



Accounting

Succinctly

by Joe Booth

Accounting Succinctly

By
Joe Booth

Foreword by Daniel Jebaraj



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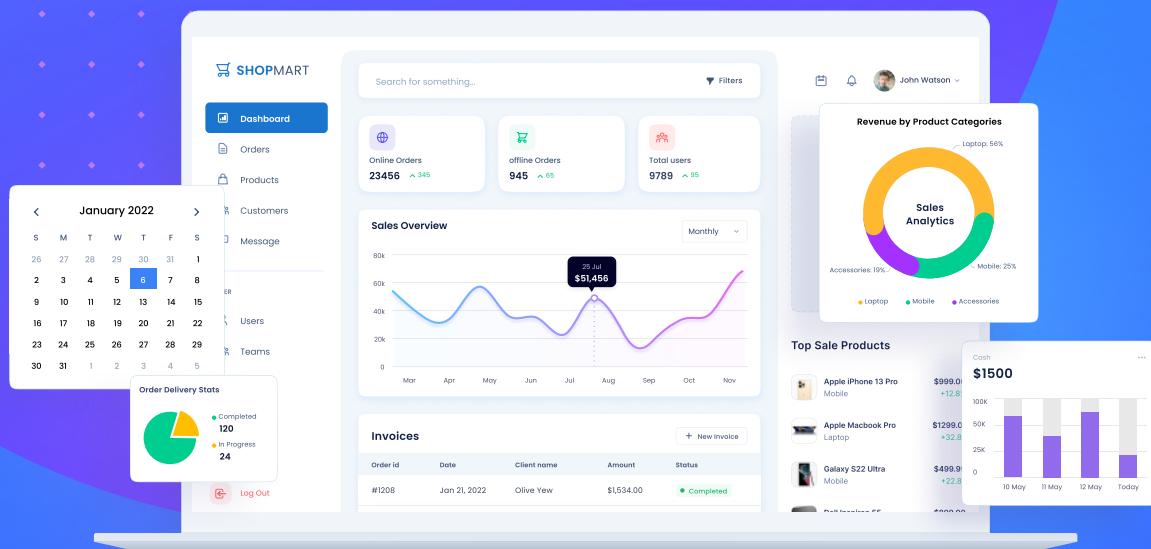
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The Story behind the *Succinctly* Series of Books

Daniel Jebaraj, Vice President
Syncfusion, Inc.

Staying on the cutting edge

As many of you may know, Syncfusion is a provider of software components for the Microsoft platform. This puts us in the exciting but challenging position of always being on the cutting edge.

Whenever platforms or tools are shipping out of Microsoft, which seems to be about every other week these days, we have to educate ourselves, quickly.

Information is plentiful but harder to digest

In reality, this translates into a lot of book orders, blog searches, and Twitter scans.

While more information is becoming available on the Internet and more and more books are being published, even on topics that are relatively new, one aspect that continues to inhibit us is the inability to find concise technology overview books.

We are usually faced with two options: read several 500+ page books or scour the web for relevant blog posts and other articles. Just as everyone else who has a job to do and customers to serve, we find this quite frustrating.

The *Succinctly* series

This frustration translated into a deep desire to produce a series of concise technical books that would be targeted at developers working on the Microsoft platform.

We firmly believe, given the background knowledge such developers have, that most topics can be translated into books that are between 50 and 100 pages.

This is exactly what we resolved to accomplish with the *Succinctly* series. Isn't everything wonderful born out of a deep desire to change things for the better?

The best authors, the best content

Each author was carefully chosen from a pool of talented experts who shared our vision. The book you now hold in your hands, and the others available in this series, are a result of the authors' tireless work. You will find original content that is guaranteed to get you up and running in about the time it takes to drink a few cups of coffee.

Free forever

Syncfusion will be working to produce books on several topics. The books will always be free. Any updates we publish will also be free.

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As a component vendor, our unique claim has always been that we offer deeper and broader frameworks than anyone else on the market. Developer education greatly helps us market and sell against competing vendors who promise to “enable AJAX support with one click,” or “turn the moon to cheese!”

Let us know what you think

If you have any topics of interest, thoughts, or feedback, please feel free to send them to us at succinctly-series@syncfusion.com.

We sincerely hope you enjoy reading this book and that it helps you better understand the topic of study. Thank you for reading.

Please follow us on Twitter and “Like” us on Facebook to help us spread the word about the *Succinctly* series!



About the Author

Joseph D. Booth has been programming since 1981 in a variety of languages, including BASIC, Clipper, FoxPro, Delphi, Classic ASP, Visual Basic, Visual C#, and the .NET framework. He has also worked in various database platforms, including DBASE, Paradox, Oracle, and SQL Server.

He is the author of *Regular Expressions Succinctly* and *Visual Studio Add-Ins Succinctly* from Syncfusion, as well as six computer books on Clipper and FoxPro programming, Network Programming, and client/server development with Delphi. He also wrote several third-party developer tools, including CLIPWKS, which allowed the ability to programmatically create and read native Lotus and Excel spreadsheet files from Clipper applications. He is the author of Visual Studio Add-ins Succinctly from Syncfusion.

Joe has worked for a number of companies including Sperry Univac, MCI-WorldCom, Ronin, Harris Interactive, Thomas Jefferson University, People Metrics, and Investor Force. He is one of the primary authors of Results for Research (market research software), PEPSys (industrial distribution software), and a key contributor to AccuBuild (accounting software for the construction industry).

He also has a background in accounting, having worked as a controller for several years in the industrial distribution field, but his real passion is computer programming.

In his spare time, Joe is an avid tennis player and a crazy soccer player (he plays goalie). He also practices yoga and martial arts, and holds a brown belt in Judo. You can visit his website at www.joebooth-consulting.com.

Chapter 1 Accounting Succinctly

Computer developers are frequently asked to create systems to assist a client in running his or her business. While the developer has the tools (e.g., SQL Server, C#, Visual Studio, etc.) to produce solid applications, the client has the knowledge of the business that needs to be computerized.

Unfortunately, most of the clients are not developers. (If they were, why would they hire programmers in the first place?)

The meeting of these two kinds of expertise is often fraught with miscommunication. The client explains his or her needs to the developer who, in turn, tries to convert those needs into a design and, eventually, into a running application. Often, after the client sees the finished program, he or she then has a clearer picture of what he or she wants the computer to do and, unfortunately, that picture frequently looks nothing like the program the developer wrote.

This disconnect (between the customer's explanations of his or her needs and how they are seen by all of the other roles in development) has been known for a long time, as shown in Figure 1. The tree swing diagram has been used for years and, although the artwork has improved, the concept remains true to this day:

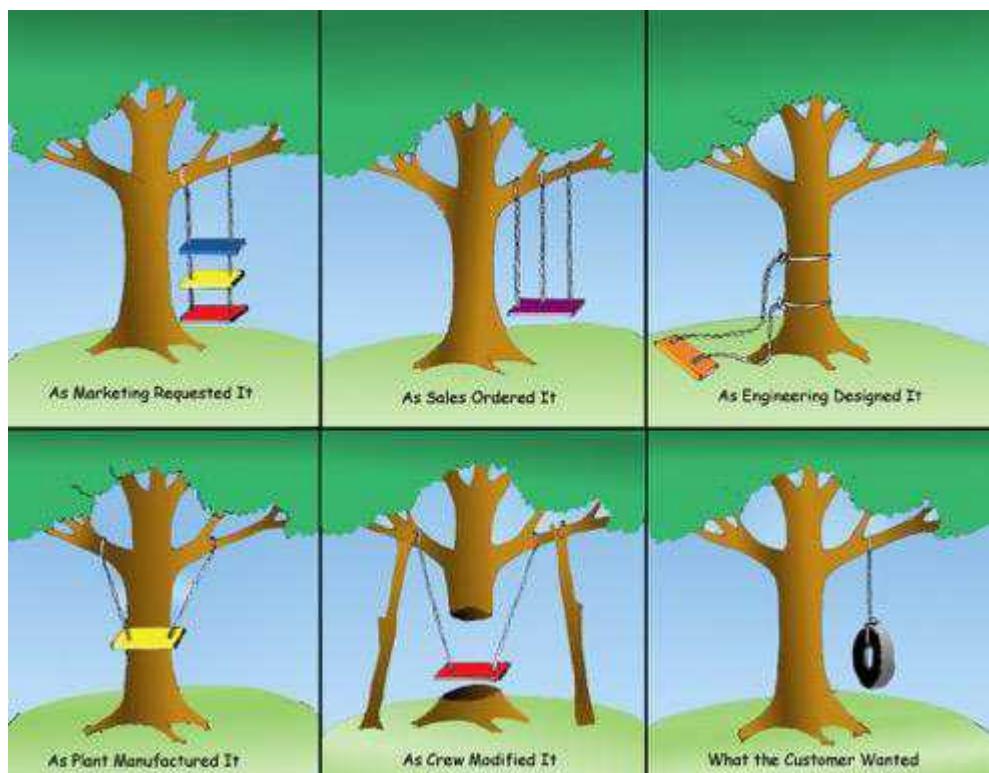


Figure 1: Tree swing diagram, courtesy of the [Monolithic Dome Institute](#)

What I will do in this book is introduce developers to some of the most common business applications he or she may run into. I will also identify some terms that have special meaning so that, when one client explains that the repair parts can be “LIFO” but the new cars better be “specific-id” and another client wants to convert from “weighted average” to “FIFO,” the developer will understand that the clients are actually talking about inventory reporting.

In the first chapter, I would like to explore some fundamental accounting concepts and definitions. While it is not my intent or desire to have developers study for the CPA exam, it is my hope to allow them to understand what the client means when terms such as debit, credit, and out of balance are discussed.

Basic Accounting Background

Accounting begins with one simple concept which is as fundamental to accountants as the DO WHILE loop is to programmers. This concept is that all businesses have assets which are funded by one of two sources: the business owners (equity) or the company's creditors (liabilities). Another view of this concept is the equation:

$$\text{ASSETS} = \text{LIABILITIES} + \text{OWNER'S EQUITY}$$

An accounting system, therefore, provides a method of record keeping that allows the user to track business activity and to record each transaction's impact on the above equation. To achieve these objectives, the system uses two primary repositories of information: the Chart of Accounts and the journals.

Chart of Accounts

The Chart of Accounts is an itemized list of assets, creditor bills, and owner's equity in the business that need to be tracked by the system. Each item in the chart is generally assigned an account number and a descriptive name. In addition, each item has a dollar balance associated with it. The account numbers assigned usually designate some sort of grouping of the accounts. All assets, for example, might begin with the number one while current assets range from 1,000 through 1,500. For example, if the business owns a computer setup worth \$5,000, then its entry in the chart of accounts might look as follows:

Table 1: Computer Asset in Chart of Accounts

Account #	Description	Type	Balance
1750	HP Server, Router, and two workstation computers	Asset	\$5,000



Note: For example's sake, we are grouping several hardware component together; however, in most businesses, each hardware component would have its own entry in the chart of accounts.

If the business borrowed money for the computer system (say \$4,000), then another entry in the chart would reflect that loan:

Table 2: Loan for Computer Purchase

Account #	Description	Type	Balance
2550	Computer Loan-HP Server and workstations	Liability	\$4,000

Each item in the business will be listed in a similar fashion in the chart. This listing of accounts is sometimes called the General Ledger. The account type field is also important since we must be able to determine the account type to test that our basic equation stays true.

In our example above, the account type is part of the chart. In many accounting systems, the account number defines the account type. Whichever method is used, we can test the basic equation by the following construct:

- Is the SUM of all assets exactly equal to the SUM of all liabilities + the SUM of all owner's equity?

If the equation is true, then accounting books are in balance. A balance sheet is a financial statement that lists the assets on one side and the liabilities and equity on the other. Both sides are totaled and must be equal. It provides the business with an accurate picture on a given date of the net worth of the business (net worth is the sum of all of the assets minus the sum of all liabilities, which happens to be the same as the sum of the owner's equity accounts).

Journals

Journals are recordings of activity or business transactions that have occurred. Every journal entry will impact one or more of the accounts in the ledger—either increasing or decreasing that account's balance. Many accounting systems will group transactions into specialized journals such as a sales journal or a cash receipts journal. In addition to the specialized journals, almost all systems have a general journal in which transactions which don't fall into any group are recorded.

In computer terms, the chart of accounts is a master file and the journal is the activity file which affects items in the master. Usually, transactions are accumulated in the journal and, after a period of time, applied to or posted against the chart of accounts:

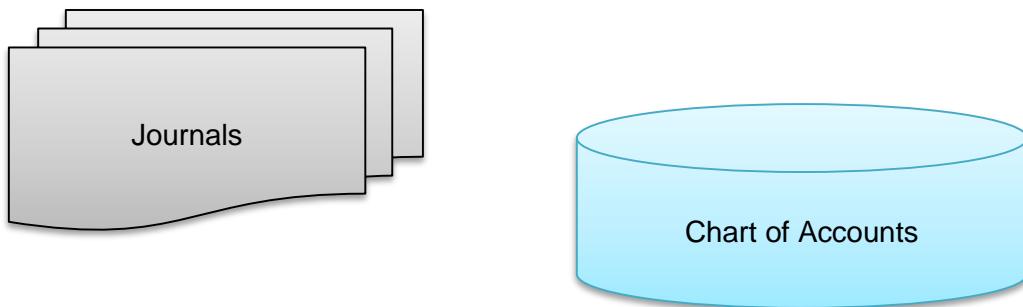


Figure 2: Transaction and master

Now that we have briefly reviewed the two main information sources for the systems, let's take a look at how these two work together to ensure that the key equation (shown below) always stays in balance:

- Assets = Liabilities + Equity

Double Entry Accounting

Double Entry Accounting is the most common method of accounting for business transactions. To understand how the method works, we need to introduce two new terms that are somewhat hard to define: **debit** and **credit**.

Each account in the chart has a balance and this balance is considered to be a debit or a credit. For the asset accounts, the debit represents a positive balance in the chart while the credit represents a negative balance. If the business checking account has \$6,000 in it, we would say the account has a \$ 6,000 debit balance. If they write a check which reduces the balance, that check will be credited to the account. Credit entries reduce the balance in an asset account.

The liability and equity accounts work in reverse; credits are considered positive balances and the debit represents a negative balance. If the sales tax liability for one state is \$ 2,000, we would say we have a \$2,000 credit balance in sales tax payable. As they pay the sales tax, that balance will be reduced by debiting the account.

The following chart summarizes debits and credits:

Table 3: Debit/Credit Summary

Description	Debit	Credit
Assets such as cash, inventory, computers, office supplies, etc.	Increase	Decrease
Liabilities such as phone bills, car loan, sales tax collected, etc.	Decrease	Increase
Equity such as owner's contribution, common stock, etc.	Decrease	Increase

Every transaction that occurs must consist of at least one debit and one credit entry. The total of all debits and credits must equal. As long as this rule is followed, the books will never get out of balance.

Let's Review a Few Examples

- A. Business is started by the owner who contributed \$10,000 into the business checking account.
- B. Business buys a computer system to do consulting work on. The system costs \$6,000, which is paid for by a \$1,000 check and a loan for \$5,000.
- C. The owner buys three necessary items: a copy of Visual Studio, the Syncfusion library, and a subscription to a Web development magazine. Owner pays by check.
- D. The first installment of \$1,000 is paid on the computer system.

