Game Design

Tuesdays at Robious Elementary School

4:00-5:00pm
1/10 - 2/14

Introduction

- Introduce yourself
- Tell us 2 truths and a lie about yourself
- Instructors
- We'll go over what to expect during the class

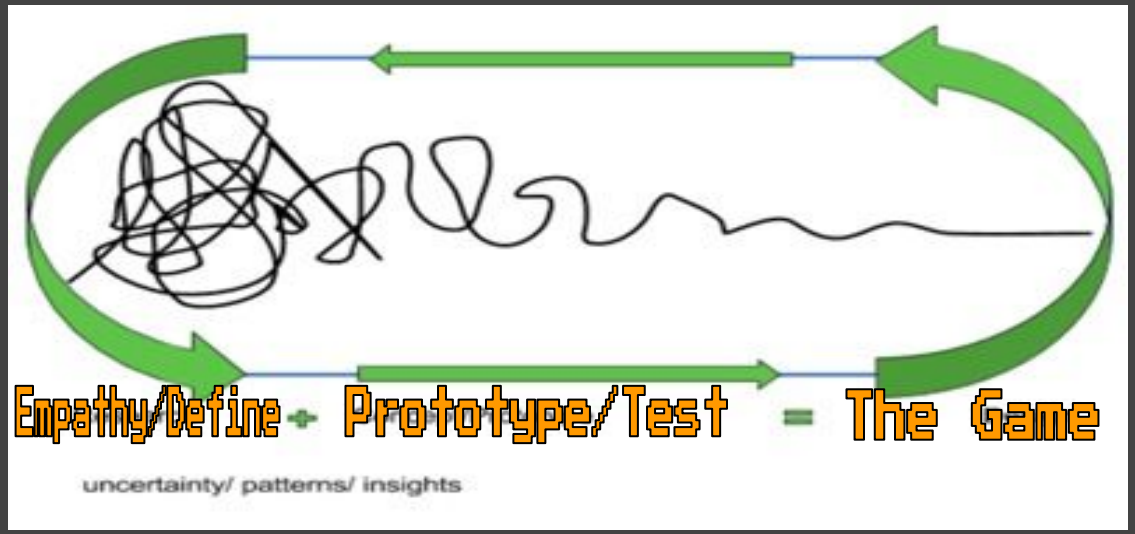
Tech Em STUDIOS

Objectives

- Collaborate with your classmates to design awesome games!

- We'll learn the **Design Thinking** process
  - A user-centered approach to design games

- Along the way, we'll learn computer science!



- Empathy: Be able to step in another person's shoes, and see what they see
- Define: Ask questions: What are the user's needs/wants? Issues? Likes/Dislikes?
  - Brainstorm **more than one** solution to the user's issues
- **Prototype**: Design a game based on user feedback
- Test: Have your classmates test out your game and give you feedback
- REPEAT!!!

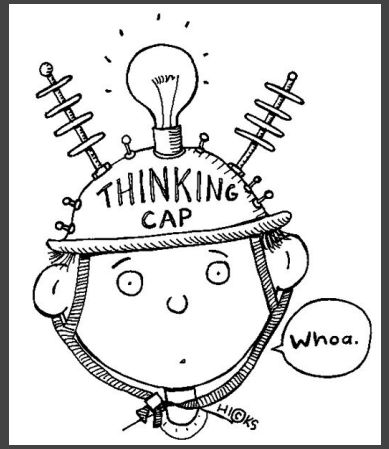
Design Thinking | Empathy/Define

What is your favorite game to play?

Why is this your favorite game?

What makes this game fun?

- Keep those design thinking questions/answers in mind for when you start to create your games!



Game Design

What we'll use:

- Game Building
  - Hyperpad (Gamepress)
  - Advanced level design
  - Advanced characters
  - Advanced game play and logic

- Design Thinking
  - User-centered approach to solve problems and design

- Computer Science Concepts
  - Along the way we will learn fundamentals of coding

Design Thinking Exercise

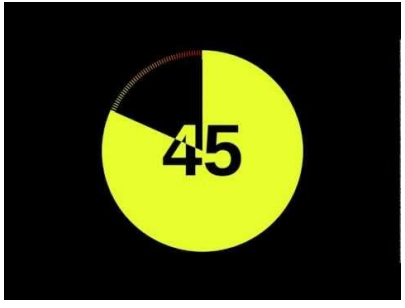
Let's Play

- Open the Hyperpad app
- Pick 1 game from "Projects"
  - Play a total of 3 games.

- Play the game — timed 4 minutes for each game.
- Jot down what you think about the games on your sheet

Think about these things while you play:

- Good things
- Bad things
- What do you want in your game?
- What would you leave out of your game?



Design your game!

1. Set the stage
    a. Sketch a level-design of your game
    b. Draw blocks
    c. Draw obstacles (i.e. spikes, lava, etc.)
2. Game Story
    a. Is there a background story for your protagonist?
    b. Is there even a protagonist?
3. **Keep in mind your design thinking statements**

Hyperpad Basics

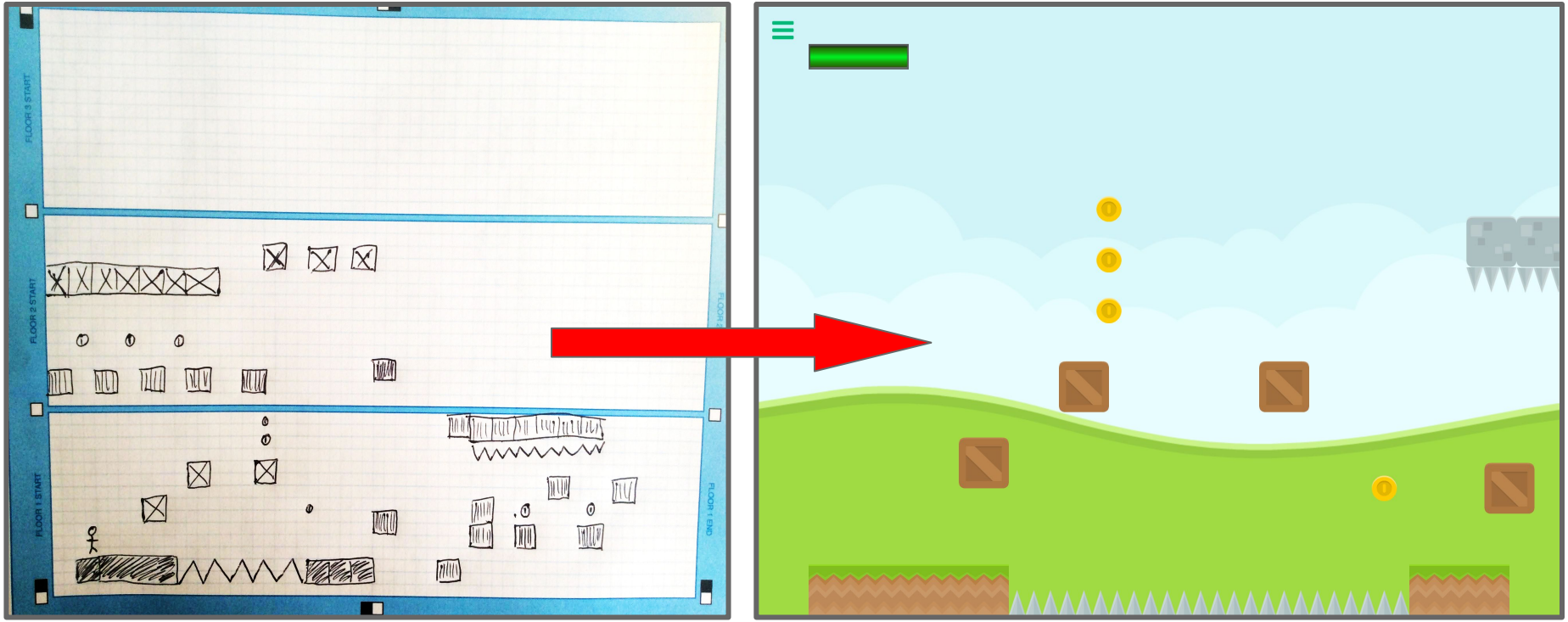
walk-through

*** NOTE ***

- Everything in Hyperpad is an object
  - Just an object, with no properties... *not for long!*

- Your character will not automatically know that coins are good and spikes/ lava are bad
  - YOU have to specify what the objects do!
  - The objects will not do anything by themselves
  - YOU are in control!

