Lesson 2: Adding a Camera

Objective: Add decorative background elements and a camera to expand the game's visible area.

Time: 30 Minutes

Level: 2 - Beginner

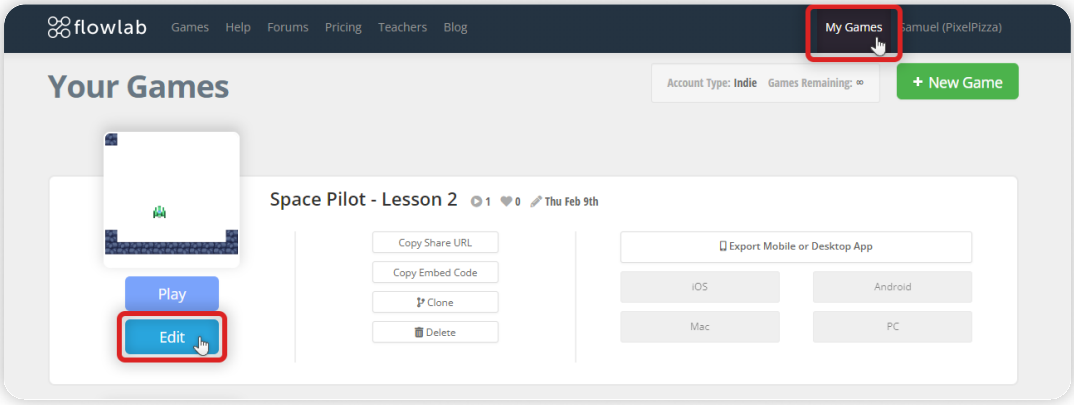
Description: Introduction to Cameras, backgrounds and how Parallax affects it.

Step 1

Edit your Game

Log in and start at your "My Games" page https://flowlab.io/game/list

Then, click "Edit" next to your game to open the game editor.

