Vexing VBA

Data Boot Camp

Lesson 2.2

Today, this is you.

Refresher

What does “coding requires thinking procedurally” mean?

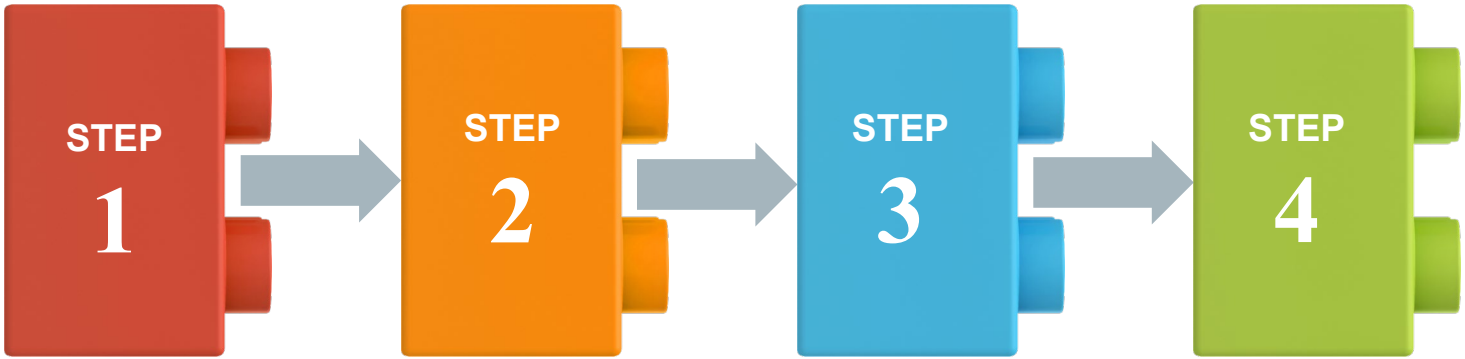
How a Computer Thinks (Procedurally)

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 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 a type. Then they can be **assigned** a value.

Variable Declaration

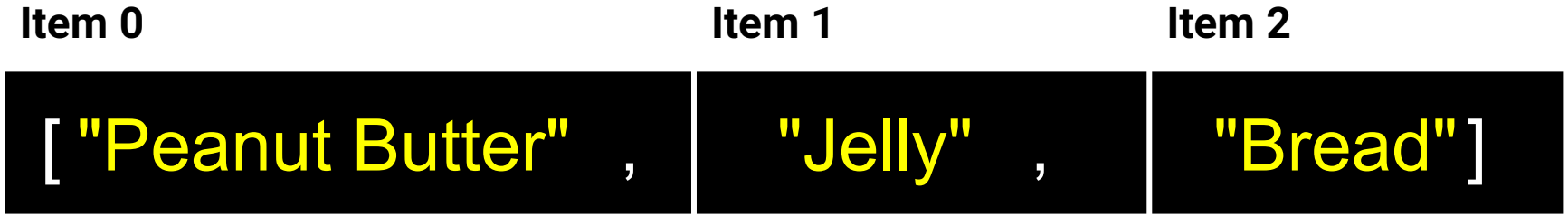
```
dim ing1  as String
dim ing2  as String
dim budget as Double
```

