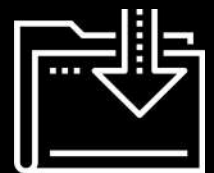




Control Flow with VBA

Data Boot Camp

Lesson 2.1





Refresher



**What does “coding requires
thinking procedurally” mean?**

How a Computer Thinks (Procedurally)

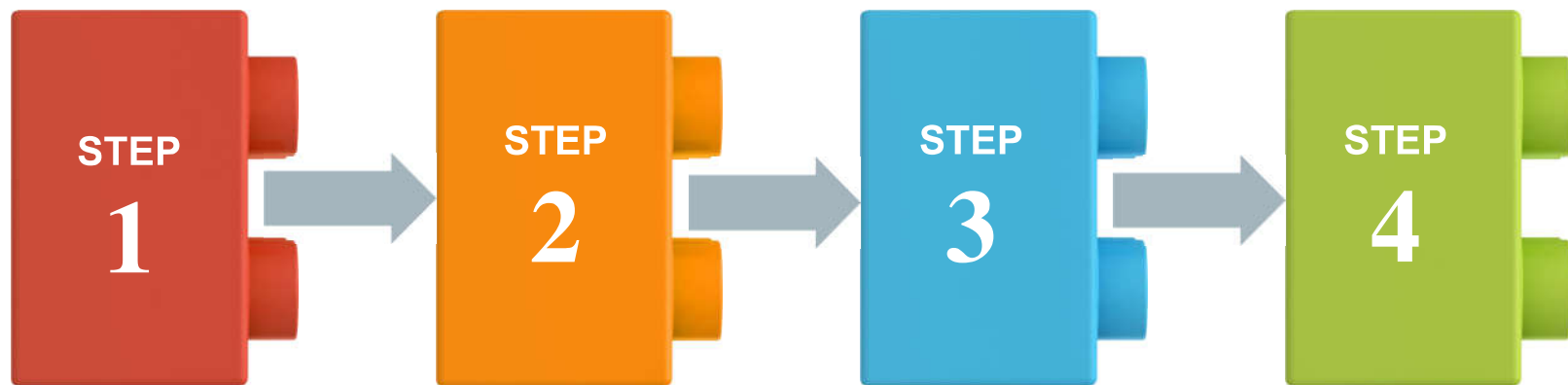
Every software development problem begins with a complex and abstract real-world need.



How a Computer Thinks (Procedurally)

In order for a computer to interpret things, a real-world problem must be broken down into a set of procedural steps.

Complex Real-World Problem



How Code Is Written (Procedurally)

Code (JavaScript)

```
1 // STEP 1
2 // -----
3 var thingamagig = 500;
4 var doodad = 200;
5
6 // STEP 2
7 // -----
8 var combinedThing = thingamagig + doodad
9
10 // STEP 3
11 // -----
12 runContraption(combinedThing);
13
14 // STEP 4
15 // -----
16 resetContraption();
```





**What are the four fundamental
tools of programming?**

Fundamental Tools of Programming

These structures are found in nearly all programming languages:



Conditionals



Iterations



Functions



Variables / Arrays

Variables: The Nouns of Code



Variables are effectively the items in a procedure.



They can be **physical things** (like an ingredient) or **abstractions** (like a counter).



In VBA, items can be **declared** as variables by using **dim** followed by the type. Then they can be **assigned** a value.

Variable Declaration

```
dim ing1 as String
dim ing2 as String
dim budget as Double
```

Variable Assignment

```
ing1 = "Peanut Butter"
ing2 = "Jelly"
budget = 5.00
```

Array: A Collection of Items

Arrays are effectively **groups** of related items. They are another way to store and reference similar pieces of information.

Item 0

Item 1

Item 2

["Peanut Butter",	"Jelly",	"Bread"]
-------------------	----------	----------

```
dim ingredients(0 to 2) as String  
  
ingredients(0) = "Peanut Butter"  
ingredients(1) = "Jelly"  
ingredients(2) = "Bread"
```

