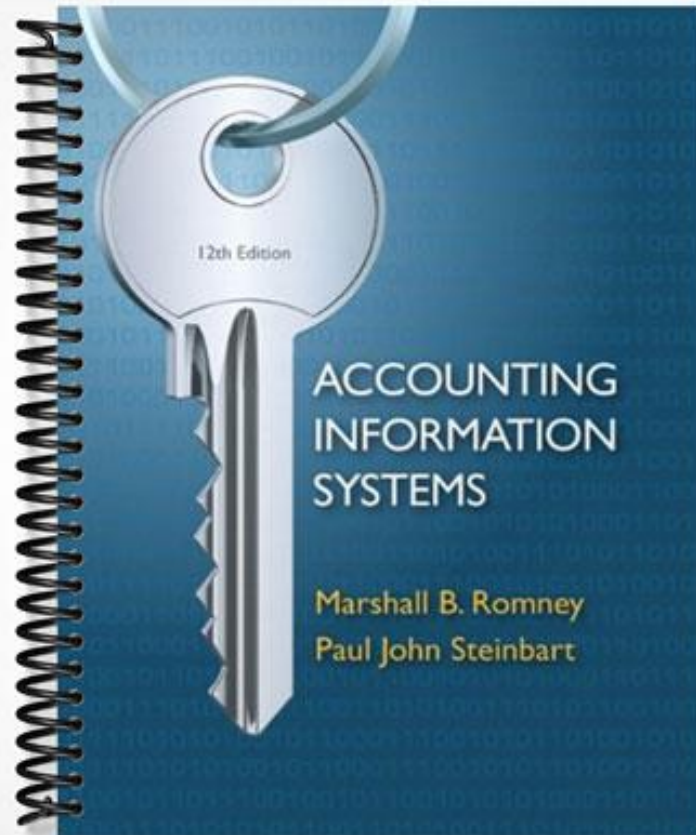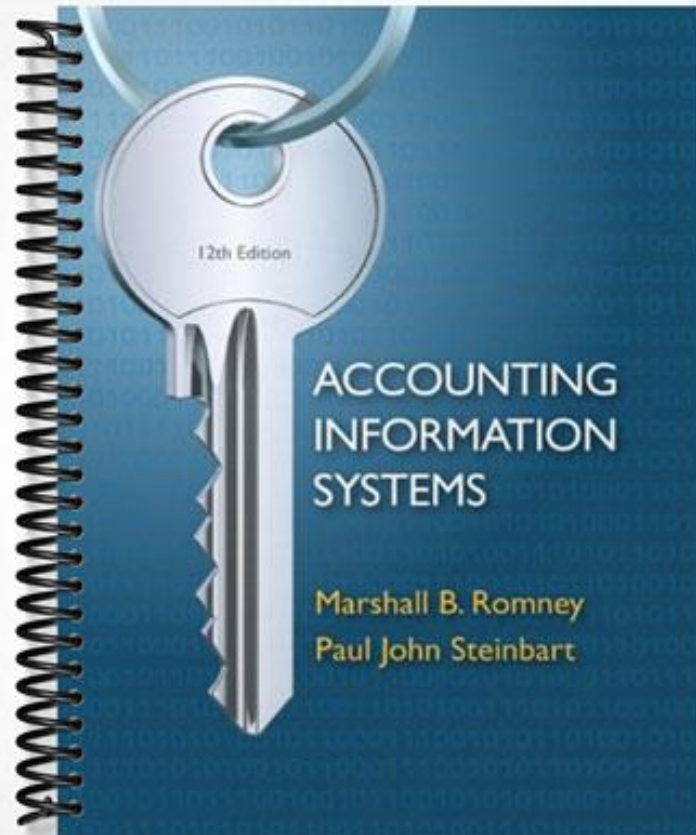# SOLUTIONS MANUAL

12th Edition

## ACCOUNTING INFORMATION SYSTEMS

Marshall B. Romney

Paul John Steinbart

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ACCOUNTING
INFORMATION
SYSTEMS

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# CHAPTER 2

# OVERVIEW OF BUSINESS PROCESSES

## SUGGESTED ANSWERS TO DISCUSSION QUESTIONS

2.1   Table 2-1 lists some of the documents used in the revenue, expenditure, and human resources cycle.  What kinds of input or output documents or forms would you find in the production (or conversion) cycle?

Students will not know the names of the documents but they should be able to identify the tasks about which information needs to be gathered.  Here are some of those tasks:

- Requests for items to be produced
- Documents to plan production
- Schedule of items to be produced
- List of items produced, including quantity and quality
- Form to allocate costs to products
- Form to collect time spent on production jobs
- Form requesting raw materials for production process
- Documents showing how much raw materials are on hand
- Documents showing how much raw materials went into production
- List of production processes
- List of items needed to produce each product
- Documents to control movement of goods from one location to another

2.2   With respect to the data processing cycle, explain the phrase "garbage in, garbage out." How can you prevent this from happening?

When garbage, defined as errors, is allowed into a system that error is processed and the resultant erroneous (garbage) data stored.  The stored data at some point will become output.  Thus, the phrase garbage in, garbage out.  Data errors are even more problematic in ERP systems because the error can affect many more applications than an error in a non-integrated database.

Companies go to great lengths to make sure that errors are not entered into a system.  To prevent data input errors:

- Data captured on source documents and keyed into the system are edited by the computer to detect and correct errors and critical data is sometimes double keyed.
- Companies use turnaround documents to avoid the keying process.
- Companies use source data automation devices to capture data electronically to avoid manual data entry with its attendant errors.
-  Well-designed documents and screens improve accuracy and completeness by providing instructions or prompts about what data to collect, grouping logically related pieces of information close together, using check off boxes or pull-down menus to

> present the available options, and using appropriate shading and borders to clearly separate data items.
> - Data input screens are preformatted to list all the data the user needs to enter.
> - Prenumbered source documents are used or the system automatically assigns a sequential number to each new transaction. This simplifies verifying that all transactions have been recorded and that none of the documents has been misplaced.
> - The system is programmed to make sure company policies are followed, such as approving or verifying a transaction. For example, the system can be programmed to check a customer's credit limit and payment history, as well as inventory status, before confirming a sale to a customer.

