



ScratchJr Coding Teacher Guide





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LESSON 1

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How to Make Character Move

This lesson introduces the app and helps the student write their first program which makes the character move in the selected scene.



Have students watch the video first, and then try to duplicate what they saw in the video. If they are having trouble getting started, play the video for them again, or guide them through the following steps.

During this lesson, students should learn how to:

- 1. Open the ScratchJr app
- 2. Click the + to create a new project
- 3. Delete the default character
- 4. Add a different character
- 5. Click the landscape button at the top to add a new background
- 6. Make a character move by adding and clicking on blue motion blocks
- 7. Add the green flag block, and run the program by clicking the green flag

It is not necessary for students to move perfectly through their background scene. Allow them to have free play with the motion blocks and explore what the blocks do.

Their end code may look like this:







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How to Move Two Characters

This lesson continues to show students how to make characters move, but this is the first lesson that has two characters. Students learn how to write code for two characters.



Have students watch the video first, and then try to duplicate what they saw in the video. If they are having trouble, play the video for them again, or guide them through the following steps. During this lesson, students will be able to:

- 1. Open the ScratchJr app
- 2. Click the + to create a new project
- 3. Delete the default character (also called a sprite)
- 4. Add two different characters (sprites)
- 5. Click the landscape button at the top to add a new background
- 6. Recognize that when each sprite is selected at the top left, their programming is shown at the bottom. This is a very important step and the main point of this lesson.
- 7. Select one character and add a green flag and blue motion blocks to its programming area.
- 8. Select the second character and add a green flag and blue motion blocks to its programming area.
- 9. Add a red repeat block after the blue motion blocks for both sprites
- 10. Use blue arrow button at the top to reset all characters to their starting position
- 11. Use green flag at the top to start all programming scripts





- Click white icon at the top to make script run full screen
- For sound, add another green flag, a popping noise block, and another red repeat block.

Their code may look something like this for each sprite:







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How to Change Size and Speed

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In this lesson, students learn to resize the sprites, change their speed, and make them talk.

After watching the video, if students are having trouble, play the video for them again, or guide them through the following steps.



During this lesson, students will be able to:

- 1. Create a new project, add a background, and add two characters, as they did in the previous lesson. They may choose a street and two cars like in the video, but other backgrounds and sprites will work just fine.
- 2. Select first sprite. Select purple looks blocks. Drag the resize blocks into the programming area and shrink and grow the sprite to the appropriate size.
- 3. Repeat to resize the second sprite.
- 4. Drag both sprites to the correct starting point.
- 5. Remove the resize blocks from the programming area of both sprites.
- 6. Add a green flag and blue movement blocks to both sprites so they both move from one side of the background to the other. Students can play with the forever loop before they determine the exact number of steps required.
- 7. Add a red stop block to the end of both scripts in the programming area.
- 8. Add an orange speed block, before the blue blocks on both sprites. Change one of the sprites to make them go faster or slower than the other sprite.





- Add a purple block to the winning sprite's code, to make them say "I won!"
- Make project full screen and click green flag to run the program
- Click the yellow tab at the top right of the screen and give the project a new name

The winning sprite's code will look something like this:







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How to Code Movement

In this lesson, students learn how to make characters start moving when they are touched by the user or by another character.

After watching the video, if students are having trouble, play the video for them again, or guide them through the following steps.



During this lesson, students will be able to:

- 1. Create a new project, add a background, and add two sprites, as they did in previous lessons.
- 2. Place the sprites on the scene so that the first sprite (to be clicked) is directly to the left of the second sprite (to be hit).
- 3. Select the first sprite and add blue movement blocks to make it move to the right and hit the other sprite.
- 4. Add the yellow "Start on Tap" block to the beginning of the script.
- 5. Select the second sprite and add the blue movement blocks to make it fall over.
- 6. Add the yellow "Start on Touch" block to the beginning of the script.

Optional:

- Add the red stop block to the end of all scripts.
- Notice that nothing happens when the green flag is clicked.
- Make project full screen and click green flag to run the program
- Click the yellow tab at the top right of the screen and give the project a new name

Their code will look something like this:







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How to Use Paint Editor

In this lesson, students learn to use the Paint Editor to create their own graphics and sprites.

After watching the video, if students are having trouble, play the video for them again, or guide them through the following steps.



