Lab Document and Questions
Name: _____

Lab #11, 11/14/2013
WFU Username: _____

## CSC 111E: Lab #11 – Visual Basic In Excel

Lab Date: Thursday, 11/14/2013 Due Date: Friday, 11/15/2013 @ 5:00pm

*Purpose:* The purpose of this lab is to have you gain experience in using Visual Basic in Excel (and to reinforce using arrays and 2-d arrays).

*Setup:*
Download the two Excel files from Sakai that are for this lab. These are .xlsm files (as they support "macros" – the "m" in .xlsm). Review the "Visual Basic in Excel" helpful hints page on the last page of this lab first (including how to access the "Developer" part of Excel). You may also want to look at the examples of using Visual Basic in Excel posted in the Course Blog on 11/12/2013.

*Constraints:*
For all problems in this lab, treat Excel as a large 2-D array, using the "ActiveSheet.Cells(row,column)" notation to access data from the cells.

*Program 1: Parallel Arrays*
You will be given an Excel file which contains two pieces of information about each sales team working for a company – the team name (which is based on a region of the country) and the sales generated by that team. The Excel file appears as follows:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | **Number of teams:** | 5 | | **Worst performing team name:** | CHI |
| 2 | **Name** | **Sales** | | **Best performing team name:** | NYC |
| 3 | ATL | 422.15 | | | |
| 4 | CHI | 315.686 | | | |
| 5 | LAX | 654.39 | | | |
| 6 | NYC | 1125.2 | | | |
| 7 | SEA | 790.235 | | | |

Given the sales information provided, your task is to fill in the worst and best performing team names in Column E (CHI and NYC are the right answers, as shown).

You should write one macro (one procedure) that computes both the best and worst team (not two separate procedures). Your macro should be general enough that I could put ANY list of teams (more than 5) into Excel and the program would still work as long as I record the correct number of teams in cell B1.

This problem is very similar to Problem #1 on Lab #10 (from last week), so you may want to look there for inspiration on how to solve the problem if needed.

*Program 2: Item Sales Analysis*
You are given an Excel file which contains sales records (transactions) for purchases of items from your company. The list will include a set of items (as the columns) and a set of transactions which involved purchases of 1 or more of those items as rows.

The Excel file appears as follows:

| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Transaction/Item** | **1** | **2** | **3** | **4** | **5** | | | **Most popular item:** | **2** | **Largest transaction:** | **6** |
| 2 | **1** | 1 | 0 | 1 | 0 | 0 | | | **Number of that item sold:** | **7** | **Number of items bought in that transaction:** | **4** |
| 3 | **2** | 0 | 1 | 0 | 0 | 0 | | | | | | |
| 4 | **3** | 1 | 0 | 1 | 1 | 0 | | | **Any items not purchased?** | FALSE | | |
| 5 | **4** | 0 | 1 | 1 | 0 | 0 | | | | | | |
| 6 | **5** | 0 | 1 | 0 | 1 | 0 | | | | | | |
| 7 | **6** | 1 | 1 | 1 | 0 | 1 | | | | | | |
| 8 | **7** | 0 | 1 | 1 | 0 | 0 | | | | | | |
| 9 | **8** | 1 | 1 | 0 | 0 | 0 | | | | | | |
| 10 | **9** | 0 | 0 | 1 | 1 | 0 | | | | | | |
| 11 | **10** | 1 | 1 | 0 | 0 | 0 | | | | | | |

You can assume there are exactly 10 transactions and exactly 5 items.

Your task is to write three macros (procedures), one to do each task below:

- Determine the item purchased most frequently and report both the item number and how many purchases of it were made
- Determine the transaction that involved buying the most items and which transaction that was
- Determine whether or not there were any items that were not purchased (True/False)

Note the transaction and item numbers don't exactly match up with the row/column number (Transaction 1 is in Row 2 and Item 1 is in Column 2).

The data for this problem is similar to Problem #3 on the 2-d array practice problems; HOWEVER – you are solving different problems with the data. You do not have to do a triple for loop (as we don't have to generate pairs of items). Since this is a 2-d array (items x transactions), a double for loop is appropriate for these problems.

