

Accessible Programming

User Guide

Welcome to Blocks4All! Thanks for giving our application a try. If you haven't already downloaded and installed the application, check out the Installation Manual.

Now let's get started!

Blocks4All is an application intended to serve the community of tens of thousands of parents, educators, and children who are involved in creating and solving programming activities for those who are vision-impaired.

Our application has three key features:

Activity Creation, Activity Solving, and Activity Management

Users can also unleash their programming creativity in the final mode:
Free Play

This user guide will explain the differences of each of these three features.

Use Cases

Educators might want to introduce programming to their class. However, this might be difficult if the teacher lacks the resources to make this accessible to a vision impaired student in their class. With Blocks4all, teachers can create and modify lessons that are compatible with iPads VoiceOver tool and provide feedback based on senses other than vision. Many educational apps for younger kids rely on visual cues rather than audible or tactile ones to guide learning. These apps are often hard for kids

with vision impairment to use because they only provide visual feedback and do not work with screen readers.

People with vision impairments often use screen readers such as VoiceOver to dictate the position of objects on a user interface. Screen readers often become useless when a user interface is complex or the program has not been designed with their use in mind.

Parents sometimes want to keep their kids busy to finish other work or simply want to get involved with their child's playtime. Parents can use Blocks4All to create or modify custom activities suited to their kid's interests.

Kids are able to complete the activities made for them. Or they might simply want to explore the app without any guidance in the free play mode. However, kids can also become very creative when they play with their peers. If they have a competitive streak, they might want to create challenging activities for their friends to complete.

Activity Creation

Activity Creation is designed for users who want to generate programming activities for themselves or others. The Activity Creation section has full VoiceOver support — enabling low-vision users to also make activities. But the prime users of this Activity Creation section will be parents and educators. They can create activities to make programming more accessible to low-vision students.

To access Activity Creation, open the Blocks4All application.

Free Play

Do Activity

Create Activity



Edit Activity

Set Block Size



Manage Robots

Tap on the “Create Activity” button. Tap on the “Activity Name” field and enter the name of your activity.

iPad 10:13 AM 95%

Cancel Create Activity Done

Activity Name: name

Instruction Solution Blocks Starting Blocks

Show in Do Activity

Activity Description Hint List

Create New Hint

“name” names named

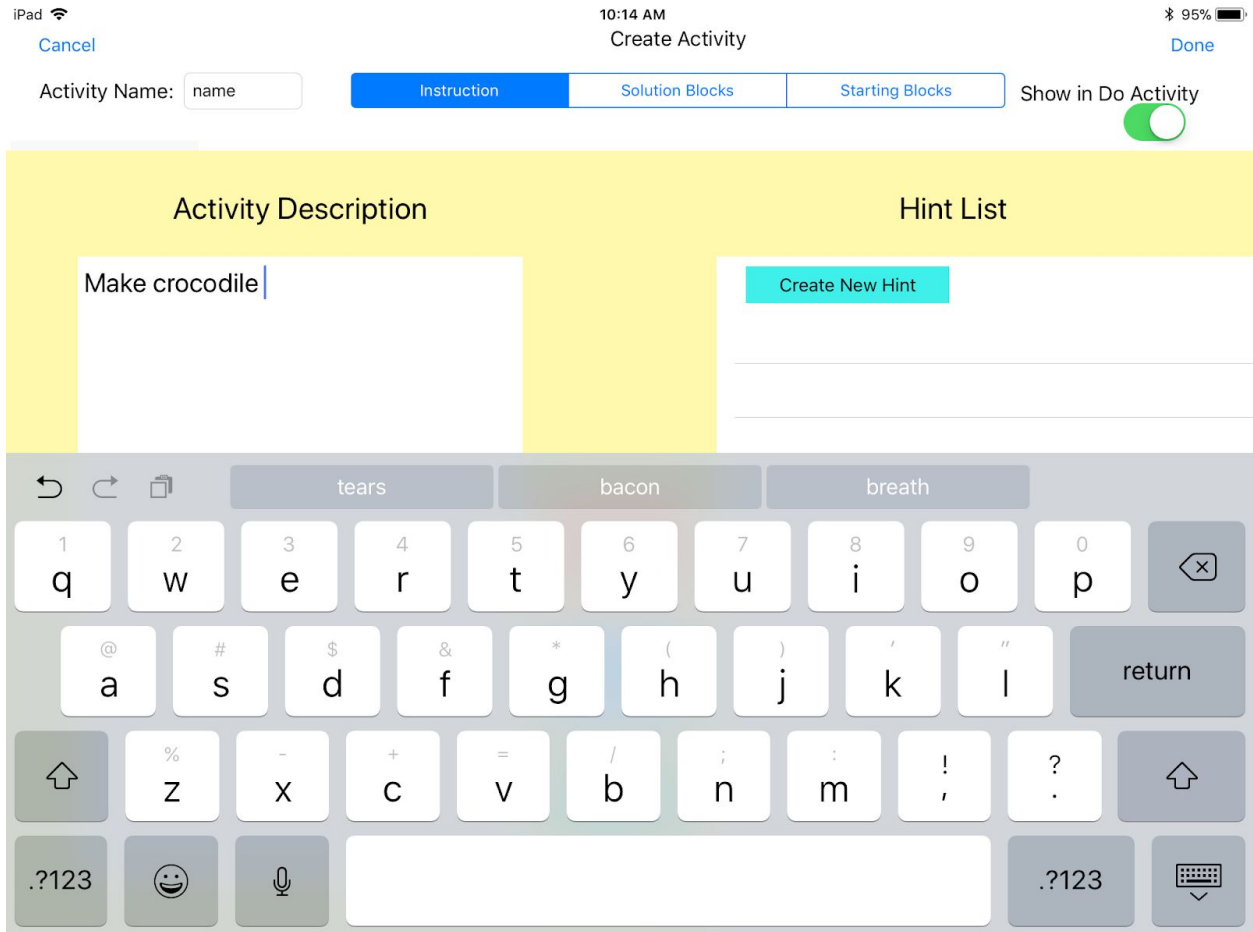
q w e r t y u i o p

a s d f g h j k l return

z x c v b n m , . ?

