

CHAPTER 2

OVERVIEW OF TRANSACTION PROCESSING AND ENTERPRISE RESOURCE PLANNING SYSTEMS

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 (also referred to as the 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 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 the keying and some of the editing process.
- 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 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>)

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.).

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- 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.

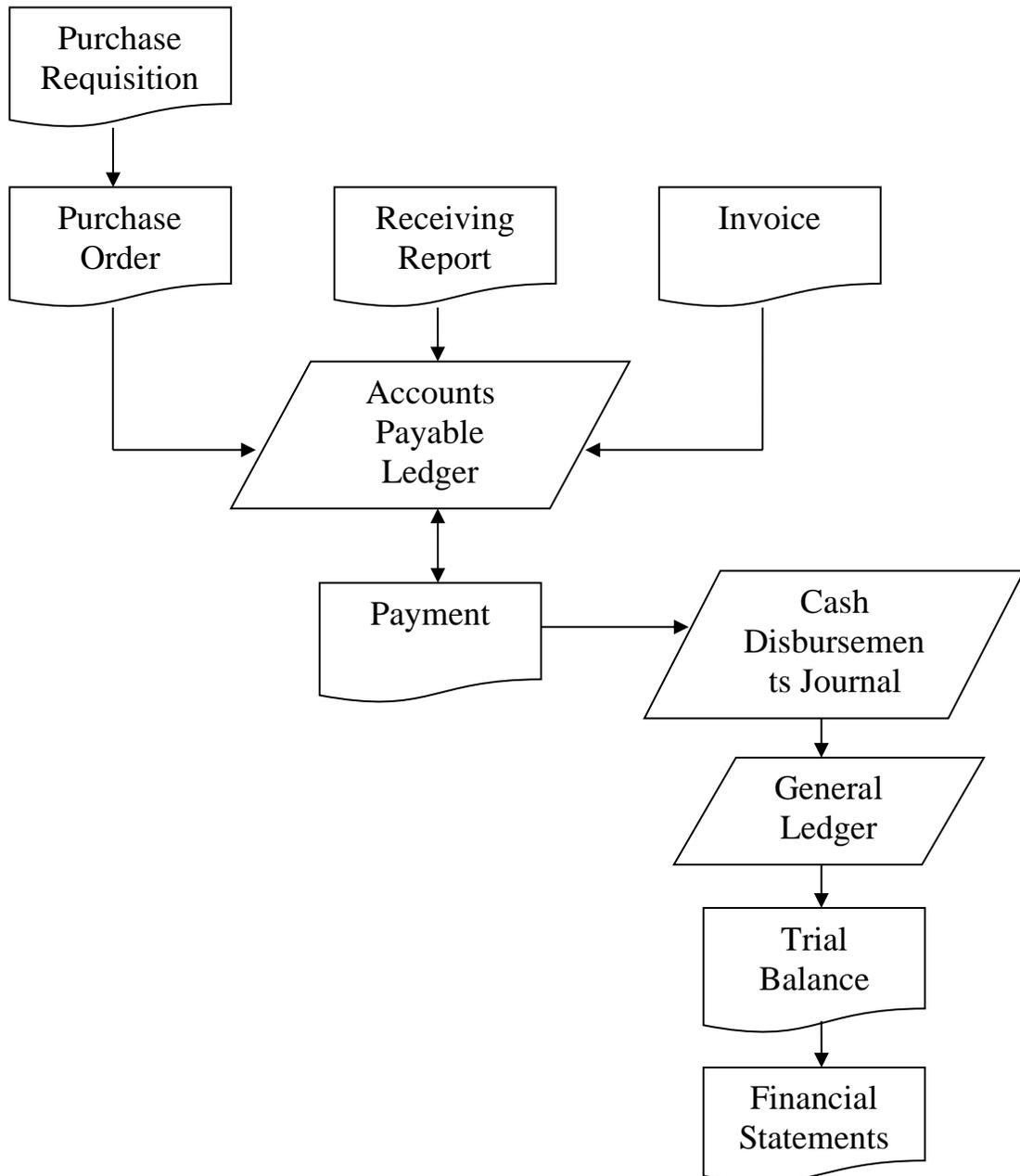
2.2 This chapter discusses the current and future uses of blockchain to process transactions and store data. Research the use of blockchain and find a non-cryptocurrency company that is currently using it. Also research how people are predicting that blockchain will be used in the future to process transactions and store company data. Write a 3-4 page report about what you found with respect to the current and future uses of blockchain.

