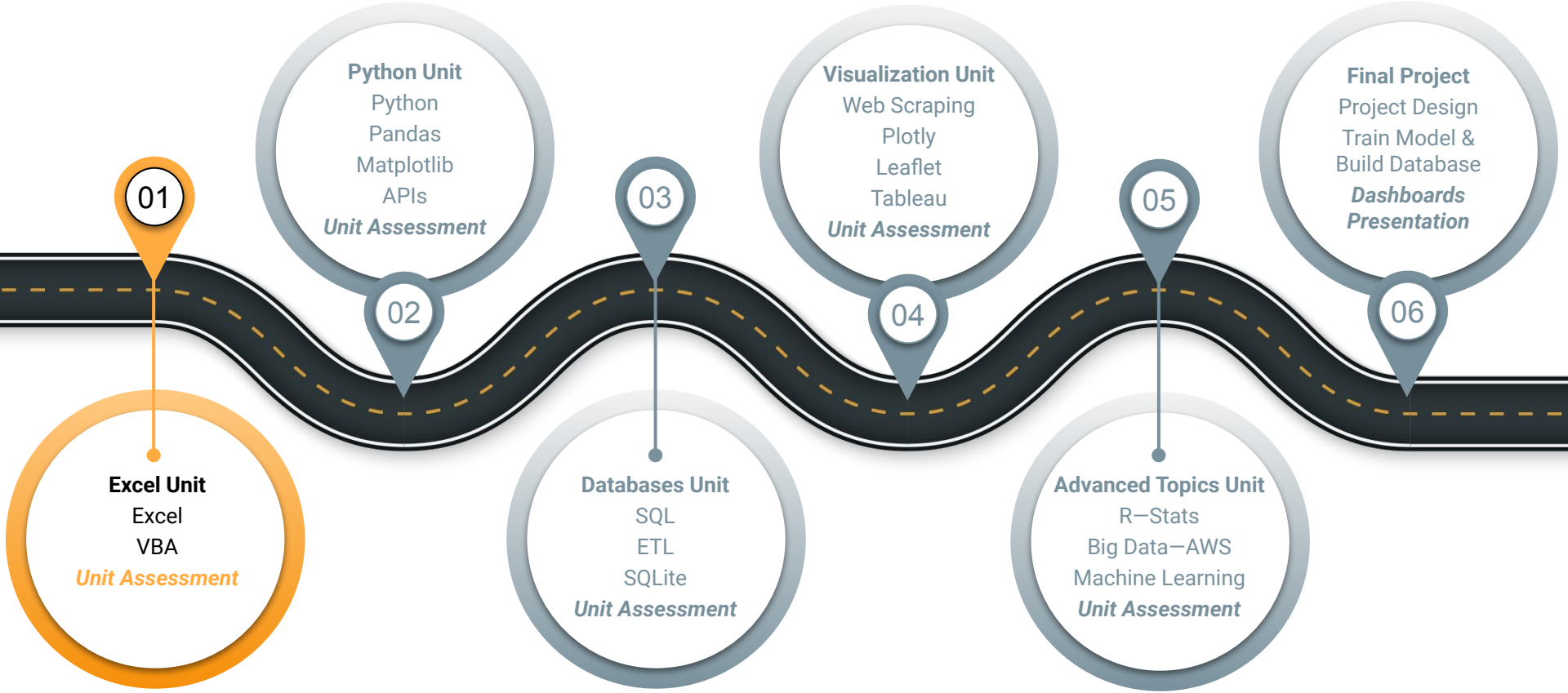
VBA

Data Boot Camp

Lesson 2.1

The Big Picture



Quick Tip for Success:

Take full advantage of office hours and your support network. Refactoring this Challenge code might be tricky! Don’t be worried if you also need help with GitHub.

Module 2

This Week: VBA

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By the end of this week, you'll know how to:

- Create a macro that can trigger pop-ups and inputs, read and change cell values, and format cells
- Use for loops and conditionals to direct logic flow
- Use nested for loops
- Apply coding skills such as syntax recollection, pattern recognition, problem decomposition, and debugging

This Week's Challenge

Using the skills learned throughout the week, refactor existing code to make a VBA macro run more efficiently.

Career Connection

How will you use this module's content in your career?

Module 2

How to Succeed This Week

Quick Tip for Success:

Take full advantage of office hours and your support network. Refactoring this Challenge code might be tricky! Don’t be worried if you also need help with GitHub.

Module 2

Today’s Agenda

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By completing today’s activities, you’ll learn the following skills:

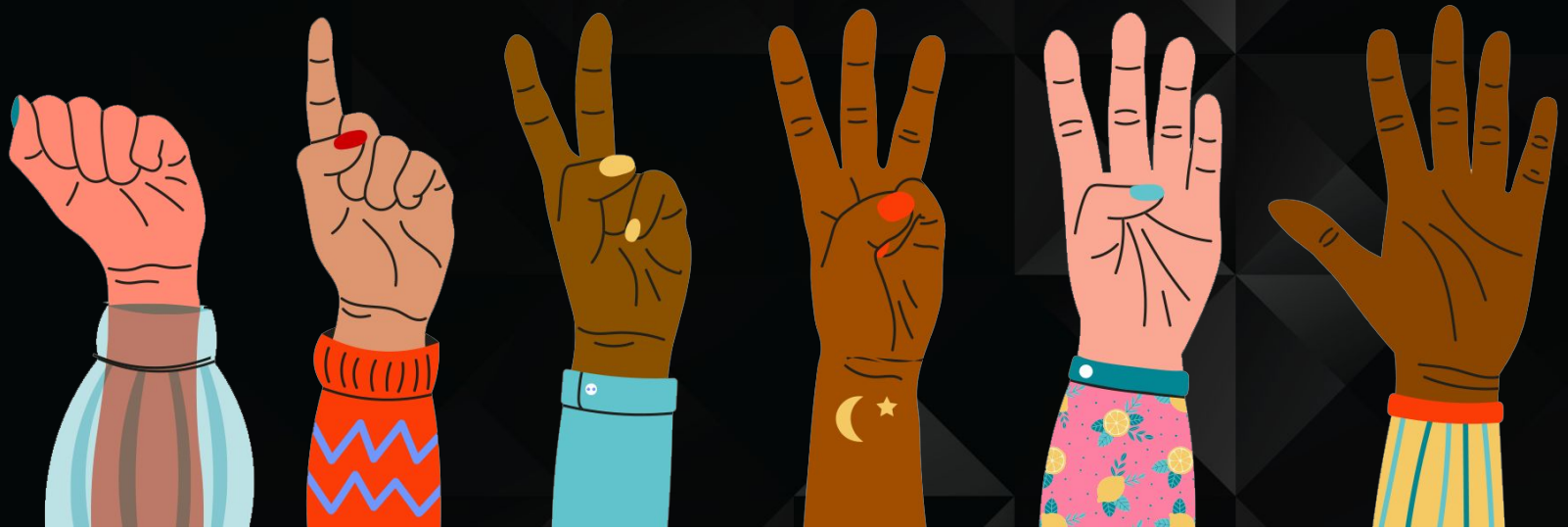
01 VBA Macros

02 Conditionals

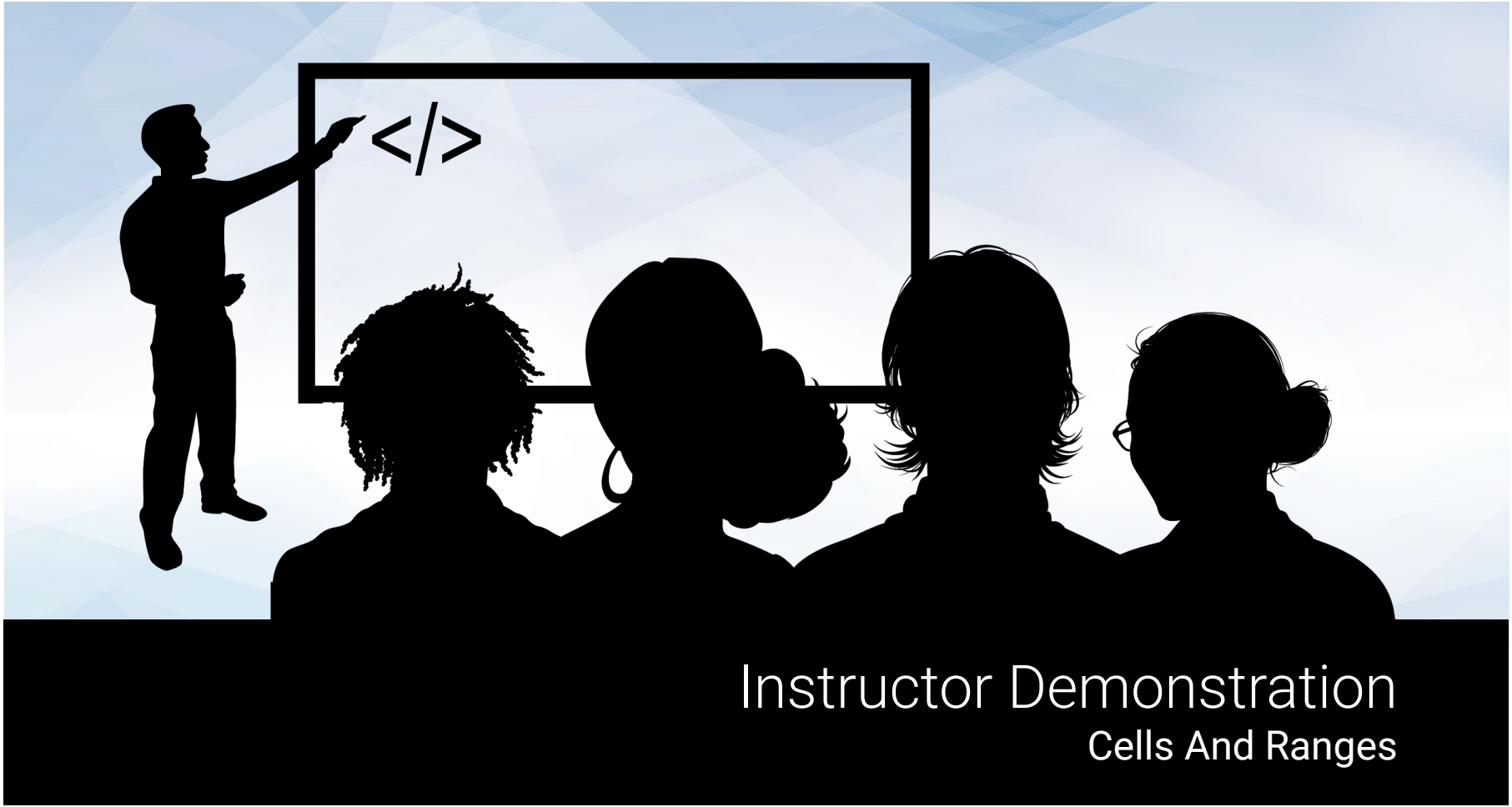
Make sure you’ve downloaded any relevant class files!

