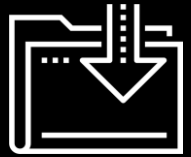




# Control Flow with VBA

Data Boot Camp

Lesson 2.1





# Refresher



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

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

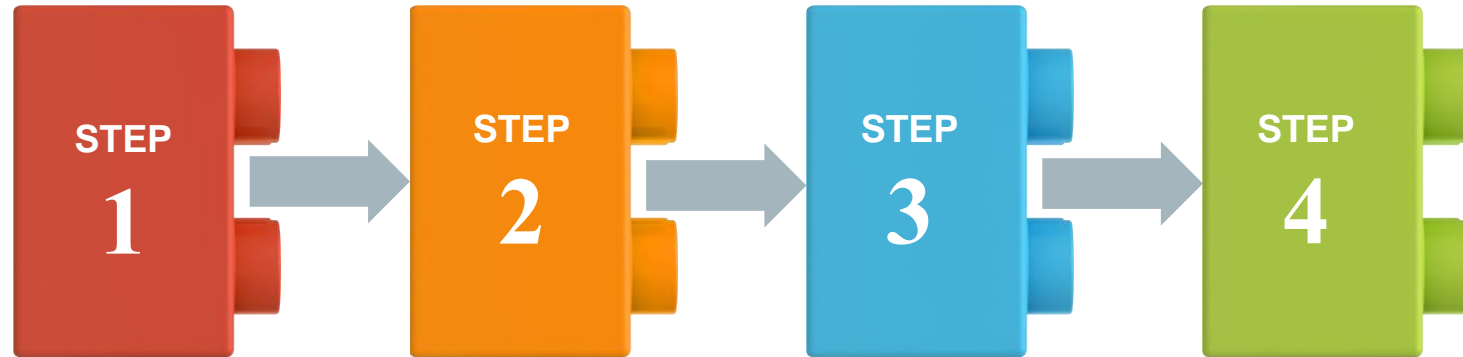


# How a Computer Thinks (Procedurally)

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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)

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## 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

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These structures are found in nearly all programming languages:



**Conditionals**



**Iterations**



**Functions**



**Variables / Arrays**

---



# Variables: The Nouns of Code

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**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"
```

---

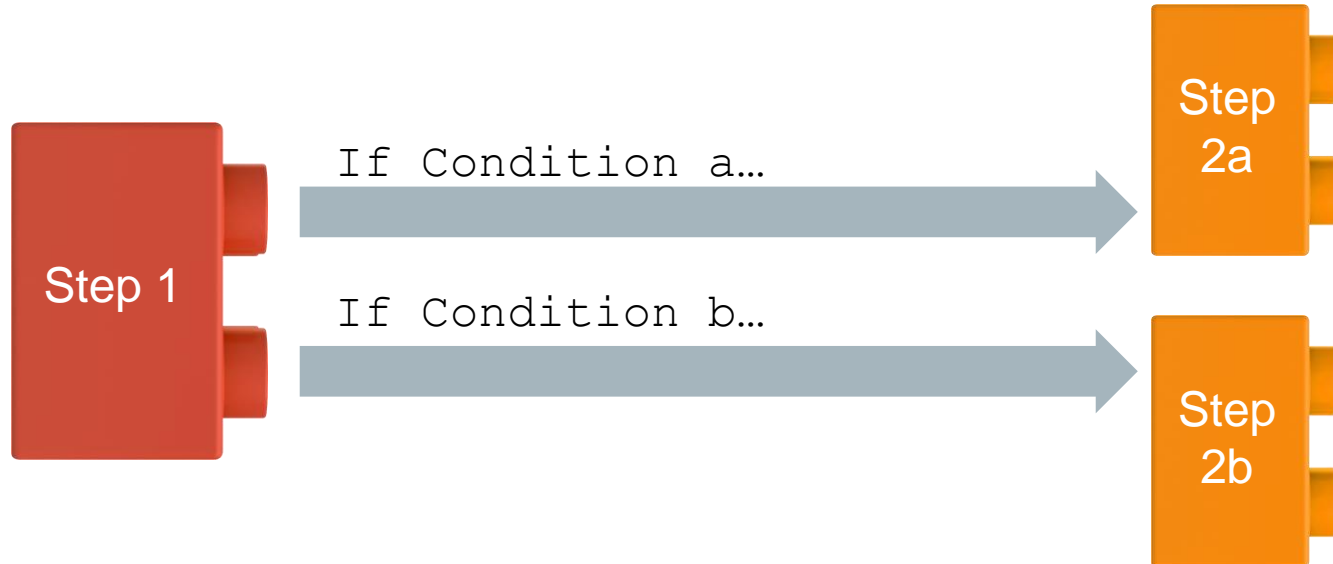
# Conditionals: If This, Then That



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!

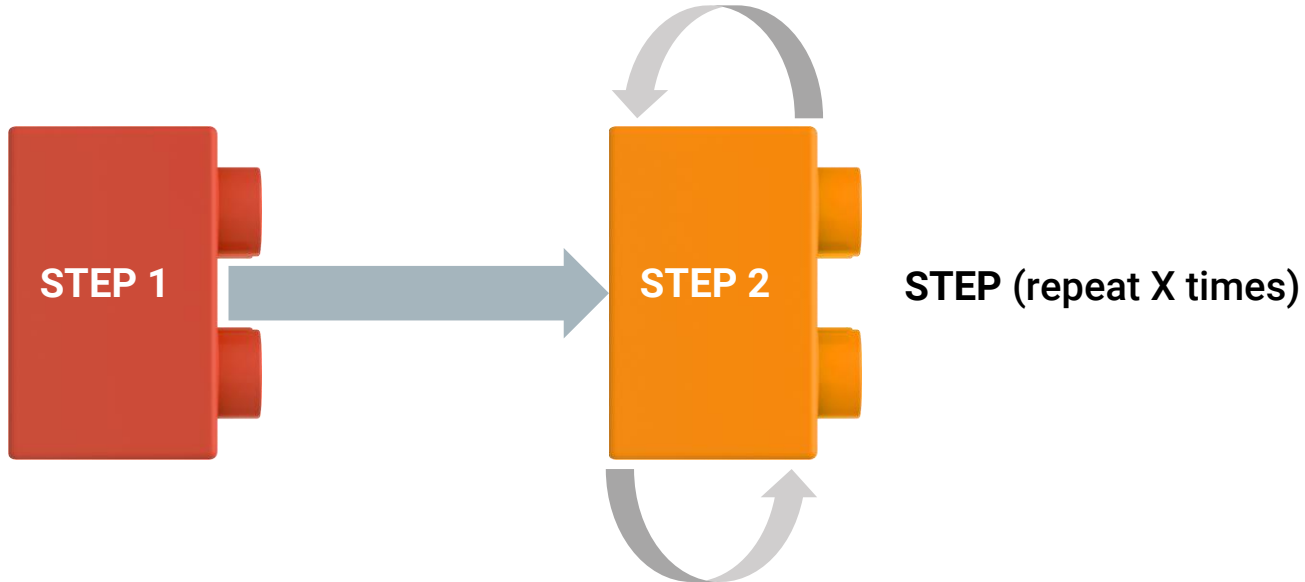
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**Iteration** is the concept of using loops to perform a group of tasks repeatedly a number of times.



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

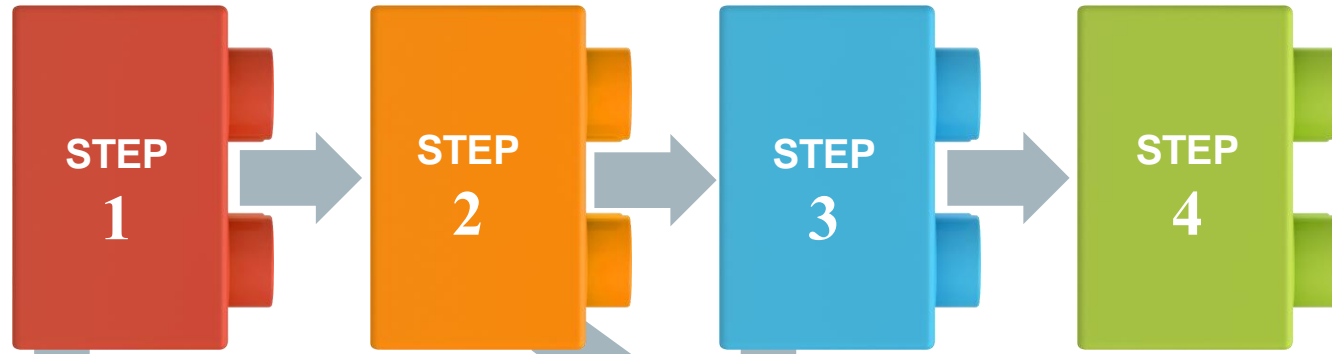


# Functions: When One Block Can't Do It All!

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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>