Students should be able to find numerous non-cryptocurrency companies that are currently using blockchain. There is also no shortage of people predicting how blockchain can be used in the future.

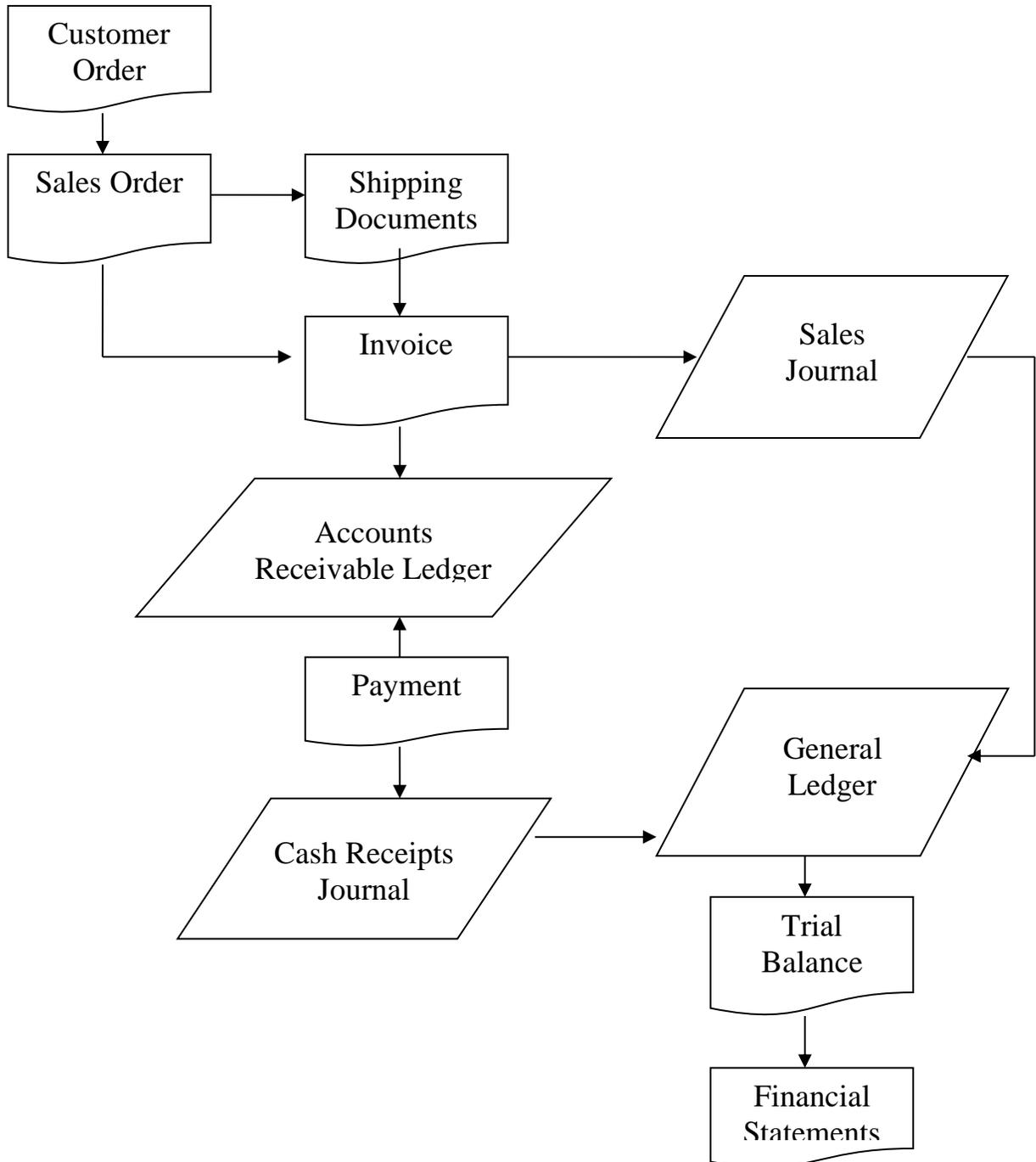
The objective is to get the students to do the research necessary to learn more about blockchain and its current real world uses and its predicted future uses.

