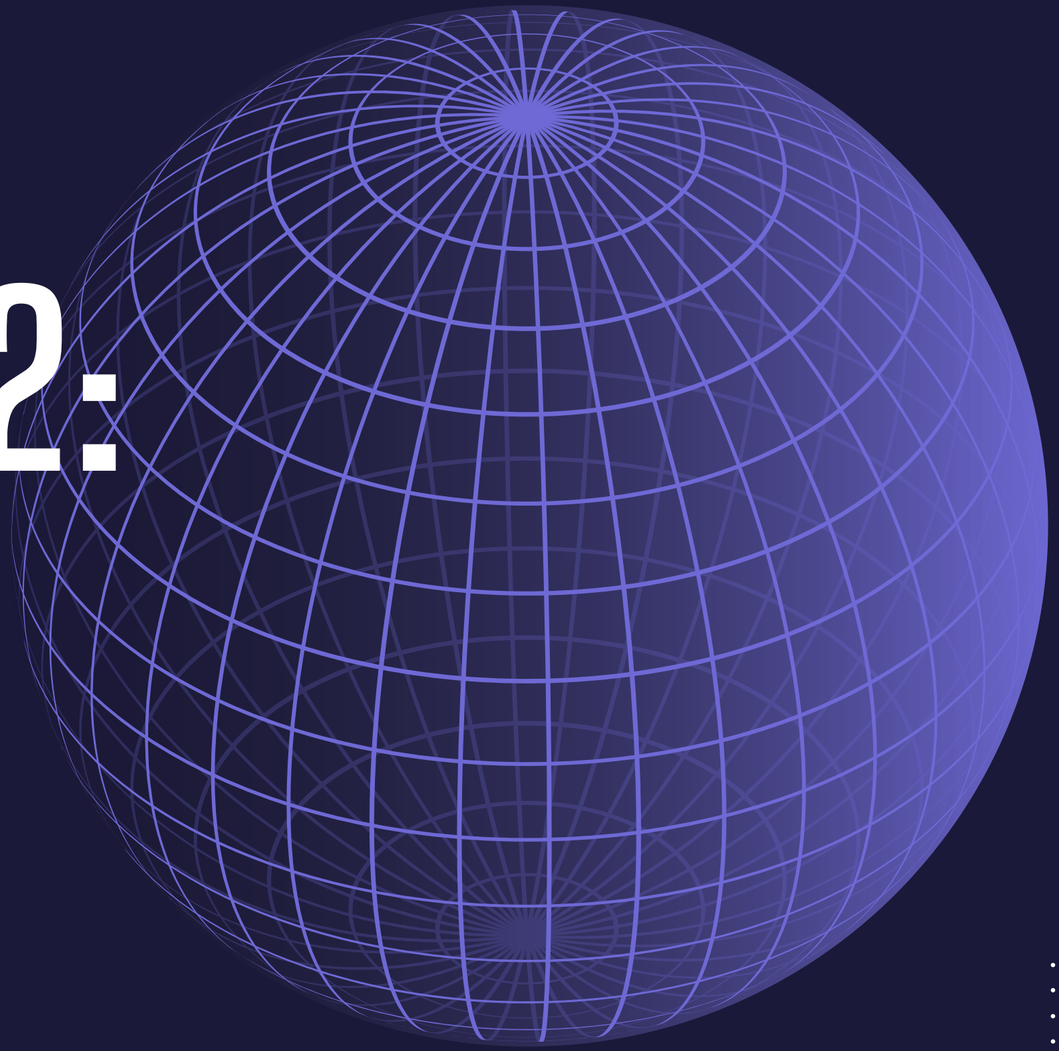
001

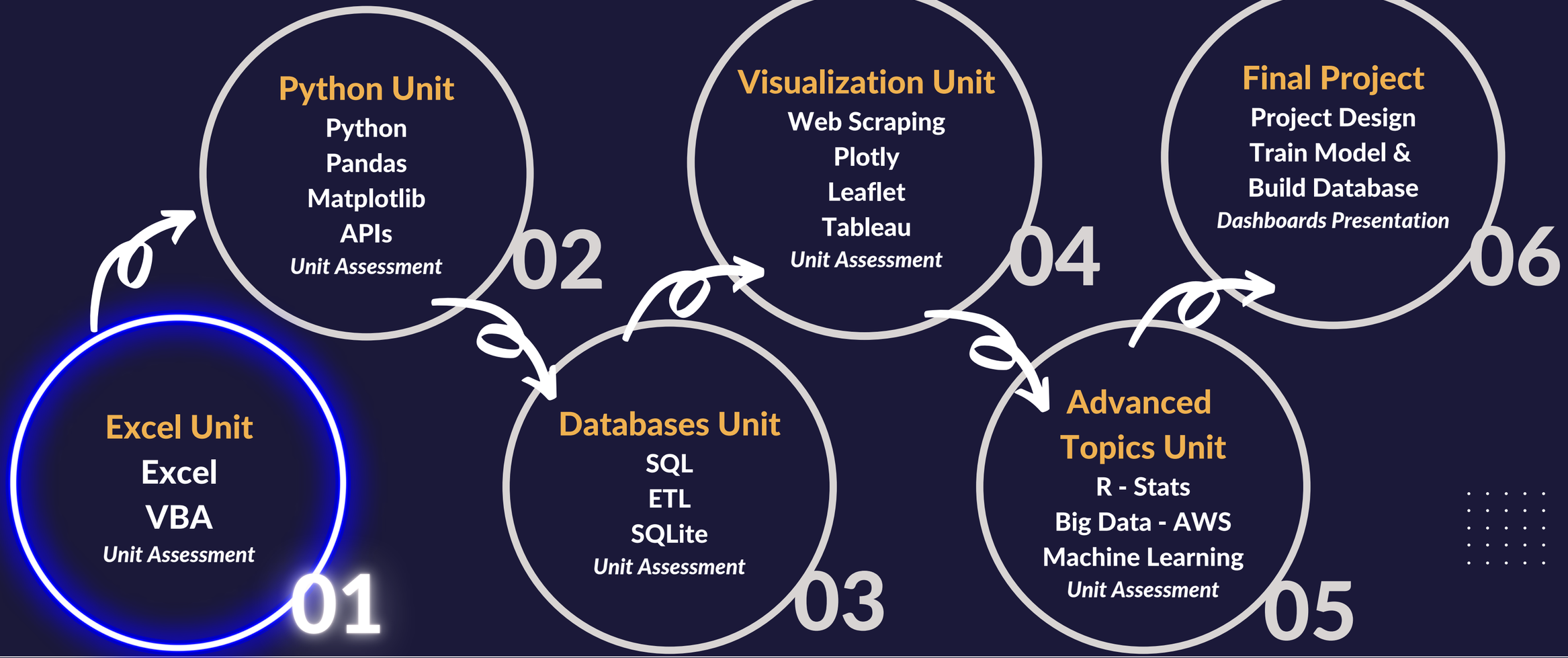
MODULE 2.2: VBA

DATA BOOTCAMP
UNIVERSITY OF KANSAS



UNIVERISTY OF KANSAS

THE BIG PICTURE

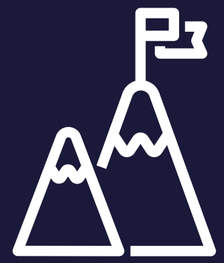


THIS WEEK: VBA

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



Wall Street Refactor Challenge

Explore green energy stock performance by analyzing financial data using VBA.