.?123 emoji microphone .?123 keyboard

Tap the “Description” box and type in a summary of the activity. The summary should describe the goal of the activity or any instructions you have.



You can record yourself or someone reading the description by hitting the “Record” button. Hit the “Stop” button to stop recording. You can listen to your recording using the “Play” button.

Select “Create New Hint” to to make a new hint and fill the text field with your desired hint. Use the “Rec” button to begin recording audio for your hint. Press “Stop” to stop recording. You can listen to your recording using “Play”. Each hint can have its own audio.

[Cancel](#)

Create Activity

[Done](#)Activity Name:

Instruction

Solution Blocks

Starting Blocks

Show in Do Activity



Activity Description

Make Elephant Sound

Record

Stop

Play

Hint List

Create New Hint

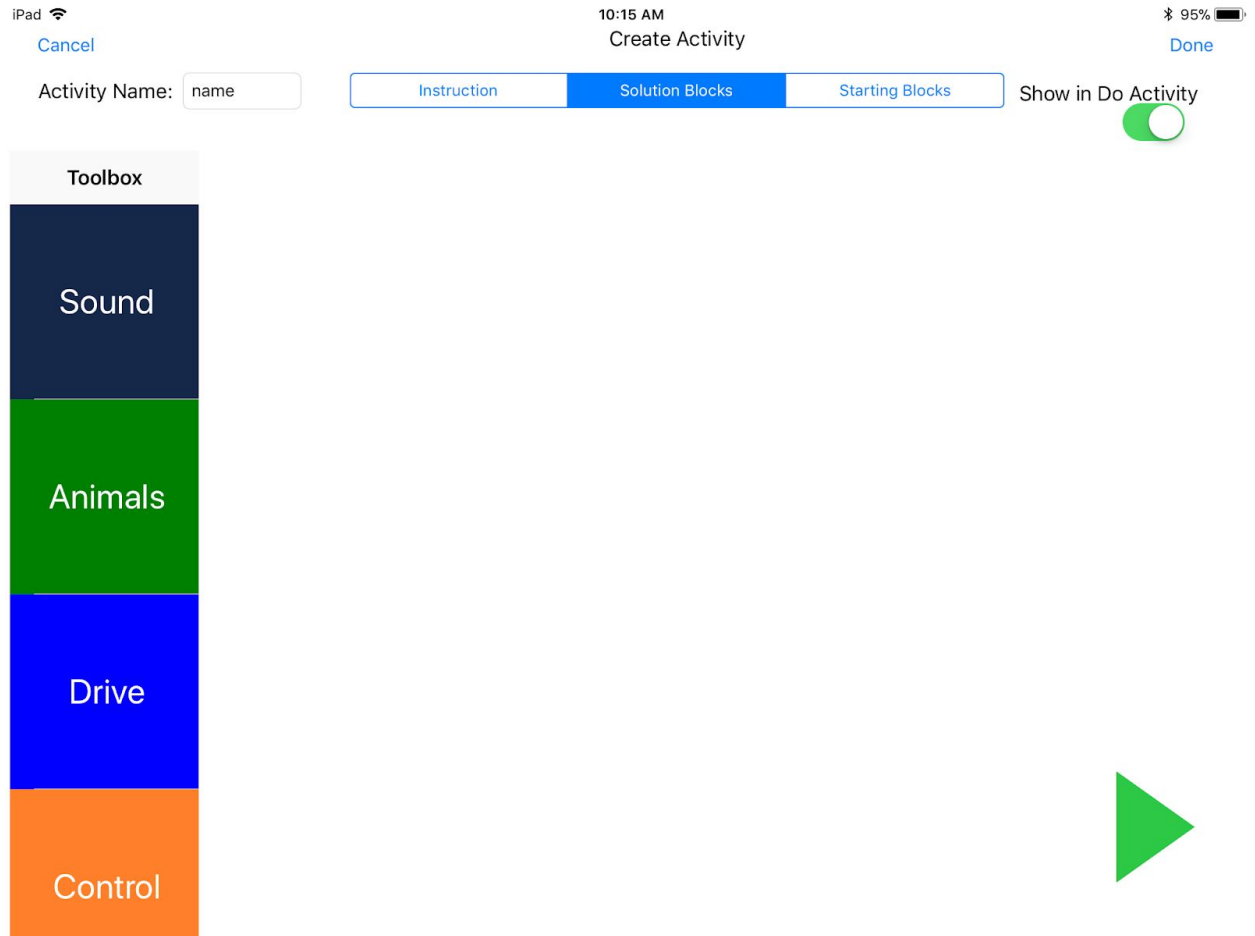
Rec

Stop

Play

Delete

Next, tap on "Solution Blocks."



Using the “Toolbox,” tap on any category to access blocks within that category. For example, tap on the “Animals” category to get animal sounds.