FIST TO FIVE:

How comfortable do you feel with this topic?



Cells and Ranges



Instructor Demonstration

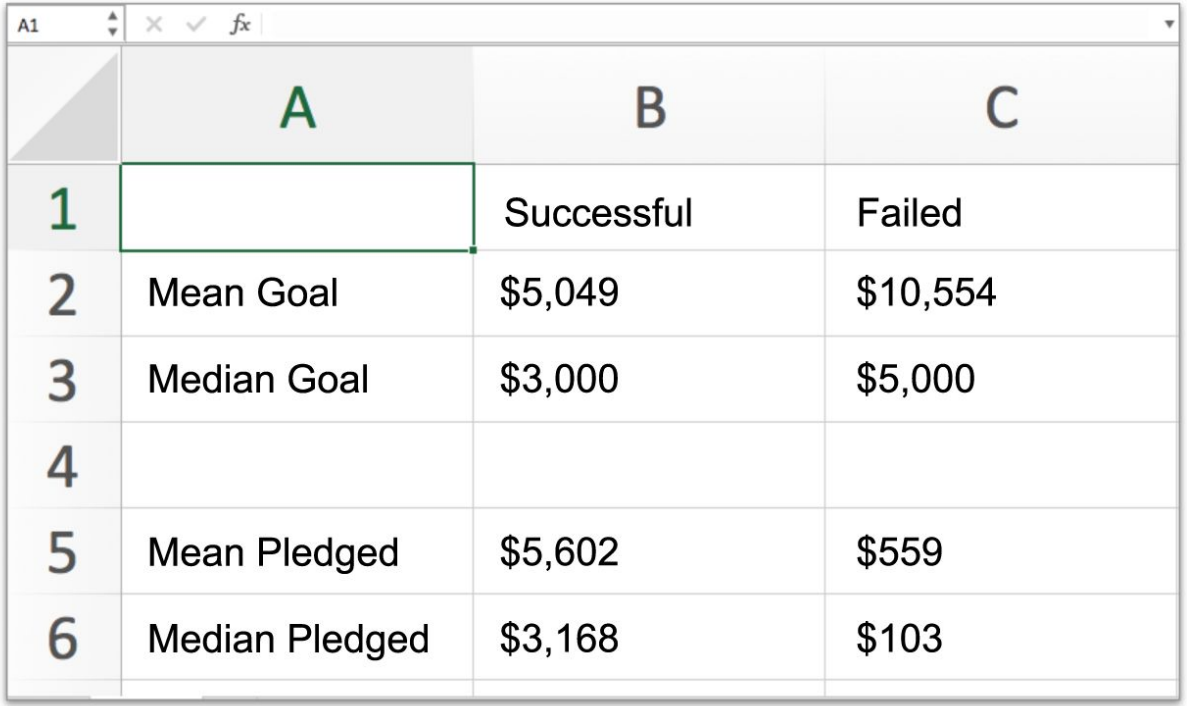
Cells And Ranges

VBA provides two primary ways to modify the contents of spreadsheet: cells and ranges.

Cells provide a numeric, coordinate-based method for referencing cells of a spreadsheet.