**2.3 What kinds of documents are most likely to be turnaround documents? Do an internet search to find the answer and to find example turnaround documents.**

Documents that are commonly used as turnaround documents include the following:

- Utility bills
- Meter cards for collecting readings from gas meters, photocopiers, water meters etc
- Subscription renewal notices
- Inventory stock cards
- Invoices
- Checks (banks encode account info on the bottom of checks)
- Annual emissions inventory forms
  (http://www.deq.state.ok.us/aqdnew/Emissions/TurnAroundDocs.htm)
- Adult Literary Information and Evaluation System forms
  (http://www.lacnyc.org/ALIES/tech_support/manual/Section4Chapter2.pdf)

Students will find many other turnaround documents.

Here are some URLs for turnaround document definitions and examples:
http://en.wikipedia.org/wiki/Turnaround_document
http://www.pcmag.com/encyclopedia_term/0,2542,t=turnaround+document&i=53248,00.asp
http://www.answers.com/topic/turnaround-document-1

Here are some turnaround document images (1 long URL):
http://images.google.com/images?q=turnaround+document&oe=utf-8&rls=org.mozilla:en-US:official&client=firefox-a&um=1&ie=UTF-8&ei=N7yBSpbAF4KiswO39JnwCA&sa=X&oi=image_result_group&ct=title&resnum=4

**2.4 The data processing cycle in Figure 2-1 is an example of a basic process found throughout nature. Relate the basic input/process/store/output model to the functions of the human body.**

There are a number of ways to relate the input/process/store/output model to the human

body.  Here are a few of them

- Brain.  We read, see, hear, and feel things.  We process that input in order to understand what it is and how it relates to us.  We store that data in our brains and then process it again in order to produce solve problems, make decisions, etc., which represent output.
- Stomach.  We take food in as input.  It is processed to produce energy to fuel all bodily functions.  If we eat more food than the body needs at any one time it is stored as fat.  The output is walking, talking, thinking – all functions fueled by the energy produced.  Human waste is also an output of that process.

Students will come up with other examples of how the input/process/store/output model applies to the human body

**2.5** **Some individuals argue that accountants should focus on producing financial statements and leave the design and production of managerial reports to information systems specialists.  What are the advantages and disadvantages of following this advice?  To what extent should accountants be involved in producing reports that include more than just financial measures of performance?  Why?**

There are no advantages to accountants focusing only on financial information.  Both the accountant and the organization would suffer if this occurred.  Moreover, it would be very costly to have two systems rather than one that captures and processes operational facts at the same time as it captures and reports financial facts.

The main disadvantage of this is that accountants would ignore much relevant information about the organization's activities.  To the extent that such nonfinancial information (e.g., market share, customer satisfaction, measures of quality, etc.) is important to management, the value of the accounting function would decline.  Moreover, accountants have been trained in how to design systems to maximize the reliability of the information produced.  If relevant information is not produced by the AIS, there is danger that the information may be unreliable because the people responsible for its production have not been trained in, or adequately aware of, the potential threats to reliability and the best measures for dealing with those threats.

**SUGGESTED ANSWERS TO THE PROBLEMS**

**2.1 The chart of accounts must be tailored to an organization's specific needs. Discuss how the chart of accounts for the following organizations would differ from the one presented for S&S in Table 2-2.**

Some of the changes in the chart of accounts for each type of entity include the following:

a.  University

- No equity or summary drawing accounts. Instead, have a fund balances section for each type of fund.

- Several types of funds, with a separate chart of accounts for each. The current fund is used for operating expenses, but not capital expenditures. Loan funds are used to account for scholarships and loans. Endowment funds are used to account for resources obtained from specific donors, generally with the objective that principal be preserved and that income be used for a specific purpose. Plant funds are used for major capital expenditures. Most fund categories would be further divided into restricted and unrestricted categories.

- Unlikely to have Notes Receivable, but may have Accounts Receivable for students who pay tuition in installment payments.

- Tuition and fees would be one source of revenue. Others include gifts, investment income, sales of services, and, for public universities, state appropriations.

- Student loans are an asset; student deposits are a liability.

b.  Bank

- Loans to customers would be an asset, some current others noncurrent, depending upon the length of the loan.

- No inventory

- Customer accounts would be liabilities.

- Classification of revenue would be among loans, investments, service charges, etc.

- No cost of goods sold.

c.  Government Unit

- No equity or summary drawing accounts. Instead, have fund balances.

- Balance sheet shows two major categories: (1) assets and (2) liabilities and fund equity.

- Separate chart of accounts for each fund (general fund, special revenue fund, capital projects fund, and debt service fund).

- Revenue and expenditure accounts would be grouped by purpose (e.g., police, highways, sanitation, education, etc.).

- Encumbrance accounts

- Revenues would include taxes, licenses and permits, fines, and charges for specific services.

- Taxes receivable as a separate category due to importance.

- No cost of goods sold.

d.  Manufacturing Company
- Several types of inventory accounts (raw materials, work-in-process, and finished goods).

- Additional digits to code revenues and expenses by products and to code assets/liabilities by divisions.

e.  Expansion of S&S

- Additional digits to code:
    - Revenues and expenses by products and by stores
    - Assets/liabilities by stores.

**2.2  Design a chart of accounts for SDC.  Explain how you structured the chart of accounts to meet the company's needs and operating characteristics.  Keep total account code length to a minimum, while still satisfying all of Mace's desires.**

(Adapted from the CMA Exam)

A six-digit code (represented by letters ABCDEF) is sufficient to meet SDC's needs:

A  This digit identifies the 4 divisions plus the corporate office. One digit can accommodate up to 9 different divisions, assuming that no division would be zero. Thus, the number of divisions would have to more than double before the chart of accounts would have to be revised.

B  This digit represents major account types (asset, liability, equity, revenue, expense). There are only 6 categories, so one digit is sufficient.

C  This digit represents the major classification within account type:

- For balance sheet accounts, this represents specific sub-categories (current assets, plant and equipment, etc.), as only six categories are needed.

- For expense and revenue accounts, this digit represents the product group, as again there are only five products plus general costs.

D  This digit represents specific accounts or cost centers:

- For balance sheet accounts, this is the control account; one digit is adequate because the problem says no more than 10 categories.

- For expense accounts, this is the cost center; one digit is adequate because the problem indicates no more than 6 cost centers.

EF These two digits represent the subsidiary accounts and natural expense categories:

- For expense accounts, these represent the 56 natural expense categories and variances for each cost center.

