Dino Dance Party

Brush off your dancing shoes and join the dinosaur's dance party! Who will you invite? There will be music, a light show, and dance moves galore. Dance routines are just like computer programs—you just follow the steps in order.

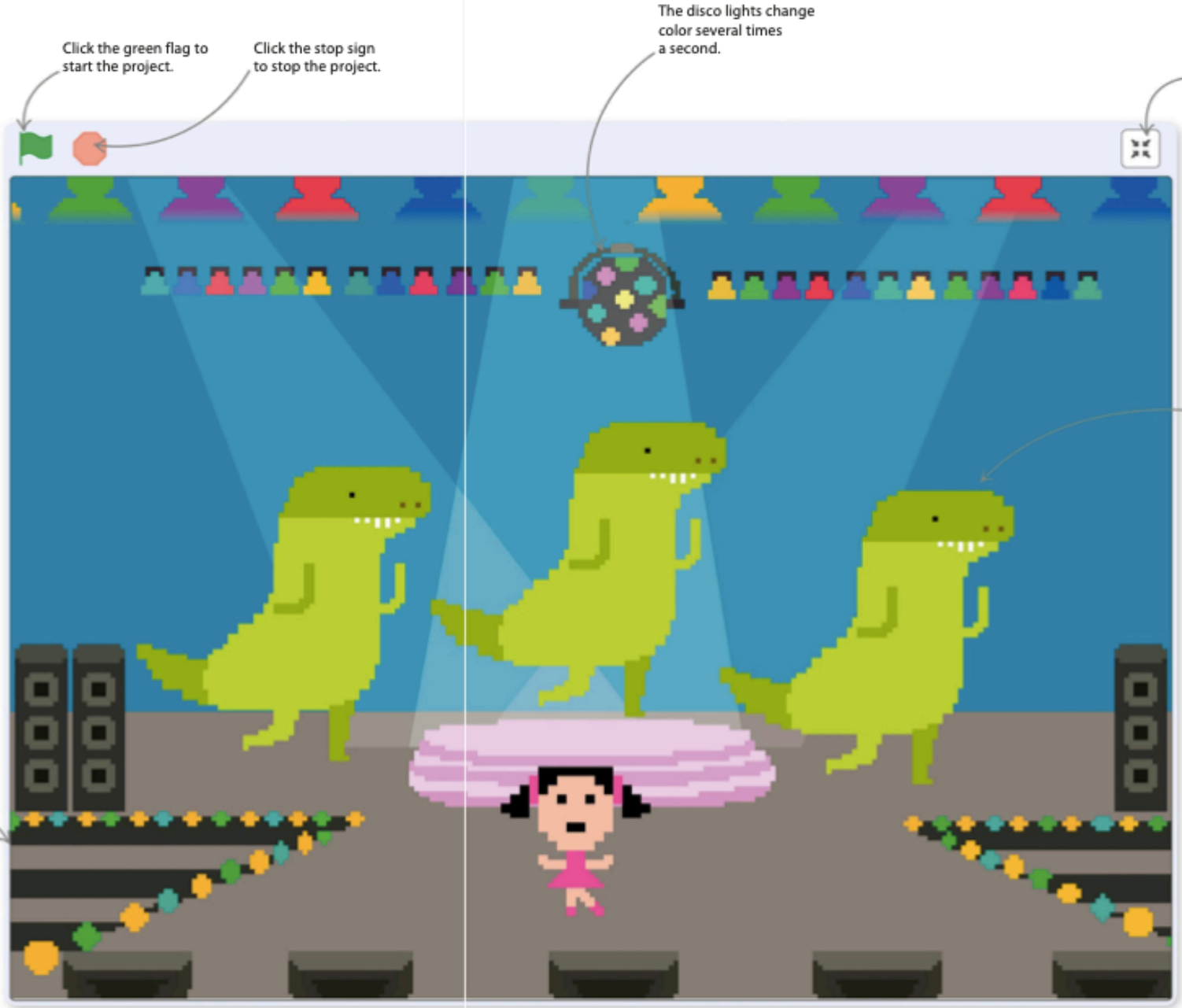
How it works

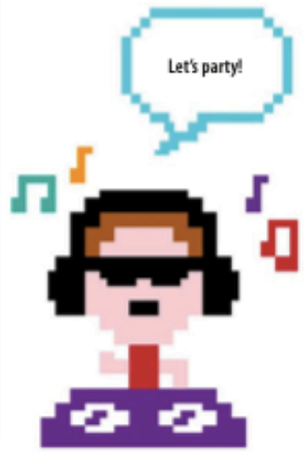
Each sprite has one or more blocks of code that program its dance moves. Some simply turn from side to side, but others glide across the dance floor or perform more varied moves. You can add as many dancers as you like.

