Lesson 5: Laser Projectiles & Music

Objective: Add Logic to Emit Lasers and play Background Music.

Time: 30 Minutes

Level: 2 - Beginner

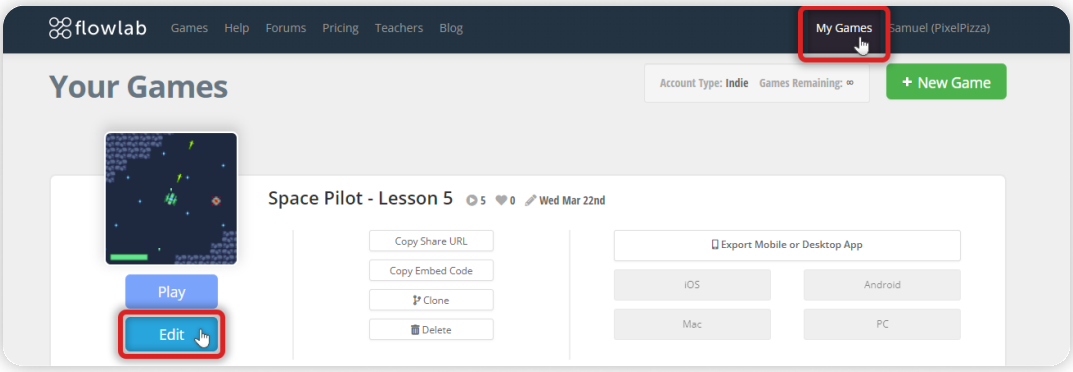
Description: Adding a mechanic expands the gameplay and can make your game more fun to interact with. Using custom Logic & Bundles, allow the Player to emit lasers and play Music.

Step 1

Edit your Game

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

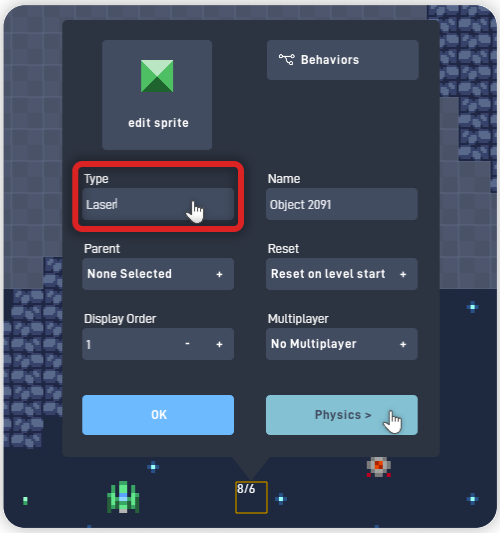
Then, click “Edit” next to your game to open the game editor.



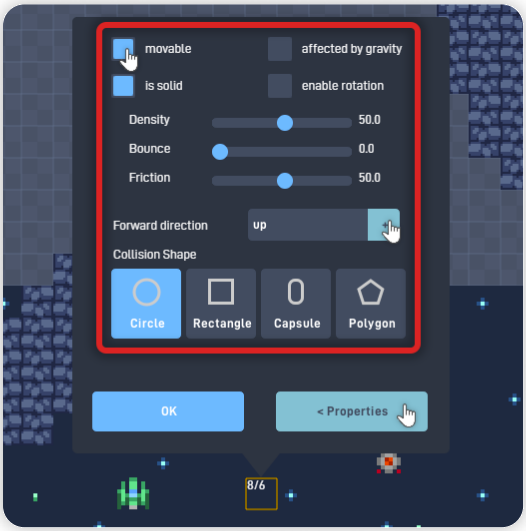
Step 2

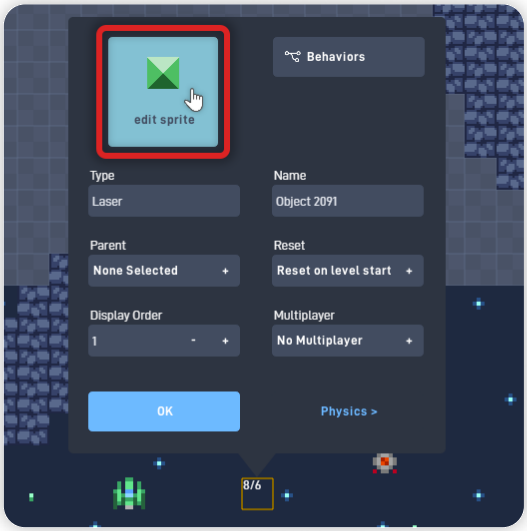
Create a Laser Projectile Object

Click anywhere inside the visible game area, and select “Create”.
It’s always crucial to name your objects, so change the Type to **“Laser”**.
Go to the “Physics >” Tab.