- For the balance sheet, these two digits accommodate up to 100 subsidiary accounts.
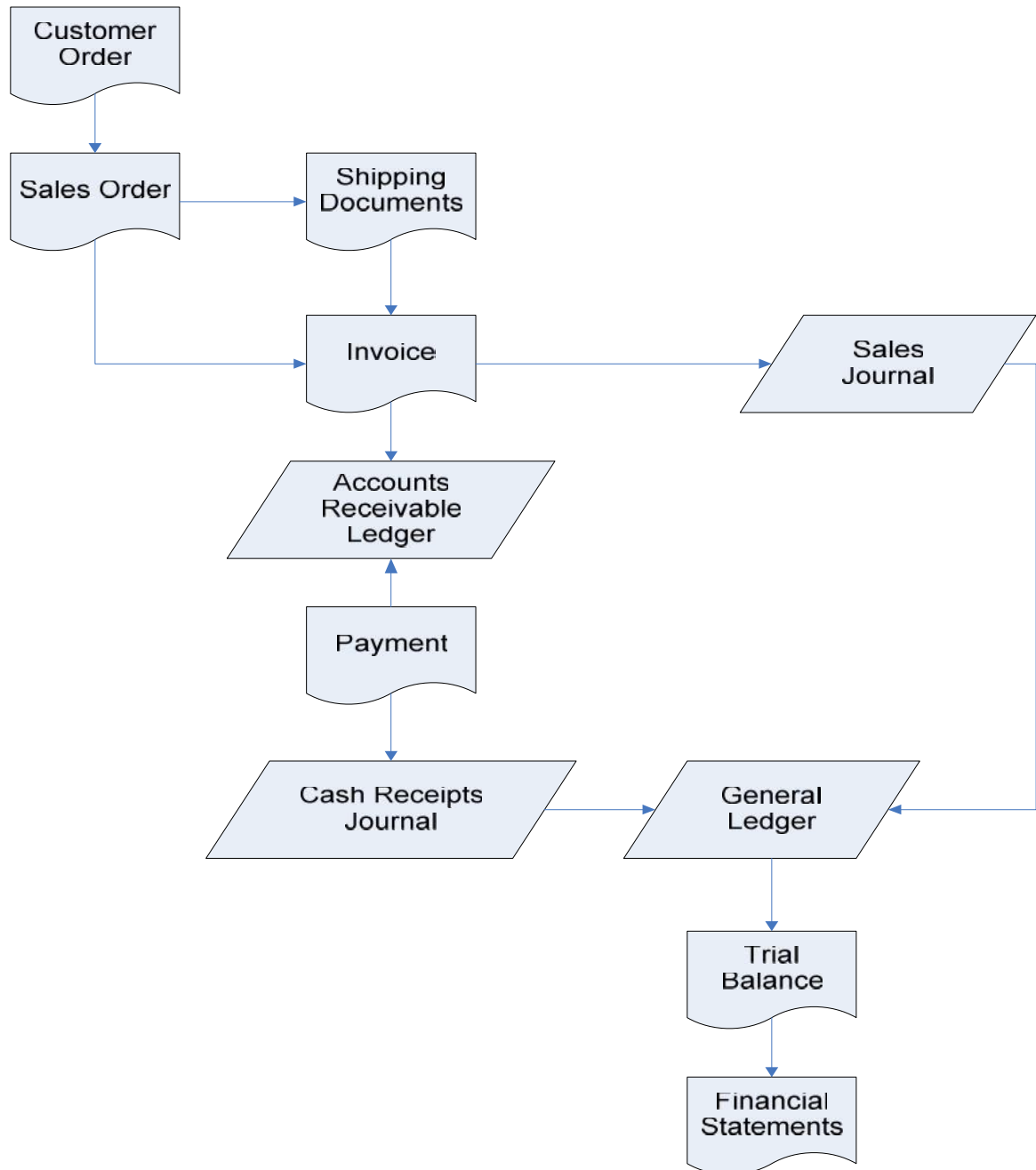
**2.3  An audit trail enables a person to trace a source document to its ultimate effect on the financial statements or work back from amounts in the financial statements to source documents.  Describe in detail the audit trail for the following:**

