

# The Jay Company Case: A New Learning Aid to the Accounting Information System

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## Abstract

*Accounting is frequently called the language of business. To understand this language requires a working knowledge of the accounting equation, accounting rules, and accounting information flows. Business students must understand the nature of financial transactions, the impact of these transactions on the financial statements, and the relationships among the financial statements. In this paper, we describe the Jay Company - a case tool that we have developed and used in teaching the structure of the accounting information system. The Jay Company case is based on twenty transactions that occur over a three-year period. By investing only a relatively brief amount of time, students can employ modern technology to better understand several important concepts. These include the nature of the accounting information system, the nature of interrelationships among the four major financial statements, the difference between accrual-basis accounting and cash-basis accounting, the difference between the direct and indirect methods of presenting the statement of cash flows, and the concept of lifetime income. The case emphasizes the impact of transactions on financial statements, and de-emphasizes such mundane manual processes as posting and closing. By focusing on a limited number of transactions, the case guides students away from their natural tendency to get lost in the details of these types of problems. Students can complete the Jay Company case in about three hours.*

## Introduction

*A*ccounting is frequently called the language of business. To understand this language requires a working knowledge of the accounting equation, accounting rules, and accounting information flows. Business students must understand the nature of financial transactions, the impact of these transactions on the financial statements, and the relationships between the financial statements.

Business students must also understand the difference between cash-basis accounting and accrual-basis accounting. The former is simple, but not allowed under generally accepted accounting principles (GAAP) because it omits important information. In contrast, accrual-basis accounting is more complex and complete and is required by GAAP.

In this paper, we contrast a typical case used to illustrate these accounting concepts with the case of Jay Company -- a case that we have developed and used in teaching the structure of the accounting in-

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*Readers with comments or questions are encouraged to contact the authors via email.*

formation system that we believe does a better job. Our case (or a variation of it) has been administered to various levels of students, including intermediate accounting students, accounting systems students, and students in an executive MBA program. The case presents a three-period example of an accounting information system that students can complete in about three hours.

### **The Typical Case**

The typical textbook problem that is used to illustrate the nature of the accounting information system has the following characteristics:

1. The typical textbook problem presents a one-period example that contains numerous transactions. The existence of numerous transactions causes many students to get lost in the details and lose sight of the big picture.
2. The one-period example involves either a new company or one that has been in business for a while. If the company is new, many students fail to see how certain account balances (such as cash, accounts receivable, and retained earnings) accumulate from one period to the next. If the company has been in business for a while, many students fail to see how the company got started, and they do not have enough information to compute its lifetime income.
3. The typical textbook problem omits the statement of cash flows for simplicity. Omitting the statement of cash flows is problematic because it suggests that this statement is unimportant. The Jay Company Case not only includes the statement of cash flows, but it requires students to develop the statements using both the direct and indirect methods. This requirement helps students clearly understand the similarities and differences in the two methods.
4. In the typical textbook problem, Cash-basis and accrual-basis accounting are not compared. As a result, an important learning opportunity is lost.
5. Because the company in the typical textbook problem remains in existence at year-end, an opportunity is lost to illustrate the concept of lifetime income.
6. The typical textbook problem requires a solution that relies solely on the traditional approach of making journal entries in accounts. This misses the opportunity to teach the immediate effect of each transaction on the company's financial position, as represented by its balance sheet.
7. The typical textbook problem usually calls for a manual solution, thereby missing an opportunity to illustrate the use of modern technology.
8. The typical textbook problem focuses heavily on posting and closing --- concepts that reflect more on the human inability to deal with large numbers of transactions than on accounting theory.

To overcome these limitations, the authors developed a three-period case for a hypothetical company called Jay Company. The case is administered in a spreadsheet environment, also developed by the authors, which allows students to readily understand the flow of information from the journals to the ledgers to the financial statements. In a properly designed template, after a transaction is entered in the journal, it is immediately reflected in the financial statements. Using only 20 relatively straightforward transactions, the Jay Company is formed, operated for three years, and finally dissolved. The case is limited to 20 transactions in order to help students focus on the big picture of accounting and reduce their tendency to get lost in the details. After each period, students are required to prepare the four basic financial statements (income statement, statement of retained earnings, balance sheet, and statement of cash flows) under both accrual-basis accounting and cash-basis accounting.

As an alternative method for understanding the effects of transactions on a company's financial position, the case also requires students to enter each of the 20 transactions in a balance sheet grid. The balance sheet grid is a new learning aid that the authors created for use with this problem. The grid helps students to understand that the fundamental balance sheet equation ( $\text{Assets} = \text{Liabilities} + \text{Owners' Eq-}$

uity) should be true algebraically after every transaction.

In addition, the grid helps students to visualize the fact that the statement of cash flows is simply the result of classifying the increases and decreases in cash into operating, investing, and financing activity categories. Moreover, the grid helps students to see that the elements of the income statement (Revenues and Expenses) are just temporary extensions of Owner's Equity. The Jay Company case is presented in the following paragraphs.

### The Jay Company Case

The Jay Company Case can be assessed from the Internet at <http://198.78.212.25/jayco/>. Figure 1 shows the opening material from Jay Company's web page. The web page introduces the case, presents the instructions, and lists the transactions. Also, a hyperlink on this web page allows the user to download the Excel template for the Jay Company.

