Assignment 3

Download the zipped folder "**Assignment 3.zip**", save to your computer, and then extract the files (right click and "Extract All"). This folder contains starter and grader files for Assignment 3.

Assignment 3.zip

IMPORTANT: All subroutines (macros) and functions must be named exactly as indicated in the problem statement(s). Otherwise, the grading file will not recognize your procedures. For each assignment, I have placed one or more starter files that contain the **Sub/End Sub** or**Function/End Function** with the correct procedure names.

Assignment 3 has a starter file available.

Problem Statement

In this challenging assignment, you will create a VBA subroutine that will iterate through a set of files to bring in data from those files into a central spreadsheet. In the "Week 3" folder there is another folder "Ralphie Reactor" (with files representing the output of the "Ralphie Reactor" - named for the mascot here at CU Boulder!). Within this folder are 24 .csv files, which are generated by a (hypothetical) bioreactor. You are in charge of quality assurance and wish for the temperature of the bioreactor to remain around 37 °C, the pH to stay around 5.5, and the dissolved oxygen (dO_2) concentration to remain around 50%. The Ralphie Reactor automatically outputs the temperature, pH, and dO_2 concentration every hour, 24 hours a day, and places the data into an hourly summary file. For example, here is what one might look like, at 3:00 a.m. (in the "RalphieReactor_10-22-17_300.csv" file):

	A	B	C
1	--- Ralphie Reactor Hourly Output ---		
2			
3	Time:	3:00	
4	Temperatu	37.2	
5	pH:	5.47	
6	dO2:	52.30%	
7			

As head of quality assurance, it is your job to summarize and analyze the results (perhaps in graphical form) once a day. Therefore, you set up a central file in which every morning you can import and analyze the data in those 24 hourly summary files rather than doing this manually (copying/pasting from those 24 files each day).

You wish to automate the import of these 24 hourly summary files into a main file (the "Assignment 3 – STARTER.xlsm" file). The data in cells B3:B6 (column) in each hourly summary file should be placed *row-wise* into the "Assignment 3 – STARTER.xlsm" file, as shown below:

	A	B	C	D	E	F	G	H
1	0:00	37.2	5.51	49.80%				
2	1:00	36.7	5.53	50.50%				
3	2:00	37.1	5.45	49.10%				
4	3:00	37.2	5.47	52.30%			Import Data	
5	4:00	36.8	5.49	51.30%				
6	5:00	36.7	5.45	49.30%				
7	6:00	36.2	5.57	49.80%				
8	7:00	36.9	5.51	50.90%				
9	8:00	37.4	5.59	50.20%				
10	9:00	37.1	5.47	50.50%				
11	10:00	36.2	5.55	49.20%			Reset	
12	11:00	37.1	5.51	50.80%				
13	12:00	37	5.53	49.70%				
14	13:00	37.4	5.39	49.20%				
15	14:00	36.5	5.42	50.40%				
16	15:00	36.8	5.58	50.10%				
17	16:00	37.3	5.52	48.90%				
18	17:00	33.4	5.43	51.20%				
19	18:00	34.1	5.49	50.80%				
20	19:00	36.5	5.52	50.20%				
21	20:00	37.4	5.45	50.40%				
22	21:00	37.1	5.57	49.60%				
23	22:00	36.7	5.51	49.90%				
24	23:00	37.3	5.54	50.30%				
25								
26								

*This is the result after the subroutine has been executed.

Please see the "Assignment 3" screencast for a detailed demonstration of what you are trying to create in this assignment.

HINT #1: To enable the user to input a range of cells using an input box, see the screencast "How to select a range using the input box method**". You can adapt the code to enable the user in your subroutine to select cellsB3:B6 (as requested by the grading file) of the sheets that you import.**

HINT #2: If you are following the method I used above in HINT #1 in the screencast referenced, **UserRange is a range, and you need to convert that to a string in order to use later in your subroutine. You can use something like **ImportRange = UserRange.Address**, where **ImportRange** is **Dim'med** as a **String**. Later on, when you are iterating through your workbooks, you can refer to that range of each workbook by using **Range(ImportRange)** - be sure to use the full reference, e.g. **aWB.Sheets(1).Range(ImportRange).Cells(<something>,<something>)**.

I have already placed three plots into this workbook, one each for temperature (column B), pH (column C), and dO_2 concentration (column D). Therefore, this makes it easy each day to import the 24 files and quickly analyze the data for any problems. It is likely that the time scales will be converted to decimals (fraction of a day), but that's okay.

What you need to do is create a properly working file that imports the data in the 24 hourly summary files into your main file.

Helpful hint: To select multiple files in a folder, you can click on a file and hold down the Ctrl key while selecting additional files. Or, Shift-click will select all files within two files. Better yet, click on one file in a folder then Ctrl-a to select all files in that folder!

When you feel that your procedure(s) are working properly, open up the "Assignment 3 – GRADER.xlsm" file, which will check your work using 5 files contained within the "Assignment 3" folder in the folder called "Grader Files". If correct, you will be provided a completion code, which you can enter into the Coursera website.

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