◁ **Dinosaur**
After you've created a dancing dinosaur, you can duplicate this sprite to make a group of dinosaurs dancing in rhythm.

The "Spotlight" backdrop sets the scene for the dance party.

◁ **Ballerina**
To add a touch of class, the ballerina will perform a more complicated dance routine.

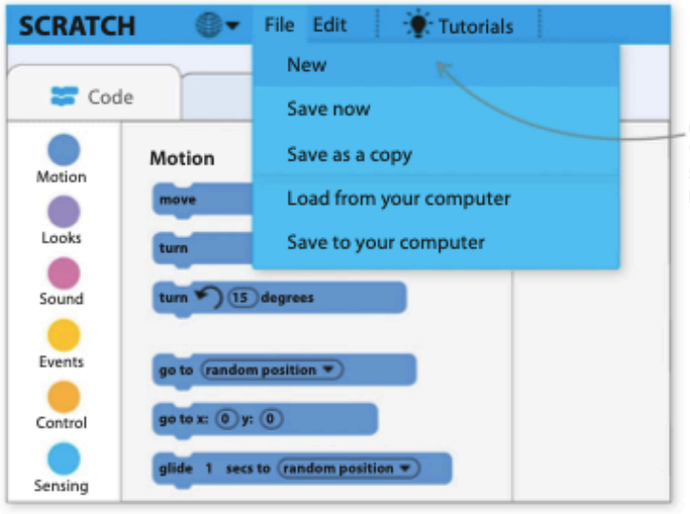




Dancing dinosaur

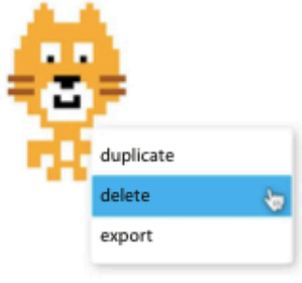
Scratch has lots of ready-made sprites for your project in the sprites library. Many of the sprites have several "costumes," each showing the sprite in a different pose. If you make a sprite switch costumes quickly, it looks like it's moving.

1 First, start a fresh Scratch project. From the main Scratch website, click on Create at the top. If a Scratch project is already open, click on the File menu above the stage and select "New".

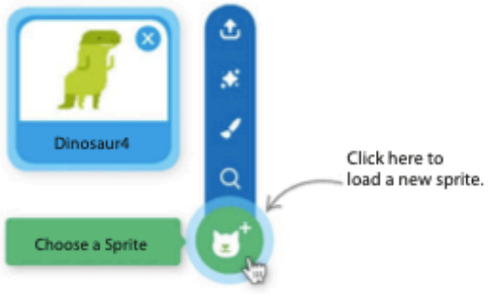


Click on "New" to start a fresh project.

2 New projects always start with the cat sprite, but you don't need it this time. To delete it, right-click on the cat (or control/shift-click on a one-button mouse) and select "delete". The cat will disappear.



3 To load a new sprite, click on the small sprite symbol in the sprites list just below the stage. A window with a huge selection of sprites will open. Choose Dinosaur4. It will now appear on the stage and in the sprites list.

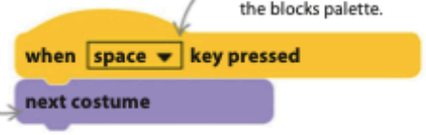


Click here to load a new sprite.

4 Make this simple code for Dinosaur4. Look carefully, and you'll see the code runs when the space bar is pressed—not when the green flag is clicked.

You can find yellow blocks by clicking on Events in the blocks palette.

Click on Looks to find purple blocks.



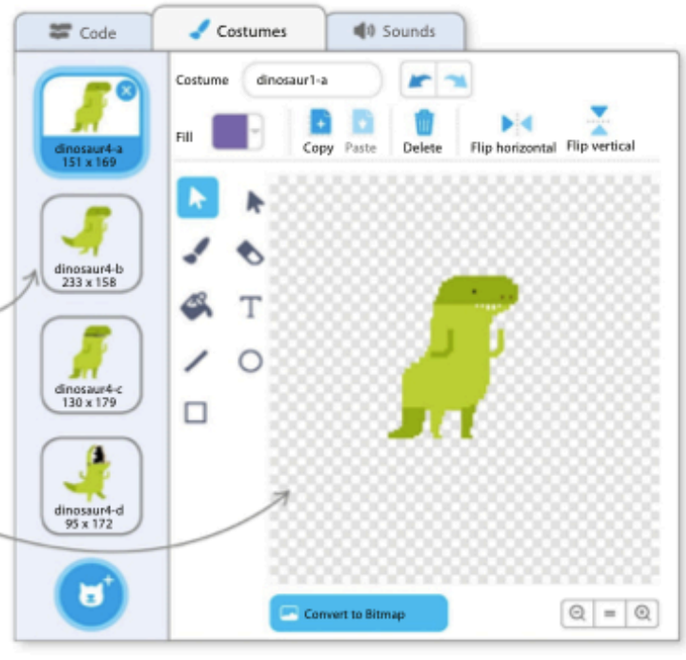
5 Look at the dinosaur on the stage and press the space bar. Every time you press it, the dinosaur will change its pose. It's still the Dinosaur4 sprite, but the way it looks keeps changing. Each different pose is called a costume and can be used to make a sprite appear to do different things.