Example: Paper sketch to Hyperpad

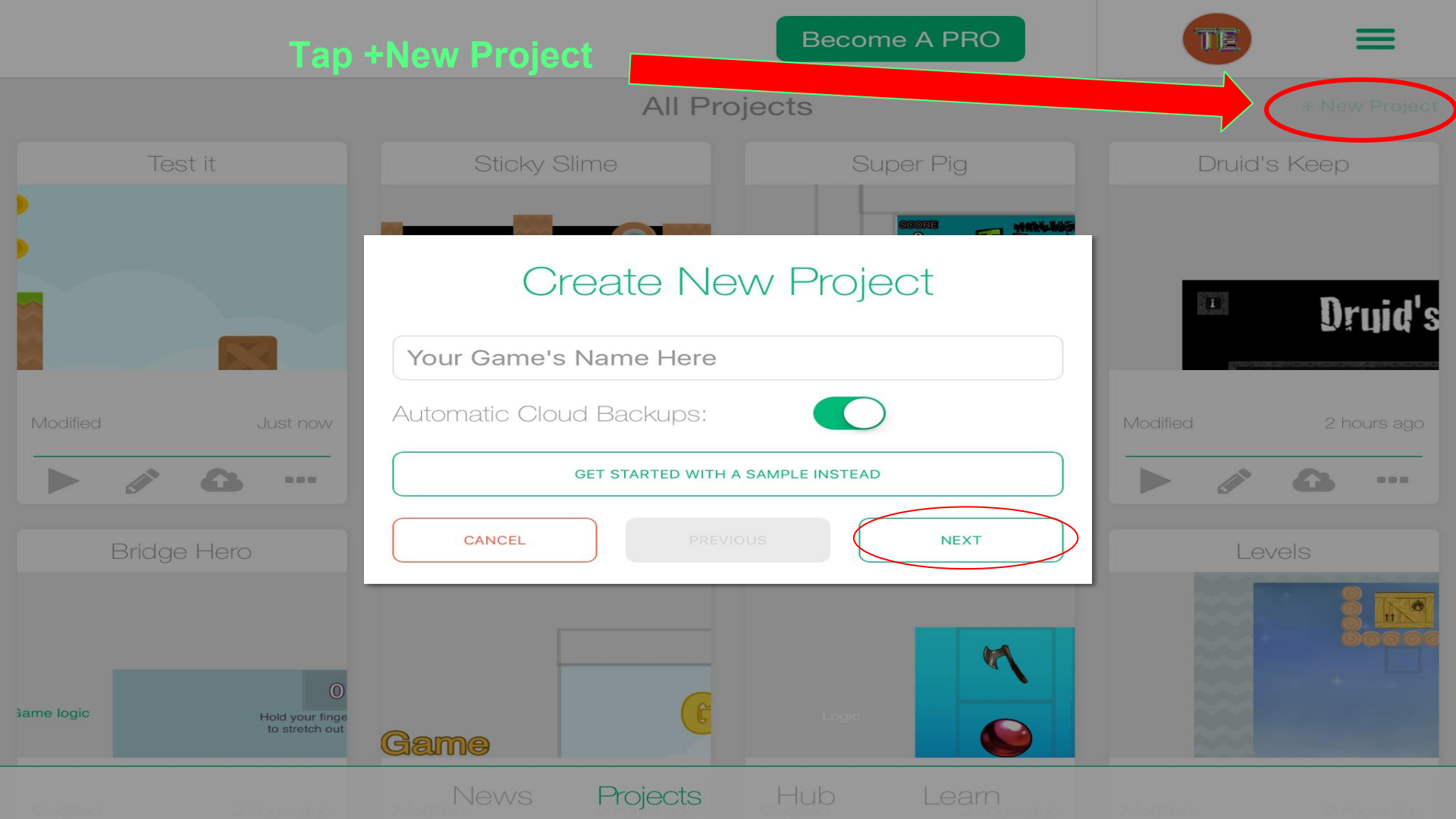


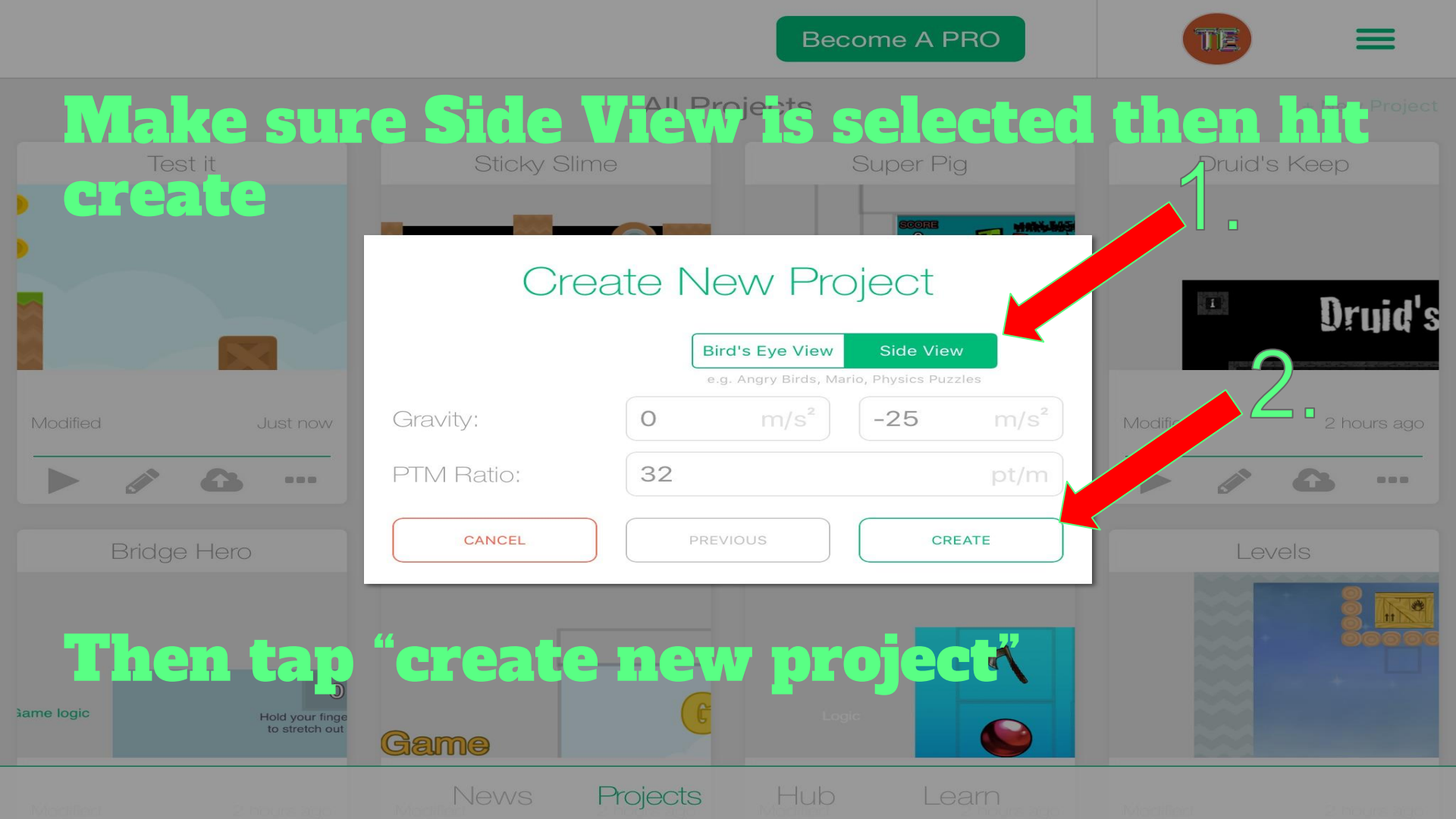
Design your game!

1. Transfer your drawing
    a. Make a New Project in Hyperpad
    b. Select Side-View
    c. Make your drawing of level-design come to life by placing your blocks and obstacles on the Hyperpad game surface

Create a New Project

Tap +New Project



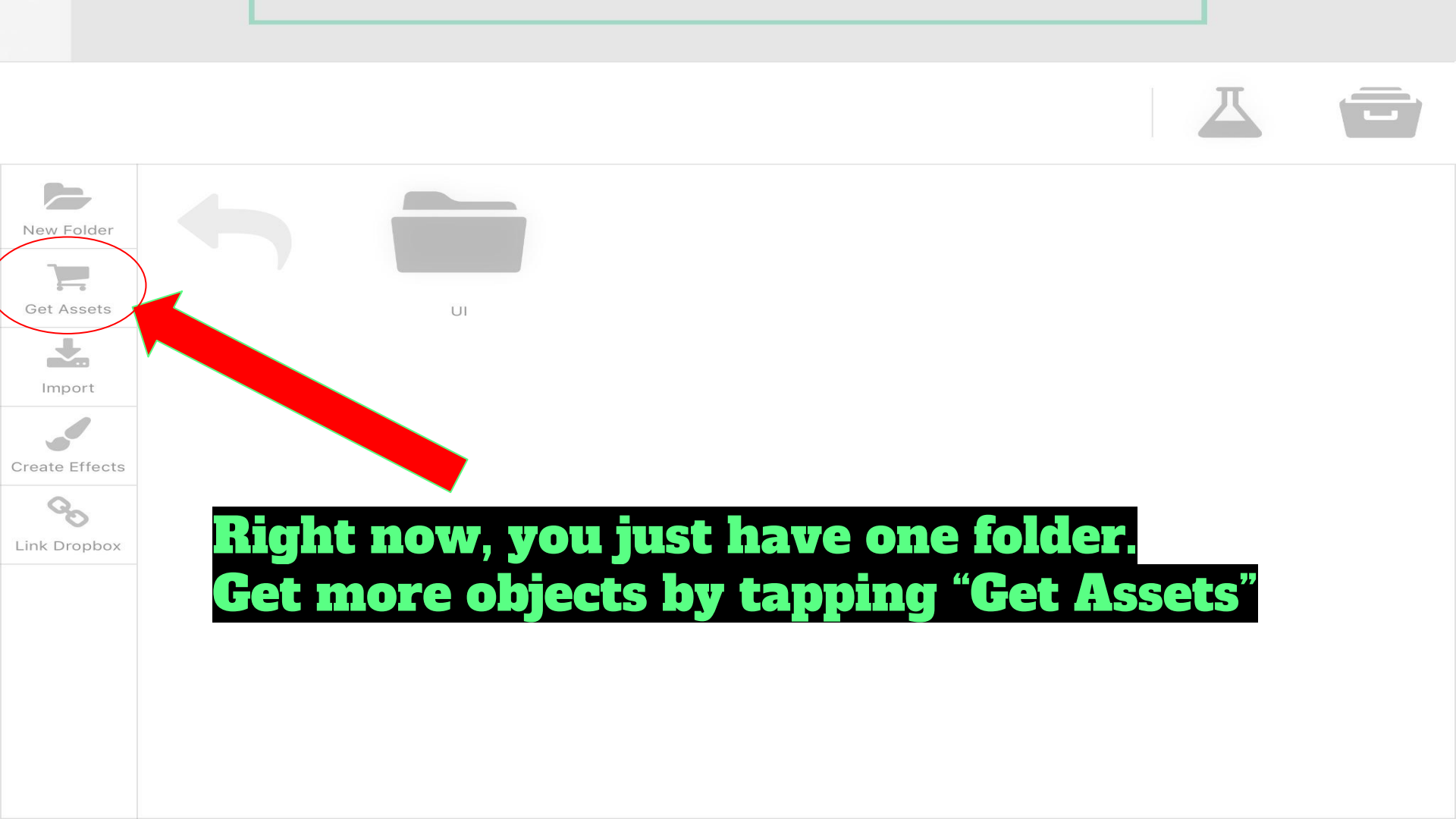

Become A PRO
Make sure Side View is selected then hit create
Test it
Sticky Slime
Super Pig
Druid's Keep
Create New Project
Bird's Eye View
Side View
e.g. Angry Birds, Mario, Physics Puzzles
Gravity:
0 m/s²
-25 m/s²
PTM Ratio:
32 pt/m
CANCEL
PREVIOUS
CREATE
1.
2.
Modified
Just now
2 hours ago
Bridge Hero
Levels
Then tap “create new project”
News
Projects
Hub
Learn

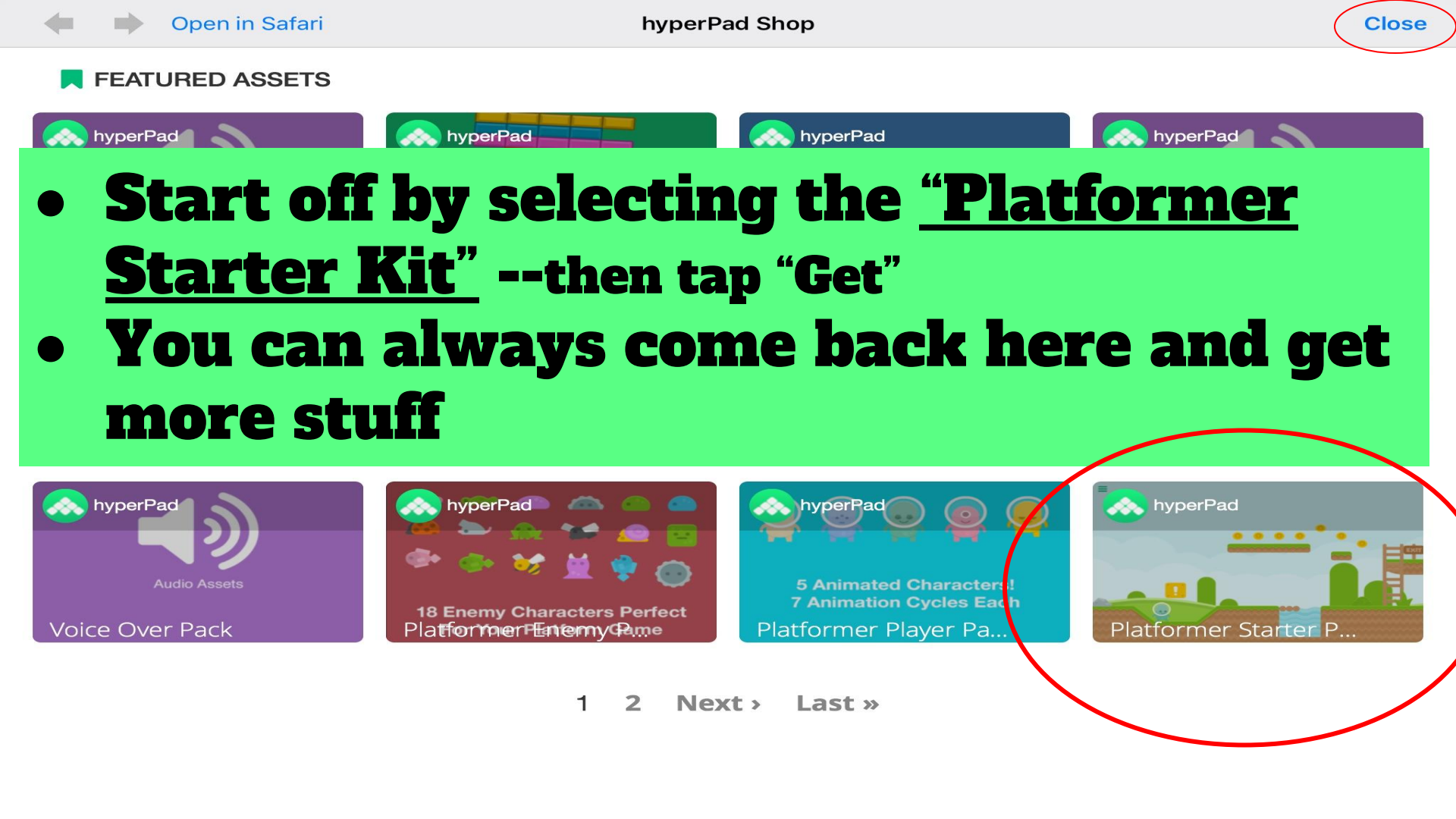
This is your game's "surface"

