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ANALYZING AND SOLVING INTERMEDIATE ACCOUNTING PROBLEMS USING LOTUS 1-2-3®

Seventh Edition

DAVID R. KOEPPEN
DONALD E. KIESO
JERRY J. WEYGANDT

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**ANALYZING AND SOLVING
INTERMEDIATE ACCOUNTING PROBLEMS
USING LOTUS 1-2-3**

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JOHN WILEY & SONS, INC.

New York Chichester Brisbane Toronto Singapore

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ISBN 0-471-55354-9 (3-1/2" disk version)

ISBN 0-471-55351-4 (5-1/4" disk version)

Printed in the United States of America

Printed and bound by Malloy Lithographing, Inc.

10 9 8 7

Note to Students:

The primary purpose of this manual is not to teach you how to use computers; rather, it is intended to help you learn more about accounting by using the computer. Our approach is to take the computer for what it is--a tool that can be used to help you gain a better understanding of accounting and its role in business. We have designed the manual to challenge your accounting knowledge and to increase your awareness of how the computer and electronic spreadsheets can be used to enhance your accounting skills.

To help achieve these goals, we have designed most of the manual to be interactive--we believe that you should be *doing* and not just reading about doing! Our premise is that the best way to learn how to *use* the computer and electronic spreadsheets is to do just that--*use* them!

The organization of this manual is essentially the same as your intermediate accounting textbook. Chapters 1 and 2, however, provide an *introduction* to computers and electronic spreadsheets. We encourage everyone to read or review this part. The remaining chapters, chapters 3-26, contain a variety of computer applications related to the accounting topics covered in each chapter. The computer applications are of five distinct types:

Preprogrammed Templates

These are preprogrammed spreadsheets for which you must *identify* and enter the relevant input data *and* evaluate and interpret the output data generated by the template. These templates are designed to test your accounting skills and require very little programming skill.

Tutorials

There are eight tutorials contained in your manual. They are designed to help you learn how to prepare your own spreadsheets. You will then be able to begin building spreadsheets to solve other accounting problems. Since the tutorials are intended to teach you about using Lotus, they will help you develop your programming skills. We recommend that you work these tutorials in the sequence suggested in the table of contents.

Partially Completed Textbook Problems

Each chapter contains a selection of problems developed from Kieso and Weygandt, *Intermediate Accounting, 7th edition*. For each of these problems, a partially completed template is provided that you must complete. You are then asked to use that template to answer several "what-if" types of questions. These problems are designed to test both your accounting knowledge and your developing computer skills.

Unformatted Textbook Problems

Each chapter also contains a problem adapted from Kieso and Weygandt, *Intermediate Accounting, 7th edition* that asks you to prepare a template from scratch and use that template to answer several "what-if" questions. These problems are also designed to test your accounting knowledge, but require even greater computer skills!

Comprehensive Problems

Finally, if you're ready for a challenge, try one of the ten comprehensive problems contained in the manual. These problems are designed to challenge both your accounting skills and your computer skills. You are responsible for all aspects of the construction of these spreadsheets--including conceptual development, design, programming, and interpretation of results!

If your accounting skills are enhanced through the use of this manual, our primary purpose will have been served. If you also learn something about computers along the way, we (and you) will have been doubly successful!

Acknowledgments

We would like to express our appreciation to the many people who contributed to the seventh edition of *Analyzing and Solving Intermediate Accounting Problems Using Lotus 1-2-3*. The many adopters and users of prior editions made numerous helpful and insightful comments, which we have tried to incorporate in the seventh edition. We extend special thanks to *Linda J. Benz*, Jefferson Community College, *Rebecca B. Herring*, College of Charleston, *Kenneth M. Macur*, University of Wisconsin-Whitewater, and *R. Kay Koeppen*, who suggested numerous improvements to the seventh edition manuscript and computer applications.

We also appreciate the support given us by the people at John Wiley & Sons, especially Terry Ann O'Shea and Marinita Timban.

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About Using This Manual

Several conventions used throughout this manual are described below. Familiarizing yourself with these conventions will make the manual easier for you to understand and use.

Actions:

Whenever you are required to perform a task, whether it be placing a disk in the computer, typing an entry, pressing a special key, or otherwise, the action is emphasized in **bold** text and offset from the other text. The remaining text, while important, is used in most cases to explain or clarify the action you have taken or are about to take.

> Actions to be taken when using Lotus 1-2-3¹ are preceded by a *greater than* (>) symbol.

Characters to be typed:

When you are asked to type one or more characters, quotation marks are used to offset the characters to be typed from the regular text. These quotation marks should not be typed unless you are explicitly told to do so.

Letters to be typed are shown in upper case (capital) in order to emphasize the characters to be typed. No differentiation is made by Lotus 1-2-3 between upper case and lower case, so it may be more convenient to enter letters in lower case and avoid using the [shift] or [Caps lock] keys.

