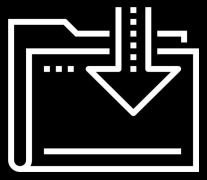
Control Flow with VBA

Data Boot Camp

Lesson 2.1

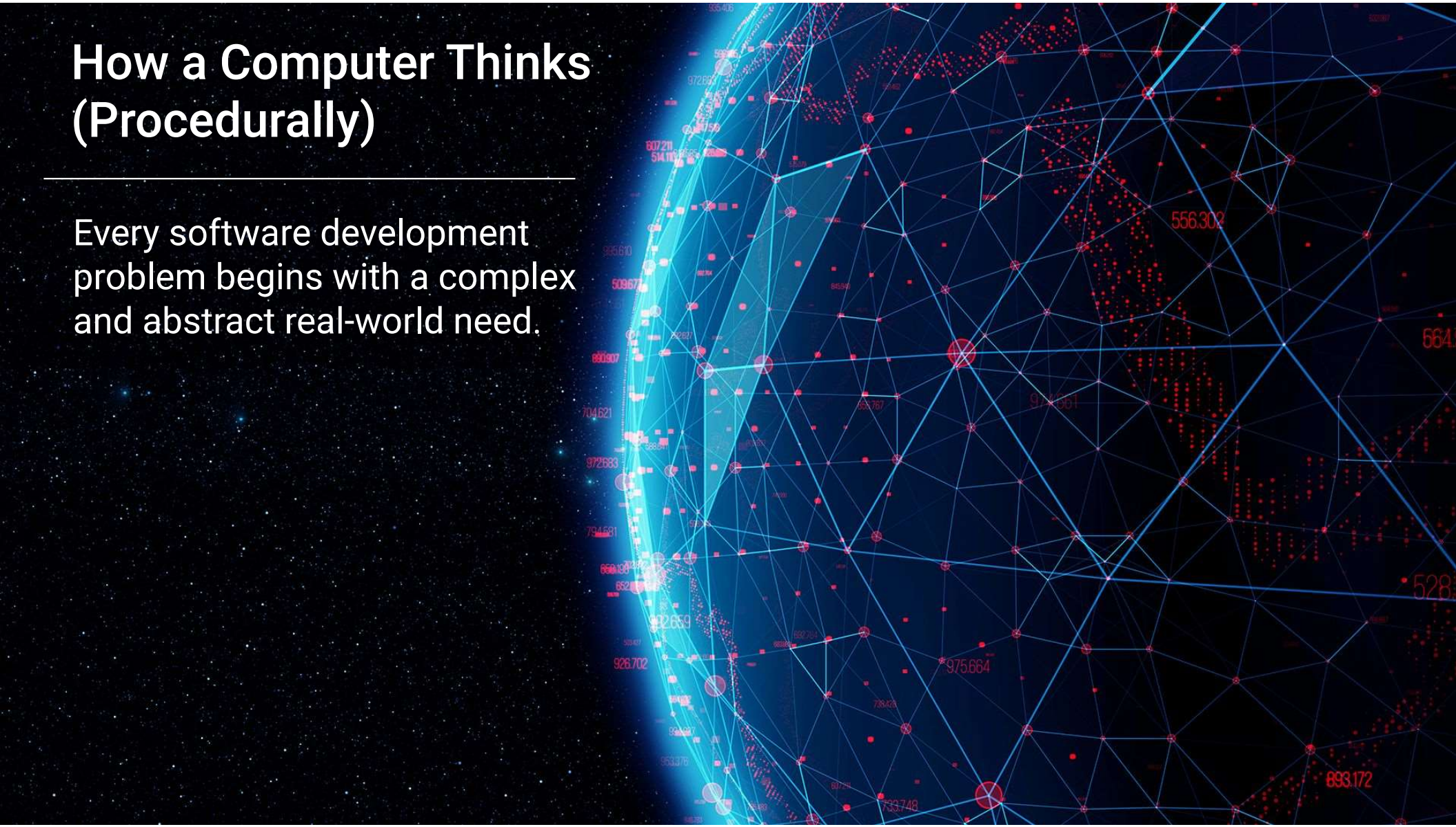


Refresher

What does “coding requires thinking procedurally” mean?

