**OPIM 5641: Homework II**

**User Controls and Recording Macros**

**Goal**

In this homework, you will learn:

1. What are user controls?
2. How to insert buttons on a spreadsheet
3. How to record macros
4. When to use Absolute or Relative References in macros

**Purpose of the Spreadsheet**

In this spreadsheet, we will extend the spreadsheet from homework I. Mainly, we will create a new sheet where we will store archival data from our stock portfolio. In addition, we will have a chart that graphs the performance of our stock portfolio over time. We will also provide buttons (with associated macros) to:

* Refresh the stock data with the current real time quotes
* Add the current portfolio data to the archive
* Update our chart to include the latest data from the archive

**Specifics**

The new sheet will store the stock data row-wise, with the quotes of each stock when they were archived and the total value of the portfolio at the time of archival. This sheet will also contain a “line chart” with the total value of our portfolio. The source data for this line chart can be refreshed and updated by pushing a button.

**Desired Result**

**A screenshot of a cell phone

Description automatically generated**

**Figure 1.** Example of the Sheet with “Historical data”

**A screenshot of a cell phone

Description automatically generated**

**Figure 2.** The modified Sheet “Portfolio”

**Buttons and Macros**

Here is a precise description of the functionality of each button:

* **Refresh Data:** This is an easy one. When pressed, the data is refreshed in real time. In other words, it is equivalent to pressing “Ctrl+Alt+F5” or clicking the “Refresh All” option under the “Data” ribbon.
* **Store Data:** This one is the most complicated button. In summary, the data in column C of the “Portfolio sheet” needs to be stored as the new *first* row in the “Historical Data” sheet. Note that the data needs to be *transposed* from column format into a row. Here are the steps that need to be accomplished:
  1. The data in the “Historical data” sheet needs to be shifted down one row, to make place for the new data. This is done by going to cell A2 (in my example), holding down Ctrl+Shift+left Arrow, then Ctrl+Shift+Down Arrow. (Note: you need to be working with relative addresses, otherwise this will fail in the future). Then cut the data (Ctrl+X), move to cell A3 and paste (Ctrl+V).
  2. Select the column C in “Portfolio” by going to cell C5, and pressing the Ctrl+Shift+Down Arrow. Then copy (Ctrl+C), and go back to the “Historical data” sheet.
  3. Go to cell A2 (where the new row needs to be inserted) and *go to the Paste Special* option under the *Home* ribbon. Remember to paste the values only and to transpose the column into a row.
* **Update Portfolio Chart:** The portfolio chart is assumed to have been created already. Pressing this button then will accomplish the following:
  1. The data points in the chart will be selected and by pressing the right mouse button, we can choose “Select data”
  2. We select the whole column L, press enter.

Excel will find where the data in column L ends and will display all the available data in the chart.

*Note:* The data in the rows runs from most recent to oldest. By default, this is how it would appear in your chart too. If you would like to have your horizontal axis in the chart display the oldest data first, then left-click the horizontal axis in the chart. Right-clicking next will let you choose the option “Format axis.” There, under “Axis options” you will find a checkbox “Categories in reverse order.” This will do the trick.

**Hints**

Useful tips for recording macros:

* Attempt to do all necessary steps in your macro several times before you record the macro;
* Know the shortcuts for selecting data, e.g., Ctrl+Shift+Arrow keys, or select a column/row header, etc.
* When using selections in macros, if the selection area may change (i.e., the number of rows or columns can be different), make sure you work with *Use Relative References.*
* Sometimes it can be useful to look at the Visual Basic code in the “Macro Editor”