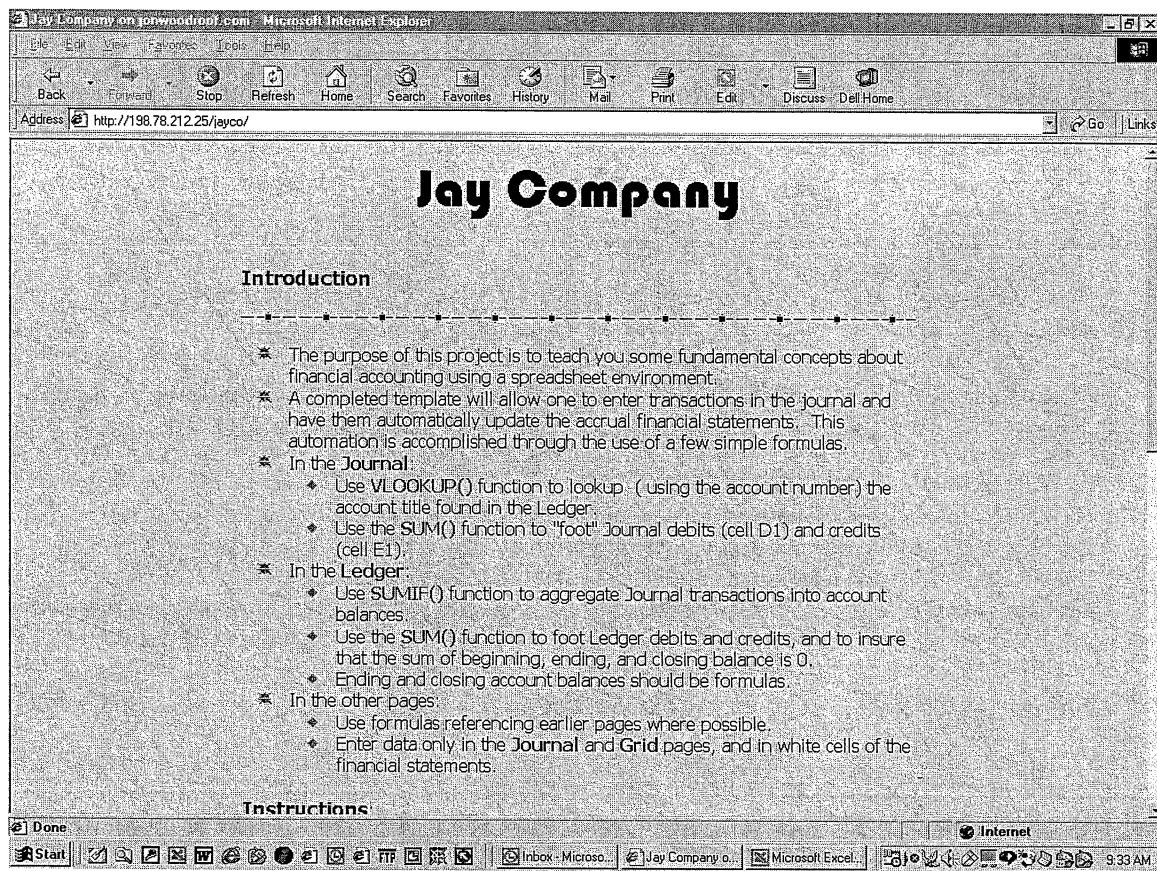


Figure 1: Excerpt from The Jay Company Case Web Page

*Transactions*

Jay Company was organized and began operations in 1998 with no assets. The company had the following 1998 transactions.

1. Sold common stock for \$100,000.
2. Rented space in a building for \$24,000.
3. Bought merchandise inventory on account from suppliers for \$80,000 on credit.
4. Sold merchandise inventory on account to customers for \$120,000. The cost of inventory sold was \$60,000.
5. Collected \$75,000 from customers on account.
6. Paid \$65,000 of accounts payable.
7. Paid \$40,000 of wages to employees during the year.
8. Owed wages to employees at year-end in the amount of \$5,000.

Jay Company continued operations during 1999 and had the following transactions.

1. Paid \$5,000 cash to advertise its product.
2. Rented building space for \$26,000.
3. Bought merchandise inventory from suppliers for \$130,000 on credit.
4. Sold merchandise inventory on account to customers for \$290,000. The cost of inventory sold was \$120,000.
5. Collected \$225,000 from customers on account.
6. Paid \$140,000 of accounts payable.
7. Paid \$50,000 of wages to employees during the year, *including* \$5,000 that employees had earned during 1998.

Jay Company continued operations during the year 2000 and had the transactions shown below. During the year, the company decided to discontinue operations and liquidate its business.

1. The company collected the accounts receivable from 12-31-99.
2. The company sold its remaining inventory for cash of \$70,000.
3. The company paid the remaining accounts payable.
4. The company paid employee wages of 8,000 that were earned during 2000.
5. The company distributed all remaining cash to stockholders and went out of business before the end of the year.

*Instructions*

Students should have a working knowledge of electronic spreadsheets, but they need not be spreadsheet experts. Only three functions are used in the template: =SUM(), =SUMIF(), and =VLOOKUP(). Students should use formulas referencing earlier pages wherever possible. The green cells throughout the software template indicate where there should be *formulas*. Students should enter *data* only in the Journal and Grid pages, and in white cells of the financial statements. Students can build the Jay Company spreadsheet template using the following instructions:

1. Download the Jay Company spreadsheet template from the web site.
2. In the Description column of the Journal page, enter the function to look up Account Description from the Ledger page.
3. Enter the transactions into the appropriate Journal page for each year. Sum the Debit and Credit

- columns to ensure that the Journal is in balance.
4. Using SUMIF() in the Debit and Credit columns of the Ledger pages, aggregate the Journal transactions into the appropriate Ledger accounts for each year.
  5. From each year's Ledger page, pull (by referencing the appropriate cells) ending balances of accounts into the appropriate accrual-basis financial statements for each year.
  6. On the Income Statement page, sum revenue and expense accounts across the three-year period and compute lifetime income for accrual-basis accounting
  7. Using cell references, dynamically link the financial statements to each other for each year.
  8. Go back and manually input cash numbers in the cash-basis financial statements for each year. Use the "pure" cash basis of accounting and not a "modified" cash basis.
  9. On the Income Statement page, compute lifetime income for cash-basis accounting.
  10. Manually enter transactions in the Balance Sheet Grid page. To the left of each increase or decrease in cash, classify the change as operating, financing, or investing. To the right of each change in retained earnings, classify the change as a revenue or expense. Foot the columns for each year.
  11. Explain why accrual basis accounting is considered superior to cash basis accounting.
  12. Upon completion of the project, look over the financials and write down observations you have as you compare accrual to cash-basis accounting.