When special keys are to be used, they are offset using brackets. For example, the escape key is shown as [Esc], the return or enter key as [enter], and the special function key F1 as [F1].

¹ Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation.

CHAPTER 1

COMPUTERS AND ACCOUNTING

Introduction

Using computers to perform accounting tasks is a logical outgrowth of the need for more timely and cost effective financial information. The high-speed processing capabilities of computers help accountants to prepare financial information in a fraction of the time it would have taken to prepare by other means. This provides users of financial data with more timely information with which to make decisions. Time savings also provide the accountant with an opportunity to spend more time on activities which were previously not cost-effective. That is, the accountant can spend time to gather and prepare information that was previously not available.

The Development of Computer Hardware and Software

The first commercially available computers were introduced in the early 1950's. The hardware, or physical components of these computers, were massive pieces of equipment, often occupying entire rooms and even buildings. Enormous amounts of electrical power were required by these computers and they were very sensitive to temperature and humidity. Because of their size and sensitivity to their environment, they required continual maintenance in order to be kept running. Computer "downtime" was a common problem.

The software programs, or instructions telling the computer how to run, were also very primitive in comparison with today's standards. Programs were designed to perform specific tasks and frequently were tailored specifically to the hardware of the computer being used. It was necessary to know and understand the computer language, the task that was being programmed *and* the computer hardware in order to develop a program. Needless to say, most computer facilities were centralized in order to take maximum advantage of the people who had the expertise to run the computer.

Accounting tasks that were frequently computerized in this early stage included the general ledger, accounts receivable and accounts payable subsidiary ledgers, payroll, and inventory control. Successfully computerizing these tasks involved the use of highly specific software programs that were difficult to modify or change.

In the mid-60's, the first minicomputers were introduced in business. Technological changes allowed the computer hardware to shrink in size and price. People using these computers frequently did not need to interact through a central computer. These types of changes permitted a much broader distribution of computers and computer users throughout an organization.

A distinction was also developing between the software used to run the computer hardware (called the operating system) and the software used to develop and run a specific task. Standardized programming languages such as Fortran and Cobol were developed and prewritten packages known as "applications software" began to appear. Knowledge of the computer's hardware was becoming less important, but computer languages were still not very user-friendly.

By the mid-to-late 70's, the first desk-top and portable computers became available. These microcomputers have proven to be extremely popular in the workplace. They are commonly used in all of the functional areas of business and at all levels of management.

The hardware and software innovations which accompanied the advent of the microcomputer have resulted in greatly reduced costs. A system which might have cost over \$100,000 in the mid-70's can now be purchased for around \$5,000--a twenty-fold decrease--and the price keeps dropping.

The Changing Nature of Software

Programming languages are increasingly easier to learn and use--becoming what are referred to as high-level languages. High-level languages have a much greater end-user orientation and utilize easy-to-interpret words along with mathematical operations and formulas. These languages are meant to be used by people who may not understand how the computer works internally--*and who don't really need to!*

The instructions which allow you to create and manage disk files, to run your programs and to run the computer hardware, can be separated from the applications you create to perform accounting tasks. Those instructions, comprising the Disk Operating System (commonly referred to as "DOS"), must be loaded into the computer before you can begin using an application. This is a very simple process, and it is described in Chapter 4.

The ability to separate DOS (the control of the computer's hardware) from specific tasks has resulted in the development of many general purpose application programs. These general purpose application programs allow you to spend more of your time concentrating on identifying the relevant inputs to a problem, how those inputs should be processed, and what the output should look like--all without having to worry about how the computer works internally.

Electronic Spreadsheets

Electronic spreadsheets are just one example of general purpose application software. Electronic spreadsheets are so flexible that you can customize the spreadsheet to meet *your* specific needs. But just what is an electronic spreadsheet? Basically, an electronic spreadsheet is a software program that can be used to automate many of the tasks we might otherwise do using a pencil and paper.

Much of an accountant's work is prepared on spreadsheets, which are simply large pieces of paper which are ruled into a grid of rows and columns. The accountant uses this grid to organize his/her work in an orderly and logical manner so that it is easier to understand and interpret. Unfortunately, each time that the accountant begins another task, a new spreadsheet must be created because of the uniqueness of each set of numbers. This is true even if the task is similar to an earlier one.

The electronic spreadsheet is also a grid of rows and columns. Thus, what the accountant could do with pencil and paper can be done on the computer. This adds the computer's processing speed to the accomplishment of the task--*an important benefit!*

However, the electronic spreadsheet has an additional benefit of even greater importance to the accountant. This is the ability to "remember" the logical relationships between the entries made on the spreadsheet. For example, once you have calculated a total at the bottom of a column of numbers, this calculation can be "remembered" by the spreadsheet. Thus, if you were to change one of the numbers in the column to be totaled, the spreadsheet would automatically retotal the column, incorporating the new number into the total. This means that the accountant can now create a basic spreadsheet--called a *template*--that can be used over and over again to perform tasks of a similar nature. Thus, once a template has been prepared, it can be used for similar tasks simply by changing the numbers. In addition, even if a template doesn't do exactly what you would like it to do, you can easily modify it to better meet your needs.