Each pose is a different costume belonging to the dinosaur sprite.

6 Click on the Costumes tab at the top of the blocks palette to see all the dinosaur's costumes. Press the space bar to trigger the "next costume" block, and you'll see the dinosaur's costumes changing in the sprites list and on the stage.

Each costume has a different name.

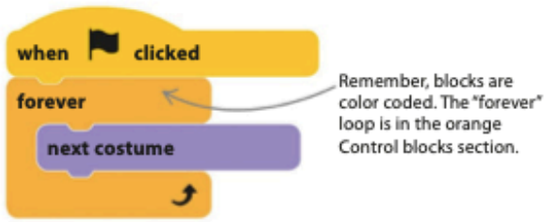
This part of the Scratch window is called the paint editor. Later, you'll find out how to use it to create your own sprites and backdrops.



Dance steps

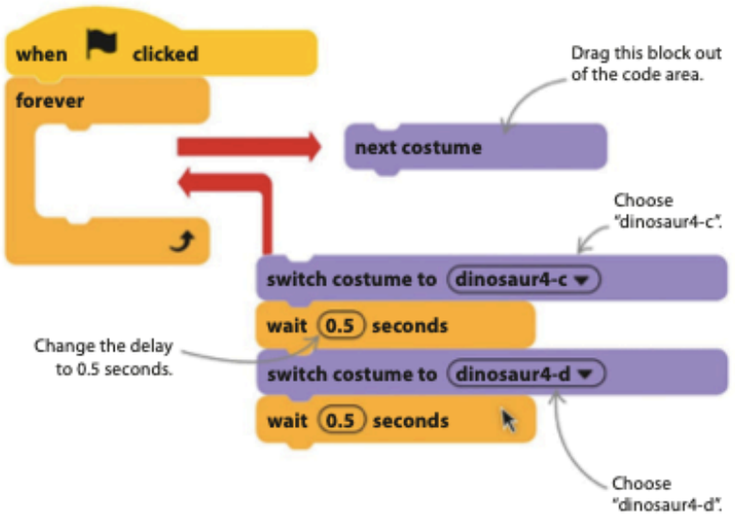
By using loops, you can make the dinosaur change its costume repeatedly, making it appear to move. Changing pictures quickly to give the illusion of movement is called animation.

7 Click on the Code tab at the top of the Scratch window to go back to the dinosaur's code blocks and add this code. Before you try it, read through the code and see wheher you can figure out what it does.



8 Click the green flag above the stage to run the code. You'll see the dinosaur move wildly as it loops through all its costumes at high speed. To make a neater dance, the next step will limit the number of costumes to just two.

9 Remove the "next costume" block from the loop and replace it with the blocks shown here. The new code switches between two costumes and slows everything down with some "wait" blocks. Run the project again by clicking the green flag—the dinosaur should now dance more sensibly.



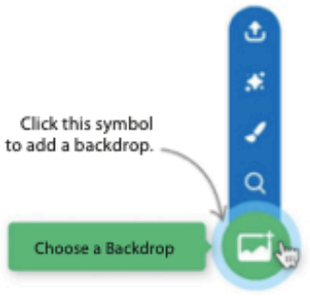
10 To add more dancing dinosaurs to the party, you can simply copy the first dinosaur. Right-click on the dinosaur in the sprites list and choose "duplicate" from the drop-down menu. A new dinosaur will appear in the sprites list.

11 Make another copy so that there are three dinosaurs in total. Click on the dinosaurs on the stage and drag each one to a good spot. Run the project. Since they all have the same code, they'll all do the same dance at the same time.