To properly record the above events, the following items are entered in the chart of accounts:

Table 4: Chart of Accounts

Account #	Description	Type	Debit	Credit
1000	Cash-Checking Account	Asset		
1100	Software	Asset		
1200	Subscriptions	Asset		
1600	Computer System	Asset		
2000	Loan for Computer	Liability		
3000	Owner's Equity	Equity		

In addition, the following journal entries are written into the general journal:

Table 5: General Journal

	Account #	Description	Debit	Credit
A	1000	Cash-Checking Account	\$10,000	
	3000	Owner's Equity		\$10,000
B	1600	Computer System	\$6,000	

	Account #	Description	Debit	Credit
	1000	Cash-Checking Account		\$1,000
	2000	Loan for Computer		\$5,000
C	1100	Software	\$794	
	1200	Subscriptions	\$99	
	1000	Cash-Checking		\$893
D	1000	Cash-Checking		\$1,000
	2000	Loan for Computer	\$1,000	

Notice that, for each transaction, the total debits and credits are equal. If not, the transaction would be considered out of balance and could not be applied to the master file.

When the transactions are posted, the chart of accounts will appear as illustrated below:

Table 6: Detailed Chart of Accounts

Acc	Description	Type	Debit	Credit
1000	Cash-Checking Account	Asset		
	Beginning Balance		0	
A	Owner Investment		\$10,000	
B	Computer System Purchase			\$1,000
C	Software/Subscription purchase			\$893
D	Loan Repayment			\$1,000
	Ending Balance		\$7,107	
1100	SOFTWARE	Asset		
	Beginning Balance		0	
C	Software Purchase		\$794	
	Ending Balance		\$794	
1200	SUBSCRIPTIONS	Asset		
	Beginning Balance		0	

Acc	Description	Type	Debit	Credit
C	Subscription Purchase		\$99	
	Ending Balance		\$99	
1600	COMPUTER SYSTEM	Asset		
	Beginning Balance		0	
B	Computer Purchase		\$6,000	
	Ending Balance		\$6,000	
2000	LOAN FOR COMPUTER	Liability		
	Beginning Balance			0
B	Computer Purchase			\$5,000
D	Loan Repayment		\$1,000	
	Ending Balance			\$4,000
3000	OWNER'S EQUITY	Equity		
	Beginning Balance		0	0
A	Owner Investment			\$10,000
	Ending Balance			\$10,000

To test that the equation is still in balance, add up all of the ending balances for the assets accounts. Now add up all of the ending balances for the liabilities and the equity account.

Assets: (\$14,000)

1000—Cash (\$7,107) + 1100—Software (\$794) + 1200—Magazine (\$99) + 1600—Computer (\$6,000)

Liabilities + Equity (\$14,000)

2000—Computer Loan (\$4,000) + 3000—Owner's Equity (\$10,000)

The total ending balances above should each be \$14,000.

An accounting system's objective is to keep the primary equation true at all times. As long as the double-entry procedure (i.e., debits and credits equal at all times) is followed, the chart of accounts will stay in balance. This allows the owner of the business at any time to see the source of funds that were used to acquire the business's assets.



Note: In this chapter, I painted the definitions of Assets, Liabilities, etc. with a broad brush. In most accounting systems, the accounts are further categorized as Current Assets (Assets likely to turn to Cash within the year), Fixed Assets (assets that will be part of the company for a long time such as cars, computers, etc.). Similarly, liabilities might be broken down as well, further categorized as Current Liabilities (due this year) or Long-Term Liabilities that are not due for several years (mortgages., etc). A good accounting system offers the flexibility to categorize assets into any grouping that works for the business.

Now, let's quickly define some of the accounting terms I used in this chapter:

- **Assets**—All items of value within the business such as cash, vehicles, computers, inventory, etc.
- **Equity**—The owner's portion of the business. How much of the assets are funded by the company owner(s) or stockholders.
- **Liabilities**—The creditor's claims against the business assets. How much of the assets must be used to pay off debt.
- **Chart of Accounts**—Itemized list of every asset, liability, and equity account in the business. It is used as a repository for the current value of each item. It is sometimes called the *General Ledger*.
- **Journals**—Transaction files recording events that happen to the various assets and liabilities in the business.
- **In Balance**—The condition where the total value of Assets equals the total value of liabilities and owner's equity.
- **Balance Sheet**—The report listing all of the assets of the business as well as all of the debt and the value of the owner's portion of the business.
- **Net Worth**—The value remaining after all of the debt is subtracted from the total value of all the assets.
- **Posting**—The process of transferring each journal entry into the Chart of Accounts.
- **Debit**—An accountant's term which means an increase in an asset account's value or a decrease in either a liability's value or an equity account value.
- **Credit**—An accountant's term which means a decrease in an asset account's value or an increase in either a liability's value or an equity account value.

Summary

In this chapter, I've covered the basics of double entry accounting and shown how this information is recorded in the system. In the next chapter, I will expand upon these concepts to show how making money appears in the chart, and the journal entries to record revenues and expenses.



Note: The Appendix contains some SQL scripts to create tables and procedures so you can try the accounting transactions out using Microsoft SQL Server (2005 or higher). These scripts are not meant to help you design a complete accounting system but, rather, they give you enough to let you watch the transactions through the tables and flows in a database. If you need to write your own system, feel free to use these scripts as a basic starting point.

Chapter 2 Revenues and Expenses

In the last chapter, I discussed how assets and liabilities of a corporation are handled. Of course, most companies are in business to make profits, not just to buy and sell assets. So, in this chapter, I will review how revenues and expenses are handled and how these accounts impact the asset, liabilities, and equity accounts.

Revenue and Expense Accounts

To start with, let's expand the chart from the previous chapter to include revenues and expenses. The updated chart is displayed below:

Table 7: Debit/Credit Summary for All Account Types

Description	Debit	Credit
Assets such as cash, inventory, computers, office supplies, etc.	Increase	Decrease
Liabilities such as phone bills, car loans, sales tax collected, etc.	Decrease	Increase
Equity such as owner's contributions, common stock, etc.	Decrease	Increase
Revenues: Monies or IOUs received from sales of a product or service.	Decrease	Increase
Expenses: Expenditures related to sales such as postage, shipping supplies, etc. Also fixed expenses such as rent, phone bills, utilities, etc.	Increase	Decrease

I've drawn a line, breaking the chart into two groups. The first group (assets, liabilities, and equity) are referred to as permanent or balance sheet accounts. The second group (revenues and expenses) are referred to as temporary or income statement accounts. The major differences between the two are:

1. Balance sheet accounts are displayed on the balance sheet while income statement accounts are displayed on the income statement.
2. Permanent accounts keep a running balance for the life of the business while temporary accounts only keep a balance for one period. As a new period starts, these accounts get reset to zero. This process is called closing, which we will cover in more detail later. A period can be any length of time for which your accounting system wants to keep income.

Using the new chart, let's show a couple of examples that affect income statement accounts.

First, we will need to add a few new accounts to our general ledger:

Table 8: New Accounts

Account #	Description	Type	Debit	Credit
4000	Sales Revenue	Revenue		
5000	Rent	Expense		
5100	Postage	Expense		
5200	Shipping Supplies	Expense		
5300	Office Supplies	Expense		

The above accounts represent the accounts that a small design shop might use to record their revenues and the costs associated with selling designs and marketing materials to clients.



Note: Our example above is a small set of expenses; most systems will have a much more detailed expense breakdown. Since taxes are paid on net profits, systems are designed to reduce net profits by accounting for all associated expenses.

Let's Review a Few Examples

- A. Bambi designs a new logo for a client who loves it and pays her \$250 cash for the logo file, which Bambi sends her via e-mail.
- B. Kim creates a mobile version of a website and charges the client \$595, which the client pays via a check.
- C. Kim purchases copier paper and blank DVDs for office use, which Kim pays via a check for \$75.
- D. Bambi prepares a marketing brochure and poster set, which she ships to the client. She spends \$28 on shipping supplies and \$12 on postage. She deposits a \$400 check from a client on her way back to the office.
- E. The end-of-month rent of \$600 for office space is paid from the checking account.

Our journal entries for the above:

Table 9: General Journal Entries for Sales Activity

	Account #	Description	Debit	Credit
A	1000	Cash-Checking Account	\$250	
	4000	Sales Revenue		\$250
B	1000	Cash-Checking Account	\$595	
	4000	Sales Revenue		\$595
C	5300	Office Supplies	\$75	
	1000	Cash-Checking Account		\$75
D	4000	Sales Revenue		\$400
	1000	Cash-Checking Account	\$360	
	5100	Postage	\$12	
	5200	Shipping Supplies	\$28	
E	5000	Rent Expense	\$600	
	1000	Cash-Checking Account		\$600

If you review our rules from Chapter 1, you'll notice that the total debits and total credits are equal in each transaction recorded. Using double-entry accounting, this must be the case.

We can take the amounts from the Sales Revenue account:

- Entry A—New Logo: \$250
- Entry B—Mobile website: \$595
- Entry D—Brochures/Posters: \$400
- TOTAL FOR PERIOD: \$1,245

This gives us the money we earned in total for the month.

We can now take the amounts from the expense accounts:

- Entry C—Office Supplies: \$75
- Entry D—Postage/Shipping: \$40

- Entry E—Rent: \$600
- TOTAL EXPENSES: \$715

You can now take the total revenues (\$1,245) and subtract out the total expenses (\$715) to see that the company made \$530 in profits this month.

Closing Entry

After this simple first month of business, they need to close the books and prepare for the next month's transactions. The goal of closing is to reset the income statement accounts to zero while doing something with the profit (or loss) that occurred during the period.



Tip: In any accounting system, all of the journal entries must be preserved. You cannot simply set accounts to zero; you must create journal entries to accomplish it.

To close the month, the business generates a special entry in our journals called the closing entry. It is going to take all of the revenue and expense accounts and write an entry for the exact balance. However, the entry will be debited for revenue (remember, debits reduce revenue) and credited for expenses. So, to close the sales revenue and expense accounts, we would record the following entries:

Table 10: Closing Entries for First Month

	Account #	Description	Debit	Credit
	4000	Sales Revenue	\$1,245	
	5000	Rent Expense		\$600
	5100	Postage		\$12
	5200	Shipping Supplies		\$28
	5300	Office Supplies		\$75

Oops!

The above entry is not in balance. Accountants really frown upon out-of-balance entries! The difference of \$530 has to be recorded somewhere. This difference, if a credit, represents the net income or profit for the period. (A debit difference would represent a net loss for the period).

The net income (or net loss) is recorded in the equity section of the balance sheet. To complete the above closing entry, the net income would be recorded as:

	Account #	Description	Debit	Credit
	3000	Owner's Equity		\$530

With this final entry, the transaction is now in balance and can be posted to the general ledger.

Once the closing entry is posted, all of the temporary accounts have zero balances and are ready to receive transactions for the next period. The equity account has increased or decreased by the amount of the net income/loss.

Equity Accounts

For a small business such as in our example, one equity account might be sufficient. However, they might want to expand the equity section a bit so they can fine-tune from where the business equity came. One approach to do this is to break equity into two accounts, the:

- 3000 Owner's Equity
- 3100 Retained Earnings

By using this approach, the Owner's Equity account represents contributions directly made by the owners and the Retained Earnings account represents accumulated profits over the life of the business.



Tip: While small businesses might be content with just a single Equity account, most corporate systems will have multiple equity accounts and will almost always have a retained earnings account.

Partnerships

If a business is run as a partnership, it might use the equity section to keep track of each partner's contributions and earnings from the business. For example, Bambi and Kim must each have their own equity accounts and agree that 60 percent of the profits go to Bambi and 40 percent of the profits go to Kim.

- 3000 Bambi's Equity
- 3010 Bambi's Retained Earnings
- 3100 Kim's Equity
- 3110 Kim's Retained Earnings

In this type of situation, the final journal row (to post the profit/loss) would be split among the two owners according to the partnership agreement:

	Account #	Description	Debit	Credit
	3010	Bambi's Retained Earnings (60%)		\$438
	3110	Kim's Retained Earnings (40%)		\$292

This approach allows each partner to see how much that (a) they've invested and (b) how much they've made over the life of the business.

Summary

Now, let us quickly define some of the accounting terms I used in this chapter:

- **Revenues**—Monies earned from selling a product or performing a service.
- **Expenses**—Monies spent for administrative overhead or direct costs of selling/delivering the product or service
- **Permanent accounts**—Accounts for assets, liabilities, and equity that are tracked for the life of the business.
- **Temporary Accounts**—Accounts for revenue and expenses that are used to track profits for a given period, then consolidated into a permanent equity account.
- **Closing**—The process of summarizing the revenue/expense accounts and moving the net profit to a permanent, balance sheet account.
- **Closing Entry**—the journal entry used to perform the closing operation.
- **Retained Earnings**—the cumulative sum of all of the profits earned over the lifetime of the business.

Chapter 3 Revenue Recognition

In our examples so far, I've looked at a simple accounting system. Whenever cash is received, we make revenue and whenever cash is spent, we incur expenses. In this chapter, I will look at two approaches: the simple cash basis and the (more commonly used) accrual basis for determining when we made and spent money.

Cash Basis

In the Cash Basis approach, it is simple to determine when you made revenue. As soon as you get paid! So, if you sell a product on December 19th of this year for \$4,000 but don't get paid until January 5th of next year, you don't report that \$4,000 this year (since you haven't been paid yet), you report it in the year you are paid (i.e., next year).

Your expenses are not recorded until you pay them. In essence, your checkbook can act as your accounting system.

Simple example

If we take the entries from the first two chapters and move them into a checkbook register, our records might look like the following:

Number	Date	Description of Transaction	C	Debit (-)	Credit (+)	Balance
	1/1/07	Owner Contribution			\$10,000	\$10,000
101	10/2/14	Computer Purchase	✓	\$1,000		\$9,000
102	10/3/14	Visual Studio Software	✓	\$394		\$8,606
103	10/4/14	Syncfusion Library		\$400		\$8,206
104	10/5/14	Subscription	✓	\$99		\$8,107
105	10/31/14	Computer Loan Payment		\$1,000		\$7,107
DEP	11/2/14	Client Logo Design			\$250	\$7,357

Number	Date	Description of Transaction	C	Debit (-)	Credit (+)	Balance
DEP	11/4/14	Invoice # 101—Website			\$595	\$7,952
106	11/6/14	Copier Paper/DVDs		\$75		\$7,877
DEP	11/8/14	Invoice #105—Brochure			\$400	\$8,277
107	11/8/14	Shipping/Postage		\$40		\$8,237
108	11/15/14	Office Rent		\$600		\$7,637

Note that, even though a loan for the computer was made, the cash basis only reflects the payment. In the cash basis, all of the deposits and payments are only recorded when they occur. A checkbook register (and most banking software) serves as the journal of activity.

While this approach is simple to understand, it does not accurately match expenses and revenues. You could easily incur a large amount of expenses in November and December but not get paid until January. So the expenses would be higher this year, with no matching revenue, while next year the revenue will be higher without matching expenses.

Accrual Basis

The Accrual Basis approach, while a bit more involved, does a much better job of associating revenues with the expenses that belong with them. The revenue is recognized as soon as it is earned, not when payment is received. The expenses are recorded when they occur, not when you pay for them.

With the accrual basis, you will need to create additional accounts called Receivables (money owed us) and Payables (money we owe). The recording of revenue for a credit sale is now two journal entries: the first, records the sale and the receivable records it when the sale is made:

	Account #	Description	Debit	Credit
	4000	Sales		\$2,500
	1100	Accounts Receivable	\$2,500	

Accounts Receivable is considered an asset so we increase it by debiting its balance. Hopefully, within a short period of time, we will close the Accounts Receivable by moving the money into the cash/checking account:

	Account #	Description	Debit	Credit
	1000	Cash-Checking	\$2,500	
	1100	Accounts Receivable		\$2,500

The Accounts Receivable account is essentially a holding bucket for IOUs. In this approach, if you made the sale in December, you would report it as income this year and the following year would simply move the payment from the Accounts Receivable account to checking—without having had any impact on revenue.