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

- **Deliverable 1**: Refactor VBA code and Measure performance
  - *This deliverable will include an updated workbook and a folder with PNGs of the pop-ups with script run time*
- **Deliverable 2:** A written analysis of your results (README.md)

CHECK IN

UNIVERSITY OF KANSAS

MODULE 2.2: TODAY'S AGENDA

DATA BOOTCAMP
UNIVERSITY OF KANSAS

TODAY'S AGENDA

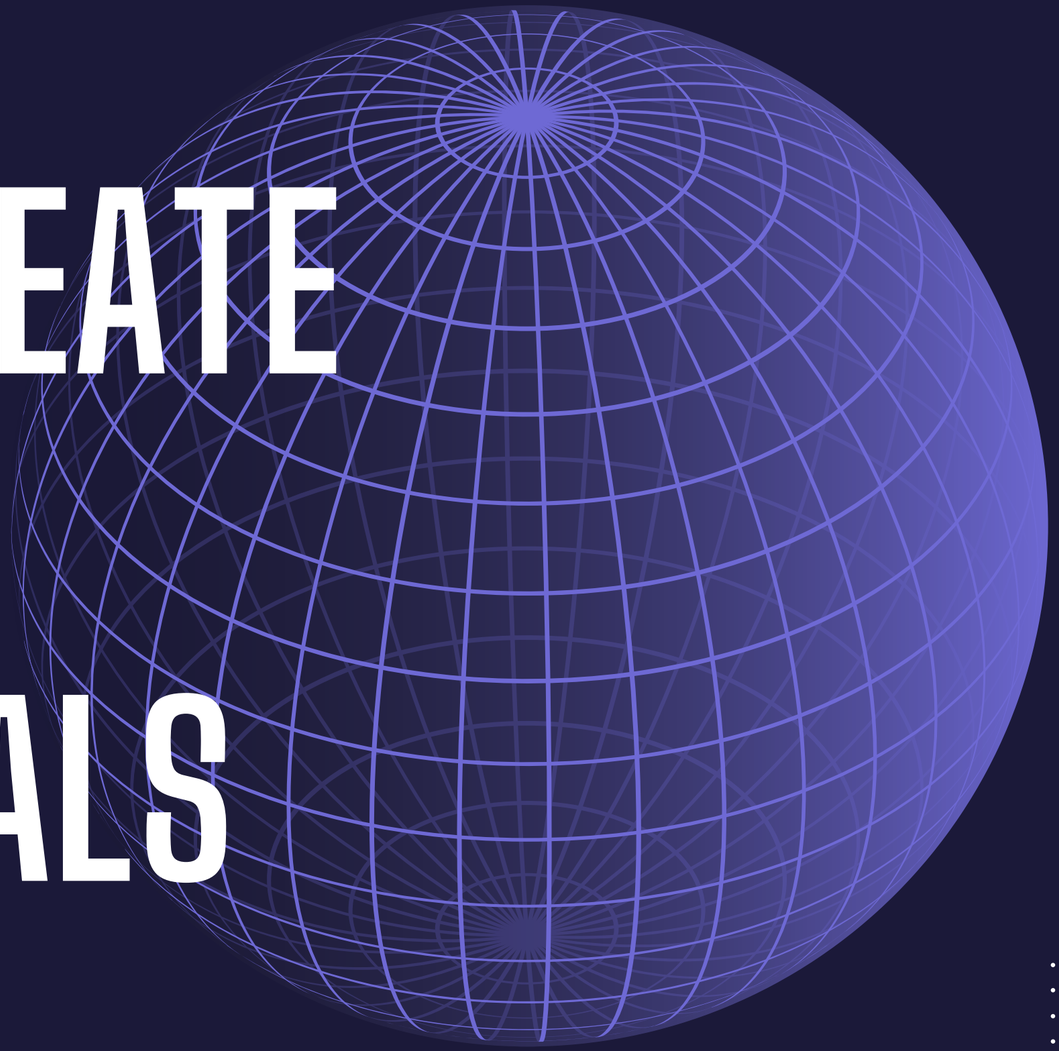
By completing today’s activities, you’ll learn the following skills:

- How to Create Looped Conditionals
- How to Create Nested For Loops
- How to Create Interactive Buttons in Excel
- How to Do VBA Formatting

Make sure you’ve downloaded any relevant class files!