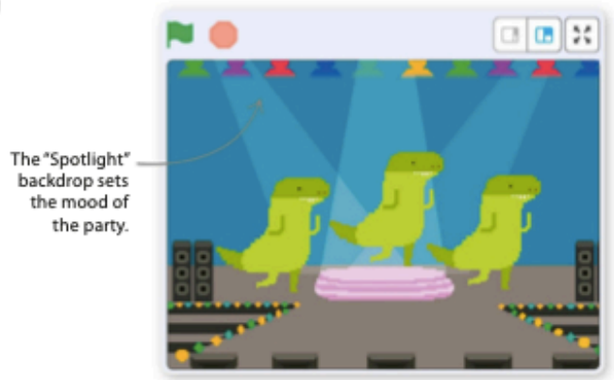
Setting the scene

The dinosaurs are dancing, but the room's a bit boring. Follow the next steps to add some decorations and music. You'll need to make some changes to the stage. Although it isn't a sprite, it can still have its own code.

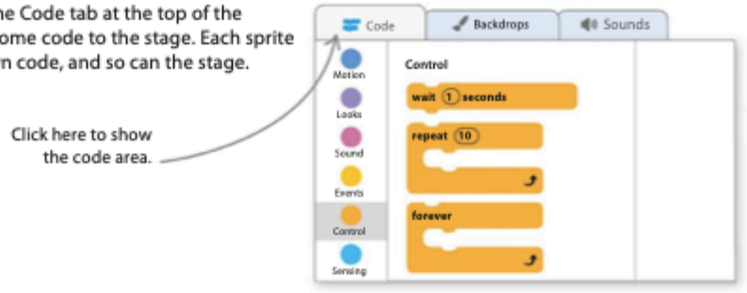
12 First, a change of scenery. The picture on the stage is called a backdrop, and you can load new ones. Look at the bottom right of the screen and click on the backdrop symbol to the right of the sprites list.



13 Search for "Spotlight" in the backdrops library and select it. This backdrop will now appear behind the dancers.

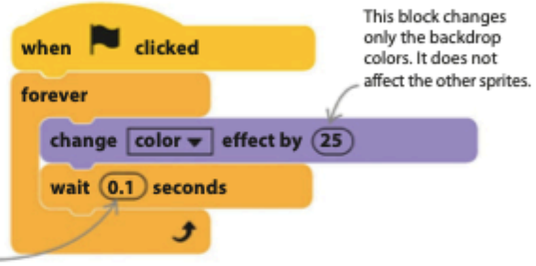


14 Now, click on the Code tab at the top of the screen to add some code to the stage. Each sprite can have its own code, and so can the stage.



Click here to show the code area.

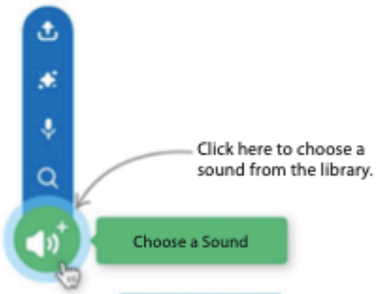
15 Add this code to make the disco lights flash. Then click the green flag to run the project—it should look like a real disco. You can experiment with the time in the "wait" block to make the lights flash faster or slower if you want.



This block changes only the backdrop colors. It does not affect the other sprites.

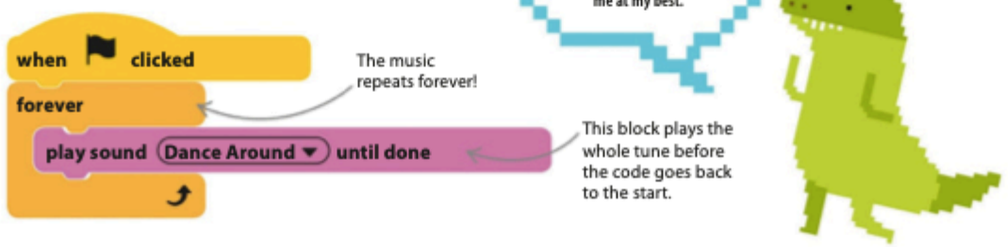
Adjust the number here to change how fast the lights flash.

16 Now it's time to add some music. Click on the Sounds tab, which is next to the Backdrops tab at the top. Then click on the speaker symbol to open Scratch's sound library. Select "Dance Around", and it will load into the stage's list of sound clips.



Click here to choose a sound from the library.

17 Click on the Code tab again and add this new code to play the music in a loop. Click the green flag to run the project again. The music should play. You now have a real party on your hands!



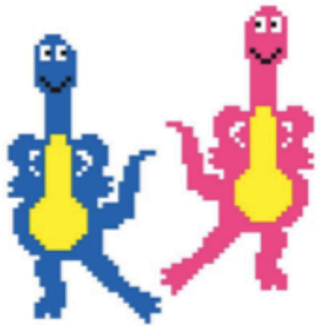
The music repeats forever!