Note: One question you might have is, how do you deal with non-payment (i.e., when a customer defaults on his bill)? Such a case is called a bad debt and becomes an expense when the debt is declared bad. This expense will allow you to offset the income that you recorded even if the income came in a prior period. We will cover handling bad debt in a later chapter.

You can also purchase items needed and pay for them on credit by using the Accounts Payable account. For example, you can purchase shipping supplies and put them on your credit card. The journal entry might look like this:

	Account #	Description	Debit	Credit
	5200	Shipping Supplies	\$750	
	2100	Accounts Payable—VISA Card		\$750

When you pay the credit off, you will reduce cash (by crediting it) and reduce the Accounts Payable (your debt to VISA) by debiting it:

	Account #	Description	Debit	Credit
	1000	Cash-Checking		\$750
	2100	Accounts Payable—VISA Card	\$750	

Generally, you can have multiple Accounts Payable accounts such as expenses, sales tax collected (yep, when you charge sales tax, you incur a debt to the government), possibly loans payable for that computer purchase, etc.

The Accounts Payable is simply a method to allow you to put the expenses within the same period as when the sale occurs, regardless of when the cash is actually paid out.

Comparing Methods

To compare the two methods, consider the following transactions:

- Customer comes in store on December 21 and purchases a \$700 TV.
- Customer pays for it with a VISA card.
- The next day, the store pays \$50 to have the TV delivered (included in the price).
- On January 24, payment is received from VISA.

Cash Basis

	Account #	Description	Debit	Credit
12/21		Nothing is Recorded		
12/22	1000	Cash-Checking		\$50
	5200	Delivery Expense	\$50	
1/24	1000	Cash-Checking	\$700	
	4000	Sales		\$700

An income statement prepared on December 31 would not show the \$700 revenue, although it would show the \$50 delivery expense:

Accrual Basis

	Account #	Description	Debit	Credit
12/21	1100	Accounts Receivable	\$700	
	4000	Sales		\$700
12/22	1000	Cash-Checking		\$50
	5200	Delivery Expense	\$50	
1/24	1000	Cash-Checking	\$700	
	1100	Accounts Receivable		\$700

An income statement prepared on December 31 would show the \$700 revenue and the \$50 delivery expense. The net income for this transaction would be \$650 (minus the cost of the TV of course).

Taxes

Taxes are collected by various government agencies. For example, they are collected by the Internal Revenue Service (IRS) in the United States and by HM Revenue & Customs (HMRC) in the United Kingdom. In the U.S., the IRS allows small businesses to pay their taxes by using either cash or to do so on an accrual basis. When you first start your business, you are somewhat free to use either approach. (The IRS assumes larger businesses and businesses with inventory, in particular, should use the accrual basis).

However, once you file a tax return, you must use that approach from then on. You can get approval from the IRS to change methods but the IRS will figure out the tax impact of such a change before it allows you to change methods. You can end up with a large tax bill to change methods.

Taxation rules, rates, allowances, etc., will vary for different countries throughout the world. Not all countries will allow cash basis for taxes. An accounting system should provide sufficient detail for the taxing agency to determine the proper revenue recognition and expense handling to accurately determine tax liability.

Multiple Books

You can keep two sets of books, one for tax purposes and the other for financial reporting. It is a common feature in modern accounting systems, which allows you to run reports by using either basis. When reporting to the IRS, companies like to use any legal method to reduce the amount of taxes it owes. However, when reporting to investors, owners, senior management, etc., the accounting system typically wants to show how well the company is performing.

While multiple books are allowed in the U.S., this may not be the case in all countries. The U.S. uses Generally Accepted Accounting Principles (GAAP) to determine accounting rules while most countries (over 100 of them at the time of this writing) use the International Financial Reporting Standards (IFRS) to handle accounting principles.

Summary

The accrual system is common for most mid to large-sized businesses and provides the most accurate matching of revenues and expenses. If you look at the chart of accounts and don't find Accounts Receivable and Accounts Payable accounts, the business most likely is using the cash basis.

Chapter 4 Organizing the Accounts

In most accounting systems, the accounting structure is organized in such a way as to make reporting accurate for the type of business. A small, cash-operated restaurant might structure their accounts differently than a car dealership would—which would be different from how a refinery complex would. However, there are some common groupings that you'll find in most accounting systems.

Assets

Assets are items owned by the business such as cash in the bank, company cars, computer systems, and invoices from customers, etc. In general, you will see the assets organized into at least three categories.

Current Assets

Current Assets include cash and items you reasonably expect to turn into cash within the year. At a minimum, this will include any bank accounts, any short-term investments, and receivables (i.e., money owed you from customers). The current assets generally make up the working capital that a business has. Most businesses will try to keep a balance between having enough cash to pay bills and expense but not tying up a lot of money in a non-interest-bearing account.

Some businesses break their cash accounts down even further, dividing them between checking, savings, and possibly money market accounts. Other businesses such as banks and credit unions might break the receivables down, possibly between currently due portions of loans and longer term money owed.

Prepaid Expenses are monies paid out for supplies or services that are expected to be used with the year. For example, a service contract paid in advance for a copier would be considered a Prepaid Expense. Stocking up on shipping supplies after the Christmas rush to save money (but using them up within the year) is another Prepaid Expense.

Inventory

In general, inventory is considered a current asset; you should expect to see the products within the year. However, inventory requires sales effort in order to become cash. By keeping inventory separate, you can get a better handle on actual working funds for bills and expenses. If a short-term event occurs that prevents you from selling products, you still want to have enough current assets to pay your short-term bills.

In addition, inventory is tracked differently since you need to know the cost of inventory items when they are actually sold. We will cover inventory costing methods in a later chapter.

Fixed Assets

Fixed Assets are items purchased to run the business, rather than those planned on being converted to cash. This category includes items such as office furniture, computers, cars, trucks, and machinery. Generally, the items have a large up-front cost but the expectation is that you will get several years of life out of the asset. Selling a Fixed Asset to pay current bills is generally an indication that a company is in financial trouble.

Fixed Assets are expensed differently, through a process known as depreciation. We will cover Fixed Assets and depreciation in a later chapter.

Long-term Assets

Long-term Assets are assets such as investments, treasury bonds, and receivables due in future years. These accounts are different from Fixed Assets because they don't lose value (i.e., depreciate) over time. Long-term investments are expected to rise in value, or at least stay the same. If a business is planning a large purchase such as a building or plot of land, they could create a special fund which would be classified as a Long-term Asset.

Liabilities

Liabilities generally consist of three categories. Trade liabilities are debts we incur as part of running the business such as purchasing shipping supplies on credit. Tax liabilities are monies we owe to a government taxing agency such as payroll taxes, and sales taxes, etc. And notes are legally binding, generally long-term liabilities for purchases such as Fixed Assets and other items needed to support the business.

Current Liabilities

Most trade liabilities and tax liabilities are current (i.e., they will need to be paid within the current period—most often within a year). Current assets generally need to be sufficient to pay off the current liabilities, otherwise potential cash flow issues can arise. The taxing agencies generally fine companies heavily if they are late with their tax payments. Vendors will sometimes accept late payments but doing so runs the risk of that vendor (who supplies the business with what it needs) no longer extending credit to the business.

Long-term Liabilities

Long-term debts are liabilities that need to be paid but not fully so within the current period. For example, if you buy a fixed asset via a loan, typically the loan repayment term is over multiple years. So the loan itself will be classified as a long-term liability.

However, even though the loan term might be multiple years, a portion of the loan should be included in current liabilities (e.g., the portion of the loan due this year). Each year, a business will prepare a journal entry to re-categorize a portion of the long-term debt into the current liabilities section of the balance sheet.

For example, if we borrow \$10,000 for a computer system and finance it over five years, the journal entry might look like the following:

	Account #	Description	Debit	Credit
	1500	Computer System	\$10,000	
	2100	Accounts Payable-Current		\$2,000
	2600	Long-term Loan Payable		\$8,000

Moving some of the long-term debt into current liabilities gives a company a better understanding of cash needs and whether or not current assets can keep the company on top of its bills.

Equity

The Equity section generally consists of two categories; one is the owner's contributions into the business and the second is the retained earnings (i.e., the accumulated earnings over the life of the company).

For a sole proprietorship, there is typically a single-owner equity account and, often, a drawing account associated with it (for when the owner withdraws money from the business). A partnership will be similar, with multiple-owner equity accounts for each partner within the business.

Corporations have more entries, using Stockholder Equity instead of an individual's equity account. The Stockholder Equity account includes Paid-in Capital, Treasury Stock, and Retained Earnings.

Paid-in Capital

Paid-in capital is the amount paid for all stockholders to acquire shares of the company's stock. This account is often broken down further by class of stock (e.g., preferred versus common stock). Paid-in capital has two components; the first is the actual par or face value of the stock. Most companies have low face values of stock. However, to actually acquire the stock, the purchasers have paid over the par value and this is recorded separately in the equity section.

Treasury Stock

When a company has stock, it can issue any number of shares—not all of which can be purchased. Purchased shares are considered outstanding shares and these shares have rights in the company (e.g., voting, receiving dividends, etc.). Shares that have not been sold, or have been sold and later bought back, are considered treasury stock. When a company computes earnings per share (i.e., how much money each share of stock made), treasury stock is not included in the calculation.

Retained Earnings

Retained earnings for a corporation is the cumulative earnings since the company started minus any dividends paid to stockholders. Technically, this money is owned by the stockholders but, in actuality, the company's senior management or board of directors decide how much to issue to stockholders as dividends. For example, if the company is planning a future expansion, they might “appropriate” retained earnings rather than declare dividends with the money.

Example Equity Account for a Corporation

The example below shows how a corporation might structure its equity accounts:

- 3000 Stockholder Equity
- 3100 Common Stock
 - 3110 Paid-in Capital
 - 3120 Excess Paid-in Capital
- 3200 Preferred Stock
 - 3210 Paid-in Capital
 - 3220 Excess Paid-in Capital
- 3500 Retained earnings
 - 3510 General Retained Earnings
 - 3520 Reserved for future expansion
- 3900 Treasury Stock

Revenue

The revenue account can be divided into subaccounts in a variety of different ways. For example, a car dealership might break revenue into three areas:

- New car sales
- Used car sales
- Service department

Such a breakdown of the sales account would allow management to see from where the most revenue is coming. Does it make sense to hire more salespeople or service people? Should they continue to sell used cars or just focus on new cars?

A different company might break their sales account down by geographic region, allowing them to decide which regions need increased sales presence.

Expenses

Expenses are generally broken down into two major categories: operating expenses and non-operating expenses. Operating expenses are the day-to-day expenses needed to keep the business running. These can be further broken down as shown below:

Cost of Goods Sold

When a company sells a product or any physical items, there are costs associated with either acquiring the item or producing it. These direct costs include material and labor costs. They are costs that are likely to vary with the quantity of goods sold.

Selling Expenses

Selling Expenses are expenses that are directly related to making the sale (e.g., salaries of salespeople, commissions, travel expenses, advertising, etc.), getting the product to the customer (e.g., freight and shipping charges, etc.) and the cost of storage and equipment. Some of these expenses will increase (e.g., commissions, rental on storage space, etc.) as sales volume increases.

General or Administrative Expenses

General or Administrative Expenses are the expenses needed to manage the business such as manager salaries, legal and professional fees, payroll expenses, utilities, insurance, office space, office supplies, etc. These expenses typically remain the same despite sales fluctuations. Often, you will see these expenses referred to as overhead and allocated to various sales or manufacturing areas.

Depreciation Expense

Depreciation Expense is a gradual deduction of a large purchase over multiple periods. The cash has already been spent to acquire the asset, but with each period, a portion of that expenditure is deducted from income. Since no actual cash was paid out during the period, depreciation expense is generally kept separate to make reporting easier and to see actual cash expenditures needed.

Research and Development

Many companies have ongoing research or development to plan for future products or services. Although such expenses are necessary for long-term growth of the business, they are generally kept in a separate category since they are, typically, not expenses directly needed to produce revenue in the current period.

Non-Operating Section

Non-Operating Section expenses are expenses that must be paid but are not actually necessary to run the business. The two biggest examples are finance costs (e.g., interest expense, bank charges, etc.) and tax expenses (e.g., the amount of tax due in the current reporting period).

Sometimes a business may have revenues and expenses outside the primary business such as the sales of investments, royalties from a patent, etc. These infrequent revenues and expenses are generally included under Non-Operating Section expenses to show they are outside the normal course of the business.

Summary

An accounting system is an organized categorization system consisting of a chart of accounts and transactions against those accounts. The greater the level of detailed categories, the more precise reporting can be performed (however, a greater level of detailed categories also requires more effort to record the transactions). In this chapter, we showed some general, commonly used account classifications. Systems can be much more complex and simple depending on the size of the business and the management structure.

Chapter 5 Accounting Principles

Accounting is governed by a set of common principles to ensure that accounting data is reliable, accurate, and can be compared. There is tremendous flexibility in how transactions can be handled, how accounts can be structured, and how reports can be presented, etc. These principles help ensure that the flexibility doesn't compromise the integrity and value of the accounting data.

Generally Accepted Accounting Principles (GAAP)

Accounting transactions (at least in the U.S.) are expected to be handled according to Generally Accepted Accounting Principles (GAAP). Some transactions are easy to define such as cash sales, and expense payments, etc. Others, such as which depreciation method makes sense, how funds are disbursed to partners or owners, etc., have a lot of choices to handling them. As a general rule of thumb, transactions should be handled the same way everyone else does them. In the event of a government audit, if the accountant can show a transaction was handled the same way as other firms handled it (and that handling for the other firms was accepted/approved by the IRS), then the transaction will most likely be allowed.

The primary purpose of an accounting system is to allow decisions to be made either by the board, the owners, the stockholders or the investors, etc. The following principles ensure that the accounting system can be used by these decision makers.

Business Entity

The Business Entity concept means that the business is a separate entity from its owners (be it a sole proprietorship, partnership or corporation). Business transactions and personal transactions must be keep separate. For example, if a business is run from a rented home and uses one room for work purposes with the remaining four rooms used for living space, then only 20 percent of the rental can be considered a business expense. If the business paid the entire rent, then the other 80 percent would be considered a draw from equity for the owner.



Note: Because of the potential abuse of mixing personal expenses (i.e., those that are not tax-deductible) with business expenses (i.e., those that are tax-deductible), the IRS has strict rules for home offices and can more frequently audit these types of businesses.

Monetary Unit

The Monetary Unit concept means that the only transactions that can expressed in money terms are reported in the accounting system. Other events can happen that have a major impact on the business but cannot be expressed in monetary terms. These are not reported in financial statements unless financial impact can be shown.

For example, if we look at the hacked Sony database in response to “The Interview” movie, the company is facing a public relations problem. This is not reported; however, it can report the potential lost income due to the decision to not release the movie. When an oil spill occurs, companies face public relations issues as well but only actual costs (e.g., clean-up, and legal bills, etc.) are actually reported.