The folder where you get all of your objects to place on the surface

Select this

How to get more objects

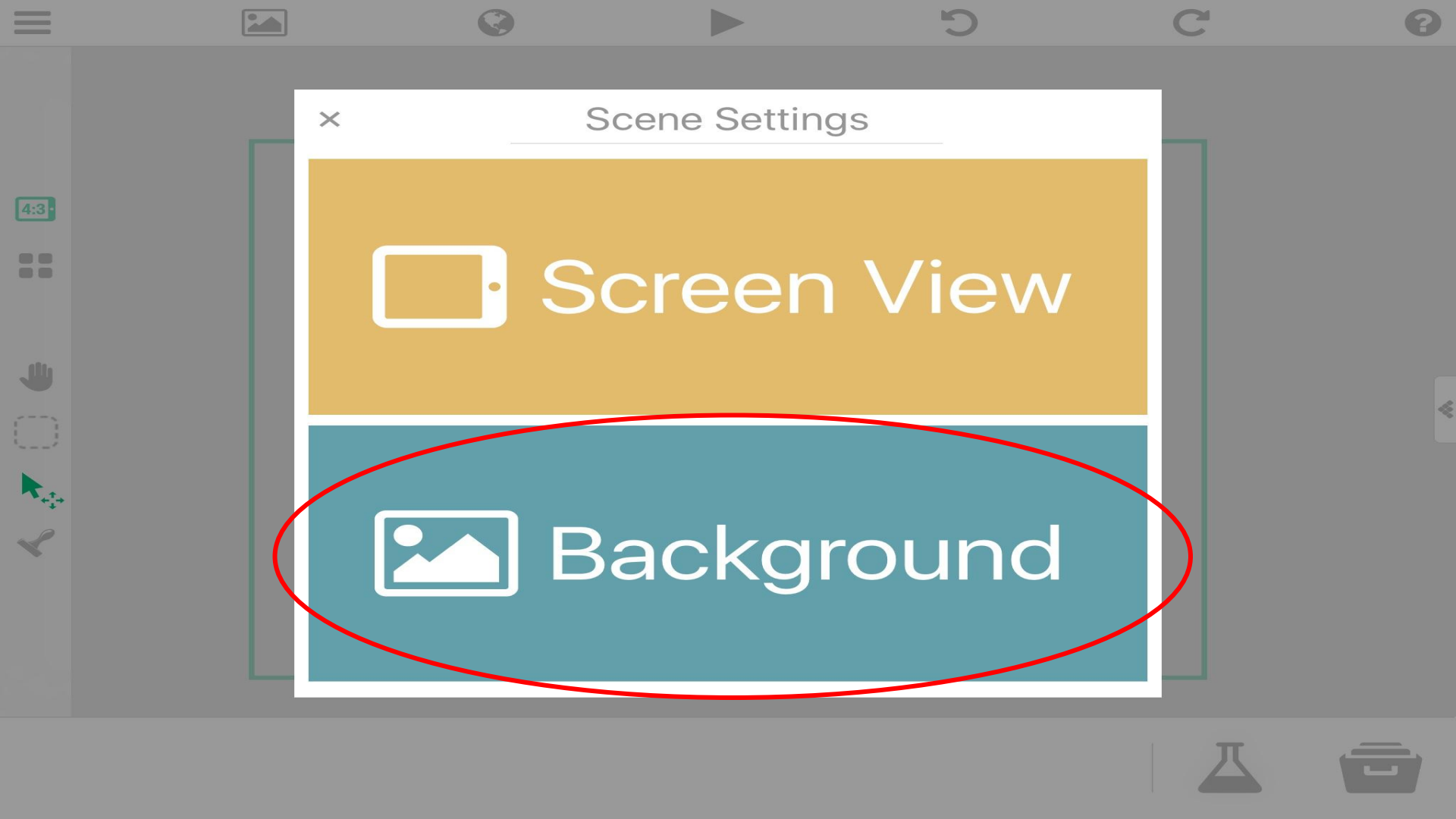

New Folder
Get Assets
Import
Create Effects
Link Dropbox
UI
Right now, you just have one folder.
Get more objects by tapping “Get Assets”

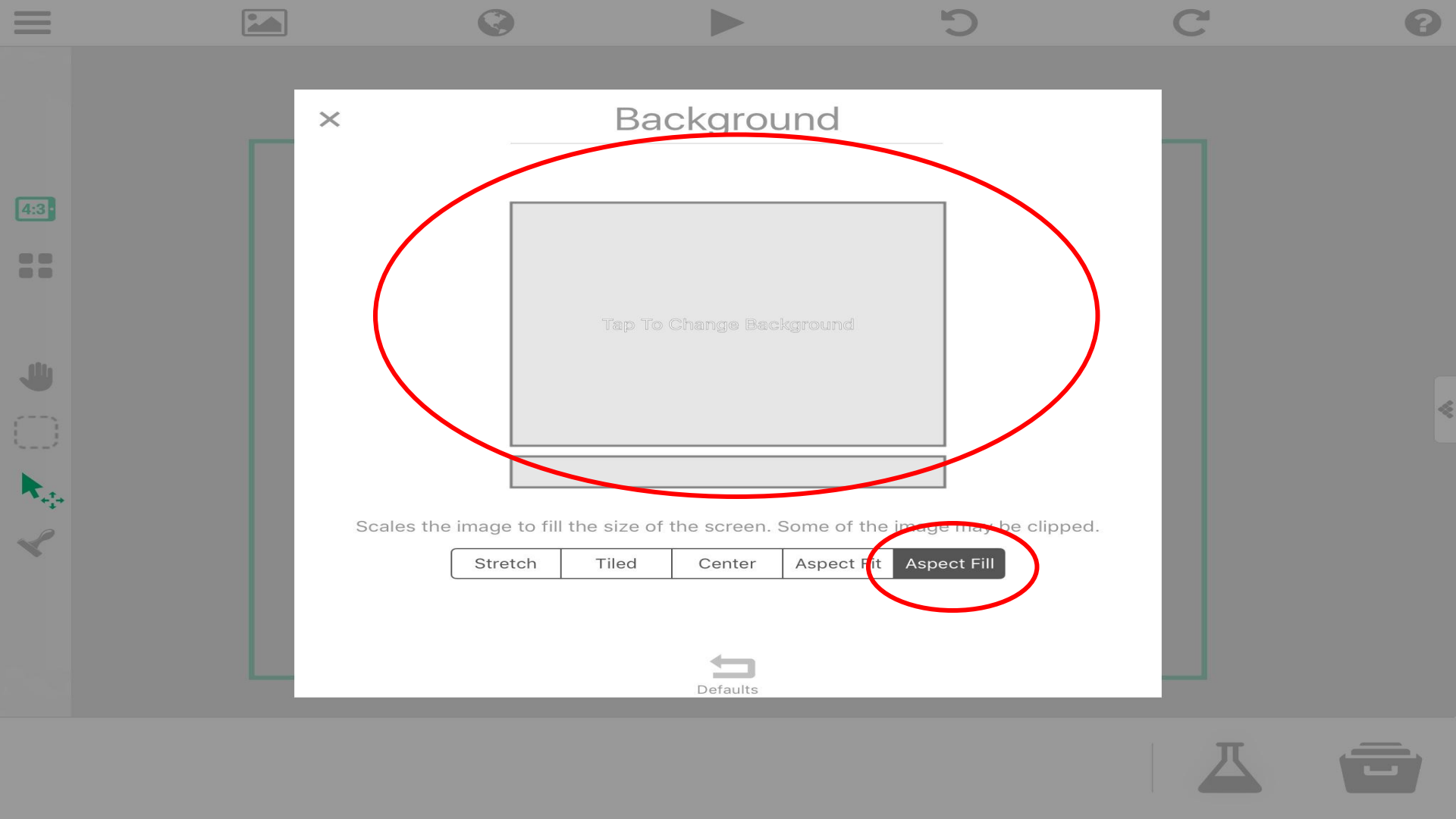


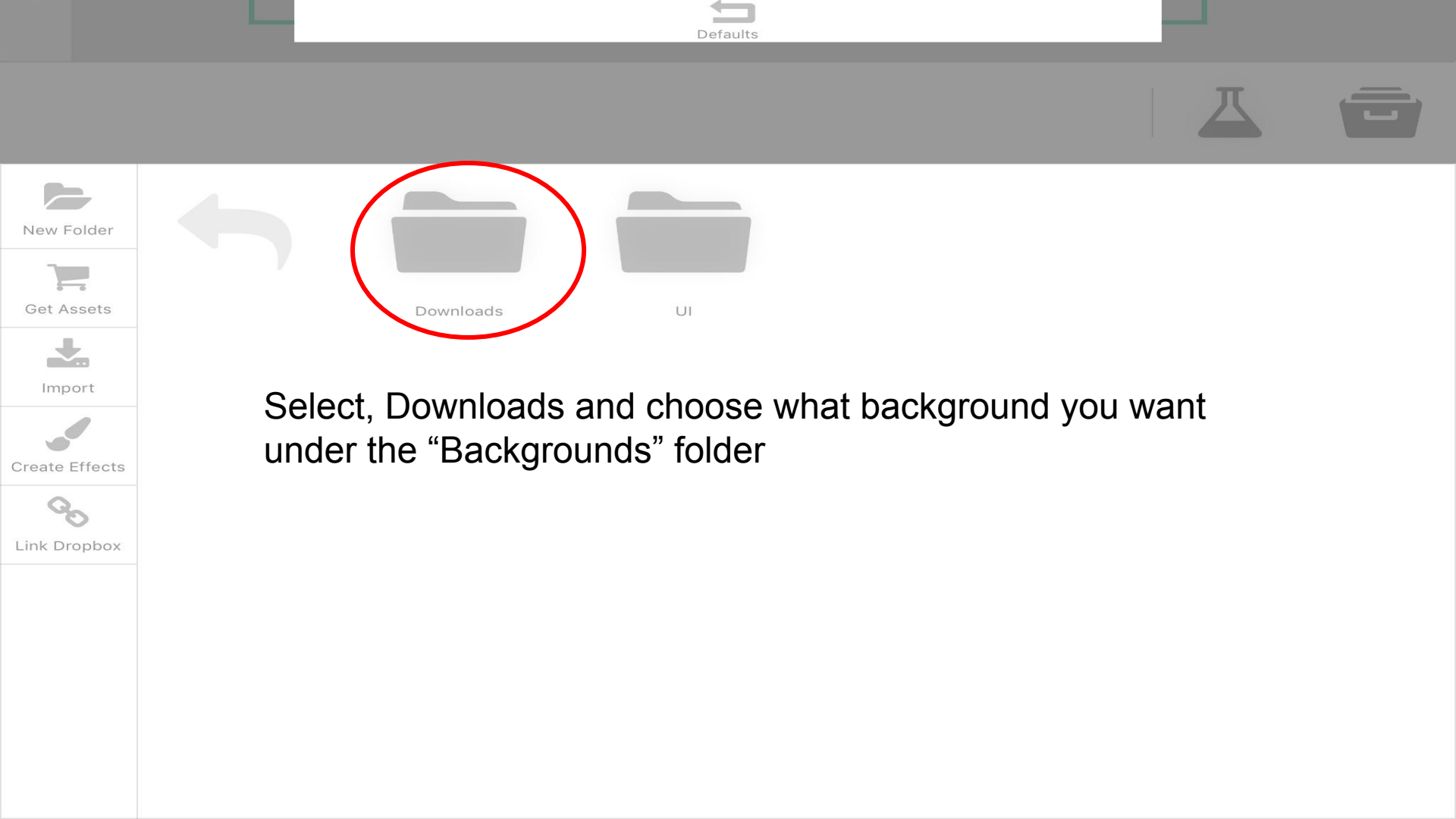
- **Start off by selecting the <u>"Platformer Starter Kit"</u> --then tap "Get"**
- **You can always come back here and get more stuff**

Choosing a Background

- After Downloaded “Platformer Starter Kit”...
- Tap the Background icon


Scene Settings
Screen View
Background


Background
Tap To Change Background
Scales the image to fill the size of the screen. Some of the image may be clipped.
Stretch
Tiled
Center
Aspect Fit
Aspect Fill
Defaults



