Block Types

Blocks in Ardublock are separated into categories using the menu on the right side of the program. These categories make writing programs easier because they keep blocks organized and easy to find. If you are curious what a specific block does, please hover your mouse over the block for a description or ask your teacher for help.

Control

The *Control* menu is one of the most used menus when writing almost any program. In fact, the first thing you must do to create a program is access the *Control* menu to access either the program or loop block. Beyond these two necessary blocks, the menu allows programmers to add loops, conditional statements like if, delay blocks (which are particularly helpful when writing chip tune songs), and more. When first getting started with Ardublock, this is a great menu to play with.

ECS

The *ECS* menu is where many of the blocks you will be using are located. This menu contains blocks for controlling the hardware, including the LEDs, buttons, speaker, and distance sensor. By combining these hardware-controlling blocks with the other control, math, and logic blocks included in Ardublock, you will be able to control the Arduino and its shield just like you have controlled onscreen behavior in Scratch.

Variables/Constants

Using the *Variables/Constants* menu, it is possible to create named variables and hard-code constant values throughout your program. This can make your programs easier to edit and simpler to read, and often allows programmers to make more complicated and interesting projects.

Math Operators

Just like Scratch, Ardublock has blocks that can be used for mathematical equations and calculations. These blocks are found in the *Math Operators* menu, which contains the basics like addition and subtraction, as well as trigonometric functions and other advanced operators.

Logic Operators

Much like the *Math Operators* menu, the *Logic Operators* menu contains blocks which can be used to compare numerical blocks. This menu is used for comparisons like “Is 3 less than or equal to 4?” and can be extremely useful when making programs which contain loops or check for certain conditions.

Communication

Like the *Advanced (Pins)* and *Advanced (Code)* menus of blocks, described below, the *Communication* menu contains advanced blocks which most students will not use. These blocks are used mainly for debugging programs, which some students may wish to use if they have previous programming experience. For those who are interested, Ardublock uses a process called “gluing” to handle the combination of different block types for printing a message to the serial console. These combined messages can be used with the print blocks to display messages during program execution. This can be very helpful when your program doesn’t seem to be working the way you expect!

Advanced (Pins)

The *Advanced (Pins)* menu of blocks is meant for advanced students who want to use more peripherals than are available on the standard shield. In general, these blocks should not be used unless you have a specific advanced goal in mind. If you are interested in using these blocks, please ask your teacher for information about how to get started.

Advanced (Code)

As you have learned in class, the Arduino board runs the code you write using Ardublock. You may not realize, though, that Ardublock takes your code and converts it into a different language: Arduino code. This code, which you are able to see by following a different tutorial (ask your teacher if you are interested), is a good introduction to writing code yourself with a keyboard instead of a block-based interface. The Advanced (Code) menu of blocks lets students try writing their own code in small pieces which they can add to a program made of Ardublock code. Like the Advanced (Pins) menu of blocks, this is intended for students who have already mastered block-based code. Please ask your teacher for help getting started if you are feeling adventurous.