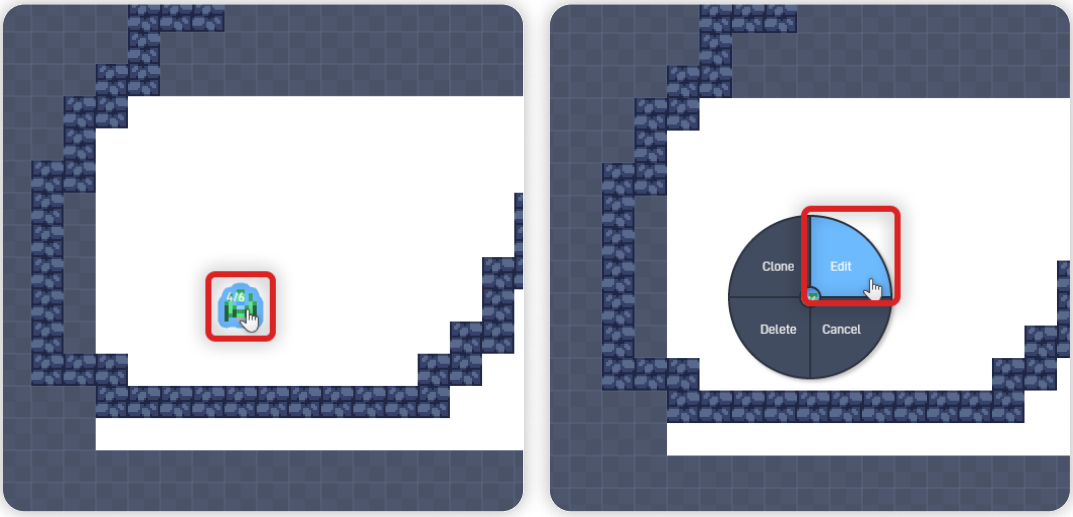


Step 2

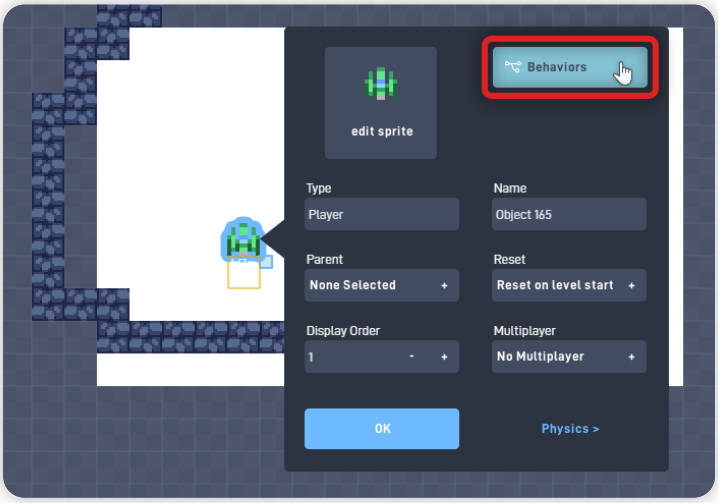
Add a Camera to the Player

Let's start by adding a camera that scrolls the game view to follow the Player ship. We can do that by opening the Behavior editor inside the Player object.

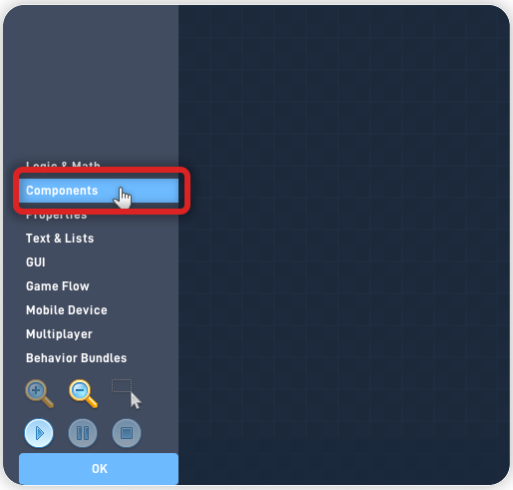
Click on the "Player" ship object, and then select "Edit" on the menu that pops up.

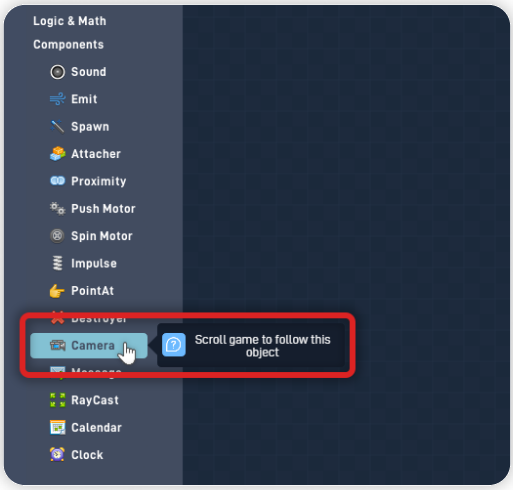


Now click on the “Behaviors” button to open the Behaviors editor.



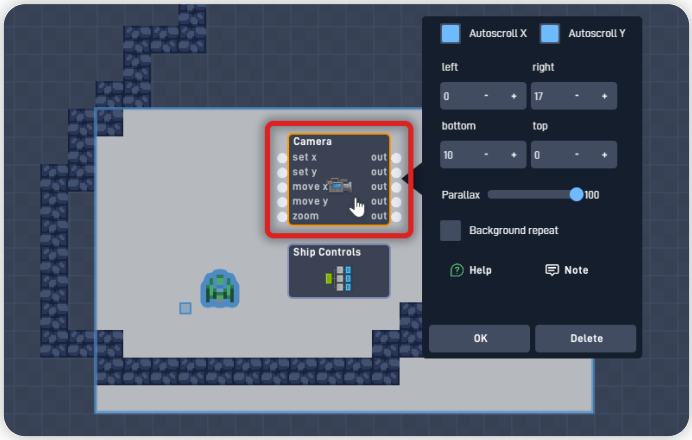
Inside the behavior editor, open the “Components” behaviors section and click on the “Camera” behavior.





