Variables Activity 1

Scratch is great at making cool noises and sounds. You can *change* the tempo, volume, pitch, and instrument. In this activity, we’re going to use variables to *change* these settings to create things like faders and samplers.

In particular, notice that:

* Whenever we use a variable, we *set* it to a particular value at the top of the program
* Once the variable is set, we can *change* it throughout the rest of the program

Assignment:

First, we’re going to experiment with variables. Create a new variable named volume. Then, create a program like the one seen below:

A screenshot of a phone

Description automatically generated

1. Describe in 1-2 sentences what happens when you run the program:
2. What would happen if you set the volume to 0 initially and then change it by 10?
3. Why is it important to have a set at the beginning of the loop? How is this similar to having a good “init” in a game loop?
4. What would happen if you had a set in the loop rather than a change?

Second, we’re going to create a program that uses a variable to play a bunch of different notes. Create a new variable named notes. Then, create a program like the one seen below:

A screenshot of a phone

Description automatically generated

1. Describe in 1-2 sentences what happens when you run the program.
2. What would happen if you put a forever loop around the two repeat loops?

Now, I would like you to create a mini-band of **three** sprites. Each of the sprites must use **at least one variable** to change some part of the sound (volume, tempo, instrument playing, note, etc.).

1. Create three sprites.
2. Program the first sprite to use a variable to change some part of the sound within a loop. The resulting program will almost certainly not sound good. In many ways, the **worse it sounds, the better you’re doing**.
3. Program the second sprite in the same way as the first.
4. Program the third sprite in the same way as the first and the second.
5. Sit back and enjoy the horrible music!

Bonus: Now that you know how to use variables, create a new scratch project that uses them tastefully. Look online for inspiration in terms of songs and notes. Then, create a program that makes some beautiful music using a variable or two.