Cells

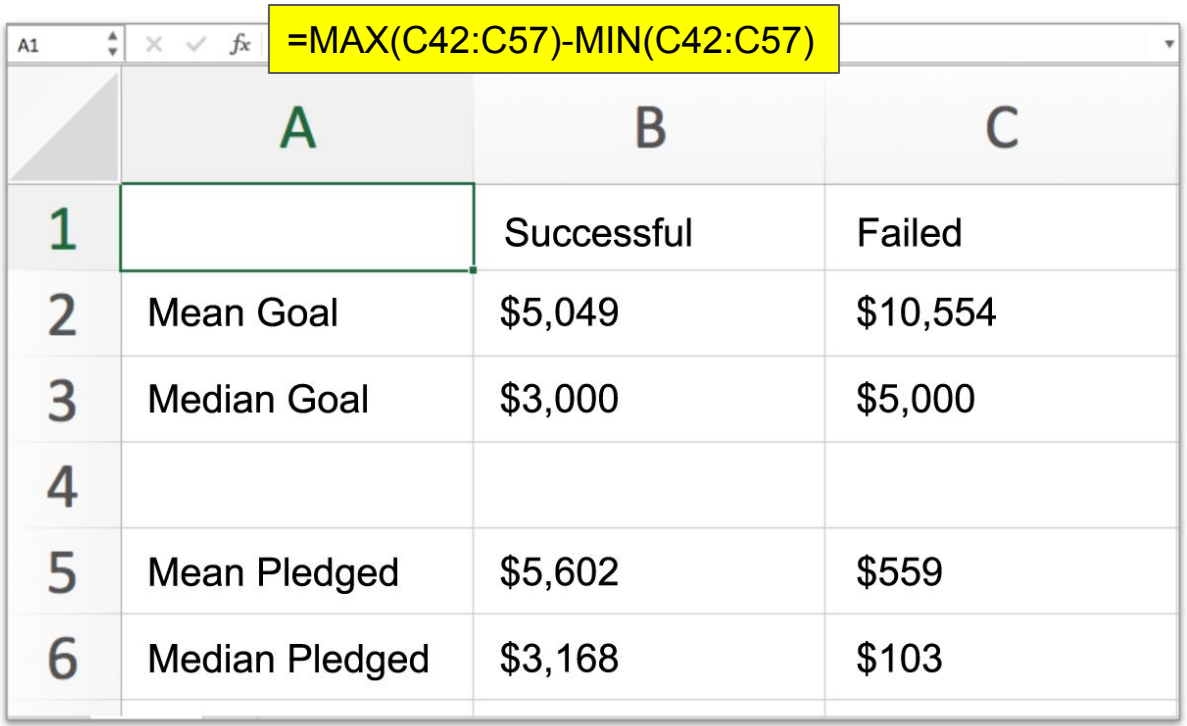
Cells are organized in a (Row, Column) format where integers 1, 2, 3 denote columns A, B, C.



Ranges provide a more customary excel-based method for specifying cells of a spreadsheet.

Ranges

Ranges can be contiguous (e.g. "F5:F7") or non-contiguous (e.g. "R2,D2").

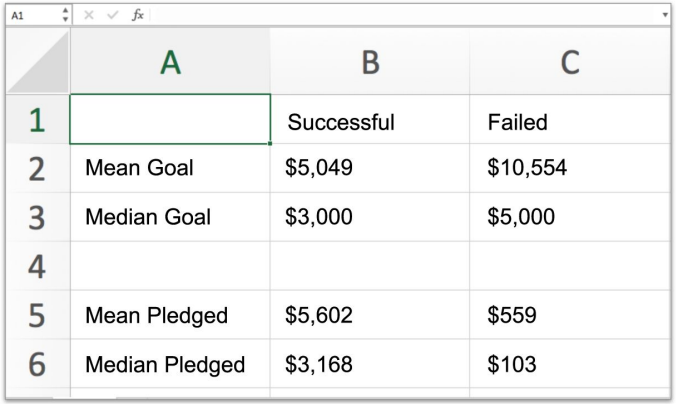


.Value is a method we add to the end of our cell or range reference to specify that we want to change the content value of these cells.

Cells vs Ranges

Cells

Allow a developer to capture a single cell at a time.



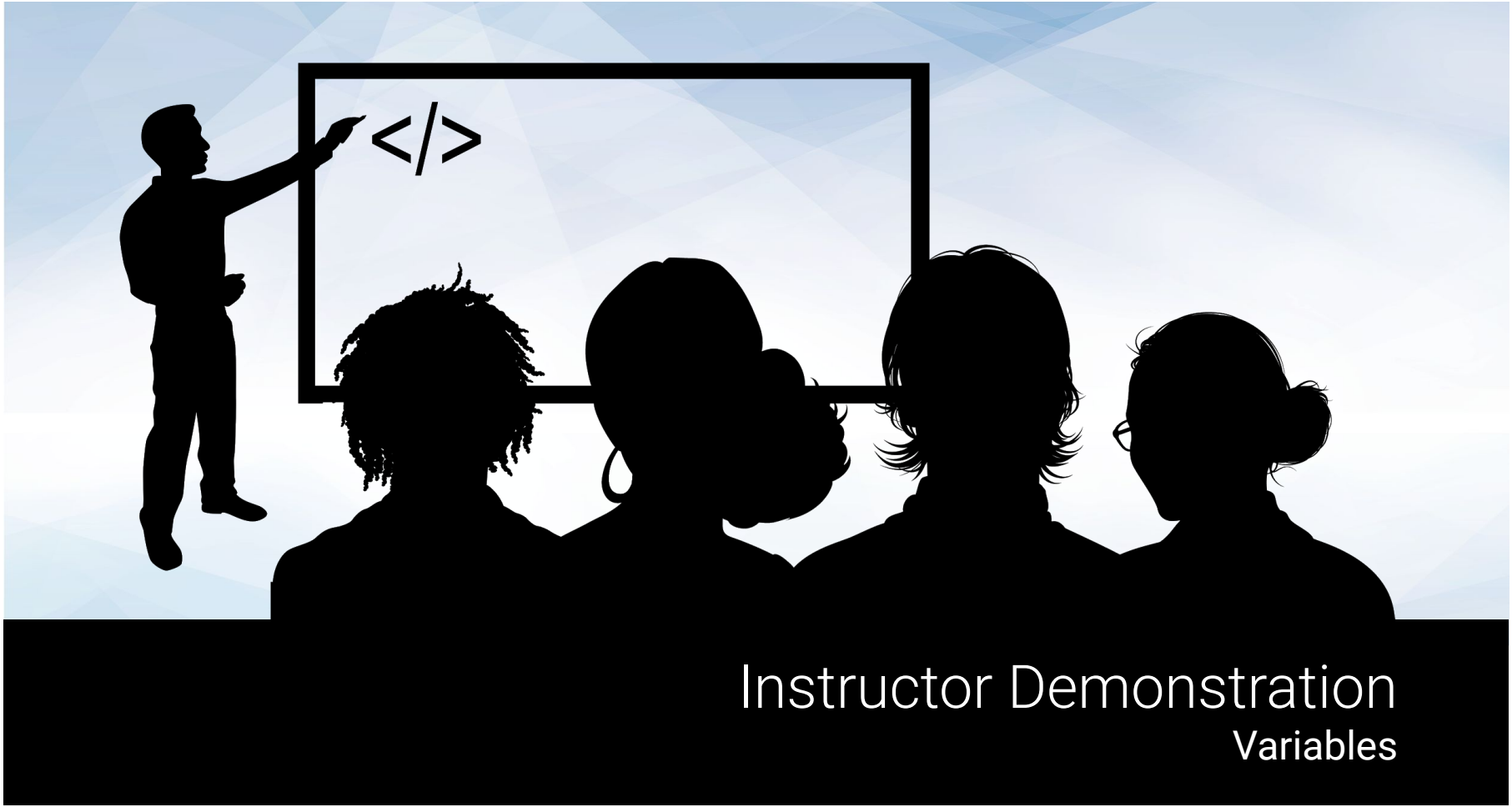
	A	B	C
1		Successful	Failed
2	Mean Goal	$5,049	$10,554
3	Median Goal	$3,000	$5,000
4			
5	Mean Pledged	$5,602	$559
6	Median Pledged	$3,168	$103

