octostudio
Reference Guide

Revised June 23, 2025

octostudio | octostudio.org

Introduction

This reference guide was created under the
Creative Commons Attribution-ShareAlike license.

We ask you to include this credit:

"OctoStudio was created by the Lifelong
Kindergarten group at MIT Media Lab.
To learn more, visit **octostudio.org**."

Introduction

OctoStudio is a free mobile coding app that lets you create animations, games, and other interactive projects using photos, drawings, and sounds from the world around you. OctoStudio is developed by the Lifelong Kindergarten group, the MIT Media Lab team that created the Scratch coding environment.

The best way to learn OctoStudio is by exploring and tinkering!

This reference guide includes a detailed description of the coding blocks, icons, settings, and other features in OctoStudio. It is intended for reference rather than instruction. If you are looking for learning resources and educator guides, we recommend visiting our **Learning Resources** page on the OctoStudio website at **octostudio.org**.

You can download OctoStudio for free from app stores.

For more details see **System Requirements** at the end of this guide.

If you have questions, please visit the **Support** section on the OctoStudio website or email us at **help@octostudio.org**

Home Screen

All your projects are listed in the home screen. You can also go to Settings and the Explore page from the home screen.

⚙ Settings

🧭 Explore Page
See sample projects

+ Create a new project

••• Project Menu

🗑	⧉	★	↗
Delete	**Duplicate**	**Favorite**	**Share**

Project Filter View
You can filter which projects are listed.

Favorites: Lists only projects you have favorited (with a star)

Shared with me: Lists only projects that were shared with you

Project Editor Overview

Portrait View

On a phone and most tablets, the OctoStudio project editor appears in Portrait View.

Sprite
A sprite is any character or object in your project

Stage
Where your creations come to life

Play Button

Quick Add
Add sprites, backdrops, and sounds to your project

Sprite Menu
Displays all sprites in a project and tools for editing selected sprite