008

HOW TO CREATE LOOPED CONDITIONALS



UNIVERISTY OF KANSAS

Looped Conditionals: A way to repeat one or more steps depending on if a condition is True or False.

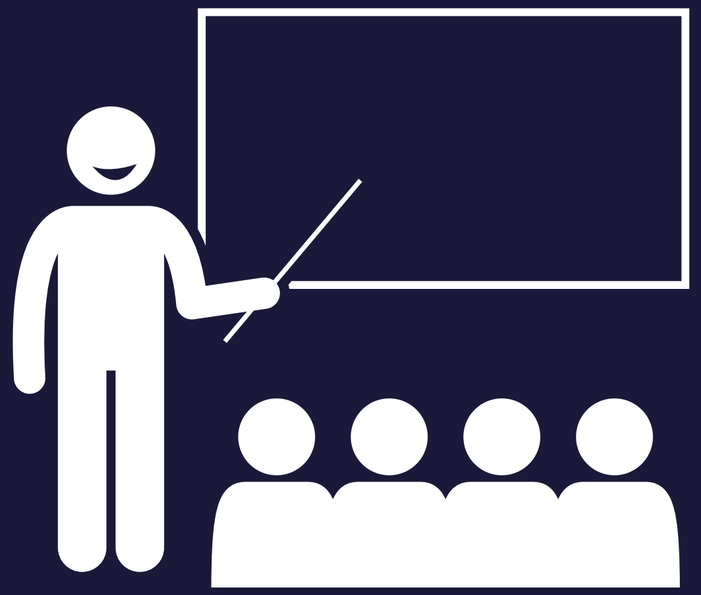
LOOPED CONDITIONALS


```
For i = 1 to 10
    If Cells(i, 1).Value Mod 2 = 0 Then
     MsgBox ("The number is even.")

    Else
        MsgBox("The number is odd.")

    End If

Next i
```



INSTRUCTOR DEMONSTRATION

Looped Conditionals

UNIVERSITY OF KANSAS

PAIR PROGRAMMING ACTIVITY: FIZZ BUZZ

In this exercise, the you will work in pairs on a very popular logic problem in coding, Fizzbuzz, which is often given in technical interviews–across all programming languages.

Suggested Time: 20 minutes

UNIVERSITY OF KANSAS

PAIR PROGRAMING ACTIVITY: FIZZ BUZZ

If a number is divisible by just 3	then the code should print **Fizz**
If a number is divisible by just 5	then the code should print **Buzz**
If a number is divisible by both 3 and 5	then the code should print **FizzBuzz**

PAIR PROGRAMING ACTIVITY: FIZZ BUZZ

Create a VBA Script that populates the second column with the word "Fizz", "Buzz", or "Fizzbuzz" based on the value in the first column.

- **If the value in column 1 is a multiple of both 3 and 5, print "Fizzbuzz" in column 2.**
- **If the value in column 1 is a multiple of just 3, print "Fizz" in column 2.**
- **If the value in column 1 is a multiple of just 5, print "Buzz" in column 2.**

Remember the mod!