Ranges

Allow a developer to capture multiple cells at a time.

For this reason, ranges are used more often.

```
=MAX(C42:C57)-MIN(C42:C57)
```



Instructor Demonstration

Variables

Activity Workbook: Cells and Ranges

As your review the file, think about the following questions:

- Where have we used this before?
- How does this activity equip us for the Challenge?
- What can we do if we don't completely understand this?

VBA Syntax

Variables are named items in programming.

VBA Syntax

Variables can be **physical things** (like a name) or **abstractions** (like an age).

Variable Declaration

```
Dim name As String
Dim age As Integer
```

VBA Syntax

In VBA, items can be **declared** as variables by using Dim followed by the type. We can then utilize these variables using their names by **assigning** them a value.

Variable Declaration

```
Dim name As String
Dim title As String
```

Variable Assignment

```
name = "Gandalf"
title = "The Great"
```

VBA Syntax

We can "concatenate" strings by combining them.

```
Dim fullname As String
fullname = name + " " + title
```

VBA Syntax

And we can perform mathematical functions by combining numeric variables with operators.

```
Dim price As Double
Dim tax As Double
Dim total As Double
price = 19.99
tax = 0.05
total = price * (1 + tax)
```

VBA Syntax

We can also use these variables to set the value of our cells.

```
Cells(1,1).Value = price * (1 + tax)
```

VBA Syntax

We can combine numerics and strings by first "casting" our numerics into string format using the `Str()` method. And, we can cast strings into integers using the `Int()` method.

```
Dim my_age As Integer

my_age = 30

MsgBox("I am " + Str(my_age) + "years old.")
```

Questions?

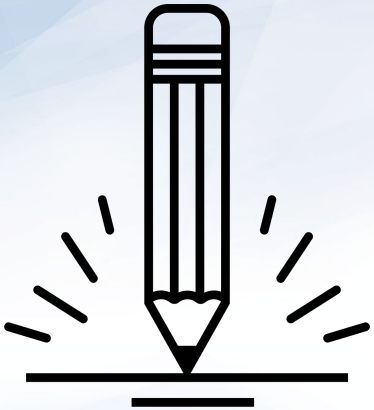
Activity Workbook: Variables

As your review the file, think about the following questions:

Where have we used this before?

How does this activity equip us for the Challenge?

What can we do if we don't completely understand this?



Activity: TypeRighter

In this activity, you will need to change the data types of variables so that the code runs without errors.

