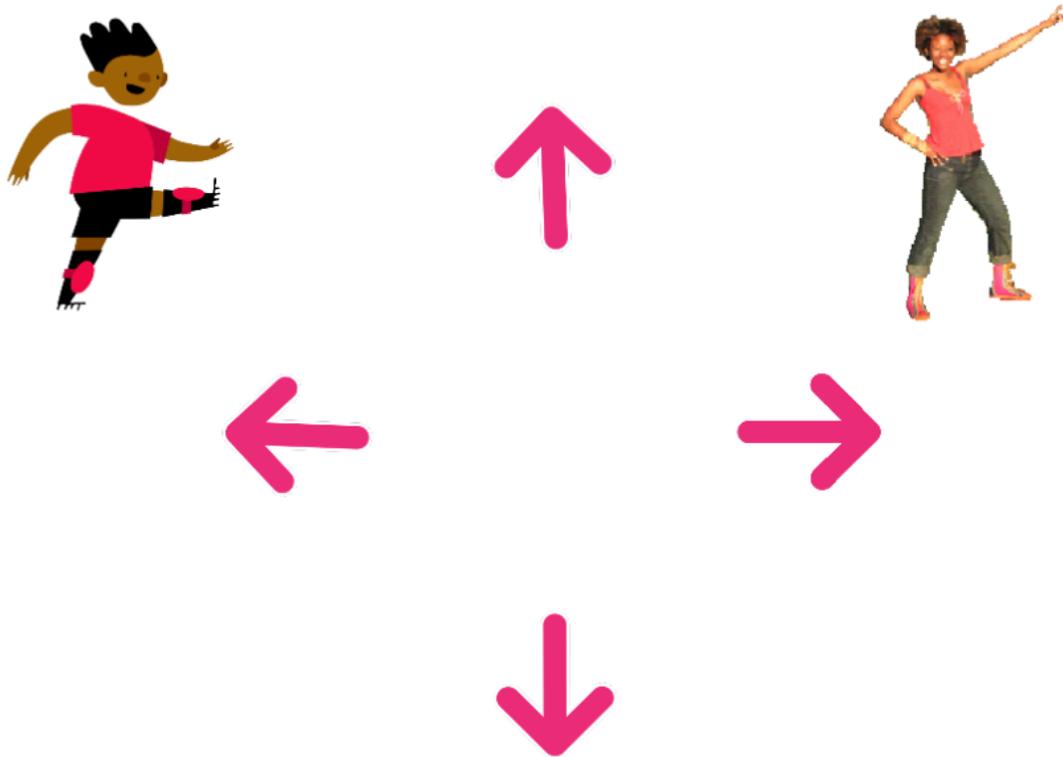


The rectangle shape again but this time using loops.

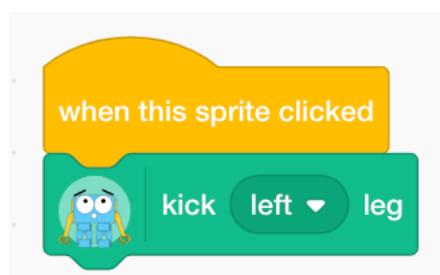


LESSON 1.6

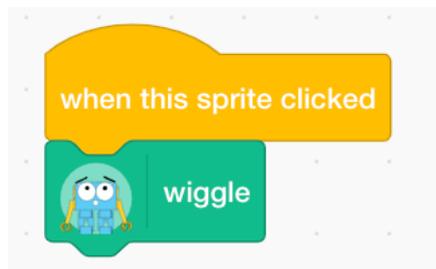
The following blocks make up an example of the remote control program that students are asked to build in this lesson. Additional features like dancing and kicking have been added onto this remote control. The stage on Scratch in our example has six sprites on the screen like below,



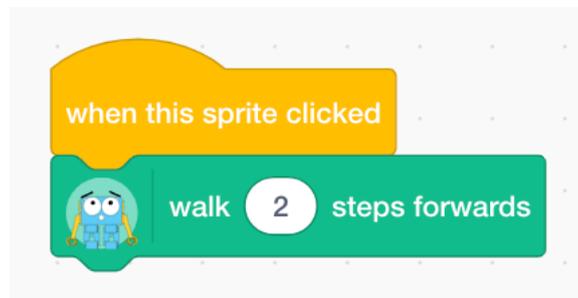
In turn, here is the code for each of the sprites. Starting with the kicking boy sprite in the top left of the stage.