Select, Downloads and choose what background you want under the “Backgrounds” folder

Level-Design

Placing objects on your game’s surface

Level-Design

- Design your level by dragging and dropping object blocks (Grass Blocks, etc.) on the surface of your game

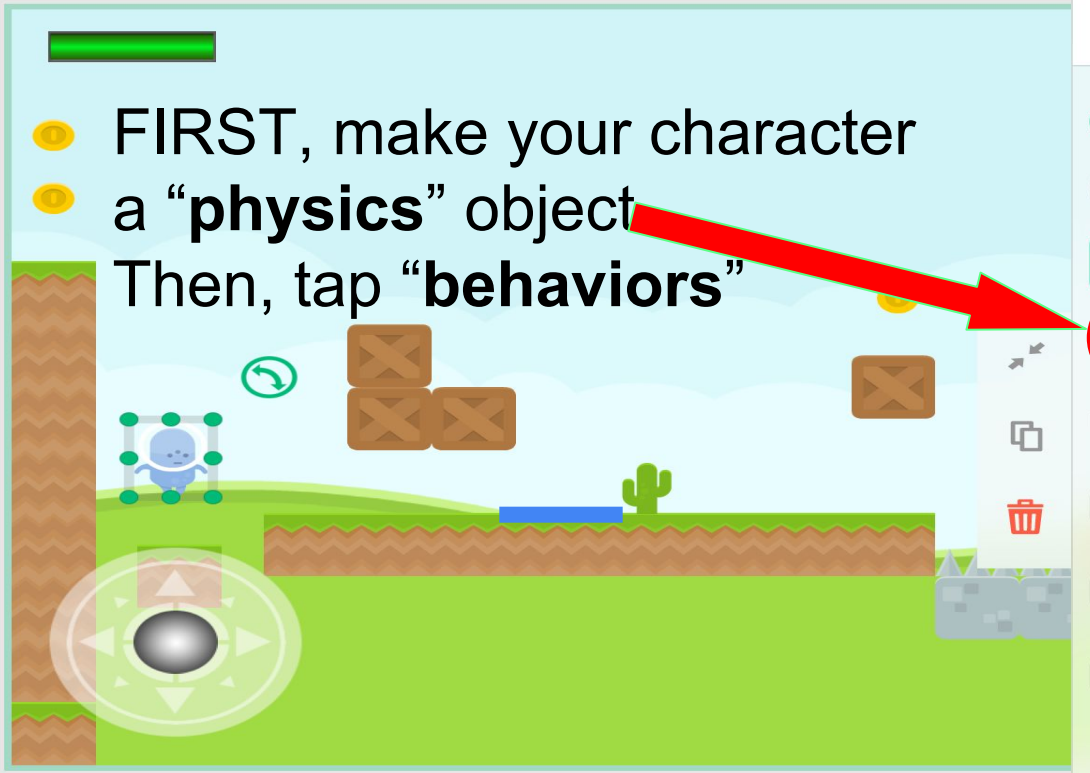
- You can start putting coins and obstacles

- Think about creating secret paths or traps

Hint
When dragging & dropping blocks/objects, keep this grid tool selected
This helps to keep everything aligned and snap together nicely

Making Your Character Move

Changing the Behaviours



Walk-14

Blue Alien

BEHAVIORS

Passable:

Friction:
35.00 %

Bounce:
0.00 %

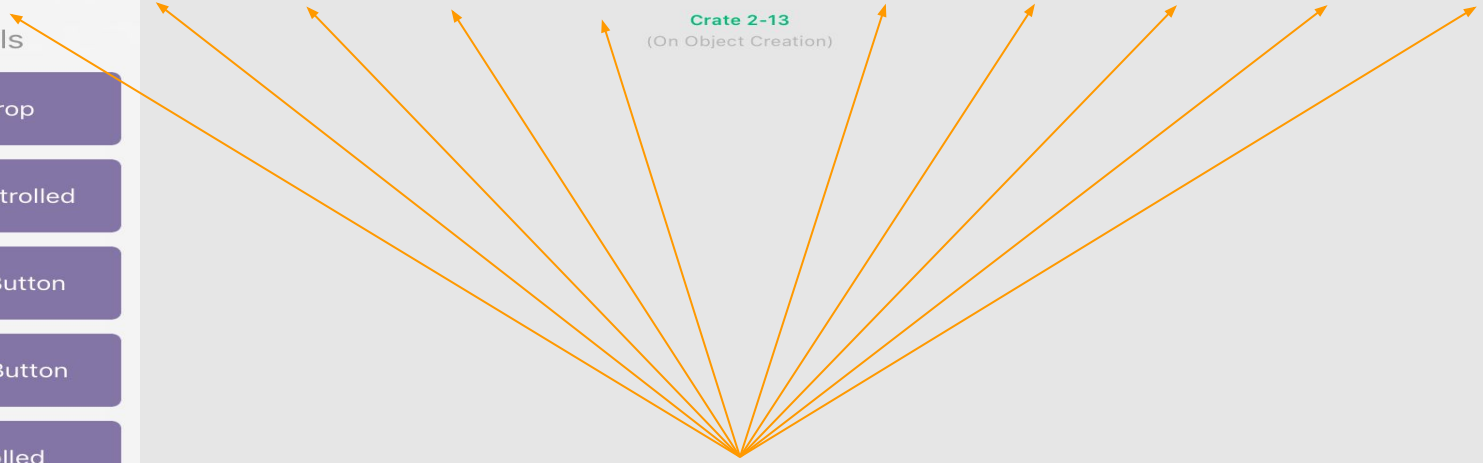
Mass:
20.00 kg

Controls

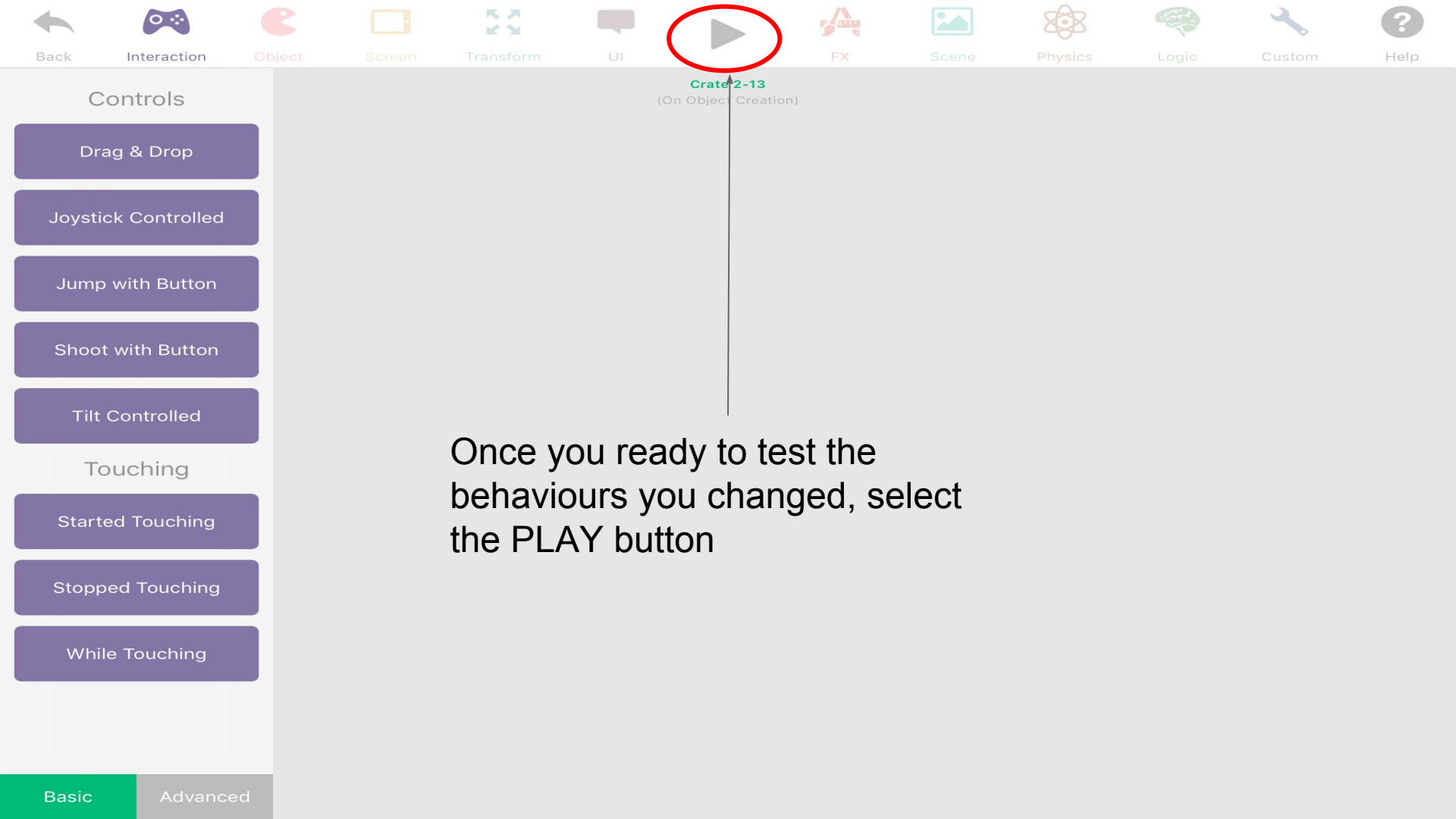
- Drag & Drop
- Joystick Controlled
- Jump with Button
- Shoot with Button
- Tilt Controlled