Note: *Sony Pictures had their databases hacked and several upcoming movies were released to the Internet as well as demands that film The Interview be pulled. It was a publicized hack and response, with some people blaming North Korean hackers. The battle between Sony and hackers caused a lot of data to be released including salary information, phone numbers, etc. Although the data breach was substantial, people formed opinions about Sony's decision to not release the movie to theatres.*

Materiality Concept

The Materiality concept has to do with what information either a) belongs on financial statements or b) belongs in footnotes or c) doesn't need to be included. Keep in mind that the purpose of financial reporting is to help people make decisions so any information found that could affect those decisions should be included.

Information that could have a major financial impact should be disclosed. For example, if a large portion of the company's profits come from an overseas operation, and the company finds out that the foreign government is going to shut down that operation, this should be included in financial reports. However, if a shipping company used by the company is closing (so the company will need to start using a different shipping company, with minor changes in shipping cost), there is no need to include that information on a financial report.

Relevance/Reliability Concept

The Relevance/Reliability concept is a tricky balance for accounting reports. Information that helps decision makers who are reviewing the financial statements is always relevant but it might not be reliable. For example, a potential recall of a company's products would be considered relevant; however, depending upon how likely the recall is, the information might not be reliable. A company has to decide the proper balance between the two.

For example, the company prepares its balance sheet as of year's end. However, before the statements are released to the public, the company is negotiating a deal to sell a portion of the business but that deal is far from being complete and certain. The information is relevant but also might not be reliable. An accountant needs to decide whether or not the potential sale is likely to occur, in which case it is relevant to the statement. However, the accountant might also wait until sale details are closer to being finalized so that the information provided will be reliable.

Comparability Concept

The Comparability concept assumes that people who are reading the financial statements are likely to want to compare financial statements between accounting periods and, possibly, with other companies. It is important the accounting standards and policies between periods are consistent and, if any major policy or standard change occurs, they must be noted.

If an investor wanted to compare financial statements between two similar companies (and if both companies prepare their statements according to GAAP standards), the investor can make a reasonable comparison. However, if the investor is comparing financial statements between American firms that are using GAAP and European firms that are using International Accounting Standards (IAS), there could be some reporting differences that would hinder the comparison. This is why financial reports indicate the standard under which they were prepared.

Consistency Concept

The Consistency concept ensures that, once a particular accounting technique is adopted, it is used consistently for all future reporting. In addition, similar situations are expected to be handled the same way. If a company reports inventory by using first-in, first-out (FIFO) and takes depreciation by using the straight-line method, a person reading the report can reasonably expect that these methods will be used in the future and for all inventory and assets.

For example, assuming a company used straight-line depreciation on assets one year and switched to an accelerated method the following year, a person cannot compare the asset values and expenses between the two periods; such a change should be noted in a footnote.

Matching Principle

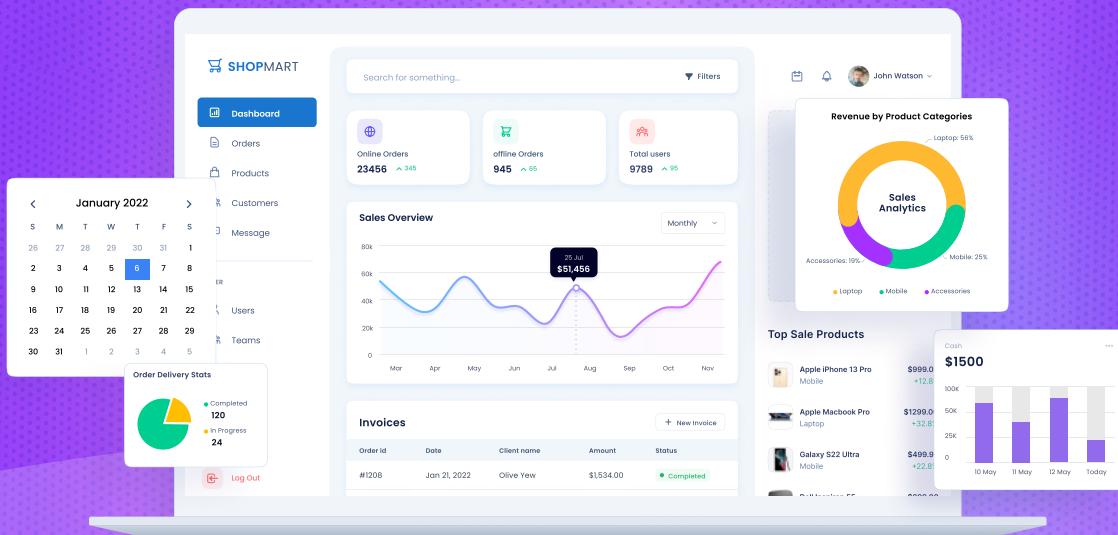
The Matching principle attempts to match revenues with the expenses that occurred to create the revenue. According to this principle, expenses are recorded in the books within the same period the revenue occurred. It is one of the main benefits offered by the accrual accounting method and it is a part of GAAP for most businesses.

Summary

In general, an accounting system should attempt to disclose all of the important information in a consistent fashion, which allows users of the data to make reliable decisions based on the data they find in the accounting statements. In the next chapter, we will look at some of the standard accounting reports that systems need to produce.



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Chapter 6 Accounting System Reporting

Accounting systems have been around long before computers came on the scene. The basic reports and ratios are the same regardless of whether they are manually prepared or are generated from a computer system. In this chapter, we will cover a few of the basic reports every accounting system should produce.

Balance Sheet

The Balance Sheet is a listing of all of the assets, liabilities, and equity accounts (recall that these are the permanent accounts) and their balance at a given point in time. Typically, a Balance Sheet is prepared after the closing entry has moved the revenue (or loss) for the period into the retained earnings account:

Balance Sheet December 31			
Assets		Liabilities and Equity	
Current Assets		Current Liabilities	
Cash-Checking	\$12,725	Accounts Payable	\$1,650
Software/Subscriptions	\$950	Current Portion of Long-term Debt	\$500
Accounts Receivable	\$2,250	Long-term Liabilities	
Fixed Assets		Computer Loan	\$5,000
Computer System	\$6,000	Equity	
		Owner's Equity	\$10,000
		Retained Earnings	\$4,775
TOTAL ASSETS	\$21,925	TOTAL DEBT/EQUITY	\$21,925

When the report is prepared immediately after the books are closed, the Balance Sheet will be in balance. However, an interim Balance Sheet could also be prepared, in which case the revenues minus expenses are placed into retained earnings for reporting purposes (i.e., no actual journal entry). In essence, the “closing entry” is made just to simulate what the Balance Sheet will look like. Interim reports should always include a footnote or comment indicating that this is an interim report.

Income Statement

While the Balance Sheet is a snapshot of the business at a given point in time, the income statement is a report about how a company did over a period of time. The income statement heading should also be labeled “For period ending mm/dd/yyyy.” This makes it clear that it represents a period of time, not a snapshot:

Income Statement		
For period ending December 31		
Revenue		
Sales-Consulting Work	\$56,750	
Miscellaneous Income	\$2,125	
<i>Total Revenues</i>		<u>\$58,875</u>
Expenses		
Wages/Salaries	\$36,000	
Rent	\$7,200	
Interest	\$750	
Supplies	\$525	
Utilities	\$1,275	
Depreciation	\$1,200	
<i>Total Expenses</i>		<u>\$46,950</u>
NET INCOME		<u>\$11,925</u>

If any unusual income or expense charges occur on the report, they are generally noted in a footnote on the bottom of the statement.

Income statements can be summarized with expenses minimized (this is useful to see the big picture) or expanded in detail, showing a manager exactly where money was spent. Often, comparative income statements show multiple periods in separate columns so that a reader can compare income/expense results between accounting periods.

Statement of Changes in Financial Position

The Statement of Changes in Financial Position report shows why the assets and liabilities have changed between periods. The report basically measures cash flow that occurs over a period of time. The report is sometimes called the **Cash Flow** or **Fund Flow** Statement or the **Sources and Uses of Cash**.

There are two sections in the report; the first is the Source of Cash (i.e., what activities brought cash into the business) and the second is Use of Cash (i.e., what activities took cash out of the business).

Source of Cash

The most common Source of Cash should be the net income from business operations. Often, this section of the report looks like a mini-income statement. However, non-cash expenses such as depreciation are added back in. So, our income statement from above would look like:

Net Sales Revenue		<u>\$58,875</u>
Operating Expenses	\$46,200	
Interest Expense	\$750	
Total Expense		<u>\$46,950</u>
Net Income		<u>\$11,925</u>
Depreciation (Non-Cash) Adjustment		<u>-\$1,200</u>
Net Cash Inflow from Operations		<u>\$10,725</u>

We might also receive cash from financing (money we borrowed), and from investments, etc. These items would also be listed as a Source of Cash. For the sake of our example, let's assume that we had the following transactions during the year:

- Borrowed \$7,500 from a bank
- Made \$2,800 from investments and dividends
- Purchased a new computer system for \$9,000
- Paid \$3,500 of debt back

The following statement shows how the net income and transactions above would appear:

Statement of Changes in Financial Position		
For period ending December 31		
Sources of Cash		
Net Cash Inflow from Operations	\$10,725	
Financing	\$7,500	
Investment Activities	\$2,800	
<i>Net Cash Inflows</i>		<u>\$21,025</u>
Uses of Cash		
Purchase of Assets	\$9,000	
Repayment of Debt	\$3,500	
<i>Net Cash Outflows</i>		<u>\$12,500</u>
INCREASE IN CASH FOR PERIOD		<u>\$8,525</u>

If we were to compare balances at the beginning of the year and at the end of the year, we should see an increase in the cash balance of \$8,525 and the report would provide an overview of where this cash came from.

In the example report above, we summarized the cash flow from operations although a company might have a more detailed version of the report that includes how that number was calculated.

Statement of Changes in Retained Earnings

The Statement of Changes in Retained Earnings is generally only prepared for a corporation. It provides an explanation for the difference in the retained earnings account between two periods. For sole proprietorships and partnerships, retained earnings always increases by the net income for the period.

However, corporations can pay dividends from retained earnings so this report provides a breakdown between income and possible dividends that are paid out:

Statement of Changes in Retained Earnings		
For period ending December 31		
Retained Earnings		
Balance January 1	\$45,000	

Statement of Changes in Retained Earnings		
For period ending December 31		
Net Income	\$8,300	
<i>Total</i>		<u>\$53,300</u>
<i>Dividends paid</i>		
Common Stock Dividends	\$6,000	
Preferred Stock Dividends	\$1,200	
<i>Total</i>		<u>\$7,200</u>
<i>Retained Earnings Balance—December 31</i>		<u>\$46,100</u>

These four financial reports are now standard reporting requirements for publicly held companies in the U.S. Taken together, they provide a good snapshot of how a business is doing. When you read a company's financial report, you will typically find these reports as well as footnotes to explain any out-of-the-ordinary events that occurred during the financial period.

Other countries, particularly those that use International Financial Reporting Standards (IFRS) may have a different set of required reports. However, regardless of the requirements, the goal is to ensure that people who are reading the reports can get an accurate picture of the health of the company. This is particularly true for companies seeking investment capital.

Ratios and Formulas

In addition to the four primary reports, there are a number of commonly used ratios to provide quick snapshots of the business. In this section, we will discuss a few examples, why they are used, and how to calculate them.

Balance Sheet Ratios

The following ratios are derived from numbers on the balance sheet. They primarily focus on whether or not the company is in a position to pay its current bills. If you just look at the numbers, they can be misleading. For example, the company with \$1,000,000 in their checking account may look much stronger than the company with \$50,000. But, if the first company has \$990,000 in current debt, and the second company has \$5,000 in debt, the second company is actually in a stronger financial position.

Working Capital

The Working Capital formula is simply:

$$\text{Current Assets} - \text{Current Liabilities}$$

It simply indicates whether or not there is enough money to pay the bills on time. The larger the working capital value, the more likely current bills will be covered.

Current Ratio

The Current Ratio measures how much more current assets there are than current liabilities. Its formula is:

$$\text{Current Assets} \div \text{Current Liabilities}$$

The Working Capital number makes it tough to compare companies since the amount of available funds can vary substantially based on the company size. The Current Ratio makes it easier to compare companies. A ratio of 2:0 indicates that the company has twice the current assets it needs to pay its bills.

Quick Ratio

A drawback to the Current Ratio is that “inventory items waiting to be sold” is considered a current asset. Depending upon how long the inventory takes to sell, it might not be a viable source of funds to pay current liabilities. If the inventory sells quickly, it is likely to be available for current bills. However, if a factor such as a shipping company strike or damage to the store happens, making inventory unavailable for sale, current liabilities might not be met.

The Quick Ratio formula pulls the inventory out of the equation, essentially asking, if nothing is sold for the next period, can the company still pay its current bills? The formula is:

$$(\text{Current Assets} - \text{Inventory}) \div \text{Current Liabilities}$$

There are some ratios used to determine how quickly inventory sells, which we will cover in a later chapter when we cover inventory. Similarly, we need to know how quickly our customers pay their bills because that number can also impact how much funds are really available in the current assets bucket.

Standards

The ratios by themselves help you compare two companies but there are also published Standard ratios based upon the industry the company is in. If a company is close to or above the current ratio that is average for their industry, that can be a good sign. However, if they are too much above (say, 4.0 vs. 1.3 industry average), it would indicate poor money management (or that the company is saving cash for a reason). If the quick ratio is below 1, it means the company does not have enough current assets to pay bills so you'd have to expect that inventory will be quickly converted to cash.

Income Statement Formulas

The following ratios are derived from numbers on the income statement. They primarily focus on how the company is doing each period and how much profit is being made. The numbers are often compared with standards and other businesses to help focus on what areas might need improvement.

Gross Margin

When a company sells goods, there is an associated cost with obtaining (either through purchase or manufacturing) the goods to be sold. The Gross Margin shows the percentage of sales dollars that can be used to pay operating expense after the cost of the good is subtracted. The formula is simply:

- Gross Profit = (Sales - Cost of Goods Sold)
- Gross Margin = Gross Profit / Net Sales

If a company has sales of \$800,000 and a gross profit of \$350,000 on those sales, the gross margin would be 43.75 percent. This is typically compared with other similar businesses. If the goods being sold are purchased, a company might be able to negotiate better terms from vendors. If the goods are being manufactured, better production machinery and techniques might be available.

Profit Margin

Profit Margin is similar to Gross Margin except that it includes all of the expenses, not just Cost of Goods Sold. It is typically computed as an after-tax, net income figure. If our company has \$800,000 in sales and a net income (after taxes) of \$48,000, the profit margin is six percent. This number is typically compared to other businesses to see whether or not operating expenses can be lowered.

Earnings per Share (EPS)

For corporations, another common ratio is Earnings per Share. This is computed by taking the net income after tax and dividing it by the number of outstanding shares of stock. It is an indication of profitability of the corporation.

The net income amount is reduced by any dividends paid on preferred stock:

- (Net Income - Dividends on Preferred) / Average number of outstanding shares

The Average number of outstanding shares can simply be computed as:

- Number of shares at beginning of the year * 50 percent
- Number of shares at end of year * 50 percent

You can also compute the number of shares as a weighted average, particularly if a large volume of stock shares are sold during the year.



Note: The above example is basic EPS; only shares outstanding (i.e., owned by stockholders) are considered. Companies can also compute diluted EPS which factors outstanding shares PLUS how many shares could be outstanding if all stocks options, warrants, etc., were converted. It tends to give a much more conservative EPS value but it is a complex calculation that is beyond the scope of this book.