In the remaining paragraphs, we walk the reader through key pages of the Excel spreadsheet template for Jay Company.

### *The Journal Pages*

Transactions are recorded in the General Journal page for each year. Figure 2 shows the journal page for 2000. Two types of formulas must be coded in this page: =SUM() and =VLOOKUP(). The =SUM() function is placed in cells D5 and E5. This function ensures that the total for the debit column equals the total for the credit column. The function for these cells is: =SUM(D7:D106).

The =VLOOKUP() function is placed in cell C7 and then can be copied into the remaining cells in the Description column. This function "looks up" the Description in the Ledger that has an AccountID matching the AccountID in the Journal. When the user types an ID in the AccountID column of the journal, the description of that account appears in the Description column. This provides a data integrity constraint on user input. The =VLOOKUP() function is: =VLOOKUP(B3,'2000 GL'!\$B\$5:\$C\$19).

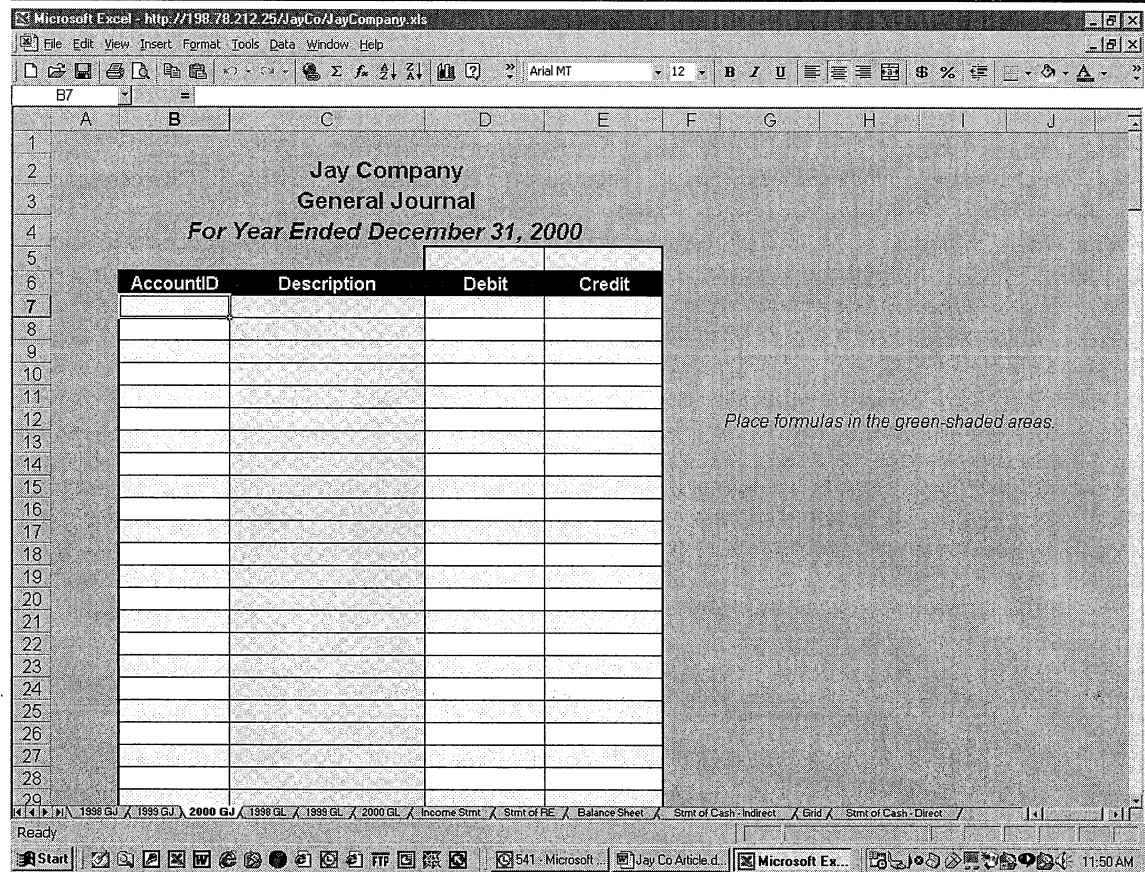


Figure 2: 2000 General Journal Page

*The Ledger Pages*

Figure 3 shows the 2000 General Ledger page. This page requires students to first enter beginning balances for each account (zeros for the first year, and cell references to ending balances of the previous year for each successive year). Next, students must enter functions to aggregate Journal debits and credits for each account. Next, students must enter summation formulas to derive ending balances for each account, as well as balances for real accounts. Finally, each column is footed to ensure that the ledger totals to zero.

The function that aggregates the Journal debits and credits for each account is =SUMIF(). This function has three parameters: 1) the range of cells to be evaluated; 2) the condition or criterion that defines which cells will be summed; and 3) the range of the cells to sum.

