Chapter 14: Fill-in-the-blank Computing: The Basics of Spreadsheets

Fluency with Information Technology
Third Edition
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Arranging Information

- Organizing textual information into lists
- An array of cells
  - Spreadsheets give us cells we fill in to set up our list
  - Entry that is too long for a cell may spill over in appearance, but still only occupies the cell into which it is typed

Sorting the Data

- Alphabetize or sort, especially when the list is long
  - Say what items to alphabetize by selecting/highlighting the list
  - Sort operation is found under Data menu
    - Ascending or descending order, as strings or numbers

Adding More Data to the List

- We can format cell entries
  - Italic, bold, underline, font styles, sizes, justification, color
  - Found under the Format menu
- Naming rows and columns
  - Automatic naming scheme—columns are labeled with letters, rows with numbers
  - We can refer to a whole column (column C), whole row (row 4), or single cell (C4)

Headings

- In addition to cell addresses, it is convenient to name rows and columns meaningfully
- Example:
  Common Name   Genus   Species

Table 14.1 Common spreadsheet operations

<table>
<thead>
<tr>
<th>Operation</th>
<th>Using Excel...</th>
<th>Using Open Office...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change column width manually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change column width automatically</td>
<td>Format &gt; Column &gt; Adjust Width...</td>
<td>Format &gt; Column &gt; Optimal Width...</td>
</tr>
<tr>
<td>Fancy formatting</td>
<td>Format &gt; Cells...</td>
<td>Format &gt; Cells...</td>
</tr>
<tr>
<td>Clear cells</td>
<td>Edit &gt; Clear &gt; All</td>
<td>Edit &gt; Delete Contents...</td>
</tr>
<tr>
<td>Delete columns, rows</td>
<td>Edit &gt; Delete</td>
<td>Edit &gt; Delete Cells...</td>
</tr>
<tr>
<td>Hide a column or row</td>
<td>Format &gt; Column &gt; Hide</td>
<td>Format &gt; Column &gt; Hide</td>
</tr>
</tbody>
</table>

Note: All spreadsheet applications provide these common operations; explore your system.
Computing with Spreadsheets

- Most common application is to process numerical data
- Writing a Formula
  - Begin with = sign, define the value for the entry based on the value of the other entries
  - Formulas contain numbers, cell references, and standard arithmetic operations
    \[ \text{F2} \times 0.621 \]

Computing with Spreadsheets (cont’d)

- Repeating a Formula
  - Copy/Paste
    - Replicates equation to other cells
    - Software automatically adjusts references
  - Filling
    - Small box or tab beyond the cell’s lower right corner (fill handle)
    - Grab with cursor and pull to other cells
    - Automated copy/paste

Transforming Formulas: Relative versus Absolute

- Relative means "relative position from a cell"
  - If we're copying a formula to a cell two columns to the right of the original, the formula adjusts all cell references two columns right
- Absolute means unchanging—denoted by using $ in front of the part of the cell address that does not change
  - $C3
  - $C$3
  - $C3$
Functions

- Give the function name, and specify the cell range to be summarized in parentheses.
  
  \[\text{max}(J2:J7)\] finds the highest value in range:
  
  : denotes a range.
  
- Available function names are listed in the \(f_X\) symbol and in Insert > Function… menu.

Filling Hidden Columns

- If columns are hidden, but we have copied formula across all columns, formula operates on hidden column also.
Charts

- Graphical representation of spreadsheet data
  - Select values to be plotted/charted, then Insert > Chart… (Chart Wizard)
  - The Chart Wizard walks us through the graphing process
  - Can see a preview of different graphs with our data

Daily Spreadsheets

- Spreadsheets can organize personal information
  - Track exercise performance
  - Set up expense budget
  - Keep lists of books and CD’s we’ve lent out
  - Follow a team’s successes
  - Record flight hours after each flying lesson
  - Document expenses or income
  - Save records generated by online banking

Calendar

- To make a custom calendar with spreadsheet software:
  - Enter first day of week (Sunday) and fill across next six columns (list of days completes automatically)
  - Below Sunday, enter date and fill across
  - Enter first two times going down a column on left side (format to taste) and fill down
Discount Table

- Suppose a store offers
  - $1.00 store credit for each $10.00 spent plus
  - $3.00 store credit for every two CD's purchased (one CD earns only one $1.00 credit)
- Construct a table to figure your credits
  - Left column is dollars spent, in $10 increments
  - Top row is CDs Purchased, in 1 CD increments
  - These are the axes of the table
  - Table entries: Formulas to calculate the correct credits, remembering some references have to be absolute
    - Get first cell formula correct then fill across and down to fill the table

Paying Off a Loan

- Suppose you are considering a large purchase
  - You have been offered a loan at 5% interest
  - Create a table of the monthly payments required for different amounts borrowed for different times
  - Fill a row across the top with different numbers of payments; fill a column with different amounts

Paying Off a Loan (cont'd)

- Use the "payment" function PMT
  - Inputs are
    - Interest RATE
    - Number of payments (Nper)
    - Present value—amount of loan (Pv)
  - The result is negative; the payment is a cost to you
  - Use conditional formatting to display entries in two colors
  - All cells with a certain value or range can be formatted automatically

Importing Data

- Foreign data—data from another application we want to import into a spreadsheet
- Spreadsheets prefer to import foreign data as tab-delimited text
  - ASCII text files
  - Each cell's entry ends with a tab
  - Each row ends with a carriage return (ENTER)
  - Spreadsheets can output as tab-delimited
  - If list is in some other form, Search/Replace can often convert to tab-delimited
  - Some browsers can automatically re-format HTML tables for importing into spreadsheets
Arranging Columns

- Data in other applications, like word processors, is hard to manipulate by column
- Solve problem by importing into spreadsheet
  - First create consistently delimited text file of data
- We can rearrange order of columns, then export as text file and re-import back to original application