Suggested Time:
15 minutes

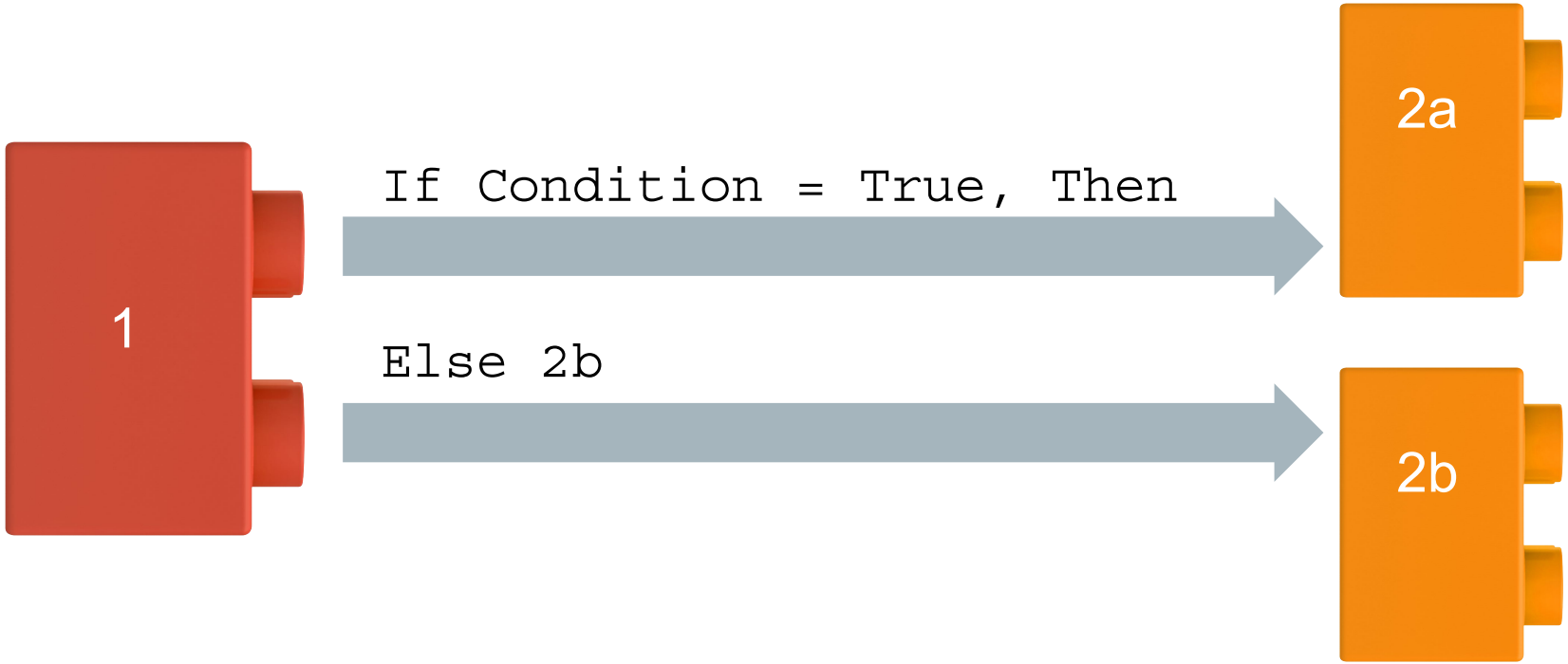
Let's Review

Conditionals

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

Conditionals: If This, Then That

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



Simple Conditional Example

Simple Conditional Example

```
If Range("A2").Value > Range("B2").Value Then
      MsgBox ("Num 1 is greater than Num 2")
End If
```

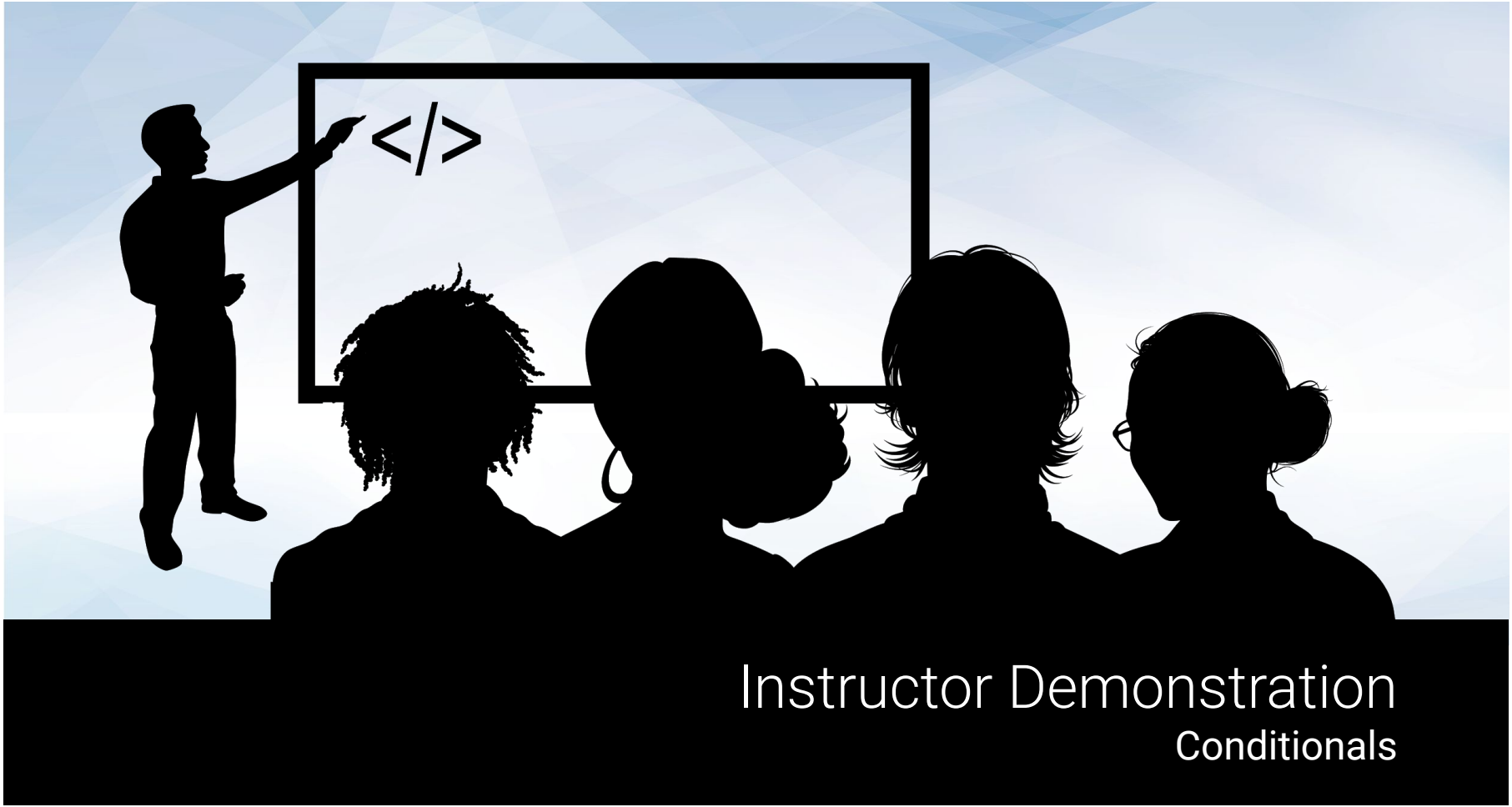
If, Else, and ElseIf

```
If Range("A5").Value > Range("B5").Value Then
    MsgBox ("Num 3 is greater than Num 4")

ElseIf Range("A5").Value < Range("B5").Value Then
    MsgBox("Num 4 is greater than Num 3")

Else
    MsgBox("Num 3 and Num 4 are equal")

  End If
```



