# Day 2: Teaching Your Robot To Move

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### Opening the Program

Double-click the Lego Mindstorm NXT icon on your desktop

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### List of the Basic Types of Robot Movement

##### Move Forward

Changing the duration changes how far forward the robot will go.

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##### Move Backward

Changing the duration changes how far backward the robot will go.

##### Turn Left

Moving the steering all the way to the left causes the robot to turn to the left sharply in-place. Changing the duration changes the amount of turning around the robot will do. It may spin in circles if the duration is high enough.

##### Turn Right

Moving the steering all the way to the right causes the robot to turn right sharply in-place. Changing the duration changes the amount of turning around the robot will do. It may spin in circles if the duration is high enough.

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### Duration: How it Works

* Unlimited - causes the robot to keep moving forever
* Degrees - How many degrees the wheel will spin before stopping
* Rotations - how many times the wheels will fully rotate(spin) around before stopping
* Seconds - the number of seconds the wheel will spin before stopping

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### Challenges

##### Challenge One: Go Into a Garage

Starting from *behind* any of the three starting points, have your robot drive into the garage across from it *without touching any of the garage walls*.



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##### Challenge Two: Back Into a Garage

Do the same as challenge one, but have your robot turn around and back into the garage once it gets close, again *without touching any of the garage walls*.

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##### Challenge Three: Drive A Lap Around a Track

Starting from any point on either track, your robot must go all the way around the track *without touching the inner or outer wall of the track*. 

##### Bonus Challenge: Drive A Lap Backwards Around a Track

As a bonus if you finish the first three challenge, try to do challenge three but having you robot go backwards instead of forwards for the whole time.

### Troubleshooting

##### Trouble Downloading to the Robot

If you are having trouble downloading to the robot, trying turning the robot off and then turning it back on again.

##### Deleting a Command Block

To delete a block, select the block and press the Delete key.

##### Not Enough Room To Add More Block

Use the arrow keys to scroll left or right for more room. 

##### Out of Memory Error

To fix the “The NXT device is out of memory” error:

1. Click the Manage Files button.
2. Click on Program.
3. Use the Delete button to delete all the unneeded programs
4. Close the box
5. Everything should work fine now

##### Program is Behaving Much Differently Than Expected

If you haven’t done so already, try saving your program under a unique name so that you do not accidentally run another program on your robot with a similar name. Otherwise, there may just be an error in the program you wrote.Use the arrow keys to scroll left or right for more room.