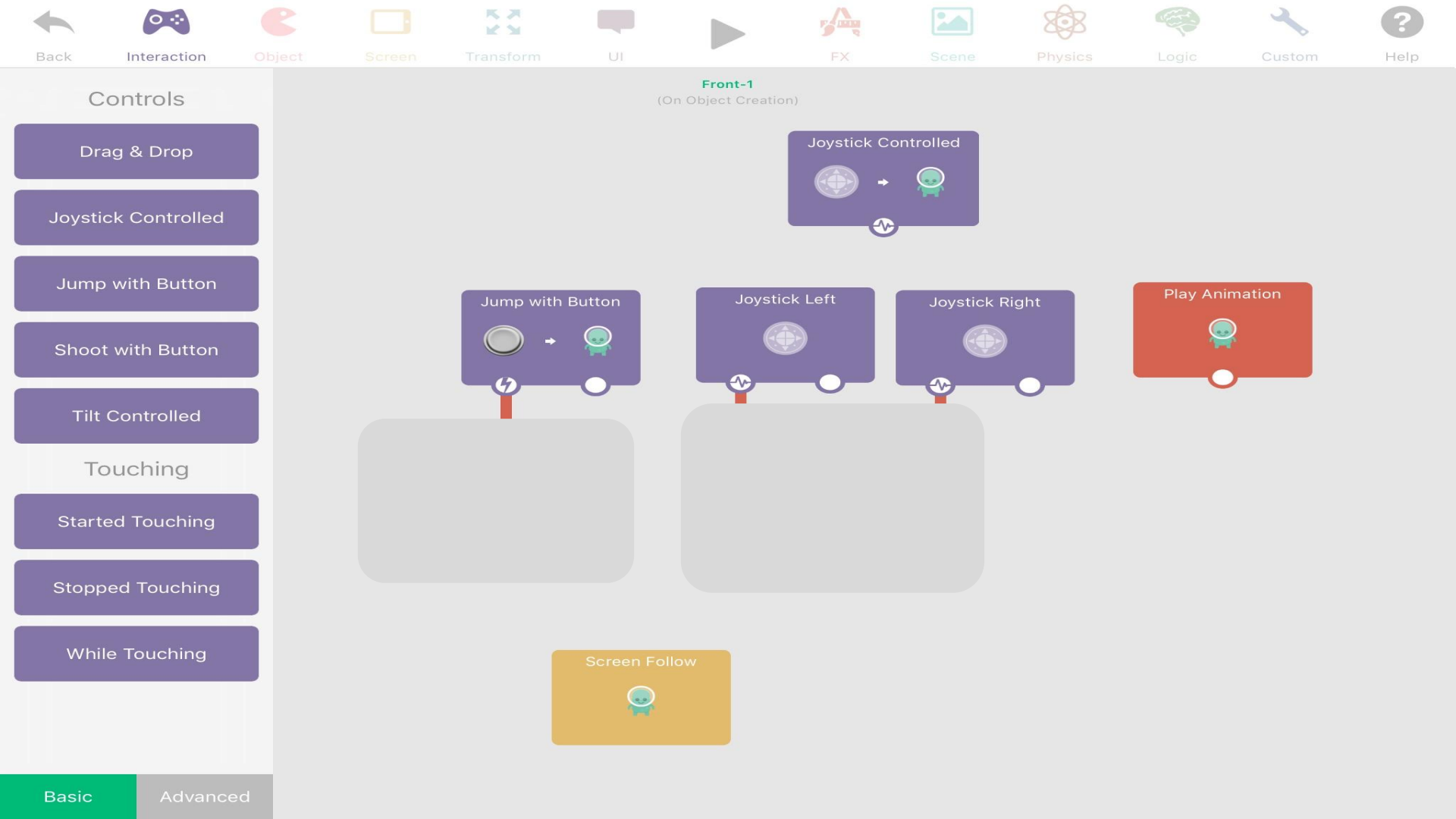
Touching

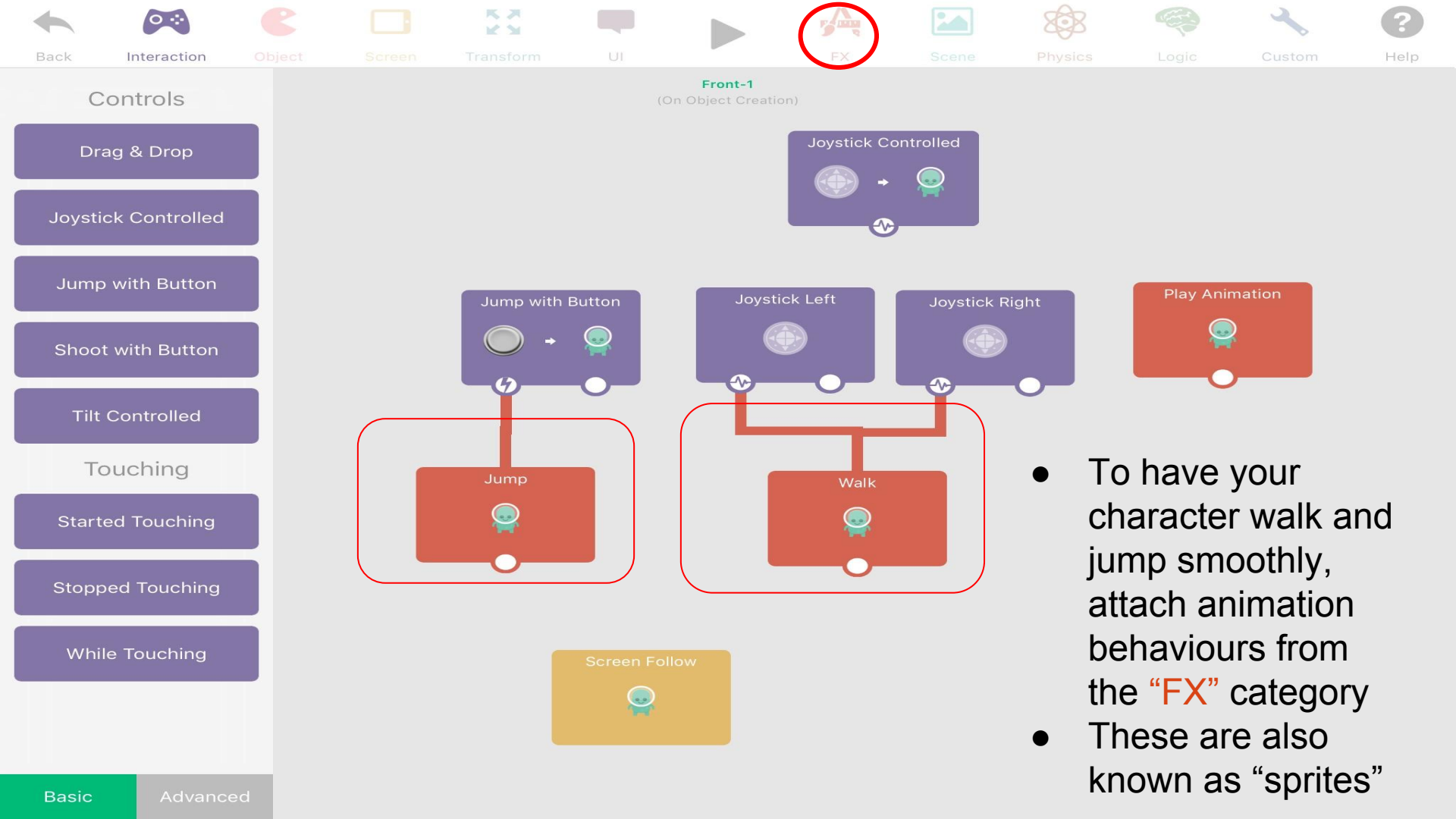
- Started Touching
- Stopped Touching
- While Touching



Categories of all of the different behaviours YOU can manipulate

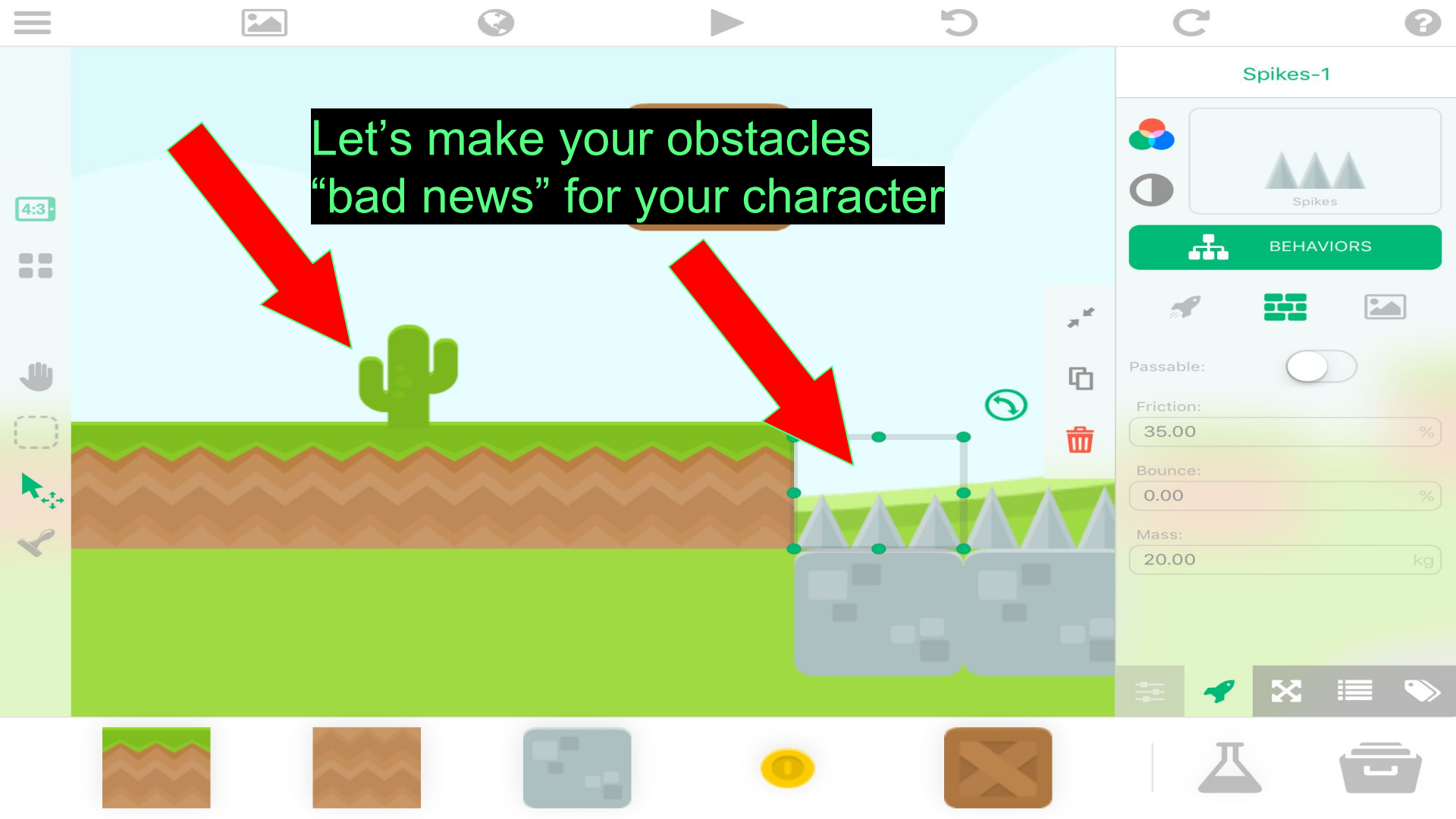

Back
Interaction
Object
Screen
Transform
UI
FX
Scene
Physics
Logic
Custom
Help
Crate 2-13
(On Object Creation)
Controls
Drag & Drop
Joystick Controlled
Jump with Button
Shoot with Button
Tilt Controlled
Touching
Started Touching
Stopped Touching
While Touching
Basic
Advanced
Once you ready to test the behaviours you changed, select the PLAY button

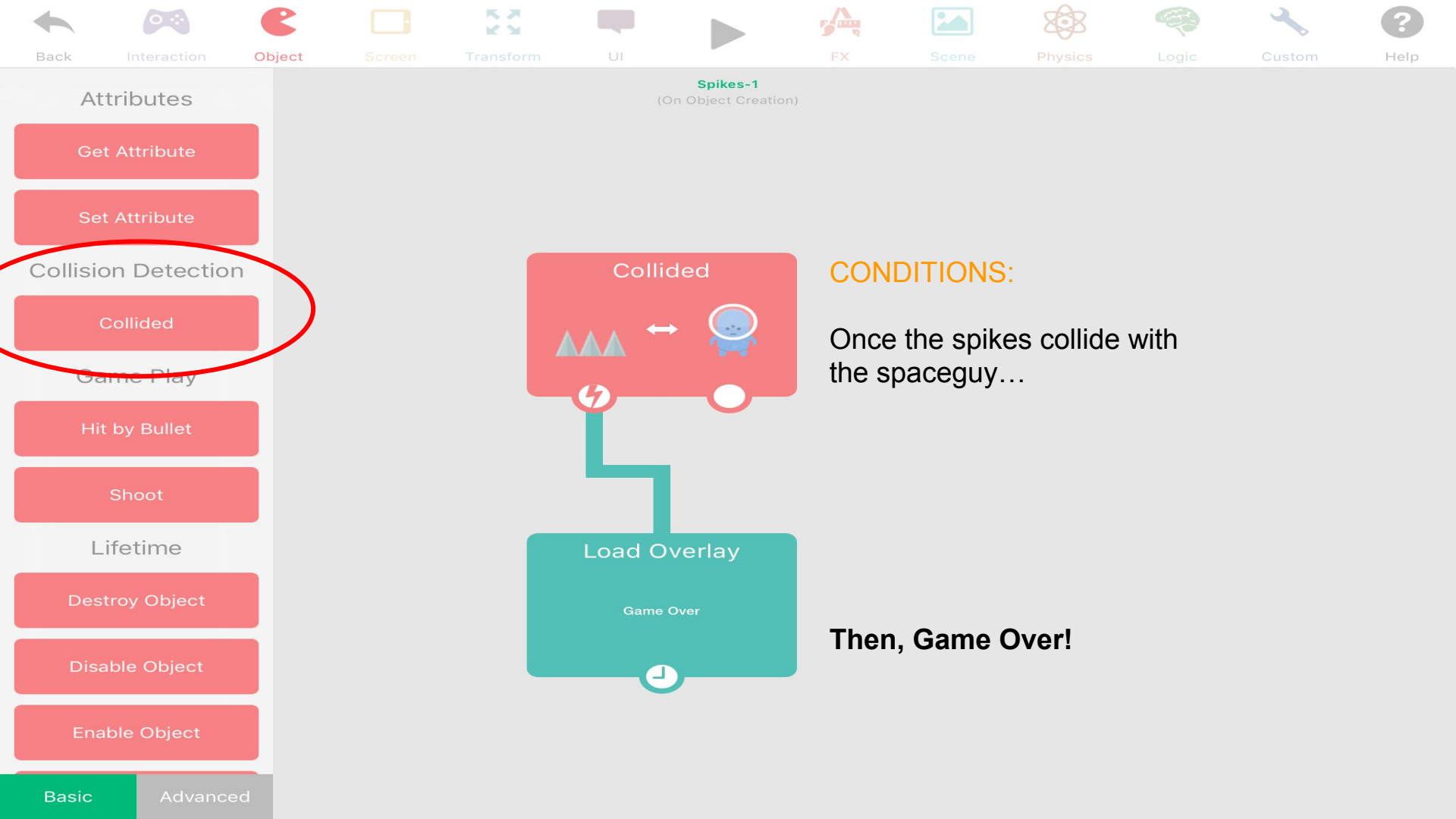

Back
Interaction
Object
Screen
Transform
UI
FX
Scene
Physics
Logic
Custom
Help
Controls
Drag & Drop
Joystick Controlled
Jump with Button
Shoot with Button
Tilt Controlled
Touching
Started Touching
Stopped Touching
While Touching
Basic
Advanced
Front-1
(On Object Creation)
Joystick Controlled
Jump with Button
Joystick Left
Joystick Right
Play Animation
Screen Follow