This block plays the whole tune before the code goes back to the start.

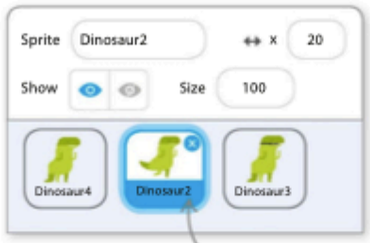
Don't forget to click the full-screen symbol above the stage to see me at my best.

Get a move on!

The dinosaurs are throwing some wicked shapes, but they're not moving around the dance floor much. You can fix that with some new code blocks that use Scratch's "move" block.

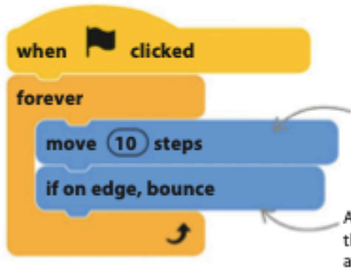


18 First, click on Dinosaur2 in the sprites list to show its code in the code area.



Click here to see Dinosaur2's code.

19 Next, add this extra code. To find the dark blue blocks, click Motion at the top of the blocks palette. What do you think the new code does?

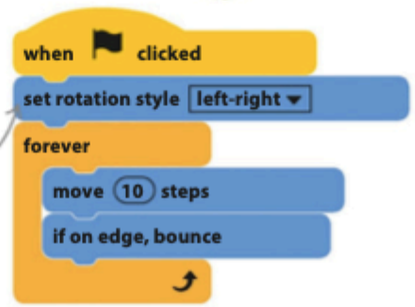


These aren't actual dinosaur steps; they're Scratch's way of measuring distances.

Add this block to turn the dinosaur around at the stage's edge.

20 Now, click the green flag, and both of Dinosaur2's code blocks will run at the same time. The sprite will move all the way across the stage and then turn around and dance back. But you'll notice that it dances back upside down!

21 To prevent the blood from rushing to the dinosaur's tiny brain, add the "set rotation style" block like this. You now have the power to choose whether the dinosaur dances on its head or not.

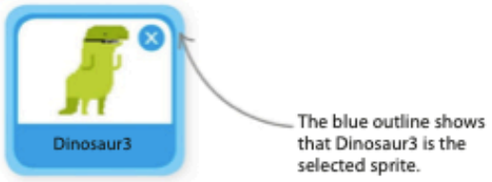


Select "left-right" in the drop-down menu to keep the dinosaur upright.

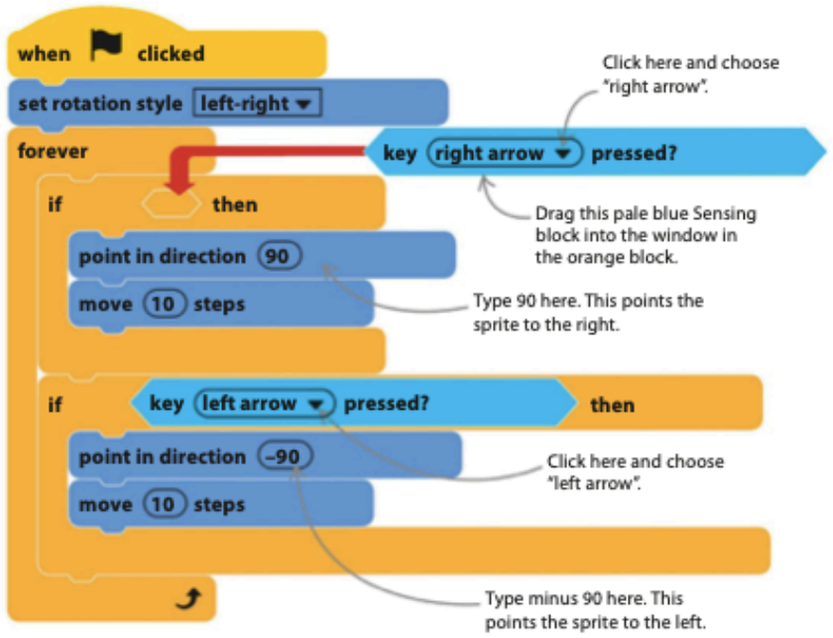
Keyboard control

Ever dreamed of taking control of your very own dinosaur? The next bit of code will give you keyboard control of Dinosaur3's movements; you'll be able to move the dinosaur across the stage with the right and left arrow keys.