a.  The audit trail for inventory purchases includes linking purchase requisitions, purchase orders, and receiving reports to vendor invoices for payment.  All these documents would be linked to the check or EFT transaction used to pay for an invoice and recorded in the Cash Disbursements Journal.  In addition, these documents would all be linked to the journal entry made to record that purchase.  There would be a general ledger account number at the bottom of each column in the journal.  The journal reference would appear in the General Ledger, Inventory Ledger, and Accounts Payable ledger.
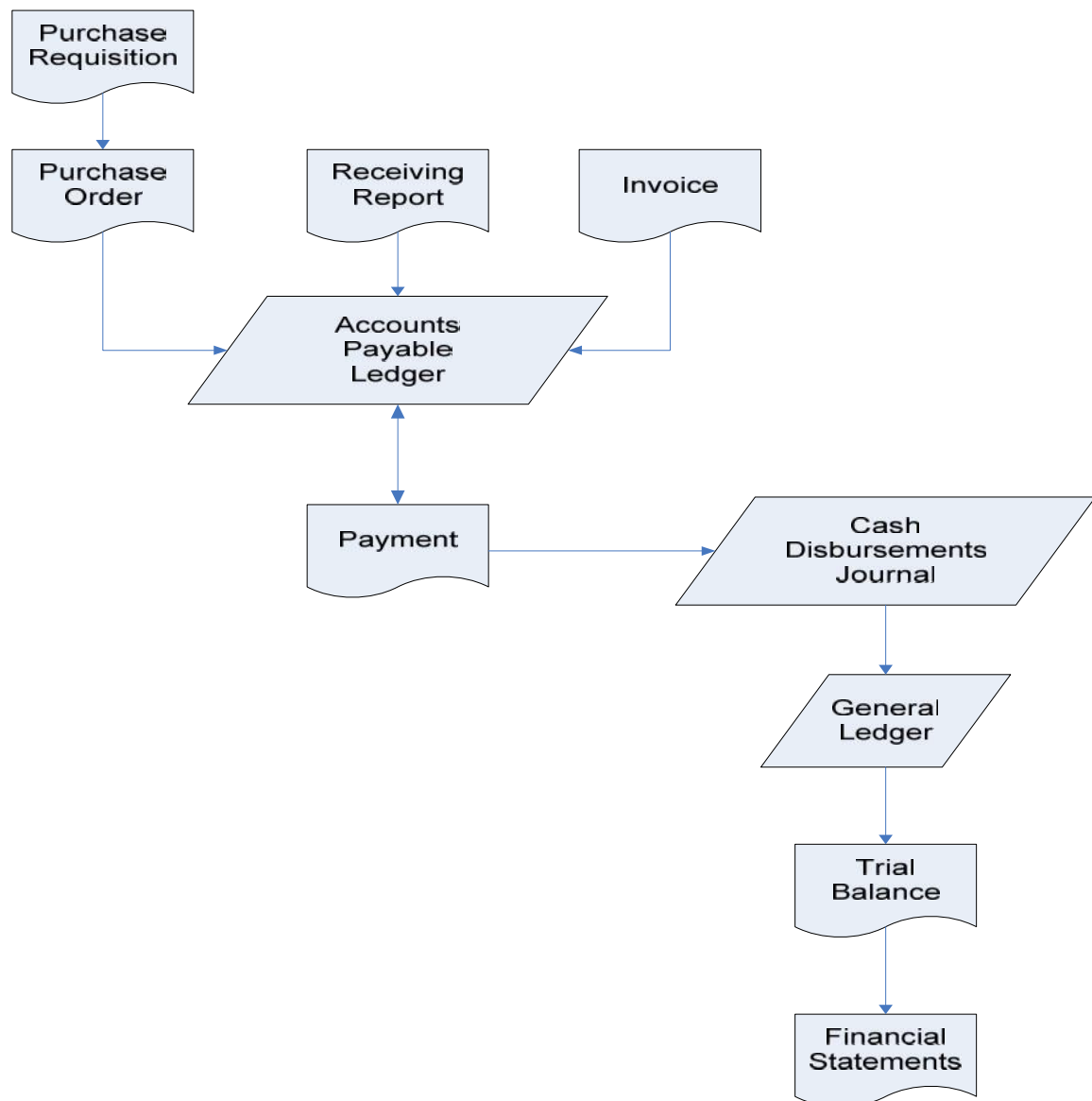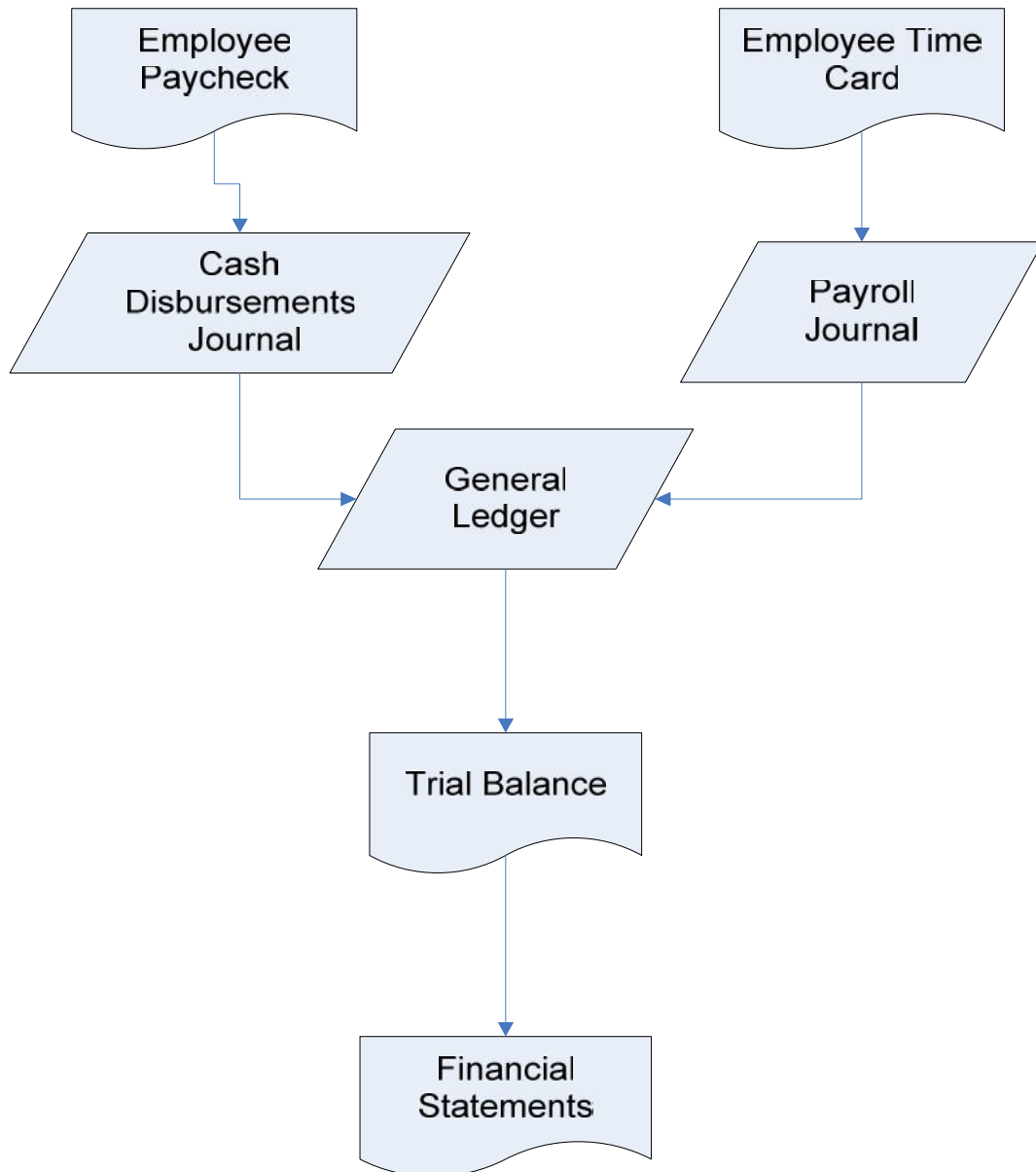
b.      The audit trail for the sale of inventory links the customer order, sales order, and shipping document to the sales invoice.  These documents are linked to the journal entry recording the sale of that merchandise.  The invoice would also be linked to the cash received from the customer and to the journal entry to record that receipt.

```
Customer
Order
   |
   v
Sales Order --------> Shipping
   |                  Documents
   |                     |
   |                     v
   +------------------> Invoice --------------------------> Sales
                          |                                 Journal
                          v                                    |
                       Accounts                                |
                       Receivable                              |
                       Ledger                                  |
                          ^                                    |
                          |                                    |
                       Payment                                 |
                          |                                    |
                          v                                    |
   Cash Receipts ----------> General Ledger <-----------------+
   Journal
                                |
                                v
                             Trial
                             Balance
                                |
                                v
                             Financial
                             Statements
```

c. The audit trail for employee payroll links records of employee activity (time cards, time sheets, etc.) to paychecks and to the journal entry to record payment of payroll. In a manufacturing company, there would also be links to the job-time tickets used to allocate labor costs to specific products or processes.