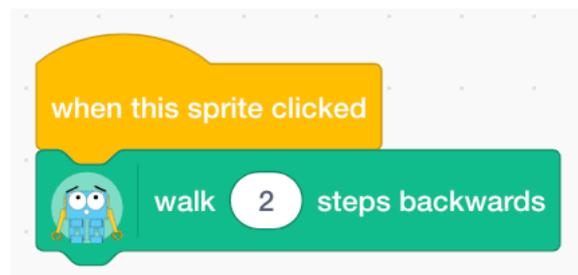
Next, is the dancing girl sprite in the top right of the stage.



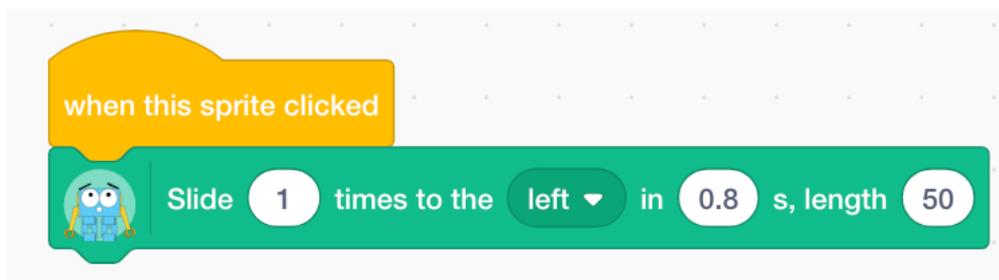
Then the up arrow in the top middle of the stage.



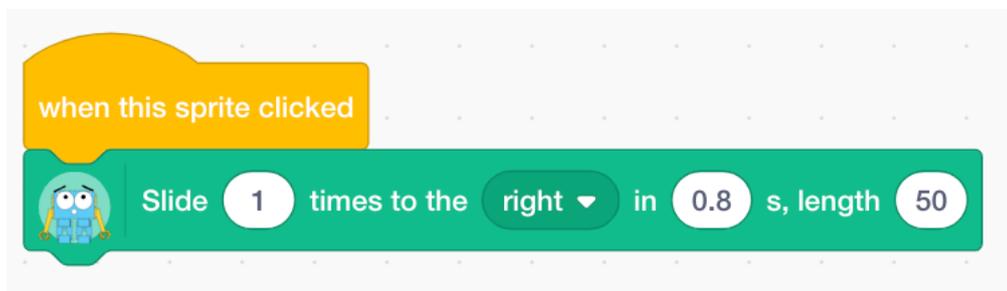
The downwards arrow near the bottom of the stage.



The arrow pointing towards the left of the screen.



And finally, the arrow pointing towards the right of the screen.



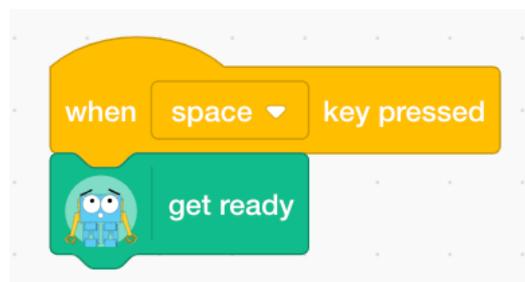
Together, these code blocks make up a basic remote control that works by clicking on different sprites on the stage. Students may take a different approach by clicking buttons on their keyboards, clicking on backdrops on the stage or using any of the other event blocks that we have covered in the lesson.

LESSON 1.7

Below is an example of how to program Marty to do two movements at once – lifting both arms up.



We have then created a reset so that when we click on the space key, Marty gets ready and returns to his default positions. The code for this is below.