Click and hold the newly added Camera behavior to move it, so it doesn’t overlap other behaviors. Place it somewhere near the already existing logic.

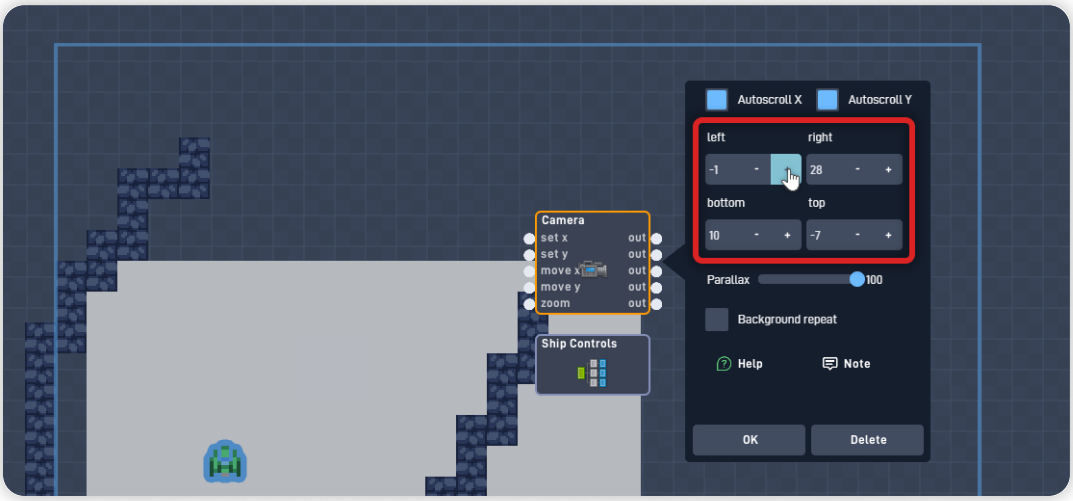
Then, click on the Camera behavior to open its behavior panel.



In this game, we want the camera to follow the player object in both directions, so keep “Autoscroll X” and “Autoscroll Y” selected.

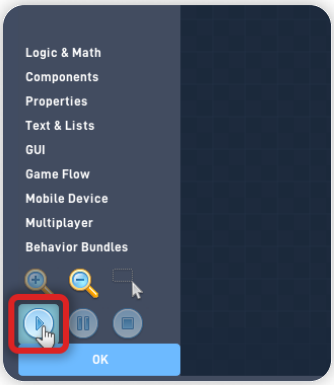
Now, use the “-+” buttons to adjust the camera boundaries.

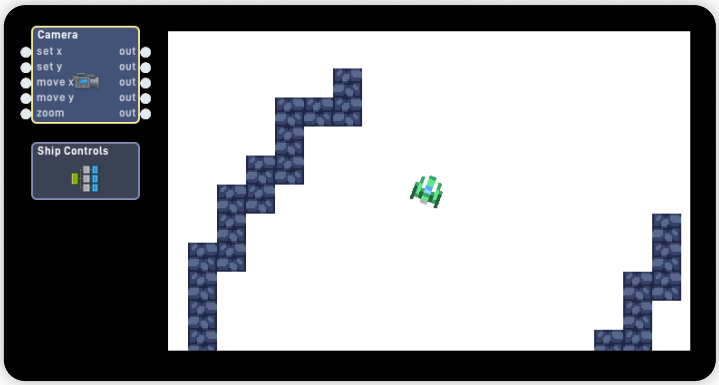
> Camera boundaries set the area the camera can display - anything outside these boundaries won’t appear in the game viewable area.
>
> You can check this area by looking at the **blue-outlined rectangle**.