22 Click on Dinosaur3 in the sprites list so you can edit its code.



23 Add this code to the code area. It's quite complicated, so make sure you get everything in the right place. The "if then" block is in the orange Control blocks section. It's a special block that chooses whether or not to run the blocks inside it by asking a question. Take care to ensure that both "if then" blocks are inside the "forever" loop and not inside each other.

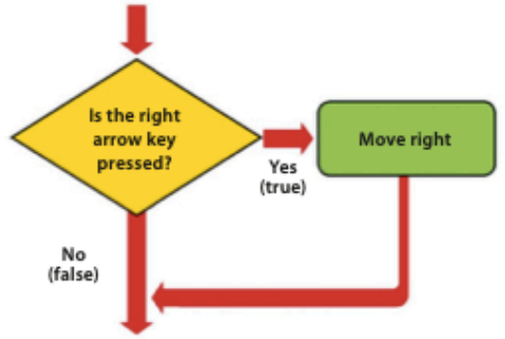


24 Before you run the code, read through it carefully and see whether you can understand how it works. If the right arrow key is pressed, blocks that make the sprite point right and move are run. If the left arrow key is pressed, blocks that make the sprite point left and move are run. If neither is pressed, no blocks are run, and the dinosaur stays put.

EXPERT TIPS

Making choices

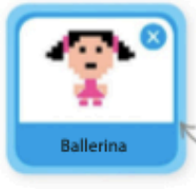
You make choices all the time. If you're hungry, you decide to eat; if not, you don't. Computer programs can also make choices between different options. One way to make them do this is to use an "if then" instruction, which is used in lots of programming languages. In Scratch, the "if then" block includes a statement or a question and runs the code inside the block only if the statement is true (or the answer is yes).



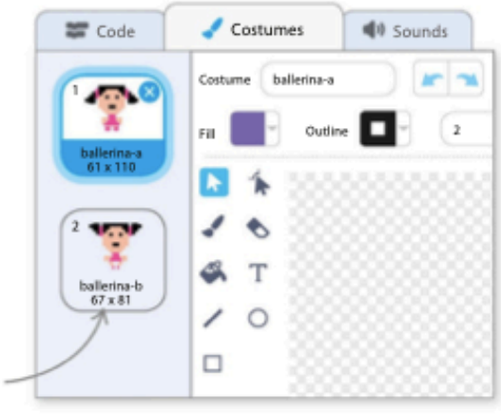
Add a ballerina

The dinosaurs are dancing, but it's not much of a party without some friends. A ballerina is going to join the fun and will do a routine. Her code will show you how to create more complicated dance routines.

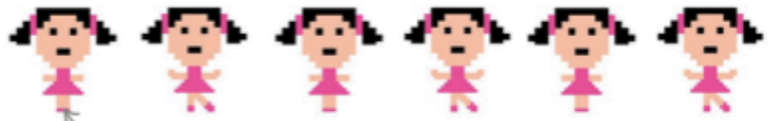
25 Click on the sprite symbol in the sprites list and load the ballerina. Then use your mouse to drag the sprite to a good spot on the stage. To give the ballerina some code, make sure she's selected in the sprites list—the selected sprite has a blue outline.



26 You can see all the costumes of a sprite by clicking on the Costumes tab when the sprite is selected. The ballerina has four costumes, and switching between them will make her dance a beautiful ballet.

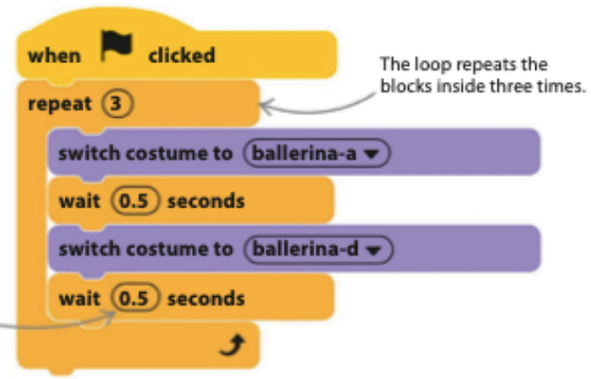


27 Using the names of the different costumes, you can design a dance routine for the ballerina, like the one shown here. Each step in the dance will become an instruction block in the code.



Costume ballerina-a then ballerina-d, repeated three times.