Most electronic spreadsheets also utilize functions (such as minimums and maximums, if/then statements, dates, etc.) which further increase the efficiency of the spreadsheet and ease the accountant's tasks.

Future Software Directions

Another major change in application programs is already underway and you will see it evidenced in your electronic spreadsheet programs. This change is the integration of several general purpose application programs into a single package. For example, your spreadsheet program is no longer just an electronic spreadsheet. It is also a database management program and a graphics program--all three programs com-

bined in one. Other software packages have also integrated word-processing programs and advanced telecommunications capabilities with spreadsheets, database management, and graphics. Still other packages allow you to take output from your spreadsheets and incorporate this output into documents--which when combined with a laser printer enable you to prepare reports which appear to have been professionally typeset! The computing power available to you, as a student or as an accountant, is increasing every day.

What You Do Need to Know About Hardware

General purpose application programs, such as the electronic spreadsheet, enable you to be a successful end user without requiring extensive knowledge about your microcomputer. What follows is a brief description of what you should know before starting to use your microcomputer.

First, your microcomputer consists of three basic hardware components. These components are:

1. The system unit.
2. The monitor.
3. The keyboard.

In addition, your microcomputer may have one or more extras--non-essential components called peripherals. Peripherals might include a printer, a mouse or joystick and other hardware; however, since they are not essential, they are not discussed here.

The System Unit

The primary workings of your microcomputer are contained within the system unit. If you were to take the cover off your computer, you might be surprised to see that the computer boards and chips--the heart of the computer's memory and processing capabilities--take up very little space. In fact, technological innovations have made these parts so small that many system units appear to be empty!

A large part of the space within the system unit is taken up by the disk drives. These drives electronically read and write to and from your floppy disks and correspondingly must be at least as large as a disk. The disk drives are also the primary moving parts in your computer--almost everything else is electronic.

In some systems, the disk drives are separate from the system unit and are connected to the system unit by "cables." Still other system units may contain a "hard-disk" drive in place of one of the floppy disk drives. Since hard-disk drives are fixed in place in the system unit, they operate much faster than floppy disk drives and they can contain a great deal more information than a floppy disk.

System units are *delicate* instruments and they should always be handled with great care.

The Monitor

The monitor is your "window to the world". Just as you cannot see all of the world around you when you look out a window, you cannot see all of what is in the computer by looking at the monitor. For example, when you view an electronic spreadsheet on the monitor, you will only be able to see a small fraction of the entire worksheet that is available to you!

Monitors are generally of two types--those with the ability to do on-screen graphics and those without that ability. A few of the templates in this manual use graphics to help illustrate certain points (these graphics are not essential to completing the assignments). However, if you wish to use graphics, you should check with your instructor or computer lab assistant to find out if your monitor has graphics capability (since it may not be obvious from the type of monitor).

The Keyboard

Your primary means of entering instructions or information to the microcomputer is through the keyboard. What you enter on the keyboard, you will usually see displayed on the monitor. While the keyboard resembles a typewriter keyboard, it has some special keys that you should be familiar with before beginning to use the computer. These keys are listed below along with the abbreviations or descriptions of the symbols *usually* used to denote each key. Make sure that you can locate them on your microcomputer's keyboard before you begin using your spreadsheet! Two typical keyboard configurations are illustrated in Exhibits 1-1 and 1-2.

Key	Common Abbreviation or Description
Escape key	Esc
Control key	Ctrl
Alternate key	Alt
Insert key	Ins
Delete key	Del
Backspace key	Key with a single solid arrow pointing to the left, and/or labeled backspace.
Enter (return) key	Key with a bent arrow pointing to the left, and/or labeled enter or return.
Shift key(s)	Key(s) with non-solid arrows pointing towards the top of the keyboard.
Tab key	Key with both left and right pointing arrows.
Directional (cursor movement) keys	Keys (usually four), each with an arrow pointing either up, down, left, or right.
Special function keys	Keys labeled [F1] through [F10], located at the left side or top of the keyboard.
Home key	Home
Page up	PgUp
Page down	PgDn
End key	End
Slash key	/ (on same key with the question mark).
Print Screen key	PrtSc
Number pad lock	Num Lock

Note: If your keyboard does not have a separate number pad and directional keys, you can use the number pad in conjunction with the directional keys by using the [shift] key. If you press the [shift] key and simultaneously press one of the number pad keys, a number will be entered. If you release the [shift] key, then the directional keys can be used. Alternatively, if you press the [Num Lock] key, then pressing a key on the number pad will enter a number--pressing the [shift] key and simultaneously pressing a key on the number pad will allow you to use the directional keys. (Press the [Num Lock] key a second time to return to the normal keyboard setting.)