Once you’ve set your Boundaries values, press “OK” on the Camera behavior panel to save your changes. *Remember, you can always adjust the Camera Boundaries by coming back and opening this panel again.*

Then, click on the empty space to move the behaviors out of view so you can see the game below, and click on the “Play” button to playtest your game.





When playtesting your game, you can see the camera in action.
The game view will change when the player moves, following it through the empty level space.

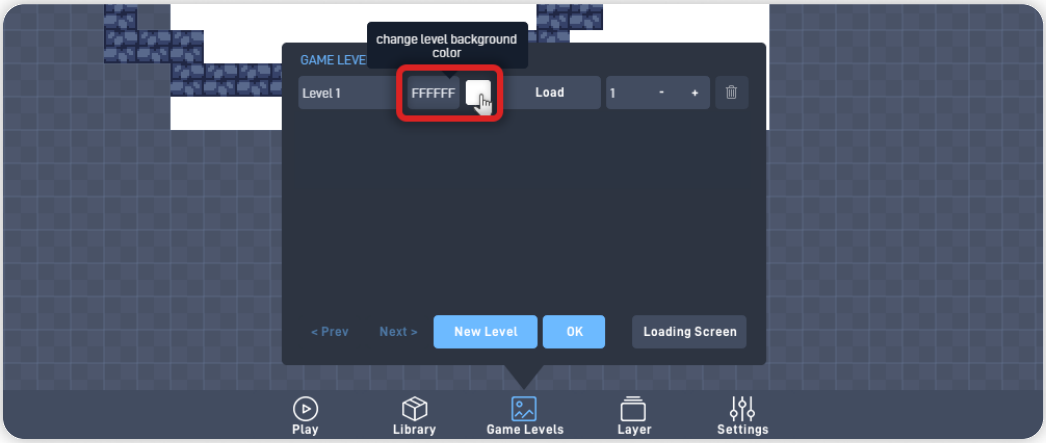
Click “OK” to close the behavior editor, and click “OK” again to close the Player object properties panel.

Step 3

Set a Background Color

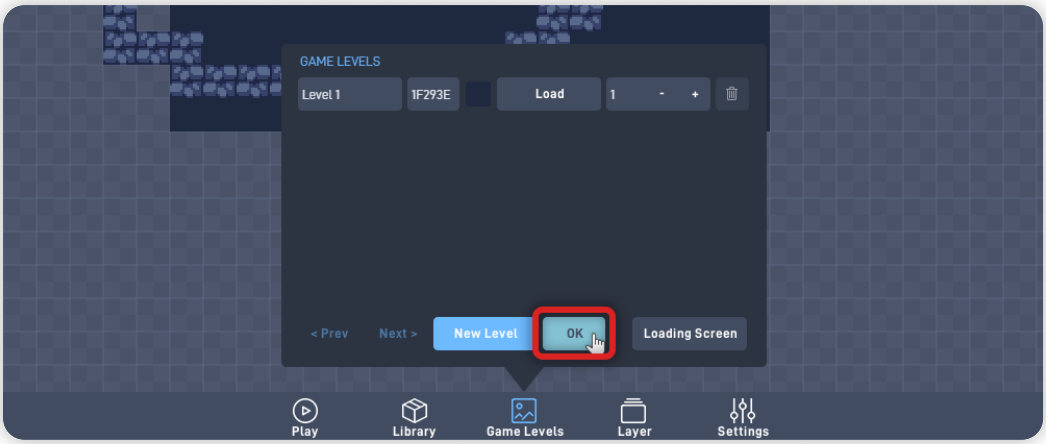
Now, click on the “Game Levels” on the bottom toolbar to open the Levels panel.

Click on the color square to change the background color.
Using the color picker, you can set it to a dark blue or a dark color to make the game feel set in space.



You can also type in the color HEX code, we’re using this **color for the Background:** 1F293E (Dark Blue)

Use it or set a color that feels right to you.
Click on the “OK” button to close the levels panel and save your changes.