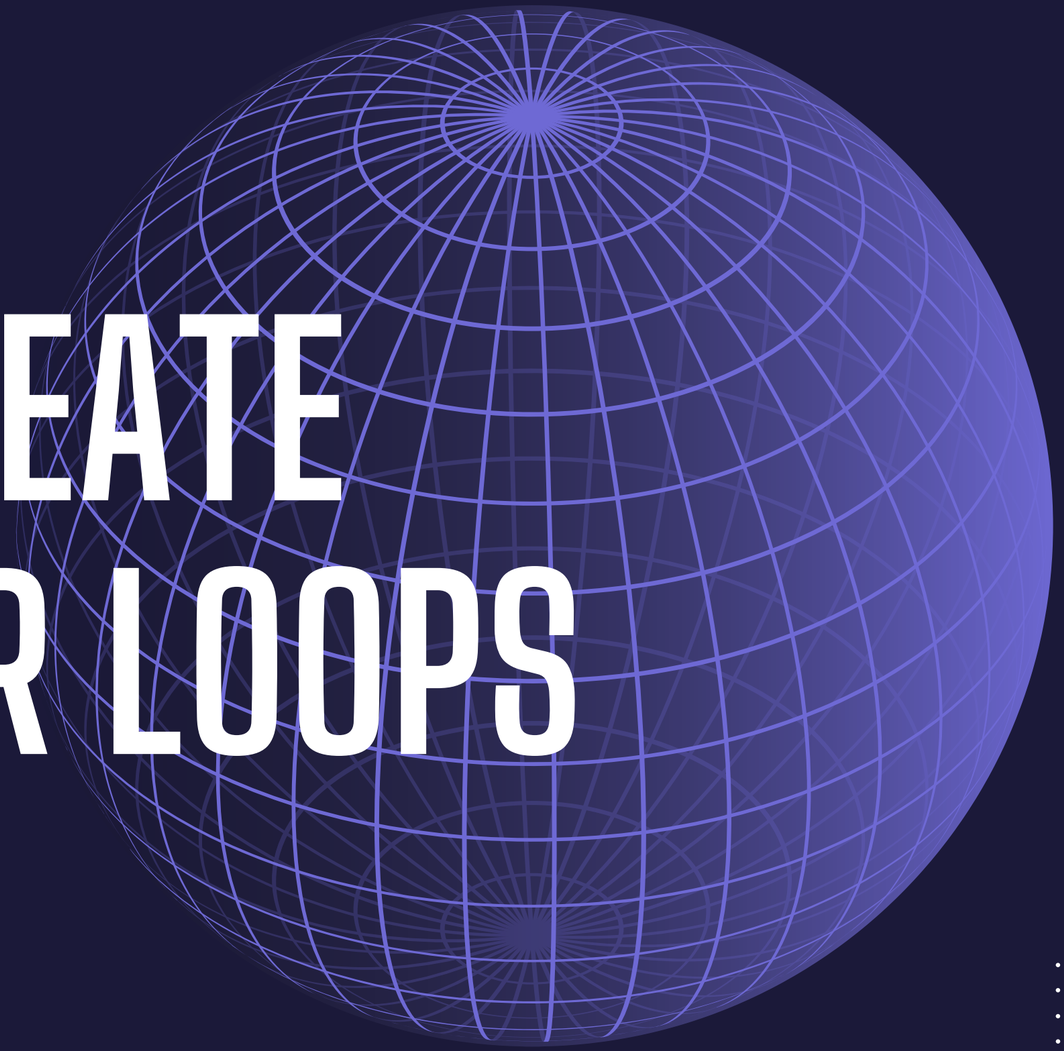
TIME'S UP

Let's Review

UNIVERSITY OF KANSAS

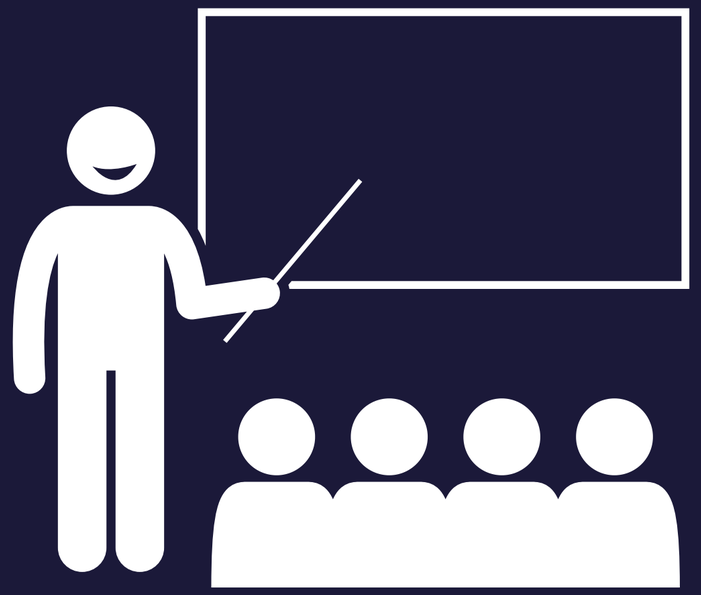
016

HOW TO CREATE NESTED FOR LOOPS



UNIVERISTY OF KANSAS

Nested Loop: A for loop within a for loop, where each loop has its own iterator variable.



INSTRUCTOR DEMONSTRATION

Nested For Loops

UNIVERSITY OF KANSAS

ACTIVITY:
STARS COUNTER

In this activity you will have access to an Excel spreadsheet containing 50 rows of "review data" for two online language learning programs, Spanish and French. Using your knowledge of VBA, it is up to you to determine the total number of stars that each user gave their respective program, and then find the total number of stars both programs received.

Suggested Time:
20 minutes

ACTIVITY: STARS COUNTER

Create a VBA Script that tallies the number of "Full Stars" per row and enters them into the Total column.

- **If the value in column 1 is a multiple of both 3 and 5, print "Fizzbuzz" in column 2.**
- **If the value in column 1 is a multiple of just 3, print "Fizz" in column 2.**
- **If the value in column 1 is a multiple of just 5, print "Buzz" in column 2.**

- **You will need to use a nested for loop.**
- **You will need to create a variable to hold the number of stars and continually reset this variable at the start of each row.**

ACTIVITY: STARS COUNTER

Bonus:

- **Part 1: Automatically determine the last row.**
  - Instead of hard-coding the last number of the loop, use VBA to determine the last row automatically (i.e. do not use for i = 2 to 51)

- **Part 2: Visualize the Results**
  - Using a Pivot Table, determine if there is a relationship between Review Date and Rating using a line chart.
  - Using a Pivot Table, determine if there is a relationship between Program Type and Rating using a bar chart.