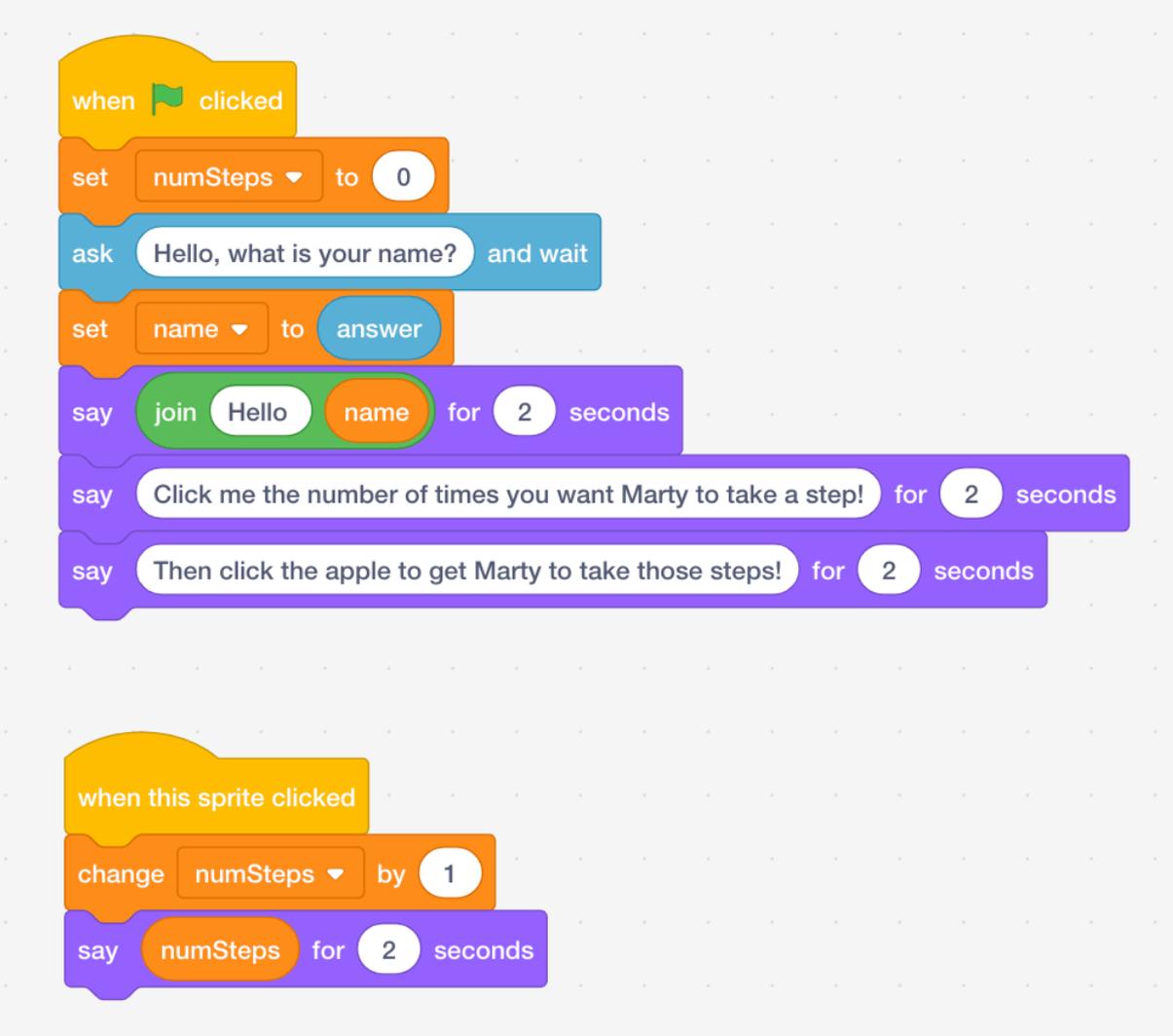


LESSON 1.8

The following code blocks demonstrate how to build a counting program that takes in the users name, counts when we click on a sprite and gets Marty to walk those number of steps when we click on an additional sprite.

We have two sprites on the screen: Scratch cat and an apple. There are also two variables: one to hold the name of the user and another to keep count of the number of steps that we want Marty to take.

Here are the code blocks for Scratch cat:

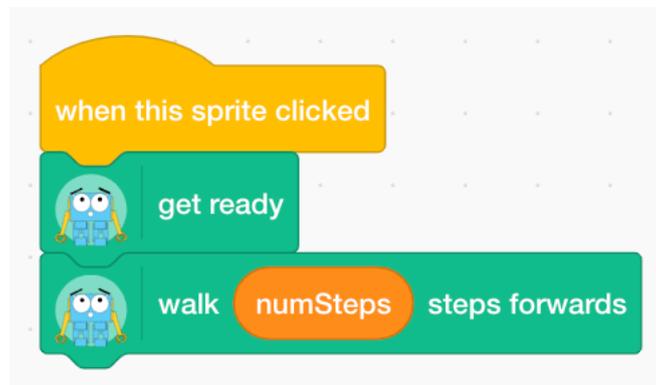


```
when clicked
  set numSteps to 0
  ask Hello, what is your name? and wait
  set name to answer
  say join Hello name for 2 seconds
  say Click me the number of times you want Marty to take a step! for 2 seconds
  say Then click the apple to get Marty to take those steps! for 2 seconds

when this sprite clicked
  change numSteps by 1
  say numSteps for 2 seconds
```