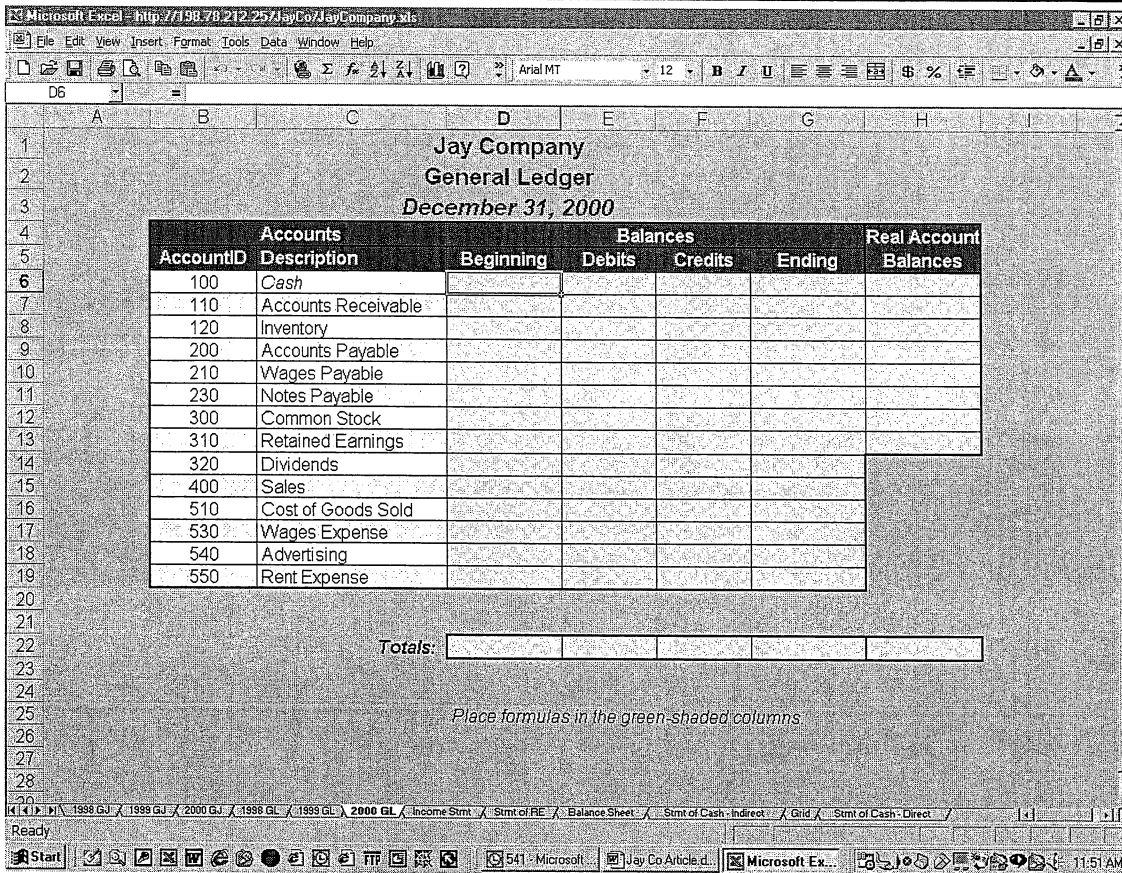


Figure 3: 2000 General Ledger Page

The function is: =SUMIF('2000 GJ'!\$B\$6:\$B\$106,\$B6,'2000 GJ'!D\$6:D\$106). This function is entered in cell E6, and then copied to the remaining cells in the Debits and Credits columns. To derive the balance in the Ending column, the following formula is placed in cell G6 and copied to the remaining cells in the column: =D6+E6-F6. Each column is then footed. The function to foot the Beginning column is: =SUM(D6:D25).

The final column to be derived on this page is the Real Accounts Balances column. All rows except the one for Retained Earnings simply reference the adjacent cell in the Ending column. The function =SUM(G13:G19) calculates Retained Earnings by summing the current Revenues and Expenses, along with any Earnings previously retained in the business, and is placed in cell H13.

*The Income Statements Page*

Figure 4 shows the Jay Company Income Statement. The first task to accomplish on this page is to work on the Accrual columns. Students should pull nominal account balances into the Income Statement page by referencing the appropriate ledger. For example, the formula in cell D9 for Sales is: = -'1998 GL'!\$G15.

Note the negative sign in front of the reference. This “flips” the Sales number in the Ledger so

that it is presented on the Income Statement in standard format. After the Accrual columns are finished, the totals for each Revenue and Expense element in the Income Statement, as well as the Lifetime Income, can be derived. The formula to calculate Lifetime Income under the accrual-basis is: =D15+G15+J15.