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Cancel

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Create Activity

95%

Done

Activity Name: name

Instruction

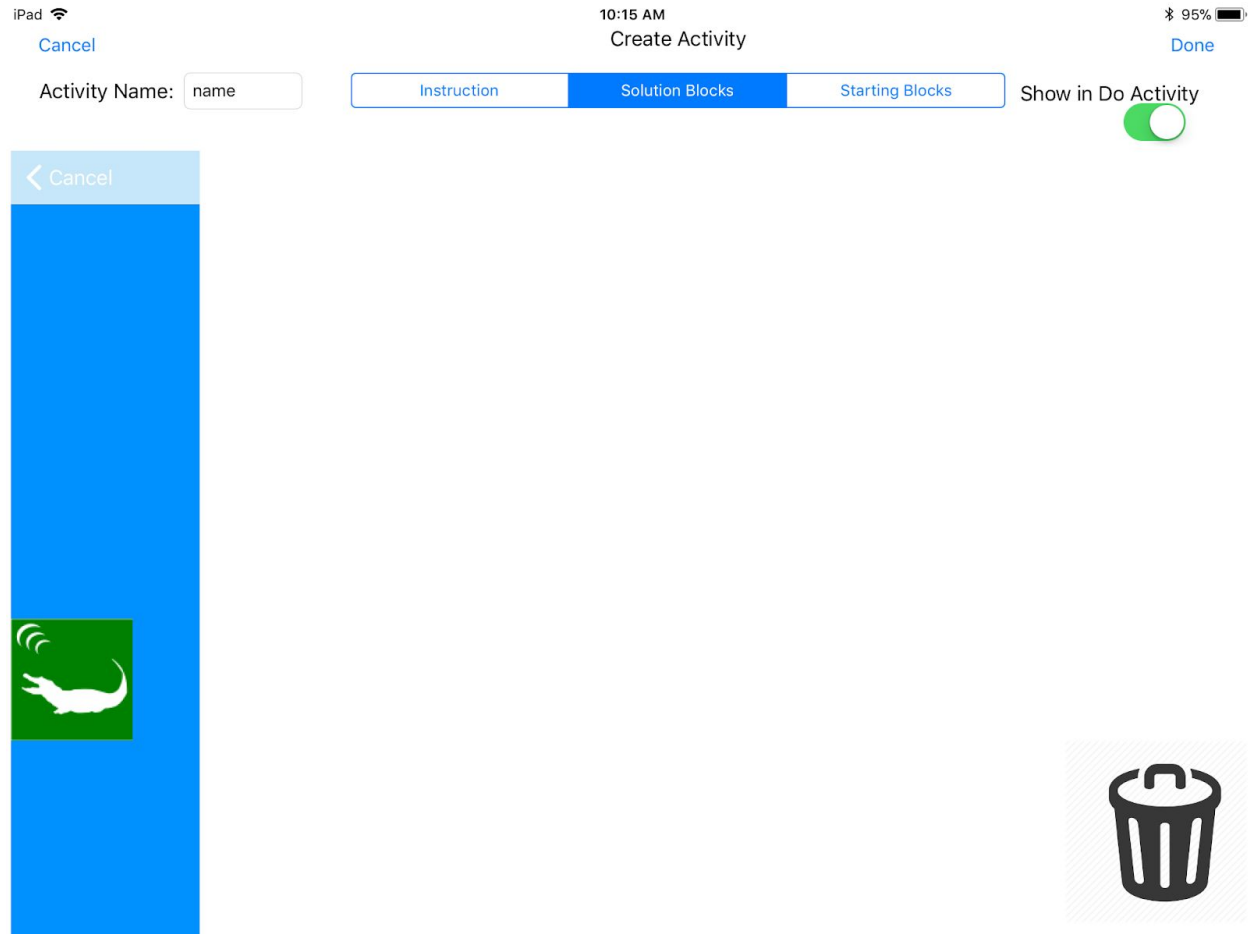
Solution Blocks

Starting Blocks

Show in Do Activity



Tap on any of the blocks in the category to select a block.



To put blocks in the solution space, tap the solution space, to the right of the “Toolbox.”

