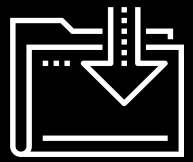
Control Flow with VBA

Data Boot Camp

Lesson 2.1



Refresher

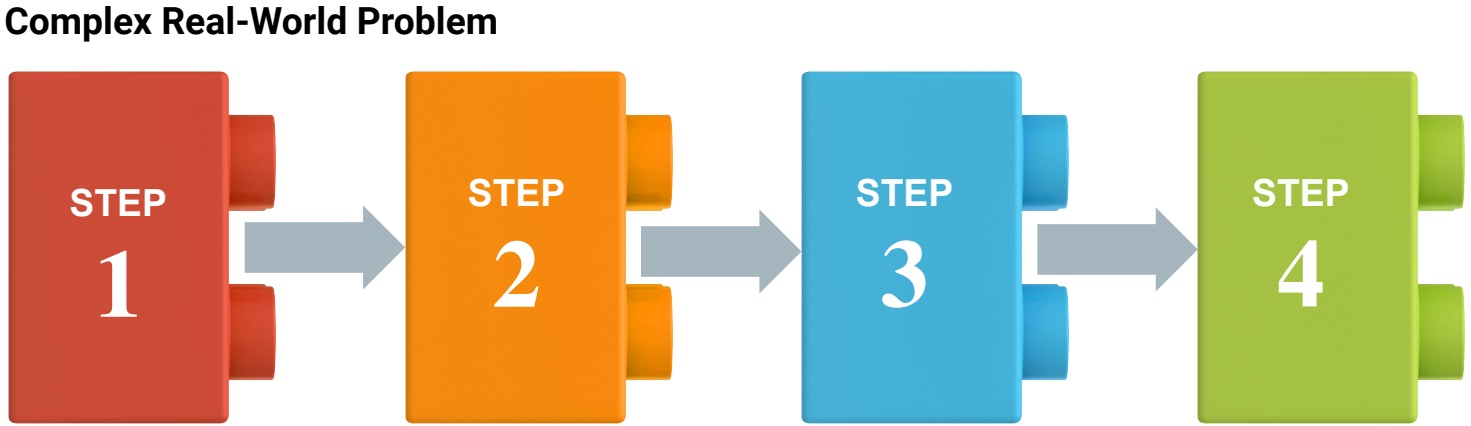
What does “coding requires thinking procedurally” mean?

How a Computer Thinks (Procedurally)

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

How a Computer Thinks (Procedurally)

For a computer to interpret it, the real-world problem must be broken down into a set of procedural steps.



How Code Is Written (Procedurally)

Code (Python)

```
# STEP 1
# ------------------------
thingamagig = 500
doodad = 200

# STEP 2
# ------------------------
combinedThing = thingamagig + doodad

# STEP 3
# ------------------------
runContraption(combinedThing)

# STEP 4
# ------------------------
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 and 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. They can then be **assigned** a value.

Variable Declarations

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

Variable Assignments