Employee Paycheck

Employee Time Card

Cash Disbursements Journal

Payroll Journal

General Ledger

Trial Balance

Financial Statements

**2.4** **Your nursery sells various types and sizes of trees, bedding plants, vegetable plants, and shrubs. It also sells fertilizer and potting soil. Design a coding scheme for your nursery.**

Grading depends upon the instructor's judgment about the quality of the coding scheme. The coding scheme should be either a group or block coding. In addition, the student's solutions should provide sufficient detail in order to determine whether the solution represents a group or block coding scheme.

An example block code is as follows (under each major heading the student would list the specific products offered for sale, such as 701 – Fuji apple tree). Four digits instead of three would allow the nursery to list more products for sale.

100  Flowers - Annual
200  Flowers – Perennial
300  Vegetables
400  Fruits
500  Shrubs
600  Trees- Flowering
700  Trees – Fruit and Nut

If the nursery had four locations, a group code could be used with the first digit indicating the location (2 location digits would allow for more growth). Other digits could be added to the group code to indicate other ways of identifying products.

## 2.5 Match the following terms with their definitions

| TERM | DEFINITION |
|---|---|
| _10_ a. data processing | 1. Contains summary-level data for every asset, liability, equity, revenue, and expense account |
| _23_ b. source documents | 2. Items are numbered consecutively to account for all items; missing items cause a gap in the numerical sequence |
| _7_ c. turnaround documents | 3. Path of a transaction through a data processing system from point of origin to final output, or backwards from final output to point of origin |
| _16_ d. source data automation | 4. List of general ledger account numbers; allows transaction data to be coded, classified, and entered into proper accounts; facilitates preparation of financial statements and reports |
| _1_ e. general ledger | 5. Contents of a specific field, such as "George" in a name field |
| _13_ f. subsidiary ledger | 6. Portion of a data record that contains the data value for a particular attribute, like a cell in a spreadsheet |
| _26_ g. control account | 7. Company data sent to an external party and then returned to the system as input |
| _21_ h. coding | 8. Used to record infrequent or non-routine transactions |
| _2__ i. sequence code | 9. Characteristics of interest that need to be stored |
| _25_ j. block code | 10. The steps a company must follow to efficiently and effectively process data about its transactions |
| _19_ k. group code | 11. Something about which information is stored |
| _22_ l. mnemonic code | 12. Stores cumulative information about an organization; like a ledger in a manual AIS. |
| __4_ m. chart of accounts | 13. Contains detailed data for any general ledger account with many individual subaccounts |
| __8_ n. general journal | 14. Contains records of individual business transactions that occur during a specific time period |
| _17_ o. specialized journal | 15. Updating each transaction as it occurs |
| __3_ p. audit trail | 16. Devices that capture transaction data in machine-readable form at the time and place of their origin |
| _11_ q. entity | 17. Used to record large numbers of repetitive transactions |
| __9_ r. attribute | 18. Set of interrelated, centrally coordinated files |
| __6_ s. field | 19. Two or more subgroups of digits are used to code items |

| _24_ t.  record | 20. Updating done periodically, such as daily |
|---|---|
| __5_ u.  data value | 21. Systematic assignment of numbers or letters to items to classify and organize them |
| _12_ v.  master file | 22. Letters and numbers, derived from the item description, are interspersed to identify items; usually easy to memorize |
| _14_ w.  transaction file | 23. Initial record of a transaction that takes place; usually recorded on preprinted forms or formattted screens |
| _18_ x.  database | 24. Fields containing data about entity attributes; like a row in a spreadsheet |
| _20_ y.  batch processing | 25. Sets of numbers are reserved for specific categories of data |
| _15_ z.  online, real-time processing | 26. The general ledger account corresponding to a subsidiary ledger, where the sum of all subsidiary ledger entries should equal the amount in the general ledger account |

**2.6    For each of the following scenarios identify which data processing method (batch or online, real-time) would be the most appropriate.**

Some students will respond that all can and ought to be done with online-real time processing.  While all can certainly be done that way, batch processing does have its advantages (cheaper, more efficient, etc.).  In making the decision between batch and online-real time processing, designers must consider the need for current and accurate data.  Batch processing is often used for data that does not need frequent updating and naturally occurs or is processed at fixed times.  For example, while employee check in and checkout times may be gathered in real time, payroll is usually only processed at a fixed interval such as weekly, biweekly, or monthly.

| | |
|---|---|
| a. Make an airline reservation | online-real time |
| b. Register for a university course | online-real time |
| c. Prepare biweekly payroll checks | batch |
| d. Process an order through an e-commerce Web site | online-real time |
| e. Prepare a daily bank deposit | batch |
| f. Preparation of customer bills by a local utility | batch |
| g. Accumulate daily costs from a production run of a single automobile part | batch |
| h. Identify the replacement drill bit size for a bit broken during a recent production run | on-line real time |

**2.7    After viewing the Web sites, and based on your reading of the chapter, write a 2 page paper that describes how an ERP can connect and integrate the revenue, expenditure, human resources/payroll, and financing cycles of a business.**

Student solutions will vary depending on the demonstrations they observe.  However, the demonstrations should give the students a more concrete and visual understanding of what an ERP system is and does.  Student solutions should at least discuss how an ERP could integrate all of the various cycle activities of a business into one integrated system.