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Cancel

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Create Activity

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Done

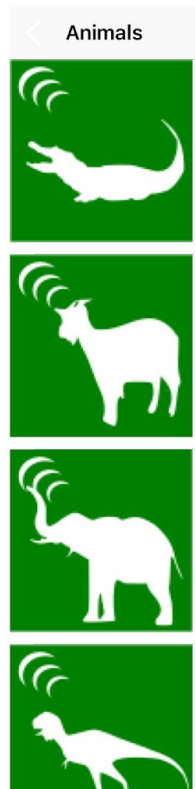
Activity Name: name

Instruction

Solution Blocks

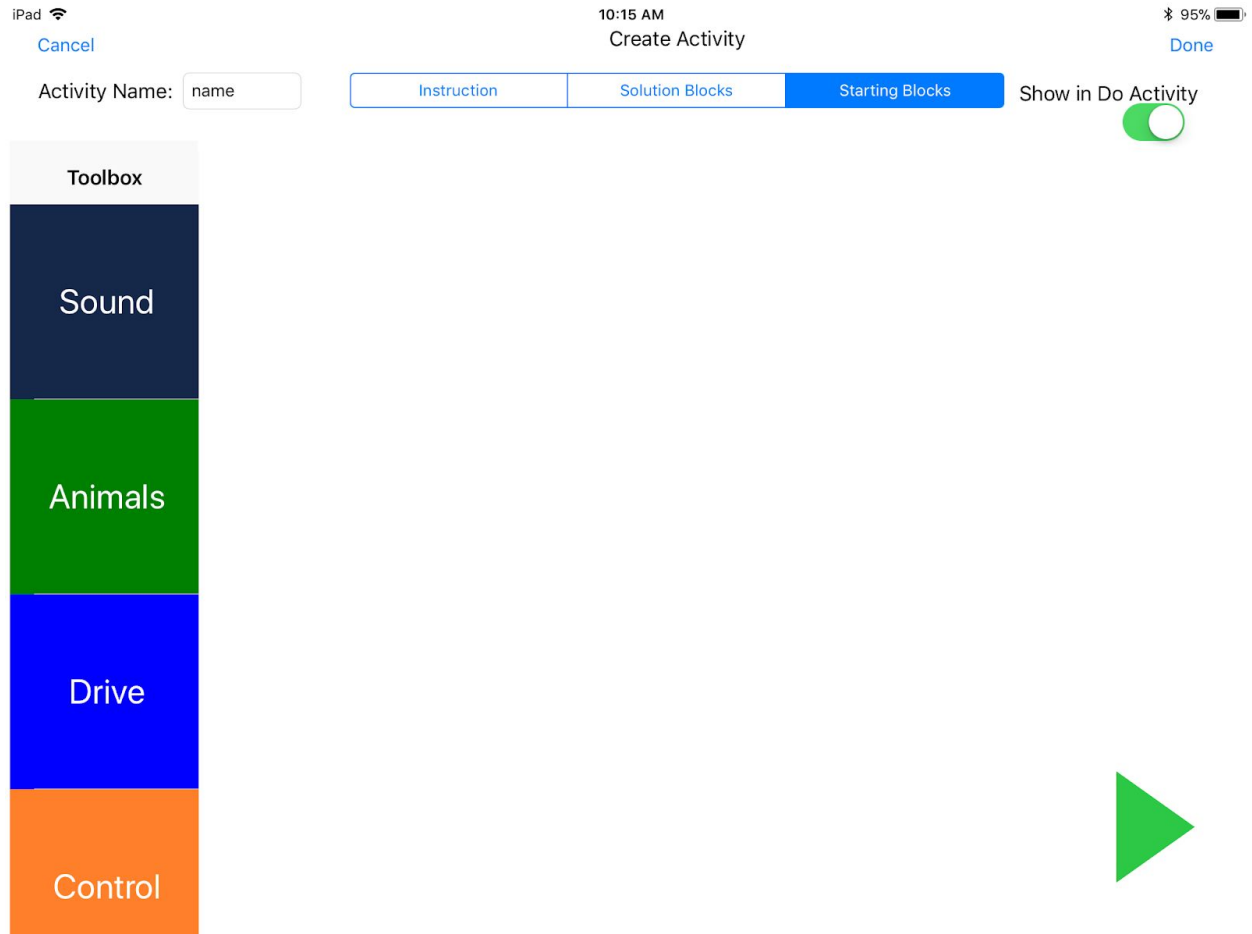
Starting Blocks

Show in Do Activity



You can play you solution by pressing the green triangle- play button.

Next tap on "Starting Blocks."



Repeat the same procedure for “Solution Blocks” to setup the user’s environment at the beginning. You do not have to put any blocks into the “Starting Blocks”.

Slide the “Show in Do Activity” slider to the right to show the activity in the “Do Activity” menu so it is available for completion. To finish creating your activity, press “Done”. If you want to edit your activity later, you can edit it using “Edit Activity”.

If you want to leave the Activity Creation screen, hit the “Menu” button.

Activity Solving

Activity Solving is designed for users who want to play with created activities. The Activity Solving section has full VoiceOver support — enabling low-vision users to jump right in and get started solving activities!

To access Activity Solving, open the Blocks4All application.