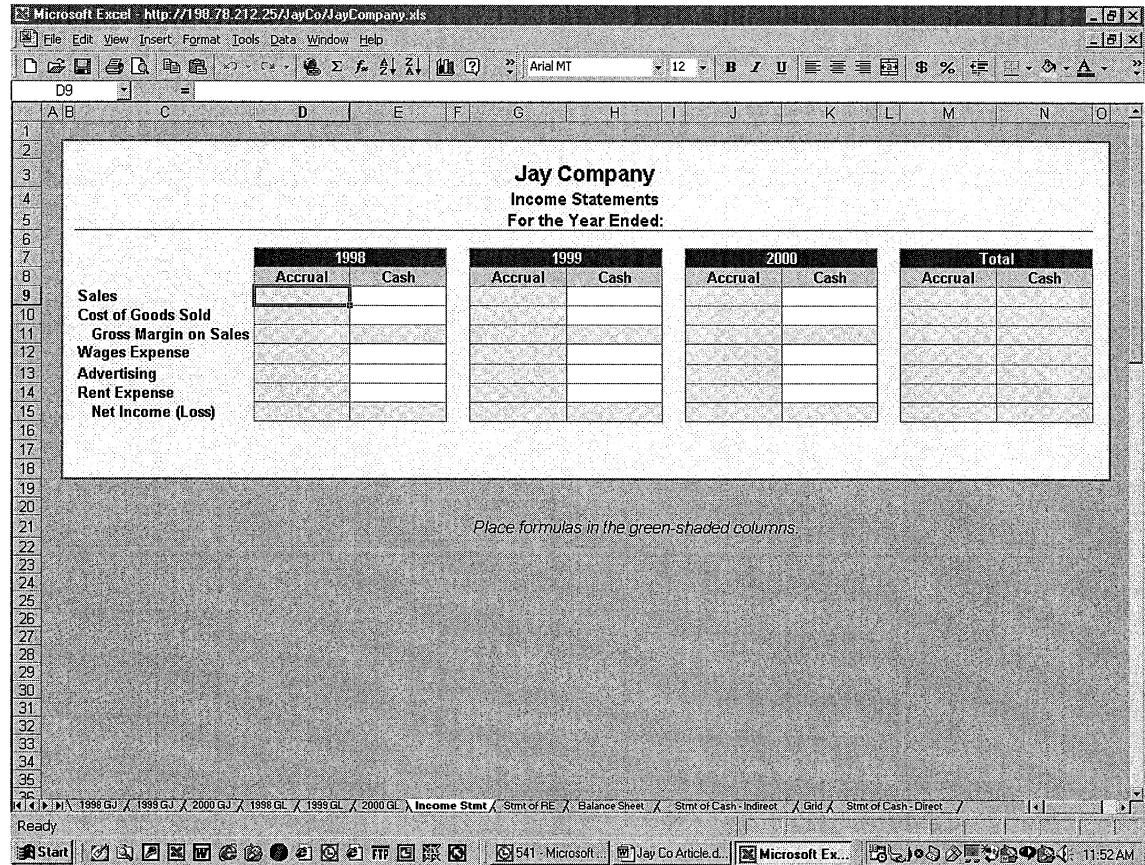


Figure 4: Jay Company Income Statements Page

It is important for students to understand that the financial statements must be generated in the correct sequence --- Income Statement, Statement of Retained Earnings, Balance Sheet, and Statement of Cash Flows. Before Ending Retained Earnings can be used on the Balance Sheet, it must be derived on the Statement of Retained Earnings. And before one can generate the Statement of Retained Earnings, Net Income must be calculated on the Income Statement. Last of all, the Statement of Cash Flows is prepared. All the statements are linked dynamically so that a change in any of the Journals is immediately reflected in the accrual-basis financial statements.

After the accrual-basis has been completed for the Income Statements, students may enter numbers into the Cash columns to derive cash-basis Income Statements. These cash-basis entries are not formulas -- they are numbers that are typed directly into the Cash column cells. After this has been done, the same formulas that were entered to derive accrual-basis Lifetime Income should be entered to derive cash-basis Lifetime Income. Building this page should illustrate to students that Lifetime Income is the same for both accrual-basis and cash-basis methods. The difference between the two bases lies in the



timing of revenue and expense (and therefore income) recognition.

The Statements of Retained Earnings Page

Figure 5 shows the Jay Company Statements of Retained Earnings page for the three-year period. All cells on the Statements of Retained Earnings page (even Cash columns) should reference cells from either the Income Statements page or prior years of the Statements of Retained Earnings (except for 1998 Retained Earnings, which is zero). The formula for Net Income (Loss) in cell D10 is: =Income Stmt!D15. The formula for Beginning Retained Earnings for 1999 in cell G9 is: =D12. Linking this page back to the income statement and forward to the balance sheet should help students understand the role that the statement of retained earnings plays among the financial statements.