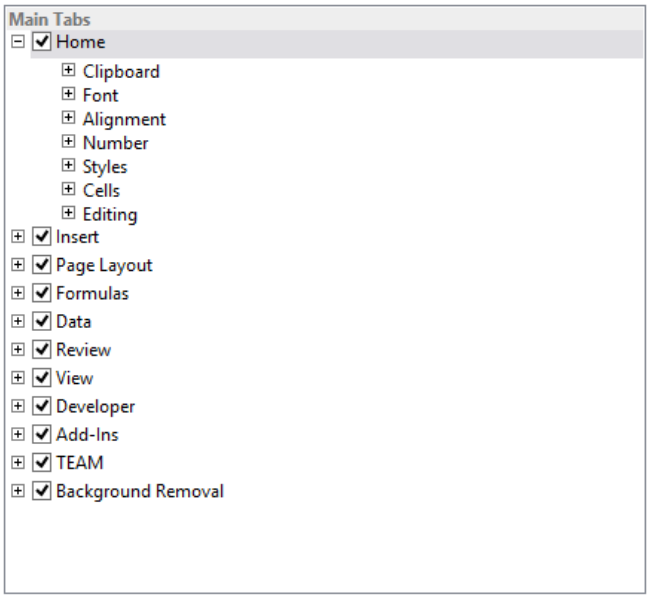
*Submission*
To submit this lab for grading, do the following by Friday, 11/8, at 5:00pm -- save and upload into Saki (under Assignments, Lab 11) both Excel files.

Your grade will be based on the following rubric:

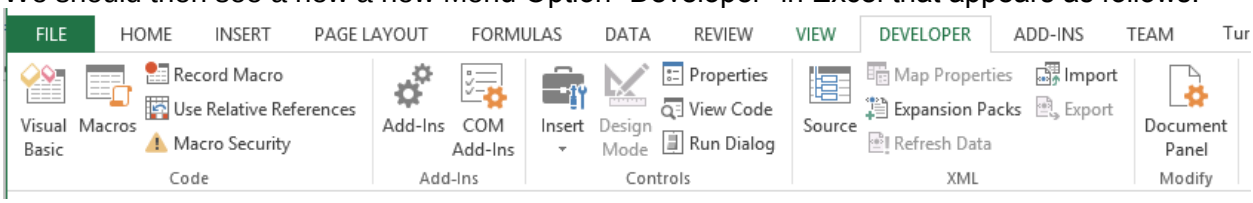
| Objective | Points Available | Earned |
|---|---|---|
| Program 1: Correctly determines "best performing" team | 10 | |
| Program 1: Correctly determines "worst performing" team | 10 | |
| Program 1: Works with any number of teams input | 10 | |
| Program 1: Outputs team names to screen | 10 | |
| Program 2: Correctly determines "most frequently purchased item" and count of purchases for that time | 12.5 | |
| Program 2: Correctly determines "largest transaction" and items sold for that transaction | 12.5 | |
| Program 2: Correctly determines whether or not there were any items not sold | 12.5 | |
| Program 2: Provides appropriate 5 outputs to screen | 12.5 | |
| BOTH: Program 1 uses 1 macro, Program 2 uses 3 macros | 10 | |
| BOTH: Employs ActiveSheet.Cells approach to working with Excel | -100 if violated | |

## VISUAL BASIC IN EXCEL HELPFUL HINTS

*Preliminaries*
We have to tell Excel that we want to make use of Developer functionality. To do this, open Excel and go to the *File, Options, Customize Ribbon* menu. Click the Developer checkbox under the Main Tabs part of the window (on the right hand side). Click OK.




We should then see a new a new Menu Option “Developer” in Excel that appears as follows:




*Macros are Procedures*
A macro is just a Visual Basic procedures (Sub..End Sub).

To create a macro: Click the Macros button, enter a name in the box that appears, click Edit
To run a macro: Click the Macros button, enter or select a name, click Run

*Choosing a worksheet*
In an Excel file, to work with data we first need to indicate which worksheet we want to manipulate. For this lab, use ActiveSheet to refer to the sheet that is currently visible

*Choosing a cell*
Given that we specified a worksheet, we also need to refer to a cell within a worksheet. Think of an Excel worksheet as one large 2-d array, with the first row addressed 1 and first column addressed 1.

ActiveSheet.Cells(row, column), where row and column are replaced by values/variables, is how to access the data in the array.

ActiveSheet.Cells(1,1) – This refers to A1 – first row, first column
ActiveSheet.Cells(2,1) – This refers to A2 – second row, first column
ActiveSheet.Cells(1,2) – This refers to B1 – first row, second column