Variable Assignment

```
ing1  = "Peanut Butter"
ing1  = "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.



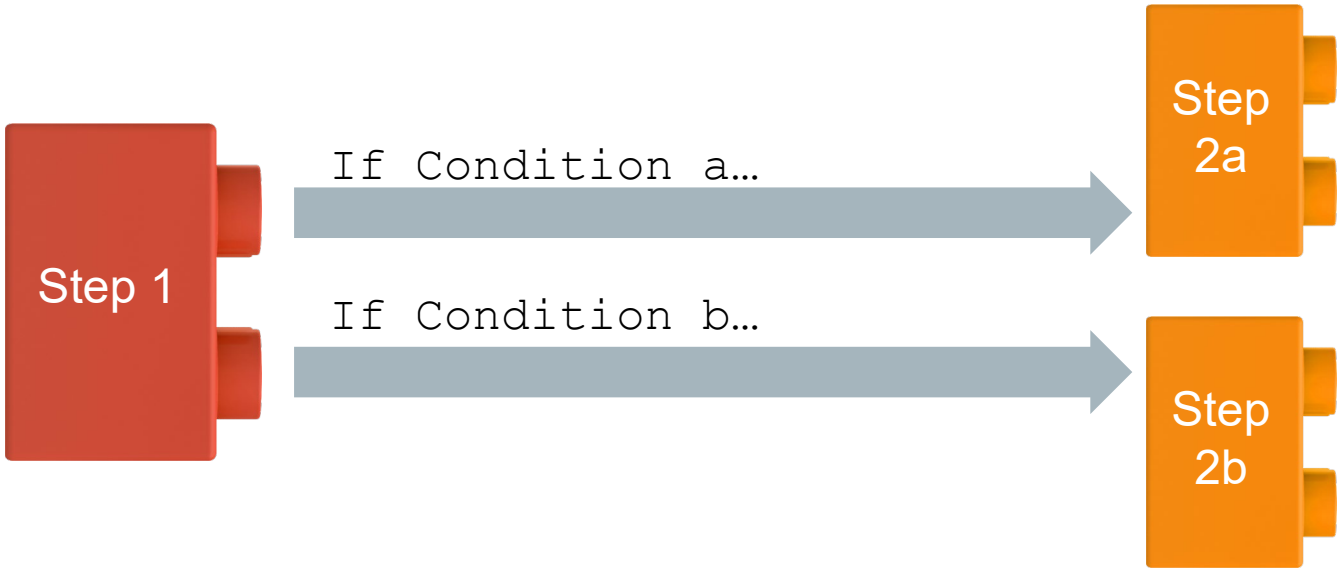

```
dim ingredients (0 to 2) as String

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.

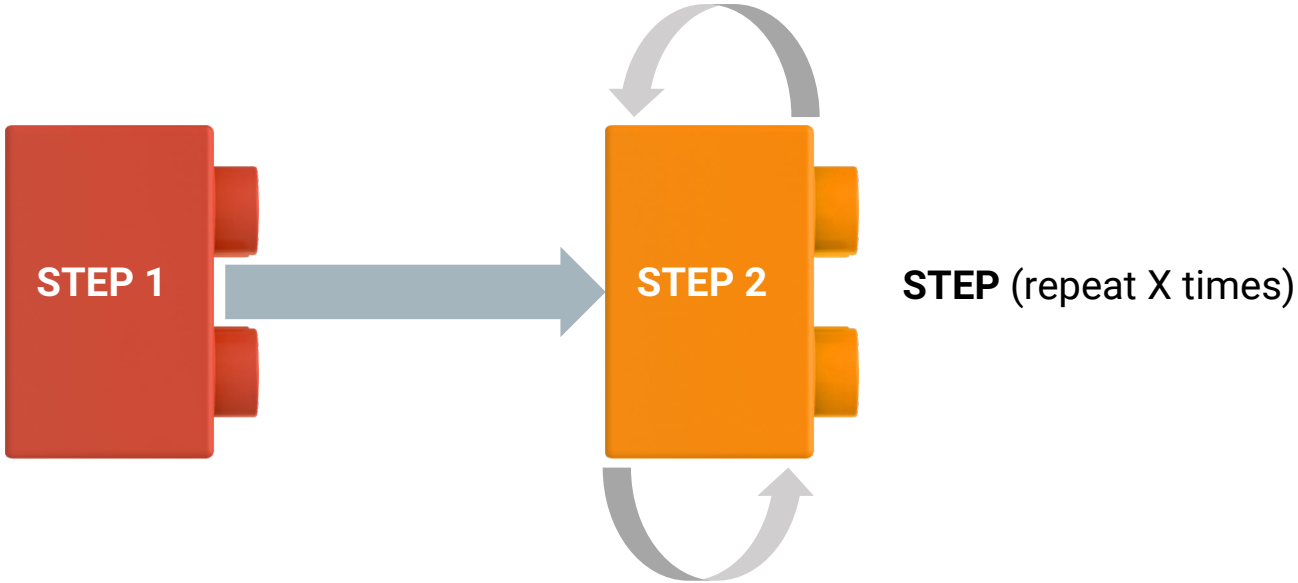
Most programming languages use **if/else** code for this purpose.



Iteration: Round and Round We Go!

