CHAPTER 4: MICROSOFT OFFICE: EXCEL 2010

Quick Summary

A ***workbook***—an Excel document that stores data—contains one or more pages called a ***worksheet***. A worksheet—or ***spreadsheet***—is stored in a workbook, and is formatted as a pattern of uniformly spaced horizontal rows and vertical columns. The intersection of a ***column*** and a ***row*** forms a box referred to as a ***cell***.

Cell content is anything typed in a cell and can be one of two things: either a ***constant value***—referred to simply as a value—or a ***formula***. A formula is an equation that performs mathematical calculations on values in a worksheet. The most commonly used values are ***text values*** and ***number values***, but a value can also include a date or a time of day.

A text value, also referred to as a ***label***, can provide information about number values in other worksheet cells. A label is usually an example of a field heading, thus it is descriptive of values in the column or row cells that follow.

The intersecting column letter and row number form the ***cell reference*** or ***cell address***.

Text or numbers in a cell are referred to as ***data***.

If the first few alphabetic characters typed in a cell match an existing entry in the column, Excel uses ***AutoComplete*** to fill in the remaining characters.

Auto Fill generates and extends a ***series*** of values into adjacent cells based on the value of other cells. By dragging the ***fill handle***—the small black square in the lower-right corner of a selected cell—to adjacent cells, the cells are filled with values based on the first cell.

Some Excel defaults are:

- Column width is 64 ***pixels***
- ***Font is Calibri***
- ***Font size is 11 pt***
- Number values are aligned at the right edge of the cell
- Number format is the general format
- The ***displayed value*** is shown for data in a cell
- The ***underlying value*** is shown for data in the ***Formula Bar***

A cell can contain either a constant value (text or numbers) or a formula. A formula is an equation that begins with the equal sign (=) and performs mathematical calculations on values in other cells and places the result in the cell containing the formula.

A ***function*** is a prewritten formula that looks at one or more values, performs an operation, and returns a value. An example of a function used in this objective is ***SUM***, which sums a group of numbers. Since SUM is a frequently used function, it can be implemented by using the ***AutoSum*** button.

There are four ways to create a formula:

- By typing
- By using the point-and-click technique
- By using a function button from the Ribbon
- By copying a formula from one cell to another

When copying a formula, Excel copies the formula but adjusts the cell references relative to the row number. This is called a ***relative cell reference***—a cell reference based on the relative position of the cell that contains the formula and the cells referred to.

To ***Format***—refers to changing the appearance of cells to make a worksheet attractive and easier to read.

The ***Merge & Center*** command joins a selected range of cells into one larger cell and centers the contents in the new cell. Individual cells in the range can no longer be selected.

A ***cell style*** is a defined set of formatting characteristics, such as font, font size, font color, cell borders, and cell shading. Two styles used for formatting financial numbers are:

- The ***Accounting Number Format*** applies a thousand comma separator where appropriate, inserts a fixed dollar sign ($) aligned at the left edge of the cell, applies two decimal places, and leaves a small amount of space at the right edge of the cell to accommodate a parenthesis when negative numbers are present.
- The ***Comma Style*** inserts thousand comma separators where appropriate and applies two decimal places. Comma Style also leaves space at the right to accommodate a parenthesis when negative numbers are present.

When preparing worksheets with financial information, the first row of dollar amounts and the total row of dollar amounts are formatted in the Accounting Number Format. Rows that are not

the first row or the total row should be formatted with the Comma Style.

A ***chart*** is a graphic representation of data in a worksheet. Data presented as a chart is easier to understand than a table of numbers.

Sparklines are tiny charts embedded in a cell and give a visual trend summary alongside your data; a sparkline makes a pattern more obvious to the eye.

Some of the components of a column chart are:

- ***Category labels***—the labels that display along the bottom of the chart to identify the category of data.
- ***Category axis*** or the ***x-axis***—Excel uses the row titles as the category names and displays them below the horizontal axis.
- ***Value axis*** or ***y-axis***—Excel includes a numerical scale on the left on which the charted data is based.
- ***Legend***— identifies the patterns or colors on the right that are assigned to the categories in the chart.
- ***Data point***—a value that originates in a worksheet cell and each data point is represented in the chart by a ***data marker***—a column, bar, area, dot, pie slice, or other symbol in a chart that represents a single data point. The related data points form a ***data series***.