```
ing1 = "Butter"
ing2 = "Vegemite"
budget = 5.00
```

Arrays: Collections of Items

An array is effectively a **group** of related items. It presents another way to store and reference similar pieces of information.

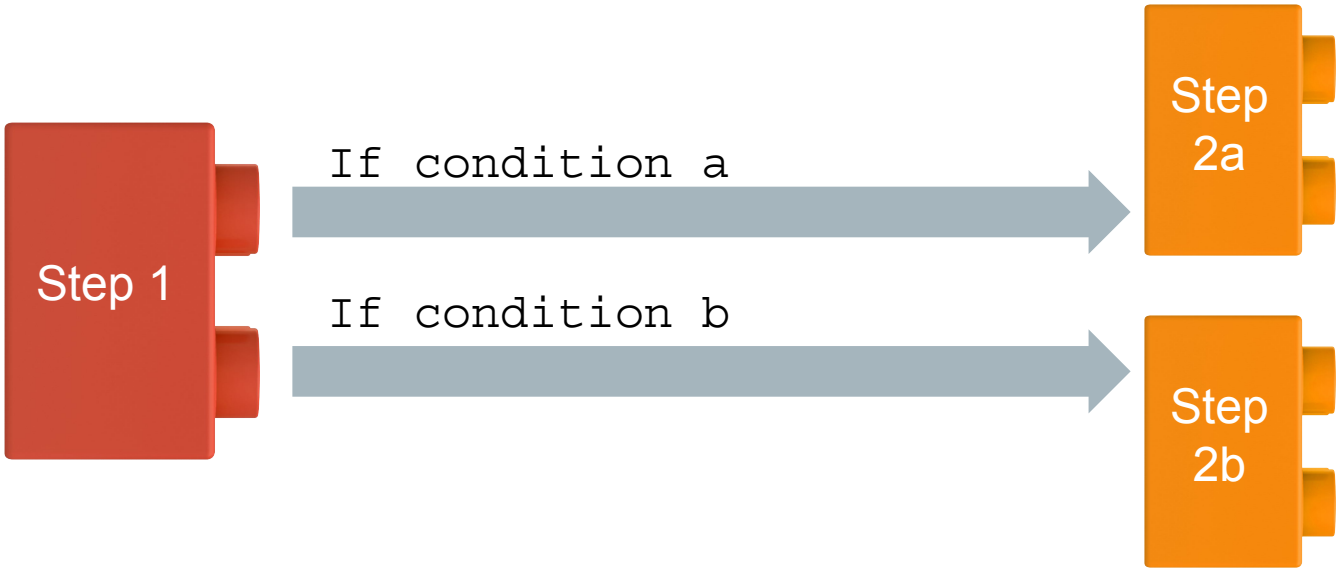