Coding Area
Drag in and snap together blocks to code your sprites

Blocks Palette
All blocks used to code your projects are found here
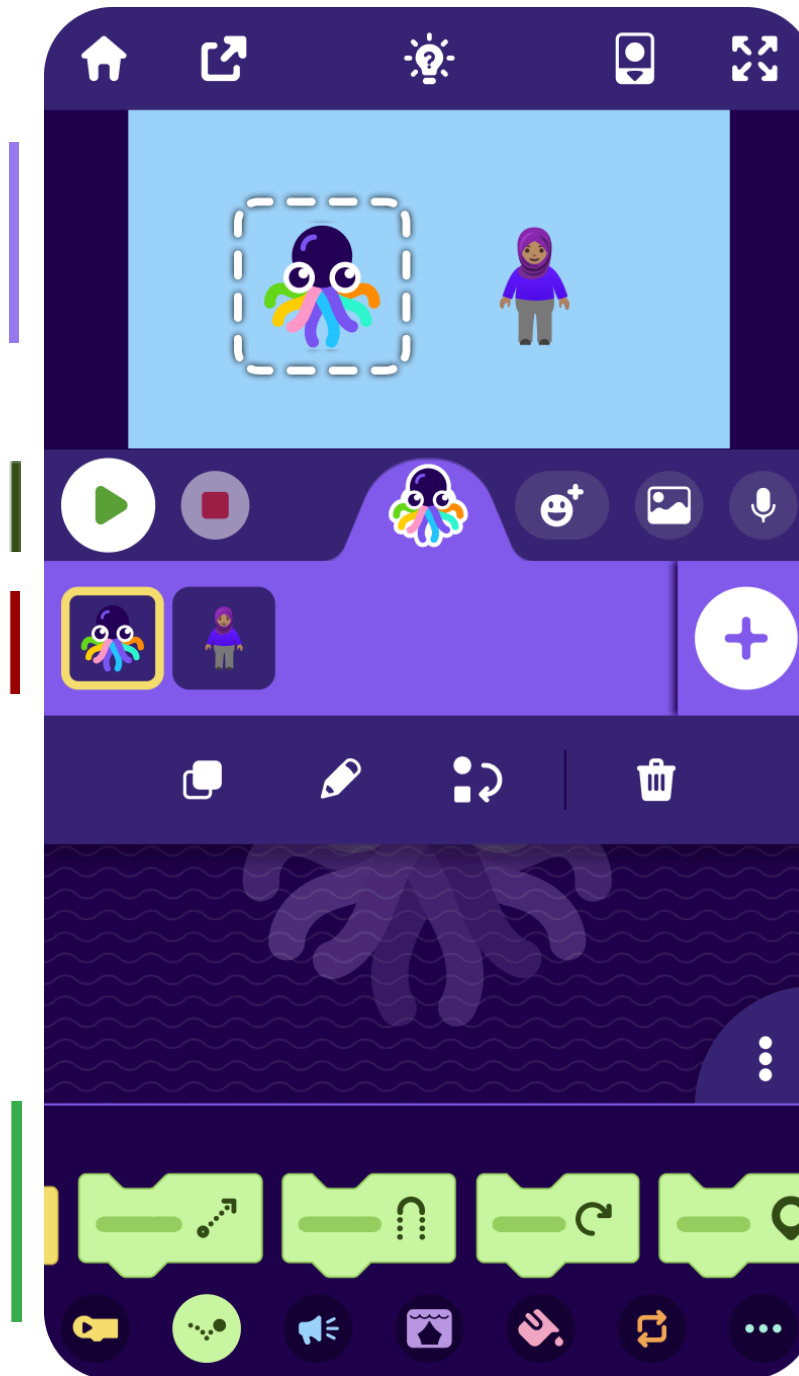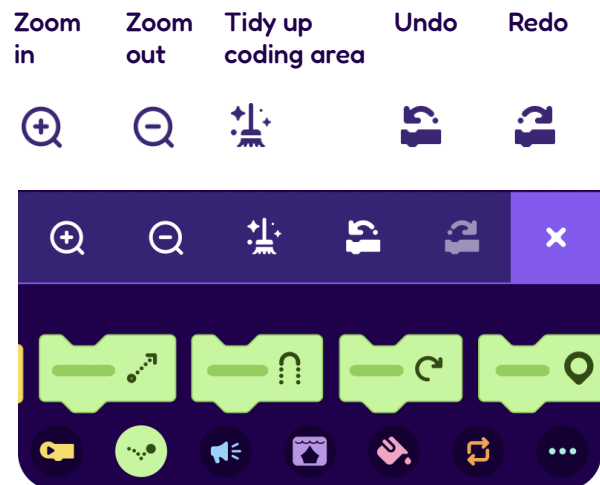
Landscape View

On Chromebooks and large tablets, you can use the Project Editor in Landscape View. This interface contains the same options as in Portrait View, rearranged to fit the available space.

Stage
Where your creations come to life

Coding Area
Drag in and snap together blocks to code your sprites

Sprite
A sprite is any character or object in your project

Play and Quick Add Buttons
Add sprites, sounds, and backdrops.

Blocks Palette
All blocks used to code your projects are found here

Sprite Menu
Displays all sprites in a project and tools for editing selected sprite