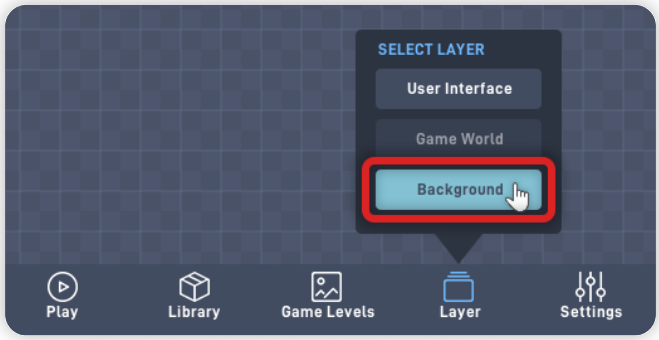


Step 4

Add a Background Object

Next, let's add a decorative background object, so the game doesn't feel so empty and further convey the location of our game.

Click on "Layer" on the bottom toolbar to open the Layers panel, and change from the "Game World" layer to the "Background" layer.

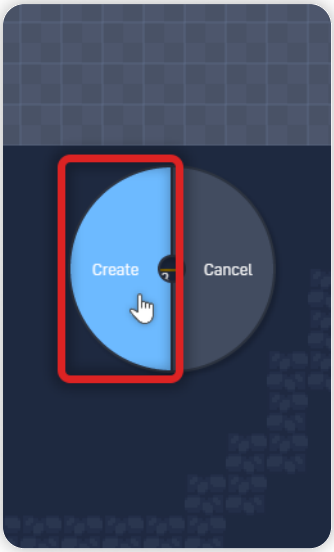


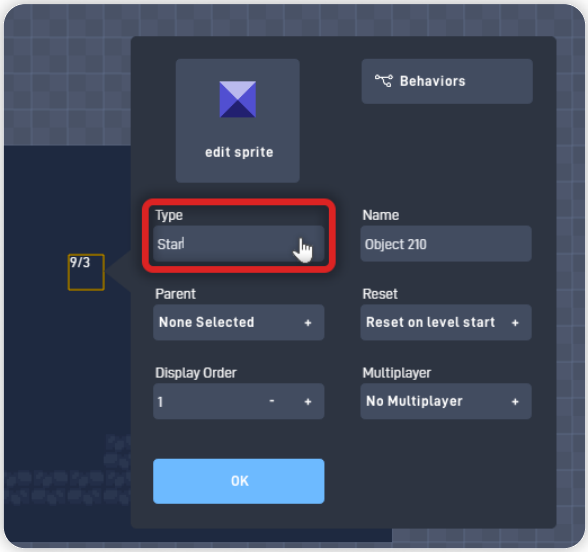
Inside this layer, it's where we create objects that stay in the Background layer and are separate from the other layers.

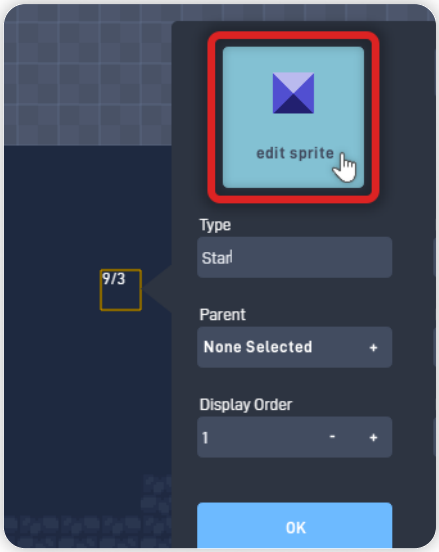
All objects created in the background:

- Don't have physics;
- Due to lack of physics, cannot have physics behaviors;
- Can render with Parallax when scrolling;
- Can repeat as a pattern when scrolling;
- Render behind the other layers;

