LINKING AND CONSOLIDATION

Microsoft Excel has a data consolidation feature that allows multiple tables to be consolidated into a single summary report. Consolidating the data often enables easier editing and viewing of information since it can be seen in aggregate form as a master spreadsheet. There are three basic ways to consolidate data in Excel: by position, category and formula. To locate the command, start by selecting the Data menu and then the Consolidate command, which will then prompt you to select one of the three consolidation options.

Consolidate by Position
• The consolidate by position function works best when the data in the separate tables is consistent in position and arrangement. Using the consolidate by position function will move the contents from column A, for example, from all of the separate spreadsheets into a single spreadsheet. In addition, the aggregate consolidated spreadsheet can be set up in a way that it automatically updates when the data in the source spreadsheet changes.

Consolidate by Category
• Consolidating by category enables spreadsheets with slightly different layouts, but consistent labels, to be consolidated into a master spreadsheet. The data will be extracted from the spreadsheet and organized automatically into the master spreadsheet. In order for this to work properly, you must go into the "Insert" menu and define the label's name, and all spelling and capitalization must be identical for it to properly mesh.

Consolidate by Formula
• Consolidation by formula uses a 3-D reference, which is "a reference to a range that spans two or more worksheets in a workbook," to execute the consolidation. This method is most effective when working in a single Excel file with multiple worksheets. A cell contains a formula that references portions of another worksheet to be consolidate, which is effective when the worksheets are not identical in layout. If the worksheets are identical, then the worksheet name can be used as part of the consolidation formula.

Steps for Linking and Consolidation

1. Enter the following information of students onto Sheet1. Double click on the sheet tab and rename it: Semester 1.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>2</td>
<td>Name</td>
<td>Physics</td>
<td>Chemistry</td>
<td>Maths</td>
</tr>
<tr>
<td>3</td>
<td>Dloak Changmai</td>
<td>50</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>Prabin Das</td>
<td>36</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>5</td>
<td>Suren Salkia</td>
<td>41</td>
<td>35</td>
<td>48</td>
</tr>
<tr>
<td>6</td>
<td>Pradyut Baruah</td>
<td>23</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>Archana Gohain</td>
<td>48</td>
<td>37</td>
<td>29</td>
</tr>
</tbody>
</table>

1. Enter the following information of students onto Sheet2. Double click on the sheet tab and rename it: Semester 2.
3. Enter the following information of students onto Sheet3. Double click on the sheet tab and rename it: Semester 3.

4. Enter the following row and column labels onto Sheets 4 and 5. Rename Sheet4: Consolidate. Rename Sheet5: Link.

5. Enter the following formulas in the appropriate cells on all the worksheets.
   E3: =sum(B3:D3)
   Copy the formula in cell E3 to cells E4 through E7.

6. Click on the tab Consolidate to make it the active worksheet.
7. Click on the cell B3 to make it active cell. Under the DATA tab, in the Data Tools group, click on Consolidate. It will display the following Dialog Box

![Consolidate Dialog Box]

a) Click on the ‘Reference’ text box.
b) Click on sheet tab Semester 1 and select cells B3 through D7.
c) Click on the Add button.
d) Click on sheet tab Semester 2 and click on Add button.
e) Click on sheet tab Semester 3 and click on Add button.
f) Click OK.

The worksheet Consolidate should now report the sum of Marks of all the students of Semester 1, Semester 2 and Semester 3 for each subject. The worksheet Consolidate should look like the one below.

![Consolidated Marks]

1. For Linking worksheets, click on the sheet tab Link to make it active.
   - Click on Data tab and then click on Consolidate under the Data Tools group. The consolidate dialog box will appear. Repeat step 7(a) through 7(e) above.
   - Click on the check box “Create links to source data”
   - Click OK.

The Link worksheet will look as shown below.
There is no difference between Linking and Consolidation except that if you change the data in the source pages, it will not make any change in the Consolidation worksheet, whereas any modification on the data of the source worksheets will automatically update the data on the Link worksheet.
**Goal Seek**

Goal Seek is an important facility provided by Excel to adjust the input value to get a predefined result which contains a formula. If you know the result that you want from a formula, but not the input value the formula needs to get that result, you can use the Goal Seek feature. To perform Goal Seek, following steps are to be performed -

1. On the **Data** tab, in the **Data Tools** group, click **What-If Analysis**, and then click **Goal Seek**.

2. In the **Set cell** box, enter the reference for the cell that contains the formula (formula: A sequence of values, cell references, names, functions, or operators in a cell that together produce a new value. A formula always begins with an equal sign (=),) you want to resolve.