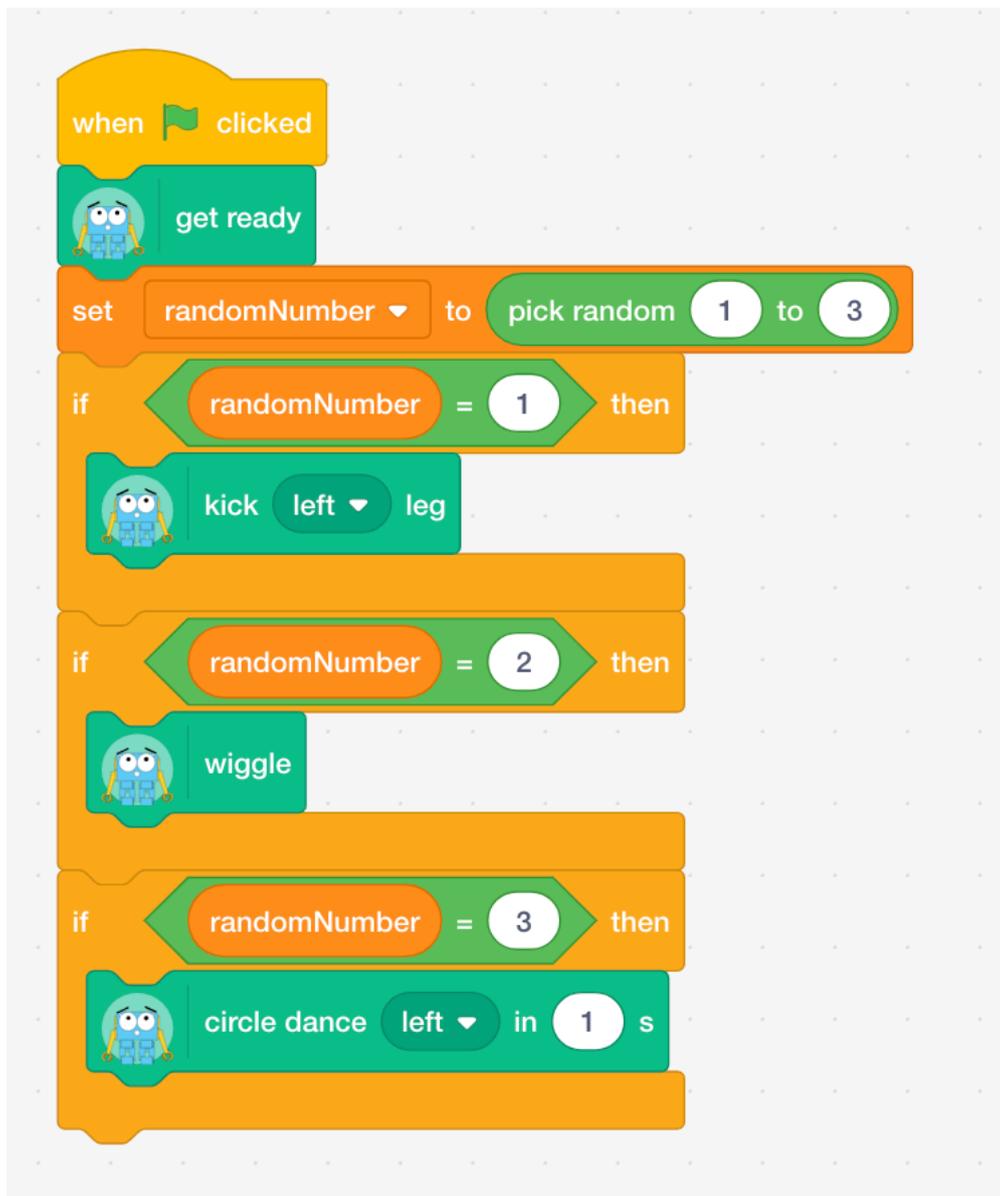
The image shows two code blocks for Scratch cat. The first block is triggered by a 'when clicked' event and contains the following steps: set 'numSteps' to 0, ask 'Hello, what is your name?' and wait, set 'name' to the answer, say 'Hello' followed by the user's name for 2 seconds, say 'Click me the number of times you want Marty to take a step!' for 2 seconds, and say 'Then click the apple to get Marty to take those steps!' for 2 seconds. The second block is triggered by 'when this sprite clicked' and contains: change 'numSteps' by 1, and say 'numSteps' for 2 seconds.

Here are the code blocks for the apple sprite:



LESSON 1.9

Here is an example of the code blocks that are used to create a Marty Magic 8 program where we generate a random number and then program Marty to do a different move depending on what the number is that was selected. In the example blocks below we have decided only to have three different actions that Marty can do in response to the number generated but students can choose to have more if they wish.



In our example, Marty can respond to the random number in three ways – kick his left leg, wiggle or do a circle dance. The number that is generated will select the movement that he will do.