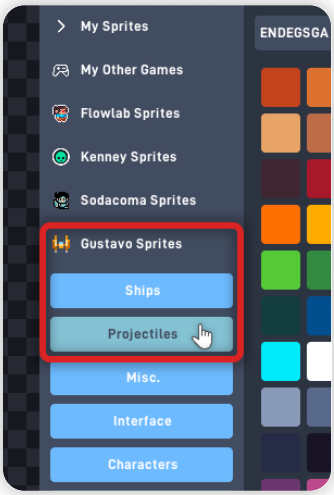


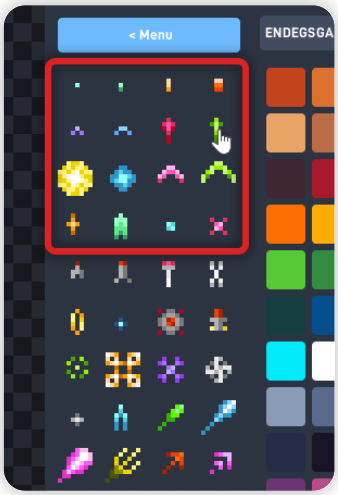
Select “Movable” and deselect “Affected by gravity”.
Set its Forward direction to "Up" and its Collision Shape to a “Circle”.
Go back to the “< Properties” tab and click on “edit sprite” to open the Sprite Editor.

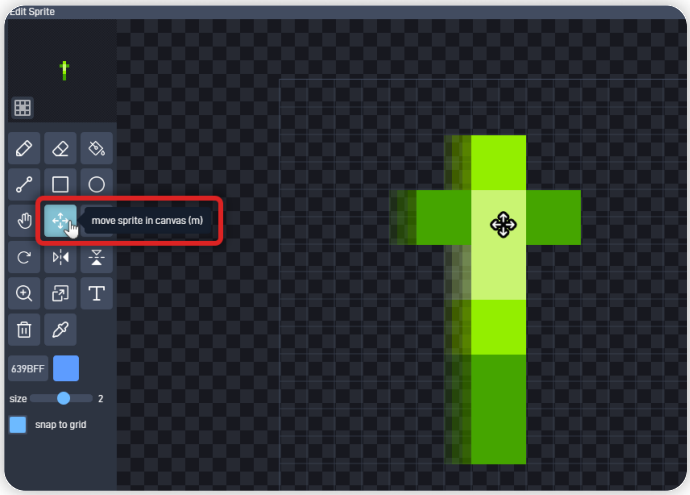




Inside the Sprite Editor, open the “Browse” panel and click “< Menu”,
“Gustavo Sprites”, and then “Projectiles”.
Select a Sprite for the Laser from the first few lines with up-facing sprites.
Click “Browse” again to close the browse panel.





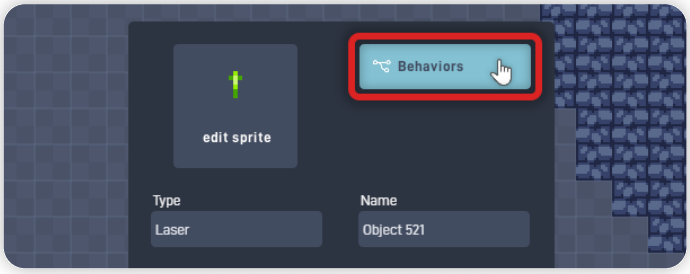


Use the “Move Sprite” Tool to center the sprite if necessary.
Press “OK” to save your changes and close the sprite editor.

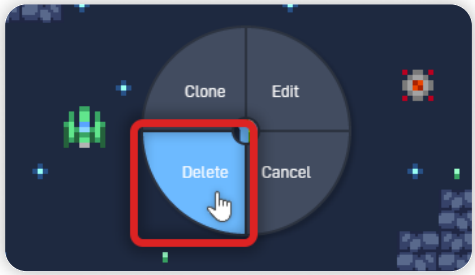
Step 3

Add Logic to the Laser Object

With the Laser object properties panel open, click on "Behaviors".



From the Triggers section, add a Collision behavior.
From the Components section, add a Destroyer behavior.
Align the Destroy behavior by the Collision side, and connect its "hit" output to the "destroy" input.



Click “OK” to save your changes and close the Behavior Editor.
Click “OK” to close the object properties panel.

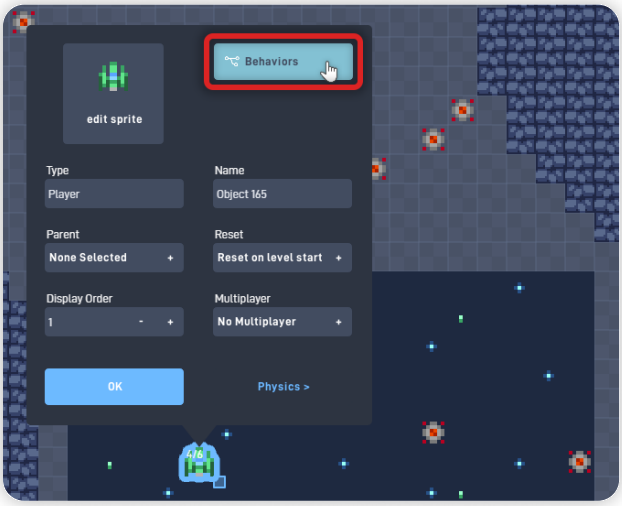
Click on the Laser object and select “Delete” to delete it from the level.