Project Editor Buttons

Share Ideas to try Expand stage

Home Fullscreen

Add sprite

Add backdrop

Add sound

Play

Stop Add sprite

Duplicate Edit Replace Delete

Coding Area Options

Zoom in Zoom out Tidy up coding area Undo Redo
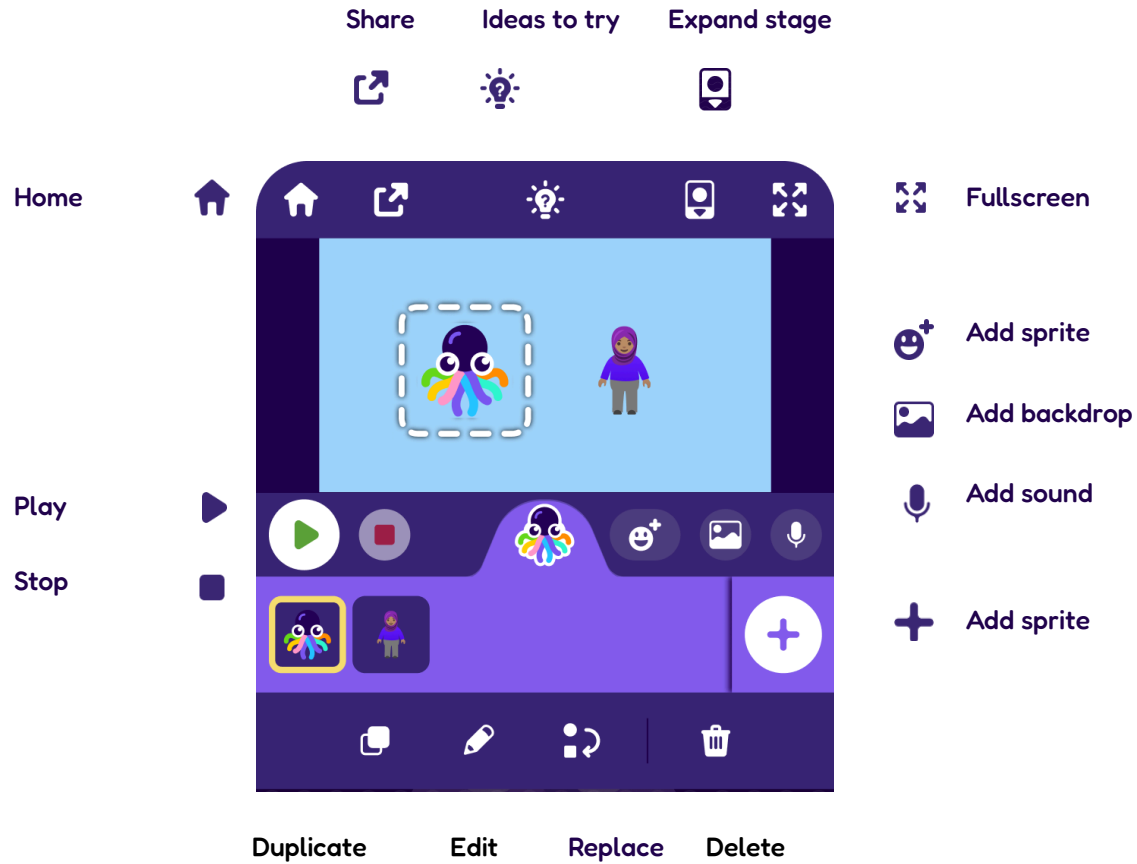
Sprites

A sprite is any character, object, or image that you want to bring to life.

Add a Sprite

There are four different ways to add a sprite.
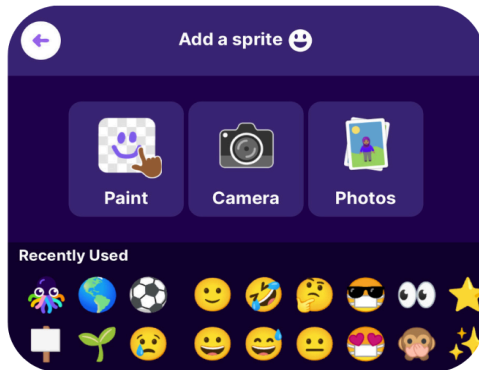
Paint
Draw in the paint editor