Back
Interaction
Object
Screen
Transform
UI
FX
Scene
Physics
Logic
Custom
Help
Controls
Drag & Drop
Joystick Controlled
Jump with Button
Shoot with Button
Tilt Controlled
Touching
Started Touching
Stopped Touching
While Touching
Basic
Advanced
Front-1
(On Object Creation)
Joystick Controlled
Jump with Button
Joystick Left
Joystick Right
Play Animation
Jump
Walk
Screen Follow
To have your character walk and jump smoothly, attach animation behaviours from the "FX" category
These are also known as "sprites"

Obstacle Behavior

Changing the Behaviours to make objects behave like obstacles


Let’s make your obstacles
“bad news” for your character
Spikes-1
Spikes
BEHAVIORS
Passable:
Friction:
35.00
%
Bounce:
0.00
%
Mass:
20.00
kg


Back
Interaction
Object
Screen
Transform
UI
FX
Scene
Physics
Logic
Custom
Help
Attributes
Get Attribute
Set Attribute
Collision Detection
Collided
Game Play
Hit by Bullet
Shoot
Lifetime
Destroy Object
Disable Object
Enable Object
Basic
Advanced
Spikes-1
(On Object Creation)
Collided
Load Overlay
Game Over
CONDITIONS:
Once the spikes collide with the spaceguy…
Then, Game Over!

Collectable Behaviors

Changing the Behaviours of objects so the main character ‘collects’ them

Collectables Behaviours

- Setting up the behaviours for collectibles, like coins, gems, keys etc. is similar to obstacle behaviour
  - First, there is a collided behaviour
  - Second, something happens after that
    - For example,
      - When a character collides with a coin, the coin disappears
      - You can even add that to your character's score

Don't Reinvent the Wheel!!!

- When you run into a problem, think about if you have seen a similar problem before
- What did you do then?

Enemy Behaviors

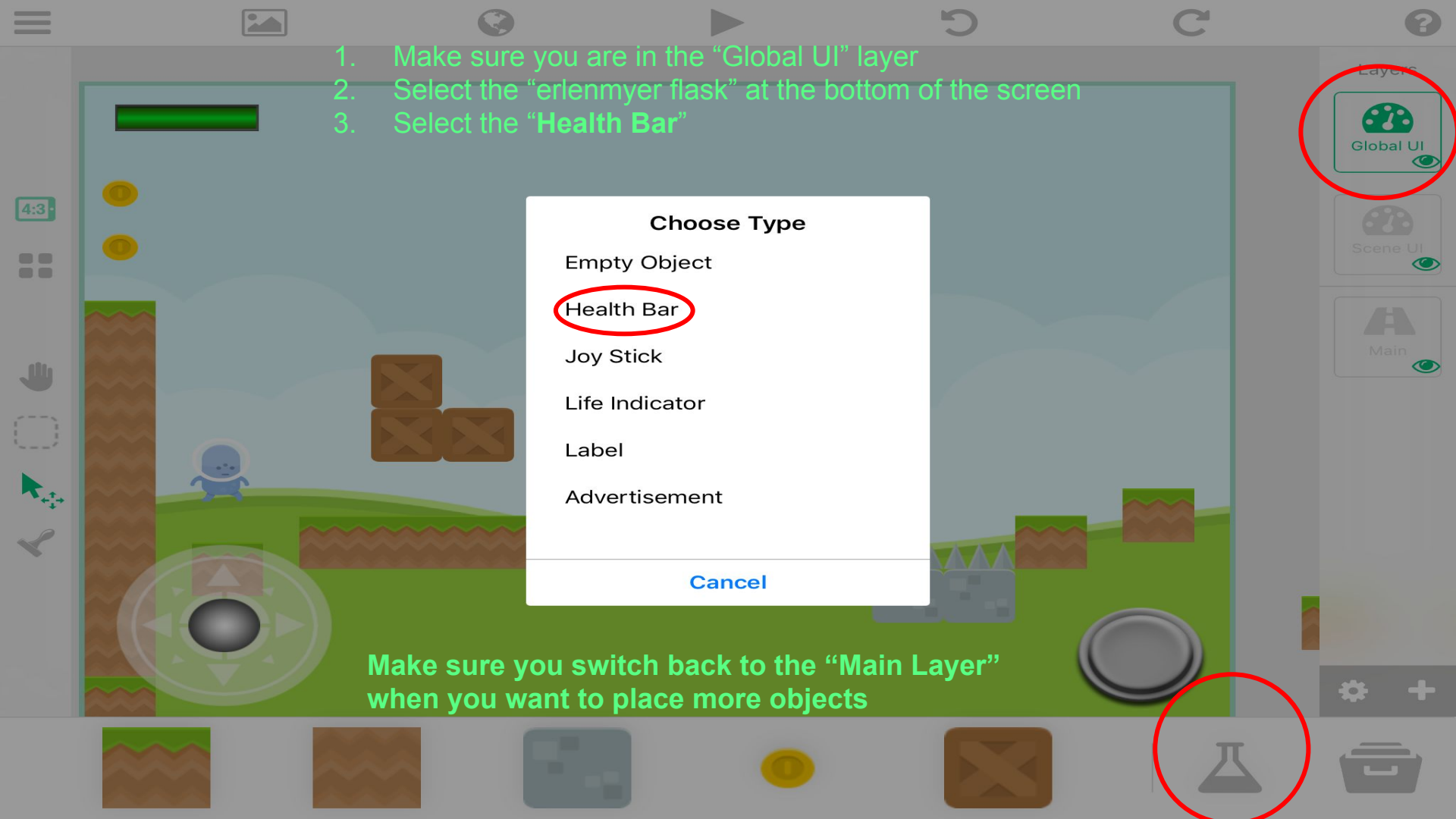
Changing the Behaviours of more objects

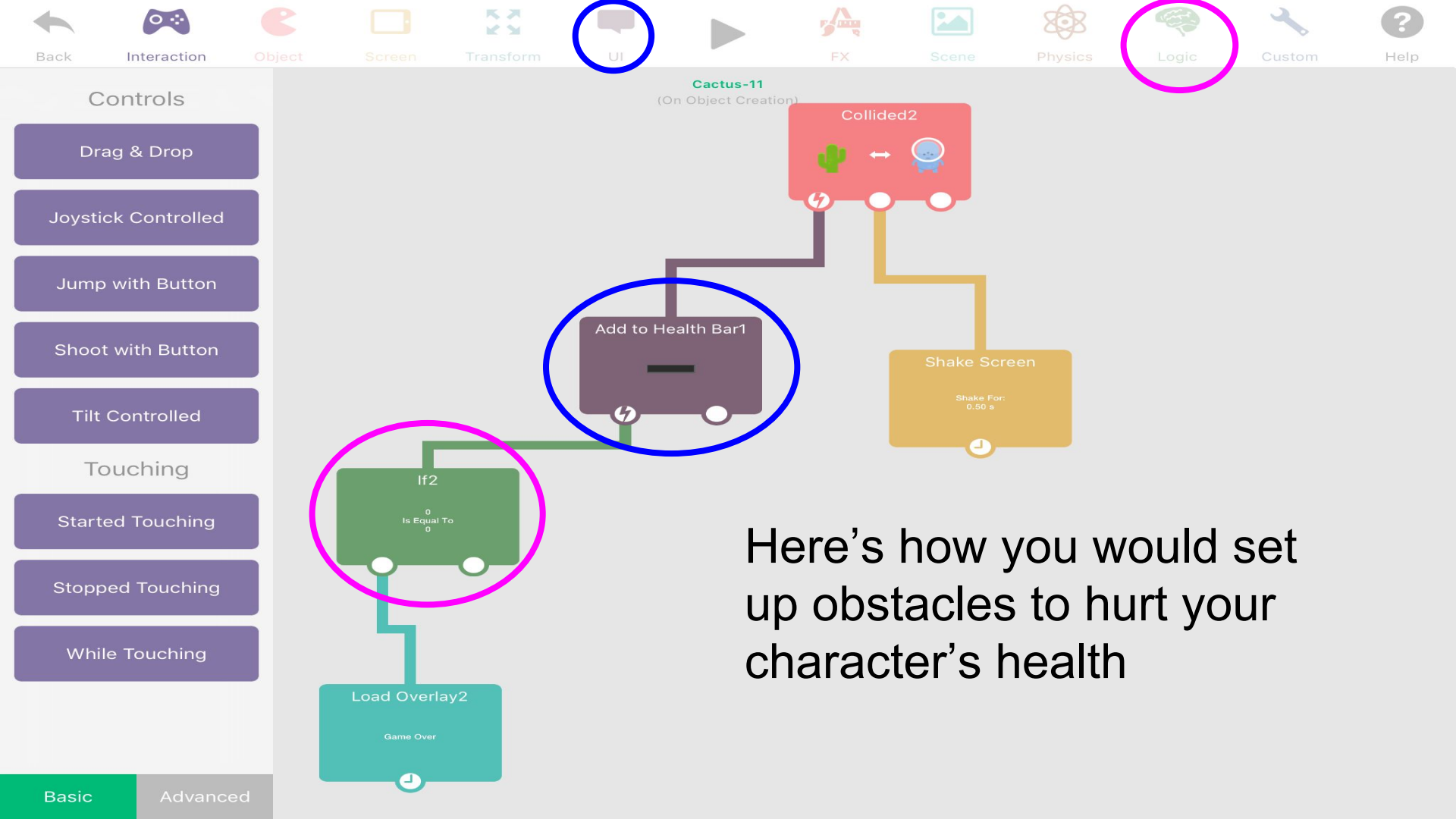
Enemy Behaviours

- Again, setting up the behaviours for enemies is similar to those for coins and obstacles
  - The main differences:
    - You can have the enemy move (**“patrol”**)
    - Once you collide with the enemy, your health bar can go down or it can be game over