Instructor Demonstration

Conditionals

Activity Workbook: Conditionals

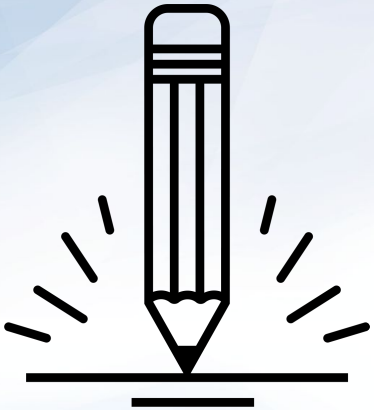
As your review the file, think about the following questions:

Where have we used this before?

How does this activity equip us for the Challenge?

What can we do if we don't completely understand this?

Questions?



Activity: Choose Your Story

In this activity, work in groups to create a simple game that outputs a message box based on the user's input number.

Suggested Time:
15 minutes

Let's Review

Activity Workbook: Choose Your Story

As we review, think about the following questions:

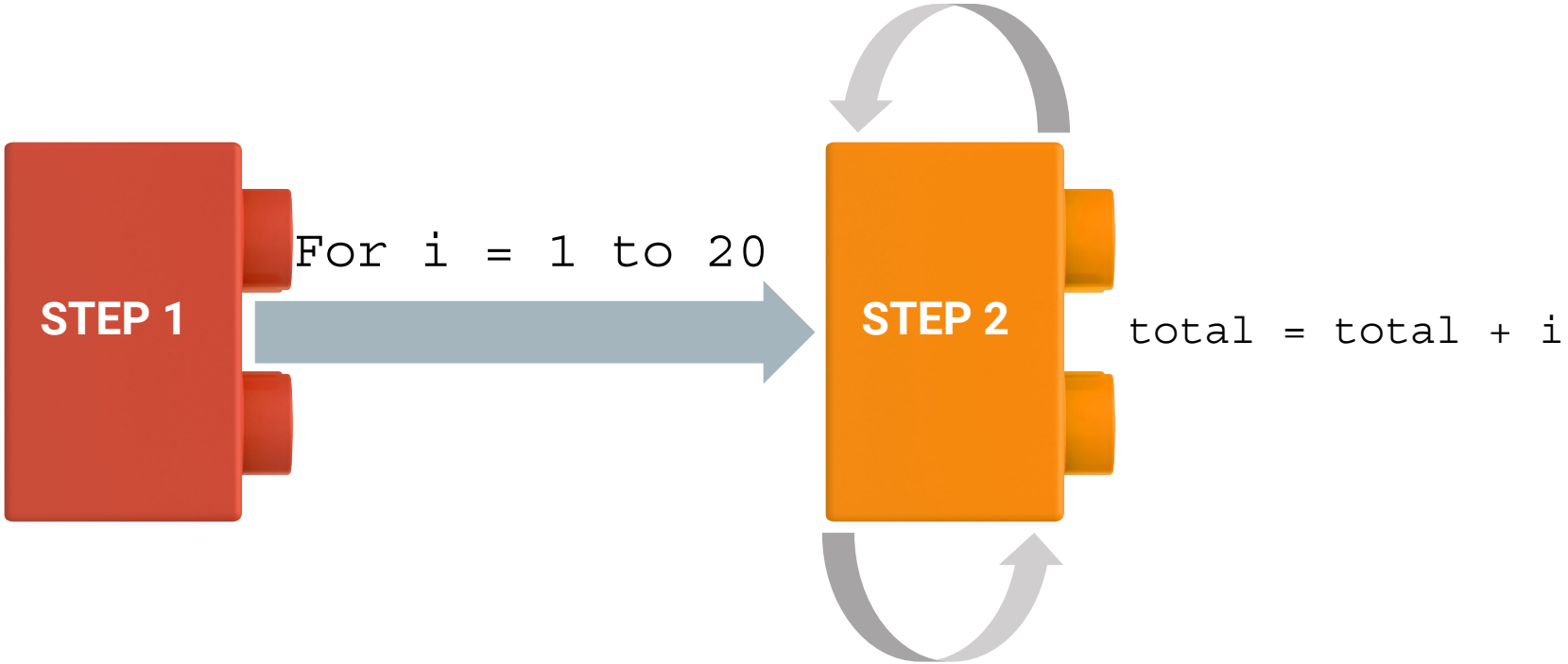
Will the program run correctly if you don't add the `.Value` at the end of the `Range()` method? Why or why not?

