

Playing with the Car



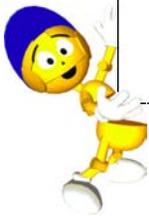
In this project learners will explore the manipulation and change of characteristics or behaviors of their object (the car) by changing its values and settings in the world and in its viewer.

The painted object presents the learner with an iconic representation. The object's viewer reveals the object's characteristics (its location in the world, heading, size and color) through a symbolic representation (by showing numeric values). The "Montessori game" here is for children to get their pay-off playing in the hand-eye arena, while gradually and subliminally gaining fluency in and an appreciation for the power of symbols.

For children to realize that their car's "heading" is a number is a powerful idea. To see the car's location in the world also as numbers is powerful. Through exploration and play they will see how each value can be positive, negative, or zero.

Exploration can be extended by using the "PenDown" feature of an object. Geometric shapes can be made by an object's pen by creating scripts with just the "forward by" and "turn by" tiles.

This initial exploration is critical to set the foundation for further play and for the creation of subsequent Etoy projects.



The Drive-a-Car Curriculum

Project Prerequisites: Squeak

- Painting.
- Naming objects.
- Setting the forward direction of an object.
- Revealing an object's viewer.
- Saving a project.

Related Math Concepts

- The concept of “x” and “y” coordinates.
- The concept of positive and negative numbers.
- Headings as angles and the number of degrees in a circle.

Curricular Objectives

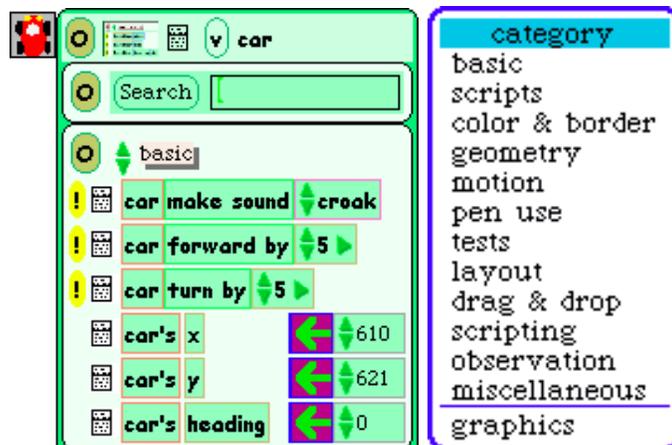
- Understanding coordinate systems.
- Providing a foundation for the understanding of simple geometric shapes and angles.

In this project you will explore your painted car as an object. If you have saved your car as a project you should load that project now. If you didn't save your car you need to paint a new car for this project.

MouseOver the car or click on the object while selecting the Command (Mac) or Alt (Windows) key to reveal its handles. If you let the mouse linger over any handle for a moment, you will see it is equipped with balloon help to remind you of its purpose. The figure below shows the car with all its handles and a description of what each handle does.



Click on the turquoise “eyeball” handle to reveal the object's viewer. The viewer below shows the “basic” category. Additional categories can be revealed by clicking on the category name or by clicking on the up or down arrowhead to the left of any category name.



MouseDown on the blue “rotation” handle of the car and move it to the left and right. Notice the value changing in the “car’s heading” tiles in the viewer.

Pick up the car and move it around the world. Notice the changes in the “car’s x” and “car’s y” value tiles.

Look at the tiles in the **basic** category pane. You’ll see two types of tile; some are preceded by a yellow exclamation point  and others are not. The tiles following an exclamation point are *action tiles*.

Clicking on an exclamation point will “fire” the action once. Holding down an exclamation point will “run” the action repeatedly. Try driving the car “around the world” using the exclamation points.

Numeric values of the tiles can be changed by either clicking on the up or down arrowhead to the left of the value, or by selecting the current value, typing in a new number and hitting return (or enter). Play around with these numbers and use the exclamation point to continue to explore.



What happens to your object if you make the value of the “forward by” tile a negative number and then click or hold down the exclamation point? Explore and experiment!

Tiles which are not followed by an exclamation point are “value” tiles. Each of these is followed by a green arrow that assigns or sets that value (a placeholder for any number) as the current value for the particular attribute or property of that object at a given time. Change the values of these tiles and notice what happens to the car.



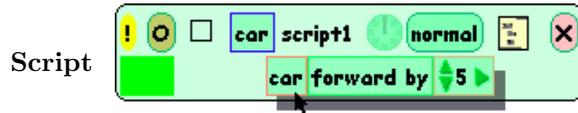


Scripts are created for objects by assembling tiles. To get a Scriptor (a “**script editor**”) drag the “Car emptyScript” tiles (or “Sketch” if you haven’t named your car) from the **scripts** category onto the World. If the **scripts** category is not visible in your object’s viewer, reveal it now (as explained earlier).



To create a script, add the “Car forward by 5” tiles to the scriptor by dragging and dropping them into the empty scriptor. When a script is ready to “accept” tiles, a bright green rectangle will appear indicating it is okay to add tiles to the scriptor.

Note: The cursor *must* be in the scriptor for it to accept tiles. If the tile graphic is in the scriptor, but the cursor is not, the tiles will not be accepted into the script.



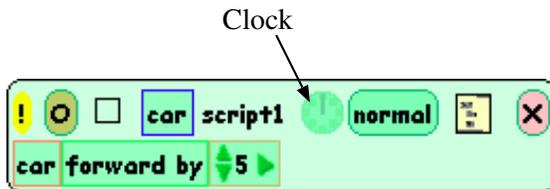
Any string of action tiles (those preceded by an exclamation point) will create their own scriptor when dragged and dropped onto the World. Value tiles must be added to a scriptor or to a string of tiles already in a scriptor. They will not create their own scriptor when dragged and dropped onto the world.

Misplaced tiles can be deleted in two ways: by dragging them into the trash (found in the Supplies flap) or by bringing up their handles and clicking on the “delete” handle. Once tiles have been joined they cannot be disconnected. If you accidentally make a string of tiles or if you find you have tiles you no longer need, throw them in the trash.

Trash

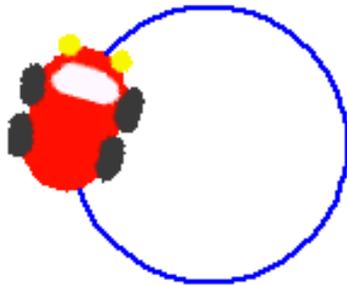


Scripts can be run (or “activated”) by clicking on the small clock in the scriptor or by selecting the “normal” button and changing its setting to “ticking.” To fire (or “step”) a script, click on the exclamation point.

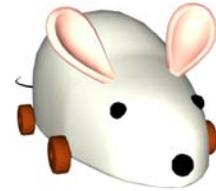


What can you add to this script that will make the car go forward and turn simultaneously?

Pen trails can be set for any object so that its movement in the world can be visualized. Reveal the **pen use** category in the car’s viewer. Change the car’s “penDown” value to “true” and set the script to “ticking.” Notice the trail left by the car. The pen size can be changed by increasing its numeric value. The pen color can also be changed.



Once a project contains multiple scripts it is wise to get a set of “stop step go” buttons from the Supplies flap and place it on the World. Clicking **go** will set all of your project’s scripts ticking. Clicking **stop** will pause all scripts.



Challenge

- Explore to discover how many geometric shapes can be created by making simple scripts for the car.