Camera
Take a photo

Photos
Choose a photo

Emojis
Or choose a sprite from the emoji library

Editing a Photo Sprite
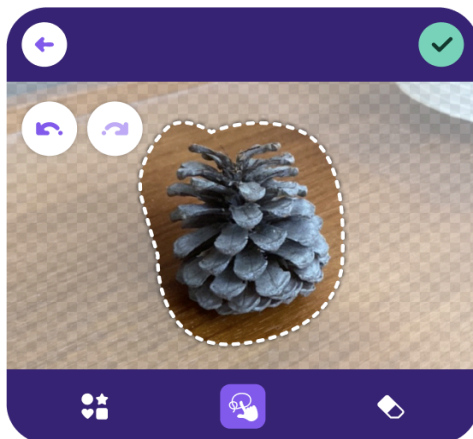
Crop your photo into **shapes**:
a circle, heart, square, or star

Trace and **crop** your image

Erase from the area you have traced

To **draw** or make further **edits** to your sprite, look for the pencil icon in the sprite menu in the Project Editor.

Backdrops

You choose a backdrop whenever you create a project. You can also add more backdrops in the Project Editor.
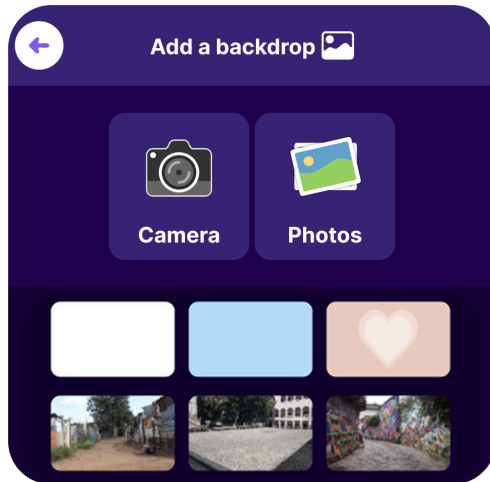
There are three different options for adding a backdrop:

Take a picture

Choose from your photo album

Backdrop Library
Choose from our collection of backdrops, including some photos from our global partners.

Stage
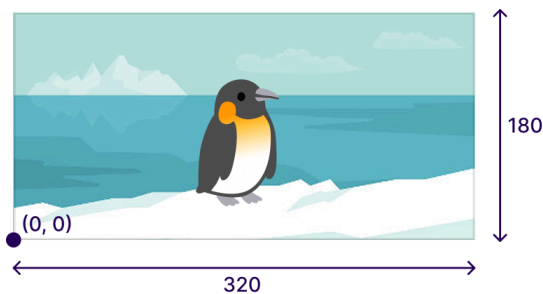
The area of the screen where your project is displayed is called the **Stage**.

The Stage is 320 units wide and 180 units high, forming an x-y grid. The bottom corner of the Stage is at x: 0, y: 0.

Sounds

Record your own sounds or select one from the sound library to use in your OctoStudio projects.

Add a 🔊 to 🐙

Choose a sound | Record a sound
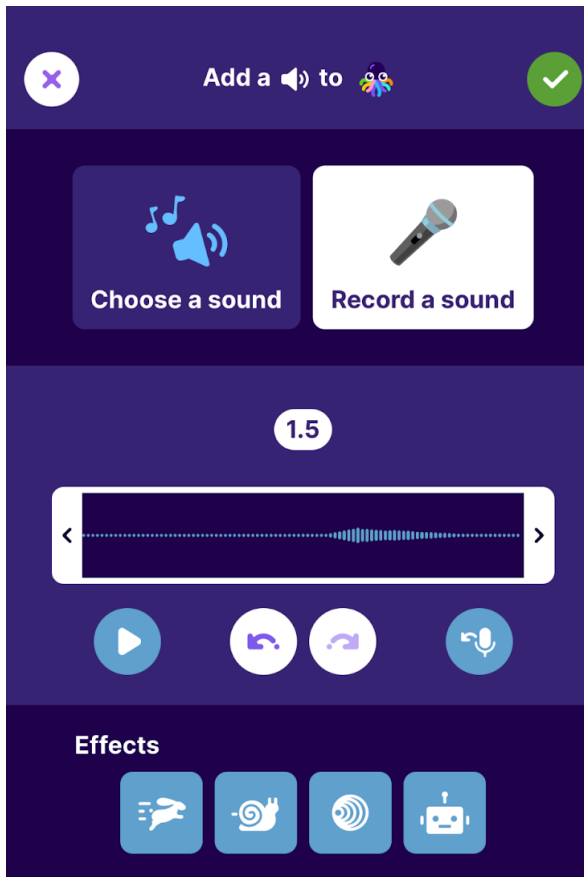
Choose a sound or **Record** a sound.