```
dim ingredients(0 to 2) as String

ingredients(0) = "Butter"
ingredients(1) = "Vegemite"
ingredients(2) = "Bread"
```

Conditionals: If This, Then That

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

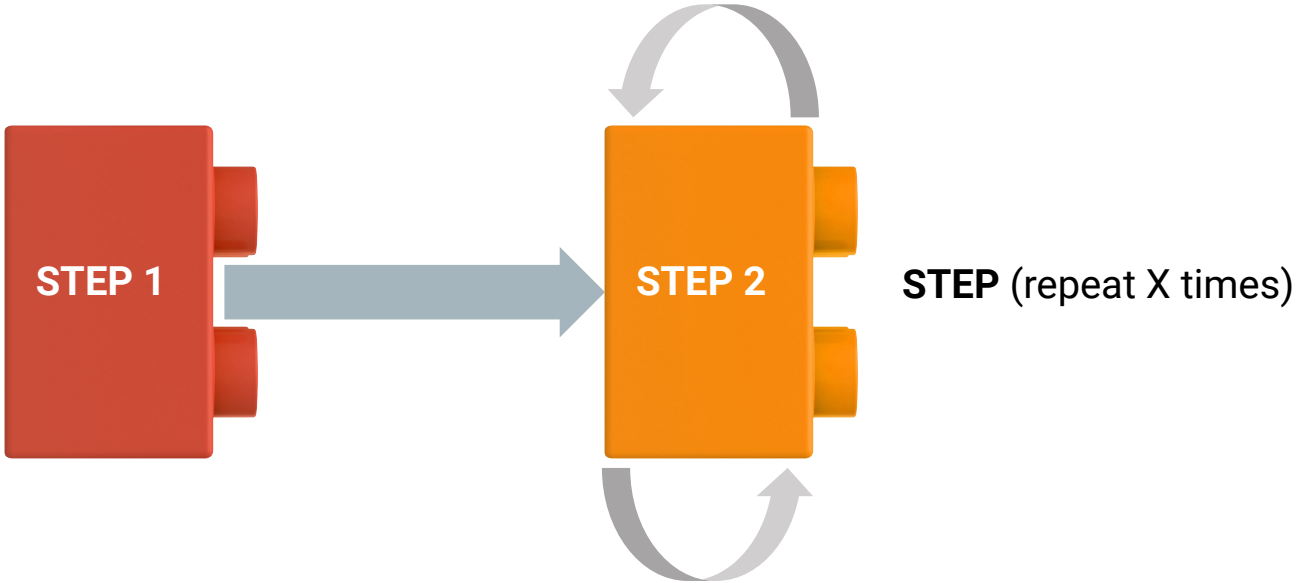
In most languages, you use **if/else** code for this purpose.



Iteration

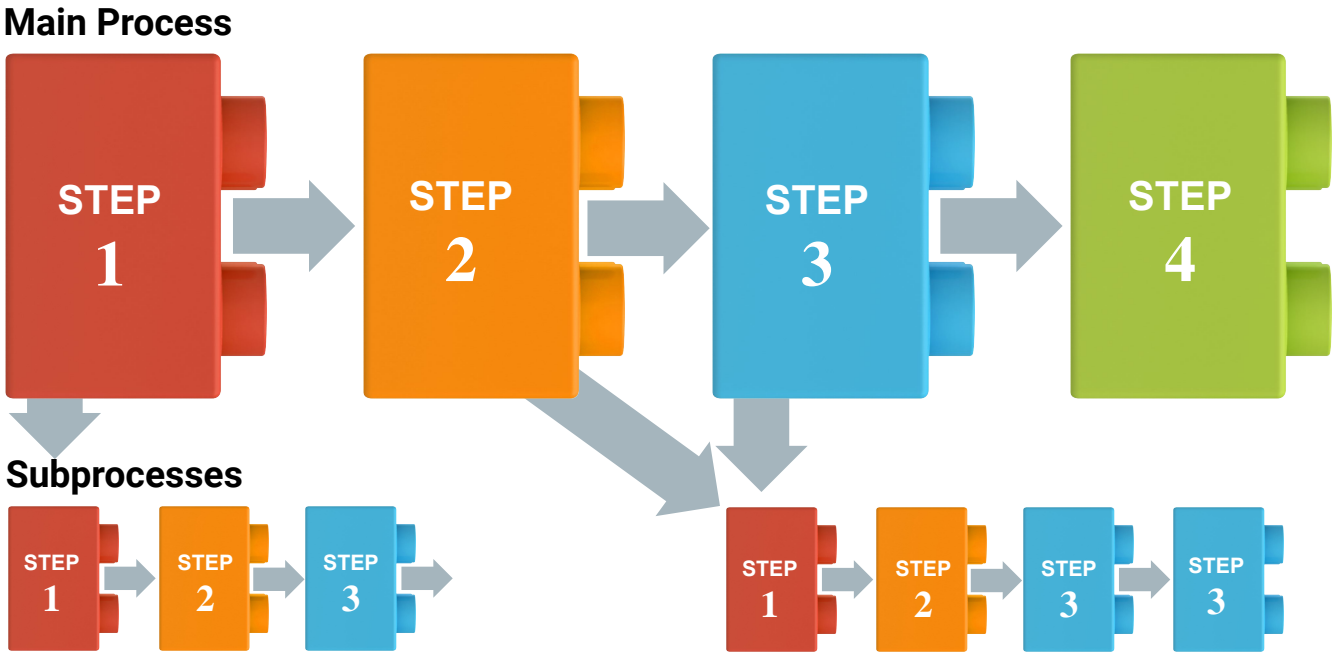
Iteration is the concept of using a loop to repeatedly perform a group of tasks a number of times.

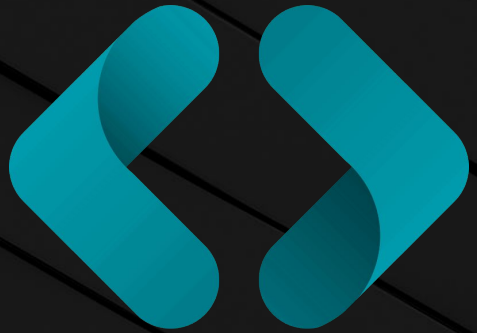
Almost all programming languages use **for loops** and **while loops** for iteration.



Functions: When One Block Can’t Do It All

In essence, a **function** is a sort of subprocess. With functions, you can create premade, reusable blocks of code that can be called on demand.





Time to <code>