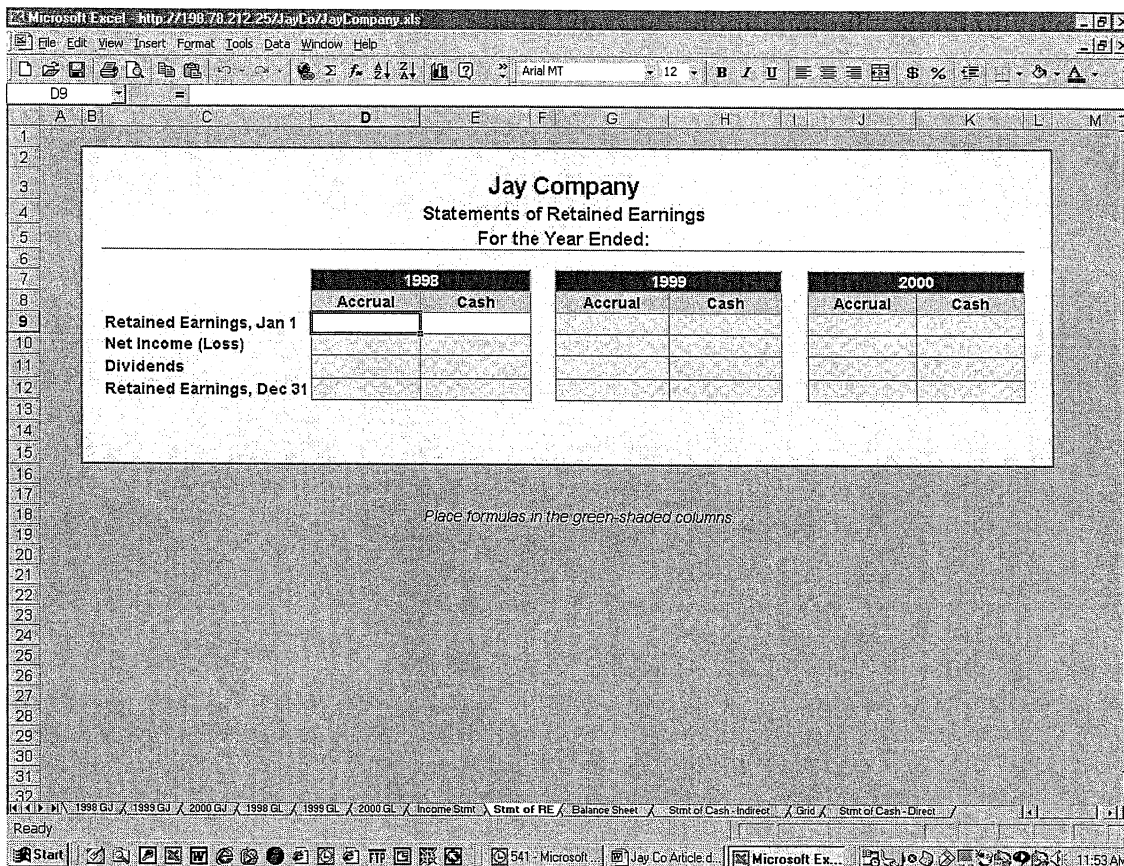


Figure 5: Jay Company Statements of Retained Earnings Page

The Balance Sheets Page

The Jay Company Balance Sheets page is shown in Figure 6. All cells in the Accrual columns (except Retained Earnings) are formulas that pull real account balances from the appropriate Ledgers. The Retained Earnings cells (for both the Accrual and Cash columns) reference Ending Retained Earnings on the Statements of Retained Earnings page. The formula in cell D10 for Cash is: = '1998 GL'!\$H6. The formula in cell D23 for Retained Earnings is: = 'Stmt of RE'!D12. The formula for Total Assets in

cell D13 is: =SUM(D10:D12). Total Liabilities would be derived in the same fashion, as would be Total Stockholders' Equity and Total Liabilities and SE.

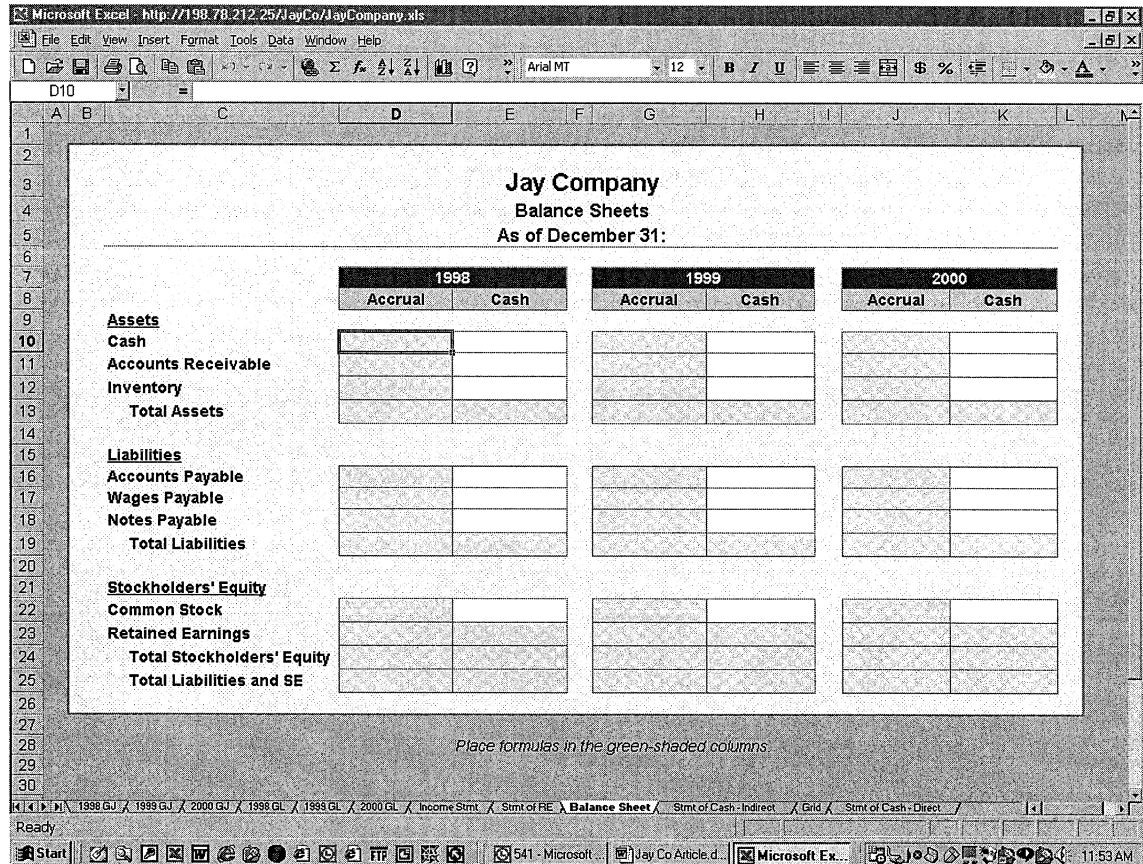


Figure 6: Jay Company Balance Sheets Page

*The Statements of Cash Flows (Indirect Method) Page*

Figure 7 shows the Statement of Cash Flows (Indirect Method) page. We implement the indirect method first because the Operating Activities section can be derived directly from earlier spreadsheet pages. For reasons that will be obvious later, we delay presenting the direct method until after the Balance Sheet Grid page has been completed. Having students use both methods for presenting the statement of cash flows illustrates the uniqueness of their presentations and helps them understand why both methods end up with the same change in cash.

The values in the net income row are pulled from the Income Statements page. The values in the section entitled, “Changes to Non-Cash WC Accounts” are calculated by subtracting the Ending balances from the Beginning balances in the General Ledger for the appropriate year. As mandated by the accounting equation, the change in the cash account must equal the change in the non-cash accounts. The formula for cell E11 is =1998 GL!D7-1998 GL!G7.