**2.8** **Which of the following actions update a master file and which would be stored as a record in a transaction file?**

a. Update customer address change     – Master file
b. Update unit pricing information     – Master file
c. Record daily sales     – Transaction file
d. Record payroll checks     – Transaction file
e. Change employee pay rates     – Master file
f. Record production run variances     – Transaction file
g. Record Sales Commissions     – Transaction file
h. Change employee office location     – Master file
i. Update accounts payable balance     – Master file
j. Change customer credit limit     – Master file
k. Change vendor payment discount terms     – Master file
l. Record purchases     – Transaction file

**2.9** **You were hired to assist Ashton Fleming in designing an accounting system for S&S. Ashton has developed a list of the journals, ledgers, reports, and documents that he thinks S&S needs (see Table 2-6). He asks you to complete the following tasks:**

No single answer exists with this case. Indeed, solutions will vary depending upon student ingenuity and creativity. Student answers can be compared to examples of these documents found in chapters 12, 13, and 15.

   a. **Specify what data you think should be collected on each of the following four documents: sales invoice, purchase order, receiving report, employee time card**

   A sample invoice is presented in the Revenue Cycle chapter. A sample purchase order is presented in the Expenditure Cycle chapter. A sample receiving report also appears in the Expenditure Cycle chapter. Although student designs will vary, each document should contain the following data items:

   Sales Invoice

   | | |
   |---|---|
   | Customer name and address | Product code or number |
   | Customer account number | Product description |
   | Customer order number | Quantity ordered |
   | Salesperson code | Quantity shipped |
   | Shipping Address | Unit price |
   | Shipper and date shipped | Extended price |
   | Terms of sale | Taxes, if applicable |
   | Total Amount due | |

   Purchase Order

   | | |
   |---|---|
   | Ship to address | Item numbers ordered |
   | Bill to address | Payment terms |
   | Purchasing agent number | Shipping instructions |
   | Quantity of parts ordered | Supplier name or number |
   | Prices of parts ordered | Date of purchase |
   | Taxes, if any | Total amount of purchase |

   Receiving Report

   | | |
   |---|---|
   | Vendor name | Vendor number |
   | Vendor address | Date received |
   | Shipper | Receiving clerk number |
   | Quantity received | Part number received |
   | Description/quality remarks | Purchase order number |
   | Inspected by | |

   Employee Time Card

| | |
|---|---|
| Employee name | Total regular hours |
| Employee number | Time in/ Time out |
| Pay period | Total overtime hours |
| Department number | Approved by |
| Employee signature | |

b.  **Design a report to manage inventory**

The report to manage inventory should contain the following information:

- Preferred vendor
- Product number
- Description
- Reorder point
- Quantity on Hand
- Quantity Available
- Vendor performance history
- Quantity on order
- Lead time

c.  **Design a report to assist in managing credit sales and cash collections.**

The report to manage credit sales and cash collections should include:

- Credit sales per period
- Cash collections per period
- Aging of accounts receivable
- Customers by geographic region
- Uncollectible accounts per period

d.  **Visit a local office supply store and identify what types of journals, ledgers, and blank forms for various documents (sales invoices, purchase orders, etc.) are available.  Describe how easily they could be adapted to meet S&S's needs.**

The answers to this will vary depending upon the types of documents carried in the office supplies stores visited by the students.

A fruitful topic for class discussion, or a possible additional case assignment, is to compare the design of paper documents to the data entry screen layouts used in various popular accounting packages.

**SUGGESTED ANSWERS TO THE CASES**

**2.1   Bar Harbor Blueberry Farm**

**Data from Case**

| Date | Supplier Invoice | Supplier Name | Supplier Address | Amount |
|------|------------------|---------------|------------------|--------|
| **March 7** | **AJ34** | **Bud's Soil Prep, Inc.** | **PO Box 34** | **$2,067.85** |
| **March 11** | **14568** | **Osto Farmers Supply** | **45 Main** | **$    67.50** |
| **March 14** | **893V** | **Whalers Fertilizer, Inc.** | **Route 34** | **$5,000.00** |
| **March 21** | **14699** | **Osto Farmers Supply** | **45 Main** | **$3,450.37** |
| **March 21** | **10102** | **IFM Package Wholesale** | **587 Longview** | **$4,005.00** |
| **March 24** | **10145** | **IFM Package Wholesale** | **587 Longview** | **$  267.88** |

**Purchases Journal**

Page 1

| Date | Supplier | Supplier Invoice | Account Number | Post Ref | Amount |
|------|----------|------------------|----------------|----------|--------|
| March 7 | Bud's Soil Prep, Inc. | AJ34 | 23 | | $2,067.85 |
| March 11 | Osto Farmers Supply | 14568 | 24 | | $    67.50 |
| March 14 | Whalers Fertilizer, Inc. | 893V | 36 | | $5,000.00 |
| March 21 | Osto Farmers Supply | 14699 | 24 | | $3,450.37 |
| March 21 | IFM Package Wholesale | 10102 | 38 | | $4,005.00 |
| March 24 | IFM Package Wholesale | 10145 | 38 | | $  267.88 |
| | | | | | |
| March 31 | TOTAL | | | | 14,858.60 |

# General Ledger

**Accounts Payable**                               **Account Number: 300**

| Date | Description | Post Ref | Debit | Credit | Balance |
|---|---|---|---|---|---|
| March 1 | Balance Forward | | | | $18,735.55 |
| March 31 | | | | 14,858.60 | 33,594.15 |
| | | | | | |
| | | | | | |

     **Purchases**                                 **Account Number: 605**

| Date | Description | Post Ref | Debit | Credit | Balance |
|---|---|---|---|---|---|
| March 1 | Balance Forward | | | | $54,688.49 |
| March 31 | | | 14,858.60 | | 69,547.09 |
| | | | | | |
| | | | | | |

**Account Payable Subsidiary Ledger**

| Account No: 23 | Bud's Soil Prep, Inc. | PO Box 34 | Terms: 2/10, Net 30 | |
|---|---|---|---|---|
| Date | Description | Debit | Credit | Balance |
| March 1 | Balance Forward | | | 0.00 |
| March 7 | Mulch | | 2,067.85 | 2,067.85 |
| | | | | |
| | | | | |

| Account No: 24 | Osto Farmers Supply | 45 Main | Terms: 2/10, Net 30 | |
|---|---|---|---|---|
| Date | Description | Debit | Credit | Balance |
| March 1 | Balance Forward | | | 0.00 |
| Mar 11 | Seedling Heat Mat | | 67.50 | 67.50 |
| Mar 21 | Medium Portable Greenhouse | | 3,450.37 | 3,517,87 |
| | | | | |

| Account No: 36 | Whalers Fertilizer, Inc. | Route 34 | Terms: 2/10, Net 30 | |
|---|---|---|---|---|
| Date | Description | Debit | Credit | Balance |
| March 1 | Balance Forward | | | 0.00 |
| March 14 | Premium Leaf-Blend Fertilizer | | 5,000.00 | 5,000.00 |
| | | | | |
| | | | | |

| Account No: 38 | IFM Package Wholesale | 587 Longview | Terms: 2/10, Net 30 | |
|---|---|---|---|---|
| Date | Description | Debit | Credit | Balance |
| March 1 | Balance Forward | | | 0.00 |
| Mar 21 | Peat Pots | | 4,005.00 | 4,005.00 |
| Mar 24 | Labels | | 267.88 | 4,272.88 |

**CHAPTER 2**

**OVERVIEW OF BUSINESS PROCESSES**

**Instructor's Manual**

**Learning Objectives:**

1. Describe the four parts of the data processing cycle and the major activities in each.

2. Describe documents and procedures used to collect and process transaction data.

3. Describe the ways information is stored in computer-based information systems.

4. Discuss the types of information that an AIS can provide.

5. Discuss how organizations use enterprise resource planning (ERP) systems to process transactions and provide information.