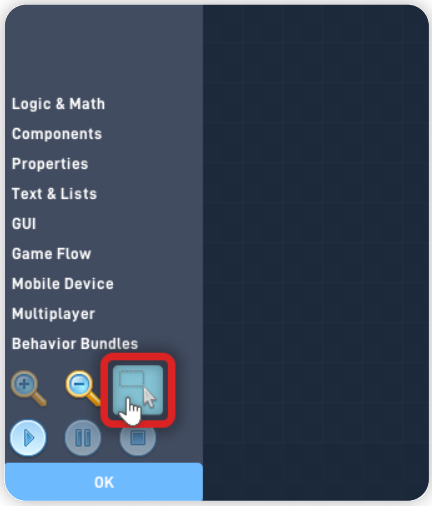
Step 4

Bundle & Organize Player’s existing Logic

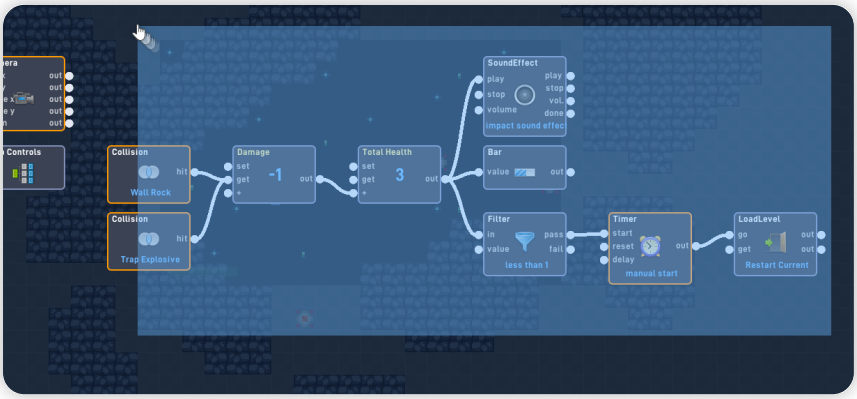
Let’s open the Player object Behaviors - click on the Player Ship object, select “Edit”, and click on "Behaviors" to open the Behavior Editor.

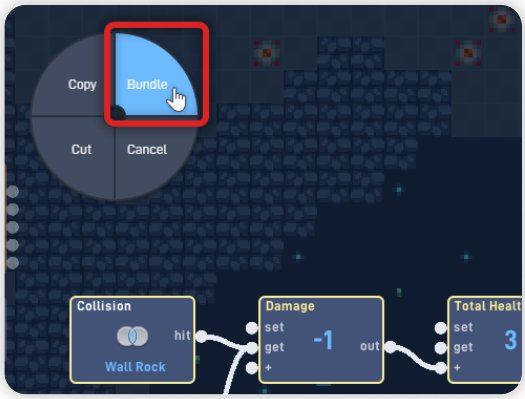
Click on the “Mouse Selection” tool in the bottom left corner.



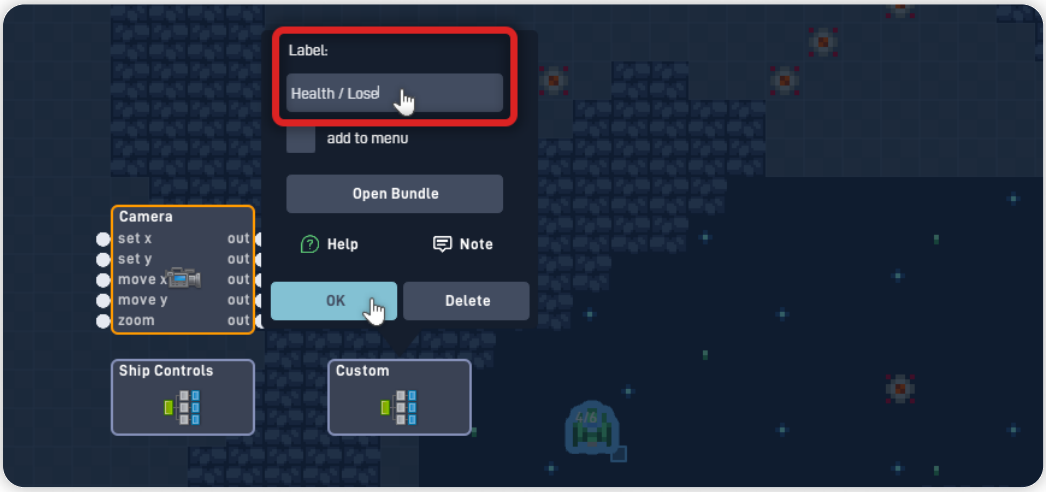


Click and hold to select all the behaviors related to the Health Logic.
From the circle menu that appears, click "Bundle".