The values for the investing and financing activities sections are simply typed in by the students

and then summed. The formula in cell E20 is =SUM(E18:E19). The Net Increase (Decrease) in Cash row is a summation of rows 15, 20, and 26. The formula in cell E27 is +E15+E20+E26.

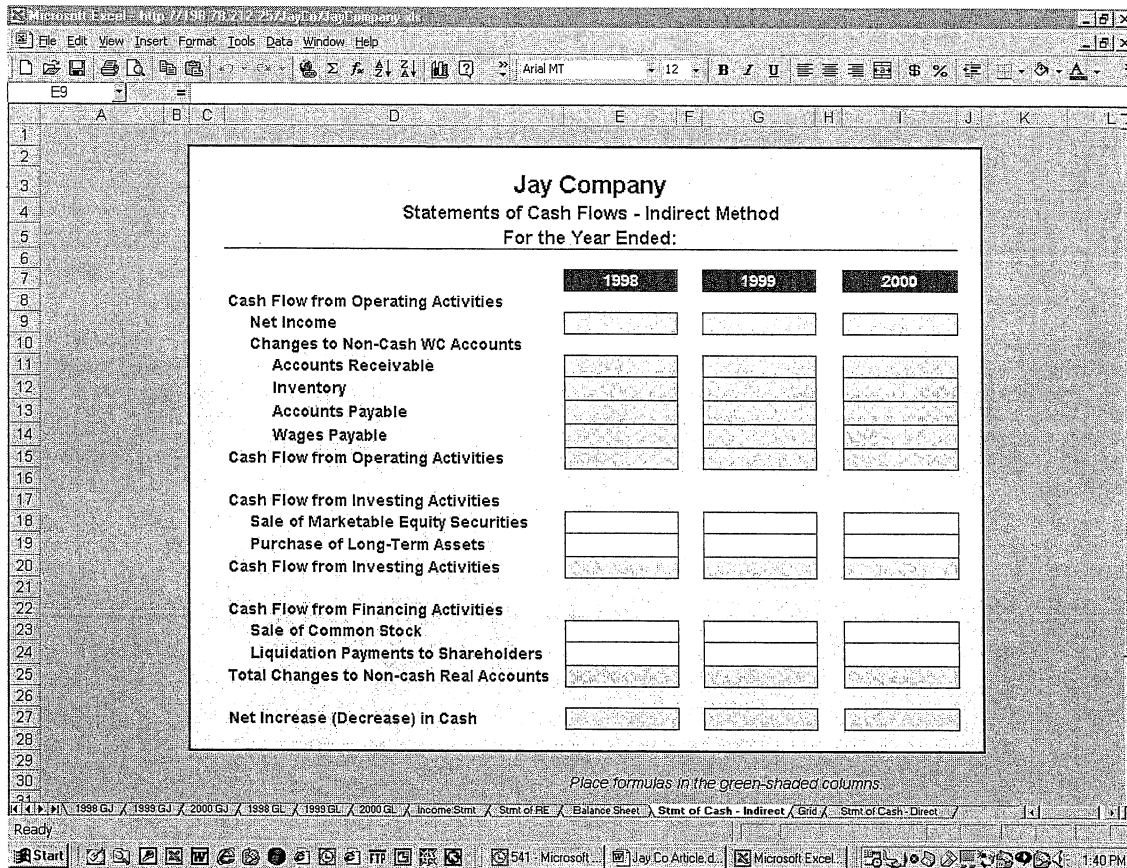


Figure 7: Jay Company Statements of Cash Flows (Indirect Method) Page

The Balance Sheet Grid Page

As was mentioned earlier, in addition to the requirement that students journalize the transactions and create and link the financial statements, the case also requires students to enter each of the 20 transactions in a balance sheet grid. The Grid page, shown in Figure 8, accomplishes three purposes: 1) the grid helps students to understand that the fundamental balance sheet equation must be true algebraically after every transaction; 2) the grid helps students to visualize the fact that the Statement of Cash Flows is simply the result of classifying the increases and decreases in cash into operating, investing, and financing activity categories; and 3) the grid helps students to see that the elements of the income statements (Revenues and Expenses) are merely temporary extensions of Owner’s Equity.

We believe that the grid offers an innovative way for students to quickly see the financial statement effects of business transactions in a single location. In the main part of the grid, students re-enter each of the 20 transactions. In column K, students enter the specific revenue and expense accounts for transactions that have affected Retained Earnings.

In column A, students classify those transactions that affect cash by entering the appropriate activity -- *operating*, *investing*, or *financing*. This classification can then be used to easily create the next spreadsheet page, the Statement of Cash Flows (Direct Method) page. The only formulas in the Grid page that the students are required to enter are those that sum each of the columns for each of the years.