ACTIVITY: STARS COUNTER

This code

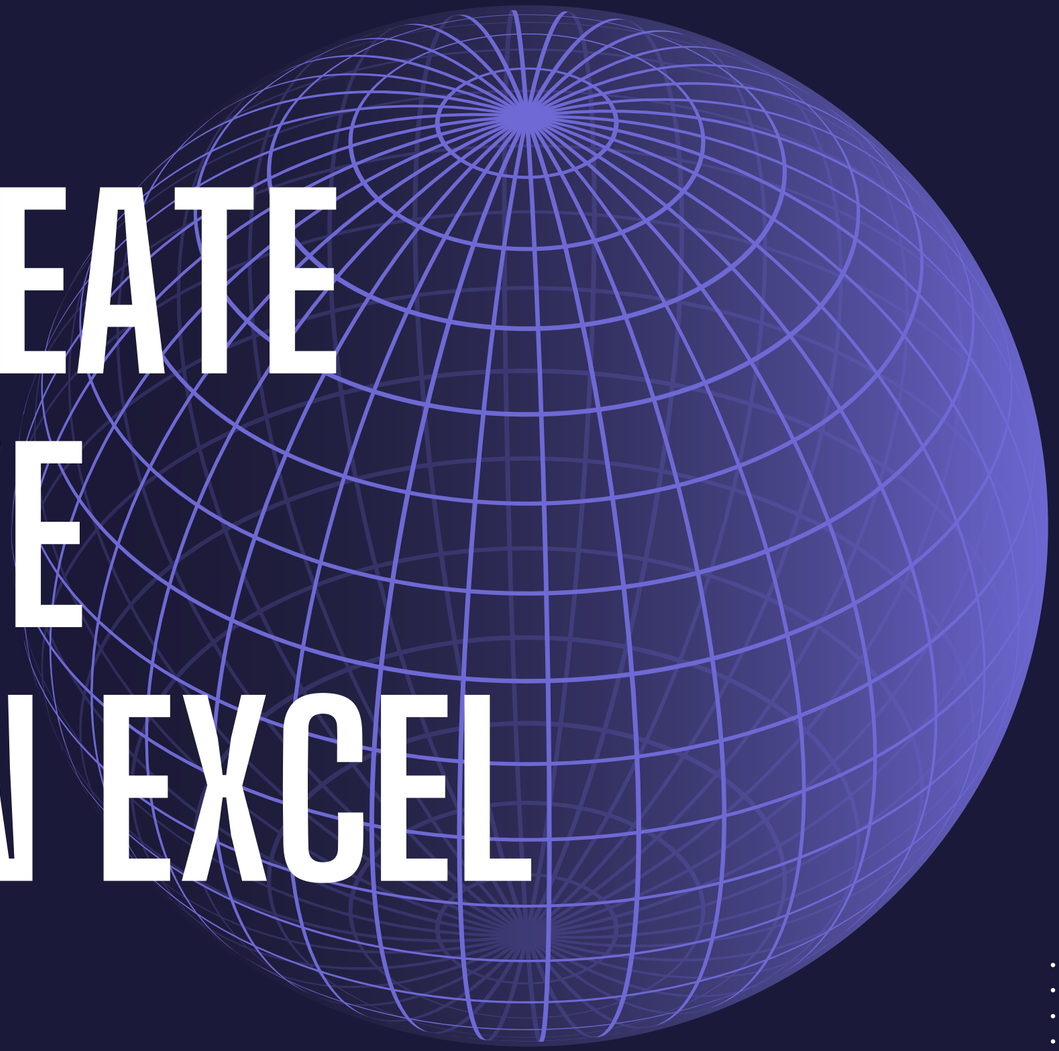
```vb
    // Loop through each row
    For i = 2 to 51
```

can be replaced with this code.

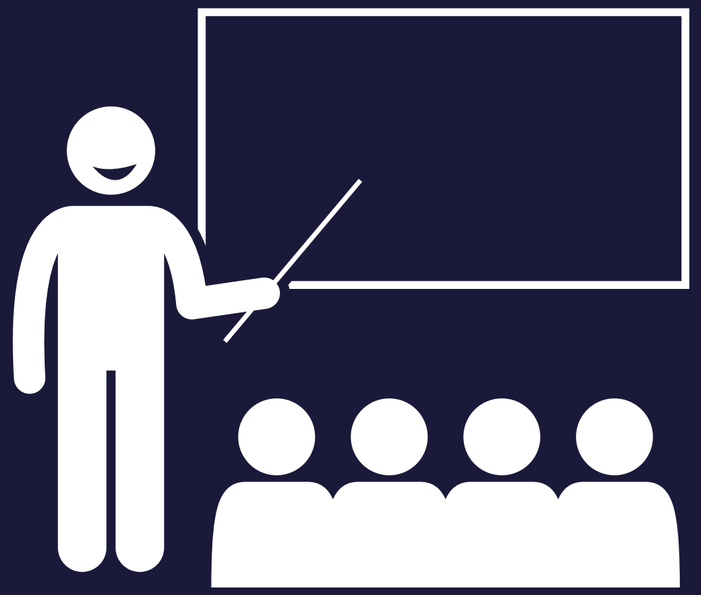
```vb
  // Counts the number of rows
  lastrow = Cells(Rows.Count, 1).End(xlUp).Row
  // Loop through each row
  // Use lastrow variable instead of 51
  For i = 2 to lastrow
```

023

HOW TO CREATE INTERACTIVE BUTTONS IN EXCEL



UNIVERISTY OF KANSAS



INSTRUCTOR DEMONSTRATION

Button Clicks

UNIVERSITY OF KANSAS

ACTIVITY:
CHOOSE YOUR BUTTON

In this activity you will be running a subroutine of your own to trigger two buttons that elicit different messages when clicked.