The ***Chart Styles gallery*** displays an array of pre-defined ***chart styles***—the overall visual look of the chart in terms of its colors, backgrounds, and graphic effects.

Page Layout view is used to view and prepare a workbook for printing.

In Page Layout:

- Footers can be inserted
- Margins can be modified
- Pages can be aligned
- Information such as the author, subject, and keywords can be added

Normal view maximizes the number of cells visible on the screen and keeps the column letters and row numbers closer. The vertical dotted line between columns indicates that, as currently arranged, only the columns to the left of the dotted line will print on the first page.

The Show Formulas button can be used to display the underlying formulas instead of the results of the formulas.

In Excel, the spelling checker performs similarly to the other Microsoft Office programs.

The Spelling command begins its checking process with the currently selected cell and moves to the right and down.

If the spelling tool does not have this word in its dictionary, then under Suggestions, Excel provides a list of suggested spellings.

Text that is too long to fit in a cell spills over to cells on the right only if they are empty. If the cell to the right contains data, the text in the cell to the left is truncated. However, the entire text value is displayed in the Formula Bar.

Data can be entered by first selecting a range of cells, and this can be a time-saving technique, especially when using the numeric keypad to enter the numbers.

Remember the default number format for cells is the General number format, in which numbers display exactly as they are typed and trailing zeros do not display, even if they were typed.

Operators are symbols that specify the type of calculation to be performed in a formula.

We already discussed that a relative cell reference refers to a cell by its position in relation to the cell that contains the formula and is automatically adjusted when a formula is copied. On the other hand, an ***absolute cell reference*** refers to a cell by its fixed position in the worksheet. A dollar sign ($) prefixed to a column letter or row number indicates an absolute reference to that column or row.

One of the most powerful and valuable features of Excel is when changes are made to a cell, Excel automatically re-calculates any formulas that reference that cell.

You can edit text and number values directly within a cell or on the Formula Bar.

The Percent Style button can be used to format selected cells as a percentage rounded to the nearest hundredth.

Formatting refers to the process of specifying the appearance of cells and the overall layout of a worksheet.

Formatting is accomplished:

- Through various commands on the Ribbon
- From shortcut menus
- By keyboard shortcuts
- By using the Format Cells dialog box

The Wrap Text command can be used to display the contents of a cell on multiple lines.

The Middle Align command is used to align text so that it is centered between the top and bottom of the cell.

The orientation of a page—portrait or landscape—can be changed.

Statistical functions, such as AVERAGE, MEDIAN, MIN, and MAX functions, are useful to analyze a group of measurements.

When using functions, the values in parentheses are the ***arguments***—the values that an Excel function uses to perform calculations or operations.

The ***AVERAGE function*** adds a group of values, and then divides the result by the number of values in the group.

The ***MEDIAN function*** finds the middle value that has as many values above it in the group as are below it.

The ***MIN function*** determines the smallest value in a selected range of values.

The ***MAX function*** determines the largest value in a selected range of values.

When a formula is moved, the cell references within the formula do not change, no matter what type of cell reference is used. If cells are moved into a column that is not wide enough to display number values, Excel will display a message so that any necessary adjustments can be made.

Data can be repositioned within a cell at an angle by rotating the text. Rotated text is useful to draw attention to data on a worksheet.

If a cell width is too narrow to display an entire number, Excel displays the ##### error, because displaying only a portion of a number would be misleading. The underlying values remain unchanged and are displayed in the Formula Bar.

Excel functions include ***logical functions***, which test for specific conditions. Logical functions typically use conditional tests to determine whether specified conditions—called ***criteria***—are true or false.

The ***COUNTIF function*** is a statistical function that counts the number of cells within a range that meet the given condition—the criteria that is provided. The COUNTIF function has two arguments—the range of cells to check and the criteria.

A ***logical test*** is any value or expression that you can evaluate as being true or false, and the ***IF function*** uses a logical test to check whether a condition is met, and then returns one value if true, and another value if false.

Comparison operators are used to compare values in a logical test.

A ***conditional format*** changes the appearance of a cell based on a condition—a criteria. If the condition is true, the cell is formatted based on that condition; if the condition is false, the cell is not formatted.