Click on the newly created Bundle, and set its Label to "**Health / Lose**".
Click “OK” to close the behavior panel and save your changes.

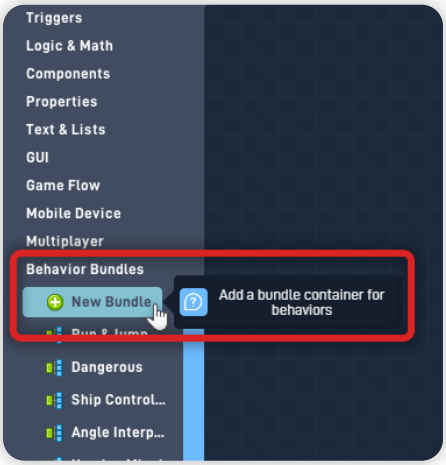


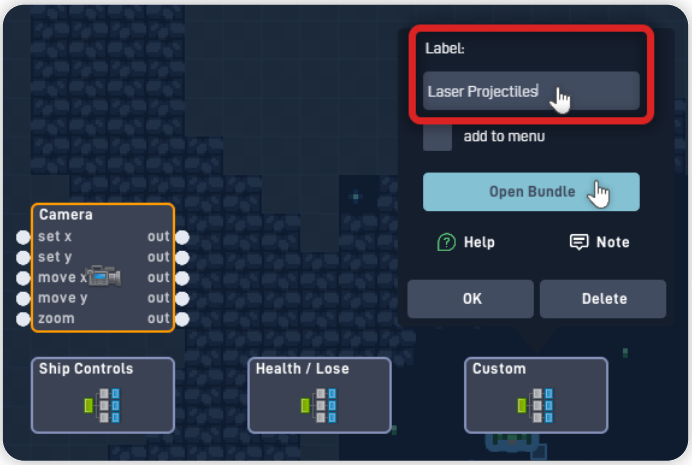
Step 5

Add Logic to Emit the Laser

From the Behavior Bundles section, click "New Bundle" to add an empty bundle.
Click and hold to move it and place it near the other bundles.

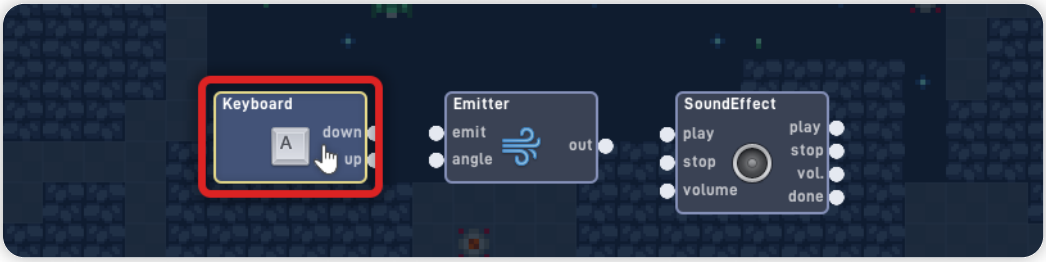
Click to open the behavior panel, set its Label to **"Laser Projectiles"**,
and click "Open Bundle".





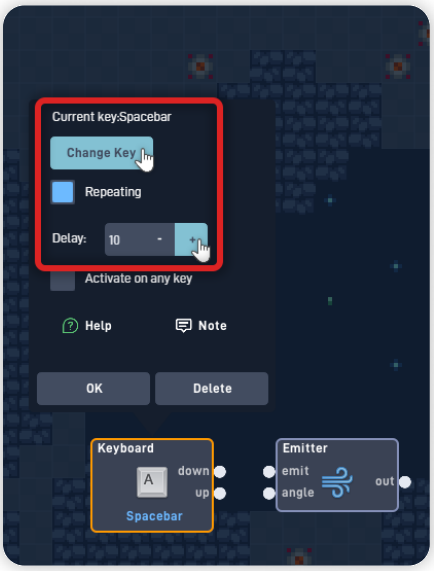
From the Triggers section, add a Keyboard behavior.
From the Components section, add an Emitter and a SoundEffect behavior.

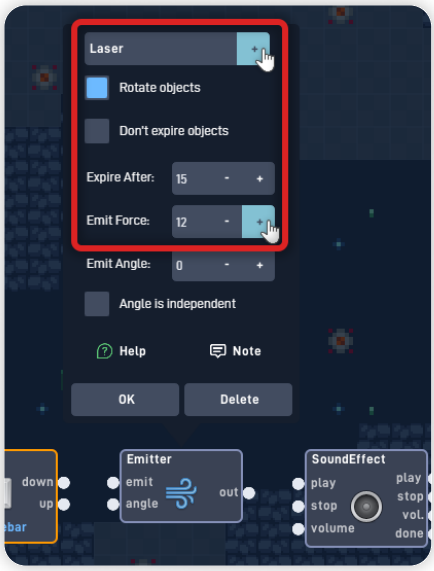
In the order we added the behaviors, align the behaviors side by side.
Click on the Keyboard behavior to open its behavior panel.