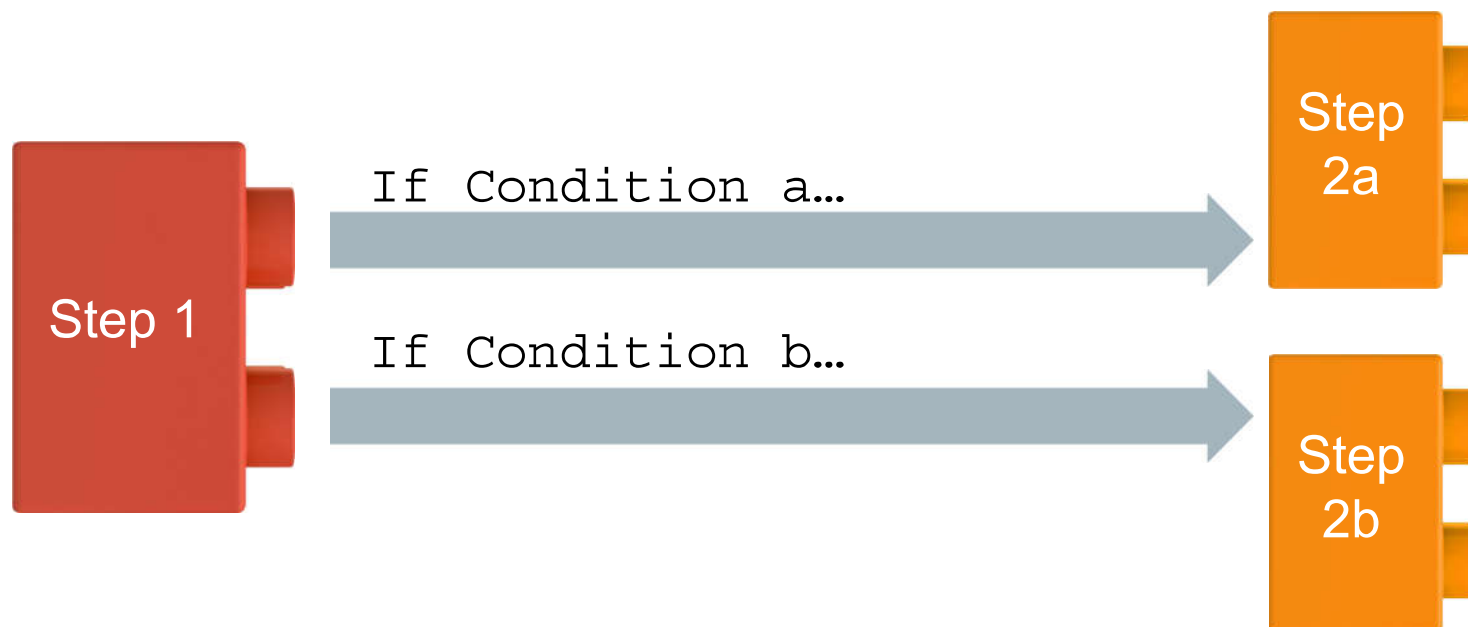
Conditionals: If This, Then That



Conditionals can control the flow of logic based on certain conditions being met.



Most programming languages use **if/else** code for this purpose.



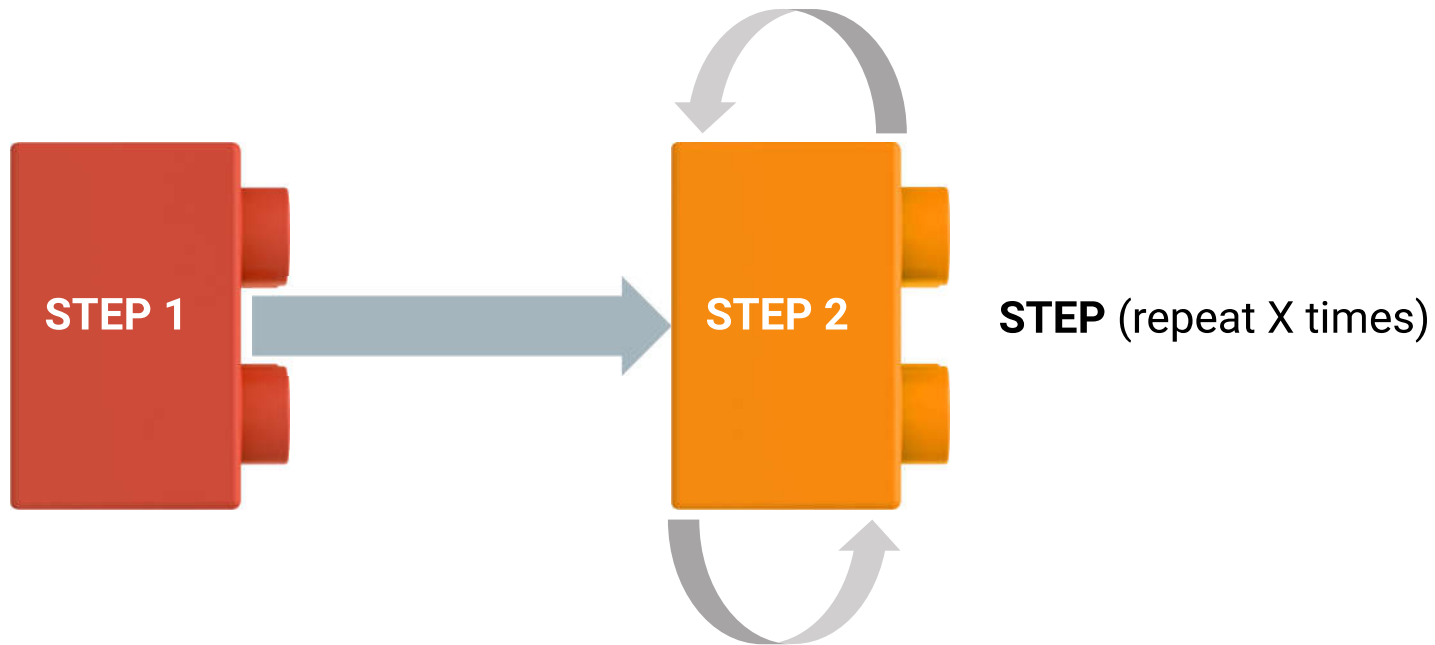
Iteration: Round and Round We Go!