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:

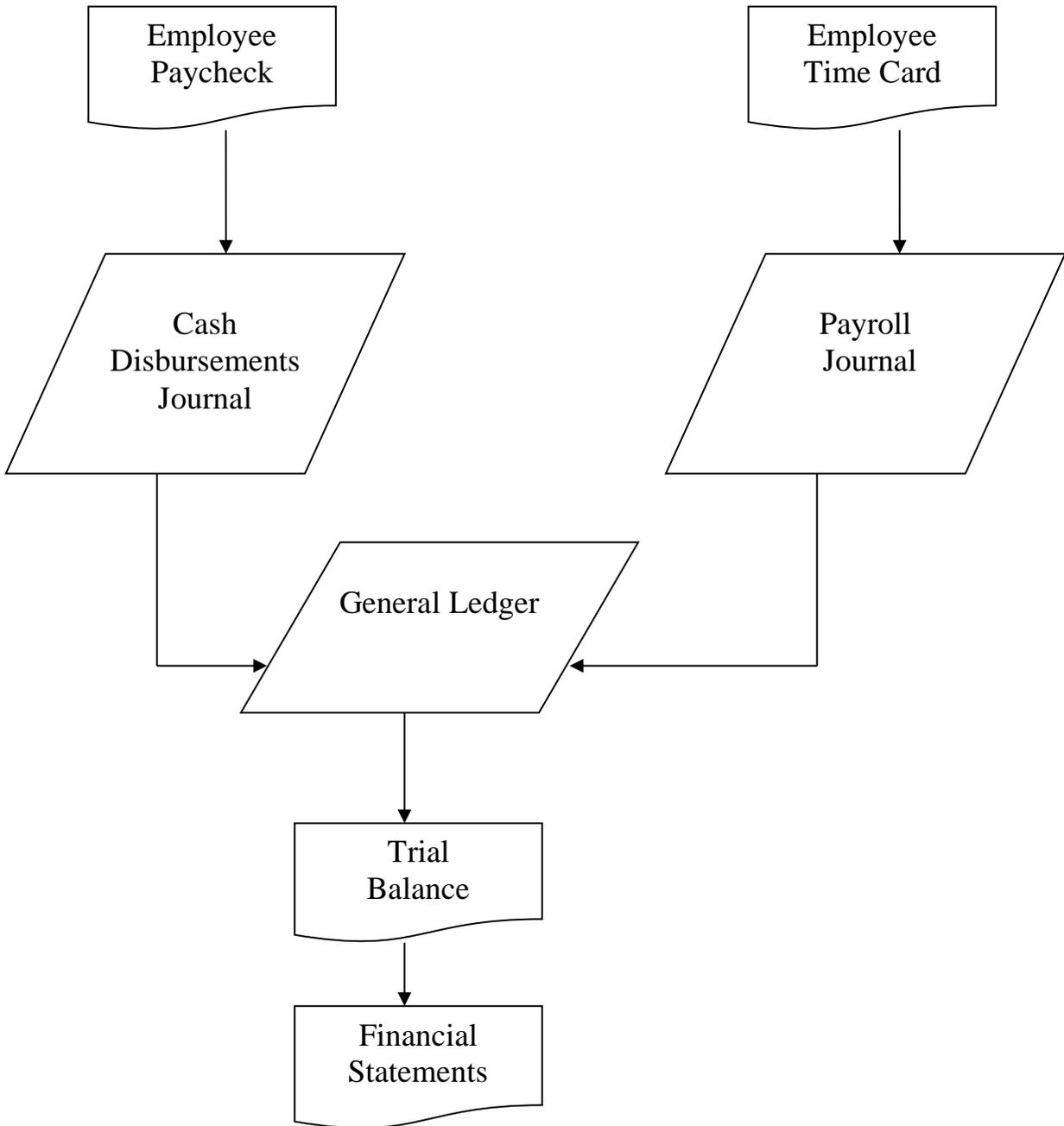
- a. The audit trail for inventory purchases includes linking purchase requisitions, purchase orders, and receiving reports to vendor invoices for payment. All these documents would be linked to the check or EFT transaction used to pay for an invoice and recorded in the Cash Disbursements Journal. In 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.



- 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.



2.4 This chapter discusses the use of smart contracts. Research their use and write a 3-4 page report that describes one or more companies that use them. Include how the smart contract works as well as its advantages and disadvantages. Also explain how people are predicting that smart contracts will evolve and how they will be used in the future.

Students should be able to find numerous examples of companies that are currently using smart contracts. They should also be able to find discussions of their advantages, disadvantages, and predicted advancements.

The objective is to get the students to do the research necessary to learn more about smart contracts and their current real world uses and predicted future uses.