On the Keyboard behavior panel, click "Change Key" and press the "Spacebar" key.
Select "Repeating" and set the **Delay to "10".** *This allows the Player to keep pressing Spacebar, and the behavior will continuously trigger with a "10 frames" delay.*

Click "OK" To save your changes and close the behavior panel.

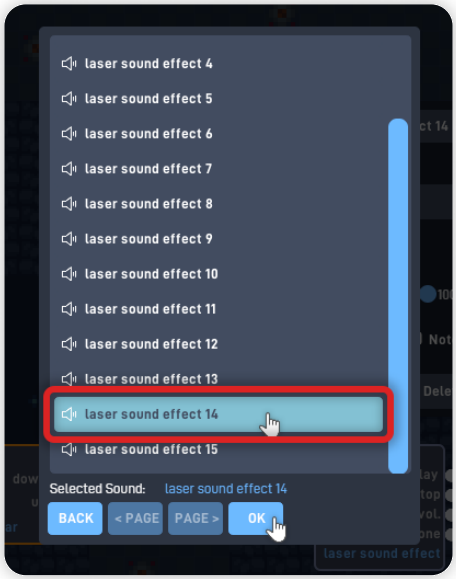




Open the Emitter behavior panel, and set the object to "Laser".
Select "Rotate objects", set the **Expire After to "15"**, and set the **Emit Force to "12"**.

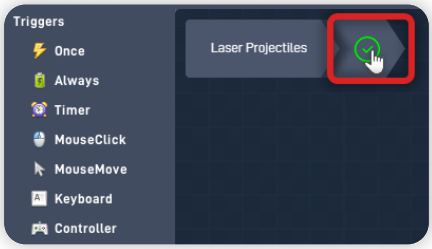
Click "OK" To save your changes and close the behavior panel.

Open the SoundEffect behavior panel, and click "Choose Sound".
Navigate through the folders and go to "Effects", "8 bit", "Weapons", and "Laser".
Scroll down, and select the **"laser sound effect 14"**.
Click "OK" to confirm your sound choice.



Reduce the Volume to "30", and click "OK" to close the behavior panel.

Now, let's connect the behaviors.
Connect the Keyboard "down" to the "emit" input from the Emitter.
Connect the Emitter "out" to the "play" input from the SoundEffect.



This logic bit will activate every time the player presses the Spacebar, Emitting a "Laser" object in the direction the Player Ship is facing, and playing a "laser" sound.

Click on the Green "Check" in the top left corner to close the bundle.

Step 6

Add Background Music

Now, let's add custom logic to play background Music while the game is running.

From the Triggers section, add a "Once" behavior.
From the Logic & Math section, add an "Ease" behavior.
From the Components section, add a "Sound" behavior.

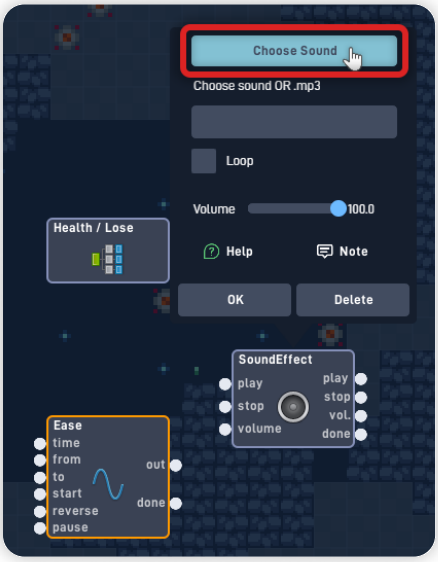
Organize and align the behaviors as shown.

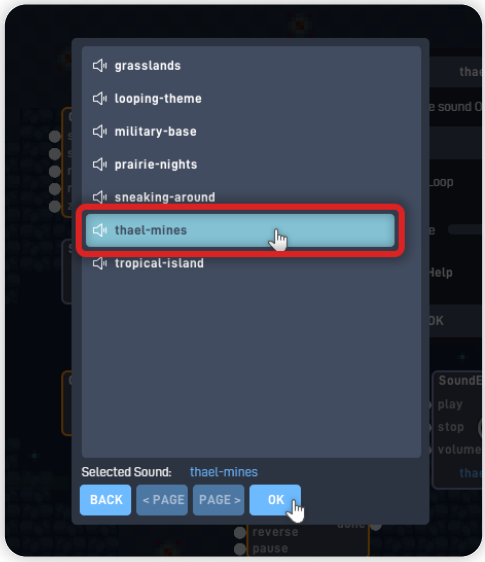
Open the Ease behavior panel, and set its Easing Function to "Sine".
Set the Seconds to "2", and set the To value to "20".

