

Cooper Interaction Software Design Test

Part One

Problem

"Your mission is to improve the table creation feature. Redesign the interaction and the user interface for table creation currently implemented with these two dialogs. Provide pencil sketches (or drawings using whatever tool you like to use) and a brief description of the interaction. Don't worry about making it pretty, just make it work."

My Design Approach

My approach to interface and interaction design is generally to step way back, and determine what's really trying to be accomplished or communicated. In this case, the motivation for the redesign wasn't stated, so I can't be sure whether the perceived problem in creating the various types of tables is that the process is too cumbersome, takes too long to accomplish or just needs to be updated to make the product manager happy. I'll assume that the feature just needs to be improved all around.

The first thing I did was visualize how I wanted it work, being I had just struggled with a similar products' table creation feature the night before (FrontPage 98). I began thinking that there shouldn't be any dialogs, and I could somehow give enough feedback and provide enough editing control to circumvent the dialogs completely. That approach began to fade when I thought more about how to present and use the AutoFormat feature. So, my next thought was to just eliminate the first dialog, and use an Options or Preferences dialog to dial in the defaults.

When sketching out that design on paper, I immediately found some rough edges in my interaction approach. What if they didn't want the default behavior? So, I went into Word and saw how it currently works. It turns out that I think the table creation and editing feature in Word 97 works fine *after* you learn to use it. You do need to explore the options and make a few tables before you really get it. Does that mean I think it's great? No, but it works fairly well and is consistent with the other interaction solutions provided in that program. And I really do like all the feedback in the AutoFormat dialog's preview area.

Anyway, playing with the existing feature made me rethink what I thought was the most significant part of the redesign – the elimination of the first dialog. Since I end up changing so much about a table once I started working with it, next approach was to make the creation simpler and quicker, while also making the table editing/formatting much easier.

My Solution

Here are the major points of my redesign:

1. Eliminate the Insert Table dialog

Picking the number of rows and columns is fundamental to table creation, but is often changed right after to table is inserted and being worked with. This change allows quick insertion of new tables at the current insertion point by eliminating the need for user input during the initial phase. The key to this being an improvement to the current approach is some additional *table splitting* functionality.

Note that the ellipses of the current menu item are removed to denote no dialog will appear when the menu item is picked (**Insert Table...** becomes **Insert Table**). A keyboard shortcut is also added for this frequently used menu item.

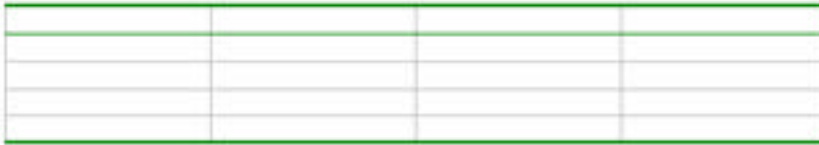
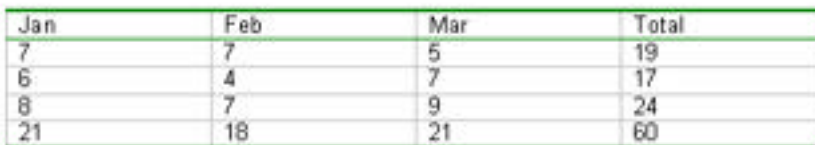


Figure 1. new table constructed from user-defined options -- 4 rows, 5 columns, Simple 1

2. Augment the table splitting functionality

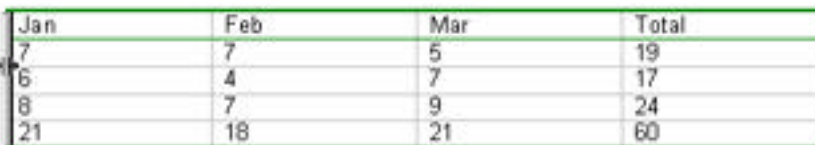
Once the new table is inserted using the default table preferences, its cells can be immediately subdivided or merged through direct manipulation, rather than only through a menu item. So, adding or eliminating rows and columns gains some visual feedback. This is accomplished by depressing and holding a modifier key (Ctrl, Alt, etc.) before starting the normal click and drag motion of resizing rows and columns. With the modifier key down, the cursor changes to the standard window splitter cursor (as found in Word already) when it passes over a table dividing line. At the same time, the divider line itself is drawn puffed out and thicker like the standard window splitter widget (found above the vertical scroll bar in Word). These visual clues suggest that the table can be subdivided and merged, not just the normal cell resizing.