1.5

Sound length in seconds

Select to edit
Drag the bars to select part of the sound. To trim, select the part you want to keep and select the Crop button that will appear.

Re-record button allows you to replace the current recording.

Effects

Effects
You can add sound effects to a sound. Effects are only added to the selected part of the recording.

Speed up
Make your recording faster

Slow down
Make your recording slower

Echo
Add an echo effect to your recording

Robot
Add a robotic effect to your recording
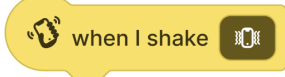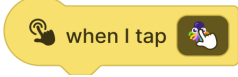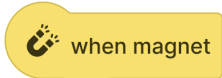
Block categories

There are seven block categories in OctoStudio.

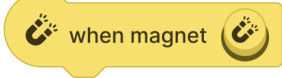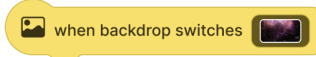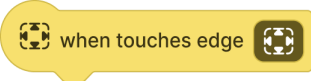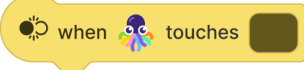| Name	Description
When to start?	Place one of these blocks on top of each script of code to tell it when to run.
Motion	Tell your sprites how to move.
Words and Sounds	Tell your sprite to play sounds, display text, and more.
Scene	Make visual changes such as resizing your sprites and changing the backdrop.
Colors and Light	Change the color of your sprite and other light settings.
Control	Controls the flow of your code.
More Blocks	Includes miscellaneous blocks such as variables, tilt, and custom blocks.
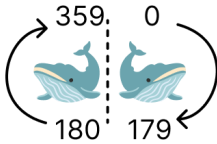
When to start?

Block	Description	Tips and Options
▶ when ▶	When the play button is tapped, runs the script below	
when I shake	Starts the script when you shake the phone or tablet	Choose how much of a shake is needed to start: ▯ Low ▯ Medium ▯ High
when pressed	**Chromebook variation:** Starts when you press the button on the screen.	On **Chromebooks**, the **shake** block looks different, as shown. It activates when you press the matching button that appears on the screen.
when I tap	Starts the script when you tap on the selected sprite or other option	Choose to tap: sprite backdrop anywhere
when magnet when magnet	Starts the script when a magnet is placed near the phone or tablet **Chromebook variation:** Starts when you click the button on the screen.	See the [OctoStudio YouTube](youtube.com/@octostudioapp) channel for examples at **youtube.com/@octostudioapp**. Note: The magnet feature may not be supported on some Android devices.
when backdrop switches	Starts the script when switching to the selected backdrop.	This is helpful for starting code when you change backdrops or scenes. The script will start when the **switch backdrop** block is halfway through its transition.
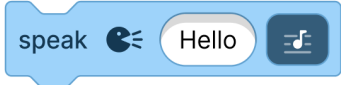
Block	Description	Tips and Options
when touches edge	Starts the scripts when the sprite reaches selected edge of the Stage	Only starts if the sprite reaches the edge from inside the Stage (not when the sprite wraps to the other side).
when touches	Starts the script when the current sprite touches the selected sprite	Choose a sprite to detect. At least two sprites are needed for this block to run.
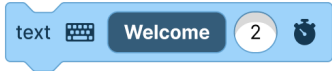
Motion