Health Bar

Creating a working health bar for main character

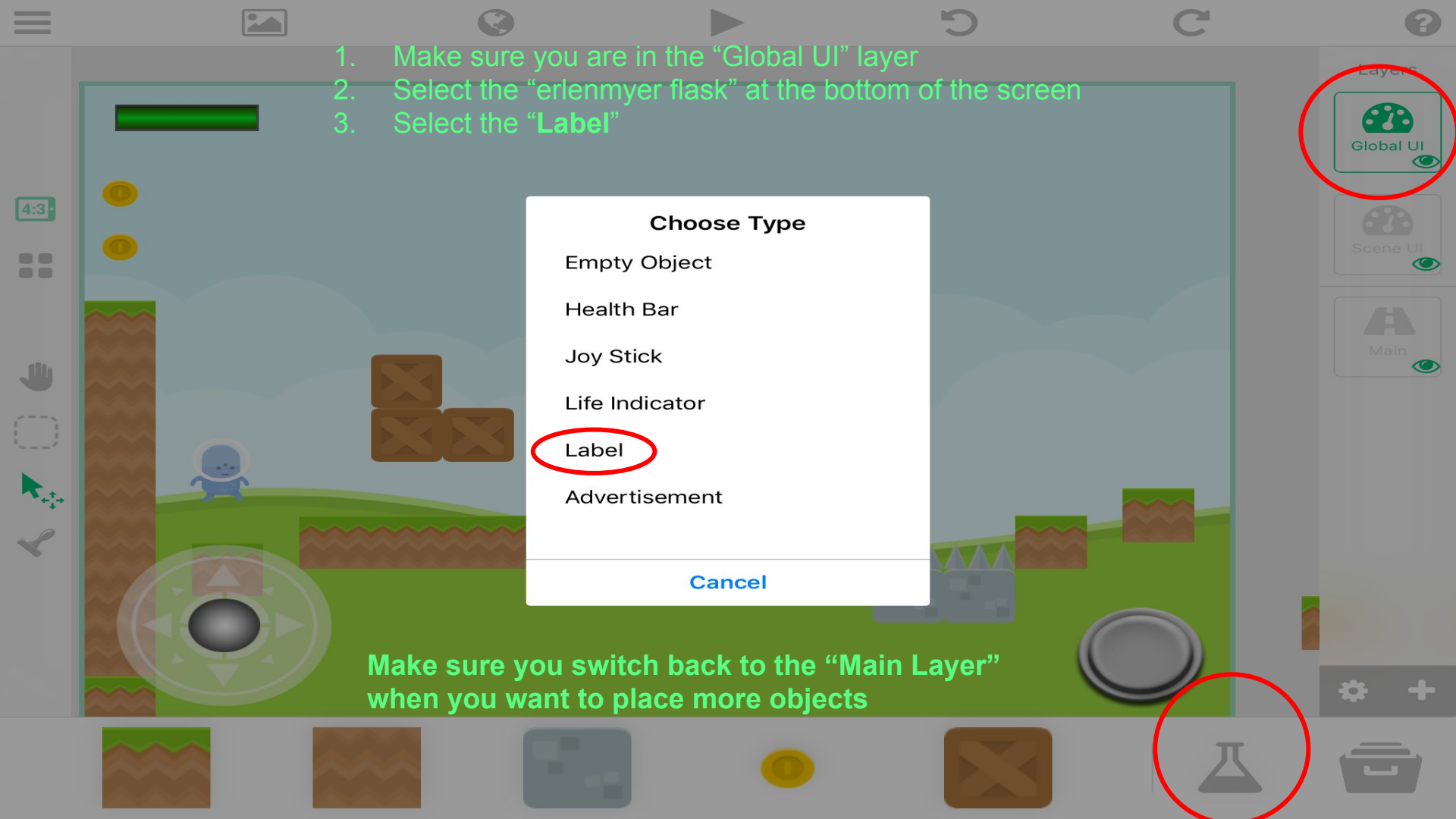

1. Make sure you are in the “Global UI” layer
2. Select the “erlenmyer flask” at the bottom of the screen
3. Select the “Health Bar”
Choose Type
Empty Object
Health Bar
Joy Stick
Life Indicator
Label
Advertisement
Cancel
Global UI
Scene UI
Main
Make sure you switch back to the “Main Layer” when you want to place more objects

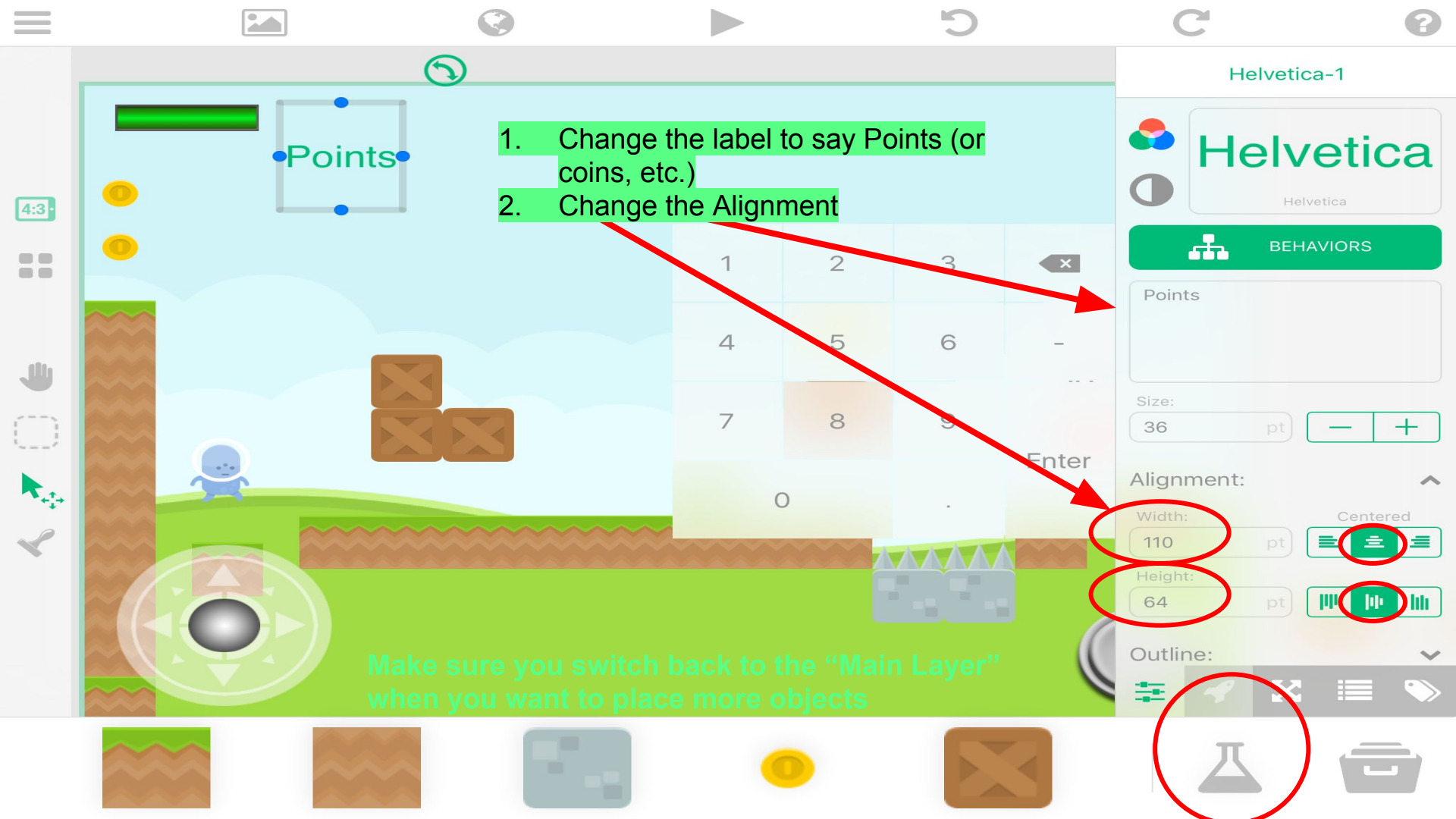

Back
Interaction
Object
Screen
Transform
UI
FX
Scene
Physics
Logic
Custom
Help
Controls
Drag & Drop
Joystick Controlled
Jump with Button
Shoot with Button
Tilt Controlled
Touching
Started Touching
Stopped Touching
While Touching
Basic
Advanced
Cactus-11
(On Object Creation)
Collided2
Add to Health Bar1
Shake Screen
Shake For:
0.50 s
If2
0
Is Equal To
0
Load Overlay2
Game Over
Here's how you would set up obstacles to hurt your character's health

Adding Points

Get points for collecting coins (and other collectibles)

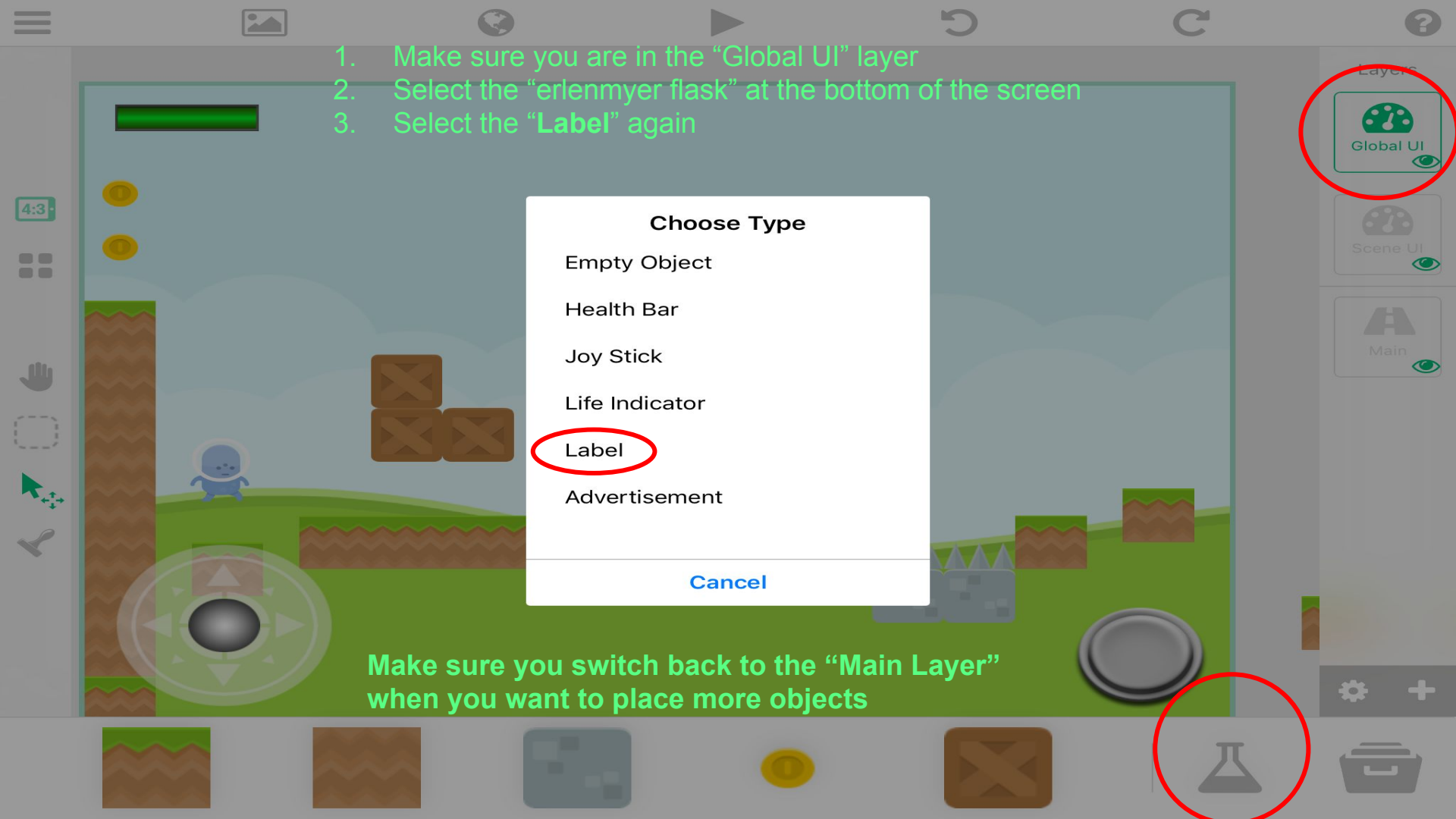
1. Make sure you are in the “Global UI” layer
2. Select the “erlenmyer flask” at the bottom of the screen
3. Select the “**Label**”