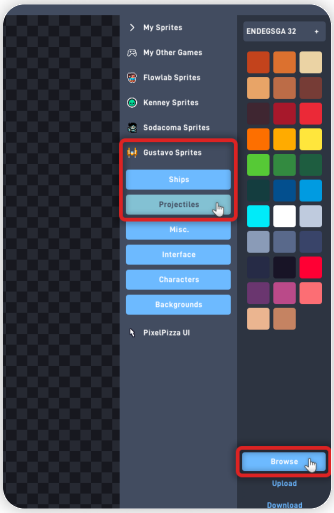
Click anywhere inside the game's viewable area and "Create" a new object.
It's always important to name our objects, so let's set this object "Type" to "**Star**".
Then, click on "edit sprite" to change this object sprite.

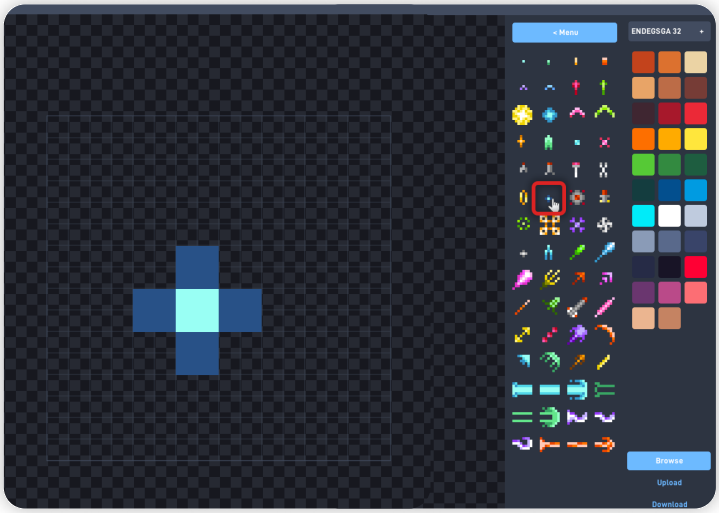






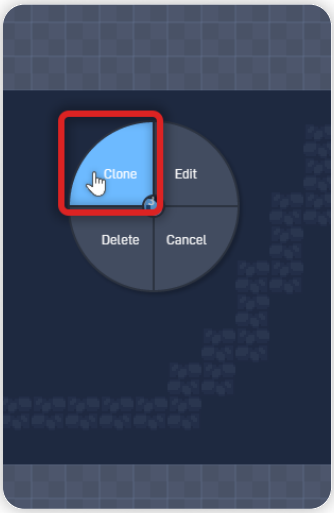
Inside the Sprite editor, open the “Browse” panel and click on “< Menu”. From the “Gustavo Sprites” collection, open “Projectiles” and select a sprite that looks like a star.

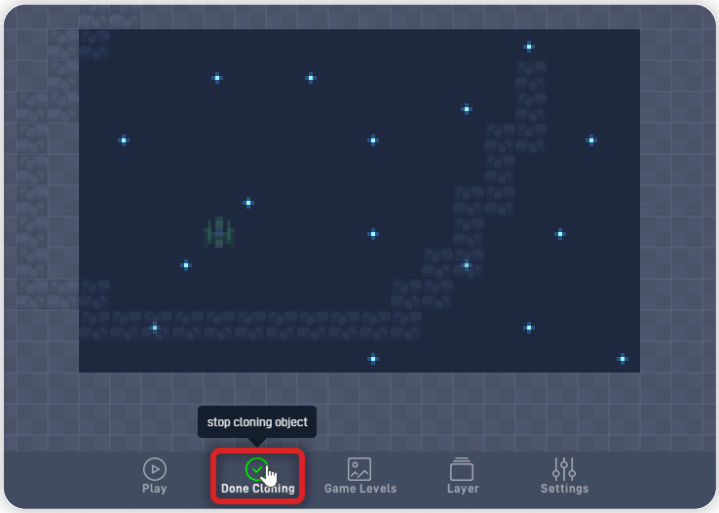




Once you pick your sprite, press "OK" to save your changes, and press "OK" on the object properties panel to close it.