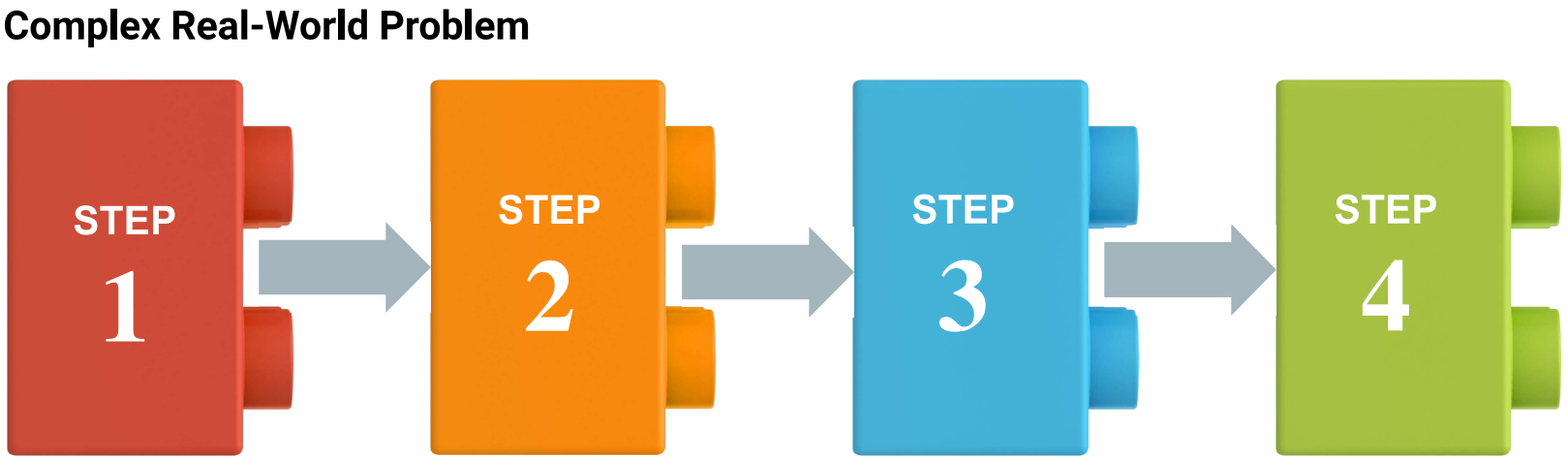
How a Computer Thinks (Procedurally)

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.



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 combindedThing = thingamagig + doodad
9
10 // STEP 3
11 // ---------------------------------
12 runContraption(combindedThing);
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

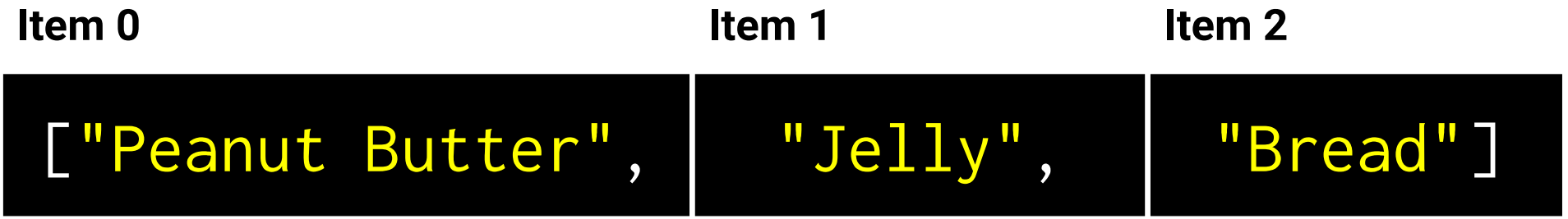
```
dim ing1 as String
dim ing2 as String
dim budget as Double
```

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.