Summary

The four reports and the variety of ratios allow a person to look objectively at how a company is doing (via the reports) and to compare the company with other companies and/or with industry standards. While there will often be exceptions and special situations, the basic reports of an accounting system should reflect a solid picture of how the company is doing, and can affect whether or not you are interested in investing in the company, working for them or doing business with them.

Chapter 7 Fixed Assets

As we saw earlier, some assets are purchased for use in the business and expected to be used over multiple revenue periods (typically years). Cars, computer equipment, office furniture, etc., are all examples of Fixed Assets. In general, if you expect the asset to be in the business for a long period of time, it is likely a Fixed Asset.

Fixed Asset Costs

Fixed Assets tend to cost more and you pay an upfront cost to get benefits for multiple years. However, a drawback is that, if you record all of the costs when the asset is acquired, your profitability will drop in the year the asset is purchased (and will not be impacted in future years). This doesn't adequately match revenues and expenses. Even when using the Cash Basis, you should still like to spread the cost of the fixed asset over all of the years it is used.

Depreciation

Depreciation is the process of spreading the cost of a fixed asset over the years of its useful life. You may use depreciation in both the Cash Basis and the accrual method. It allows for a more even treatment of the expense from the asset, with the revenue generated by using the asset.

There are generally four methods by which to depreciate assets. To calculate depreciation, regardless of method, you will need to know the following:

- Cost of the asset
- Estimated salvage value at the end of the asset's life
- Number of years for which the asset will be used

Straight-line Depreciation

In Straight-line depreciation, we simply take the cost of the asset, subtract its salvage value, and divide the difference by the number of years for which the asset will be used. The formula is:

$$(Acquisition\ cost - Salvage\ value) \div Years\ of\ life = Annual\ depreciation$$

Note that acquisition cost can include delivery and setup expenses, although these expenses can also be recorded separately and deducted in the year they occurred.

Units of Production

Sometimes, it is possible to determine how many units a piece of equipment can produce, and the depreciation entry is accurately computed as the number of units produced for the given year, divided by the total number of units that can be produced. For some fixed assets, such as office furniture, computer systems, and cars, the Units of Production method does not make sense. However, in manufacturing or processing plants in which it is known how much production a machine can provide, this method provides an accurate depreciation method.

To compute the depreciation, you need two steps:

First, compute the per-unit cost of the machinery:

$$(Acquisition\ cost - Salvage\ value) \div Capacity\ in\ units = per-unit\ cost$$

Once you know the per-unit cost, determine how many units were produced that period:

$$Depreciation\ expense = Number\ of\ units * per-unit\ cost$$

As an example, let's say we purchase a production machine to produce gasoline from crude oil. It is estimated that the machine can produce 750,000 gallons of gasoline and the machine cost (after salvage value) is \$175,000. The per-unit capacity of that machine is 23 cents per gallon.

Assuming in the first year we produce 125,000 gallons of gasoline, our depreciation entry for the year is:

$$125,000 * .23333 = \$29,166.25$$

This method allows for a close matching of the expense associated with the asset with the revenue produced by it.

Accelerated Depreciation

The Straight-line depreciation method does not account for the fact that, as an asset ages, it is typically less productive. This method assumes that the “deduction” should be uniform throughout the asset’s life. However, in many cases, an asset is more productive early on in its life so it might make sense to apply more depreciation in the early periods when more revenue is generated as a result of the asset. The Accelerated Depreciation methods attempt to do just that.

Declining Balance

One approach to Accelerated Depreciation is to compute the straight-line value for a period and then double it. The same formula is applied in subsequent periods; however, the formula is only applied to the remaining balance of the asset, not the original purchase cost.

To calculate the formula, we first have to determine the straight-line rate. Assuming an asset has an eight-year-long life, the straight-line rate is 12.5 percent (100 percent divided by eight years). We are going to double that rate so, each year, we will deduct 25 percent of the balance left on the asset.

Let's say we have an asset that costs \$37,000 and a \$4,000 salvage value. Depreciation is eight years for this asset. The double declining calculation for the first year is:

- $\$37,000 * .25 = \$9,250$

To compute the second year, we use the following formula:

- $\$37,000 - \$9,250 = \$27,750$ - *Compute current book value*
- $\$27,750 * .25 = \$6,938$

The third year's calculation is:

- $\$37,000 - (\$9,250 + \$6,938) = \$15,609$ - *Year three book value*
- $\$15,609 * .25 = \$5,203$

This calculation is repeated until the remaining balance of the asset is less than the book value. In our example above, the seventh year has a book value of \$4,939 and a depreciation value of \$1,646. This means that, in the eighth year, the depreciation entry can only be \$939—which reduces the value of the asset down to \$4,000 (i.e., its salvage value).

When using this approach, there is not a definite number of periods. Sometimes you might hit the salvage prior to the eighth year and, at other times, you might hit it afterwards.

Sum of the Years Digits

The Sum of the Year's Digits is another accelerated depreciation method that strives to take higher depreciation in the early years of an asset's life and less depreciation as the asset gets older. It does this by creating a planned depreciation percent each year that decreases the asset value until the salvage value is met.

To calculate the amount of depreciation per year, you first need to take the number of years and add up the individual year's digits. For example, if you have a four-year life, to compute the base you would add the years as shown below:

- $1 + 2 + 3 + 4 = 10$

Or simpler:

- $\text{Years} * (\text{Years} + 1) / 2 = 4 * 5 = 20 / 2 = 10$

No matter which formula you use, you'll still get the base for the formula. For each year, you take the year number (starting backwards) and divide it by the base. So, the first year (counting backwards) is four. The depreciation percent for the first year is:

- $4/10$ or 40 percent

The second year would be:

- 3/10 or 30 percent

Assuming an asset with a \$15,000 value and \$3,000 salvage value, the depreciation for each year would look like:

- Year 1 4/10 = 40 percent = \$4,800
- Year 2 3/10 = 30 percent = \$3,600
- Year 3 2/10 = 20 percent = \$2,400
- Year 4 1/10 = 10 percent = \$1,200

After the end of the fourth year, the total depreciation is \$12,000 and the value of the asset is \$3,000—which is its salvage value.

Depreciation Examples

To look at how depreciations work, let's work through an example. Suppose we purchased a computer system consisting of network servers, workstations, and printers for the office. The entire system ran \$27,000, and cost \$1500 for shipping and set up work. We anticipate using the system for five years. Most likely, after five years, our five-year technology will not be useful (but let's be hopeful and assume we can sell it for \$1,000 to some collector on eBay).

- System Cost: \$27,000
- Installation/Setup: \$1,500
- Salvage Value: \$1,000
- Estimated Life: Five years
- Declining Balance Rate 45 percent

We decide to include our installation cost in our depreciation calculations. So, our total acquisition cost of the asset is \$28,500. The following table illustrates various depreciation methods:

Year	Straight-line	Sum of the Year	Declining Balance	New Balance
First Year	\$5,500	\$9,166.67	\$12,825	\$15,675
Second Year	\$5,500	\$7,333.33	\$7,054	\$8,621
Third Year	\$5,500	\$5,500	\$3,880	\$4,742
Fourth Year	\$5,500	\$3,666.67	\$2,134	\$2,608
Fifth Year	\$5,500	\$1,833.33	\$1,174	\$1,434
Sixth Year			\$434	\$1,000
Final Balance	\$1,000	\$1,000		\$1,000

Modified Accelerated Cost Recovery System (MACRS)

In the U.S., the IRS allows a system called MACRS to be used to calculate depreciation for tax purpose. MACRS stands for Modified Accelerated Cost Recovery System. It supports larger deductions in earlier years and lower deductions in later years. The MACRS system is based upon the Declining Balance Depreciation method we covered earlier. However, the IRS indicates how certain asset classes must be depreciated and the asset's useful life span.

To depreciate an asset by using MACRS, the first step is to look up the asset class on the IRS form. For example, office furniture has a class life of 10 years, with a MACRS recovery period of seven years. Computer systems have a class life of six years, with a MACRS recovery period of five years.

Once you know the recovery period, you can chose one of three recovery percentages (100 percent, same as straight-line), 150 percent or 200 percent. With this information, you can take the depreciation deduction by using a declining balance method as described earlier. However, the calculation is more complex because the IRS also considers when the asset was acquired. So, in the first year, depreciation might be reduced for assets put in place later in the year.



Note: MACRS depreciation is more involved than the simple taste shown above. When depreciation is less than straight-line, straight-line may be used. Assets acquired midway through the year are handled differently. While the concept of declining balance is used, there are many more rules put into place by the IRS.

Summary

Assets are needed by the business, and spreading the cost of the asset over multiple periods more closely matches the cost with the revenue that will be produced by the asset. Depreciation methods are designed to provide as accurate of a cost/revenue match as possible. However, the IRS requires that the depreciation be consistently handled within its rules in order to prevent abuse of depreciation (by using different methods, useful life, etc.).

Chapter 8 Accounts Receivable

Accounts Receivable is the accounting system that is designed to keep track of who owes your company money and why. It also needs to post deposits, issue credit memos, prepare statements, and send dunning letters, etc. Whether computerized or not, these are the basic functions the Accounts Receivable system must provide. This chapter will discuss the terminology and functions of the system.

Goods and Services

Whether a company provides goods or services or some combination of both, they are going to charge for them. The selling process brings customers to the business who want to pay for the items. Accounts Receivable kicks in once the sale is made, and handles various actions including recording the amount owed and, eventually, getting the money paid and into the checking account.

The work flow consists of:

- **Purchase Order:** A request to buy goods or services (not always needed).
- **Sale Made/Shipped:** **Goods or services performed or delivered.**
- **Invoice Sent to Customer:** **Paper or electronic notice sent to customer.**
- **Payment Received:** Money received from customer.

It is possible a sale could be made without a prior purchase order and it is also possible that the customer pays in cash at the time of the sale. In that example, only a single journal entry is needed:

	Account #	Description	Debit	Credit
	1000	Cash-Checking account	\$ 1,500	
	4000	Sales		\$ 1,500

More likely, the sale will be made on credit, with payment to be made within a specified time frame (such as 30 days). The journal entries to record the credit sale are shown below:

	Account #	Description	Debit	Credit
Sale date	1100	Accounts Receivable	\$ 1,500	
	4000	Sales		\$ 1,500

	Account #	Description	Debit	Credit
30 days later				

This is the basic journal entry record for sales made on credit to the customer.

Customers

Customers are the people for whom you will produce a product or perform a service, and you expect to get paid by them for that product or service in return. Whether or not you call them customers or clients is largely a matter of professional preference. Most lawyers and other service-oriented firms tend to refer to them as clients while most product-oriented firms tend to use the customer terminology. No matter what you call them, they are the same thing: people from whom we hope to receive money!

Accounting systems generally keep track of customer demographic information, including possibly multiple ship-to addresses, payment terms, and notes about the customer, etc. While the customer data is needed to record sales transactions, it is also a source of selling/marketing that allows for repeat sales, etc.

Payment Terms

Customers, particular large or repeat customers, will have payment terms with the company. A common payment term such as “net-30” means that payment is due in 30 days. This payment term might be standard for the company; however, some customers may negotiate different payment terms. Often, government entities take longer to pay.

Companies might be able to charge late fees or interest if payment is not made by the due date. Such a charge would be considered miscellaneous income when reported on the income statement.

Tax-exempt Certificate

Many types of sales are subject to sales tax; it is the company's responsibility to collect the sales tax from the customer and to pay it to the taxing agency in a timely manner. Some customers might be exempt from sales tax and will have a certificate to confirm it. Typically, this information is kept in the customer's file and is used to prevent the system from charging sales tax at the time the sale is made to the customer.

Detailed Sales Example

Let's look at an example of a sale, with sales tax and late payment, to see how the journal entries might look.

1. Received a purchase order for \$10,000 worth of soccer equipment.
2. Delivered the equipment, charging a \$150 delivery charge.
3. Invoiced customer for \$10,750 (Equipment-\$10,000, Sales Tax \$600, delivery \$150).
4. After 30 days, payment was not received.
5. Charged a late fee of \$100.
6. After 45 days, partial payment of \$9,000 was made.
7. After 60 days, a check for the remaining balance of \$1,850 was received.

	Account #	Description	Debit	Credit
1		Nothing Record in Journals		
2/3	4000	Sales		\$10,000
	4110	Shipping Income		\$150
	2110	Sales Tax Payable		\$600
	1100	Accounts Receivable	\$10,750	

Recording the sale consists of a sales increase and a shipping income increase. You could combine shipping into Sales if you don't need to track it separately for any reason. The final part is the \$600 sales tax liability; that is payable to the taxing agency. The total invoice amount is added to Accounts Receivable, which represents an asset on our balance sheet.

After 30 days, when payment is not received, we add a late charge and send a notice to the customer:

	Account #	Description	Debit	Credit
4/5	4120	Misc. Income - Late Charge		\$100
	1100	Accounts Receivable	\$100	

After 45 days, a partial payment was received so we record that by reducing the amount owed and increasing the cash account:

	Account #	Description	Debit	Credit
6	1000	Cash-checking	\$9,000	

	1100	Accounts Receivable		\$9,000
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Finally, after 60 days, the remaining balance was paid off so we create another entry to record the money into the cash account and reduce the customer's balance to zero:

	Account #	Description	Debit	Credit
7	1000	Cash-checking	\$1,850	
	1100	Accounts Receivable		\$1,850

You can see the transactions flowing in and out of the Accounts Receivable account to reflect the sale and subsequent payments. You can also look at a snapshot during the period to see how much money is owed and how much is likely to be received within a month or two (depending upon your credit terms).

Early Pay Discounts

Some companies offer discounts for early payment by using terms such as **2/10, Net 30**, which means you take a two-percent discount if you pay within ten days, or you pay the full amount if you pay within 30 days. This discount represents an expense to the company. If, like in the example above, the customer chooses to pay within 10 days and takes the discount, the journal entry would be the following:

	Account #	Description	Debit	Credit
6	1000	Cash-Checking	\$10,535	
	4101	Sales Discount	\$215	
	1100	Accounts Receivable		\$10,750

The Sales Discount account is a contra-revenue account used to reduce the sales revenue. It is an expense of the business (i.e., a cost of receiving payment early). Some companies may choose to report it as an expense although the contra-revenue account is more commonly used.

The example above uses the Gross method to record sales discounts (i.e., the sale is recorded at the full amount) and the amount is reduced only if the discount is taken. Another approach is called the Net method which assumes the customer will take the discount so it records the sale at the discounted amount and adds back the potential discount only if the cost does not take it. The journal entries from the above would appear as follows using the Net method:

	Account #	Description	Debit	Credit
2/3	4000	Sales		\$9,785
	4110	Shipping Income		\$150
	2110	Sales Tax Payable		\$600
	1100	Accounts Receivable	\$10,535	

When the payment is received, if paid on time, the following is a standard journal entry to reduce Accounts Receivable and increase cash:

	Account #	Description	Debit	Credit
6	1000	Cash-Checking	\$10,535	
	1100	Accounts Receivable		\$10,535

However, if the payment is not made in time, then the discount no longer applies, so the following journal entry would be recorded:

	Account #	Description	Debit	Credit
	1000	Cash-Checking	\$10,750	
	1100	Accounts Receivable		\$10,535
	4010	Sales Discounts Not Taken		\$215



Note: An accountant will often suggest discount terms, and the percent will vary based on prevailing interest rates. The discount only makes sense if you can make more money in interest in 20 days than the discount amount you are offered. Of course, if your customers are notoriously slow in paying (such as the government), the discount might make sense. In the U.S., some government agencies are required by law to take the discount if one is offered.