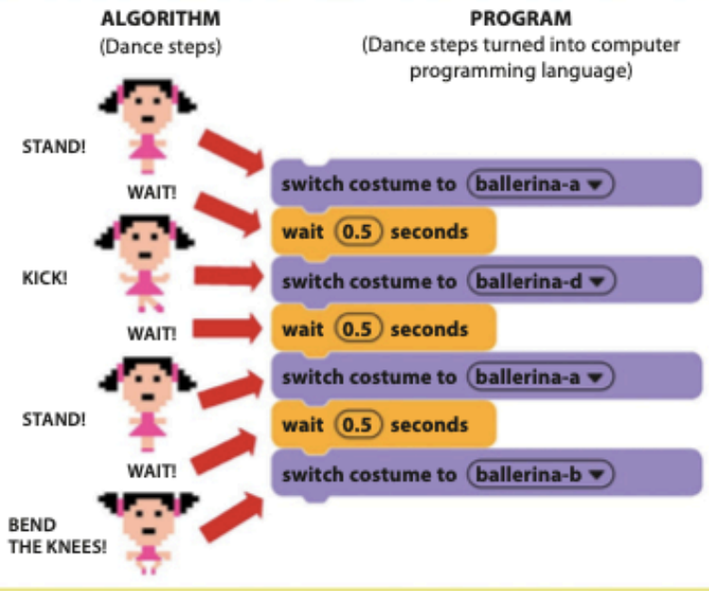
28 Build this code to create the ballerina's first dance. There's no "forever" loop—instead, the code uses a "repeat" loop that runs a fixed number of times before moving on to the next block. Run the project to see her perform the dance routine.



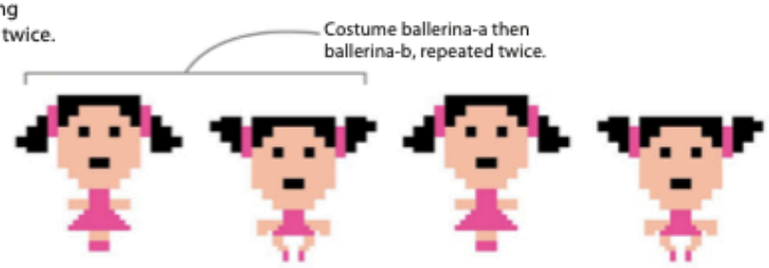
LINGO

Algorithms

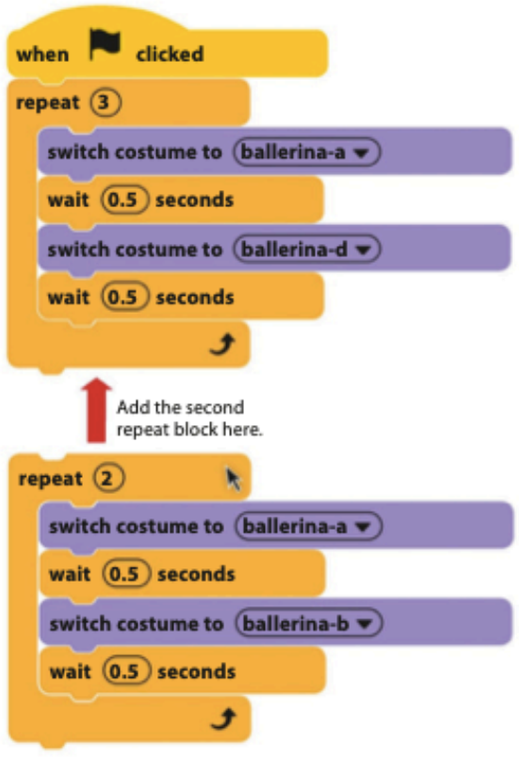
An algorithm is a series of simple, step-by-step instructions that together carry out a particular task. In this project, you converted the ballerina's dance routine (an algorithm) into a program. Every computer program has an algorithm at its heart. Programming is translating the steps of the algorithm into a computer programming language that the computer understands.



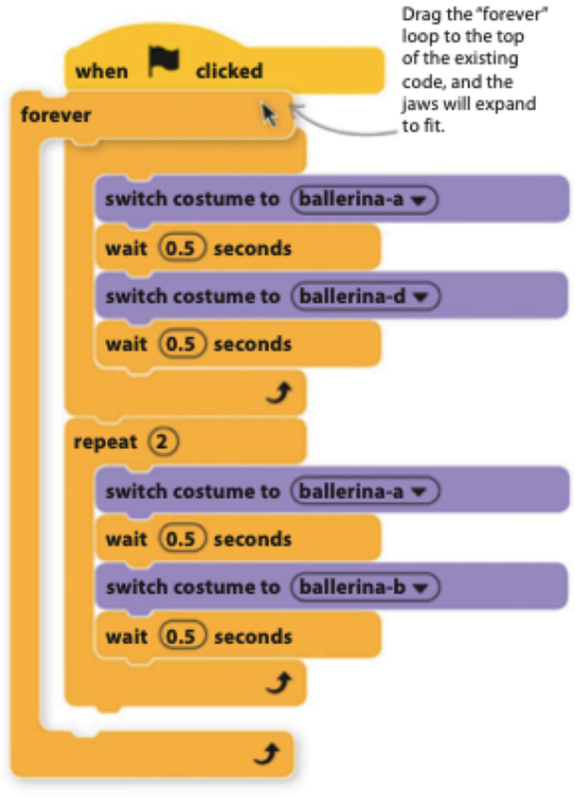
29 Now for the second part of the ballerina's routine. After flexing her leg three times, she'll dip twice.