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Free Play

Do Activity

Create Activity

Edit Activity

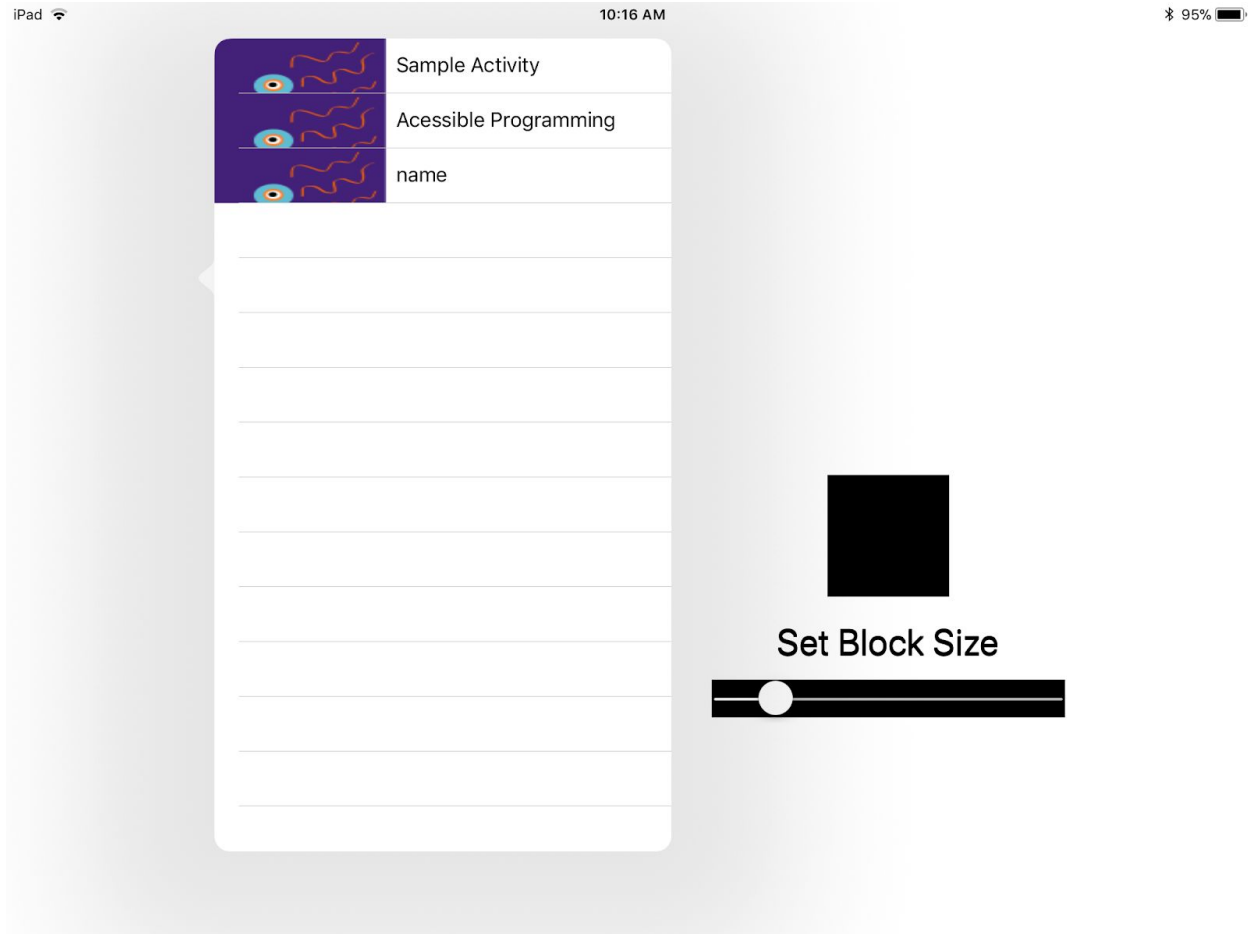
Manage Robots



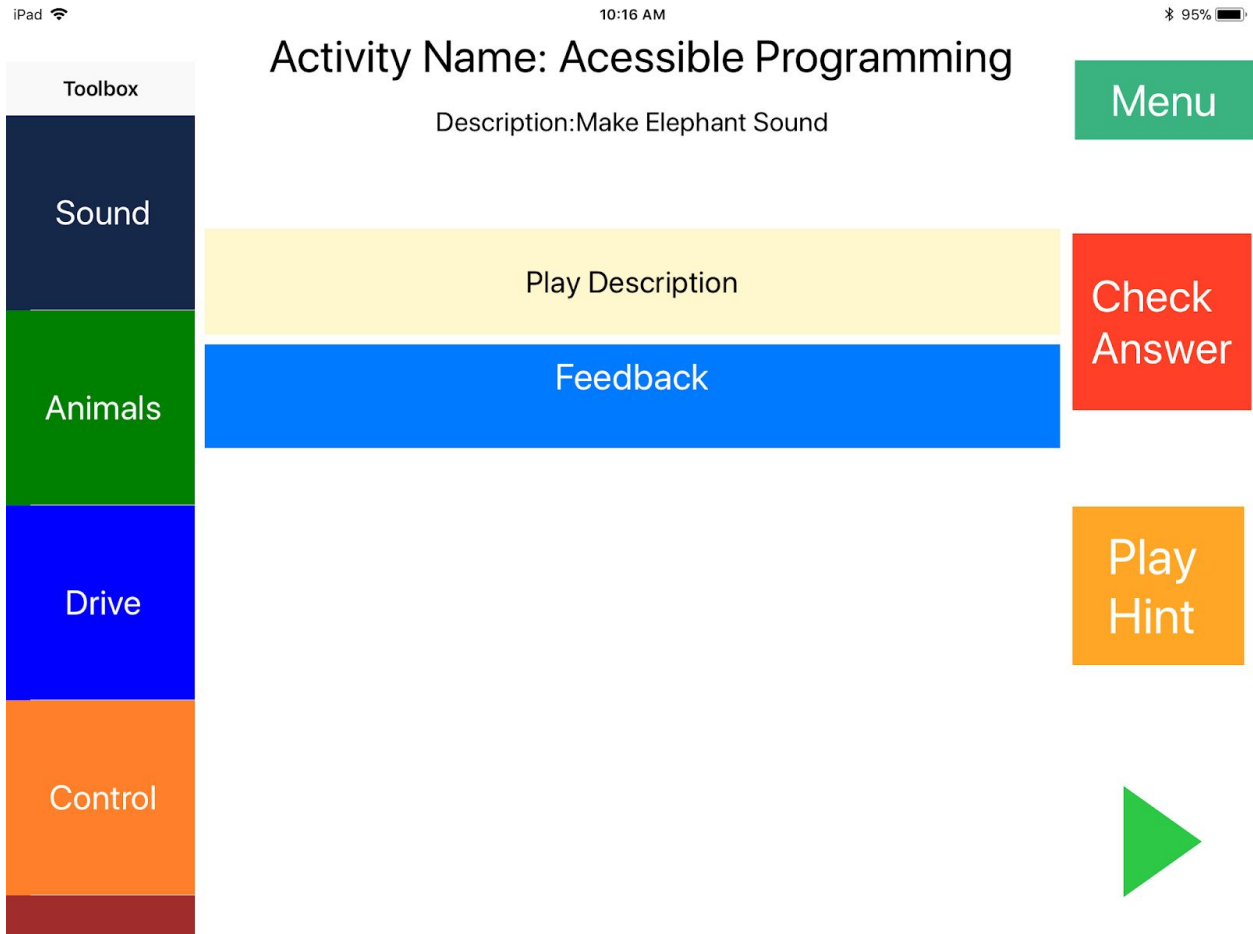
Set Block Size



Tap on the “Do Activity” button.