Returns

Occasionally, a customer may decide to return the product they purchased, subject to your policies and a possible restocking fee. Let's assume we accept returns but do not refund shipping, and we charge a five-percent restocking fee on any returns.

Our initial journal entry for the sale was recorded as shown below:

	Account #	Description	Debit	Credit
2/3	4000	Sales		\$10,000
	4110	Shipping Income		\$150
	2110	Sales Tax Payable		\$600
	1100	Accounts Receivable	\$10,750	

When the customer decides to return the item, we need to reduce Accounts Receivable and reduce our Sales Tax liability. If we will not receive money from the customer at all, the journal entry would be an exact reversal of the above entry:

	Account #	Description	Debit	Credit
7	4000	Sales	\$10,000	
	4110	Shipping Income	\$150	
	2110	Sales Tax Payable	\$600	
	1100	Accounts Receivable		\$10,750

However, if the customer accepts our return policy and agrees to pay for shipping and the restocking fee, the journal entry will reflect this as shown below:

	Account #	Description	Debit	Credit
7	4000	Sales	\$10,000	
	4020	Restocking Fee		\$500
	2110	Sales Tax Payable	\$600	
	1100	Accounts Receivable		\$10,100

After this transaction is posted, the original Accounts Receivable balance is now \$650, which reflects payment for the shipping charge of \$150 and the \$500 restocking fee.

If returns are common in your business or industry, you might want to create a special account to record sales returns. This would be called a contra-revenue account (which means that the balance of this account offsets the corresponding revenue account). This account would then be debited rather than directly debiting the Sales account.

Bad or Uncollectable Debt

Unfortunately, not all payments will be made by the customer for a variety of reasons (e.g., fraud, bankruptcy, etc.). There are a variety of methods for accounting for bad debt.

Direct Write-off

The direct write-off method is simple. Once you realize that the debt will not be collected, you create a journal entry to reduce accounts receivable by the amount of the bad debt:

	Account #	Description	Debit	Credit
7	5210	Bad Debts Expense	\$10,750	
	1100	Accounts Receivable		\$10,750

However, this method is generally not used since it does not match revenues and expenses. If the sale occurs in one year, with the anticipation that payment will be received in the following year, then the actual write-off will not occur in the year the sales was recorded. This violates the matching principle of GAAP.

Bad Debt Allowance

Using the Bad Debt Allowance method assumes that some portion of your sales (or receivables) will not get paid. You can create a special allowance account in anticipation of this. This allowance account reduces the balance expected in the Accounts Receivable account and is treated as an expense on the income statement.

Your balance sheet will now look like the following when reporting Accounts Receivable:

- 1100 Accounts Receivable
- 1101 Allowance for Bad Debt
- Net Receivables

This provides a better picture of what the account value actually is. You will also have an expense on the income statement called Bad Debts Expense.

There are two methods used to compute the balance of the allowance account.

Percentage of Sales

If you offer credit sales, you should keep them in a separate account than the cash sales. So, when you compute the percent, you only compute it on sales that could potentially become bad debt. Unless the cash is counterfeit (which is a different entry), cash sales do not become bad debt. The formula is simple:

- Bad Debts Expenses = (Estimated percent) * Credit Sales

This amount is computed and recorded as an expense, and added to the Allowance contra account by the following journal entry:

	Account #	Description	Debit	Credit
7	5210	Bad Debts Expense (2% of Sales)	\$25,000	
	1101	Allowance for Bad Debt		\$25,000

Note that the balance sheet account (Allowance for Bad Debt) can continue to grow. If the account balance is increasing each year (meaning, less bad debt than estimated), you will probably adjust your estimation percentage in subsequent years. The allowance account balance should be pretty close to zero balance each year but probably never exactly since it is based on a guess of a future event.

Percentage of Receivables

The Percentage of Receivables approach handles the computation a bit differently. Rather than estimate what the yearly expense is, it attempts to estimate what the balance in the allowance account should be. Then, a journal entry is made to bring the account balance to that amount.

At the period's end, a company looks at total Accounts Receivable and makes an estimate as to how much is (in dollar terms) likely to remain uncollectable. Typically, the older a receivable is, the less likely it is to be collected. (An aging report is helpful in this computation).

Once this estimate is computed, the balance in the Allowance account is considered. The entry consists of the amount needed to bring the balance in line with the estimate. For example, imagine the contra account has a balance of \$2,500. Based on aging schedules and experience, the company believes \$9,000 of the Accounts Receivable will be uncollectable. The entry to add the difference (\$6,500) to the account is shown below:

	Account #	Description	Debit	Credit
7	5210	Bad Debts expense	\$6,500	
	1101	Allowance for Bad Debt		\$6,500

Writing Off Debt

Regardless of how you compute the Allowance for Bad Debt amount, the write-off entry for the actual determination that the debt is bad is the same:

	Account #	Description	Debit	Credit
7	1101	Allowance for Bad Debt	\$10,750	
	1100	Accounts Receivable		\$10,750

Ideally, at the end of the year, the allowance account will be close to zero, indicating your estimation was pretty close. If the contra-account has a large balance, you should revisit how you calculate your estimate. If you are generally using up the entire balance, while it indicates your percentage is good, you might want to compare it to other, similar business to see if actions can be taken to improve your collection rate.

Reporting on Accounts Receivable

The transactions above will also be recorded into the Accounts Receivable asset account (which is hopefully short-term and converted to cash within the year). There are a couple of standard reports and ratios that are commonly computed as part the Accounts Receivable function.

Accounts Receivable Aging

The Accounts Receivable Aging report calculates the age of all of the outstanding invoices and categorizes them into buckets, typically 30, 60, 90 days—although the categories can be anything that makes sense for the business.

For example, if a business has \$300,000 in Accounts Receivable, it might have an Aging report as shown below:

Accounts Receivable Aging

Current (<30 days): \$125,000

Late (31-60 days): \$45,000

Past due (>60 days): \$130,000

This report would indicate collection efforts might need to be stepped up since a good portion of the Accounts Receivable is past due (however, the definition of past due is variable based upon the industry, and payment terms, etc.). In some cases, the normal period might be 60 days so you might age your report to consider 120 days past due.

Accounts Receivable Turnover Ratio

The Accounts Receivable Turnover ratio measures how many times a business converts its Accounts Receivables to cash during a given period. You can use the ratio to get the average number of days it takes for invoices to get paid.

To calculate the ratio, you need to know the period sales on credit and you need to compute an average balance in the Accounts Receivable account. Let's say we had credit sales of \$475,000 for the year. At the beginning of the year, the Accounts Receivable account had a balance of \$17,500, and at year's end, it was \$26,000:

- Beginning Accounts Receivable Balance: \$17,500
- Ending Balance: \$26,000
- Average Balance: \$21,750 $(\$17,500 + \$26,000)/2$
- Turnover Ratio: 22 days $(\$475,000 / \$21,750)$

A turnover ratio of 22 days is generally pretty good, although you should compare it with similar industries to get a sense of whether or not it is a reasonable number.

Summary

Selling to and collecting payment from customers is a driving force behind revenue for the company. In an ideal environment, customers pay on time, never return anything, and the journal entries are simple. However, in the real world, the accounting system has to deal with those scenarios, plus late payments, early pay discounts, returns, bad debt, and more.

Chapter 9 Accounts Payable

The Accounts Payable function of an accounting system is responsible for tracking money the business owes and the payments made to those vendors. Our company's Accounts Payable is also some other company's Accounts Receivable.

We have seen examples of these entries throughout the book. In general, the entry is as shown as follows:

	Account #	Description	Debit	Credit
		Some Expense Account	\$6,500	
	2100	Accounts Payable		\$6,500

This creates the entry in which to record the debt we owe and records the expense in some expense account. Once we write the check, another entry credits the cash account and reduces the Accounts Payable balance.

Types of Payables

There are a variety of vendors, agencies, and banks, etc. to whom a business might owe money. Generally speaking, bills (i.e., payables) are organized into at least three categories of payables.

Trade Payables

Trade Payables are the bills that must be paid for purchases associated with running the business. This includes items such as shipping services, rent, office supplies, and utilities, etc. Almost every Trade Payable will have an associated expense account.

Taxes

Many government agencies expect businesses to collect taxes for them and to send these taxes to the agency periodically. Sales tax and payroll taxes are two common examples; the business is simply the middleman, obtaining the money for the tax (either from customers or from an employee's gross pay, for example) and sending it to the government. Generally, the liability accounts are kept separate from regular trade payables.

Sales tax collected is not considered an expense of the business nor revenue of the business; it is simply a pass through. Similarly, the employee's share of the taxes is not considered an expense (the payroll is, however), but simply a pass through to the tax agency. The company's share of the taxes, however, is considered a business expense.

Loans and Notes

Loans and notes are legal agreements between the business and a financial institution (typically a bank) from whom the company has borrowed money (typically to purchase assets or to grow the business). For the most part, loans should not be used to pay Trade Payables because doing so raises concerns that the business is not generating enough income to pay its bills. Loans typically have a longer term than payables and are subject to interest payments to the bank. These interest payables are expenses to the business.

The journal entry made to borrow money from a bank might look like the following:

	Account #	Description	Debit	Credit
	1000	Cash-Checking	\$77,000	
	5910	Loan Origination Fee Expense	\$1,000	
	2800	Notes payable		\$78,000

Expenses involved in setting up the loan are generally taken when the loan is first made, so cash is increased and the fee charged while the balance is placed into the payable account.

When periodic payments are made, the journal entry both reduces the notes payable account and records the interest expense, as shown below:

	Account #	Description	Debit	Credit
	1000	Cash-Checking		\$832
	5920	Interest Expense	\$182	
	2800	Notes Payable	\$650	

Amortization schedules are typically part of the loan documentation to let the business know how much interest needs to be paid as part of each payment on the loan.

Current Accounts Payable

Payables are broken into two sections: current liabilities and long-term liabilities. Trade Payables and taxes are almost always current liabilities. For the business to stay in business, it is expected that those obligations be paid timely from the revenue generated each period.

Long-term liabilities are typically your bank loans or notes or any other instrument where money is to be paid back in more than a year. Car loans and asset purchases, etc., are examples of these loans. However, for these types of loans, typically some portion of the loan is current. When the books are closed for the end of the period, a journal entry is prepared transferring the current portion from long-term liabilities to the current liabilities section. Your payable section might look like this structure:

- Liabilities
- Current Liabilities
 - Accounts Payable-Trade
 - Accounts Payable-Misc.
 - Taxes Payable
 - Sales Tax
 - Payroll Tax
- Current Portion of Long-term Debt
- Long-term Liabilities
 - Loans Payable
 - Notes Payable

The journal entry for our loan example (assuming a 10-year repayment) might look like this:

	Account #	Description	Debit	Credit
	2500	Current Portion of Long-term Debt		\$7,800
	2800	Notes Payable	\$7,800	

The payment would now be made against the 2500 account each month rather than against the Notes Payable account.

Trade Discounts

Just as a business might offer discounts for those who pay early, the vendors might also offer such discounts. You can then record your Accounts Payable gross (not recording the discount unless actually taken) or net (assuming you will take the discount and only recording it when you don't).

For example, let's say a vendor offers **2%/10, net 30** (that's a discount of two percent if paid within 10 days, otherwise the full amount is due in 30 days). Assuming we purchased \$5,000 worth of goods, we can record the purchase and subsequent payment by using either method.

Net Method

Using the net method (where you assume the discount will be taken), the purchase entry is recorded at the discounted rate. The journal entry to record the purchase would appear as follows:

	Account #	Description	Debit	Credit
	5000	Purchases	\$4,900	
	2100	Accounts Payable-Trade		\$4,900

If payment is made on time, the following journal entry would record the payment:

	Account #	Description	Debit	Credit
	1000	Cash-Checking		\$4,900
	2100	Accounts Payable-Trade	\$4,900	

However, if payment was not made within the discount window, you would need to record an additional expense to reflect the discount that was not taken. This entry would look like:

	Account #	Description	Debit	Credit
	1000	Cash-Checking		\$5,000
	2100	Accounts Payable-Trade	\$4,900	
	5110	Purchase Discounts Lost	\$100	

The benefit of this approach is that the accounting system clearly indicates the expense so management can decide whether or not to push to take discounts offered.

Gross Method

Using the gross method, you record the purchase entry under the assumption that you will not take the discount and only adjust the entry if you actually take the discount. The purchase entry is:

	Account #	Description	Debit	Credit
	5000	Purchases	\$5,000	
	2100	Accounts Payable-Trade		\$5,000

When the payment is made in 30 days for the full amount, the journal entry is:

	Account #	Description	Debit	Credit
	1000	Cash-Checking		\$5,000
	2100	Accounts Payable-Trade	\$5,000	

However, if you pay within 10 days and take the discount, the entry becomes:

	Account #	Description	Debit	Credit
	1000	Cash-Checking		\$4,900
	5120	Purchase Discounts Taken		\$100
	2100	Accounts Payable-Trade	\$5,000	

In this case, no one knows how many discounts were missed; only discounts that were actually taken are considered. One of the features of an accounting system is that procedures can be designed to present the appropriate information as needed by management. While investors might not care about that level of detail, managers who decide when to pay bills most likely do.

Summary

Accounts payable is concerned with how to keep track of the money you owe to various vendors and entities with whom you do business. The liabilities are generally categorized both by type and by current or long-term terms. You can also decide how you want to handle trade discounts, either by using the Gross method (which "hides" available discounts) or the Net method (which "shows" all of the discounts and clearly shows the missed discounts). If you see the missed discounts, it is easier to see where cash flow improvements might help the bottom line by reducing some of your costs.

Chapter 10 Inventory

Some companies perform services for which they bill their clients while other companies purchase goods with the intent of reselling them (hopefully at a higher price) to their customers. In this chapter, we will cover inventory and how to determine its cost.

Inventory is all the goods that a company purchases with the intent of reselling them. From an accounting standpoint, the system has to know the selling price and the cost of each item that was purchased. The difference is the gross profit, as shown by this simple formula:

$$\text{Selling price} - \text{Cost of the item} = \text{Gross profit}$$

The selling price is easy; the invoice to the customer will show that. However, the cost of the item requires some special handling to ensure that the proper cost is reflected on the books.

Four Ways to Compute Cost

The cost of an item consists of two main components: the actual price and the acquisition cost (i.e., what it cost to get the physical item into your inventory, including costs such as delivery charges, shipping insurance, and tracking costs). The actual price and the acquisition cost are both included in the cost of the inventory item.

There are four methods which an accounting system can use to compute the cost of the item that was sold to the customer. Each method has its benefits and drawbacks as we will see in this section.

Specific Identification

From a computation point of view, Specific Identification is easy. You know the exact item that was sold and you know the matching purchase order. Large-ticket items such as cars or jewelry are typically calculated this way. This technique works when there is a manageable number of items sold and the actual items sold can be identified. For example:

$$\text{Sticker price of car \$} - \text{Dealer invoice \$} = \text{Gross profit on the car}$$

An inventory system that uses “specific ID” must provide a serial number or some other identifier, and the costs and selling information are grouped by that identifying number. It requires a more detailed record-keeping since costs are tied to a single inventory item but it provides the most accurate cost and profit calculations.

First-In, First-Out

A second approach is called First-In, First-Out (FIFO) which stands for when the first item into an inventory is also the first item sold. However, this is an accounting approach, not necessarily a physical approach. For example, if we were selling gasoline, the gasoline could be stored in a tank.

Assuming the valves to extract the gasoline are located at the bottom of the tank, then physically, the inventory would be extracted at FIFO. The first gallons of gasoline placed into the tank will be the first gallons extracted.