Iteration is the concept of using loops to perform a group of tasks repeatedly a number of times.



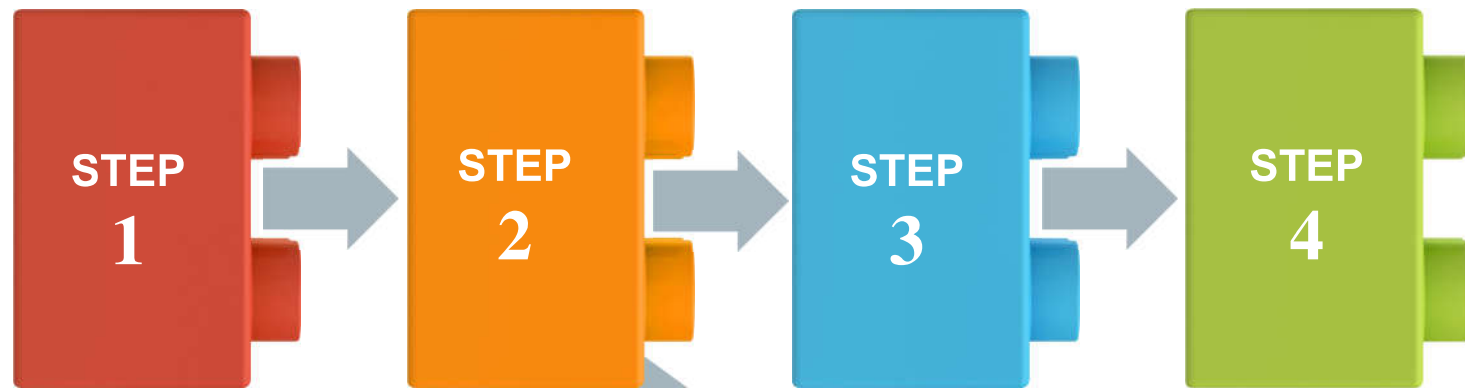
Almost all programming languages use **for loops** and **while loops** for iteration.



Functions: When One Block Can't Do It All!

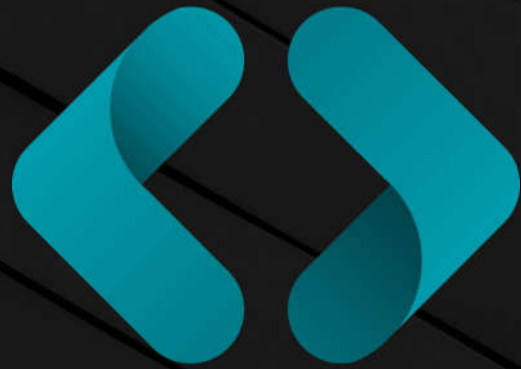
Functions are, in essence, a sort of sub-process. They allow us to create premade, reusable blocks of code that can be called on demand.

Main Process



Sub-Processes





Time to <code>