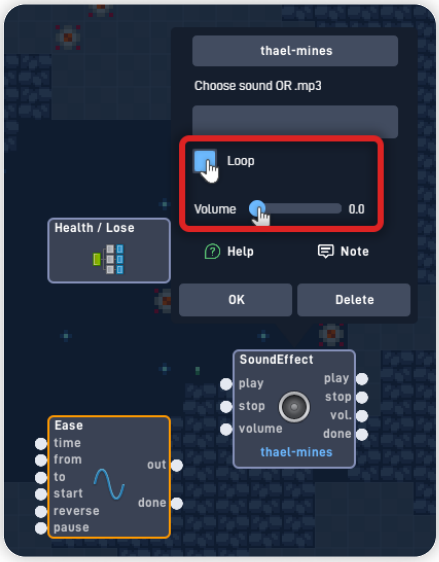
Click "OK" to close the behavior panel and save your changes.

Open the SoundEffect behavior panel, and click "Choose Sound".
Navigate through the folders and go to “Music”, “Themes”, and “Exploration”.
From this folder, select the **"thael-mines"** song.
Click "OK" to confirm your sound choice.

Select "Loop" and set the Volume to "0".
Click "OK" to close the behavior panel and save your changes.

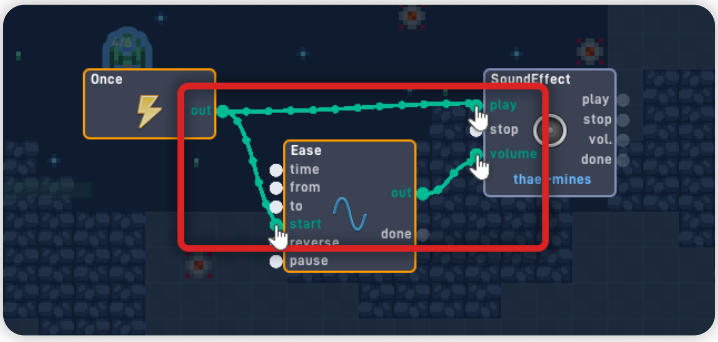






Now, let’s connect the Behaviors.
Connect the Once "out" to the "play" input from the SoundEffect.
Connect the Once "out" to the "start" input from the Ease.
Connect the Ease "out" to the "volume" input from the SoundEffect.

Once the game starts, this logic bit will activate, playing the background music “thael-mines” and Easing its Volume from 0 to 20.

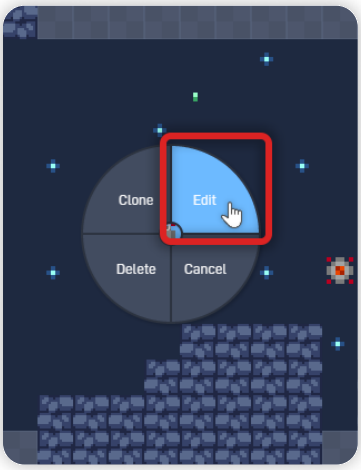


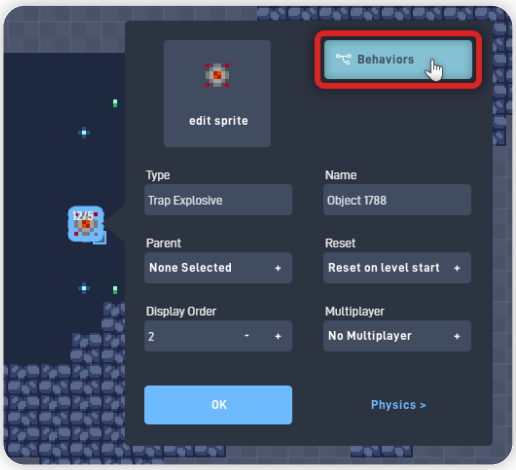
Click "OK" to close the Behavior Editor and save your changes.
Click "OK" again to close the Player object properties panel.

Step 7

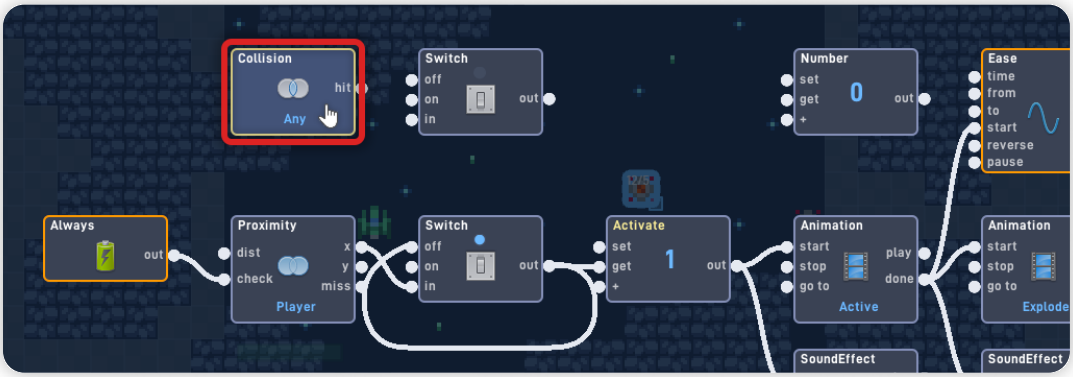
Add Logic to make the Trap Explode with the Laser

Back in the Level editor, click on the Trap Explosive object, select "Edit", and click on "Behaviors" to open the Behavior Editor.