Block	Description	Tips and Options
move 50	Moves the sprite in a direction a specified amount.	Pick direction with arrow, set speed as 👟 Slow 👟 Medium 👟 Fast ⚡ Instant
jump 50	Makes a sprite go up and down	Type larger number for higher jumps. A negative number will jump downward.
turn 45	Rotates the sprite a certain number of degrees	Type in an angle from 1 to 360 to make the sprite turn in the direction you choose. ↻ Clockwise ↺ Counterclockwise 🎲 Random
go to	Tells a sprite where to go on the Stage	📍 Tap the map pin icon, then select the location where you want your sprite to go. To set the location, you can drag the sprite, type in numbers, or use random,
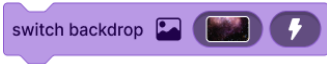
Block	Description	Tips and Options
😊 go to sprite ⬛ 👟	Makes this sprite go to the position of another sprite	This sprite will go to the **rotation point** of the other sprite. (You can move a sprite's rotation point in the paint editor.)
set direction 🪧 ➡️	Sets the direction a sprite is facing	This block will flip a sprite. 359 · 0 180 · 179 If you want a full rotation, use a **turn** block instead.
forward 👣 50 👟	Moves forward in the current direction	

Words and Sounds

Block	Description	Tips and Options
play sound 🔊 chimes ▼ ▶❙	Plays a library or recorded sound	Tap to choose or record a sound. ▶❙ Select 'until done' if you want this sound to finish playing before the next block runs. ▶↳ Select 'and continue' if you want the sound to play at the same time as the next block.
buzz 📳 👟	Makes the phone vibrate	Only phones with haptic feedback will vibrate.
speak 🗣 Hello 🎵	Makes your sprite talk aloud	To change language pronunciation, change the language in OctoStudio settings.
say 💬 Hello for 2 ⏱	Displays words in a speech bubble	Type how many seconds you want the words to appear for.

Block	Description	Tips and Options
text ⌨ **Welcome** 2 ⏱	Makes text appear on the Stage as a title or caption	Tap on the text in the block to edit, resize, change color, or change the location of the text which will appear. Each sprite can display only one text box at a time on the Stage. To display multiple text boxes at the same time, use **text** in additional sprites.

Scene

Block	Description	Tips and Options
set size 📏 to 150 % 👟	Sets sprite's size to specified % of original size	
change size 📐 by 20 👟	Changes sprite's size by specified amount	
hide 🚫 👟	Makes sprite disappear from the Stage	⚡ To hide a sprite at the start of a project, choose lightning speed. Hidden sprites do not interact with other sprites.
show 👁 100 % ⚡	Makes sprite appear on the Stage	Change a sprite's transparency by entering a number below 100. At 0, the sprite is invisible but still interactive.
switch backdrop 🖼 ▨ ⚡	Sets backdrop to the selected backdrop	Choose a specific backdrop orprevious, next, or random. ⮐ previous ⮕ next 🎲 random You can also choose how fast the backdrop switches. Lightning speed switches the backdrop instantly.

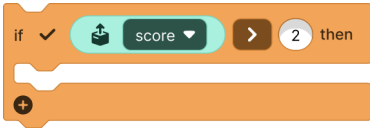| Block	Description	Tips and Options
layer 😀 in front ▼ 👥	Layers a sprite in front or behind of another sprite	Option to layer in front of or behind a specific sprite or all sprites. 👥 all sprites
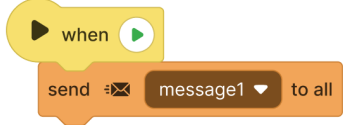
Colors and Light