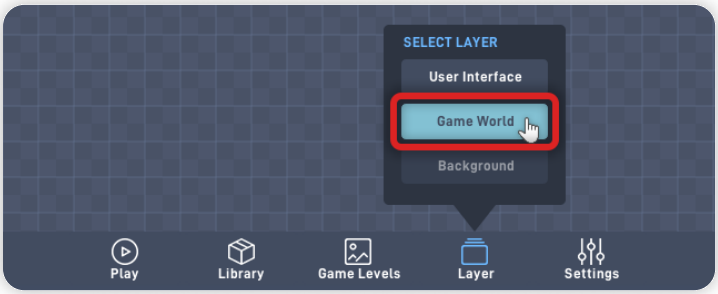
Back in the background layer, click on the "Star" object, select "Clone," and place these stars randomly inside the game's viewable area.





Once you finish adding stars to the background, click "Done Cloning" in the bottom toolbar.

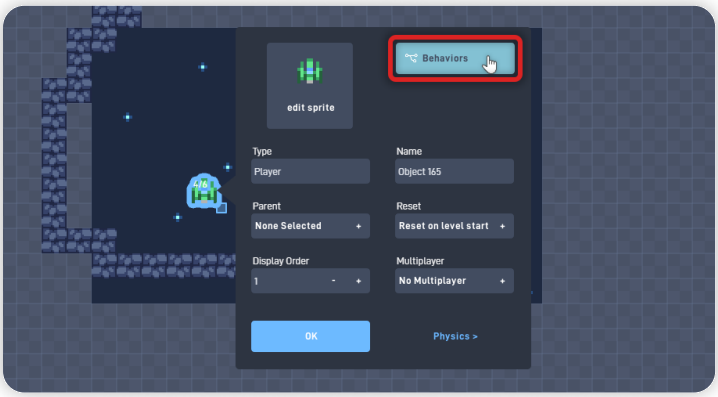
Then, open the “Layer” panel again and switch back to the “Game World” layer.



Step 5

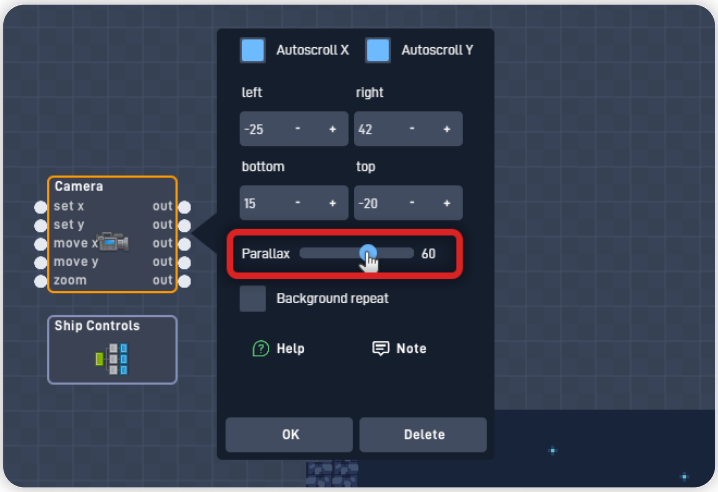
Adjust the Camera Parallax and Repeat the Background

Inside the “Game World” layer, let’s open the “Player” object behaviors.
As before, click on the “Player” ship object, click “Edit”, and open the “Behaviors” editor.



Inside the behavior editor, move the behaviors out of the game view and click on the Camera behavior.
Now that we created background objects, we can use Parallax to make objects in the background seem as if they were further away from the camera.

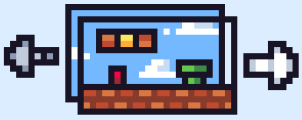
Click and drag the “Parallax” slider from “100” to “60”.