From the Triggers section, add a “Collision” behavior.
From the Logic & Math section, add a “Switch” behavior and a “Number” behavior.
Organize the newly added behaviors as shown.



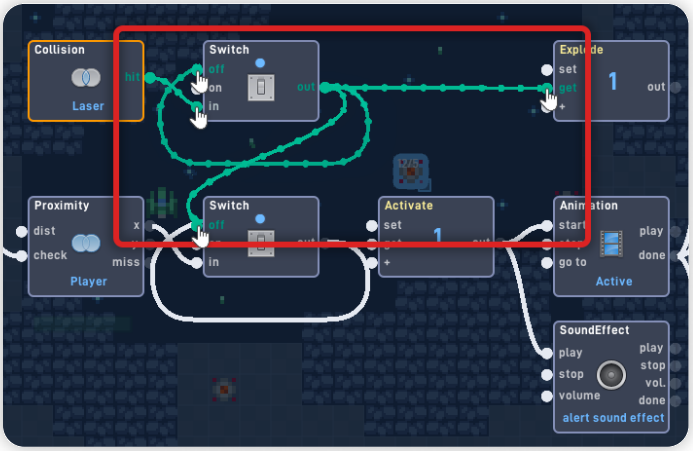
Open the Collision behavior panel, set its collision to "Laser".
Click "OK" to close the Collision panel and save your changes.

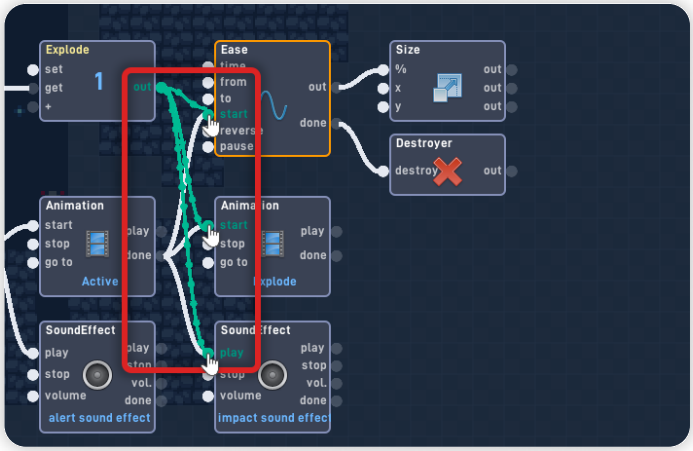
Open the Switch behavior panel, set its initial state to "on".
Click "OK" to close the Switch panel and save your changes.

Open the Number behavior panel, and set its Label to "Explode".
Set the Current value to "1".
Click "OK" to close the panel and save your changes.

Now, let's connect the behaviors.
Connect the Collision "hit" to the "in" upper Switch input.
Connect the upper Switch "out" to:

- Its own "off" input;
- The "off" input from the Switch below it;
- And the "get" input from the Explode Number;