2.5 Match the following terms with their definitions

- __i__ 1. attribute
- __c__ 2. audit trail
- __t__ 3. batch processing
- __y__ 4. block code
- __d__ 5. chart of accounts
- __u__ 6. coding
- __z__ 7. control account
- __j__ 8. data processing cycle
- __e__ 9. data value
- __r__ 10. database
- __k__ 11. entity
- __f__ 12. field
- __h__ 13. general journal
- __a__ 14. general ledger
- __s__ 15. group code
- __l__ 16. master file
- __v__ 17. mnemonic code
- __o__ 18. real-time processing
- __x__ 19. record
- __b__ 20. sequence code
- __p__ 21. source data automation
- __w__ 22. source documents
- __q__ 23. specialized journal
- __m__ 24. subsidiary ledger
- __n__ 25. transaction file
- __g__ 26. turnaround documents

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

Some students will respond that all can and ought to be done with 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 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. real-time
- b. real-time
- c. real-time
- d. batch
- e. batch
- f. real-time
- g. batch
- h. real time
- i. real time
- j. real time
- k. batch
- l. real time

2.7 On their websites, you will find several online demonstrations for the SAP and Oracle ERP systems. Visit these websites and explore their content by doing the following:

- a. Search the SAP site for corporate videos, and watch two of them. Explore the industries, services, solutions, and platforms that SAP offers. Read several of the articles, such as the ones about customer successes.
- b. Explore the Oracle website just as you explored the SAP site.

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 | – 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:**
- 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**
 - b. Design a report to manage inventory.**
 - c. Design a report to assist in managing credit sales and cash collections.**
 - 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.**

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 10 and 11.

- a. 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. 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. 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. 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.

2.10 Correct answers bolded

1. Which of the following statements is (are) true?
 - a. **Well-designed documents and screens improve accuracy and completeness by providing instructions or prompts about what data to collect**
 - b. Online batch processing is where transaction data are entered, edited, and processed as they occur.
 - c. ERP implementation costs for large companies with multiple sites are usually about half the cost of the ERP user license.
 - d. In an ERP system, data entry controls such as validating data item and checking them for accuracy at the time of initial entry are not needed.
 - e. **Data in ledgers is organized logically using coding techniques that assign numbers or letters to items to classify and organize them.**

2. Which of the following statements is (are) true?
 - a. **With sequence codes, items are numbered consecutively to account for all items, and missing items cause a gap in the numerical sequence.**
 - b. The data capture or input process is usually triggered by a top management decision.
 - c. **Updating done periodically, such as daily or weekly, is referred to as batch processing.**
 - d. Cumulative accounting information is stored in general and subsidiary journals.
 - e. **Computers store data in a field; the fields containing data about entity attributes constitute a record.**

3. Which of the following statements is (are) true?
 - a. **A chart of accounts facilitates preparing financial statements because data stored in individual accounts can easily be summed for presentation.**
 - b. Repetitive and frequently used database queries are usually developed by users; one-time queries are usually developed by information systems specialists.
 - c. **A database query can provide the information needed to deal with problems and questions that need rapid action or answers.**
 - d. **A journal entry shows the accounts and amounts to be debited and credited.**
 - e. Transaction files are permanent and must be maintained for several years for backup purposes.

4. Which of the following statements is (are) true?
- a. A group code is derived from the description of the item and is usually easy to memorize.
 - b. Using source data automation or well-designed turnaround documents and data entry screens helps ensure captured data are accurate and complete**
 - c. It is usually best to let a user determine what data to input rather than have data input screens list the data the user needs to enter
 - d. If the sum of all subsidiary ledger account balances does not equal its general ledger control account balance, a recording error has occurred.**
 - e. **Real-time processing updates transactions as they occur, helping ensure stored information is current and useful in making decision.**
5. Which of the following statements is (are) true?
- a. With mnemonic codes, blocks of numbers are reserved for specific categories of data.
 - b. Input controls are improved by using pre-numbered source documents or by the system automatically assigning a sequential number to each transaction.**
 - c. In an integrated ERP system, undetected data entry errors can automatically propagate throughout the system.**
 - d. As ERP modules do not automatically trigger additional actions in other modules, it is less important to understand business processes and their interactions.
 - e. A purchase to pay ERP module facilitates production scheduling, work-in-process, quality control, cost management, and manufacturing processes.
6. Which of the following statements is (are) true?
- a. Data is one of a company's most important resources but to function properly most organizations do not have to have the data readily and easily accessible.
 - b. Turnaround documents are company output sent to an external party and returned as an input document.**
 - c. Each type of entity possesses the same set of attributes or characteristics of interest that are stored, but the specific data values for those attributes will differ depending on the entity.**
 - d. Reaping the potential benefits of ERP systems and mitigating their disadvantages requires conscious effort and involvement by top management.**
 - e. Real-time data processing is almost always cheaper and more efficient than batch processing.