Block	Description	Tips and Options
glow ✨ 🟡 👟	Creates a colorful glow around sprite	Choose the color of the glow.
flashlight ☀ on ▼	Turns on or off flashlight on phones or tablets that have a built-in flashlight.	Resets to off when you press the stop or play button. If your device doesn't have a built-in flashlight, you may see the stage brighten instead.
set color 😀 to 🔵	Sets sprite or backdrop to a certain color	Options: set color of sprite or backdrop. 🚫 To reset, set color to no color.
change color 😀 by 20	Shifts the color of the sprite or backdrop	Will return to its original color every 360 units
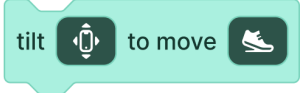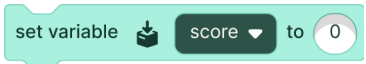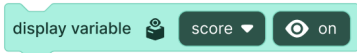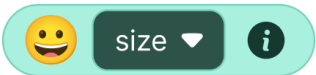
Control
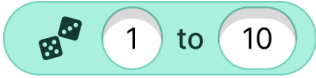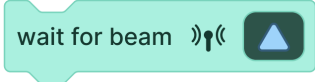
Block	Description	Tips and Options
repeat 5 🔁	Runs the script inside a specified number of times	Snap blocks inside the "mouth" of the **repeat** or **forever** block.
forever ∞	Runs the script inside over and over until the project stops	Example: forever ∞ play sound 🔊 cat ▼ ⏭ move 50 👟

Block	Description	Tips and Options
if ✓ 📦 score ▼ > 2 then ➕	Checks once if a condition is true. If so, it runs the blocks inside.	Because the **if** block only checks once, it usually works best in a **forever** block, 😀 x-position ▼ You can insert a number, variable, or other reporter. ➕ Tap the plus symbol to add an **else** to this block, Tap again to add an **else if**,
wait 1 ⏱	Waits a specified number of seconds before continuing	
wait until 👆 tap ▼	Waits until a sensor is detected, then continues to run the next block.	Options to **wait until shake,tap**, or **when a magnet** is near the phone or tablet. **Chromebook variation:** the option **shake** is replaced with **pressed** to indicate pressing the on-screen button. See the **OctoStudio on Chromebooks** section at the end of this guide to learn more.
stop ■ all ▼	Stop scripts or sounds that are running	The options are to **stop this script**, **stop all sounds**, **stop other scripts** in this sprite, or **stop all scripts** in the project.
send ✉ message1 ▼ to all	Sends a message that all sprites can receive	Example of **send** and **receive**: ▶ when ▶ send ✉ message1 ▼ to all
✉ when message1 ▼ received	Starts this script when the selected message is received	✉ when message1 ▼ received move 50 ○→ 👟

More Blocks

Block	Description	Tips and Options
tilt ⟨▯⟩ to move 👟	Tilt your phone or tablet to move the sprite. **Chromebook variation:** To interact, use the tilt controller that appears on the screen. See the **OctoStudio on Chromebooks** section at the end of this guide to learn more.	Works best in a **forever** block. (This is why when you drag in this block, it comes with a **forever** block.) Tilt motion options: ⟨▯⟩ Horizontal only ◻ Up and down only ⟨▯⟩ All four directions **Phone or Tablet:** Hold at desired angle before pressing play.
tilt angle ⟋ ▯	Reports the angle your phone is being tilted in, either horizontal or vertical	The angle value that this block returns is scaled down to 1/4. **Chromebook:** The tilt controller is active only while the block is running,
set variable 📦 score ▼ to 0	Sets the selected variable to a specified number	To create a new variable, tap **+** in the menu. Variable names cannot currently be deleted.
change variable 📦 score ▼ by 1	Changes the selected variable by a given amount	
display variable 📦 score ▼ 👁 on	Displays or hides variable monitor on the Stage	🚫 To hide the variable, choose off Variables default to being displayed on the Stage.
📤 score ▼	Returns the current number value of a variable	You can snap this block into any rounded slot inside another block.
😀 size ▼ ⓘ	Reports the size or other info about the sprite	Options to report a sprite's direction, size, x-position, or y-position.