A ***data bar*** provides a visual cue to the reader about the value of a cell relative to other cells. The length of the data bar represents the value in the cell. A longer bar represents a higher value and a shorter bar represents a lower value.

Data bars are useful for identifying higher and lower numbers quickly within a large group of data, such as very high or very low levels of inventory.

The ***Find and Replace*** feature searches the cells in a worksheet—or in a selected range—for matches, and then replaces each match with the replacement value of your choice.

Excel can obtain the date and time from a computer's calendar and clock, and display this information on a worksheet.

By freezing or splitting panes, you can view two areas of a worksheet or lock rows and columns in one area. When freezing panes, the specific rows or columns are selected, and they remain visible when scrolling in the worksheet.

The ***NOW function*** retrieves the date and time from a computer's calendar and clock, and inserts the information into the selected cell. The result is formatted as a date and time.

The NOW function is volatile, which means the date and time will not remain as entered, but rather the date and time will automatically update each time the workbook is opened.

A ***pane*** is a portion of a worksheet window bounded by and separated from other portions by vertical or horizontal bars, and the ***Freeze Panes*** command is used to select one or more rows or columns and then freeze (lock) them into place.

To analyze a group of related data, a range of cells can be converted into an ***Excel table***. An Excel table is a series of rows and columns that contains related data that is managed independently from the data in other rows and columns in the worksheet.

Once an Excel table has been created, one can:

- ***Sort*** the table—arrange all the data in a specific order—in ascending or descending order.
- ***Filter*** the table—display only a portion of the data based on matching a specific value—to show only the data that meets the specified criteria.

After any sorting, filtering, and totaling have been performed, the table can be converted back into a normal range. Converting to a normal range can also be useful if the only table feature you want to apply is an attractive Table Style to a range of cells.

If a worksheet is too wide, too long—or both—to print on a single page, Excel's ***Print Titles*** and
Scale to Fit commands can be used to create pages that are attractive and easy to read.

The Print Titles command is used to specify rows and columns to repeat on each printed page.

The Scale to Fit command is used to stretch or shrink the width, height, or both, of printed output to fit a maximum number of pages.

Multiple worksheets are used in a workbook to organize data in a logical arrangement. When there is more than one worksheet in a workbook, click the sheet tabs to ***navigate*** among worksheets. ***Sheet tabs*** identify each worksheet in a workbook and are located along the lower left edge of the workbook window.

Excel names the first worksheet in a workbook Sheet1 and each additional worksheet in order—Sheet2, Sheet3, and so on. Most Excel users rename the worksheets with meaningful names.

Dates represent a type of value that is entered in a cell. When a date is entered, Excel assigns a serial value—a number—to the date. This makes it possible to treat dates like other numbers, so finding the number of days between the two dates is done by subtracting the older date from the more recent date.

A cell has contents—a value or a formula—and a cell may also have one or more formats applied.

One can clear—delete—the contents of a cell, the formatting of a cell, or both.

- Clearing the contents of a cell deletes the value or formula typed there, but it does not clear formatting applied to a cell.
- Clearing the formats deletes formatting from the cell, but does not delete the cell's contents.

Data in cells can be copied to other cells in the same worksheet, to other sheets in the same workbook, or to sheets in another workbook. The action of placing cell contents that have been copied or moved to the Office Clipboard into another location is called ***paste***.

When pasting, the ***Paste Options gallery*** is displayed. Live Preview is also displayed and shows how the copied cells will look when placed in the worksheet.

When pasting a range of cells, one only needs to point to or select the cell in the upper left corner of the paste area—the target destination for data that has been cut or copied using the Office Clipboard.

Data can be entered or edited on several worksheets at the same time by selecting and grouping multiple worksheets. Data that is entered or edited on the active sheet is reflected in all selected sheets.

When worksheets are grouped, [Group] displays in the title bar, and the sheet tabs are underlined in the tab color to indicate they are selected as part of the group.

A ***summary sheet*** is a worksheet where totals from other worksheets are displayed and summarized.

A Summary worksheet accurately displays the current totals from the other worksheets, which are sometimes referred to as ***detail sheets***.

Remember sparklines are tiny charts within a single cell that show a data trend.

Each worksheet within a workbook can have different formatting. However, if the same formatting is desired, all the worksheets can be selected and common formatting can be applied to all of the worksheets.

To print all worksheets, group them and, in the Print group, click the Print button.