**Questions to be addressed in this chapter include:**

1. How should I organize the accounting records so that financial statements can be easily produced?

2. How am I going to collect and process data about all of S&S's transactions?

3. How do I organize all the data that will be collected?

4. How should I design the AIS so that the information provided is reliable and accurate?

5. How can I design procedures to ensure that they meet all government obligations, such as remitting sales, income, and payroll taxes?

---

### Learning Objective One

**Describe the four parts of the data processing cycle and the major activities in each.**

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## Transaction Processing: The Data Processing Cycle

**Four Major Steps in the Data Processing Cycle**

**FIGURE 2-1**
**The Data Processing Cycle**
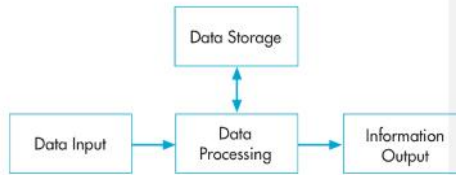


1) Data Input
2) Data Storage
3) Data Processing
4) Information Output

The first step in processing transactions is to capture the data for each transaction that takes place and enter them into the system.

**Data Inputs**

Data must be collected about **three facets** of each business activity:

1. Each activity of interest

2. The resource(s) affected by each activity

3. The people who participate in each activity

For example, collect the following data about a sales transaction:

1. Date and time of day the sale occurred

2. Employee who made the sale and the checkout clerk who processed the sale

3. Checkout register where the sale was processed

4. Item(s) sold

5. Quantity of each item sold

6. List price and actual price of each item sold

7. Total amount of the sale

8. For credit sales: delivery instructions, customer bill-to and ship-to addresses, customer name

**Information Output**

This is the **final step** in the data processing cycle.

**Forms of Information Output**

**Documents** are records of transaction or other company data., For example,such as checks and invoices.

Documents generated at the end of transaction processing activities are called **operational documents** to distinguish them from **source documents**, which are used at the beginning of the process.

**Reports** are prepared for both internal and external users. We are all familiar with the external reports called financial statements.

Information needs cannot always be satisfied strictly by documents or periodic reports. Instead, problems and questions constantly arise that need rapid action or answers. To respond to this problem, personal computers or terminals are used to **query** the system.

When the queried information is displayed on the computer monitor, the output is referred to as a **"soft copy."** When it is printed out on paper, it is referred to as a **"hard copy."**

**Purpose of Output**

There are **four main types** of **financial reports** that were covered in Principles of Accounting I & II courses, the **balance sheet, income statement, statement of owner's equity** or **statement of stockholder's equity** and the **statement of cash flows.** Sometimes a **statement of retained earnings** is used instead of the **statement of stockholder's equity.** These financial statements are used by both external and internal users.

**Budgets** are used by the management of the firm. Budgets require estimating future revenue/sales, cost, and expenses. This is the **operational budget.** There are also **cash budgets** and **capital expenditure budgets.**

**Multiple Choice #1**

Which of the following is NOT a step in the data processing cycle?

a. _____ data collection    c. ___ data storage
b. _____ data input    d. ___ data processing

## Learning Objective Two

**Describe documents and procedures used to collect and process transaction data.**

**TABLE 2-1** Common Business Activities and Source Documents

| Business Activity | Source Document |
| --- | --- |
| **Revenue Cycle** | |
| Take customer order | Sales order |
| Deliver or ship order | Delivery ticket or bill of lading |
| Receive cash | Remittance advice or remittance list |
| Deposit cash receipts | Deposit slip |
| Adjust customer account | Credit memo |
| **Expenditure Cycle** | |
| Request items | Purchase requisition |
| Order items | Purchase order |
| Receive items | Receiving report |
| Pay for items | Check or electronic funds transfer |
| **Human Resources Cycle** | |
| Collect employee withholding data | W-4 form |
| Record time worked by employees | Time cards |
| Record time spent on specific jobs | Job time tickets or time sheet |

**Source Documents** are documents used to collect data about their business activities. Source documents are also used to support the validity of the business activities.

If paper documents are exchanged with customers or suppliers, data input accuracy and efficiency is improved by using **turnaround documents,** which are records of company data sent to an external party and then returned to the system as input.

**Table 2-3** on ~~Page~~ page 36 provides an excellent listing of Common Business Activities and Source Documents for the revenue, expenditure, and human resources cycles that students should become familiar with.

**Source Data Automation** is yet another means to improve the accuracy and efficiency of data input. An example would be once the sale of merchandise is rung up on the cash register it would be interfaced with accounting to automatically record the sale and also interfaced with the warehouse to automatically reduce the level of inventory for the item that was sold. This would also be interfaced with purchasing in which the purchase order would automatically be printed out for delivery to the vendor.

The second step in processing transactions is to make sure captured data are accurate and complete.

One way to increase accuracy and completeness is to use well-designed turnaround documents and data entry screens, as well as source data automation.

**Multiple Choice #2**

Which of the following documents is most likely to be used in the expenditure cycle?
a. sales orders
b. credit memo
c. receiving report
d. job time

Which of the following documents is most likely to be used in the expenditure cycle?
a. sales orders          c. receiving report
ticket  b. credit memo          d. job time ticket

**Learning Objective Three**

Describe the ways information is stored in computer-based information systems.

## Computer-Based Storage ~~concepts~~Concepts

An **entity** is something about which information is stored. For example, employees, inventory items, and customers.

Each entity has **attributes,** or characteristics of interest, which need to be stored. For example, an employee's hourly rate of pay, unit cost of an inventory item, and a customer's address.