7. Which of the following statements is (are) true?
- Source data automation devices capture transaction data in paper form at the time and place of their origin.
 - Master files are permanent and exist across fiscal periods; individual master file records may change frequently.**
 - General ledgers are often used for accounts receivable, inventory, fixed assets, and accounts payable.
 - If an ERP system does not meet your needs, it can almost always be inexpensively modified to meet your unique needs
 - When choosing an ERP system, make sure it has a module for every critical company process and you are not paying for modules you do not need.**
8. Which of the following statements is (are) true?
- Documents are records of transaction or other company data that can be printed out or stored as electronic images in a computer**
 - Transaction data are almost always recorded in a ledger before they are entered into a journal
 - Since batch processing data are current and accurate only immediately after processing, it is used for applications that do not need frequent updating.**
 - ERP systems are not effective in integrating non-financial company operations with a traditional accounting system.
 - Well-designed screens improve accuracy and completeness by using checkoff boxes or pull-down menus to present the available options**
9. Which of the following statements is (are) true?
- A transaction file contains records of individual business transactions and is similar to a general ledger in a manual AIS.
 - To ensure credit sales policies are followed, the system can be programmed to check a customer's credit limit and payment history.**
 - Use of pre-numbered documents makes it harder to verify that all transactions have been recorded and that none has been misplaced.
 - An ERP system uses a centralized database to share information across business processes and coordinate activities.**
 - It is difficult for an ERP system to provide management with the up-to-date information needed to plan, control, and evaluate an organization's business

10. Which of the following statements is (are) true?
- a. **The need for reports should be periodically assessed because they are often prepared long after they are needed---wasting time, money, and resources.**
 - b. An audit trail is a transaction path through a data processing system from point of origin to final output, but not backward from final output to point of origin.
 - c. Accountants and systems developers do not need to understand how data are captured, organized, stored, processed, or accessed.
 - d. **An AIS has traditionally been referred to as a transaction processing system because its only concern was financial data and accounting transactions.**
 - e. **A master file, like a ledger in a manual AIS, stores cumulative information about an organization.**

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	PO Box 34	\$2,067.85
March 11	14568	Osto Farmers Supply	45 Main	\$ 67.50
March 14	893V	Whalers Fertilizer	Route 34	\$5,000.00
March 21	14699	Osto Farmers Supply	45 Main	\$3,450.37
March 21	10102	IFM Wholesale	587 Longview	\$4,005.00
March 24	10145	IFM Wholesale	587 Longview	\$ 267.88

Purchases Journal

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Date	Supplier	Supplier Invoice	Account Number	Post Ref	Amount
March 7	Bud's Soil Prep	AJ34	23	√	\$2,067.85
March 11	Osto Farmers Supply	14568	24	√	\$ 67.50
March 14	Whalers Fertilizer	893V	36	√	\$5,000.00
March 21	Osto Farmers Supply	14699	24	√	\$3,450.37
March 21	IFM Wholesale	10102	38	√	\$4,005.00
March 24	IFM 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 PO Box 34 Terms: 2/10, Net 30				
Date	Description	Debit	Credit	Balance
March 1	Balance Forward			0.00
March 7	Supplier invoice AJ34		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	Supplier invoice 14568		67.50	67.50
Mar 21	Supplier invoice 14699		3,450.37	3,517.87

Account No: 36 Whalers Fertilizer Route 34 Terms: 2/10, Net 30				
Date	Description	Debit	Credit	Balance
March 1	Balance Forward			0.00
March 14	Supplier invoice 893V		5,000.00	5,000.00

Account No: 38 IFM Wholesale 587 Longview Terms: 2/10, Net 30				
Date	Description	Debit	Credit	Balance
March 1	Balance Forward			0.00
Mar 21	Supplier invoice 10102		4,005.00	4,005.00
Mar 24	Supplier invoice 10145		267.88	4,272.88

2.2 SDC Corp. - Chart of Accounts Design

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 enough to meet SDC's needs:

- A This digit identifies the 4 divisions plus the corporate office
 - B This digit represents major account types (asset, liability, equity, revenue, expense).
 - 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.