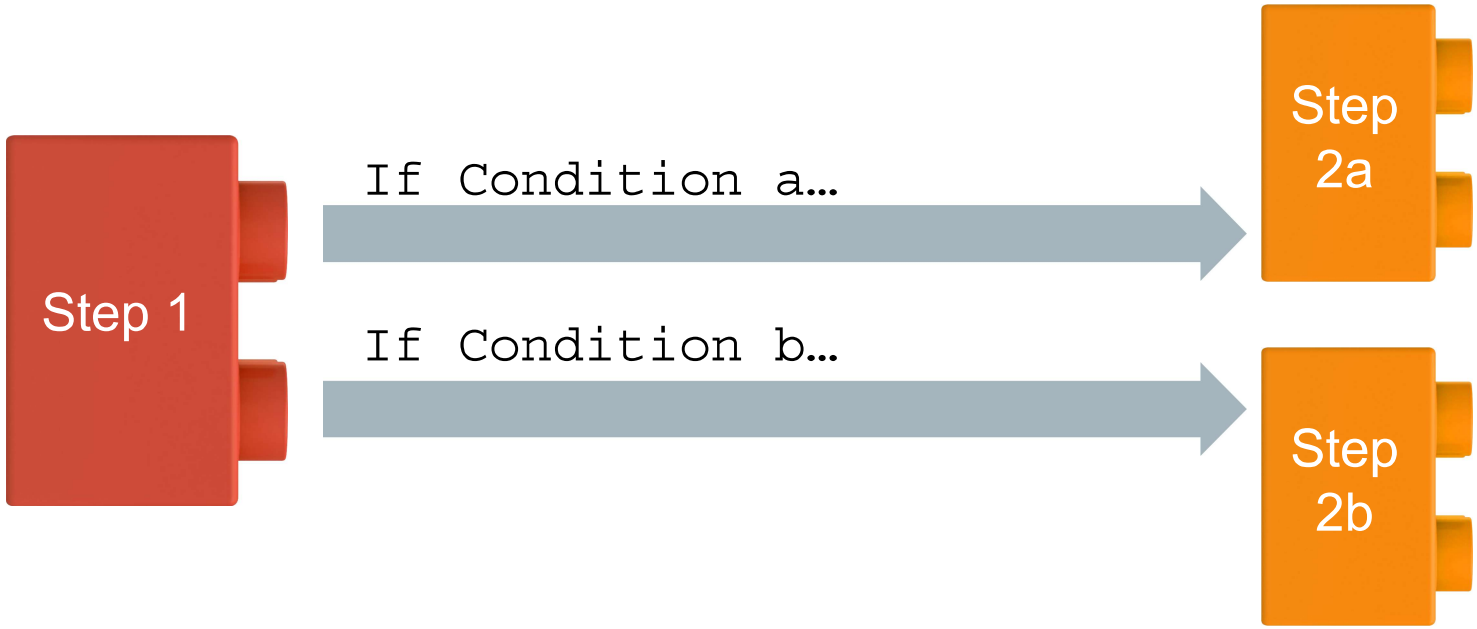

```
dim ingredients(0 to 2) as String

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.

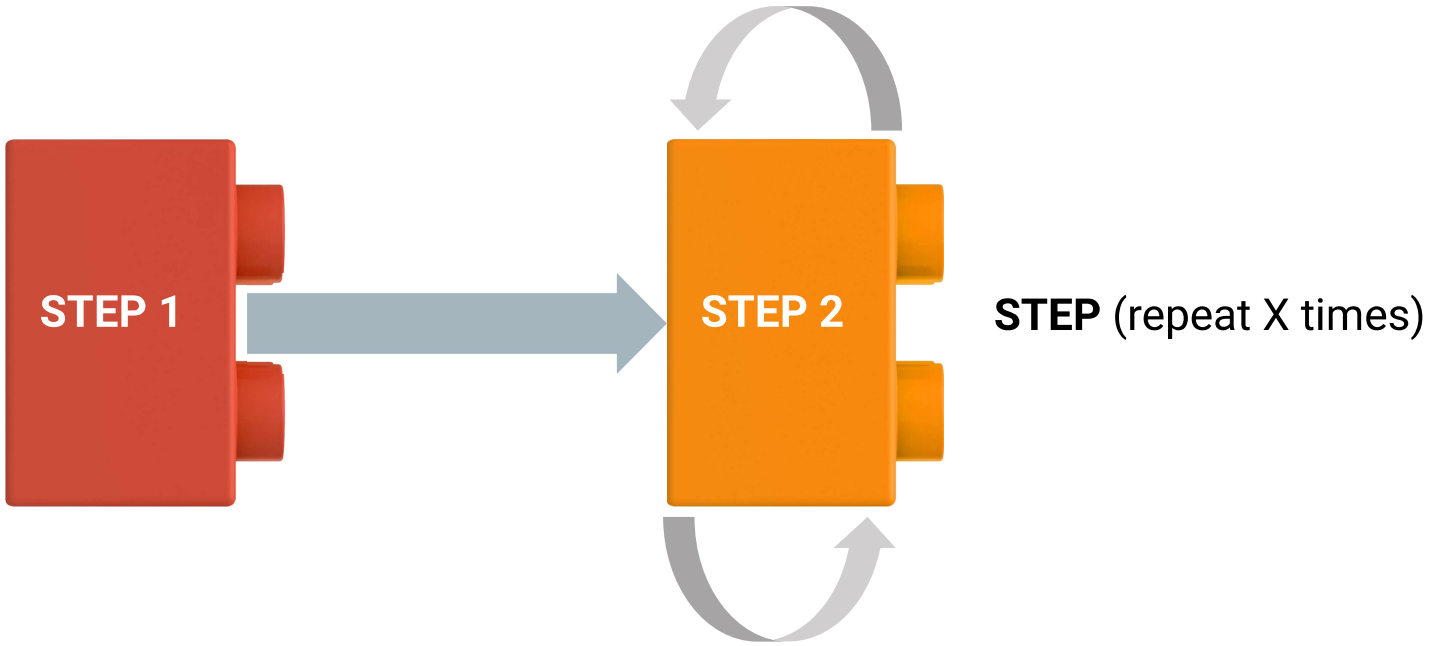
Most programming languages use **if/else** code for this purpose.



Iteration: Round and Round We Go!

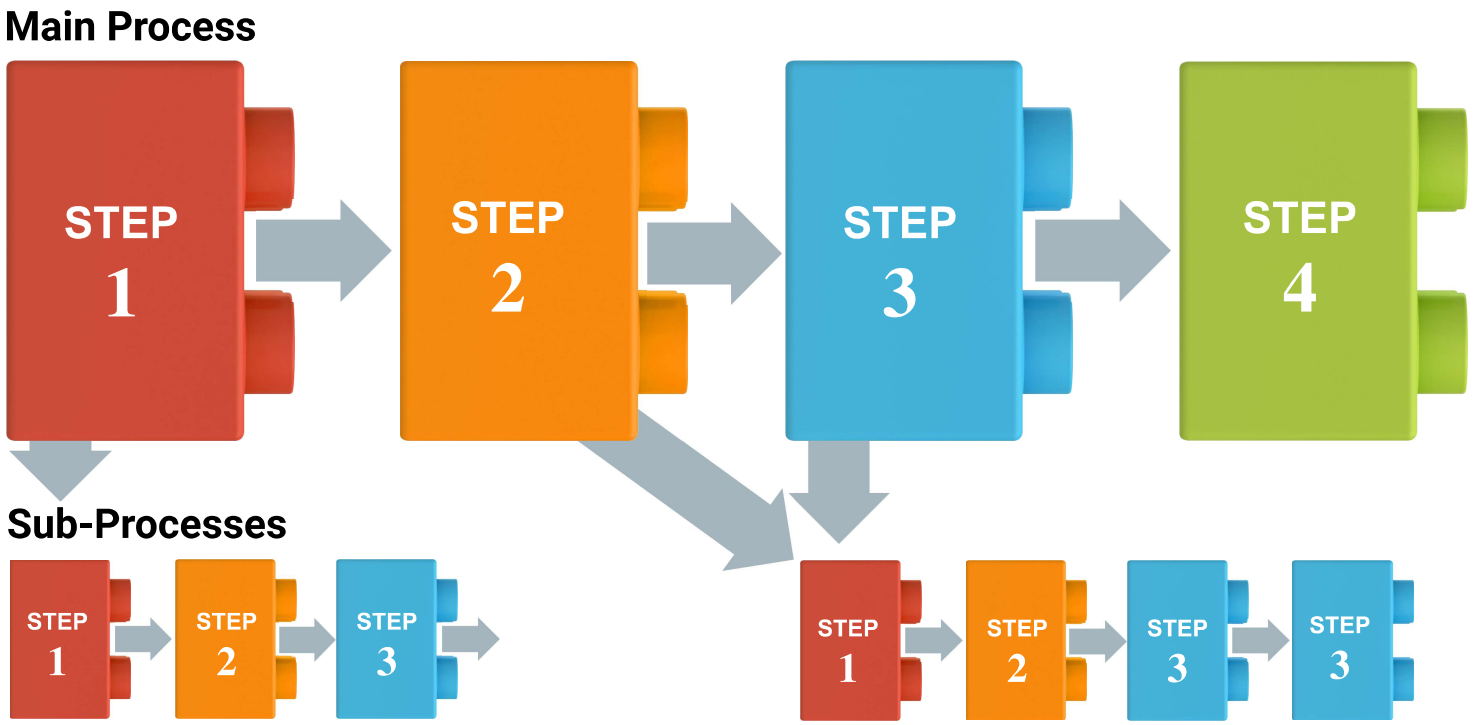
Iteration is the concept of using loops to perform a group of tasks repeatedly a number of times.

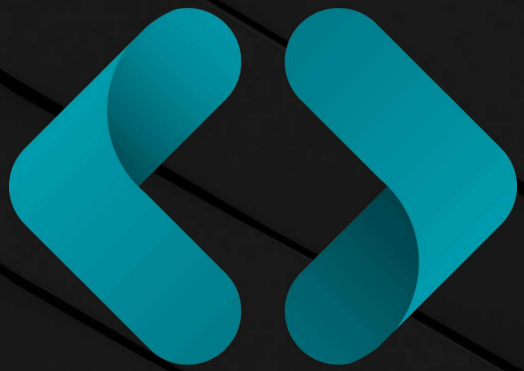
Almost all programming languages use **for loops** and **while loops** for iteration.



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.





Time to <code>