Block	Description	Tips and Options
🎲 1 to 10	Picks a random number within the specified range	
⬭ + ⬭	Performs a certain mathematical operation on two values.	Select from menu: **+** addition **—** subtraction **✕** multiplication **÷** division
beam 📡 🔺	Sends message via Bluetooth to other nearby devices using OctoStudio **Chromebooks** cannot beam, but can receive a beam from a mobile phone or tablet	Enable Bluetooth on your device before sending or receiving a beam. The **beam** block broadcasts a message to all nearby devices using OctoStudio. There are different messages you can beam: 🔺 🟡 🟧 💗 ⭐ ☘️ 🔶 🌙 You can also add a **channel** within the beam blocks. This is useful when you have multiple groups of people working on different beam projects in the same location to avoid conflicting beams. The range of the **beam** block is approximately 30 feet (10 meters).
wait for beam 📶 🔺	Runs script below when it receives the specified beam message via Bluetooth.	
🚩 make block ⬭	Create a custom block. Name your block and then snap blocks below to define what your new block will do.	Custom blocks can make your code more organized. All custom blocks will appear in 'More Blocks' at the end of the blocks palette. Custom blocks are specific to a sprite.

Settings

Where to find settings?
Look for the gear ⚙ in the upper right of the home screen.

Languages
OctoStudio is offered in more than 30 languages. You can change languages anytime in settings.

Screen Layout
On larger tablets you may see an option to choose between **Portrait** or **Landscape** view.

Accessibility
To use OctoStudio with a **screen reader**, turn on the built-in screen reader on your device (**VoiceOver** in iOS and **TalkBack** in Android).

In OctoStudio Settings, you can also toggle on **Sound effects for code blocks**. This will make a sound play for any code block with visual output. (For example, you can hear a sound effect when you play the jump or glow block.)

Interface Options
If you turn on **Show Screen Taps**, you will see a circle that shows the location of your fingers whenever you touch the screen. This is helpful when demonstrating how to use OctoStudio.

Getting Started
Starter cues are the animated hand icons that show the first steps for using OctoStudio. You can turn on Starter Cues in Settings anytime.

Further Information
For more information, ideas, and technical support, please see our OctoStudio **Support** pages at **octostudio.org**

System Requirements

OctoStudio can run on the following devices:

On an **iPhone** or iPad, iOS version 15 or above.
On an **Android** phone or tablet, Android version 8 or above.
On **Chromebooks** that support Android apps.

OctoStudio is not yet supported on other laptops or desktop computers.
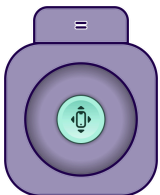
OctoStudio on Chromebooks

OctoStudio on Chromebooks is different in a few ways from OctoStudio on mobile phones or tablets.

Sensing
Most Chromebooks do not have physical sensors. So, on Chromebooks, there is a different way to interact with sensor blocks.

For **shake** or **magnet** blocks, you can interact using the buttons that appear on the screen.

For **tilt** blocks, you can interact using the tilt controller that appears on the screen when the code runs.

Beam
Chromebooks cannot send a beam, so the **beam** block won't work on a Chromebook. However, Chromebooks can receive a beam from a mobile phone or tablet, so **when beam received** blocks will work well using Bluetooth.

Camera
Unlike mobile devices, Chromebooks usually only have a front facing camera.

To activate a camera on a Chromebook, you can click the button on the screen or press the Space or Enter key on the keyboard.

An alternative way to add photos is by taking a photo with a mobile phone or tablet, and sending them to the Chromebook.

File Saving Options

On Chromebooks you can save to **Google Drive** or you can send the file to **Google Classroom**.

Chromebook Trackpad Tips

To **scroll**, use two fingers on the trackpad.

To **zoom in**: Put two fingers on the trackpad and slowly move them apart.
To **zoom out**: Put two fingers on the trackpad and pinch them together.

To **drag**, press down on the trackpad and move with one finger. Or, you can use one finger to press down and a different finger to move.

If you have questions, please visit the **Support** section on the OctoStudio website or email us at **help@octostudio.org**