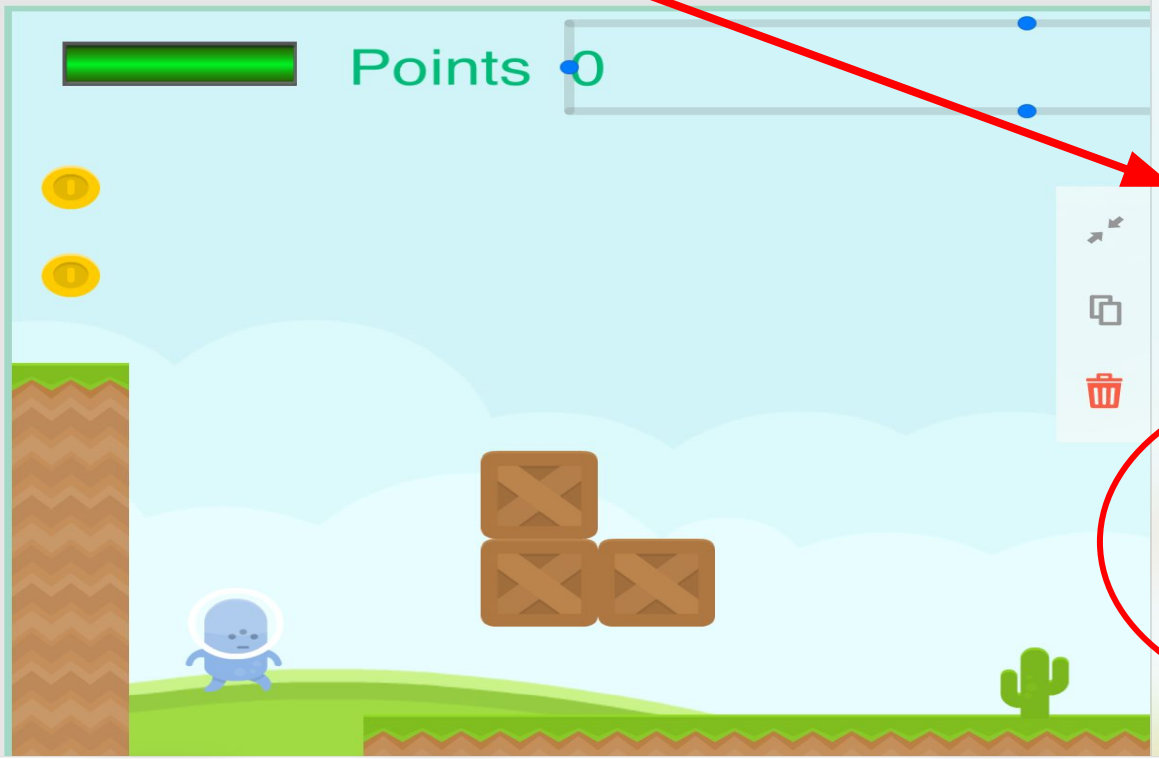

Points
1. Change the label to say Points (or coins, etc.)
2. Change the Alignment
Helvetica-1
Helvetica
BEHAVIORS
Points
Size:
36 pt
Alignment:
Width:
110 pt
Centered
Height:
64 pt
Outline:
Make sure you switch back to the "Main Layer" when you want to place more objects

Then, Repeat

- Make One more Label
- This is the label that will change each time you collect things


1. Make sure you are in the “Global UI” layer
2. Select the “erlenmyer flask” at the bottom of the screen
3. Select the “**Label**” again
Choose Type
Empty Object
Health Bar
Joy Stick
Life Indicator
Label
Advertisement
Cancel
Global UI
Scene UI
Main
Make sure you switch back to the “Main Layer” when you want to place more objects

Name this label the number: zero
Line it up next the previous label: “Points”



Helvetica-11

Helvetica

Helvetica

BEHAVIORS

0

Size:

36 pt

Alignment:

Width:

Flush Left

500 pt

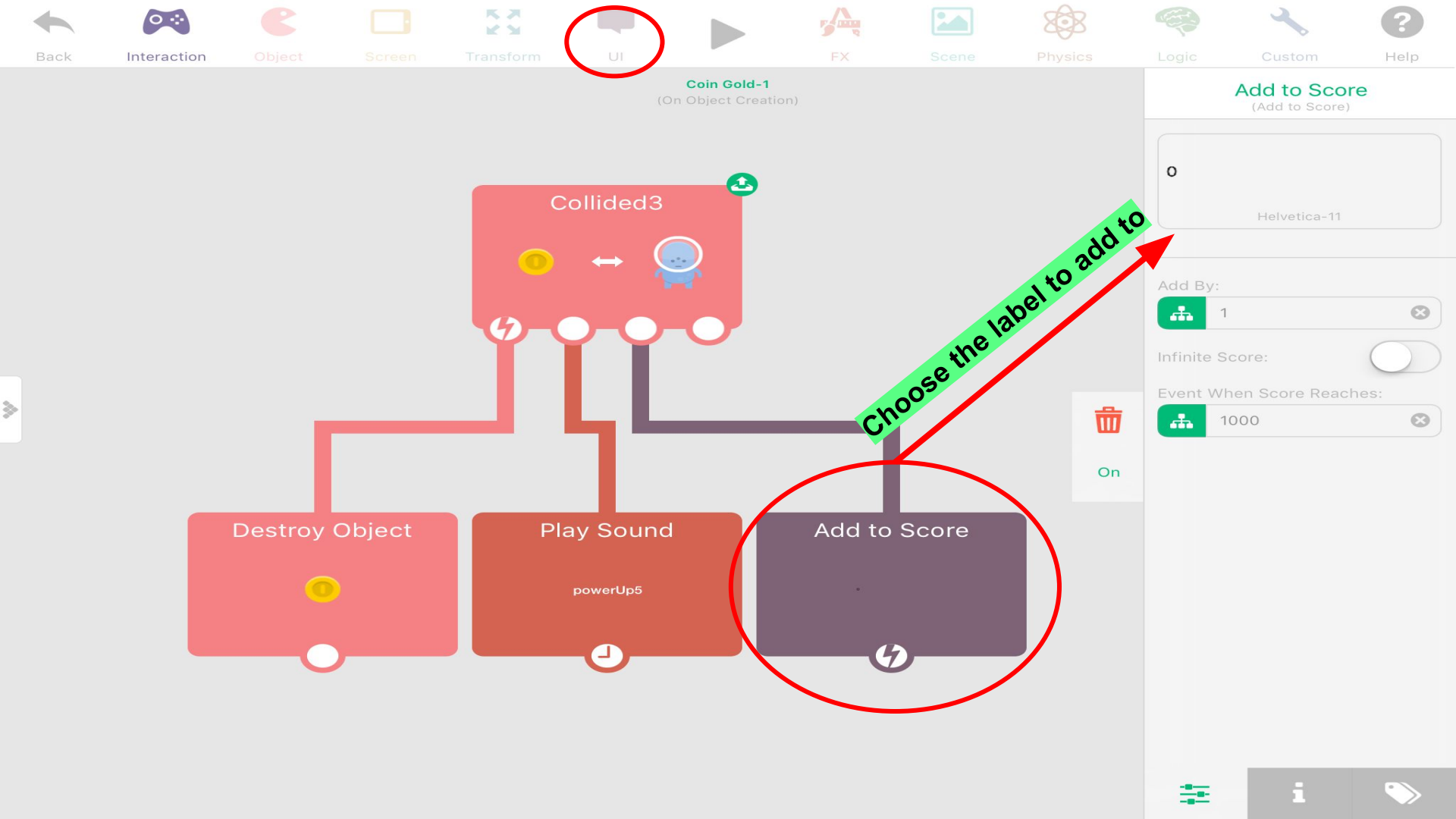
Height:

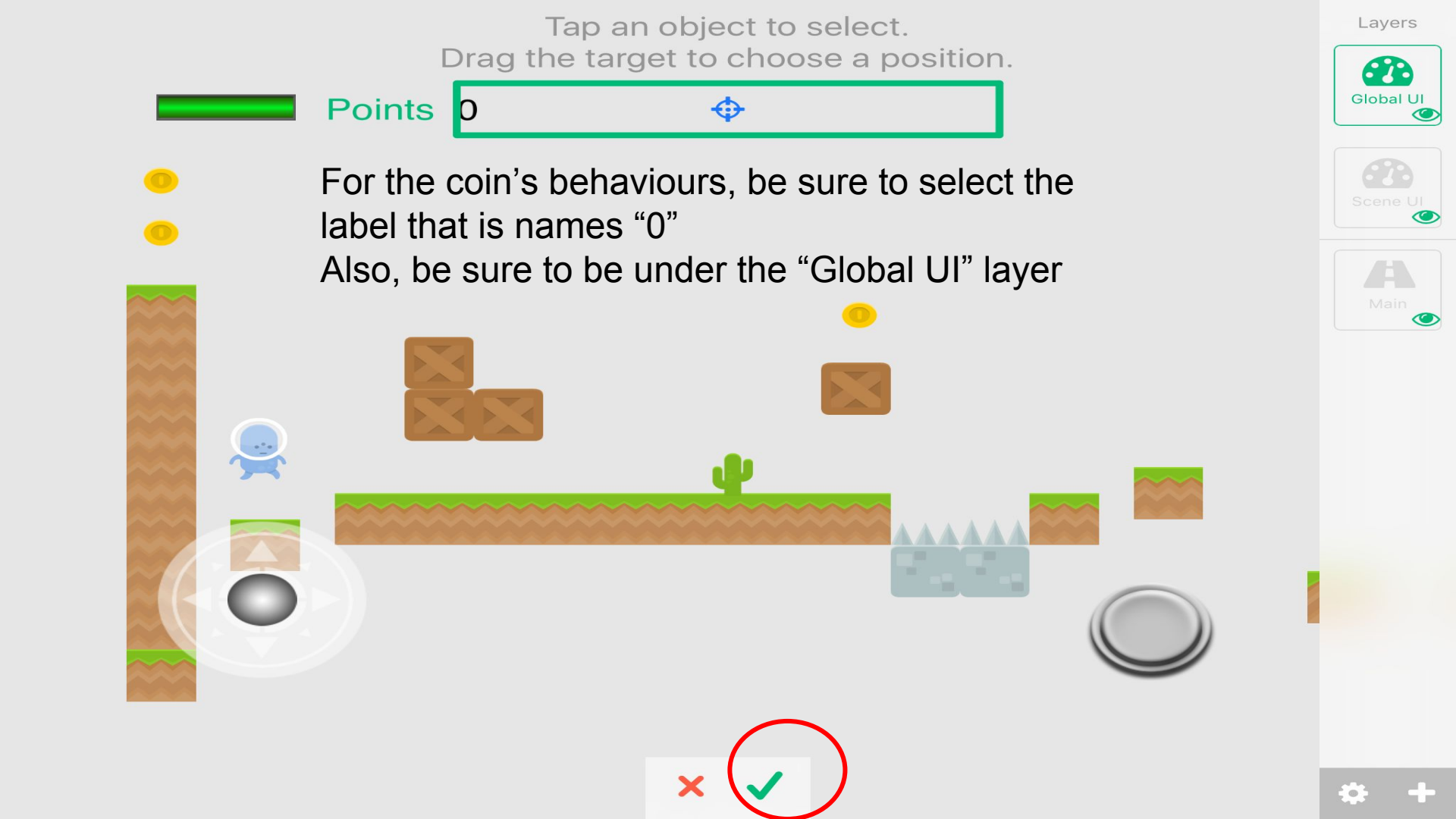
64 pt

Outline:

Making the Points Label Add

Get points for collecting coins (and other collectibles)

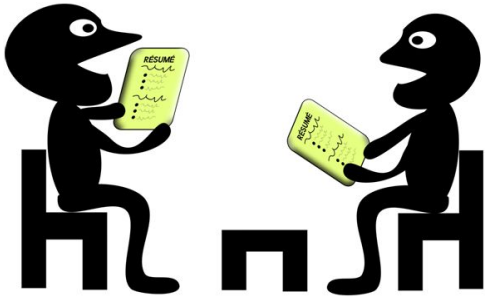

Back
Interaction
Object
Screen
Transform
UI
FX
Scene
Physics
Logic
Custom
Help
Coin Gold-1
(On Object Creation)
Collided3
Destroy Object
Play Sound
powerUp5
Add to Score
Choose the label to add to
On
Add to Score
(Add to Score)
0
Helvetica-11
Add By:
1
Infinite Score:
Event When Score Reaches:
1000


Tap an object to select.
Drag the target to choose a position.
Points
0
For the coin’s behaviours, be sure to select the label that is names “0”
Also, be sure to be under the “Global UI” layer
Layers
Global UI
Scene UI
Main

Now Test it out!

You will now see your points add up when you collide with coins

Design Thinking Interview



Day 4