Since the tank was filled with gasoline purchased at different times, the cost of the gasoline in the tank would vary. If gas prices are rising, the gas at the bottom of the tank has the lowest price and the gas at the top has the highest prices. So, as a simple example, let's assume the gas was purchased in five lots at the prices shown below:

Purchase date	Gallons purchased	per gallon	Cost	Total
January 22	5,000	\$2.18	\$10,900	\$10,900
March 04	6,500	\$2.35	\$15,275	\$26,175
June 04	4,000	\$2.50	\$10,000	\$36,175
July 05	2,500	\$2.60	\$6,500	\$42,675
November 09	3,750	\$2.90	\$10,785	\$53,550

If we now sell 15,000 gallons of gas at \$3.50 per gallon, we need to determine our cost of those gallons. Using the FIFO method, our cost would be computed as follows:

- 5,000 gallons at \$2.18 = \$10,900
- 6,500 gallons at \$2.35 = \$15,175
- 3,500 gallons at \$2.50 = \$8,750
- Total cost of gas sold = \$34,825

Selling price = **\$52,500** - Cost **\$34,825** = Gross profit of **\$17,675**

Even if our gasoline was extracted from the top of the tank (meaning, the last items in were physically sold first), we can still use the FIFO method to compute our cost. In a period of rising prices, the FIFO method will maximize our gross profit (and increase our tax burden).

Last-In, First-Out

The Last-In, First-Out method (LIFO) operates by using the same structure as FIFO but the costs are computed in reverse. That is, the newest items purchased are assumed to be the first items sold. For example, imagine a mulch farm where new mulch purchases are added to the top of the pile. When customer purchases mulch, the top layer is used (i.e., the last items purchased). However, the accounting method used does not have to agree with the physical way the inventory is processed.

Using our gasoline purchases example again, let's see the impact of using LIFO when someone purchases 15,000 gallons of gasoline at \$3.50 per gallon:

Purchase date	Gallons purchased	per gallon	Cost	Total
January 22	5,000	\$2.18	\$10,900	\$10,900
March 04	6,500	\$2.35	\$15,275	\$26,175
June 04	4,000	\$2.50	\$10,000	\$36,175
July 05	2,500	\$2.60	\$6,500	\$42,675
November 09	3,750	\$2.90	\$10,785	\$53,550

- 3,750 gallons at \$2.90 = \$10,875
- 2,500 gallons at \$2.60 = \$ 6,500
- 4,000 gallons at \$2.50 = \$10,000
- 4,750 gallons at \$2.35 = \$11,162.50
- Total cost of gas sold = \$38,537.50

Selling price of = **\$52,500** - Cost of **\$38,537.50** = Gross profit of **\$ 13,962.50**

As the example shows, by using the LIFO method, our profits decrease since we are selling the highest price items first. Of course, in the case of a supply shortage, we can create scenarios in which the items left in inventory (i.e., the first ones ever purchased), if sold, would result in a larger profit. The longer items stay in inventory, the lower the value of inventory will be. Gas prices in the mid-1990s were approximately \$1.50 per gallon. If we ever actually sold the gas from those inventory layers, the profits would rise when, more than likely, the actual cost of the gas was much higher than the \$1.50 per gallon cost still on the books.

Comparison between LIFO/FIFO Methods

The choice of LIFO/FIFO has an impact on profitability, taxes, and value of the remaining inventory. During a period of rising prices, the chart below illustrates the differences:

Account	FIFO	LIFO
Cost of Goods Sold	Lower	Higher
Net Income	Higher	Lower
Taxes	Higher	Lower
Inventory Balance	Higher	Lower

If prices to purchase inventory are falling, the chart is reversed.

Average Cost

The Average Cost method takes the weighted average of all of the purchases and computes the average cost per unit. This cost is then multiplied by the units sold to get the cost of goods sold and the ending inventory balance. By using our example from above, we can compute our cost:

Purchase Date	Gallons Purchased	Per gallon	Cost	Total
January 22	5,000	\$2.18	\$10,900	\$10,900
March 04	6,500	\$2.35	\$15,275	\$26,175
June 04	4,000	\$2.50	\$10,000	\$36,175
July 05	2,500	\$2.60	\$6,500	\$42,675
November 09	3,750	\$2.90	\$10,785	\$53,550
TOTAL	21,750			\$53,550

The average cost is:

- $\$53,550 / 21,750 = \2.46

To determine the cost of goods sold, we take the total amount of units sold (15,000) and multiple by \$2.46, which is \$36,391. The remaining inventory is 6,750 units at a cost of \$16,619. By using this approach, pricing fluctuations are less likely to skew the cost of goods sold from our inventory.

Other Cost Considerations

We touched, in general, on how to cost the items placed in inventory. Any cost of acquiring the object is added to the cost. Any trade discounts are subtracted from the cost. If a company takes a cash discount for early payment of the invoice, they have the option to reduce costs by that amount, or they can include those discounts in the income section. However, the company must be consistent with their treatment of these cash discounts.

Uniform Capitalization (UNICAP)

Uniform Capitalization (UNICAP) is a method that the IRS requires for allocating additional costs to the inventory. Generally speaking, smaller companies (e.g., those with less than 10 million in gross sales over a three-year period) are exempt. In addition, companies who are allowed to use the Cash Basis for tax reporting are also exempt.

The concept behind UNICAP is to allocate additional costs (that might be treated as expenses) into the inventory valuation. There are two main categories: Indirect Costs and Service Costs.

Indirect Costs

Indirect Costs include things such as rental of storage space, utilities, and insurance, etc. For a car dealer, these costs might include rental of the lot on which the cars are stored, and insurance on those cars while stored on the lot, etc. For a retailer, the costs could include store rental, and labor to staff the store, etc.

Service Costs

Service Costs are administrative overhead such as management, human resources, and security. A portion of these costs must be allocated to the inventory valuation as well.

For small businesses, these costs are generally written as expenses and deducted during the current year. For larger businesses, particularly in an inventory that takes longer than a year to sell, UNICAP provides a method to allocate those costs more closely to the inventory in the period in which it sells.

Taxes

The IRS allows you to use any of the four general methods for computing inventory; however, they recommend certain inventory valuation methods based upon the type of business. The IRS will also consider a request to change methods but they will compute the tax impact of such a change before allowing it.

Manufacturing

In a manufacturing business, there are multiple inventories depending on where the product is at the time the report is prepared. A business can use any of the costing methods to evaluate inventory as it moves between various categories.

Raw Materials

Raw Materials are the starting point of material that will, through some sort of manufacturing process, become finished products to sell. In the case of a refinery, for example, the crude oil is the raw material that will eventually be processed to produce fuel.

The cost of the raw material should include any shipping or freight charges involved in getting the material to the physical location. Another factor to consider is spoilage of raw materials, particularly if demand slows or other problems prevent production from occurring. If spoilage occurs, you can create a journal entry to expense the cost and reduce the inventory lost due to spoilage:

	Account #	Description	Debit	Credit
	5920	Inventory spoilage-Raw Materials		\$10,000
	1110	Raw Materials Inventory	\$10,000	

When raw materials begin to get used in the manufacturing process, they enter the next type of inventory: Work in Process. This involves a journal entry to move the inventory between phases:

	Account #	Description	Debit	Credit
	1110	Raw Materials Inventory		\$75,000
	1120	Work in Process Inventory	\$75,000	

Note that, when this journal entry is made, expense and overhead costs are usually recorded as well to reflect the cost of working on the material. Also note that some manufacturing processes produce scrap (i.e., raw materials that cannot be used for some reason in the work process). In such cases, you can expense the scrap material rather than move the entire amount to Work in Process:

	Account #	Description	Debit	Credit
	1110	Raw Materials Inventory		\$75,000
	1120	Work in Process Inventory	\$70,000	
	5930	Scrap-Raw Materials	\$5,000	

Work in Process

Work in Process is the inventory that has entered the production process but has not yet been completed. If production is very short, a business can move the raw material directly to finished goods. But if the production cycle takes longer than an accounting period, there is likely to be some in-between inventory.

The journal entry to move the inventory from Work in Process to Finished Goods is as follows:

	Account #	Description	Debit	Credit
	1120	Work in Process Inventory		\$80,000
	5940	Finished Goods Inventory	\$80,000	
	???	Possible Expenses for Loss		

If products get lost or damaged between the two steps, the business can record an expense entry to handle the loss. Typically, there will also be other journal entries to allocate direct and overhead costs to the proper expense accounts to reflect the completion of the manufacturing process.

Finished Goods

Once the process is completed, the Finished Goods inventory contains the actual product that will be sold to the customer. The cost passed on the customer will be the cost of the raw materials and some costs associated with the manufacturing process. Costs associated with moving the inventory from vendors to raw materials are typically included in the inventory layer. The costs, if any, to move raw materials to processing and to move products to finished goods should also be included in the inventory layer.

Inventory Ratios

Businesses must carefully manage inventory levels. Too much inventory can create loss or spoilage, incur holding costs, and represents money tied up that could be used elsewhere in the business. However, being out of stock could result in the loss of customers.

The Inventory Turnover ratio is a commonly used ratio to indicate how often inventory is turned over in a given period. Basically, the number tells you how many times inventory was “sold out” during the period. There is no good or bad number; the turnover ratio needs to be compared to standards and other companies within the industry. For example, in the automobile industry, Inventory Turnover ratios are typically between five and ten times, yearly.

To compute Inventory Turnover, use the following formula:

- Cost of Goods Sold / Average Inventory

Inventory is often the largest asset on the balance sheet. If it takes too long to sell (i.e., turn to cash), costs for holding the inventory pile up. In general, the larger the turnover number, the better. For some products, it might take over a year to sell the inventory (such as exotic cars) while other products (such as baked goods or apparel) would expect a much higher turnover.

Summary

Inventory is typically purchased or assembled over a period of time, making computing the cost of items sold more complicated but important for matching those costs to revenue. The various inventory costing techniques attempt to match costs and revenue based upon the most appropriate model for the business. A business generally chooses a model and uses it throughout the life of the business, adhering to the consistency and comparability principles of accounting.

Chapter 11 Payroll

Payroll is the process of giving a company's employees money for the work that they do for the business. However, many companies farm out their payroll processing to firms that specialize in payroll due to the ever-changing complexities of payroll tax law. In this chapter, I will cover the basics of accounting for the payroll process.

Gross Pay

Gross Pay is a pretty simple calculation. Some employees get paid a fixed amount per week regardless of the number of hours they work. Other employees get paid hourly for all of the hours they work, possibly getting extra money if they work overtime. While this is a bit of a simplification, the concept is straightforward. Compute the money the employee is owed and pay him or her. The amount owed could consist of:

- Base Pay
- Overtime Pay
- Commissions
- Bonuses
- Misc.

Unfortunately, figuring out how much the employee is actually owed after all of the deductions is much more complicated.

Net Pay

Net Pay is the Gross Pay amount minus all of the taxes, benefits, and other expenses that the employee pays out of his or her Gross Pay. These deductions from Gross Pay need to be recorded in the journals and posted to the ledger in order to keep track of payroll, to whom taxes should be reimbursed, and which insurance companies to pay.

Payroll Taxes—Employee

When the government first introduced income tax (back in 1862 to support the Civil War and then, formally, in 1913 as an amendment to the U.S. Constitution), income tax was paid by the person receiving the income. However, in 1943, it was decided that corporations would withhold the income tax from an employee's paycheck and directly pay that money to the government. In essence, the government made companies acts as "collection agents" for the IRS.

Since then, when companies compute their employees' paychecks, they withhold federal, state, and (possibly) local income taxes for their employees rather than expecting their employees to send the money to the government. Other types of taxes can be withheld as well depending upon current laws.

In addition to income tax, Social Security and Medicare taxes are also withheld from an employee's paycheck by their employer. An employee may also have money withheld due to court order provisions such as garnishments and child support.

Payroll Taxes—Employer

The government requires that businesses who hire people pay additional taxes as well, as part of the cost of having employees. While employee withholdings are simple liabilities (temporarily holding money for the government), employers' payments are considered expenses of the business. In general, employers are expected to contribute to the employee's Social Security and Medicare taxes, to pay unemployment taxes (both Federal and state), and to pay Worker's Compensation insurance. The last three taxes are to provide funds to unemployed or injured workers.

The following chart shows how the tax burden of a payroll system is treated:

	Liability	Expense
Income Taxes	Collected from Employee	
Social Security Tax	Portion from Employee	Employer Portion
Medicare Tax	Portion from Employee	Employer Portion
Unemployment Taxes		Expense to Employer
Workers' Compensation		Expense to Employer

While the tax amount, the maximum tax liabilities per employee, and the rules change frequently, the general journal entry looks as follows (in this example, we see a \$60,000-a-year employee who is paid twice a month):

	Account #	Description	Debit	Credit
	1000	Cash-Checking		\$1,628.75
	5150	Payroll Expense	\$2,500	
	2100	Federal Income Tax Liability		\$562.50
	2119	State Income Tax		\$75
	2129	Medicare Tax		\$42.50
	2139	FICA-Employee Portion		\$191.25

You have probably seen similar levels of detail on your pay stub. Most paychecks provide a detailed breakdown of how Net Pay is computed from Gross Pay.

The employer journal entry for above looks like the following example:

	Account #	Description	Debit	Credit
	5125	Payroll Tax Expenses	\$323.75	
	2139	FICA Taxes Payable		\$191.25
	2149	Federal Unemployment Payable		\$66.25
	2159	State Unemployment Payable		\$43.75
	2169	Workers' Compensation		\$22.50

While the tax percentages will vary from agency and from year to year, the basic journal entry to handle payroll taxes will look the same—possibly with more taxes being withheld and also being paid by the employer.

Due to the tax rules and agencies involved (particularly when employees live in different states and cities), many companies farm this accounting out to specialized payroll companies. The penalties imposed by taxing agencies for missed or wrong payments can be substantial.

Other Deductions

Most businesses offer employees benefits in addition to their base pay. Although there are a variety of benefits offered, two common ones are health insurance payments and contributions to retirement plans.

Let's assume that the company offers to pay 80 percent of health insurance costs (this is typically done because a company can get a better health insurance rate than individuals) and will match the employee's contribution to a pension plan up to five percent. This employee puts seven percent of her salary away to her pension plan:

Here is an employee's journal entry (using the example from above) with a monthly insurance cost of \$250 and with the following deductions added:

	Account #	Description	Debit	Credit
	2175	Health Insurance Payable		\$25
	2195	Pension Contribution Payable		\$175

The employer is simply withholding money from her paycheck, to be paid to the health insurance agency and the pension account at a later date.

When the payment is made, the journal entry for the employee might look like this (assuming the payment was made monthly):

	Account #	Description	Debit	Credit
	1000	Cash-Checking (to Health Insurance Company)		\$250
	2175	Health Insurance Payable	\$50	
	5175	Health Insurance Expense	\$200	

The company expenses 80 percent (i.e., \$200) of the money premium and has taken 20 percent (i.e., \$50) from the employee for her contribution.

Assuming a quarterly pension contribution into the employee's 401K account, the journal entry would look like this:

	Account #	Description	Debit	Credit
	1000	Cash-Checking (to Health Insurance Company)		\$1,800
	2195	Pension Contribution Payable	\$1,050	
	5195	Pension Expense	\$750	

Summary

Payroll processing is a simple process that is made complex by tax laws and the taxing agencies involved, as well as by the variety of benefits an employer might offer employees. I covered the very basic type of payroll entries in this chapter and suggest that, due to the complexities involved on the tax side and the legal ramifications of taxes, many companies let a payroll service stay on top of the ever-changing tax laws and handle payroll for them.