**Figure 2-5** on ~~Page~~ page 42 provides examples of data storage elements:

1. Data values are stored in a physical space called a **field.** In the figure the fields are Customer number, Customer name, Address, Credit limit, and Balance

2. The sect of fields that contain data about various attributes of the same entity forms a **record**. In the figure th~~e~~at records are represented by each of the three rows; so there are three records.

3. The contents of each field within a record are called a **data value**. Sometimes, not mentioned in this book, the contents of each field are called a specific **data element** which contains value the data.

4. In turn, data elements/data value is composed of **characters** such as letters, numbers, and symbols.

5. Related records are grouped to form a **file**.

6. Two basic types of files exist:

   - A **master file** is conceptually similar to a ledger in a manual AIS.

   - The second basic type of file is called a **transaction file**, which is conceptually similar to a journal in a manual AIS.

## Data Processing

Once data about a business activity have been collected and entered into the system they must be processed.

Data processing implies the execution of a certain procedures, usually involving a series of tasks.

There are four different types of file processing:

1. **Updating data** previously stored about the activity, the resources affected by the activity , or the people who performed the activity

   **Figure 2-6** on ~~Page~~ page 41 provides The Accounts Receivable File Update Process

2. **Changing data**, such as changing a customer's address when they move or their credit limit when their financial situation changes

3. **Adding data**, such as adding a new employee to the payroll master file or data—base after they have been hired

4. **Deleting data**, such as purging the vendor master file of all vendors that the company no longer does business with

Periodic updating of data is referred to as **batch processing**. This approach may be combined with either the off-line or on-line entry of data.

Under the **on—line entry/batch processing** method of processing, individual transactions are entered directly into the computer via a terminal as they occur.

Updating as each transaction occurs is referred to as **on—line, real-time processing.**

The **on-line entry/on-line processing method** differs from **on-line entry/batch processing** in the following two respects: (1) master files are updated concurrently with data entry and (2) a transaction log is produced that consists of a chronological record of all transactions.

**Multiple Choice #3**

Recording and processing information about a transaction at the time it takes place is referred to as which of the following?
   a. batch processing
   b. online, real-time processing
   c. captured transaction processing
   d. chart of accounts
      processing

> Recording and processing information about a transaction at the time it takes place is referred to as which of the following?
>
> | a. batch processing | c. captured transaction processing |
> |---|---|
> | b. online, real-time processing | d. chart of accounts processing |

## Learning Objective Four

**Discuss the types of information that an AIS can provide.**

**Data Storage**

A company's data are one of its most important resources.

Accountants need to know how to manage data for maximum corporate use.

### Ledgers

**General Ledger** contains summary-level data for every asset, liability, equity, revenue, and expense account of the organization.

**Subsidiary Ledger.** Records records all the detailed data for any general ledger account that has many individual subaccounts.

These subsidiary ledgers would be used for **accounts receivable** and **accounts payable**.

**Accounts receivable subsidiary ledger** would record detailed data for customers whom buy products or services on credit.
The accounts receivable subsidiary ledger would support the accounts receivable general ledger controlling account.

**Accounts payable subsidiary ledger** would record detailed data for the individual vendor credit purchases of merchandise~~/~~ or supplies made by the company.

The accounts payable subsidiary ledger would support the accounts payable general ledger controlling account.

## Coding Techniques

**Coding** is the systematic assignment of numbers or letters to items to classify and organize them.

1. With *sequence codes,* items are numbered consecutively to ensure that there will be no gaps in the sequence.

2. With a *block code,* blocks of numbers within a numerical sequence are reserved for categories having meaning to the user

S&S had the specific range of code numbers for their following major product categories:

| Product Code | Product Type |
|---|---|
| 1000000-1999999 | Electric range |
| 2000000-2999999 | Refrigerator |
| 3000000-3999999 | Washer |
| 4000000-4999999 | Dryer |

3. **Group codes** are often used in conjunction with the block code. S&S uses a seven-digit product code number, for example, the group coding technique might be applied as follows

| Digit Position | Meaning |
|---|---|
| 1-2 | Product line, size, style |
| 3 | Color |
| 4-5 | Year of manufacture |
| 6-7 | Operational features |

In designing a coding system, the following **guidelines** will result in a better coding system:

1. The code should be consistent with its intended use, which requires the code designer to determine the types of system outputs desired by users prior to selecting the code.

2. Make sure the code allows for growth in the number of items to be coded.

3. Make the coding system as simple as possible in order to minimize costs, facilitate memorization and interpretation of coding categories, and ensure employee acceptance

Make sure the coding system is consistent (1) with the company's organizational structure and (2) across the different divisions of an organization

## Chart of Accounts

A chart of accounts is a list of all general ledger accounts an organization uses with each general ledger account being assigned a specific number.

**Audit Trail** The accounting data and records should provide a trail starting with the source document that supports the transaction (for example, lets use credit sales) all the way through to the final posting in the general ledger accounts to the financial statements. An audit trail provides a means to check the accuracy and validity of ledger postings.

In auditing, this technique would be called **Tracing.** In the opposite direction; from the general ledger to the journals and subsidiary ledgers to the source document; this is called **Vouching** for auditors. This is covered in more detail in Auditing Theory and Practice courses.

## Multiple Choice #4

How does the chart of accounts list general ledger accounts?
a. alphabetical order
b. chronological order
c. size order
d. the order in which they appear in financial statements

## Learning Objective Five

**Discuss how organizations use enterprise resource planning (ERP) systems to process transactions and provide information.**

**Enterprise resource planning (ERP) systems** are designed to overcome these problems as they integrate all aspects of a company's operations with its traditional AIS.

A key feature of ERP systems is the integration of financial with other nonfinancial operating data.

<u>**Multiple Choice #5**</u>

<u>Which of the following is NOT an advantage of an ERP system?
a. better access control
b. standardization of procedures and reports
c. improved monitoring capabilities
d. simplicity and reduced</u>

Which of the following is NOT an advantage of an ERP system?
a. better access control                          c. improved monitoring capabilities
b. standardization of procedures and reports      d. simplicity and reduced costs

<u>costs</u>

**ANSWERS to Multiple Choice Questions:**

| Multiple Choice Number | Multiple Choice Answer |
|:---:|:---:|
| 1 | A |
| 2 | C |
| 3 | B |
| 4 | D |
| 5 | D |

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