During this lesson, students will be able to:

- 1. Create a new project and add a background.
- 2. Click + to add a new sprite, but don't select one. Instead, click the paintbrush at the top right, to draw your own.
- 3. Select a shape to draw a line, circle/ellipse, rectangle, or triangle.
- 4. Select the line width and draw more shapes
- 5. Click to use Undo and Redo
- 6. Select a different color and draw more shapes
- 7. Select the bucket and dump a color inside of a shape to fill it with that color
- 8. Click between select and rotate to arrange the shapes
- 9. Click the check mark at the top right to save the sprite and add it to the scene
- 10. Add blue movement blocks to the new sprite

Optional:

- Use the paint editor stamp tool to copy and paste shapes
- Add code to make new sprite spin fast then slow down and stop
- Make the project full screen and click green flag to run the program
- Click the yellow tab at the top right of the screen and give the project a new name

Their code may look like this:







Make a Basketball Game

In this lesson, students learn to use the repeat (looping) block and how to delete a project.

After watching the video, if students are having trouble, play the video for them again, or guide them through the following steps.



During this lesson, students will be able to:

- 1. Create a new project. Add the basketball court background (Gym).
- 2. Add two sprites; a person and a ball.
- 3. Select the person. Drag them to the left of the screen, and add the code to move them to the basketball hoop.
- 4. Change the person's script to use the orange repeat block instead of multiple blue movement blocks.
- 5. Add the green flag and the red stop block to the person's code.
- 6. Select the ball and drag it to a good starting point.
- 7. Add the same loop that was added to the person to make the ball move to the right too.
- 8. Add a second script with a loop to make the ball bounce as it moves down the court
- 9. Add the green flag and the red stop block to both scripts.





- Add the code at the end to make it look like a basket was made
- Make project full screen and click green flag to run the program
- Click the yellow tab at the top right of the screen and give the project a new name
- Go to the Home screen and hold down on a project and click the X to delete. (Only if there are extra unwanted projects.)

Their code may look something like this:









How to Make a Memory Game

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In this lesson, students learn to use the wait block and the visibility blocks. They also learn some shortcuts for copying characters and scripts.

After watching the video, if students are having trouble, play the video for them again, or guide them through the following steps.

During this lesson, students will:



- 1. Create a new project and put three sprites on the screen. Resize them if necessary, using the purple resize blocks.
- 2. Use the Paint Editor to draw a filled rectangle to be used as the card.
- 3. Drag the newly created card sprite to the scene on the top right to duplicate the card sprite. Do this twice, so that you have three cards.
- 4. Drag the cards to cover the other sprites.
- 5. Select one card and add the green flag, the purple invisible block, the orange wait block, and the purple visible block.
- 6. Drag that script to the other two cards.
- 7. Select one card and add the yellow block to run when clicked. Add the purple invisible block.
- 8. Drag that script to the other two cards.





Optional:

- Rename cards to be "Card 1", "Card 2", and "Card 3"
- Drag each of the characters to the scene on the top right. This makes an extra copy that will not be covered up during the game.

Their code will look something like this:







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Create a Maze Game Using Messages

In this lesson, students learn to use the message blocks to initiate a script. Tapping the various arrows sends messages to tell the character which direction to go.

After watching the video, if students are having trouble, play the video for them again, or guide them through the following steps.







During this lesson, students will be able to:

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- 1. Create a new project and delete the default sprite
- 2. Click + to add a new sprite. Click the paintbrush to create a new sprite. Draw a simple maze using just one color. Click check mark to save and add to project.
- 3. Use purple resize blocks to fill the area with the maze.
- 4. Add a sprite to go through the maze and resize it
- 5. Add a sprite using paint editor to create the green finish line.
- 6. Add a sprite using the paint editor to create an arrow and resize it.
- 7. Add yellow triggering blocks to the arrow's programming area so that when tapped, it will send red messages.
- 8. Add yellow triggering block to the character sprite, so that when it sees the red message, it will move in the direction of that arrow
- 9. Add a script to the finish line so that if something runs into it, it says, "You Won!"
- 10. Drag the arrow to the scene three times so that there are four arrows. Edit each and spin them to point in the four directions.
- 11. Change the color of the message sent by three of the arrows so they are four different colors.
- 12. Select the character sprite and add three more opening message blocks to receive all four colors. (Change envelope to the four colors sent by the arrows.) Add the movement blocks to go in the correct direction.
- 13. Add another script to the character sprite to make him start over if he bumps into something.





• Add a second Page (scene/background) that says "You Won!" when the character reaches the finish

Their code may look something like this:

