

Episode 4 Notes



Before the Episode

1. Get the starter file, Moonlander1: Download it from Booleangirl.org/full-STEM-ahead or save from this email. This file has some starter sprites and backgrounds for the game
2. Practice opening the file in Scratch.

a. On a Raspberry Pi (Boolean Box)

- i. either connect to wifi and download the file from Booleangirl.org/full-STEM-ahead (see downloads on episode 4.)

OR download on your computer, copy it to a USB drive and move it to your Child's Raspberry Pi. (this option allows you to keep the Raspberry Pi disconnected from the internet for internet safety reasons)

- ii. Once loaded, double click the file to start Scratch

b. On all other computers.

- i. Download the file from email or from Booleangirl.org/full-STEM-ahead.
- ii. Open Scratch in a browser scratch.mit.edu. Click on **Create** to open Scratch, select **File**, **Load from your computer** on the top menu.

Additional instructions (booleangirl.org/full-stem-ahead/fullstemdetails/#scratch)




3. Review instructions for connecting to the Episode:
booleangirl.org/full-stem-ahead/fullstemdetails/

During the Episode

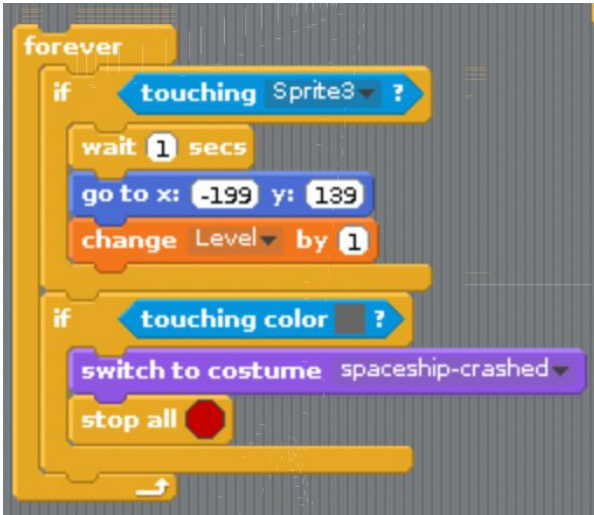
During the episode we will focus on four things that are used in many games:

- 1) **Movement based on velocity.** Instead of moving one step for each key press, the arrow keys are used to speed up and slow down movement



Simple Movement like in Pong	Movement that speeds up and down
	 <p>And this</p> 

2. **Completing a level and starting the next level.** Use a **variable** to track the level and change things, like the background when the level is complete

	<p>If the character touches Sprite 3, the objective, go to the next level</p> <p>If you touch the ground (grey) end the game</p>
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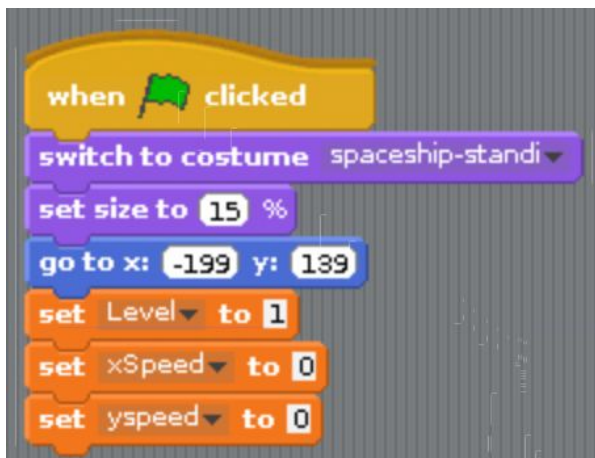


When the game starts show a certain background.

For level 2 show a different background

For level 3 show another background



3. **Set the start up conditions.** Each time the game starts, make sure the correct background is showing, the character is in the right place, and all the variables are reset to their starting value usually 0 or 1.



After the Episode

During the episode we will code up the basic game. After the episode we encourage kids to improve the game. Ideas and sample code follow.

After the episode the video can be replayed or downloaded with an enhanced version of the game here: booleangirl.org/full-stem-ahead/past

1) Add more levels	
<p>2) The lander is delicate, landing speed must be less than 2 mph.</p> <p><i>Figure out why the speed is > -2 instead of speed < 2.</i></p>	 <pre> if (yspeed > -2) { wait 1 secs go to x: -199 y: 139 change Level by 1 } else { switch to costume spaceship-crashed stop all } </pre>
<p>3) Make the lander slow down as time goes on due to drag</p>	 <pre> when green flag clicked forever loop if (xSpeed > 0) { change xSpeed by -0.05 wait 0.5 secs } if (xSpeed < 0) { change xSpeed by 0.05 wait 0.5 secs } </pre>
<p>4) Create a variable called fuel. Each time a key is pressed, decrease the fuel remaining. If you run out of fuel, game over or no more maneuvering.</p>	
<p>5) Add a timer to see how long it takes to complete all the levels. Bonus: keep track of the best score, lowest time.</p>	