30 Add the blocks shown here to the bottom of the ballerina's code, after the first "repeat" block.



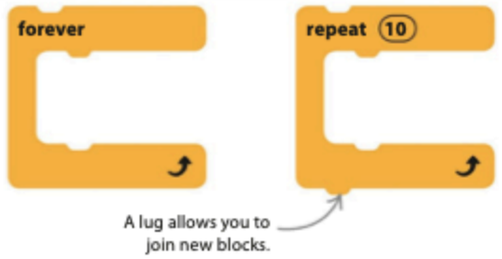
31 Next, click the green flag, and you'll see the ballerina do her full routine. But she'll do the routine only once. To make the dance go on, you can wrap the whole body of the code in a "forever" loop. Loops inside loops!



EXPERT TIPS

Repeat loops and forever loops

Look at the bottom of the two types of loops you've used so far. Which one can have blocks attached to it? You might notice that the "repeat" block has a small lug on the bottom, but the "forever" block doesn't. There's no lug on a "forever" loop because it goes on forever, so there's no point adding blocks after it. A "repeat" block, however, runs a fixed number of times, and the code then continues.

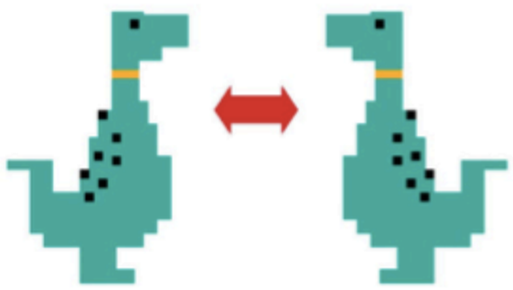


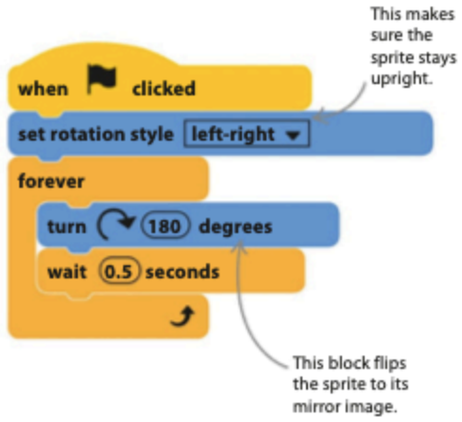
Hacks and tweaks

You can add as many dancers as you like to this project. There are lots of sprites in Scratch that have several costumes, and even those with only a single costume can be instructed to dance by flipping left to right or by jumping in the air.

▽ **Turn around**

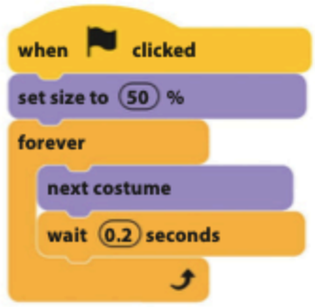
You can make any character face the other way by using a "turn 180 degrees" block. Just add this block before the end of the "forever" loop to make your sprite's dance switch direction each time.





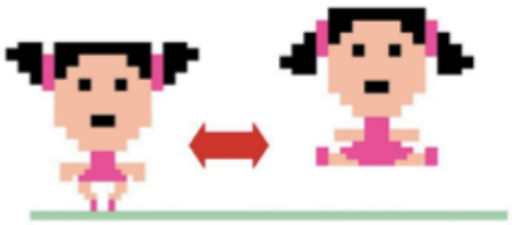
▷ **Dance off!**

Look in the library for other dancing sprites. They have lots of costumes showing different dance postures. Start off with some simple code like this one that shows all the costumes in order. Then choose the costumes that work best together and switch between them. Add loops to extend the dance or add sensing blocks to give you keyboard control.



▽ **Might as well jump!**

Add another ballerina, and make her jump in the air with this code. The change of costume makes it seem like the ballerina is really jumping. Experiment with the timing to make the dance match the music.



TRY THIS

Shout!

Add this short bit of code to every one of your sprites. When you press the x key, all the sprites will shout "Party!"