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

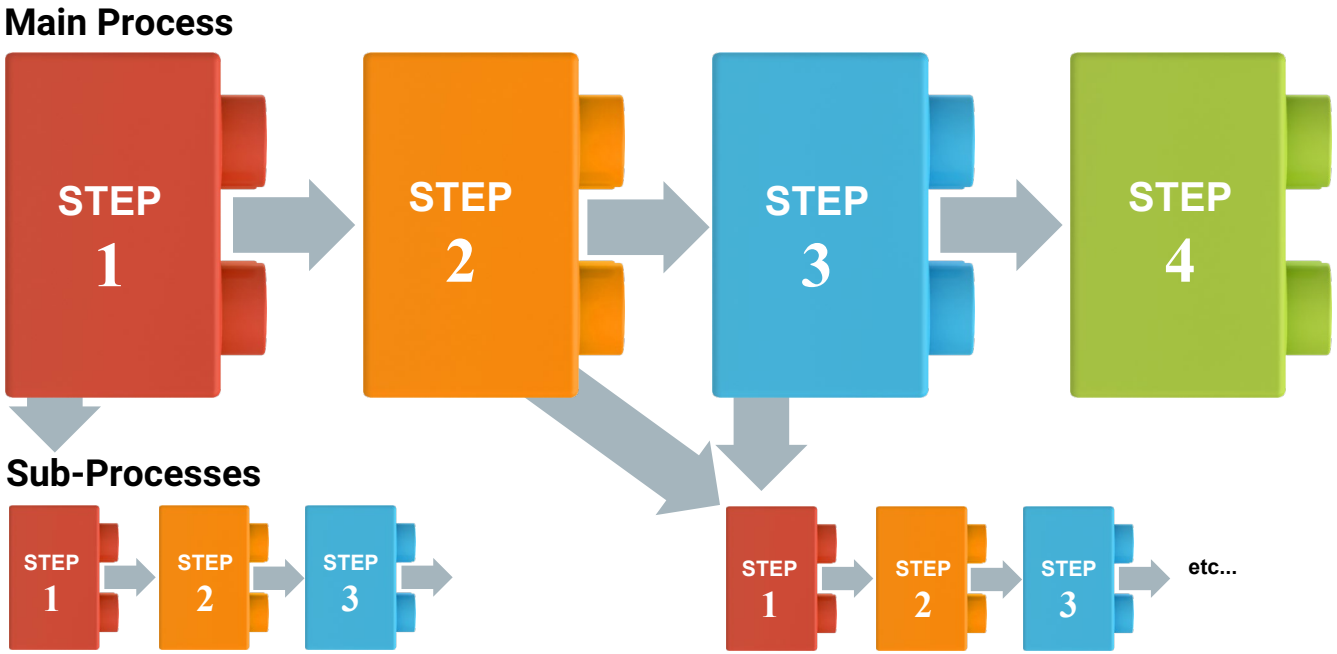
Almost all programming languages use **for loops** and **while loops** for iteration.



Functions

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.



Thinking Procedurally

To Make a Sandwich:

Logical Procedure:

01 Get bread, peanut butter, and jelly from pantry.

02 Lay out bread on table.

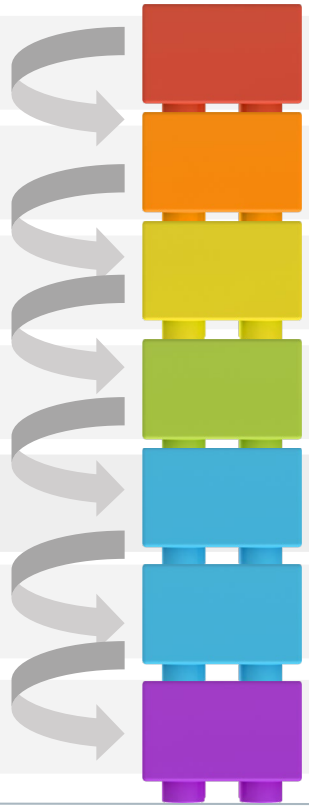
03 Open jars of peanut butter and jelly.

04 Get spreading knife.

05 Use knife to spread peanut butter.

06 Use knife to spread jelly.

07 Combine bread to create sandwich.



Let’s Get Coding!