3. In the **To value** box, type the result you want.

4. In the **By changing cell** box, enter the reference for the cell that contains the value you want to adjust.

**NOTE** This cell must be referenced by the formula in the cell you specified in the **Set cell** box.
**Scenarios**

Scenarios are part of a suite of commands sometimes called what-if analysis tools. A scenario is a set of values that Microsoft Office Excel saves and can substitute automatically on your worksheet. You can use scenarios to forecast the outcome of a worksheet model. You can create and save different groups of values on a worksheet and then switch to any of these new scenarios to view different results.

**Creating Scenarios**

1. On the Data tab, in the Data Tools group, click What-If Analysis, and then click Scenario Manager.
2. Click Add.
3. In the Scenario name box, type a name for the scenario.
4. In the Changing cells box, enter the references for the cells that you want to change.
   
   **NOTE** To preserve the original values for the changing cells, create a scenario that uses the original cell values before you create scenarios that change the values.
5. Under Protection, select the options that you want.
6. Click OK.
7. In the Scenario Values dialog box, type the values that you want for the changing cells.
8. To create the scenario, click OK.
9. If you want to create additional scenarios, repeat steps 2 through 8. When you finish creating scenarios, click OK, and then click Close in the Scenario Manager dialog box.

**Display a Scenario**

1. On the Data tab, in the Data Tools group, click What-If Analysis, and then click Scenario Manager.
2. Click the name of the scenario that you want to display.
3. Click Show.

**Create a scenario summary report**

1. On the Data tab, in the Data Tools group, click What-If Analysis, and then click Scenario Manager.
2. Click Summary.
3. Click Scenario summary or Scenario PivotTable report.
4. In the **Result cells** box, enter the references for the cells that refer to cells whose values are changed by the scenarios. Separate multiple references with commas.
If you perform a task repeatedly in Microsoft Excel, you can automate the task with a macro. A macro is a series of commands and functions that are stored in a Microsoft Visual Basic module and can be run whenever you need to perform the task. For example, if you often enter long text strings in cells, you can create a macro to format those cells so that the text wraps.

**Recording macros**
When you record a macro, Excel stores information about each step you take as you perform a series of commands. You then run the macro to repeat, or "play back," the commands. If you make a mistake when you record the macro, corrections you make are also recorded. Visual Basic stores each macro in a new module attached to a workbook.

**Record a Macro**
1. If the Developer tab is not available, do the following to display it:
   - Click the Microsoft Office Button, and then click Excel Options.
   - In the Popular category, under Top options for working with Excel, select the Show Developer tab in the Ribbon check box, and then click OK.
2. On the Developer tab, in the Code group, click Record Macro.
3. In the Macro name box, enter a name for the macro.
4. To assign a CTRL combination shortcut key to run the macro, in the Shortcut key box, type any lowercase letter or uppercase letter that you want to use.
5. In the Store macro in list, select the workbook in which you want to store the macro.
6. To include a description of the macro, in the Description box, type the text that you want.
7. Click OK to start recording.
8. Perform the actions that you want to record.
9. On the Developer tab, in the Code group, click Stop Recording

**Run a Macro**
1. Open the workbook that contains the macro.
2. On the Developer tab, in the Code group, click Macros.
3. In the Macro name box, click the macro that you want to run.
4. To run a macro in an Excel workbook, click Run.
CELL ADDRESSING

An absolute cell address is a cell address that does not change when you move a formula from one cell to another. A relative address will change in the relation to the number of cells you move from the original cell that held the formula. In an absolute cell reference, a dollar sign ($) precedes both the column letter and the row number. You can also have a mixed reference in which the column is absolute and the row is relative or vice versa. To create a mixed reference, you use the dollar sign in front of just the column letter or row number. Here are some examples:

Cell Reference Types

<table>
<thead>
<tr>
<th>Reference Type</th>
<th>Formula</th>
<th>What Happens After Copying the Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative</td>
<td>=A1</td>
<td>Both the column letter A and the row number 1 can change.</td>
</tr>
<tr>
<td>Absolute</td>
<td>=$A$1</td>
<td>The column letter A and the row number 1 do not change.</td>
</tr>
<tr>
<td>Mixed</td>
<td>=$A$1</td>
<td>The column letter A does not change. The row number 1 can change.</td>
</tr>
<tr>
<td>Mixed</td>
<td>=A$1</td>
<td>The column letter A can change. The row number 1 does not change.</td>
</tr>
</tbody>
</table>