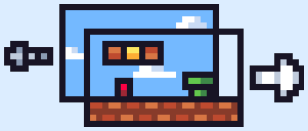
The Camera Parallax determines how quickly the background moves when moving the camera view. The slower the background layer moves in relation to the game layer, the further away it appears to the player.

No Parallax (100) makes it seem as if the background is near, but a lower Parallax (closer to 0) makes it seem as if the background is further away.

No Parallax (100)



High Parallax (70)



Low Parallax (20)

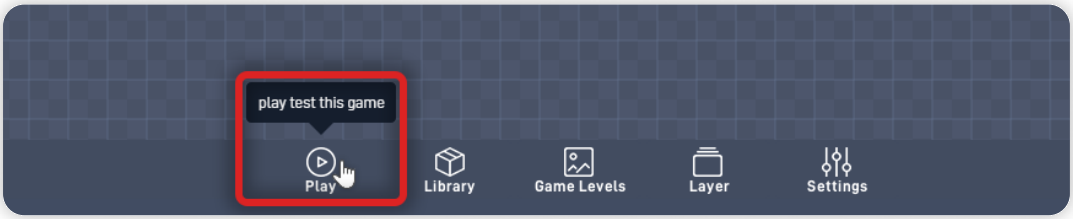
Next, select “Background repeat” and click “OK” to save your changes. With “Background repeat” enabled, the background objects will now repeat as a pattern throughout the game.

Click the “Play” button to playtest the game inside the editor.
Move the ship around the level to see how the Parallax affects the position of the background stars.

You can click “Stop” and test different Parallax values to see how they change the depth perception. Adding Parallax to your game can make your game look less flat and more natural.

Once you are happy with the Parallax values, click “OK” to save your changes and exit the Behavior editor.

To test your game so far, click the “Play” button in the bottom toolbar to switch from “Edit” mode to “Play” mode.



When in Play mode: You will notice that by moving the player, the game view will follow along, and the stars in the background will repeat throughout the level.

If you have problems, check the troubleshooting section.

Troubleshooting

A big part of game development is figuring out why things sometimes do not behave as you expect. If your game is misbehaving, check the following points:

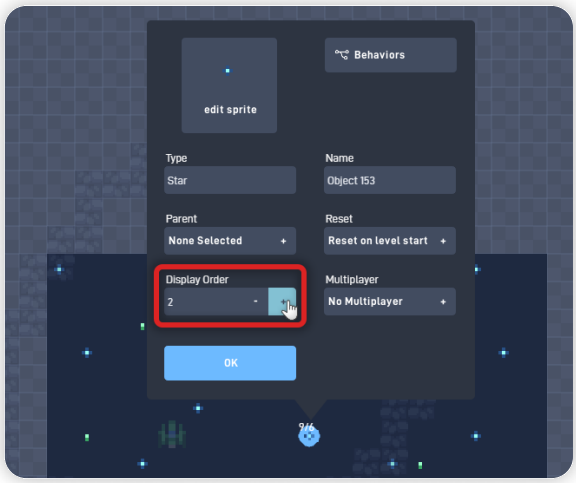
- **If there are empty gaps when repeating the background,** ensure that your background stars are inside the game viewable area; *(Step 4)*
- **If the Stars aren't seen throughout the entire level,** ensure that the Camera Behavior has the "Background repeat" option selected; *(Step 5)*
- **Make sure that you create the stars object on the "Background" layer** and not on the "Game World" Layer; *(Step 4)*

Optional Game Enhancements

Once you have a background and camera working, here are some simple enhancements to try:

- **Make additional background objects** by creating a new object in the "Background" layer and selecting a different sprite (repeat Step 4).

  You can change the "Display Order" of the background objects, so it has a different Parallax distance from the other stars, adding even more depth.



Space Pilot - Part 1

Nice work!

You've now finished **Lesson 2 out of 6.**