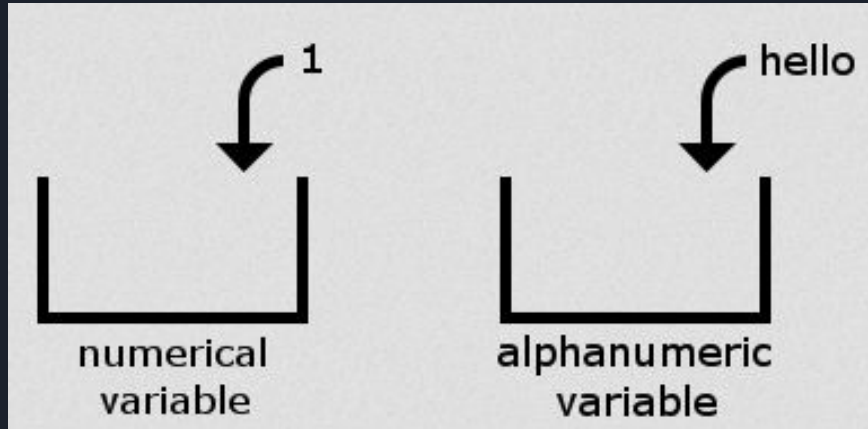# *Variables*

Robotics Curriculum
IT Adventures

Lesson Overview

- Learn what variables are and why they are important

- Learn how to use variables with the micro:bit

- Use variables to record inputs and control outputs
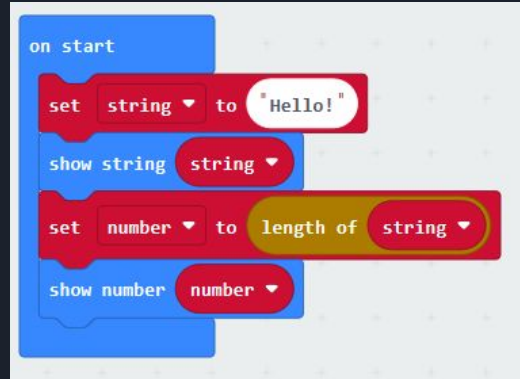
- Use variables to control the RVR!

What are variables?

Variables are used to store information that can be referenced later in a program. Think of variables as a container to put something in. Then later, we can take out that thing and use it again. In MakeCode, our variables can store both numbers or strings, like sentences or words.

Code Example: Using variables to store strings and numbers

Let's take a look at variables in MakeCode, below are two examples of setting variables. Implement the code and explore variables:


In order to set a variable to a string or characters, we need to use the blocks under "Text." Also, take a look at the "Math" section to see how we can manipulate variables that are numbers! If you ever want more information on a block, right click the block and select help.

# Code Example: Use variables to store other data

Variables are not restrained to just words or numbers, implement the code below using the "Images" tab:
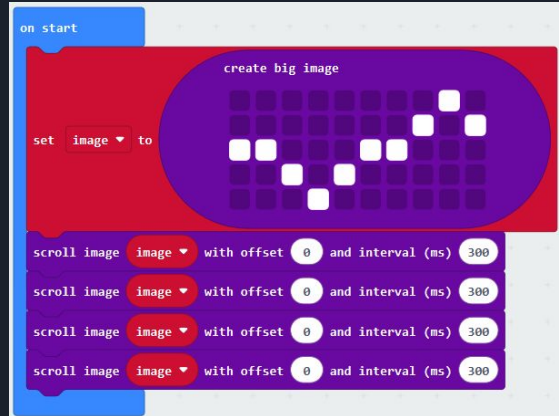
Variables are used commonly to reference previous values and can save us programmers a lot of time!

Code Example: Learning Offset

Complete the following code so that the up arrow is displayed when A is pressed, the down arrow is shown when B is pressed, and the screen clears when both buttons are pressed (hint: play around with offset).
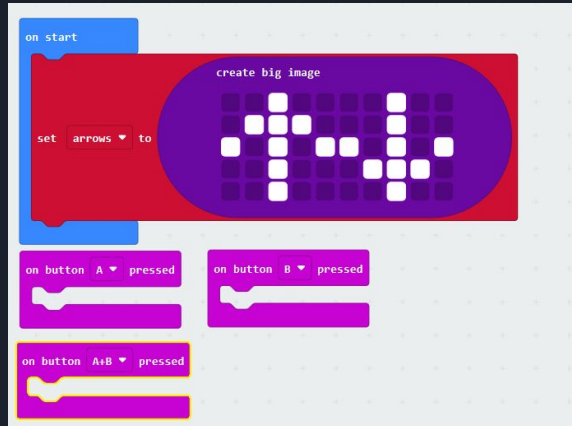
Like this example, variables are often manipulated to get the output we need. This can allow us to interpret sensor data, scale our inputs, or convert data to something we can use.

Primary Learning Challenge

Write a program where the micro:bit plays a song when a button is pressed and the volume is a random number (within the volume range) chosen on start. Display the number on the LEDs before the song is played.

Now use a new input, compass heading, to control the volume. Store the compass heading when a button is pressed and play a song at that volume. Can you find 0?

Secondary Learning Challenge

Create a program that will speed up the RVR every time the A button is pressed, slow down the RVR every time the B button is pressed, and STOP when the logo is pressed or touched.