



Deconstruction and Reconstruction

Code Your Story: Session 4

Pixel Programming 2: Nested Loops

Warm-Up

- How would you draw a straight horizontal line?
- How would you draw a rectangle?
- How would you draw a solid rectangle?

•

What is Pseudocode?

Pseudocode is code written in plain English. Pseudocode might look something like this:

- *Fill in a square, move right*
- *Repeat X times*

What is Pseudocode?

Versus Pixel Programming, which might look like this:

Set LENGTH to ____

Repeat LENGTH times

—

| *MARK*

| *MOVE RIGHT*

—

How to Do Anything with Algorithms

- *A for loop repeats a sequence a number of times (“for 10 reps”)*
- *A while loop repeats a sequence until a certain condition is met (“while 30 seconds pass”).*
 - *In a for loop, the computer would create a variable to keep count and run a test to see when the counter has reached its limit whereas, in a while loop, the computer would be able to explicitly define the test.*
- *Both algorithms get a problem solved, but in different ways*

Optional Extension Activity: Loopy Lyrics

- For this activity, we're going to write some musical lyrics using loops.
- Most songs have at least one loop in it: the chorus repeating two or three times at the end.
- **Challenge (If there is time):** Can you think of songs that use a ton of repetition? Look up the lyrics and rewrite some of them with even more loops!

Optional Extension Activity: VarLibs

- Compared to Mad Libs, Var Libs actually make a lot of sense! This is because the prompts are designed to fit the pattern of a story.
- In the computer programming world, using variables allows programmers to customize things for users and even for different situations (think about how many websites or video games ask for your name!). Words and phrases are pretty common variables; they're called *strings* in computer jargon.

Optional Extension Activity: Mash Up

- Choose your favorite song and use it to create your own Var Lib.
- Transcribe and Var Lib-ify at least one verse of the song and/or the chorus—or, if time permits, the entire song.
- Use loops to make your songs even *more* awesome. Use a loop to repeat it one more time, or two, or eight!

Once you're done, swap with a partner and try it out. Reading aloud is great here and, of course, singing is encouraged!