Suggested Time:
15 minutes

UNIVERSITY OF KANSAS

ACTIVITY: CHOOSE YOUR BUTTON

Create an Excel file with two interactive buttons.

These buttons should each be associated with a different VBA subroutine.

When clicked, each button should trigger a different pop-up message.

TIME'S UP

Let's Review

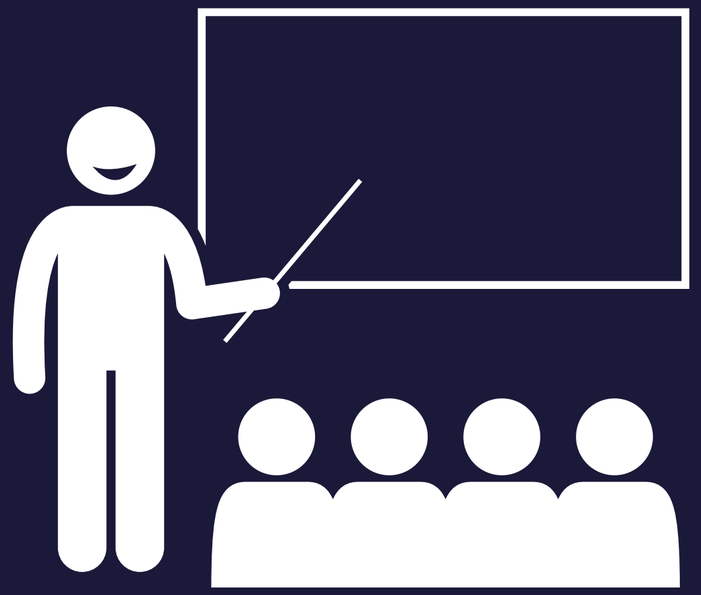
UNIVERSITY OF KANSAS

028

HOW TO DO VBA FORMATTING

UNIVERISTY OF KANSAS

VBA Formatting: Allows us to format the values within cells, automatically fit column widths, change font, and apply color using a variety of functions.



INSTRUCTOR DEMONSTRATION

VBA Formatting

UNIVERSITY OF KANSAS

ACTIVITY:
VBA GRADEBOOK

In this activity you are going to create an Excel application that checks a fictional student's grade and performs some actions based upon the grade.

Suggested Time:
15 minutes

UNIVERSITY OF KANSAS

ACTIVITY: VBA GRADEBOOK

- Using grader.xlsm as a starting point, create a grade calculator using conditionals. This calculator will convert a student's numeric grade into a letter grade, and style the resulting cell accordingly.

- Once complete your script should perform the following:
  - If the score is over 90, the student will receive an "A" in the letter grade cell, and the Pass/Warning/Fail cell will be filled green with the text "Pass."
  - If the score is between 80 and 89 (inclusive), the student will receive a "B" in the letter grade cell, and the Pass/Warning/Fail cell will be filled green with the text "Pass."
  - If the score is between 70 and 79 (inclusive), the student will receive a "C" in the letter grade cell, and the Pass/Warning/Fail cell will be filled yellow with the text "Warning."
  - Finally, if the score is below a 70, the student will receive an "F" in the letter grade cell, and the Pass/Warning/Fail cell will be filled red with the text "Fail."

TIME'S UP

Let's Review

UNIVERSITY OF KANSAS

SUMMARY

- Conditional statements and for loops were covered in Lesson 2.2.3.
- Nested for loops were covered in Lesson 2.3.2.
- Adding color to cells using conditionals was covered in Lesson 2.4.2.
- Form control buttons were covered in Lesson 2.5.1.