Chapter 12 Summary

Bookkeeping or accounting systems are essentially categorization systems for financial transactions that occur within a business. The double-entry accounting system ensures that all of the financial events get recorded in such a way as to ensure the basic formula (as follows) remains intact:

ASSETS = LIABILITIES + OWNER'S EQUITY

When working with an accounting system, you might run into special journals (e.g., perhaps sales transactions are recorded in a separate transaction journal for each sale made) or additional reports and ratios. However, all of the data in all of the journals and reports will be found in two key repositories: the ledger (chart of accounts) and the journals (transactions).

Roles

A bookkeeper is responsible for recording all of the journal entries. He or she will typically manage the checkbook and record expense reports. If the system is computerized, the bookkeeper is the person who is recording the transactions in the system.

However, it is the accountant who is responsible for preparing the reports and the data for the management team and for making recommendations about how to optimally organize the books, which depreciation method to use, whether or not the business should offer early pay discounts, etc. The accountant is guided by the GAAP previously mentioned so, as long the accounting maneuver could be considered generally accepted, the accountant has the flexibility to suggest whatever recording options he or she wants the company to use.

Management typically reviews the financial statements and/or ratios to make decisions as to the short and long-term direction of the company. Often, for just their divisions, line managers might want income statements a lot of expense details, while upper management might want to compare divisions and expenses so their reports would require much less detail.

Existing Systems

Frequently, the role of the developer is to either create additional reports or interface some new system with the company's existing accounting software. Many accounting systems provide API-level access to allow developers to record transactions within their systems. QuickBooks, the popular accounting application, has an API which exposes many types of objects including a **JournalEntry** object. This object is a transaction with both a debit and credit. There is also an **Account** object which provides access to the Chart of Accounts.

Taxes

Taxes are a fact of life in most countries and one of the major reasons that accounting systems exist. It takes a lot of people power to decide on how to record journal entries and actually record them. However, the detailed recording and documentation of expenses can often save substantial amounts of money at tax time. Because of this, companies expend the effort.

Summary

I have covered, at a high level, much of the functionality you will find in a client's accounting system. There are a variety of accounting packages available for all sizes of business. Having a basic understanding of their functionality should assist you with integrating your software into their system. You might need to learn some of the system's complex procedures and processes but the bottom line of every transaction will always be designed to maintain this simple formula:

$$\text{ASSETS} = \text{LIABILITIES} + \text{OWNER'S EQUITY}$$

Enjoy the wonderful world of accounting!

Appendix

Basic Accounting Systems in SQL

The following scripts show a simple set of tables and stored procedures (written in Microsoft SQL Server 2008 but should work in other versions, including SQL Express) that could handle the tasks of a basic accounting system. Note that this is a very basic system, with very little error handling. However, by creating the system in SQL and running some sample transactions, you can visually see the impact of journal entries.

The table design could work in other database products, but scripts would need to be tweaked to handle difference, particularly in identity keys and date handling.

Tables

The chart of accounts and journal tables are shown below. Both tables use an identity key to uniquely identify the rows:

```
CREATE TABLE Chart_of_Accounts
(
    ID          INT      IDENTITY(1,1),
    AccountNum VARCHAR(12) UNIQUE NOT NULL,
    Descrip    VARCHAR(48),
    AcctType   CHAR(1)   CHECK (AcctType in ('A', 'L', 'O', 'R', 'E')),
    Balance    MONEY,
    CONSTRAINT PK_Chart_of_Accounts PRIMARY KEY (ID)
)
CREATE TABLE Journals
(
    ID          INT      IDENTITY(1,1),      -- Unique key per line item
    AccountID  INT,
    Jrn1Type   CHAR(2),                      -- GJ, AR, AP, SJ, PJ, etc.
    TransNum   INT,                          -- Key to group entries together.
    DC         CHAR(1)  CHECK (DC in ('D', 'C')),
    Posted     CHAR(1)  DEFAULT 'N',
    TransDate  DATETIME DEFAULT GetDate(),
    PostDate   DATETIME,
    Amount     MONEY NOT NULL,
    CONSTRAINT PK_Journals PRIMARY KEY (ID),
    CONSTRAINT FK_Chart FOREIGN KEY (AccountID) REFERENCES Chart_of_Accounts(ID)
)
```

The table design is simple so as to illustrate the data flow; an actual accounting system will have additional fields such as transaction description, check reference number, etc.

Loading Sample Data

If you want to follow along with the sample transactions in the book, you can run the following script to load the sample chart of accounts:

```
INSERT INTO [dbo].Chart_of_Accounts (AccountNum,Descrip,AcctType,Balance)
VALUES
('1000','Cash-Checking Account','A',0),
('1100','Software','A',0),
('1200','Subscriptions','A',0),
('1600','Computer System','A',0),
('2000','Loan For Computer','L',0),
('3000','Owner Equity','O',0),
('3100','Retained Earnings','O',0)
-- Add income statement accounts (Chapter 2)
INSERT INTO [dbo].Chart_of_Accounts (AccountNum,Descrip,AcctType,Balance)
VALUES
('4000','Sales Revenue','R',0),
('5000','Rent Expense','E',0),
('5100','Postage Expense','E',0),
('5200','Shipping Supplies Expense','E',0),
('5300','Office Supplies Expense','E',0)
```

Stored Procedures

There are two primary processes that rely on stored procedures:

1. Adding Transactions
2. Posting Transactions

Adding Transactions

The stored procedure to add transactions expects two parameters; the first is a list of the account entries separated by commas. The format of each entry is:

Comma Separated: Format is AcctNum|D or C|Amount

The second parameter is the journal type, which defaults to the General Journal (GJ).

The code relies on a user-defined function (UDF) to split the Account entry string into components and return a data table. The code for this function is shown below:

```
CREATE Function [dbo].TransToTable
(@AcctList VARCHAR(1000) )
RETURNS
@RowTable TABLE
(
    AcctNumber VARCHAR(12),
    JrnL_Account_ID INT,
```

```

        DebitCredit CHAR(1),
        Amt MONEY
    )
AS
BEGIN

    DECLARE @X INT
    DECLARE @Y INT
    DECLARE @OneLine VARCHAR(30)
    DECLARE @acctNUM VARCHAR(12)
    DECLARE @DebCred CHAR(1)
    DECLARE @TransAmt MONEY
    SET @AcctList=@AcctList+','

    SET @x = CHARINDEX(',',@AcctList)
    WHILE @x >0
    BEGIN
        SET @OneLine = LEFT(@AcctList,@x-1)
        SET @AcctList = RTRIM(SUBSTRING(@AcctList,@x+1,9999))
        if LEN(@OneLine) > 0
        begin
            SET @Y = CHARINDEX(' | ',@OneLine)
            SET @AcctNum = LEFT(@OneLine,@y-1)
            SET @DebCred = SUBSTRING(@OneLine,@y+1,1)
            SET @OneLine = RTRIM(SUBSTRING(@OneLine,@y+3,9999))
            SET @TransAmt = CAST(@OneLine AS MONEY)
            INSERT INTO @RowTable VALUES (@AcctNum,-1,@DebCred,@TransAmt)
        end
        UPDATE @rowTable SET JrnL_Account_ID = xx.id
        FROM (select id,accountNum FROM [dbo].chart_of_accounts) xx
        WHERE xx.accountNum=AcctNumber
        SET @x = CHARINDEX(',',@AcctList)
    END
    RETURN
END

```

With this function available, the Add Transaction function uses this function and converts the string to a table. It then checks to see that:

- All accounts are found.
- The debits and credits match.

If so, the entry is added to the journals (but not posted):

```

CREATE PROCEDURE [dbo].AddTransaction
(
    @AcctList VARCHAR(1000), -- Comma Separated: Format is AcctNum|D or
    C|Amount,
    @JrnLType CHAR(2) ='GJ'
)
AS
BEGIN
    SET NOCOUNT ON
    -- Split the parameter into a table

```

```

DECLARE @TransTable TABLE (AccoutNum VARCHAR(12),ID INT,DC CHAR(1),amt MONEY)
INSERT INTO @TransTable
    SELECT * FROM [dbo].TransToTable(@AcctList)
-- Validate all accounts, return -1 if any invalid accounts
DECLARE @nCtr INT

SELECT @nCtr = COUNT(*) FROM @TransTable WHERE ID <0
IF (@nCtr >0 )
BEGIN
    -- Optionally, could raise an error
    PRINT 'Missing account numbers'
    RETURN -1
END

-- Validate Debits = Credits, return -2 if not
DECLARE @DebitTot MONEY
DECLARE @CreditTot MONEY

SELECT @DebitTot = SUM(amt) FROM @TransTable WHERE DC='D'
SELECT @CreditTot = SUM(amt) FROM @TransTable WHERE DC='C'
IF (@DebitTot <> @CreditTot )
BEGIN
    -- Optionally, could raise an error
    PRINT 'Debits <> Credits'
    RETURN -2
END
-- Post the transaction into journals
BEGIN TRANSACTION
    DECLARE @nNext INT
    SELECT @nNext = IsNull(max(transNum)+1,1)
        FROM [dbo].Journals WHERE jrn1Type=@Jrn1Type

    INSERT INTO [dbo].Journals (AccountID,Jrn1Type,TransNum,DC,Amount)
    SELECT ID,@Jrn1Type,@nNext,DC,amt
        FROM @TransTable
    COMMIT
    RETURN 0
END

```

The procedures returns a code indicating whether or not the transaction was added to the journal:

- 0 OK
- -1 Account numbers not found
- -2 Transaction not in balance

The following are the journal entries that would be recorded based on Chapter 1's transactions:

```

EXEC [dbo].AddTransaction '1000|D|10000,3000|C|10000','GJ'
EXEC [dbo].AddTransaction '1600|D|6000,1000|C|1000,2000|C|5000','GJ'
EXEC [dbo].AddTransaction '1100|D|794,1200|D|99,1000|C|893','GJ'

```

```
EXEC [dbo].AddTransaction '1000|C|1000,2000|D|1000', 'GJ'
```

Posting Transactions

The journal entries are recorded as not posted; they are not applied to the chart of accounts. At some point, the entries need to be applied to the accounts. You could call the posting immediately when the entry is written or do a periodic posting process. The post transaction code takes a parameter—either the Transaction number to post or 0 indicating to post all transactions. The code is shown below:

```
CREATE PROCEDURE [dbo].PostTransaction( @TransNumb INT = 0 )
AS
BEGIN
    SET NOCOUNT ON
    UPDATE [dbo].Chart_of_Accounts SET Balance = Balance +xx.PostAmt
    FROM
    (
        SELECT AccountID,
        Sum(
            CASE WHEN jl.dc='D' THEN amount ELSE -1*amount END
        ) as PostAmt
        FROM [dbo].Journals jl
        JOIN [dbo].Chart_of_Accounts ca on jl.AccountID=ca.id
        WHERE jl.posted='N' AND ca.AcctType in ('A', 'E')
            AND (Transnum = @TransNumb or @TransNumb=0)
        GROUP BY AccountID
    ) xx
    WHERE xx.accountID=ID

    UPDATE [dbo].Chart_of_Accounts SET Balance = Balance +xx.PostAmt
    FROM
    (
        SELECT AccountID,
        Sum(
            CASE WHEN jl.dc='C' THEN amount ELSE -1*amount END
        ) as PostAmt
        FROM [dbo].Journals jl
        JOIN [dbo].Chart_of_Accounts ca on jl.AccountID=ca.id
        WHERE jl.posted='N' AND ca.AcctType in ('L', 'O', 'R')
            AND (Transnum = @TransNumb or @TransNumb=0)
        GROUP BY AccountID
    ) xx
    WHERE xx.accountID=ID
    UPDATE [dbo].Journals SET posted='Y', PostDate=getDate()
        WHERE posted='N' AND (Transnum = @TransNumb or @TransNumb=0)
END
```

The journal transactions that are applied are then marked as posted, and a post date is recorded.

Reporting Views

The following two views create a balance sheet and an income statement. They can be used as a starting point to gather the raw data to display these reports to the user.

Balance Sheet

```
CREATE VIEW [dbo].BalanceSheet
AS
    SELECT AccountNum, Descrip, Balance FROM [dbo].Chart_of_Accounts WHERE
AcctType='A'
    UNION
    SELECT '1900', 'TOTAL ASSETS', Sum(Balance) FROM [dbo].Chart_of_Accounts
        WHERE AcctType='A'
    UNION
    SELECT AccountNum, Descrip, Balance FROM [dbo].Chart_of_Accounts
        WHERE AcctType='L'
    UNION
    SELECT '2900', 'TOTAL LIABILITIES', Sum(Balance) FROM [dbo].Chart_of_Accounts
        WHERE AcctType='L'
    UNION
    SELECT AccountNum, Descrip, Balance FROM [dbo].Chart_of_Accounts
        WHERE AcctType='O'
    UNION
    SELECT '3900', 'TOTAL EQUITY', Sum(Balance) FROM [dbo].Chart_of_Accounts
        WHERE AcctType='O'
    UNION
    SELECT '3999', 'TOTAL LIABILITIES/EQUITY', Sum(Balance) FROM
[dbo].Chart_of_Accounts
        WHERE AcctType IN ('L', 'O')
```

Note that the code above is assumed to be run after the closing entry has been posted but before the next period transactions have occurred. To create an interim balance sheet, you would need to start with the above and then add a “computed” retained earnings based upon the difference between revenues and expenses in the journals. If you do so, be sure to note that the balance sheet is interim.

Income Statement

The income statement view is prepared from non-posted journal transactions:

```
CREATE VIEW [dbo].IncomeStatement
AS
    SELECT 4000 as Seq, 'REVENUE' as 'Account Name', IsNull(Sum(jl.Amount), 0) as
Balance
        FROM [dbo].Journals jl
        JOIN [dbo].Chart_of_Accounts ca on ca.id=jl.AccountId
        WHERE jl.posted='N' and ca.AcctType='R'
    UNION
    SELECT ca.AccountNum, descrip, IsNull(Sum(jl.Amount), 0) as Balance
```

```

FROM [dbo].Journals jl
JOIN [dbo].Chart_of_Accounts ca ON ca.id=jl.AccountId
WHERE jl.posted='N' AND ca.AcctType='E'
GROUP BY ca.descrip,ca.AccountNum
UNION
SELECT '9999','NET INCOME(loss)',xx.Balance
FROM (
    SELECT IsNull(
        Sum(CASE WHEN jl.dc='D' THEN -1*jl.amount
                  ELSE jl.amount END),0 ) AS Balance
    FROM [dbo].Journals jl
    JOIN [dbo].Chart_of_Accounts ca ON ca.id=jl.AccountId
      AND jl.posted='N' AND (ca.AcctType IN ('R','E'))
) xx

```

You can use the data from this view to produce the income statement for the period. It could also be used to generate a closing entry to move the income into the retained earnings account to get ready for the next period.

Summary

The SQL code for this simple system can be found on Syncfusion's [BitBucket site](#). The following scripts can be run if you want to review some of the early transactions in the book.

CreateTables.sql

This builds the chart of accounts and journal tables. You can add extra fields to these tables if you want but, if you change any fields names, be sure to update the various procedures and views.

CreateProcs.sql

This generates the procedures to add and posts transactions to the journals and chart of accounts.

CreateReportsView.sql

This creates the views to provide data for balance sheet and income statements.

LoadSampleData.sql

This loads the sample chart of accounts and transactions from the first two chapters.