Example – Adding a new column with direct manipulation



Jan	Feb	Mar	Total
7	7	5	19
6	4	7	17
8	7	9	24
21	18	21	60

Figure 2. a newly created table has been populated with data



Jan	Feb	Mar	Total
7	7	5	19
6	4	7	17
8	7	9	24
21	18	21	60

Figure 3. the cursor is passed over the leftmost table divider with the modifier key held down

	Jan	Feb	Mar	Total
7	7	7	5	19
6	4	4	7	17
8	7	7	9	24
21	18	18	21	60

Figure 4. dragging with the modifier key held down creates a new column

	Jan	Feb	Mar	Total
7	7	7	5	19
6	4	4	7	17
8	7	7	9	24
21	18	18	21	60

Figure 5. releasing the mouse button commits the new column

3. Add a Table Options... dialog and menu item

Because the Insert Table... dialog has been removed from the insertion process, we move its functionality into a new **Table Options...** dialog. This dialog exists to control the default values and appearance of newly created tables. It is the combination of the old **Insert Table...** and **Table AutoFormat...** dialog boxes. The Insert Table... items appear on top and the Table AutoFormat items appear on the bottom. Combining all the visual and structural attributes into a "new table preferences" dialog makes the functionality readily apparent and accessible. All the defaults are remembered across sessions.

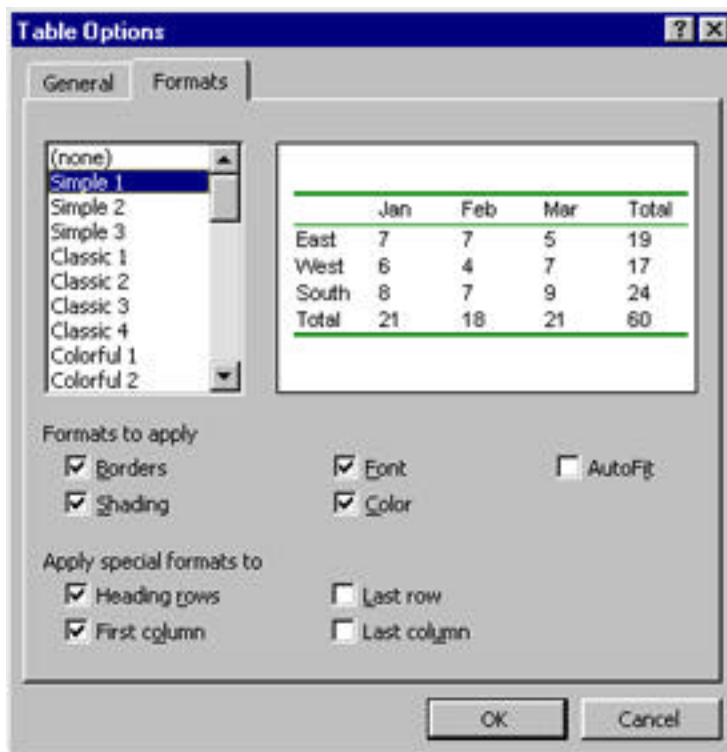


Figure 6. the contents of the old Insert Table... dialog are in the General tab.

4. Net Result

The above changes make table creation faster, editing easier, and provide a richer set of default values and appearance for new tables. All of the other menu items and interactions stay the same, as the focus of this problem was the creation of tables, not the overall table functionality within the application.

Time and Tools Used

It took approximately six hours to complete this test, which included considering the problem, sketching out some designs on paper, rethinking the solution, write-up of this document in Microsoft Word, and producing the figures in Adobe Photoshop.