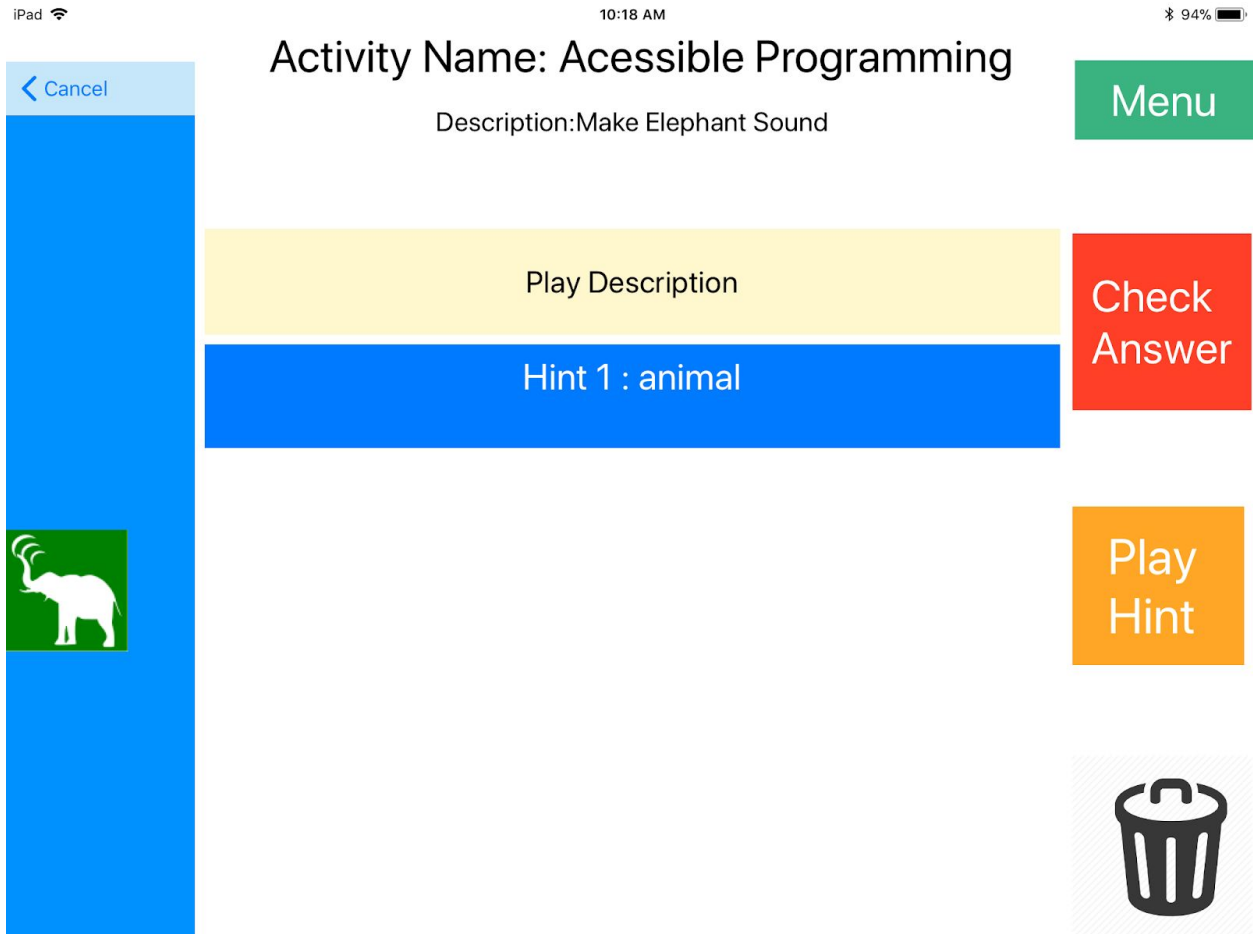


Select the activity you would like to complete.



The instructions appear at the top of the screen. You can listen to the description using the “Play Description” button. To go back to the Menu, hit the “Menu” button.

You can use the toolbox to select categories. From the categories, you can select blocks.



You can place selected blocks into the solution space on the right by tapping on blocks and then tapping on the solution space. To delete blocks from the solution space, tap the block in the solution space and then tap the trash can that appears.

If you are stuck, try pressing the “Play Hint” button- the creator of the activity might have left some clues to help you figure out the activity.

Press the “Check Answer” button to check your solution. You can check your answer by tapping the “Check Answer” button. The feedback box will fill with feedback telling you whether your solution is correct or incorrect.

To play your solution, hit the green triangle — play button.

Activity Name: Acessible Programming

Description: Make Elephant Sound

Menu

< Animals



Play Description

Congratulations! That's correct!