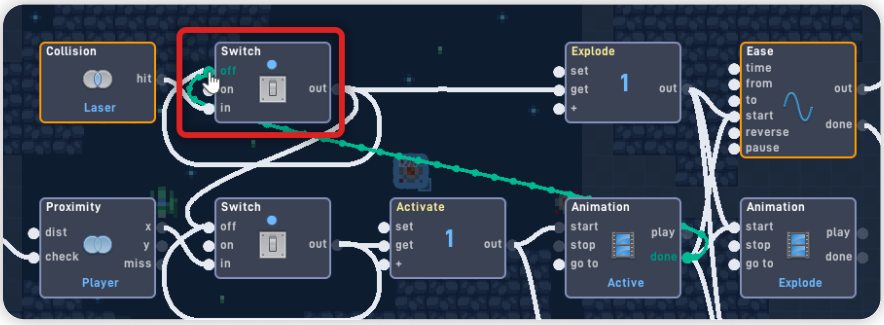




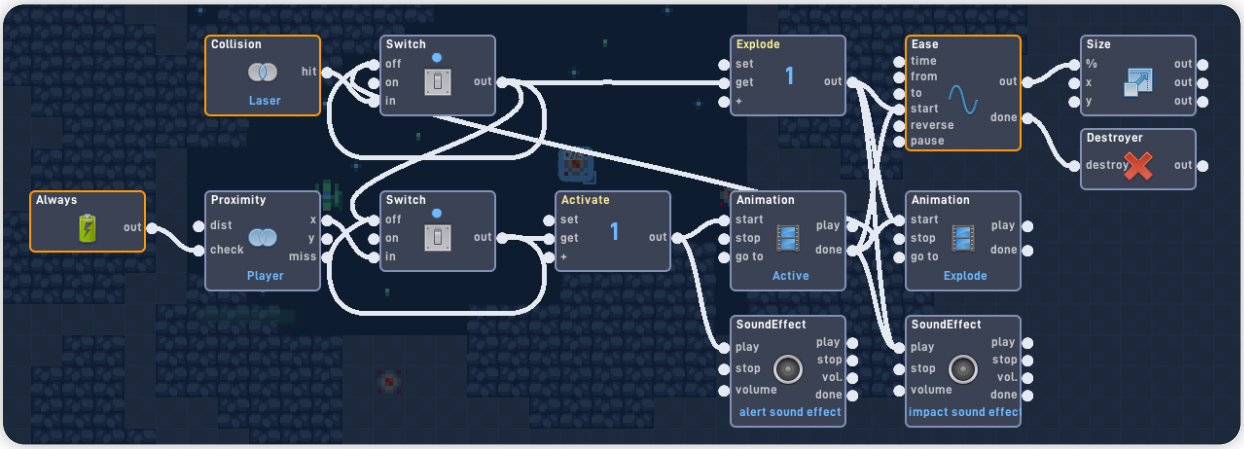
Connect the Explode Number "out" to:

- The "start" input from the Ease;
- The "start" input from the Explode Animation;
- And the "play" input from the Impact SoundEffect;

And finally, connect the Active Animation "done" to the "off" input from the upper Switch behavior.



Nice work! This new logic we added skips the "Active" logic and instantly starts the "Explode" logic.



- *If this object Collides with the Laser object, it triggers the Explode Number and turns both Switches off, so the logic only activates Once.*
- *Then, the Explode Number plays the Explode Animation, starts the Size animation, and plays the impact Sound.*

Click "OK" to close the Behavior Editor and save your changes.
Click "OK" again to close the object properties panel.

Click "Play" on the bottom toolbar to play your game.

When in Play mode:

- Background Music will play and gradually raise its volume when the game starts, looping throughout the entire level;
- When the player presses the Spacebar key, the Player Ship will emit Lasers in the direction it's facing;
- If a Laser collides with the Trap Explosive object, it will explode the Trap instantly;

If you run into any 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 the Trap object activates or explodes multiple times,** make sure the Switch behaviors are turning themselves "off" and the Active animation "done" output also turns off the upper Switch; *(Step 7)*

- **If the Player emits the Laser object in the correct direction, but the Laser sprite angle doesn't match the direction it is moving:**
  Ensure that the Laser "Forward direction" is set to "Up" on the object Properties panel; *(Step 2)*

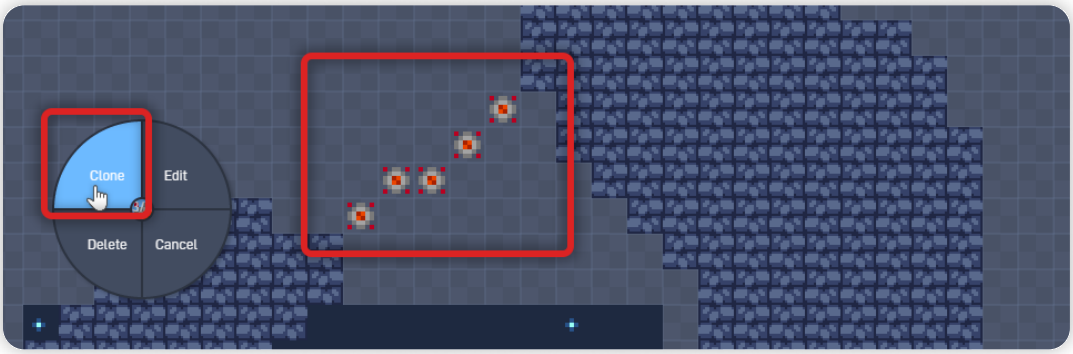
- **If the Player doesn't emit the Laser in the direction the Ship is facing:**
  Ensure that on the Player Behaviors, inside the "Laser Projectiles" bundle, the Emit behavior has "Rotate objects" enabled; *(Step 5)*

- **If the Laser projectile is moving too slowly or too fast:**
  Bigger or smaller sprites affect the object's mass; Therefore, having a bigger or smaller Laser sprite can make the object travel slower or faster respectively.
  So, if you change a sprite, always remember to update its logic values.
  On the Player Behaviors, you can adjust the Laser speed by changing the "Emit Force" value in the Emit behavior panel; *(Step 5)*

Optional Game Enhancements

Once you have this lesson's game working, here is a simple enhancement to try:

- **Add more "Trap Explosive" objects to the Level** by clicking on the Trap object, selecting "Clone" from the circle menu, and clicking throughout the level to place more traps.



As a challenge for the player, you can create "blocked passages" the player must destroy with the Lasers to proceed.

Space Pilot - Part 1

Nice work!

You've now finished **Lesson 5 out of 6.**