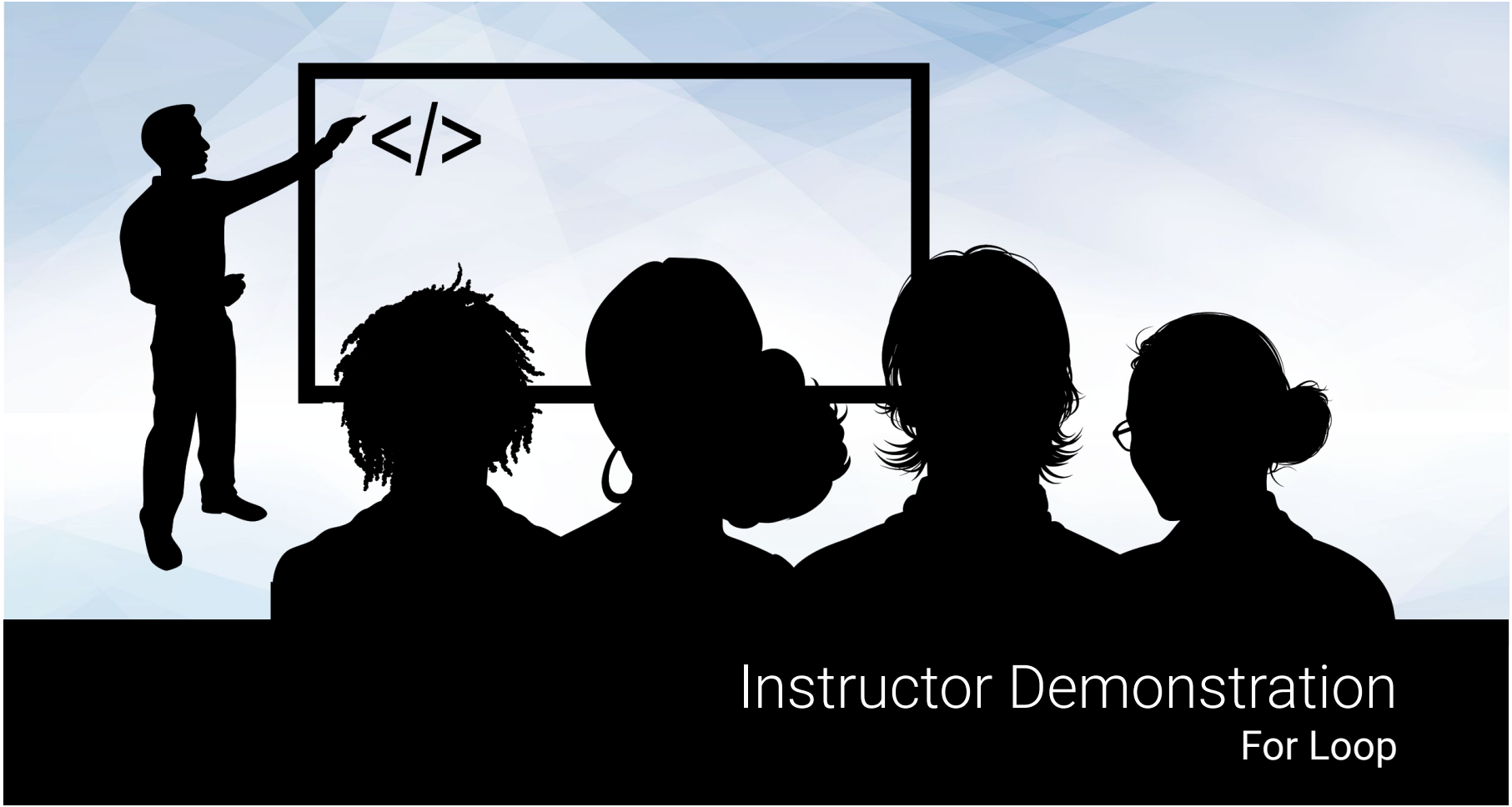
What can we do if we don't completely understand this?

For Loop

For loop is a repetition statement to iterate over a sequence of numbers or items in an array.

For Loop





Instructor Demonstration

For Loop

Activity Workbook: For Loop

As your review the file, think about the following questions:

Where have we used this before?

How does this activity equip us for the Challenge?

What can we do if we don't completely understand this?

Activity: Chicken Nugget Loop

In this activity, you will create a VBA script with a for loop that prints "I will eat “i” Chicken Nuggets," where the value of “i” changes within the for loop.

Suggested Time:
20 minutes

Questions?