Check
Answer

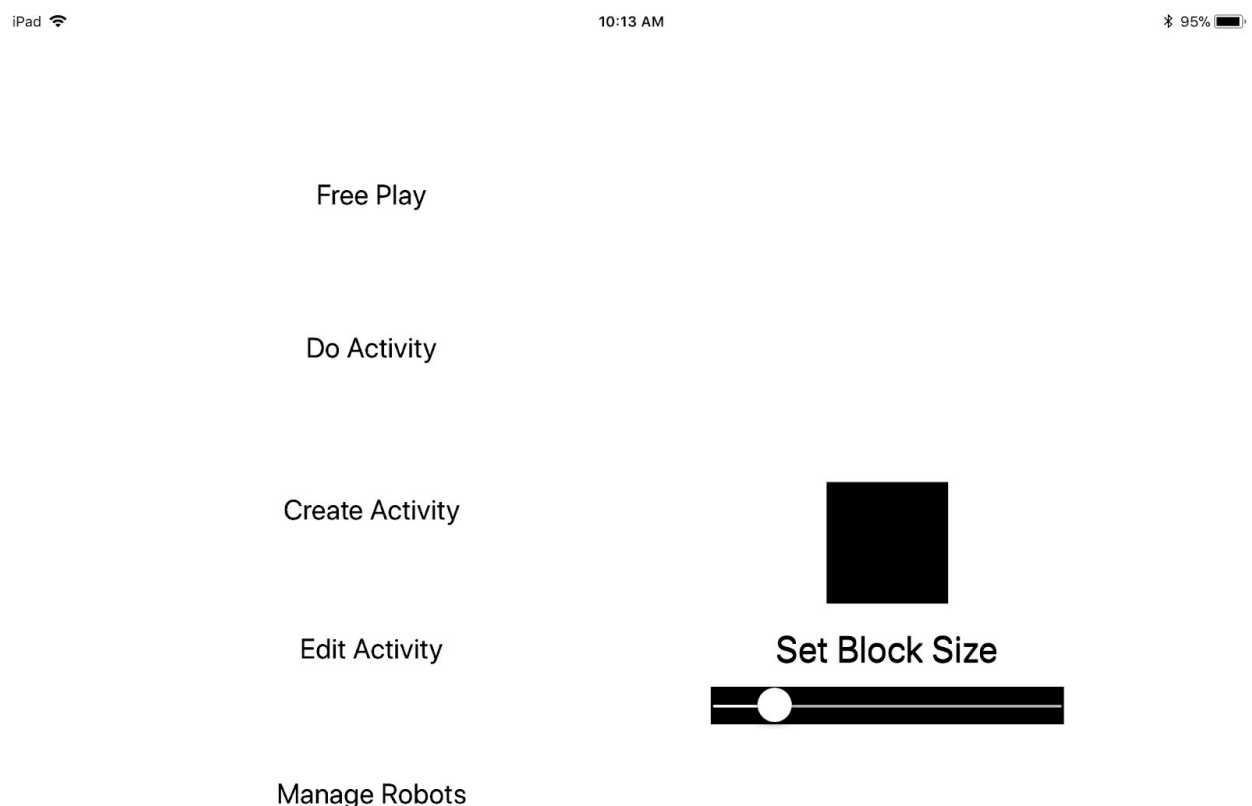
Play
Hint



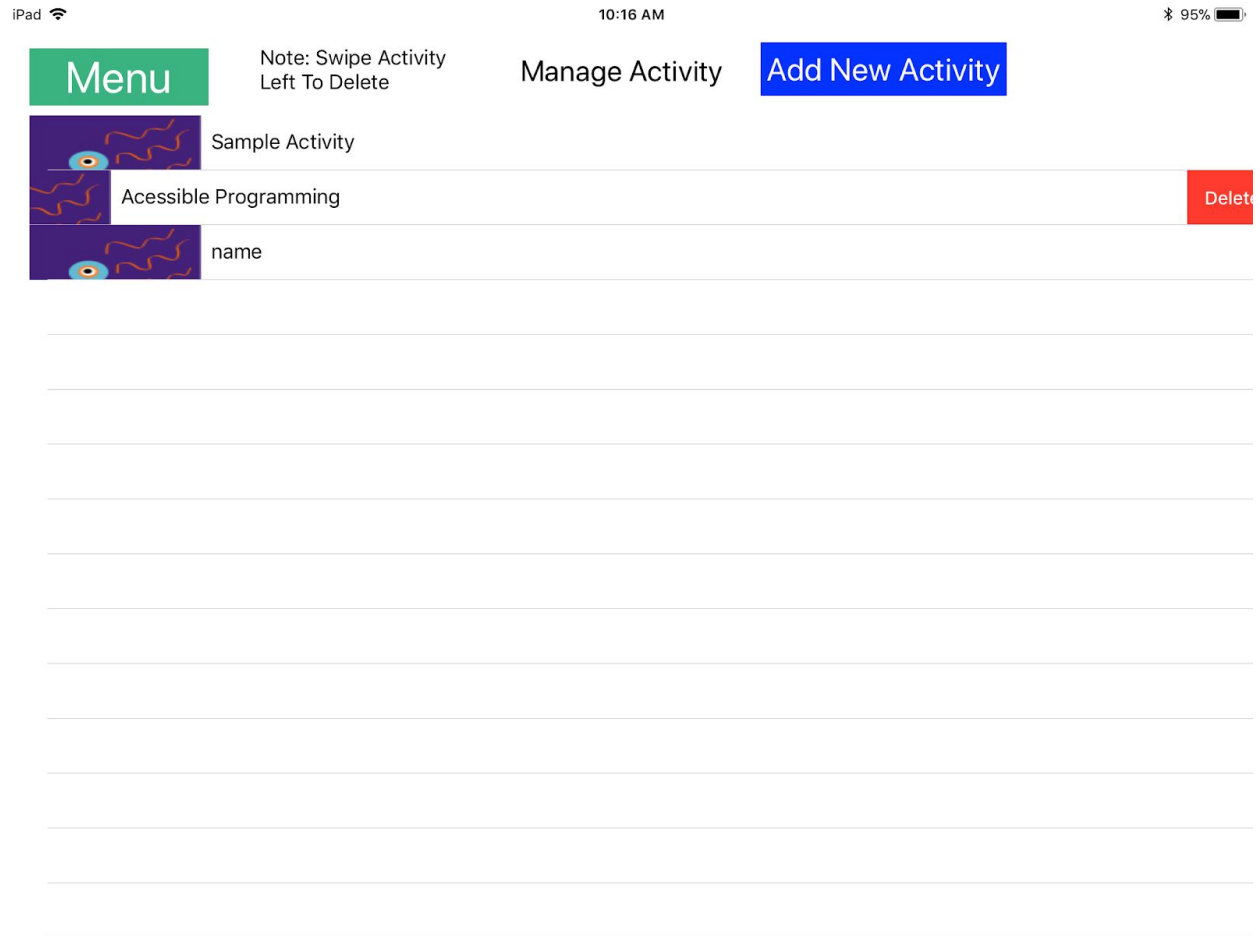
Activity Management

Activity Management is targeted at users who want to edit created tasks — modifying existing solutions or clearing the activity from memory. The Activity Management section has full VoiceOver support — but will mostly be targeted at parents and educators to edit solutions after a student completes a task.

To access Activity Solving, open the Blocks4All application.



Tap on the “Edit Activity” button.



From this screen activities can be edited by tapping them- this will bring you into the activity editor. To delete an activity, swipe left to reveal the delete button and then press it.

Free Play

Free Play is designed for low-vision users who want to explore programming without having to solve activities. The Free Play section has full VoiceOver support.

To access Activity Solving, open the Blocks4All application.

Free Play

Do Activity

Create Activity

Manage Activity

Manage Robots



Set Block Size

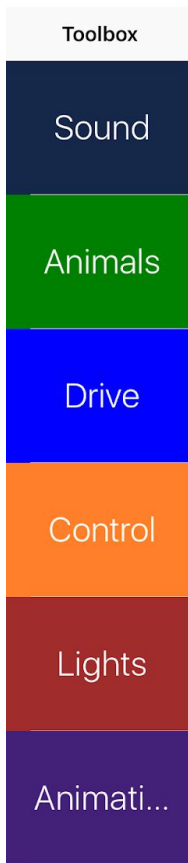


Tap on the “Free Play” button.