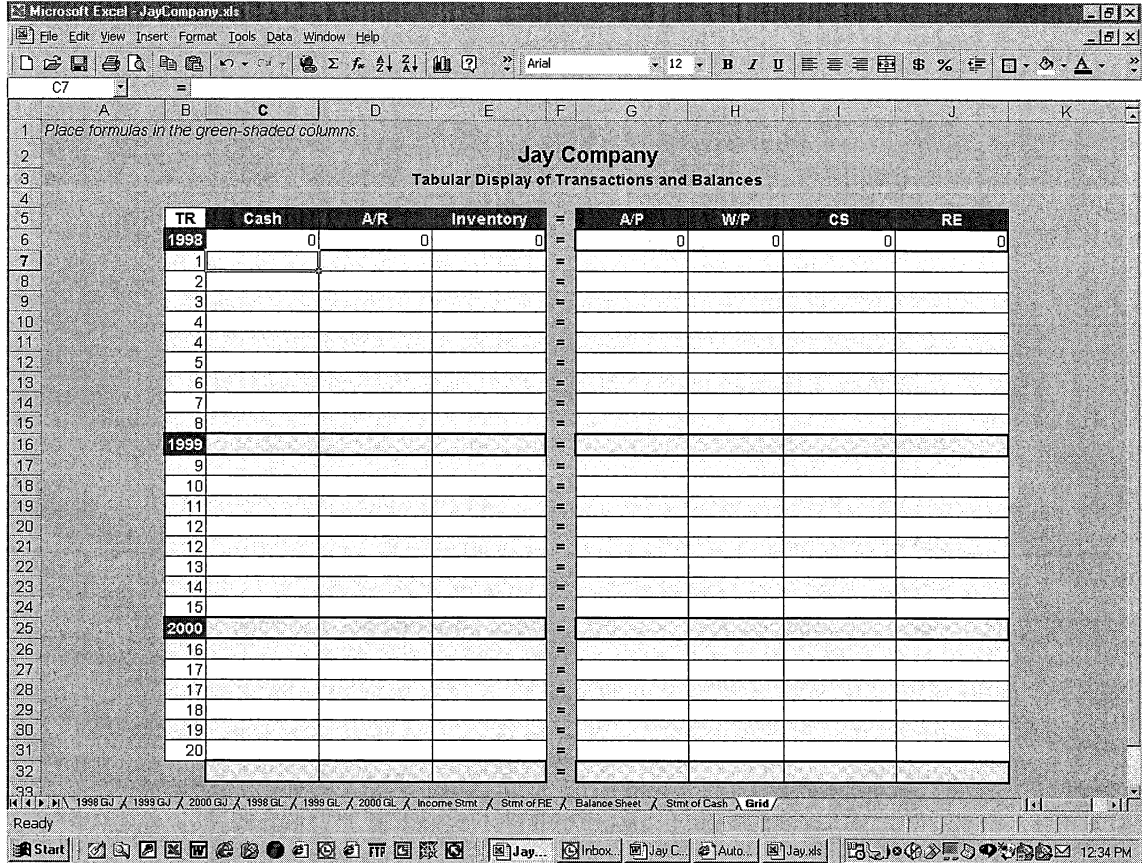


Figure 8: Jay Company Balance Sheet Grid Page

*The Statements of Cash Flows (Direct Method) Page*

Figure 9 shows the final page in the Jay Company Case template, the Statement of Cash Flows (Direct Method) page. This page can be completed by simply inserting the actual values from the Balance Sheet Grid page into the appropriate sections on the Statement of Cash Flows page. This exercise serves to reinforce the fact that the statement of cash flows is simply the result of classifying the increases and decreases in cash into operating, investing, and financing activity categories.

It should be noted that it is also possible to complete this page entirely with formulas by referencing previous pages already completed. The Cash Flow from Operating Activities section can contain formulas that pull information directly from the appropriate cells on the cash-basis income statement. And, because the only difference between the direct and indirect methods for presenting the statement of cash flows is in how the Cash Flow from Operating Activities section is derived, cells in the other two sections can pull information directly from the corresponding cells on the Statement of Cash Flows (Indi-

rect Method) page. The only other cells on this page contain formulas for summing the Operating, Investing, and Financing activities, and the Net Increase (Decrease) in Cash.

Jay Company			
Statements of Cash Flows - Direct Method			
For the Year Ended:			
	1998	1999	2000
<b>Cash Flow from Operating Activities</b>			
Cash Provided by Customers	<input type="text"/>	<input type="text"/>	<input type="text"/>
Less:			
Cash Paid to Suppliers	<input type="text"/>	<input type="text"/>	<input type="text"/>
Cash Paid to Employees	<input type="text"/>	<input type="text"/>	<input type="text"/>
Cash Paid for Advertising	<input type="text"/>	<input type="text"/>	<input type="text"/>
Cash Paid for Rent	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Cash Flow from Operating Activities</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Cash Flow from Investing Activities</b>			
Sale of Marketable Equity Securities	<input type="text"/>	<input type="text"/>	<input type="text"/>
Purchase of Long-Term Assets	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Cash Flow from Investing Activities</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Cash Flow from Financing Activities</b>			
Sale of Common Stock	<input type="text"/>	<input type="text"/>	<input type="text"/>
Liquidation Payments to Shareholders	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Cash Flow from Financing Activities</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Net Increase (Decrease) in Cash</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Figure 9: Jay Company Statements of Cash Flows (Direct Method) Page

The Jay Company Case is now complete. After finishing the case, students should be asked to reflect on the exercise and to explain why accrual-basis accounting is considered to be superior to cash-basis accounting. It is also useful to have the students write down any observations they might have as they proceed through the case.

*Concluding Remarks*

The Jay Company case is based on twenty transactions that occur over a three-year period. By focusing on a limited number of transactions, the case guides students away from their natural tendency to get lost in the details of these types of problems. By investing only a relatively brief amount of time, users can employ modern technology to better understand several important concepts. These include the nature of the accounting information system, the nature of interrelationships between the four major financial statements, the difference between accrual-basis accounting and cash-basis accounting, the difference between the direct and indirect methods of presenting the statement of cash flows, and the concept of lifetime income. The case emphasizes the impact of transactions on financial statements, and de-emphasizes such mundane manual processes as posting and closing. The balance sheet grid offers an in-

novative way for students to visualize the effects of business transactions on each financial statement.

Students' comments about the case have been very favorable. The authors encourage experimental research to compare the learning effects of the Jay Company Case with more traditional methods of instruction on the accounting information system. 