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[Spatial Layout](#)



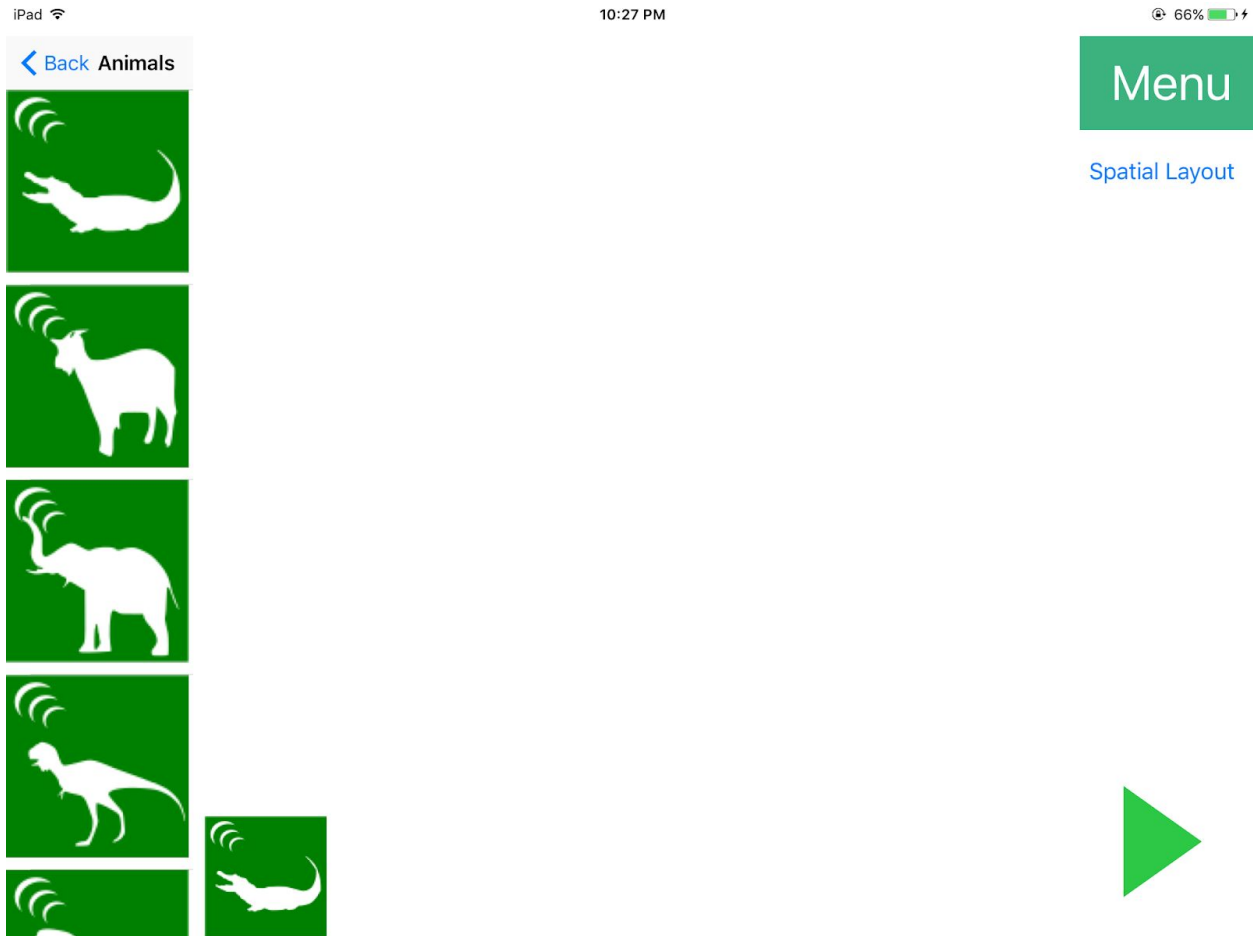
Use the toolbox to select categories. From the categories, you can select blocks.



[Spatial Layout](#)



You can place blocks into the solution space on the right by tapping selected blocks on the solution space. To delete blocks from the solution space, tap the block in the solution space and then tap the trash can that appears.



To go back to the Menu, hit the “Menu” button.

To play your program, hit the green triangle — play button.

How to Deal With Failures

The Blocks4All application is very forgiving. The solution space comes with a delete tool (trashcan) to remove blocks which have been placed on accident. Activities can be modified after their creation, enabling users to fix up mistakes or expand on an activity they have already created.

Users can press the “Check Answer” button to get feedback as they are completing an activity. This feature can be used as many times as the user presses it.

Our team has developed the application with failure modes in mind. With these in mind, we added a number of safeties and conditions to catch mistakes before they hit the user. But we cannot catch them all.

Prior to restarting the application on iPad, take a screenshot of your current screen to save any progress you have on the screen. To take a screenshot: hold down the Home button and the Lock button at the same time. If successful, the screen will flash white and the photo will be saved in your Photos app on the iPad. You can use this screenshot to remember what you had on the screen when it comes to returning to your work.

If the application stops responding or crashes, close the application completely: double tap the Home button on the iPad and swipe the program up to close it. Then try re-opening Blocks4All. Depending on where you are in the application, you might lose some progress.

If restarting the application doesn't work, try restarting the entire iPad by holding down on the power button and swiping on the Power Off slider. Wait 30 seconds and then turn the iPad back on by holding down on the power button.

If that fails to fix the problem, remove the application from your iPad: go to the Home Screen on the iPad, hold down the Home button on the iPad (until the apps start jiggling), then hit the X button on the Blocks4All application. Then go back to our Installation Manual and re-install the application. In this case, you will lose all of your progress -- and we apologize for that.